Güvenal

GTH

Die & Mould Components

Since
1976

Standard / Custom-Made
Die & Mould Components

2020-21
Volume - 1

ООО "ВИВТЕХ" 127254, Москва, ул. Руставели д. 14, стр. 6 +7 (495) 755-91-45 info@vivtech.ru www.vivtech.ru

Güvenal GTH
Die & Mould Components
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**▶ Our new digital portal "E-Guvenal" is now online.
Fast, practical, qualified and reliable system.**

"E-Guvenal"

B2B

▶ Configure: You can group by selecting the products you need.
You can search by other codes in the sector (automatic code matching).

▶ 3D CAD Data Download: You can download the 3D CAD Data of the standard parts for free and make a library.

▶ Reasonable Price Guarantee: We offer the best quality/price combination products to our esteemed partners.

▶ Order, Quotation and Package List Forms: You can perform all these process online. You can download the desired lists to your system.

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"We have adopted a service culture focusing on customer satisfaction."

Why GUVENAL?

- Techinal support / Engineering services
- Reasonable prices
- Fast delivery
- No minimum order quantity
- After sales support
- Wide variety of quality products
- Free 3D CAD Data downloads available
- Easy access to Digital Catalog
- The presantation of lastest Die & Mould Components Technologies
- Unconditional customer satisfaction

Get to know GUVENAL with numbers

+ 2 / production facilities
+ 5 / sales office
+ 33 / supply to 33 countries
+ 170 / employees
+ 1976 / establishment year
+ 6500 m^2 / total area
+ 57000 / different products
+ 900000 kg / annual tool steel machining

CAD Data Downloads

* GUVENAL - GTH standard components CAD Data is provided on our website (www.guvenal.net), this service is free and you only need to register.

* GUVENAL PARTcommunity
To make it easier for you to design your die & mould, CAD data for our standard components are available in all common 2D and 3D formats. Only register, log in, select the format and product you want and download the data.
The link for the free download of our standard components:
http://guvenal.partcommunity.com

3D CAD FILES CADENAS
b2b.partcommunity.com

Company & Contact Details

ISO 9001 2008

GUVENAL KALIP ELEMANLARI SAN. VE TIC. A.S.

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Tax Identification No: 4510 3150 97 • **Trade Register No:** 296816

Die & Mould Components and Punch Production Facilities

Rami Kisla Cad. Emintas-3 San. Sit. No: 12 - 13
Postcode: 34055 Topcular - Eyup, Istanbul / Turkey

Mould Bases & Die Sets Production Facility

Akcaburgaz Mah. 1592 Sk. Alkop A Blok No: 5 - 6 - 7
Postcode: 34522 Kirac - Esenyurt, Istanbul / Turkey

Sales & Support Centre - 1

Ikitelli Organize Sanayi Bölgesi, Demirciler San. Sit. B1 Blok No: 34
Postcode: 34490 Ikitelli - Basaksehir, Istanbul / Turkey

Sales & Support Centre - 2

Akcaburgaz Mah. 1592 Sk. Alkop A Blok No: 8
Postcode: 34522 Kirac - Esenyurt, Istanbul / Turkey

Technical Support Office / Gebze Automotive Industrial Area

TOSB Sosyal Tesisler 8/3 C Blok No: 108
Postcode: 41420 Cayirova, Kocaeli / Turkey

Technical Support Office / Bursa Industrial Area

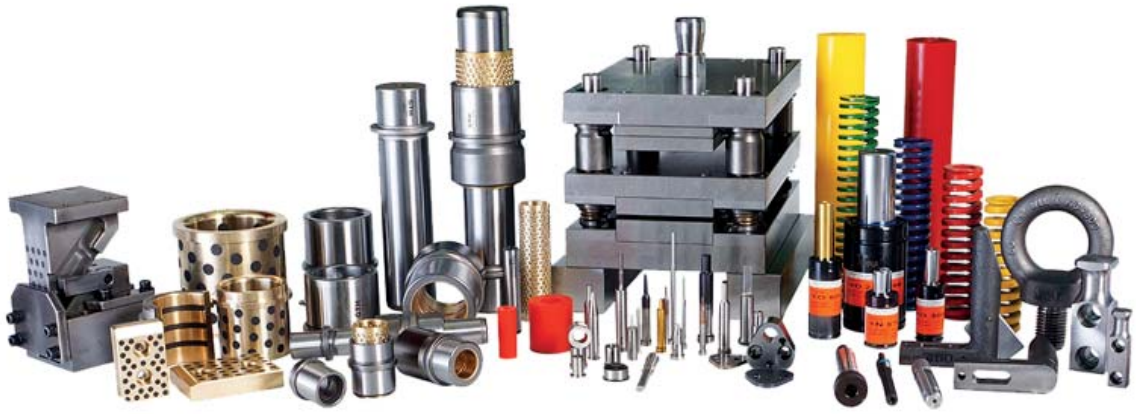
Besevler Mah. Aktas Sk. Gulecler Is Merkezi No: 3 Office: 17
Postcode: 16260 Nilufer, Bursa / Turkey

Production Facilities Sales & Support Offices Home Office Employees

Our production facilities:

Video

Standard / Custom-Made
Die & Mould Components and Bases



Die & Mould Components, Bases and Systems
Your Global Partner

From 1976 to present, Guvenal Kalip Elemanlari A.S, a member of "Guvenal Corporate Group", has continued globally customer-oriented service presentations with numerous advantages and 45-year sector experience. Our company is an ideal partner about Standard / Custom-Made Die & Mould Components and Bases that are combined with high quality / economic price.

With strict quality control, good availability and short delivery periods, Guvenal products are used actively in 33 countries. We are supporting you with customizable offers about technical and costing issues of your projects and we are producing the best solutions. Guvenal, the perfect choice for professional and productive cooperation.

About the Catalogue

Successful usage secrets of Guvenal - GTH Die & Mould Components:
Guvenal - GTH book is more than a catalogue. Not only it exhibits our products, but also it includes recommendations related to efficient usage of components with basic and special technical / short information.
Our catalogue has been prepared with the principle of "quick way to perfect Dies & Moulds."
Guvenal has a global logistic network with its own warehouses and production facilities having a high experience level.
Stable and reliable Die & Mould production is obtained with components having a reliable quality.
Guvenal - GTH tends towards the highest quality standards with all development and test efforts.
We classified our products as quality and economically. We have specified possible adverse effects of products on human health and we have taken care to select accurate ineffective products.

Our Customer Services

The most important advantage of competition is quality human resources.
We consider learning for success as a cultural phenomenon. We have adopted a service culture focusing on customer satisfaction. We are at your service together with our whole team, we provide solution rapidly but still expect some tolerance. What you call service is nature of the work we perform.

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Some Images from Guvenal

1976, Istanbul / Turkey

Guvenal has been founded in Istanbul / Turkey thanks to superior attempts and ethical and working values with the empathy of Honorary President Dear Mr. "Avni Tarakçıoğlu" in 1976.
The company is being managed by the 2nd generation of his family with the same values. Our adventure which began with 2 employees in 1976 continue with 170 employees and export to 33 countries today.

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GTH Code: Page numbers of products in Guvenal production line.

Product Code	Page No	GTH Die - Mould Components Product Description
G01	39	Guide Pillar with Centre Collar / NAAMS
G02	39	Guide Pillar / NAAMS
G03	41	Guide Pillar / CNOMO
G04	40	Guide Pillar / PSA
G05	40	Guide Pillar / PSA
G06	38	Guide Pillar / FCA
G07	38	Guide Pillar / FCA
G08	45	Guide Pillar with Centre Fixing
G09	33	Guide Pillar for Large Dies / DIN 9833
G10	35	Guide Pillar with Centre Collar
G11	49	Guide Pillar with Oil Groove
G12	54	Guide Pillar / Shouldered
G13	51	Guide Pillar with Centring Collar
G14	277	Core Guide Pillar (Inclined & Threaded)
G15	34	Guide Pillar / Thickbacked
G16	62	Ejector Rod
G17	48	Guide Pillar without Oil Groove
G18	47	Guide Pillar for Ball Cage
G19	36	Guide Pillar
G20	42	Guide Pillar for Cast Block Bush
G21	47	Support Pillar for Injection Mould
G22	45	Perforated Flange
G23	46	Sheet Lifting Pin
G24	36	Guide Pillar / Plain & Threaded
G25	67	Guide Bush - Headed
G26	66	Guide Bush with Centre Collar
G27	67	Guide Bush with Collar
G28	60	Centring Bush
G29	71	Steel Bush + Ball Cage Bush Set
G30	61	Guide Bush - Headed
G31	60	Guide Bush with Centring Collar
G32	61	Guide Bush with Centre Collar
G33	73	Guide Bush / Thin & Long Type
G34	72	Guide Bush / Thin & Short Type
G35	75	Guide Bush - Bronze Plated / Long Type
G36	75	Guide Bush - Bronze Plated / Short Type
G37	69	Guide Bush for Ball Cage / Long Type
G38	69	Guide Bush for Ball Cage / Short Type
G39	167	Shoulder Screw
G40	77	Guide Bush with Collar - NAAMS
G41	77	Guide Bush, Headed - NAAMS
G42	78	Guide Bush, Headed / Self-Lub. Bronze
G43	79	Guide Bush, Headed, CNOMO - PSA
G44	76	Guide Bush, DIN 9834 - ISO 9448
G45	76	Guide Bush with Centre Collar
G46	107	Locating Cone
G47	119	Die Lifting Bolt - Heavy Duty
G48	66	Guide Bush, Plain / Self-Lub. Bronze
G49	56	Guide Bush with Circlip Slotted / Headed
G50	57	Guide Pillar / Shouldered
G51	120	Die Lifting Pin - WDX22-60
G52	121	Die Lifting Pin - VDI 3366
G53	123	Die Lifting Bracket - FCA
G54	119	Die Lifting Bolt - DIN ISO 10242-1
G55	121	Die Lifting Pin - FCA
G56	124	Safety Pin - FCA
G57	124	Safety Pin - VDI
G58	122	Die Lifting Lug with Rope Stop Safety
G59	105	Support Washer
G60	105	Tapered Locating Unit
G61	50	Angled Guide Bush - Core Pillar Holder
G62	104	Centring Pin / Mercedes - Benz Std.
G63	107	Locating Cone / NAAMS
G64	106	Locating Cone
G65	104	Centring Pin
G66	104	Centring Pin
G67	103	Guide
G68	103	Guide with Part Position Control
G69	101	Air Pin
G70	68	Ball Cage Bush
G71	166	Spring and Spacer Unit
G72	74	Guide Bush with Flange
G73	279	Dial Caliper for Load Control Monitoring
G74	71	Linear Ball Bearing Bush / Headed Type
G75	71	Linear Ball Bearing Bush
G76	92	Return Cam Plate / Self-Lub. Bronze
G77	63	Guide Bush with Circlip Slotted
G78	92	Positive Return Plate
G79	42	Flange Cast Bush / Rectangular
G80	43	Flange Cast Bush / Rectangular
G81	40	Compensation Block / PSA
G82	105	Tapered Locating Unit / Headed
G83	83	Wear Plate / Self-Lub. Bronze
G84	86	Wear Plate / Self-Lub. Bronze
G85	83	Wear Plate / Self-Lub. Bronze
G86	79	Guide Bush / CNOMO - PSA
G87	86	Wear Plate, VDI 3357
G88	87	Wear Plate / Self-Lub. Bronze
G89	87	Wear Plate, ISO 9183-1
G90	85	Wear Plate / Self-Lub. Bronze
G91	85	Wear Plate, VDI 3357
G92	88	Wear Plate, AFNOR - ISO 9183-2
G93	88	Wear Plate, CNOMO
G94	84	Wear Plate, NAAMS
G95	84	Wear Plate, VDI 3357
G96	88	Wear Plate, VDI 3357
G97	102	Slide Stop Block
G98	102	Cylinder Stopping Block
G99	103	Cylinder Locating Block / FCA
G100	80	Guide Pillar & Bush Clamp
G101	81	Guide Pillar & Bush Clamp
G102	80	Guide Pillar & Bush Clamp
G103	125	Die & Mould Safety Latch
G104	89	"L" Shaped Wear Plate
G105	89	"L" Shaped Wear Plate
G106	91	Guide Bar / Self-Lub. Bronze
G107	78	Thrust Washer - Perforated
G108	91	Cam Driver Plate / Self-Lub. Bronze
G109	90	Cam Driver Plate, VDI 3357
G110	34	Mounting Flange
G111	93	Cam Plate - "V" Guide
G112	41	Circlip
G113	158	Shock Absorbing for Gas Spring
G114	62	Thick Mounting Washer
G115	274	Automatic Ejector Coupling - L. Duty
G116	274	Automatic Ejector Coupling - H. Duty
G117	62	Mounting Washer for Ejector Rod
G118	79	Bush Holder Flange
G119	41	Square Flange for Guide Pillar/ CNOMO
G120	47	Thrust Pin
G121	82	"T" Shaped Wear Plate
G122	82	Wear Plate, Plain Type
G123	82	Wear Plate, Two-Way Sliding Type
G124	113	Cycle Counter & Socket for Installation
G125	116	Id Card for Mould Base
G126	116	Id Card for Die Set
G127	109	Group Locating / Centring Unit
G128	109	Square Locating / Centring Unit
G129	111	Locating / Centring Unit
G130	110	Square Locating / Centring Unit
G131	110	Centring Unit - DLC Coated
G132	111	Locating / Centring Unit
G133	275	Inclined Ejector Pin Unit
G134	122	Die Lifting Lug / VDI 3366
G135	44	Guide Pillar with Centre Flange
G136	282	External Side Core Unit with Hydraulic Piston
G137	92	Cam Plate / Self-Lub. Bronze
G138	92	Wear Plate, Replaceable
G139	93	Cam Plate - "V" Guide
G140	127	Rotary Safety Eyebolt
G141	127	Eyebolt
G142	113	Cycle Counter / Round Type
G143	80	Guide Pillar & Bush Clamp
G144	270	Ejector Plate Thrust - Support
G145	168	Compression Spring Set Screw
G146	168	Spring and Spacer Unit
G147	276	Support Slide for Core Position
G148	276	Support Slide for Core Position - Side Guide
G149	277	Angular Core Slide
G150	277	Stopping Pin for Core Slide
G151	45	Ball Cage Holder Flange
G152	108	Bar Lock System
G153	120	Die Lifting Pin / CNOMO
G154	65	Wear - Shim Plate
G155	64	Wear - Shim Plate
G156	64	Wear - Shim Plate / Round
G157	65	Urethane Spring for Mould Closing
G158	279	Adjustable Ejector Plate Cover
G159	125	Support Bolt
G160	123	Die Lifting Lug
G161	50	Angled Guide Pillar
G162	198	Mounting Ring for Bottle-neck Punch
G163	183	Drill Bush - Headed DIN 172
G164	184	Drill Bush - Plain DIN 179
G165	46	Pilot Unit
G166	37	Guide Pillar - Bolted Type
G167	70	Plain Guide Bush for Ball Cage
G168	70	Limiting Bush
G169	101	Retainer Bolt

Please refer to back inner cover of catalogue for compatibility list of Guide Pillars & Bushes

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Catalogue code and page numbers of Guvenal products with LETTER code.

"A" Code	Page	Product Description
A Series	222	Pneumatic Feeders (Eco)
Series: A..	223	Pneumatic Feeders
AA...	132	Allen Wrench
AAS..	132	Allen Wrench Sets
AB	238	Strap Extender
AC..	377	Wooden Lapping Sticks
ACE016	182	Dowel Pin Extractor / Puller Kit
ACS..	377	Wooden Felt - Round
AE	259	Accelerated Ejector
AG-45	371	Rotary Air Grinder Tool
AG-90	371	Rotary Air Grinder Tool
AG-260	370	Rotary Air Grinder Tool
AG-360	370	Rotary Air Grinder Tool
AG-460	370	Rotary Air Grinder Tool
AG-672	370	Grinder Tool Collet
AG-673	370	Grinder Tool Collet
AG-676	370	Grinder Tool Collet
AGC01	370	Wheel for Grinder Tool
AGS01	370	Rubber Band for Grinder Tool
Code: AD	153	Gas Spring - Low Profile
AGM	224	Decoilers for Steel Roll
AHV	264	Gas Venting Filter for Diecasting
AK400	126	Double Swivel Ring - Eyebolt
AK450	126	Heavy T. Swivel Ring - Eyebolt
AK580C	127	Eyebolt
AK582S	127	Eyenut
AK1017	354	Manifold Block for Cooling
AKH..	132	"T" Allen Wrench
AKUC	99	Aerial Cam Unit
AL	258	Threaded Limiter Adapter
ALE	381	Engineers File - Aluminium
AP	240	Retractable Core Extension
AR..	220	In-Die Tapping Unit / Automatic
AR-030	371	Air File Tool
AR-070	371	Air File Tool
AR-991	371	Air File Tool
AR-661	371	Air File Tool Holder
AR-662	371	Air File Tool Holder
AR-664	371	Air File Tool Holder
AR-665	371	Air File Tool Holder
AR-666	371	Air File Tool Holder
AR-667	371	Air File Tool Holder
ARU	349	Extension Fitting with Thread
ASPEST	131	Thermal Protection Glove

"A" Code	Page	Product Description
ASK	377	Mounted Wooden Points
ASM	340	Hot Runner Main Nozzle
AWF1400	294	High Temp. Ejector Pin Grease
AU..	132	Allen Wrench - Long Type
AYY	171	Extra Light Load Springs

"B" Code	Page	Product Description
Series: B..	223	Pneumatic Feeders
BA..	132	Round Head Allen Wrench
BA	259	Ejector Pin Base
BA...	217	Ball Lock Punch - Heavy Duty
BAF..	216	Ball Lock Ejector Punch - H.Duty
BAFZ..	216	Ball Lock Ejector Punch - H.Duty
BAG..	218	Larger Ball Lock Ejector Punch
BAGY	218	Larger Ball Lock Ejector Punch
BAK..	218	Larger Ball Lock Punch
BAKY	218	Larger Ball Lock Punch
BAPK	215	Ball Lock Pilot - Conical
BAPP	215	Ball Lock Pilot - Parabolic
BAPX	215	Ball Lock Pilot - Spherical
BAZ	217	Ball Lock Punch - Heavy Duty
BC	235	Slide Base
Code: BD.	138	Gas Spring Fixing Element
BD..	319	Deburring Blades
BD	245	Adaptable Base
BD	245	Horizontal Base
BE	259	Ejector Pin Base
BF..	210	Ball Lock Punch - Light Duty
BF800	383	Diamond Riffler File Set
BFZ	210	Ball Lock Punch - Light Duty
BG	236	Square Angle Pin Housing
BG..	211	Larger Ball Lock Ejector Punch
BG...	373	Polishing Block Stone
BH..	209	Ball Lock Punch - Light Duty
BHZ	209	Ball Lock Punch - Light Duty
BK..	211	Larger Ball Lock Ejector Punch
Code: BK	138	Gas Spring Fixing Element
BLEL	131	Rubber Glove
BM..A	372	Electrical Spiral Motor
BM	260	Block Base Insert
BMS-20	380	Diamond CBN Set
BMS-30	380	Diamond CBN Set
BM...W	372	Foot Switch for Spiral Motor
BN..	318	Deburring Blades

"B" Code	Page	Product Description
BOX	271	Latch Lock
BPK	208	Pilot - Conical
BPP	208	Pilot - Parabolic
BPX	208	Pilot - Spherical
BS..	319	Deburring Blades
BS	238	Safety Strap
BS100	365	Adhesive
BSE06	380	Needle File Set (6 pcs.)
BSE12	380	Needle File Set (12 pcs.)
BSL	360	Sintered Muffler
BSM	164	Spring Plunger
BT..	132	Round Head Wrench
BT	259	Ejector Pin Base
Code: BT	138	Gas Spring Fixing Element
Code: BTA	138	Gas Spring Fixing Element
Code: BTB	138	Gas Spring Fixing Element
Code: BY	138	Gas Spring Fixing Element
Code: BY-B	138	Gas Spring Fixing Element
Code: BY-A	138	Gas Spring Flange-Quick Fitting
BZ #	378	Abrasive Cloth Rolls

"C" Code	Page	Product Description
Series: C..	223	Pneumatic Feeders
C280300	380	Diamond CBN Set - Eco
CA	235	Adjusted Slide
CB	375	Rubber Mounted Polishing Point
CC..	27	Cold Work Tool Steel
CC.HS5328	253	High Speed Cycle Counter
CEMBS150	321	Mould Endoscope Camera
CETA17	317	Multi-Purpose Scissors
CF...	382	Diamond Tapered Files - Hand
CF500	383	Diamond Tapered File Set
CF400	383	Diamond Tapered File Set
CG	234	Adjustable Wedge Assembly
CG.60	235	Heel Unit with Angle Pin
CHV	268	Air Venting Valve
CI	242	Angled Guide Bush
CK	375	Rubber Mounted Polishing Point
CKT	355	Detent Plug - Conical (Steel)
CR	234	Adjustable Wedge
CR..	324	Flexible Rod Heater (Hot Runner)
CR....	320	Cera-Cut Deburring Tool
CRP	267	Mini Screwdriver Set
CTB	181	Bush for Dowel Pin
CTP	178	Dowel Pin with Internal Thread

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Catalogue code and page numbers of Guvenal products with LETTER code.

"C" Code	Page	Product Description
CTPC	182	Dowel Pin Extractor / Puller Kit
CVPL	112	Cycle Counter
CVR	112	Cycle Counter - Round Type
CX	241	PX Cutting Jig

"D" Code	Page	Product Description
D29..	114	Counter - Eco Type
DA	244	Adjustable Lifter Base
DAK02	97	Angular Cam Unit
DB	249	Dog Lifter Limiter
DB....	410	Die Lifters
DB..	155	Gas Spring Distribution Blocks
DBC	155	Gas Spring Quick Dist. Blocks
DCY	159	Disc Springs
DD..	156	Gas Spring Fitting
DDB..	156	Gas Spring Fitting
DE	255	Two-Stage Ejector System
DEE	382	Diamond File - Square (Eco)
DEN	356	Reduction Fitting
DF	244	Fixed Lifter Base
DFSG	360	Hose Fitting with Valve
DFZ	194	Center Dowel Headed Punch
DG-M	370	Rotary Air Grinder Tool
DG-M5	370	Rotary Air Grinder Tool
DG-M8	370	Rotary Air Grinder Tool
DHV	268	Double Air Venting Valve
DIN471	63	External Circlip
DK	250	Cooling Hose
DK02	96	Die Mounted Cam Unit
DK06	375	Rubber Polishing Disc
DKM	134	Low Head Socket Cap Screw
DKT	267	Multi-Date / Double Date Stamp
DL....	410	Die Lifters
DM03	375	Mandrel for Rubber Point
DMZARB6	131	Machine Carrier Trolley
DP	252	Ejector Foot
DP25	374	Grinder Disc (Polishing)
DPCF	360	Fitting - Internal Thread
DPCG	360	Fitting - External Thread
DPLG	360	Elbow Fitting - 90^0
DPT	360	"T" Fitting
DPUC	360	Straight Fitting
DPUL	360	Elbow Hose Fitting

"D" Code	Page	Product Description
DPUT	360	"T" Hose Fitting
DPW	360	"Y" Hose Reduction Fitting
DPWT	360	"Y" Fitting
DPY	360	"Y" Hose Fitting
DPZA	360	Pipe Cross Hose Fitting
DR	251	Double Rack Lifter
DS06	375	Rubber Polishing Disc
DSN	356	Cooling Adapter
DSZ	194	Center Dowel Headed Punch
DT..	156	Gas Spring Fitting
DTP	179	Dowel Pin - Straight
DYF	301	Locating Ring
DX	254	Superior Double Ejector
DZL..	375	Holder (polishing)
DZ..	375	Self-adhesive Abrasive Disc

"E" Code	Page	Product Description
E Series	222	Pneumatic Feeders (Eco)
E08	317	Diagonal Side Cutter for Wire
E09	317	Diagonal Side Cutter for Plastic
EA	131	Safety Footwear
EB..	284	Hydraulic Cylinder Flange
EBM...	326	Socket & Plug Inserts
EBBR	131	Safety Helmet
EBBH	131	Safety Helmet
ECB	412	Magnetic Clamping Block
ECO-316	415	Drill & End Mill Cutter
EDG	414	Drill Sharpening Machine
ED	243	Double Ejector
EE	243	Tulip Ejector
EEM...	225	Servo Roll Feeders
EEPM	413	Magnetic Chuck
EF	261	Removal Jig Set (Date Stamp)
EG..	373	EDM Polishing Stones
EGM	315	Magnetic Separator (Inj.Machine)
EHDB210	117	Demagnetizer Rod
E..K	376	Felt Polishing Sticks
EKS	28	Mould Bases
EKP	27	Ground Plates for Mould Base
ELE	382	Diamond File - Hand (Eco)
ELM	117	Permanent Lifting Magnet
EMG	415	End Mill Sharpening Machine
EP..	154	Thrust Plate for Gas Springs

"E" Code	Page	Product Description
EP	254	Ejector Plate Accelerator
ESR	362	Water Flow Regulator
ES..	381	Plastic Handle for Files
ET-1	370	Rotary Air Grinder Tool
EV	247	Vertical Lifter Block
EYE	382	Diamond File - Round (Eco)
EYM	301	Sprue Bushes
EYY	382	Diamond File - Half Round (Eco)
EZ	378	Foam - Abrasive Pads

"F" Code	Page	Product Description
FAS100T	383	Diamond Tip File Set
FB..	284	Hydraulic Cylinder Flange
FHR	357	Hose Fitting
F Series	222	Pneumatic Feeders (Eco)
FLEX	357	Rubber Hose (Cooling)
FLV1-20	369	Air File Tool
FLV4-9	369	Air File Tool
FP	261	Date Stamp Plus
FR	323	Cartridge Heater (Hot Runner)
FX	261	Xtra Date Stamp
FT	260	High Temp. Date Stamp

"G" Code	Page	Product Description
GADS	395	Revolving Handle
GAK	389	Woodruff Key DIN 6888
Code: GC	150	Gas Spring / Super Pressure
GBRT	213	Punch Retainer - Heavy Duty
GCM09	187	Embossing Date Stamp
GCP	355	Detent Plug with O-Ring
GCRT	205	Punch Retainer - Light Duty
GDKA	388	Parallel Key DIN 6885 - A
GDM	266	Recycling Date Stamp
GEAV	391	Spoked Handwheels - Alu.
GEBT	395	Lobe Knobs
GEDM	395	Revolving Handle
GEDV	391	Spoked Handwheels - Cast.
GEKO	397	Steel Hinges
GEPM	397	Hinges
GEPT	397	Handles
GEPV	391	Spoked Handwheels
GET	395	Three-arm Knobs
GEVS	395	Fold-away Handle
GGA	265	Gas Venting Filter / Yellow Wired
GH	359	Heat Transfer Pipes (Cooling)
GHS	156	Hose for Gas Spring Dist. Blocks

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Catalogue code and page numbers of Guvenal products with LETTER code.

"G" Code	Page	Product Description
GI	236	Angle Pin
GK.	395	Latches
GKE..	396	Lobe Knobs
GKOL..	396	Tapered Handles
GKP..	396	Lobe Knobs
GKT	354	Detent Plug
GL.64832	365	Loctite 648 - Adhesive
GMK	306	Midiflow - Gate Insert
GPDS	395	Revolving Handle
GPLA	270	Friction Puller
GPR	197	Punch Retainer - ISO 8020
GPRS	197	Punch Retainer - ISO 8020
GPS	131	Lifting Sling
GR	236	Angle Pin Housing
GRF	305	Ringelflow - Gate Insert
GS	257	Latch Lock
GSK	299	Cooling Junction
GSM	134	Straight Stud
GSM...	392	Adjustable Clamping Levers
GSP...	394	Adjustable Clamping Levers
GTE	302	Standardflow - Gate Insert
GTH	322	Cable Retainer Cap - Magnetic
GTH-00.	128	Mould Testing & Assembly Unit
GTH1000	315	Teknoclean Cleaning Agent
GTH.ALO	222	Part & Scrap Carrier
GTK	304	Konturflow - Gate Insert
GT-133	373	EDM Stone Holder (Polishing)
GT-468	373	EDM Stone Holder (Polishing)
GT-613	373	EDM Stone Holder (Polishing)
GTM	303	Miniflow - Blank Gate Insert
GTP..	396	Ball Knobs
GTR	302	Standardflow - Gate Insert
GV	391	Spoked Handwheels
GVSY	265	Sintered Gas Venting Filter
GXK	307	Maxiflow - Gate Insert
GY	176	Ultra Heavy Load Spring - Silver

"H" Code	Page	Product Description
H8B	386	Cold-drawn H8 Honed Tube
H9B	386	Ready to use Tube-H9
HBE	356	Hose Fitting
HBI	289	Ejector Pin / DIN 1530 - D
HBZ	191	Conical Head Punch DIN 9861
HCC	327	Hot Runner Temp. Controller
HFK	190	Square Head Punch, Shaped

"H" Code	Page	Product Description
HIC	134	Countersunk Head Screw
HK	156	Hose Clamp for Gas Spring
HKI	356	Hose Clamp
HKZ	190	Conical Head Punches - Stepped
H2K	190	Conical Head Punches - Stepped
HL-09	385	Headband Magnifier
HLB	116	Precision Feeler Gauge Tape
HFY	190	Conical Head Punch - Shaped
HRD-..	363	WD-40 Multi-use Spray
HRE	357	Hose Fitting
HRU	357	Hose Fitting (Long Type)
HRM	154	Thrust Pad for Gas Springs
HOBI...	385	Tool Cabinet with Drawers
HSG	356	Rubber Hose (Gas & Air)
HSEP	358	Threaded Spiral Baffle
HT..	317	Nipper with Heat Control (for Plastic)
(G136) HP	283	Special Piston for Hydraulic Core
(G136) HPM	283	External Side Core with Hydraulic
HVES	360	Fitting with Valve
HVFF	360	Valve for Hose (Spherical)
HX..	382	Diamond Files with Handle

"I" Code	Page	Product Description
IBBG	361	Metal Nipple
IBDG	361	Metal, Reduction Fitting
IBP	361	Detent Plug
IBPG	361	Detent Plug with O - Ring
ICF	134	Socket Cap Screw Counterbore
IF	244	Lifter Head
IF...	382	Diamond Files
IF500	383	Diamond File Set
IGZ	131	Safety Goggles
IHS	274	Acceleration Rocker for Ejector
IKM	387	Hardened Chrome Plated Bar
IMB	135	Hex-Socket Head Cap Screw
IMBF	133	Button Head Screw
IMBP	133	Inox Head Cap Screw
IX	261	Xtra Insert for Date Stamp
IPBT	361	Metal, "T" Fitting
IPCT	361	Metal, Fitting - External Thread
IPCV	361	Metal, Hose Fitting with Valve
IPET	361	Metal, "T" Hose Fitting
IPHT	360	Manifold Fitting
IPLT	361	Metal, Elbow Fitting - 90^0
IPOT	361	Metal, Hose Reduction Fitting
IPU	360	Hose Reduction Fitting
IPUT	361	Metal, Hose Nipple

"I" Code	Page	Product Description
IPVT	361	Metal, Elbow Hose Fitting
IPZT	361	Metal, Pipe Cross Hose Fitting
IR550	299	Digital Laser Thermometer
ISCG	360	Elbow Fitting with Valve
ISPPU	360	Hose Stop Nipple
ISPLG	360	Hose Stop Nipple with Valve
IT	260	High Temp. Insert for Date Stamp
IW3C14	132	Die & Mould Mounting Kit
IYPA	314	Heat Insulation Plates
IYPE	314	Heat Insulation Plates - Eco

"K" Code	Page	Product Description
KAU	271	Latch Lock Unit
KA2000	363	Mould Release Agent Spray
KBK	131	Ear Protection
KBEL	131	Cloth Glove
KBS	164	Spring Plunger with Bushing
KDEL	131	Welder Glove
KDR	356	Cooling Fitting - Elbow
KG01	384	Safety Goggles
KHV	269	Air Venting Valve
KKV	356	Mini Ball Valve
KLK	131	Earplug
KLT..	378	Mandrel for Abrasive Disc
KMB	366	Mould Marking Paint - Red
Code: KN	139	Gas Spring - Mini & Low Force
KPA	157	Control Panel for Gas Spring
KPR	300	Taper Pin Reamer
KR	323	Band Heater (Hot Runner)
KT..	267	Date Stamps
KTE	381	Engineers File - Square
KS..	384	Polishing & Cleaner Block
KS	373	Mini Cutting Disc
KS06	375	Rubber Polishing Roll
KY	174	Heavy Load Springs - Red
KYF	301	Locating Ring
KYR	300	Taper Sprue Bush Reamer
KZ2	185	Locating Punch
KZ310	384	Mini Abrasive Pen
KZG	185	Locating Punch
KZD..	378	Abrasive Disc
KZF	186	Locating Punch Ford / WDX

"L" Code	Page	Product Description
LA..	132	Hexagon Socket Wrench
LB..	318	Deburring Tool

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"L" Code	Page	Product Description
LBS...	227	Level Balancing Stand
LHE	381	Engineers File - Hand
LD	249	Dog Lifter Limiter
LR	258	Threaded Limiter
LV.483610	264	Laminar Gas Vent

"M" Code	Page	Product Description
M18A	372	Motor Hanger
M19KK	372	Spiral Rod
M19FTK	372	Spiral Rod with Latch
MARPOL	377	Metal Polisher Paste
MB	232	Mini Base
MB	284	Hydraulic Cylinder Connector
MB..	219	Ball Lock Matrix - Straight
MBC	219	Ball Lock Matrix
MBE	219	Ball Lock Matrix
MBL	385	Table Lamp with Magnifier
MC..	202	Matrix - Headed & Tapered
MC	232	Mini Slide
MCA	342	Extractor Tool for Hot Runner Nozzle
MD2	186	Backing Plate for Stamp Retainer
MEG	185	Backing Plate for Stamp Retainer
MEU	185	Backing Plate for Stamp Retainer
MEY	300	Sprue Bush for Metal Injection
MF..	204	Matrix with Locking Device
MG	232	Mini Guide
Code: MG	148	Gas Spring - High Stroke Rates
MG..	355	Extra Long Drill
MH...	339	"MH" Type Manifold for Hot Runner
MHH...	338	"MHH" Type Manifold for Hot Runner
MI...	339	"MI" Type Manifold for Hot Runner
MK..	201	Matrix - Straight
MKB	200	Matrix with Counter-bore Relief
MK1	281	Micro Limit Switch
ML	375	Mini Abrasive Roll Set
ML..	201	Matrix - Headed
MLB	200	Matrix with Counter-bore Relief
MMB	366	Mould Marking Paint - Blue
MM101	162	Indexing Plunger
MM102	162	Indexing Plunger with Lock Nut
MN2	280	Micro Limit Switch
MLEL	131	Latex Glove
MP..	202	Matrix - Straight & Tapered

"M" Code	Page	Product Description
MPY	361	Metal, "Y" Hose Fitting
MRA	205	Ball Lock Retainer with Air Cylinder
MRM	212	Ball Lock Punch Retainer
MRR	212	Ball Lock Punch Retainer
MT...	338	"MT" Type Manifold for Hot Runner
MT-015	342	Thermocouple for Valve Gate
MTK	207	Ball Lock Stripper Retainer
MTB	213	Ball Lock Stripper Retainer
MTB..	273	Slide Retainer - Pinned & Lock
MTC	278	Slide Retainer - Round Type
MTE	381	Engineers File - Mill Saw
MTJ	207	Ball Lock Stripper Retainer
MTF100	383	Diamond File Set for Air File
MTG	185	Stamp Retainer (Ford-WDX)
MTK.1/2	272	Slide Retainer
MTL	207	Ball Lock Stripper Retainer
MTM	214	Stripper Retainer for "MRM"
MTM..	273	Slide Retainer with Latch
MTMF	322	Nozzle Filter
MTP	214	Stripper Retainer for "MRR"
MTR	214	Stripper Retainer for "GBRT"
MTS	214	Urethane Stripper
MTS..M	272	Slide Retainer - Pinned & Lock
MTU	185	Stamp Retainer
MTV	206	Ball Lock Stripper Retainer
MTY	278	Slide Retainer - Pinned & Round
MTX	206	Ball Lock Stripper Retainer
MTW	206	Ball Lock Stripper Retainer
MX	257	Internal Latch Lock
MX...	339	"MX" Type Manifold for Hot Runner
MXX..	338	"MXX" Type Manifold for Hot Runner
MVG	344	Valve Gate for Hot Runner System
MY...	339	"MY" Type Manifold for Hot Runner
MY	173	Medium Load Springs - Blue
MYY...	338	"MYY" Type Manifold for Hot Runner
MZ	378	Abrasive Mop Wheels
MZG	185	Marking Stamp

"N" Code	Page	Product Description
NAK-A	370	Rotary Air Grinder Tool
NG..	318	Deburring Tool Kit
NL35	131	Ratchet Strap - 8 Mt.
NL50	131	Ratchet Strap - 10 Mt.
NTEL	131	Industrial Glove - Basic
NTKL	131	Nitrile Glove - Basic

"O" Code	Page	Product Description
OKS	354	Detent Plug, Headed
OKS..	358	Water Flow Cooling Pipe
ONE	356	Cooling Adapter
ORING.	356	O-Ring Set

"P" Code	Page	Product Description
P350	385	Industrial Cleaning Cloth Roll
P1000	385	Cleaning Cloth Stand
P...	376	Polishing Felt Sheets
Series: P..	223	Pneumatic Feeders - Heavy Duty
PB..	284	Hydraulic Cylinder Hose
PC..	377	Plexiglass Polishing Sticks
PCAM	316	Precision Deburring Blade + Handle
PCBU	316	Precision Deburring Blade
PH	361	Air Hose - Polyurethane
PEF	380	CBN Grinding Points
PTF100	383	Diamond Tapered File Set
PF	242	Flexible Sprung Core
PF-WB	242	Flexible Sprung Core
PFL100	383	Diamond Needle File Set
PHV	269	Air Venting Valve with Pin
PKMS	162	Precision Pin Gauge Kit
PKM1	287	Pin Cutting & Grinding Machine
PKS..	30	Die Sets
PM..	161	Polyurethane Compression Spring
PMT	164	Mounting Kit for Spring Plungers
PMV	160	Locating Pin for Polyurethane Sp.
PO	239	Dowel Pin for Slide Retainer
POLB	361	Air Hose - Polyamide
POLIN	366	Casting Resin
PR	256	Plate Retainer
PRBP	197	Backing Plate (4.8) for Retainer
PRP..	161	Poly. Shock Absorbing Washers
PRSP	197	Shim Plate (1.8) for Retainer
PS	246	Standard Lifter
PS1	165	Spring Plunger
PS2	165	Spring Plunger
PSE	356	Flexible Cooling Hose
PSK	164	Spring Plunger
PSL	360	Plastic Muffler
PSP	160	Locating Bolt for Polyurethane Sp.
PX	241	Xtra Sprung Core
PXG	360	Manifold Fitting (4-Distributor)
PTF10T	383	Diamond Tapered File Set
PV	247	Vertical Lifter Block
PW	240	Sprung Core
PY..	161	Polyurethane Compression Spring
PYB	204	Polyurethane Punch Stripper
PYP	160	Guide Bolt for Poly. Spring

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"R" Code	Page	Product Description
R-3030	369	Universal Grinding Spindle
RA	238	Automatic Retainer
RB	375	Rubber Mounted Polishing Point
RC	239	Slide Retainer
RC....	320	Precision Deburring Tool
RCM	239	Slide Retainer
RCP	321	Deburring Tool Kits - Eco
RK	98	Roller Cam Unit
RK..	375	Rubber Mounted Polishing Point
RKE1005	382	Diamond File Set - Eco
RM	256	Modular Retainer
RMM..	332	Multi-Tip Hot Runner Nozzle
RMM0201	385	Mini Vacuum Base Vice
RO-1785	369	High-speed Grinding Spindle
RS207	114	Counter
RSM	333	Runner Series Nozzle
RT	324	Thermocouples (Hot Runner)
RUK	316	Extra Long Needle Nose Pliers
RYS	227	Roller Lubricator for Steel Roll
RZ..	378	Tapered Abrasive Cartridge Rolls

"S" Code	Page	Product Description
Series: S..	223	Pneumatic Feeders - Heavy Duty
SA...	342	Manifold Inlet
SA	263	Sprue Adjuster
SA.Type	379	Carbide Rotary Burrs
SAR-070	371	Air File Tool
SB.Type	379	Carbide Rotary Burrs
SB..	193	Cylinder Head Punch-Stepped
SBD	296	Ejector Pin - Threaded
SC..	319	Deburring Tool Kit
SBIAH	291	Ejector Pin - AH Type
SBKAH	290	Cylinder Head Ejector Pin - Stepped
SBMAV03	295	Cylinder Head Ejector Pin - Oxidation
SBS	164	Spring Plunger with Slotted Head
SBT	156	Gas Spring Fitting
SBW	296	Cylinder Head Ejector Pin - Stepped
SBZ	193	Cylinder Head Punch - ISO 8020
SBZF	194	Heavy Duty Punch
SCB	341	Hot Runner Outer Bushing
SCPM8	270	Friction Puller
S..D	376	Mounted Felt Sticks
SD..	156	Gas Spring Fitting
SD	242	Undercut Base Unit
SD.Type	379	Carbide Rotary Burrs
SD02	342	Hot Runner - Hub Disc
SD03	342	Hot Runner - Stopping Disc
SDI	297	Ejector Pin with Locking Head
SDP	377	Diamond Compounds
SDS200	377	Diamond Compound Moisturiser

"S" Code	Page	Product Description
SDT	355	Detent Plug - Straight
SE10	380	Needle File Set - Eco
SEC	134	Hex-socket Set Screws
SECP	133	Inox Hex-socket Set Screws
SEP	358	Threaded Flat Baffle
SF..	192	Cylinder Head Punch with Ejector
SFZ	192	Cylinder Head Punch with Ejector
SFZF	194	Heavy Duty Punch with Ejector
SG...	373	Fiber Ceramic Polishing Stones
SG1000	318	Deburring Tool Kit
SG.Type	379	Carbide Rotary Burrs
SGA	265	Sintered Gas Venting Filter
SH.Type	379	Carbide Rotary Burrs
SK.Type	379	Carbide Rotary Burrs
SK404	356	Liquid Gasket Sealant
SKE	381	Steel Needle File - Square
SKF	377	Mounted Hair Brushes
SKM	387	Hard Chrome Plated Bar
SKT	355	Detent Plug - Conical
SL	256	Stroke Limiter
SL.Type	379	Carbide Rotary Burrs
SLE	381	Steel Needle File - Hand
SM	378	Abrasive Paper with Sponge
SM404	356	Liquid Gasket Sealant
SMA...	331	"A" Series Nozzle for Hot Runner
SMB...	331	"B" Series Nozzle for Hot Runner
SMB	292	Ejector Sleeve / Nitrided
SMF	375	Mounted Wire Brushes
SMK	203	Pilot - Compact Type
SMM..	335	Multi-Tip Hot Runner Nozzle
SMX	203	Pilot - Compact & Spherical
Code: SN	140	Gas Spring - ISO 11901
SPI	298	Ejector Pin - Stainless / INOX
SPK	203	Pilot with Taper End
SPK....	376	Mounted Polishing Felt
SPLAH	293	Blade Ejector Pin - Hardened
SPL	375	Holder for Abrasive Roll
SPP	203	Pilot - Parabolic Type
SPPAV07	298	Ejector Pin - Copper Alloy
SPX	203	Pilot - Spherical
SPW	294	Blade Ejector Pin - Oxidation
SPT	374	Pink Mounted Points
SPTA	163	Magnetic Carrying Handle
SPZ	375	Mini Abrasive Rolls
SR	325	Coil Heater (Hot Runner)
SRD3-55	368	Rotary Air Grinder & Deburring Tool
SRD3-85	368	Rotary Air Grinder Tool
SRD6-45	368	Rotary Air Grinder Tool
SS..	340	Bushings for Hot Runner Nozzles
SSY6	362	Manual Pressure Test Pump
ST..	384	Tool Post Grinders

"S" Code	Page	Product Description
ST-	359	Flat Plastic Baffle - Base
STA	359	Spiral Plastic Baffle
STB	359	Spiral Plastic Baffle without Base
STF	375	Mounted Wire Brushes
STM	131	Dust Mask
STRONG	372	Corded Rotary Tool
STV	265	Air Venting Valve for Blow Moulding
SUNFIX	356	Repair Paste
SU	233	Slide Unit
SUE	381	Steel Needle File - Triangular
SVG	347	Hot Runner - Valve Gate Systems
SY	175	Extra Heavy Load Springs - Yellow
SY	255	Compact Double Ejection
SYE	381	Steel Needle File - Round
SYT	322	Hot Tip Mould Sprue Cleaner
SYY	381	Steel Needle File - Half Round
SZ	378	Waterproof Abrasive Paper

"T" Code	Page	Product Description
T3-65S	368	Rotary Air Grinder Tool / Oil-free
T6-50S	368	Rotary Air Grinder Tool / Oil-free
T20	380	Diamond CBN Set - Eco
T30	380	Diamond CBN Set - Eco
T186	361	Spiral Air Hose
TA	252	Shock Absorber Disc
TA..	132	Hexagon Key Wrench
TB....	318	Deburring Tool Kit
TBM	177	Round Wire Spring, Medium
TBTHS	284	Hydraulic Cylinder - Tube Type
TDEL	131	Leather Safety Glove
TEFLON	356	Teflon Sealing Tape
TGB	131	Face Mask
THS	284	Hydraulic Cylinder - Round Type
THCF	285	Hydraulic Piston - Square Type
THCS	285	Hydraulic Piston - Square Type
THKS	284	Hydraulic Cylinder - Square Type
TKLN	366	Cold - Curing Tool Repair Set
TM..	378	Mandrel for Abrasive Cartridge Roll
TM	252	Magnetic Safety Stopper
TROY	385	Hand Magnifier with Lamp
TRF25	317	Heat Control Unit (HT..)
TR-1785	369	High-speed Oil-free Spindle
TPF10E	382	Diamond File Set - Eco.
TPS	180	Dowel Pin Retaining Sleeve
TRK	177	Round Wire Spring, Heavy
TVD3-100	368	Rotary Air Grinder Tool / Oil-free
TVY	177	Round Wire Spring, Light
TUSCP	366	Engineer's Marking Blue Paste
TX.T	132	Key Wrench for Torx Head

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"U" Code	Page	Product Description
U-LAP106	372	Ultrasonic Polishing Machine
UA	237	Compact Coring Unit
UBZ	199	Bottle-neck Punch
UC	237	Core Cam
UCBAS	360	Rotary Joint Fitting
UEE	382	Diamond File - Triangular (Eco)
UFT	198	Piloted Counterbore Punch
UFZ	199	Bottle-neck Punch with Ejector
UKZ	199	Bottle-neck Punch - Stepped
UTE	381	Engineers File - Triangular
UU	233	Undercut Unit

"V" Code	Page	Product Description
V-PB	226	Punch Former Tool
V-PS	286	Pin & Punch Former Tool
VA	262	Air Poppet Valve
VCF...	228	Handheld Chamfering Machine
VD	263	Double Air Valve
VGP	346	Valve Gate Pin (Hot Runner)
VH	262	Air Valve for High Pressure
VHR	269	Special Reamer for VHV Valve
VHV	269	Venting Valve for Metal Inj.
VI	245	Lifter Shaft
VKT	266	Date Stamp - Screwed
VM03	374	Mandrel for Grinder Disc
VML ..	117	Magnetic Lifter
VPG	286	Pin & Punch Former Tool
VPGA	226	Mini Pin & Punch Former Tool
VPGM	286	Pin & Punch Former Tool Motor
VPS - S	226	Sine Plate for Punch Former Tools
VTDB	226	Wheel Dresser Tool
VTM13	117	Magnetic Tapper Stand
VTM	131	Dust Mask with Valve
VYZ	189	Screw Form Punch Unit

"W" Code	Page	Product Description
W140602	365	Hand Cleaner
W150154	363	Silicon-free Mould Release
W150170	363	Mould Protective Spray
W150206	363	Multi-purpose Grease
W160105	363	Food Grade Lubricant
W160106	363	Protective Wax Spray
W160108	364	White Lithium Grease Spray
W160109	364	MOS2 Dry Lubrication Spray
W160110	363	Multi-purpose Signum Spray
W160114	364	Liquid Grease Spray
W160117	363	Corrosion Protection Spray
W160170	363	Rust Remover Spray
W160200	364	Anti-seize Ceramic Grease
W170104	364	General Cleaning Spray
W1701201	364	Universal Bio Cleaning Spray
W200001	365	Two-component Adhesive
W200014	365	Two-component Epoxy
W200725	365	Epoxy Resin (liquid metal)
W223243	364	Threadlocker - Medium
W230270	364	Threadlocker - High

"W" Code	Page	Product Description
W610511	364	Liquid Sealant - PTFE
W670542	364	Pipe Sealant - Medium
W19	317	Spare Heater (HT..)
W29	317	Spare Heater (HT..)
WBS-300	227	Wheel Balancing Stand
WH	373	Holder for Ceramic Stones
WRD3-85	368	Rotary Angled Air Grinder Tool
WRD6-20	368	Rotary Angled Air Grinder Tool

"Y" Code	Page	Product Description
Code: Y	143	Gas Spring (Space Saving)
Y..D	376	Adhesive Felt Disc
YTB	181	Bush for Dowel Pin, with Bonding
YTE	381	Engineers File - Round
Code: YO	145	Gas Spiring - High Force
YY	172	Light Load Spring - Green
YYE	381	Engineers File - Half Round
YYH	169	Round Wire Compression Spring
YYS	169	Round Wire Compression Spring

"Z" Code	Page	Product Description
Series: Z..	223	Pneumatic Feeders - Heavy Duty
ZDP	186	Backing Plate (PSA)
ZLA	385	Table Lamp with Magnifier
ZK155	384	Spare Abrasive Band for Pen
ZTF	186	Stamp Retainer (Ford-WDX)
ZTP	186	Stamp Retainer (PSA)

Catalogue code and page numbers of Guvenal products with NUMBER code.

Code	Page	Product Description
11..-M	402	Combined Power Clamp
11..-T	400	Combined Power Clamp
148..	115	Number Stamping Sets
149..	115	Letter Stamping Sets
509HG	353	Quick-release Coupling USA
509FG	353	Quick-release Coupling USA
509LG	353	Quick-release Coupling USA
509EG	353	Quick-release Coupling USA
509DG	353	Quick-release Coupling USA
509ER	353	Male Fitting USA
509BN	353	Extension Fitting USA
509BL	353	Extension Adjustable Fitting USA
509KG	353	Diverting Coupling Bridge USA
571HG	350	Quick-release Coupling
571EG	350	Quick-release Coupling
571DG	350	Quick-release Coupling
571ER	350	Male Fitting
571HR	350	Hose-tail Fitting
571DR	350	Female Fitting
590HG	348	Quick-release Coupling EURO
590FG	348	Quick-release Coupling EURO
590LG	348	Quick-release Coupling EURO

Code	Page	Product Description
590EG	348	Quick-release Coupling EURO
590DG	348	Quick-release Coupling EURO
590KG	348	Diverting Coupling Bridge EURO
590HR	349	Hose-tail Fitting
590FHR	349	Push-lock Hose Fitting
590DR	349	Female Fitting
590AER	349	Male Fitting with Inner Hex.
590ER	349	Fitting 90^0 - Male Threaded
590-ORE	349	Male Fitting
600HG	351	Quick-release Coupling-Colour
600FG	351	Quick-release Coupling-Colour
600HA	351	Quick-release Coupling-Colour
600ER	351	Fittings with Colour Ring
600BU	351	Extension Fitting-Colour
600UR	351	Extension Fitting-Colour
601HG	352	Quick-release Coupling
601FG	352	Quick-release Coupling
601HL	352	Quick-release Coupling
601DG	352	Quick-release Coupling
601RR	352	Male Fitting with Inner Hex.
601TR	352	Male Fitting
601RRB	352	Male Fitting
601DR	352	Female Fitting
620HG	350	Quick-release Coupling
620DGB	350	Quick-release Coupling
620ER	350	Male Fitting
620HR	350	Hose-tail Fitting
620DR	350	Knurled Female Fitting
1009	354	Multi Coupling Plate
1010-..	405	Hydraulic Clamp
1015-..	406	Hydraulic Clamp
1024-...	130	Die Changing Cart
1025-..	408	Die Rails
1130061	132	Allen End for Mounting Kit
1170	398	Combined Clamp
1200	399	Stepless Adjustable Clamp
1205	399	Stepped Adjustable Clamp
1231	317	Diagonal Side Cutter for Plastic
1233	317	Diagonal Side Cutter for Plastic
1630	398	Combined Bolt for T-Slot
1520	118	Wedge - Support Block
1714	385	Inspection Mirror
1720	380	Needle File Set
1737	381	File Cleaning Brushes
2730	118	Die Lifting Bolt
2750	118	Die Lifting Lug
10531	365	Repair Stick - Aqua
10533	365	Repair Stick - Steel
10534	365	Repair Stick - Aluminium
10538	365	Repair Stick - Stainless Steel
13701	114	Counter - Eco Type
13710	382	Diamond File Set - Eco
13711	382	Diamond Course File Set - Eco
13726	382	Die Sinkers Diamond Riffler Files
183303	385	Clear Loupe Magnifier
800598	362	Descaling Liquid
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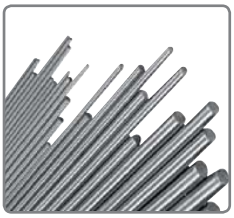
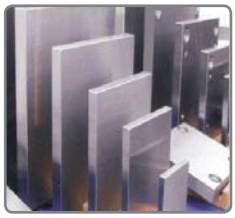
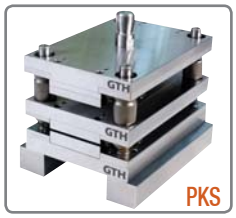


Page 27 Cold Work Tool Steel



Page 27 Standard Ground Mould Plates

28 29 Mould Bases



30 31 Die Sets

Page 33 Guide Pillar for Large Dies DIN 9833

Page 34 Mounting Flange

Page 34 Guide Pillar Thickbacked

Page 35 Guide Pillar with Center Collar

Page 36 Guide Pillar Plain & Threaded DIN 9825

Page 36 Guide Pillar DIN 9825

Page 37 Guide Pillar Bolted Type DIN 9825

Page 38 Guide Pillar FCA

Page 39 Guide Pillar NAAMS

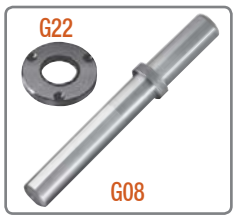
Page 40 Guide Pillar PSA

Page 41 Guide Pillar CNOMO

Page 42 Guide Pillar for Cast Block Bush

Page 43 Flange Cast Bush Rectangular

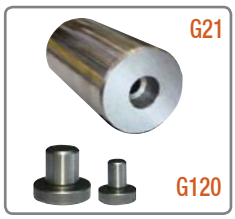
Page 44 Guide Pillar with Centre Flange



Page 45 Guide Pillar with Centre Fixing

Page 46 Pilot Unit

Page 46 Sheet Lifting Pin



Page 47 Support Pillar for Injection Mould

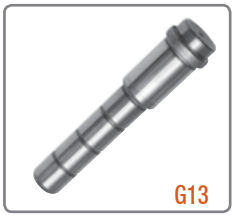
Page 47 Guide Pillar for Ball Cage

Page 48 Guide Pillar without Oil Groove

Page 49 Guide Pillar with Oil Groove

Page 50 Angled Guide Pillar

Page 50 Angled Guide Bush



51 53 Guide Pillar with Centring Collar

51 53 Guide Pillar with Centring Collar without Oil Groove

54 55 Guide Pillar Shouldered

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54 55 Guide Pillar Shouldered without Oil Groove

Page 56 Guide Bush Headed

57 59 Guide Pillar Shouldered

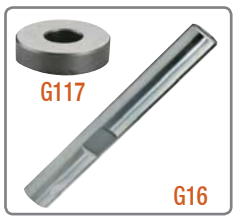
57 59 Guide Pillar Shouldered without Oil Groove

Page 60 Guide Bush with Centering Collar

Page 60 Centring Bush

Page 61 Guide Bush Headed

Page 61 Guide Bush with Centre Collar



Page 62 Ejector Rod

Page 63 Guide Bush Headed

Page 64 Wear - Shim Plate

Page 65 Wear - Shim Plate

Page 65 Urethane Spring for Mould Closing

Page 66 Guide Bush, Plain Self-Lub. Bronze

Page 66 Guide Bush with Centre Collar Self-Lub. Bronze

Page 67 Guide Bush with Collar Self-Lub. Bronze

Page 67 Guide Bush Headed Self-Lub. Bronze

Page 68 Ball Cage Bush

Page 68 Ball Cage Holder Flange & Spring

Page 69 Guide Bush for Ball Cage Short Type

Page 69 Guide Bush for Ball Cage Long Type

Page 70 Plain Guide Bush for Ball Cage

Page 70 Limiting Bush

Page 71 Steel Bush + Ball Cage Bush Set

Page 71 Linear Ball Bearing Bush

Page 71 Linear Ball Bearing Bush Headed Type

Page 72 Guide Bush Thin & Short Type

Page 72 Guide Bush Thick & Short Type

Page 73 Guide Bush Thin & Long Type

Page 73 Guide Bush Thick & Long Type

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Page 74 Guide Bush with Flange

Page 75 Guide Bush Bronze Plated Short Type

Page 75 Guide Bush Bronze Plated Long Type

Page 76 Guide Bush with Centre Collar Self-Lub. Bronze

Page 76 Guide Bush DIN 9834 ISO 9448 Self-Lub. Bronze

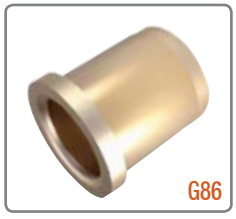
Page 77 Guide Bush Headed - NAAMS Self-Lub. Bronze

Page 77 Guide Bush with Collar - NAAMS Self-Lub. Bronze

Page 78 Guide Bush Headed Self-Lub. Bronze

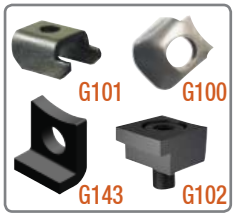
Page 78 Thrust Washer Perforated Self-Lub. Bronze

Page 78 Guide Bush Plain & Bronze



Page 79 Guide Bush Bronze CNOMO - PSA

Page 79 Guide Bush Headed CNOMO



80 81 Clamps for Guide Components

Page 82 Wear Plate Plain Type Self-Lub. Bronze

Page 82 Wear Plate Two-Way Sliding Self-Lub. Bronze

Page 82 “T” Shaped Wear Plate Self-Lub. Bronze

Page 83 Wear Plate Self-Lub. Bronze Thickness: 10mm

Page 83 Wear Plate Self-Lub. Bronze Thickness: 5mm

Page 84 Wear Plate VDI 3357 Self-Lub. Bronze

Page 84 Wear Plate NAAMS Self-Lub. Bronze

Page 84 Wear Plate NAAMS Steel

Page 85 Wear Plate VDI 3357 Self-Lub. Bronze

Page 85 Wear Plate VDI 3357 Steel

Page 85 Wear Plate VDI 3357 Self-Lub. Bronze

Page 85 Wear Plate VDI 3357 Steel

Page 86 Wear Plate Self-Lub. Bronze

Page 86 Wear Plate VDI 3357 Self-Lub. Bronze

Page 86 Wear Plate VDI 3357 Steel

Page 87 Wear Plate Self-Lub. Bronze

Page 87 Wear Plate ISO 9183 - 1 Self-Lub. Bronze

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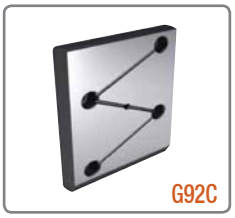
Page 88 Wear Plate AFNOR / ISO 9183-2 Self-Lub. Bronze



Page 88 Wear Plate AFNOR ISO 9183-2 / Steel

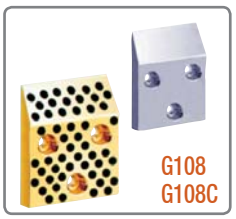
Page 88 Wear Plate VDI 3357 Self-Lub. Bronze

Page 88 Wear Plate CNOMO Self-Lub. Bronze

Page 89 "L" Shaped Wear Plate Self-Lub. Bronze

Page 89 "L" Shaped Wear Plate Self-Lub. Bronze

Page 90 Cam Driver Plate VDI 3357



Page 91 Cam Driver Plate

Page 91 Guide Bar VDI 3387

Page 92 Wear Plate Replaceable Self-Lub. Bronze

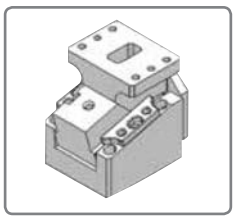
Page 92 Cam Plate Self-Lub. Bronze

Page 92 Return Cam Plate Self-Lub. Bronze

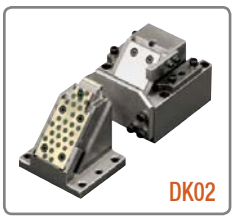
Page 92 Positive Return Clamp

Page 93 Cam Plate "V" Guide

Page 93 Cam Plate "V" Guide

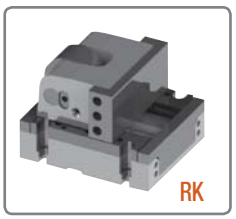


94 95 Cam Units Definitions

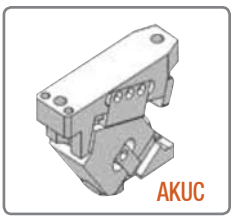


Page 96 Die Mounted Cam Unit

Page 97 Die Mounted Angular Cam Unit



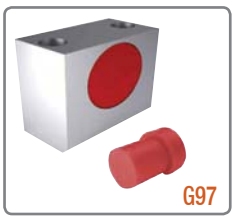
Page 98 Roller Cam Unit



Page 99 Aerial Cam Unit

Page 101 Air Pin

Page 101 Retainer Bolt FCA - FORD



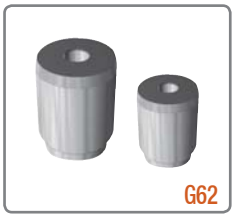
Page 102 Slide Stop Block

102 103 Cylinder Stopping and Locating Blocks

Page 103 Guide

Page 103 Guide with Part Position Control

Page 104 Centring Pin



Page 104 Centring Pin

Page 104 Centring Pin

Page 105 Tapered Locating Unit Headed

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Page 105 Tapered Locating Unit

Page 105 Support Washer

Page 106 Locating Cone

Page 107 Locating Cone NAAMS

Page 107 Locating Cone

Page 108 Bar Lock System

Page 109 Group Locating Centring Unit

Page 109 Square Locating Centring Unit

Page 110 Square Locating Centring Unit

Page 110 Centring Unit DLC Coated

Page 111 G132 - Locating Centring Unit

Page 111 G129 - Locating Centring Unit

Page 112 Cycle Counter Round Type

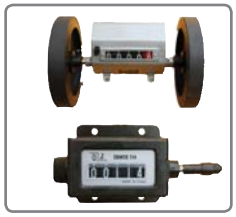
Page 112 Cycle Counter

Page 113 Cycle Counter

Page 113 Cycle Counter Round Type

Page 114 Cycle Counter Socket for Installation

Page 114 Counters



Page 114 Counters

Page 115 Number Stamping Sets

Page 115 Letter Stamping Sets

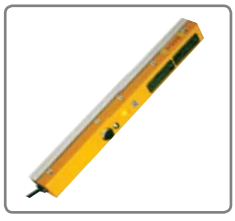
Page 115 Press Mounting Arbour

Page 115 Letter & Number Stamping Kit

Page 116 Precision Feeler Gauge Tape

Page 116 Id Card for Mould & Die

Page 117 Permanent Lifting Magnet



Page 117 Demagnetizer Rod for inside of Die & Mould

Page 117 Magnetic Lifter

Page 117 Magnetic Tapper Stand

Page 118 Wedge Support Block

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Page 118 Die Lifting Bolt & Lug

Page 119 Die Lifting Bolt Heavy Duty

Page 119 Die Lifting Bolt DIN ISO 10242-1

Page 120 Die Lifting Pin CNOMO

Page 120 Die Lifting Pin WDX22-60

Page 121 Die Lifting Pin FCA

Page 121 Die Lifting Pin VDI 3366

Page 122 Die Lifting Lug VDI 3366

Page 122 Die Lifting Lug with Rope Stop Safety

Page 123 Die Lifting Lug

Page 123 Die Lifting Bracket - FCA

Page 124 Safety Pin - FCA

Page 124 Safety Pin - VDI

Page 124 Shock Absorber for Safety Pin

Page 125 Support Bolt

Page 125 Die & Mould Safety Latch

Page 126 Double Swivel Ring - Eyebolt

Page 126 Heavy Tonnage Swivel Ring Eyebolt

Page 127 Rotary Safety Eyebolt

Page 127 Eyebolt

Page 127 Eyebolt & Eyenut

Page 128 Instructions for Mould Testing Unit

Page 129 Mould Testing & Assembly Unit

Page 130 Die Changing Cart & Table

Page 131 Lifting Slings

Page 131 Work Safety Products

Page 131 Machine Carrier Trolley

Page 132 Allen Wrench Tools

Page 132 Die & Mould Mounting Kit

Page 132 "T" Allen Wrench

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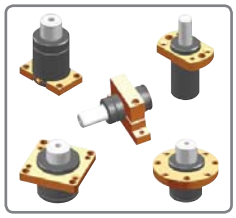
Page 133 Inox Fasteners

Page 134 Fasteners

Page 135 Hex-socket Head Cap Screw 12.9

136 137 Operating Instructions for Gas Springs



Page 138 Fixing Elements for Gas Spring

Page 139 Gas Spring Mini & Low Force

140 142 Gas Spring ISO 11901

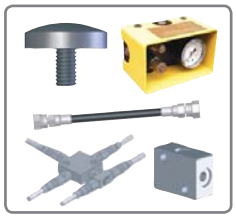
143 144 Gas Spring (Space Saving)

145 147 Gas Spiring High Force

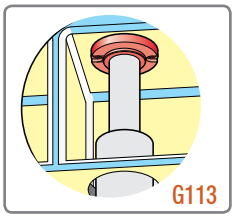
148 149 Gas Spring High Stroke Rates

150 152 Gas Spring Super Pressure

Page 153 Gas Spring Low Profile

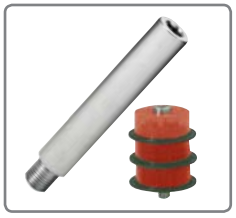


154 157 Gas Spring Accessories



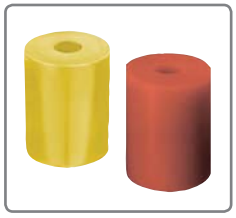
Page 158 Shock Absorbing for Gas Spring

Page 159 Disc Springs DIN 2093

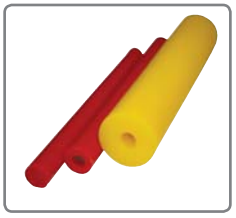


Page 160 Guide Bolt for Polyurethane Spring

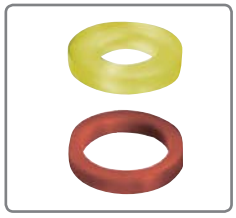
Page 160 Locating Bolt & Pin for Poly. Spring



Page 161 Polyurethane Compression Springs



Page 161 Polyurethane Compression Springs



Page 161 Polyurethane Shock Absorbing Washers

Page 162 Indexing Plungers

Page 162 Precision Pin Gauge Kit

Page 163 Magnetic Carrying Handle

Page 164 Spring Plungers

Page 164 Mounting Kit for Spring Plungers

Page 165 Spring Plungers

Page 165 Spring Plungers

Page 166 Spring and Spacer Unit

Page 166 Spacer Tubes

Page 167 Shoulder Screws

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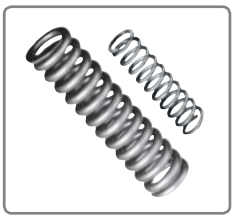
Page 168 Spring and Spacer Unit

Page 168 Compression Spring Set Screws



Page 169 Round Wire Compression Springs

Page 170 Technical Specifications of Springs

Page 171 Extra Light Load Springs "Light Green"

Page 172 Light Load Springs "Green"

Page 173 Medium Load Springs "Blue"

Page 174 Heavy Load Springs "Red"

Page 175 Extra Heavy Load Springs "Yellow"

Page 176 Ultra Heavy Load Springs "Silver"

Page 177 Round Wire Springs Green - Blue - Red

178 179 Dowel Pins

Page 180 Dowel Pin Retaining Sleeves

Page 181 Bushes for Dowel Pin

Page 182 Dowel Pin Extractor - Puller Kit

Page 182 Dowel Pin Extractor - Puller Kit

Page 183 Drill Bush Headed DIN 172 Form A

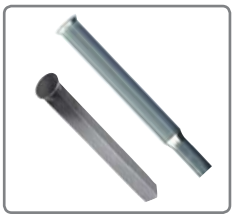
Page 184 Drill Bush Plain DIN 179 Form A

185 186 Stamp Retainers & Marking Stamps

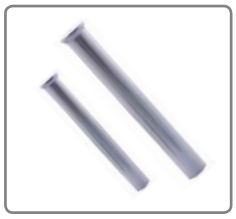
Page 187 Embossing Date Stamp (for sheet metal)

Page 188 Technical Specifications of GTH Punches

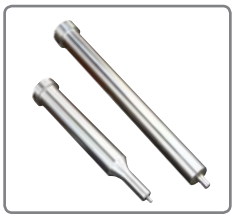
Page 189 Screw Form Punch & Die Button Unit



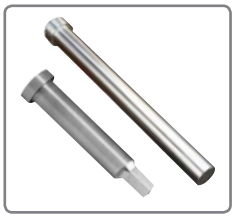
Page 190 Conical Head Punches Stepped & Slot



Page 191 Conical Head Punches DIN 9861



Page 192 Cylinder Head Punch with Ejector ISO 8020



Page 193 Cylinder Head Punches ISO 8020

Page 194 Heavy Duty Headed Punches

Page 194 Center Dowel Headed Punches

195 196 Heavy Duty & Center Dowel Stepped Punches

Page 197 Punch Retainers for ISO 8020

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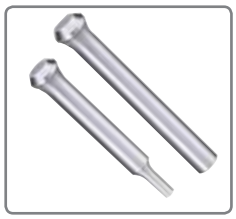
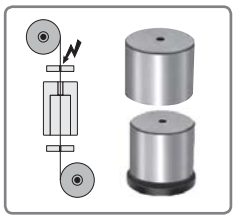
Page 198 Mounting Ring for Bottle-neck Punch

Page 198 Piloted Counterbore Punch


Page 199 Bottle-neck Punches (trambone)

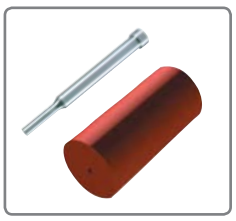

200 201 Matrixes with Counter-bore Relief

Page 202 Matrixes - Tapered

Page 203 Pilots SPK - SPX - SPP

Page 203 Compact Pilots SMK - SMX

Page 204 Matrix with Locking Device


Page 204 Polyurethane Punch Stripper

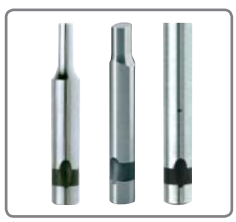
Page 205 Ball Lock Retainer with Air Cylinder

Page 205 Ball Lock Punch Retainer Light Duty

Page 206 Ball Lock Stripper Retainer Light Duty

Page 207 Ball Lock Stripper Retainer Heavy Duty

Page 208 Ball Lock Pilots Light Duty


Page 209 Ball Lock Punches Light Duty

Page 210 Ball Lock Ejector Punches Light Duty

Page 211 Larger Ball Lock Ejector Punches Light Duty

Page 212 Ball Lock Punch Retainer Round

Page 212 Ball Lock Punch Retainer Mini

Page 213 Larger Ball Lock Stripper Retainer

Page 213 Ball Lock Punch Retainer Heavy Duty

Page 214 Stripper Retainers

Page 215 Ball Lock Pilots Heavy Duty

Page 216 Ball Lock Ejector Punches Heavy Duty

Page 217 Ball Lock Punches Heavy Duty

Page 218 Larger Ball Lock Punches

Page 218 Larger Ball Lock Punches

Page 219 Ball Lock Matrix Shaped Types

Page 219 Ball Lock Matrix

220 221 In - Die Tapping Unit / Automatic

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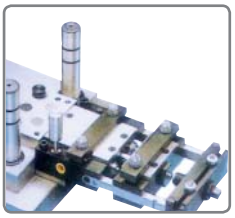
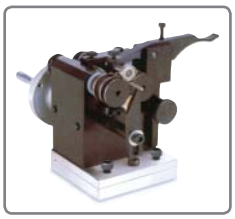
Page 222 Pneumatic Feeders & Carriers


Page 223 Pneumatic Feeders

Page 224 Decoilers for Steel Roll

Page 225 Servo Roll Feeders

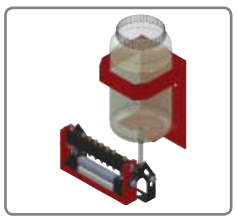
Page 226 Punch Former Tool

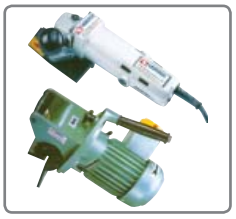

Page 226 Mini Pin & Punch Former Tool

Page 226 Wheel Dresser Tool

Page 226 Sine Plate for Punch Former Tools

Page 227 Level & Wheel Balancing Stands


Page 227 Roller Lubricator for Steel Roll


Page 228 Chamfering Machines

229 231 * Guvenal Mould Components Section
* Cumsa Components Section (page 230 to 263)

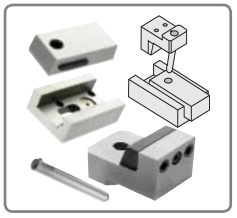
Page 232 Mini Guide

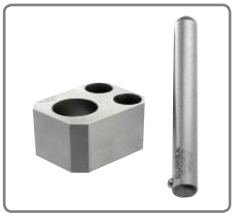
Page 232 Mini Slide & Base

Page 233 Slide Unit

Page 233 Undercut Unit

Page 234 Adjustable Wedge Assembly


Page 235 Adjustable Wedge Assembly


Page 236 Square Angle Pin Housing & Angle Pin

Page 236 Angle Pin Housing

Page 237 Core Cam

Page 237 Compact Coring Unit

Page 238 Automatic Retainer

Page 238 Safety Strap

Page 239 Slide Retainer

Page 239 Slide Retainer

Page 240 Retractable Core Extension

Page 240 Sprung Core

Page 241 PX Cutting Jig

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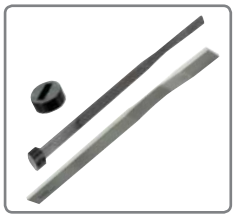
Page 241 Xtra Sprung Core

Page 242 Undercut Base Unit

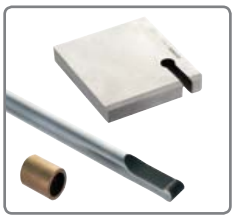
Page 242 Angled Guide Bush



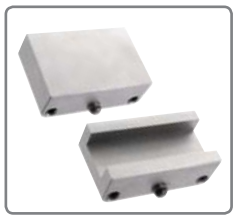
Page 242 Flexible Sprung Core

Page 243 Double & Tulip Ejector

Page 244 Adjustable & Fixed Lifter Base



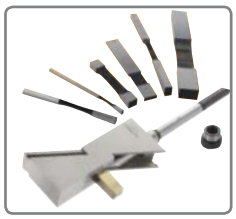
244 245 Lifter Head & Shaft



Page 245 Adaptable & Horizontal Base

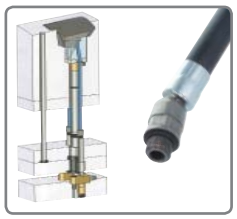
Page 246 Standard Lifter

Page 247 Vertical Lifter & Block



Page 248 Custom-made Cores & Lifters

Page 249 Automatic Dog Lifter & Limiter



Page 250 Cooling Hose

250 251 Double Rack Lifter

Page 252 Stoppers & Discs

Page 253 High Speed Cycle Counter

Page 254 Ejector Plate Accelerator

Page 254 Superior Double Ejector

Page 255 Compact Double Ejection

Page 255 Two-Stage Ejector System

Page 256 Modular Retainer

Page 256 Stroke Limiter

Page 256 Plate Retainer

Page 257 Internal Latch Lock

Page 257 Latch Lock

Page 258 Threaded Limiter

Page 259 Ejector Pin Base

Page 259 Accelerated Ejector

Page 260 High Temp. Date Stamp & Insert

Page 260 Block Base Insert

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Page 261 Date Stamp Plus & Removal Jig Set

Page 261 Xtra Date Stamp

Page 262 Air Valve for High Pressure

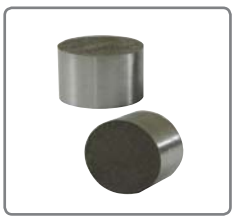
Page 263 Double Air Valve

Page 263 Sprue Adjuster

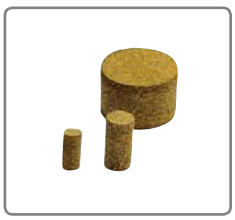
Page 264 Laminar Gas Vent

Page 264 Gas Venting Filter for Diecasting

Page 265 Sintered Gas Venting Filter



Page 265 Sintered Gas Venting Filter (steel casing)



Page 265 Gas Venting Filter Yellow Wired

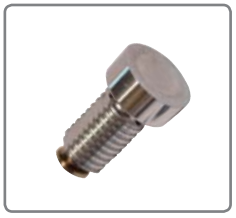
Page 265 Air Venting Valve for Blow Moulding

Page 266 Recycling Date Stamp

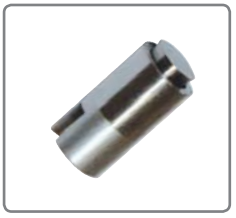
266 267 Date Stamps

Page 267 Multi-Date Double Date Stamp

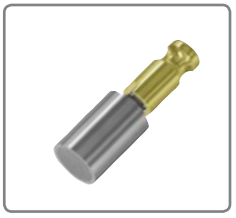
Page 268 Double Air Venting Valves



Page 269 Venting Valve for High Pressure



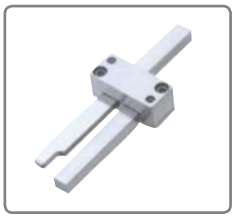
Page 269 Air Venting Valve



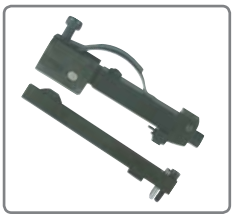
Page 269 Air Venting Valve with Pin

Page 270 Ejector Plate Thrust & Flange

Page 270 Friction Pullers

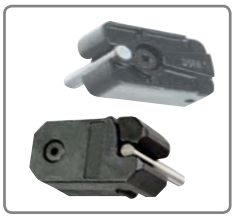


Page 271 Latch Lock Unit

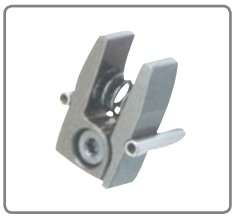


Page 271 Latch Lock

Page 272 Slide Retainers



272 273 Slide Retainer Pinned & Lock



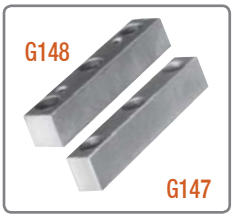
Page 273 Slide Retainer with Latch

Page 274 Automatic Ejector Coupling

Page 274 Acceleration Rocker for Ejector

Page 275 Inclined Ejector Pin Unit

Page 275 Inclined Pin Holder Spherical Guide Bush



Page 276 Support Slide for Core Position

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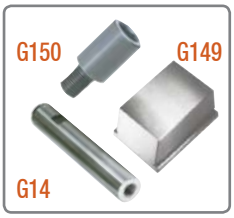


Page 277 - Angular Core Slide
- Stopping Pin
- Core Guide Pillar

Page 278 Slide Retainer Pinned & Round

Page 278 Slide Retainer Round Type

Page 279 Adjustable Ejector Plate Cover

Page 279 Dial Caliper for Load Control

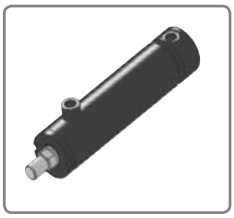
Page 280 Micro Limit Switches

Page 281 Micro Limit Switches

Page 282 Technical Specifications of "G136"

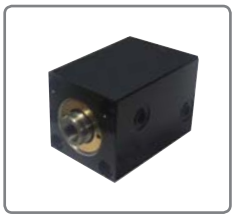
Page 283 External Side Lifter Unit with Hydr. Piston

Page 284 Hydraulic Cylinders for Injection Mould

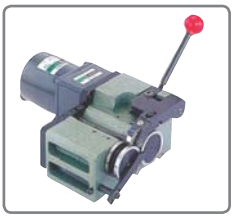


Page 284 Hydraulic Cylinder Tube Type

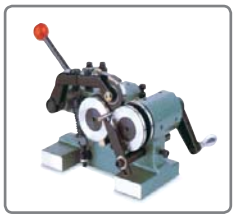
Page 284 Hydraulic Cylinder Square Type



Page 285 Hydraulic Piston Square Type



Page 286 Pin & Punch Former Tool Motor Type



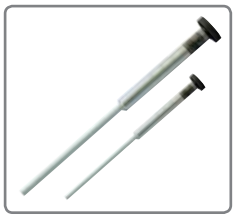
Page 286 Pin & Punch Former Tool

Page 286 Pin & Punch Former Tool

Page 287 Pin Cutting & Face Grinding Machine

Page 288 Technical Specifications of Guvenal Ejector Pins

Page 289 Ejector Pin DIN 1530-D

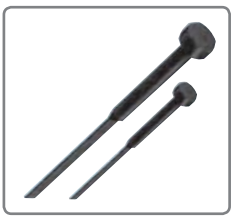


Page 290 Cylinder Head Ejector Pin Stepped

Page 291 Ejector Pin - AH DIN ISO 6751

Page 292 Ejector Sleeve Nitrided

Page 293 Blade Ejector Pin Hardened

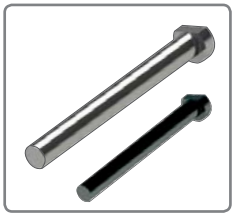


Page 294 Blade Ejector Pin Nitrided & Oxidation

Page 295 Cylinder Head Ejector Pin Oxidation

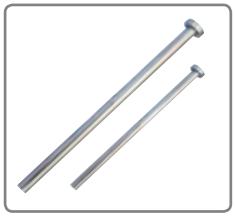
Page 296 Stepped Ejector Pin Nitrided & Oxidation

Page 296 Ejector Pin Threaded



Page 297 Ejector Pin with Locking Head

Page 298 Ejector Pin Copper Alloy



Page 298 Ejector Pin Stainless / INOX

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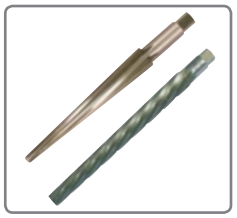
Page 299 Digital Laser Thermometer

Page 299 Cooling Junction

Page 300 Sprue Bush for Metal Injection



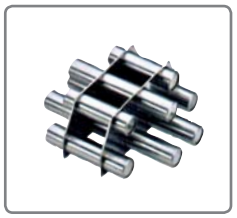
Page 300 Taper Sprue Bush & Pin Reamer

Page 301 Sprue Bushes & Locating Rings

302 309 Tunnel Gate Inserts

310 313 In-mould Edge Gate Cutting Components

Page 314 Heat Insulation Plates



Page 315 Magnetic Separator (for inj. machine)

Page 315 Teknoclean Cleaning Agent

Page 316 Precision Deburring Blade / Mechanical Pliers

Page 317 Diagonal Side Cutters

Page 317 Heat Nippers (for plastic)

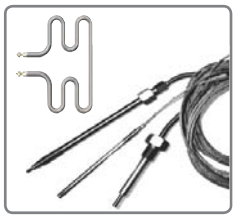
318 321 Deburring Tool Kits

Page 321 Mould Endoscope Camera

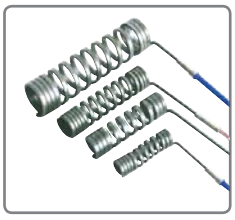
Page 322 Nozzle Filter / Cable Retainer Cap

Page 322 Mould Sprue Cleaner

Page 323 Cartridge & Band Heater (hot runner)



Page 324 Thermocouples & Rod Heaters (hot runner)



Page 325 Coil Heater (hot runner)

326 327 Hot Runner Temp. Controller / Sockets & Plugs

328 330 Raw Material & Technical Spec. of Nozzles

Page 331 A & B Series Nozzle for Hot Runner

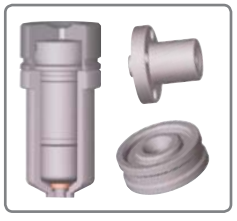
Page 332 Multi-Tip Hot Runner Nozzle

Page 333 Runner Series Nozzle

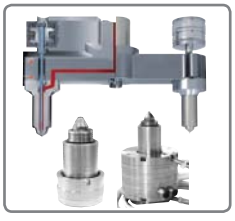
Page 335 Multi-Tip Hot Runner Nozzle

337 339 Manifold Systems

Page 340 Hot Runner Main Nozzle and Bushings



341 342 Outer Bushing & Fittings for Hot Runner



343 345 Valve Gates for Hot Runner System

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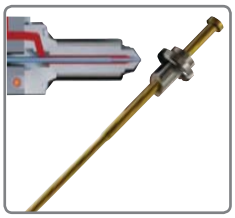
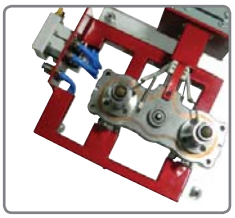


Page 346 Valve Gate Pin (hot runner)



Page 347 Hot Runner Valve Gate Systems

348 349 Quick-release Couplings & Fittings (EURO / standard)

Page 350 Quick-release Couplings & Fittings for Large Moulds

Page 351 Quick-release Couplings & Fittings with Colour Ring

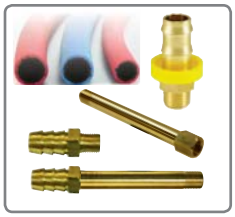
Page 352 Quick-release Couplings & Fittings

Page 353 Quick-release Couplings & Fittings (USA system)

Page 354 Manifold Block, Multi Coupling Plate & Detent Plugs

Page 355 Detent Plugs & Extra Long Drills

Page 356 Mould Cooling Equipment



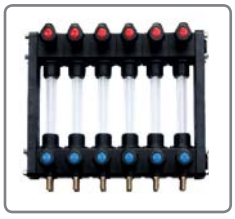
Page 357 Hoses & Fittings

Page 358 Cooling Baffles

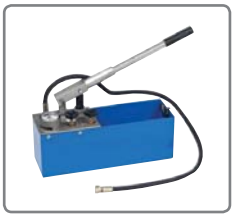
Page 359 Heat Transfer Pipes

Page 359 Plastic Baffles

360 361 Pneumatic Fittings



Page 362 Water Flow Regulator



Page 362 Manual Pressure Test Pump

Page 362 Descaling Liquid

363 365 Consumables Die & Mould Lubricants

Page 366 Engineer's Marking Blue Paste

Page 366 Cold - Curing Tool Repair Set & Casting Resin

Page 367 Mould Polishing / Finishing Technologies

368 369 Precison Rotary Air Grinder & File Tools

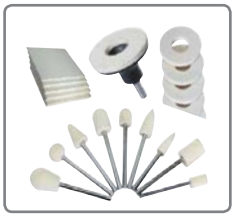
370 371 Air Grinder & File Tools

Page 372 Polishing Tools

Page 373 Fiber Ceramic Polishing Stones

Page 374 Pink Mounted Points

Page 375 Polishing Tools



Page 376 Polishing Felts

Page 377 Diamond Compounds

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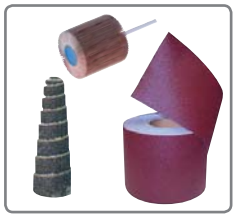


Page 378 Types of Abrasives

Page 379 Carbide Rotary Burrs

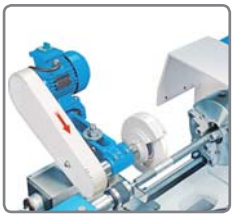
Page 380 Diamond CBN Sets

Page 380 Needle File Sets

Page 381 Engineers Files & Spare Parts

Page 382 Diamond Files

Page 383 Diamond File Sets



Page 384 Tool Post Grinders

Page 384 Polishing & Cleaner Block

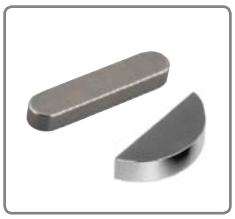
Page 384 Abrasive Pen & Work Safety Products

Page 385 Auxiliary Materials for Polishing

Page 385 Tool Cabinet with Drawers

Page 386 Operating Elements

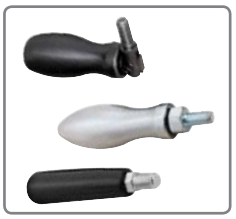
386 387 Cold-drawn H8 Tubes & Chrome Plated Bars



388 399 Fitting Keys DIN 6885 DIN 6888

Page 391 Spoked Handwheels

392 394 Adjustable Clamping Levers



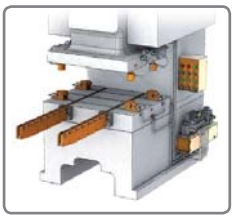
Page 395 Revolving Handles

395 396 Knobs

Page 397 Handles

398 399 Clamping Tools

400 403 Combined Power Sliding Clamps



404 407 Quick Die & Mould Change Systems

408 411 Die Rails & Die Lifters

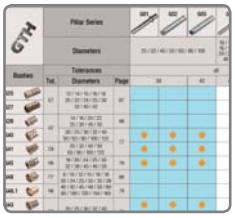
Page 412 Permanent Magnetic Clamping Block

Page 413 Electro - Permanent Magnetic Chuck

Page 414 Drill Sharpening Machine

Page 415 End Mill Sharpening Machine

416 422 Tolerance and Fit Systems



Back Cover "Guvenal" Guide Components Matching Chart

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Some Images from Guvenal - GTH Production Facilities

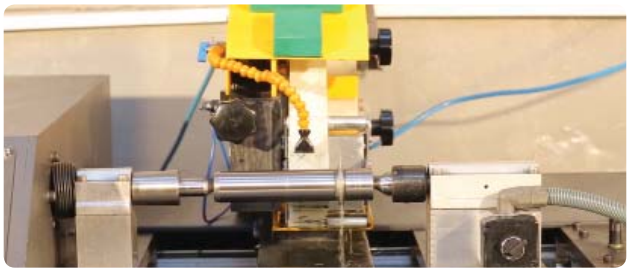
Punch Production Facility
- 5 Axis Multi-grinding Machines

Die & Mould Components Production Facility
- High-tech Grinding Machines

Punch Production Facility
- 6 Axis Wire Edm Machine / 5 Axis Multi-grinding Machines

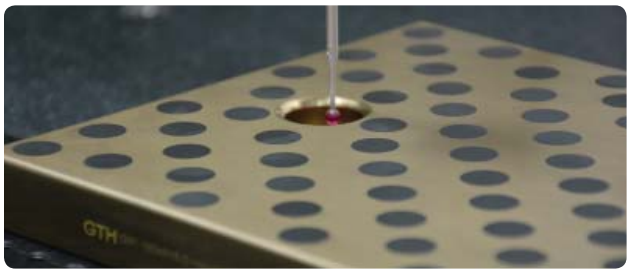
Punch, Die & Mould Components Production Facility
- Robot Automations

Die & Mould Components Production Facility
- In-house Heat Treatment



- Our Components are Polished with Surface Polishing Machine at Final Stage of Production (after grinding)

Die & Mould Components Production Facility
- Precise Honing Machines with Pneumatic Measurement Systems



Quality Department

Mould Bases / Die Sets Production Facility

Mould Bases / Die Sets Production Facility
- Deep Hole Drilling

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Cold Work Tool Steel

Code: CC

Cylindrical recess material very suitable for production sector / mounting industry, especially mould production. Ensures compliance to usage with its suitable hardness surface brightness - stainless - flexibility, it is an essential product for equipment and tool production.

Cold work tool steel (Böhler) can be supplied with a wide variety and high quality selection from our company stocks. The desired hardness can be obtained with simple heat processing method as per request.

Hot Forming and Heat Treatment: **DIN 17006**

Forging Anneal : 1050 - 800°C
Soft Anneal : 700 - 720°C
Anneal Hardness : Max. 280 HB
Stress Relief Annealing : 600°C
Pre-Heat For Hardening : 650°C
Hardening (Quenching) : Up to 12 mm at 780-800°C oil
Up to 12-20 mm at 780-800°C water
Up to 20-40 mm at 780-820°C water
Up to 40-60 mm at 810-830°C water
Tempering : 180 - 200°C - 1 hour / 25 mm

Presented as: 2 Metre / as per request: 1 Metre

Order	Dia. mm	Kg/mt.
CC20	2.0	0.040
CC25	2.5	0.050
CC30	3.0	0.060
CC35	3.5	0.080
CC40	4.0	0.100
CC45	4.5	0.130
CC50	5.0	0.160
CC55	5.5	0.200
CC60	6.0	0.230
CC65	6.5	0.280
CC70	7.0	0.310
CC75	7.5	0.400
CC80	8.0	0.410
CC85	8.5	0.450

Order	Dia. mm	Kg/mt.
CC90	9.0	0.500
CC95	9.5	0.560
CC100	10	0.620
CC105	10.5	0.700
CC110	11	0.750
CC115	11.5	0.820
CC120	12	0.900
CC125	12.5	0.980
CC130	13	1.050
CC140	14	1.250
CC150	15	1.400
CC160	16	1.600
CC170	17	1.800
CC180	18	2.000
CC190	19	2.300
CC200	20	2.500
CC210	21	2.800
CC220	22	3.000
CC230	23	3.300
CC240	24	3.600
CC250	25	3.900
CC300	30	5.600
CC320	32	6.400
CC350	35	7.600
CC400	40	9.900

Order: CC. Diameter

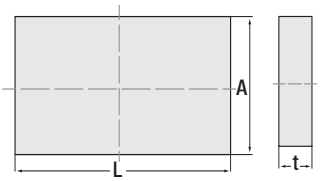
Chemical Analysis: % C1,15-CR 0.70-V 0.10

Material: 115 CR V 3 acc. to DIN 17006

Standard Ground Mould Plates

A	L	Thickness (t)								
		26	36	46	56	66	76	86	96	106
156	156	■	■	■	■	■	■			
	196	■	■	■	■	■	■	■	■	
	246	■	■	■	■	■	■	■	■	■
	296	■	■	■	■	■	■	■	■	■
	346	■	■	■	■	■	■	■	■	■
196	196	■	■	■	■	■	■	■	■	
	246	■	■	■	■	■	■	■	■	■
	296	■	■	■	■	■	■	■	■	■
	346	■	■	■	■	■	■	■	■	■
	396	■	■	■	■	■	■	■	■	■
246	246	■	■	■	■	■	■	■	■	■
	296	■	■	■	■	■	■	■	■	■
	346	■	■	■	■	■	■	■	■	■
	396	■	■	■	■	■	■	■	■	■
	446		■	■	■	■	■	■	■	■
	496		■	■	■	■	■	■	■	■
296	296	■	■	■	■	■	■	■	■	■
	346	■	■	■	■	■	■	■	■	■
	396	■	■	■	■	■	■	■	■	■
	446		■	■	■	■	■	■	■	■
	496		■	■	■	■	■	■	■	■
	546		■	■	■	■	■	■	■	■
346	346	■	■	■	■	■	■	■	■	■
	396	■	■	■	■	■	■	■	■	■
	446		■	■	■	■	■	■	■	■
	496		■	■	■	■	■	■	■	■
	546		■	■	■	■	■	■	■	■
	596		■	■	■	■	■	■	■	■
396	396	■	■	■	■	■	■	■	■	■
	446	■	■	■	■	■	■	■	■	■
	496	■	■	■	■	■	■	■	■	■
	546		■	■	■	■	■	■	■	■
	596		■	■	■	■	■	■	■	■
	646			■	■	■	■	■	■	■
446	446	■	■	■	■	■	■	■	■	■
	496	■	■	■	■	■	■	■	■	■
	546	■	■	■	■	■	■	■	■	■
	596		■	■	■	■	■	■	■	■
	646		■	■	■	■	■	■	■	■
	696			■	■	■	■	■	■	■
496	496	■	■	■	■	■	■	■	■	■
	546		■	■	■	■	■	■	■	■
	596		■	■	■	■	■	■	■	■
	646		■	■	■	■	■	■	■	■
	696		■	■	■	■	■	■	■	■
	746			■	■	■	■	■	■	■
	796			■	■	■	■	■	■	■

Ground Mould Plates Code: EKP
Standard & Custom-made



Precision machined and grinded plates are prepared as rectangular, square or as per request in the desired dimensions, also hole, pool, core space and similar processes can be done on plate, the desired precision tolerances excluding standard dimensions are applied. Surfaces are milled / precision perpendicularity and roughness are provided, precision surfaces ground plates with CK45 / tool steel material are available in our stocks normatively or can be supplied in 2-3 working days. In addition, except our standard materials, the production in desired materials (alloy aluminium or quality steel material) is possible. All of these processes are produced within the structure of our company, then they are presented to our customers by providing cost saving.
We are an accomplished and dedicated and customer oriented company with our experience and knowledge, advantages of being ahead and with our presentations of GTH Die & Mould Components improved by our side and needed by the whole world market and with unquestionable quality.

Order: EKP. A x L x t

Material: CK45

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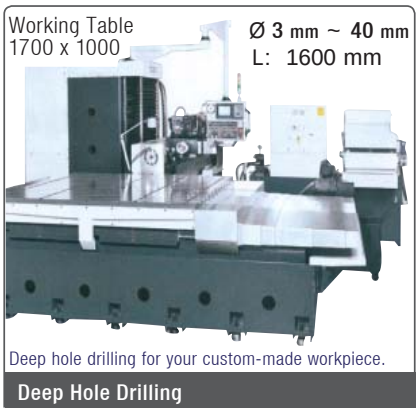
Standard Mould Base **EKS**

Custom-made Mould Base

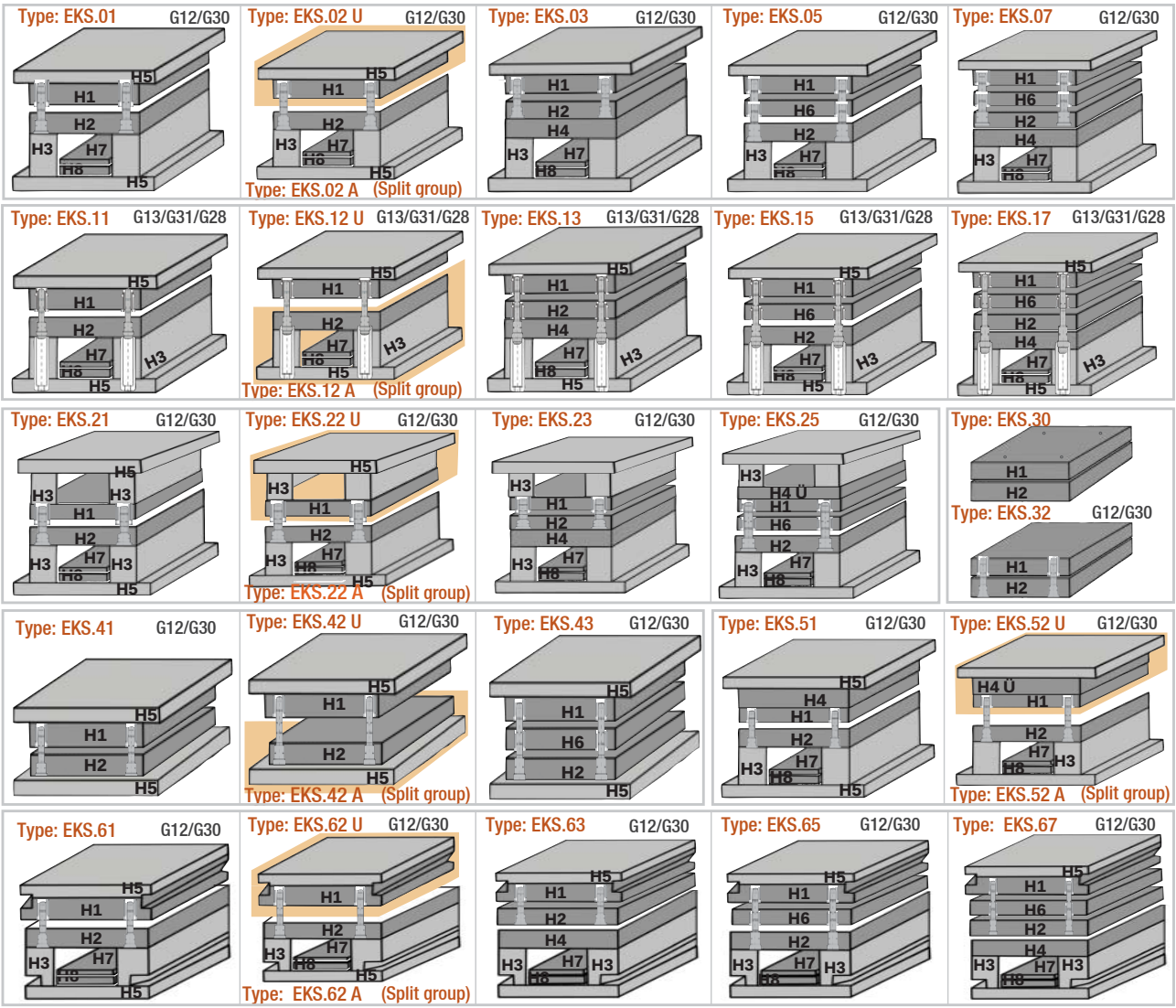


Deep hole drilling for your custom-made workpiece.

Deep Hole Drilling

Standard Mould Bases - Types

Production by: GTH



Production as per request.
Dimensions: Up to 1800 mm

"You can always trust our experience, expertise and Guvenal quality"

- **Cnc machining (3D) can be done as per request in plate works of your standard or shaped moulds.**
- **EKS.01 ~ EKS.07** Standard mould bases (guide pillar & bush equipped with bolt connection)
- **EKS.11 ~ EKS.17** Standard mould bases (G13 / G31 / G28 equipped with bolt connection)
- **EKS.21 ~ EKS.25** Standard mould bases (hot runner & manifold plate created)
- **EKS.30 ~ EKS.32** Standard mould bases (holder plate group H1-H2 can be done channelled as per request)
- **EKS.41 ~ EKS.43** Standard mould bases (plain set - located excluding ejector plates and support blocks)
- **EKS.51 ~ EKS.52** Standard mould bases (female holder-support plate / H4 plate added)
- **EKS.61 ~ EKS.67 Metal Injection** Mould Base (connecting system & cover and female holder have been created).

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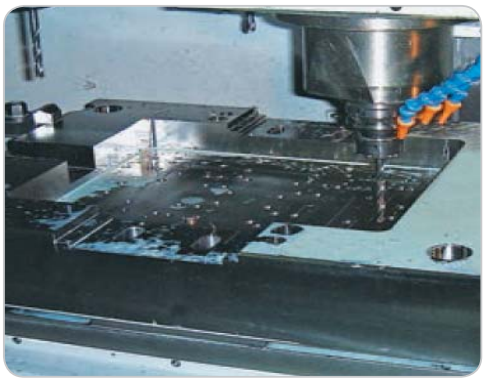
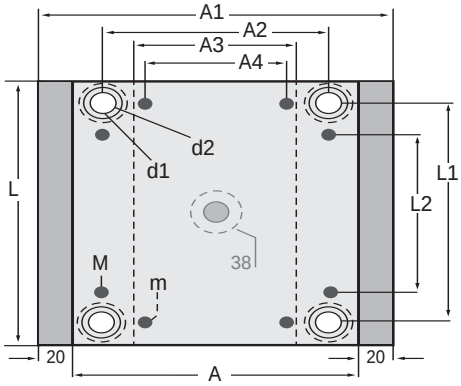
Outer Dimensions		Mould Plate Thickness Dimension Selection mm								Plate Axis mm						Pillar & Bush d1-d2	Bolt	
A	L	H5	H1	H2	H6	H4	H7	H8	H3	A1	A2	A3	A4	L1	L2		M	m
156	156	26 36	26 36 46 56 66	26 36 46 56 66	26 36 46 56 66	26 36 46 56 66	16	16	46 56 66	196	114	80	56	114 154 204 254 304	60 100 150 200 250	16 24	M.8 M.10	
196	196 246 296 346 396	26 36	26 36 46 56 66 76	26 36 46 56 66 76	26 36 46 56 66 76	26 36 46 56 66 76	16	16	46 56 66	246	154	120	96	154 204 254 304 354	100 150 200 250 300	16 24	M.8 M.10	
246	246 296 346 396 446	26 36	26 36 46 56 66 76	26 36 46 56 66 76	26 36 46 56 66 76	26 36 46 56 66 76	16	16	46 56 66 76 86 96	296	194	148	126	194 244 294 344 394	130 180 230 280 330	20 25 28 34	M.8 M.12	
296	296 346 396 446 496	26 36	26 36 46 56 66 76 86	26 36 46 56 66 76 86	26 36 46 56 66 76 86	26 36 46 56 66 76 86	16	16	56 66 76 86 96	346	244	198	176	244 294 344 394 444	180 230 280 330 380	25 34	M.8 M.12	
346	346 396 446 496 546	26 36	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	16	22	56 66 76 86 96	396	294	228	202	294 344 394 444 494	220 270 320 370 420	25 34	M.10 M.12 M.16	
396	396 446 496 546 596	26 36	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	16	22	56 66 76 86 96	446	324	278	252	324 374 424 474 524	230 280 330 380 430	30 39	M.10 M.16	
446	446 496 546 596 646	26 36 46	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	16	22	56 66 76 86 96	496	374	328	302	374 424 474 524 574	280 330 380 430 480	30 39	M.10 M.16	
496	496 546 596 646 696	36 46 56	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	36 46 56 66 76 86 96	16	22	56 66 76 86 96	546	424	378	348	424 474 524 574 624	330 380 430 480 530	30 39	M.10 M.16	

546	546 596 646 696	596	596 646 696 746	646	646 696 746 796	696	696 746 796 846	746	746 796 846 896	796	796 846 896 946





Standard Mould Bases:

Code: EKS

Your reliable label → GTH

Mould locating and cycle counter place opening processes, o-ring hot / cold runner place and manifold plate processes, drilling of coolant water runners (deep hole drilling), flange slots works, angular or plain pool and core places are prepared with customer drawing at special characterized moulds. The creation of ejector pin and back striker holes are presented as cnc production suitable to mould 3D data and that all plates are connected or with guide pillar & bush as per request at plain plates, also as split pieces, standard mounted or ground plate with fastest delivery periods. You can always trust our experience, expertise and Guvenal quality.

Order: EKS.. A x L
H1-H2-H4/H6/H3

Material: CK45 Steel
or material as per request

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Code: PKS 1 — Standard Die Set

Code: PKS 2 — Die Set with Ball Cage System

Code: PKS 3 — Progressive Die Set

Standard & Custom-made Die Sets

Guvenal are honored to contribute to the industry with 170 employees. Guvenal that has given itself over to its job will continue “Affordable Die & Mould Prices” policy with 2nd Generation team having the same vision value as a solution partner to global industry with your supports.

Standard & Custom-made Die Sets

In our production, precision surface grinding of die set plate as well as circumferential perpendicularity precision are made by using machining power and our cnc machinery as well as new requirements of design engineering. The connections are completed with 12.9 cylinder head cap screw by providing reference points, using **Guvenal-GTH Guide Pillar & Bush** components that are produced by us with precision at all sets.

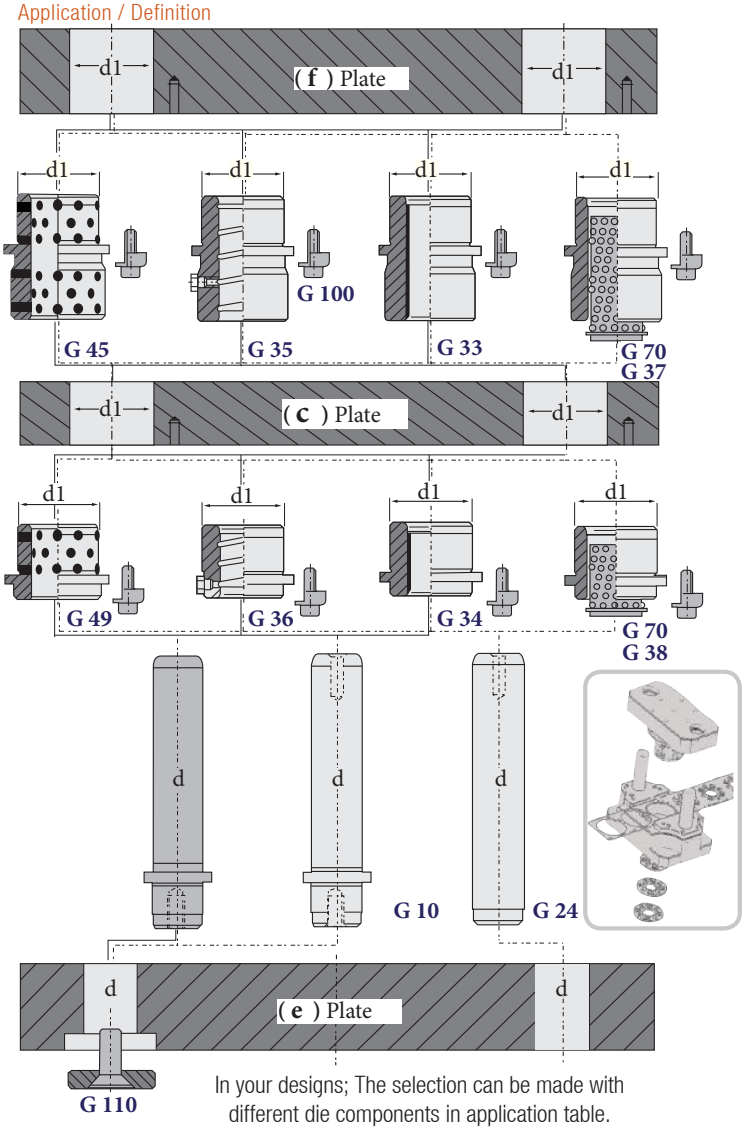
In addition, 1 or 2 eyebolt holes (according to the load) are opened for die lifting and mounting (die safety latch can be inserted as per request). CK45 (tool steel) is used at our production.

Also as per request, aluminum alloy or quality steel material can be used. Thickness and circumferential tolerance values applied as standard are ± 0.1-0.2. sizes up to 1600 x 800 mm. The sets and plates are produced with fast delivery.

In order to avoid possible errors of dimensional in the customer drawings at special character dies, all operations are controllig by Guvenal, information flow of assortment is provided within mutual information. The most important one is to follow customer delivery times by our company meticulously.

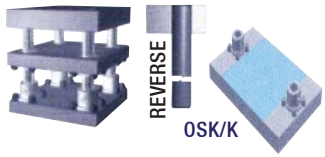
Note: We deliver standard sets in 2-3 working days or partially from our stocks according to the urgency of your work.

Application / Definition

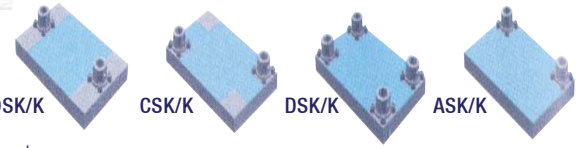


In your designs; The selection can be made with different die components in application table.

Guide Pillar & Bush Application



As Per Request : Types & Die Sets



As per request: Aluminum alloy and high quality steel material die sets production can done.
As per request: Precision Cnc machining works, pool draining, die spaces, core slots can done.

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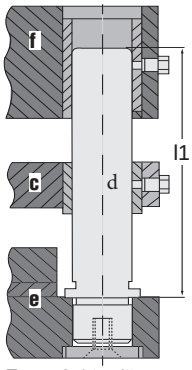
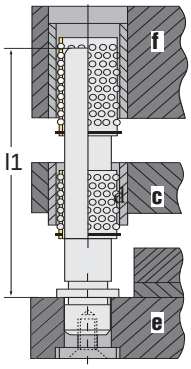
Die Set - Guide Pillar & Bush Selection:



Type: Guide pillar with centre collar (G10)

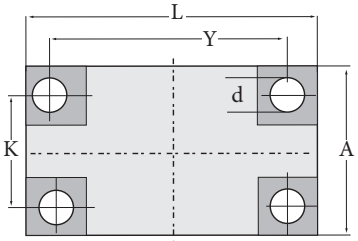
Suggestion: Pls. note that shrink fits are not suitable for 4-guide pillar die sets! Generally, two and three diversification can be chosen in cases that guide pillar space geometry is irregular.

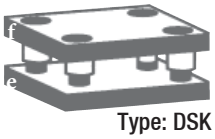


Type: Guide pillar for ball cage, shrink fit model (G10)

Die Set Types - Selection as per request

Type: DSK - DSK K (Four Columns)

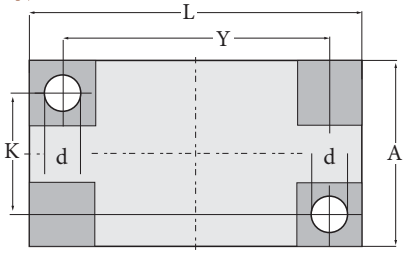


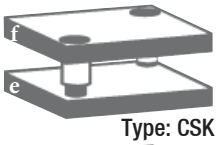


Type: DSK

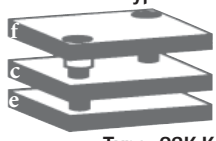
Type: DSK K

Type: CSK - CSK K (Cross Columns)



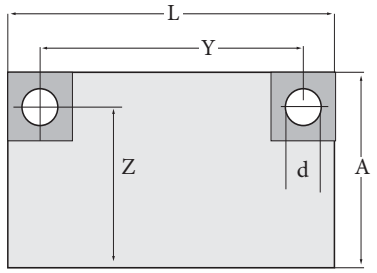


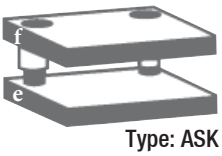
Type: CSK



Type: CSK K

Type: ASK - ASK K (Rear Columns)

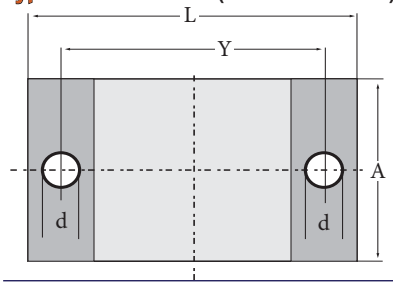


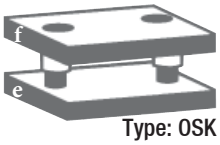


Type: ASK

Type: ASK K

Type: OSK - OSK K (Centre Columns)





Type: OSK

Type: OSK K

Order: PKS.. A x L Type:.. e.f.c. x d x l1

Custom: 3D drawing
Standard: Dimension table

Material: CK45 Steel
Production as per request

Standard Die Set Selection / Dimensions

Die Dimension mm		Plate Thickness mm			Free Area mm			Guide Pillar x Length	
A	L	e	f	c	K	Y	Z	G10	d x l1
156	156	26 36	26 36	26	100	100	128	Ø 20	100 112 125 140 160 200
	196					140			
	246					190			
	296					240			
196	196	26 36 46	26 36 46	26	132	132	164	Ø 25	100 112 125 140 160 180 200 250
	246					182			
	296					232			
	346					282			
	396					332			
246	246	36 46 56	36 46 56	26	174	174	210	Ø 30	112 125 140 160 180 200 250 315
	296					224			
	346					274			
	396					324			
	446					374			
296	296	36 46 56	36 46 56	26	224	224	260	Ø 30	112 125 140 160 180 200 250 315
	346					274			
	396					324			
	446					374			
	496				212	412	254	Ø40	
346	346	36 46 56	36 46 56	26	274	274	310	Ø 30	112 125 140 160 180 200 250 315
	396					324			
	446					374			
	496				262	412	304	Ø 40	
	546					462			
396	396	46 56 66	46 56 66	36	312	312	354	Ø 40	125 140 160 180 200 250 315 355
	446					362			
	496					412			
	546					462			
	596				300	500	348	Ø50	
446	446	46 56 66	46 56 66	36	362	362	404	Ø 40	125 140 160 180 200 250 315 355
	496					412			
	546					462			
	596				350	500	398	Ø 50	
	646					550			
496	496	56 66	56 66	36	400	400	448	Ø 50	140 160 180 200 250 315 355 400
	546					450			
	596					500			
	646					550			
	696					600			

546	546
	596
	646
	696

596	596
	646
	696
	746

646	646
	696
	746
	796

696	696
	746
	796
	846

As per request, Cnc precision machining works, pool draining, die spaces, core slots can done.
Production: GTH Die & Mould Base

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STANDARD DIE COMPONENTS

Güvenal Group

Güvenal GTH
Die & Mould Components

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DIN 9833

Ø d	l mm	d2 Hole	d5 mm	l2 mm	l1 mm	l3 mm
80	200	-	M12 x24 Guide pillar lifting hole	10	100	4
	224					
	250					
	280					
	315					
	355					
	400					
100	224	50	72	10	125	4
	250					
	280					
	315					
	355					
	400					
	450					
125	315	65	90	12	140	5
	355					
	400					
	450					
	500					
160	400	95	132	12	180	5
	450					
	500					
	560					

Operating Components: Self-lubricating guide bushes are recommended.

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Order: G09.d x l

The importance of alignment precision of punch and matrix at dies is very obvious.
This alignment depends on accuracy and protection of precision, correct placement of guide pillar / bush groups, quality and abrasion resistance. It is especially demountable. We endeavor keeping this range with the additions we made such as new guiding equipment.

Ø d	l mm	d2 Hole	l2 mm	l1 mm	l3 mm
25	125	-	8	40	4
	140				
	160				
	180				
	200				
	224				
32	140	-	8	45	4
	160				
	180				
	200				
	224				
	250				
40	140	-	8	56	4
	160				
	180				
	200				
	224				
	250				
	280				
50	160	-	10	70	4
	180				
	200				
	224				
	250				
	280				
	315				
	355				
63	180	-	10	80	4
	200				
	224				
	250				
	280				
	315				
	355				
	400				

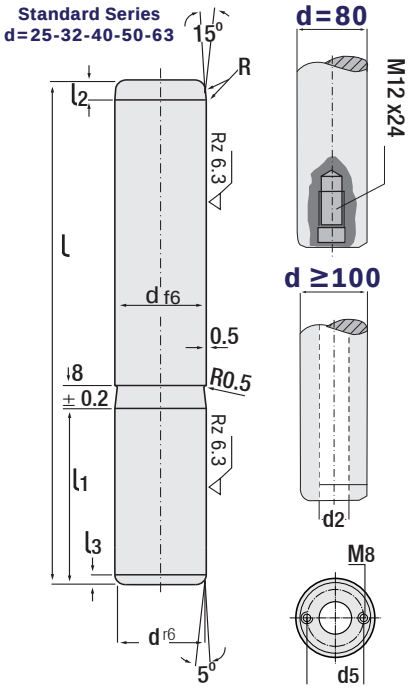
GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

Custom-made production can be done as per request.

Code: G09

Guide Pillar for Large Dies

DIN 9833

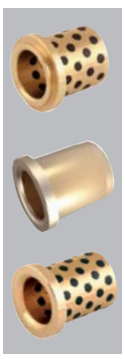


Heavy Duty Type for Dies

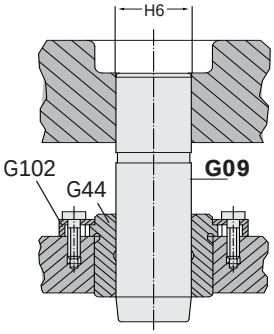
Practises: Ground surface is holeless up to Ø d = 80 and Ø 80 = M12 X 24 mm has one lifting hole. From Ø d.100, it has hollow (d2) and have 2 pieces M8 X 24 mm lifting holes.

Note: Hole tolerance should be H7. It is recommended to use guide pillar only with self-lubricating guide bushes.

Compatible Bushes: Self-lubricating bronze guide bushes.



Mounting Example



DIN 9833 ISO 9182-3

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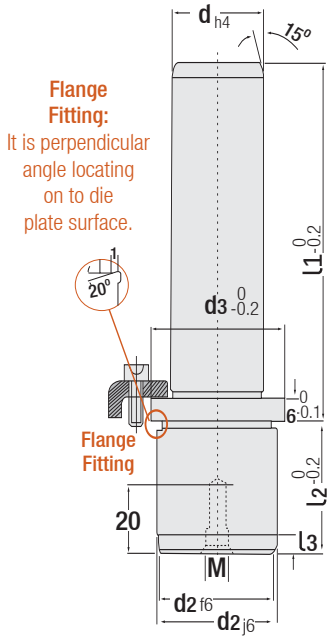
Code: G15

Guide Pillar, Thickbacked



Ø d	l1	d2	d3	l2	l3	M
20	100	28	34	23	4	M.8
	125					
	140					
	160					
	180					
	200					
25	100	34	39	30	6	M.8
	125					
	140					
	160					
	180					
	200					
	220					
	240					
30	125	39	44	37	6	M.8
	140					
	160					
	180					
	200					
	220					
	240					
	260					
	315					

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

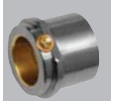
Operating Components: G100 - G33 G34 - G35 - G36 - G40 - G42

Order: G15. d x l1

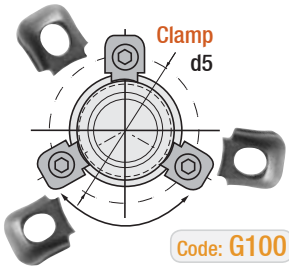
Compatible Bushes

G41- 42- 43

G 40 - 44


G 35 - 36

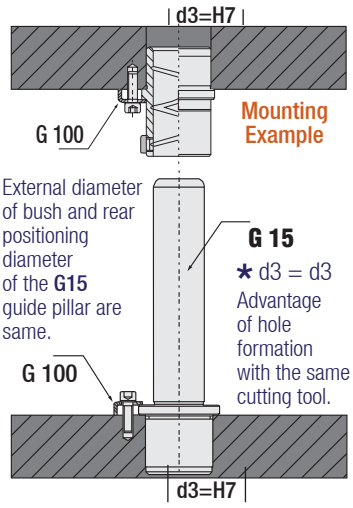
G 33 - 34



Code: G100

G15 / Guide Pillar, Thickbacked
It is used as guiding component at dies and blow moulds.

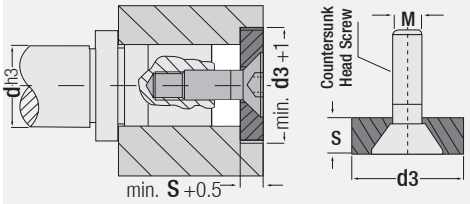
Advantageous Product:
Pillar mounting diameter and bush mounting diameter have the same tolerance value. In machining of guide pillar / bush holes on dies with the advantage of using same cutting tool (drill / reamer) for both guide pillar & bushes hole. Thus, the necessity of using different cutting tools will disappear.



Mounting Flange

Code: G110

Guide pillar fixation & Support washer



* Reliable product used for guide pillar with centre collar mountings min. d3 + 1
* It can also be used to support for ejector plates in injection moulds / etc.

Ø d3	Pillar Diameter d	Flange S	Screw M
22	Ø 15 / 16	5.5 mm	M8 x 20
25	Ø 19 / 20		
32	Ø 24 / 25		
40	Ø 32 / 30	7.5	
50	Ø 38 / 40	9.5 mm	
60	Ø 48 / 50		
73	Ø 60 / 63		
93	Ø 80	12	M12 x 20

Order: G110. d3

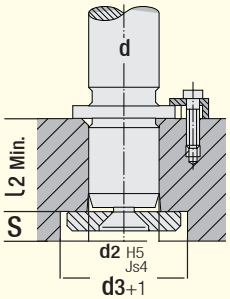
Usage: Guide pillar fixation (Die)
Support washer (Mould)

Mounting Dimensions and Tolerances of Demountable Die Guide Pillars

Technical Info

Dimensions Given:
Recommended (suggestion) for product: **G10** Guide pillar.

Mounting System:
Soft tight fitting system has been selected and determined for **G10** Guide pillar.



"d" Guide Pillar Dia.	d2 H5	d3 +1	l2	S
15 / 16	+0.008	22	14.5	5.5
19 / 20	+0.009	25	17.5	5.5
24 / 25	+0.009	32	24.5	5.5
30 / 32	+0.011	40	29.5	7.5
38 / 40	+0.011	50	27.5	9.5
48 / 50	+0.013	60	37.5	9.5
60 / 63	+0.013	80	37.5	9.5
80	+0.013	95	48	12

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DIN 9825 / ISO 9182-5

Ø d d2	L1 mm	L2 mm	L3 mm	Ø d3	Clamp d5	M M1	r r1
38 **40**	125	37	9	50	55.8	M8	r 3,5
	140						
	160						
	180						
	200						
	224						r1 30
	250						
	280						
	315						
	355						
48 **50**	140	47	10	63	65.8	M8	r 3,5
	160						
	180						
	200						
	224						
	250						r1 30
	280						
	315						
	355						
	400						
60 **63**	160	47	10	80	78.8	M8	r 4
	180						
	200						
	224						
	250						r1 30
	280						
	315						
	355						
	400						
80	200	60	15	95	95.8	M 12	r 4
	224						
	250						
	280						r1 30
	315						
	355						
	400						

Ø d d2	L1 mm	L2 mm	L3 mm	Ø d3	Clamp d5	M M1	r r1
15 **16**	100	20	4	22	31.8	M8	r 2
	112						
	125						
	140						
	160						
	180						r1 10
	200						
	220						
	250						
	300						
19 **20**	100	23	4	25	35.8	M8	r 2
	112						
	125						
	140						
	160						
	180						r1 10
	200						
	220						
	250						
	300						
	320						
24 **25**	100	30	6	32	40.8	M8	r 3
	112						
	125						
	140						
	160						
	180						r1 20
	200						
	224						
	250						
	320						
	350						
32 **30**	112	37	7	40	45.8	M8	r 3
	125						
	140						
	160						
	180						
	200						r1 20
	224						
	250						
	280						
	315						
	350						
	400						

All dimensions are promptly delivered from our stocks.

Order: G10. d x l1

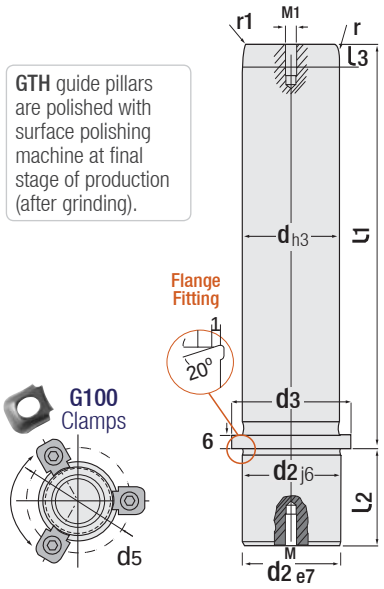
Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Operating Components: All sliding systems also can be used with ball cage bush.

Code: G10

Guide Pillar with Centre Collar

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).



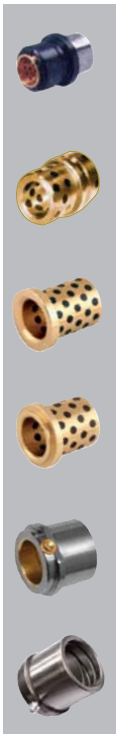
It can be inserted directly to the holes which opened on the die plate. During mounting, please avoid tight fitting. It can be positioned via soft-tight fitting to the holes and clamps or mounting flange with suitable tolerances or also with chemicals.

Technical Info: Refer to the mounting measurement tolerance table on the Page-34 for correct fitting of guide pillar to the die plate.

Please do not use two products without oil grooved together. One of the products should be with oil grooved.

Die Producers: Should pay attention to choose products suitable to the tolerances / standards in guide pillar & bush selection.
To prevent incorrect closing of dies, three pieces main dimension and one piece auxiliary dimension can be used:
(15 - 19 - 24 - 32 - 38 - 48 - 60)

For precision and safe mounting: **G110** mounting flange.



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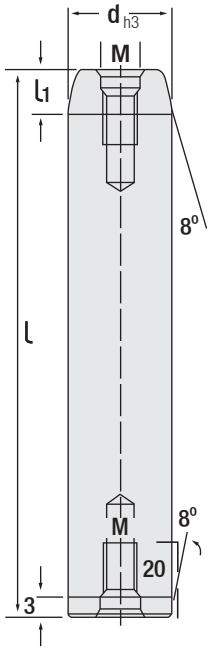
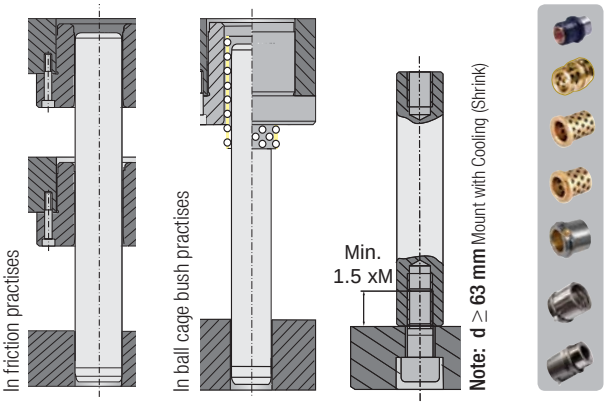
Guide Pillar, Plain & Threaded

Code: G24

DIN 9825 / ISO 9182





Note: Section (d), two different products are to avoid incorrect closing of die during mounting, three pieces main dimension and one piece auxiliary should be used (d= ø 16 - 19 - 24 - 32 - 38 - 48 - 60 mm).

If extreme lateral forces are occurred at dies, in these cases, self-lubricating wear plates should be used with pillars.

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

Order: G24. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Operating Components: All sliding systems also can be used with ball cage bush.

Code: G24

Ø d	l mm	l1 mm	M
16	90	4	M8
	100		
	112		
15	125		
	140		
	160		
	180		
	200		
19	100	4	M8
	112		
	125		
	140		
	160		
20	180		
	200		
	224		
	250		
24	100	6	M8
	112		
	125		
	140		
	160		
	180		
25	200		
	224		
	250		
	280		
	315		

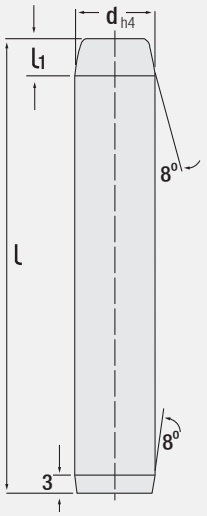
Ø d	l mm	l1 mm	M
32	112	6	M8
	125		
	140		
	160		
	180		
30	200		
	224		
	250		
	280		
	315		
38	125	10	M8
	140		
	160		
	180		
	200		
40	224		
	250		
	280		
	315		
	355		
	400		

Ø d	l mm	l1 mm	M
48	140	10	M 12
	160		
	180		
	200		
	224		
50	250		
	280		
	315		
	355		
	400		
60	200	15	M 12
	224		
	250		
	280		
63	315		
	355		
	400		
80	250	18	M 16
	280		
	315		
	355		
	400		
	450		
	500		

Guide Pillar

Code: G19

DIN 9825 / ISO 9182

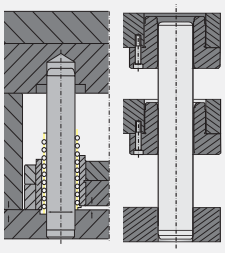


Ø d	l mm	l1 mm
12	100	6
	125	
18	125	6
	160	
30	160	7
	240	

* In-die auxiliary guide pillar

* Guide pillars for ejector plate in injection moulds

It is used as auxiliary guiding component in dies or progressive die plates. It can be used with all sliding system or ball cage bush tools. When precision and iterative high speeds are required in injection mould ejector plates, it is suitable to use together with ball cage tools and also with sliding and self-lubricating guide bush components.



Order: G19. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Operating Components: All sliding systems also can be used with ball cage bush.

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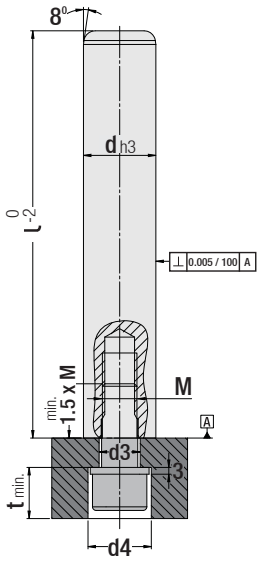
NEW

Code: G166

Guide Pillar - Bolted Type

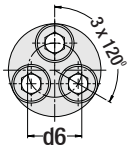
DIN 9825 / ISO 9182

* G166 is supplied with a screw and washer. GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

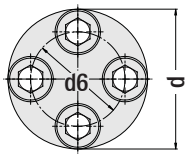


Hole pattern for pillar fastening:

d =
Ø15-**16** / 19-**20**
24-**25** / **30**-32 / 38-**40**



d = Ø48-**50** / 60-**63**



d = Ø80

Note: Section (d), two different products are to avoid incorrect closing of die during mounting, three pieces main dimension and one piece auxiliary should be used (d= ø 16 - 19 - 24 - 32 - 38 - 48 - 60 mm).

If extreme lateral forces are occurred at dies, in these cases, self-lubricating wear plates should be used with pillars.

d mm	d3 mm	d4 mm	d6 mm	t min.	M	l mm	Cap Screw	(Nm)
15 **16**	9	17	-	12	8	90 100 112 125 140 160 180 200 224 250 280 315 355	M8 x 35	Tightening torque: 21
19 **20**	11	20	-	14	10	100 112 125 140 160 180 200 224 250 280 315 355 400	M10 x 40	Tightening torque: 37
24 **25**	14	22	-	16	12	100 112 125 140 160 180 200 224 250 280 315 355 400 450	M12 x 40	Tightening torque: 85
30 32	18	28	-	20.5	16	125 140 160 180 200 224 250 280 315 355 400 450	M16 x 40	Tightening torque: 150

d mm	d3 mm	d4 mm	d6 mm	t min.	M	l mm	Cap Screw	(Nm)
38 **40**	18	28	-	20.5	16	160 180 200 224 250 280 315 355 400 450 500 550 600	M16 x 40	Tightening torque: 150
48 **50**	14	22	28	16	12	180 200 224 250 280 315 355 400 450 500 550 600	M12 x 50	Tightening torque: 85
60 63	18	28	34	20.5	16	250 280 315 355 400 450 500 550 600	M16 x 60	Tightening torque: 200
80	18	28	54	20.5	16	280 315 355 400 450 500 550 600	M16 x 60	Tightening torque: 200

Order: **G166.** d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Operating Components: All sliding systems also can be used with ball cage bush.

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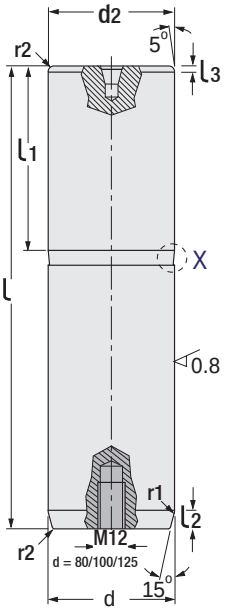
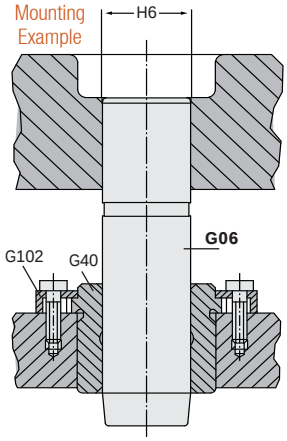


Guide Pillar

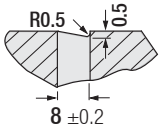
Reference: FCA

Code: G06

DIN 9833



X Detail



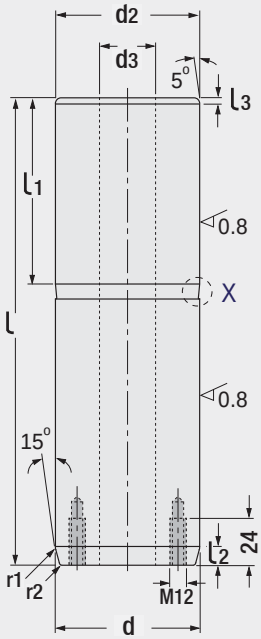
Code: G06

d f6	l mm	d2 r6	l2 +0.8	l3 +0.8	l1 +0.8	r1	r2
ø 32	160	32	8	4	45	15	2
	180						
	200						
ø 40	200	40	8	4	56	20	2
	224						
	240						
ø 50	224	50	10	4	70	20	2.5
	250						
	280						
ø 63	250	63	10	4	80	25	2.5
	280						
	315						

d f6	l mm	d2 r6	l2 +0.8	l3 +0.8	l1 +0.8	r1	r2
ø 80	250	80	10	4	100	30	2.5
	280						
	315						
	355						
ø 100	315	100	10	4	125	30	3
	355						
	400						
ø 125	355	125	12	4	140	40	4
	400						
	450						
	500						
	550						

Order: G06. d x l

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC



Guide Pillar

Reference: FCA

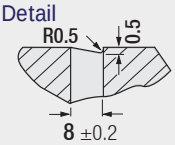
Code: G07

DIN 9833

Order: G07. d x l

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

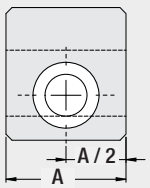
X Detail

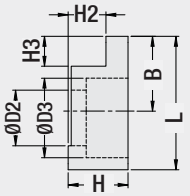


Code: G07

d f6	l mm	d2 r6	d3 ±0.2	l2 +0.8	l3 +0.8	l1 +0.8	r1	r2
80	250	80	40	10	4	100	30	4
	280							
	315							
	355							
100	315	100	50	10	4	125	30	5
	355							
	400							
125	355	125	65	12	5	140	30	5
	400							
	450							
	500							
	550							

Guide Pillar & Bush Clamp





Order: G102. Form

Code: G102

Ø d1 Bush / Pillar	l mm	A mm	B mm	H mm	H2 mm	H3 mm	D2 Ø	D3 Ø	Form Screw
25 - 32 40 - 50	20	20	12.5	10	6.3	5	7	11	**A** M.6 x16
63 - 80 100 - 125 160	32	32	21	16	10	10	11.5	17.5	**D** M.10 x25

FCA FIAT CHRYSLER AUTOMOBILES

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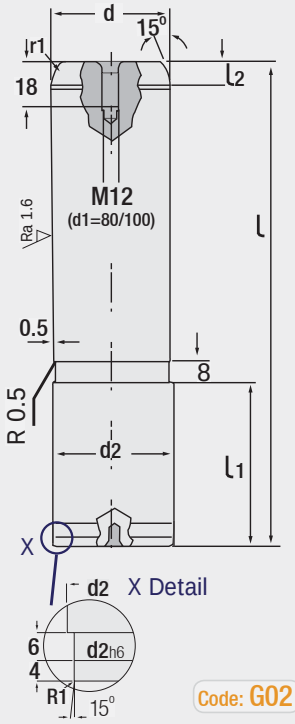
Guide Pillar Code: G02

Reference: NAAMS



d f6	l mm	d2 r6	l1 mm	l2 mm	r1
25	140	25	40	4	2
	160				
	180				
32	140	32	45	6	2
	160				
	180				
	200				
40	160	40	56	8	2
	180				
	200				
	224				
	250				
50	160	50	70	12	2.5
	180				
	200				
	224				
	250				
	280				
	315				

Code: G02

d f6	l mm	d2 r6	l1 mm	l2 mm	r1
63	200	63	80	12	2.5
	224				
	250				
	280				
	315				
	355				
	400				
80	250	80	100	15	3
	280				
	315				
	355				
	400				
	500				
100	315	100	125	18	3
	355				
	400				
	500				

Order: G02. d x l

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Code: G01

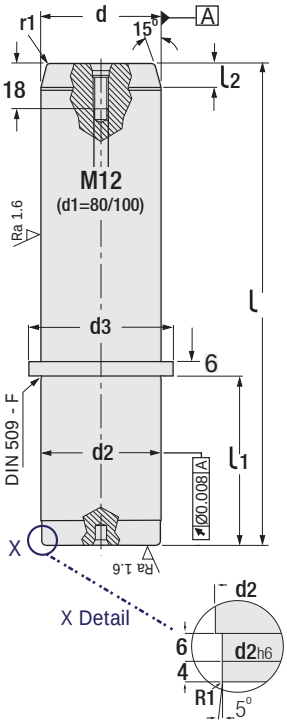
d f6	l mm	d2 r6	d3	l1 mm	l2 mm	r1
25	140	25	33	40	4	2
	160					
	180					
32	140	32	40	45	6	2
	160					
	180					
	200					
40	160	40	50	56	10	2
	180					
	200					
	224					
	250					
50	160	50	60	70	12	2
	180					
	200					
	224					
	250					
	280					
	315					
63	200	63	80	80	12	2
	224					
	250					
	280					
	315					
	355					
	400					
80	250	80	90	100	15	2
	280					
	315					
	355					
	400					
	500					
100	315	100	110	125	20	3
	355					
	400					
	500					

Order: G01. d x l

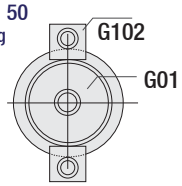
Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Guide Pillar with Centre Collar Code: G01

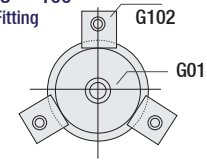
Reference: NAAMS



d1 = 25 ~ 50
Clamp Fitting



d1 = 63 ~ 100
Clamp Fitting



Ford

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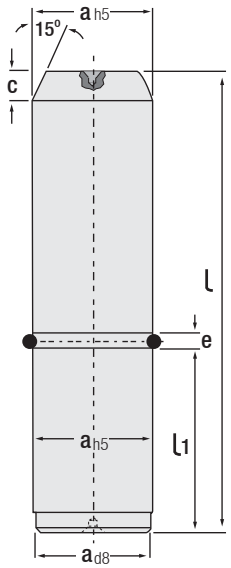
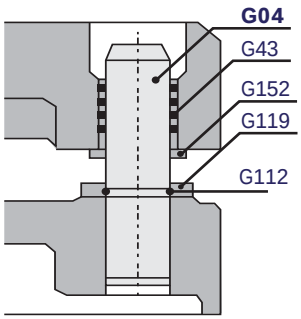


Guide Pillar
Code: G04

Reference: PSA



Code: G04

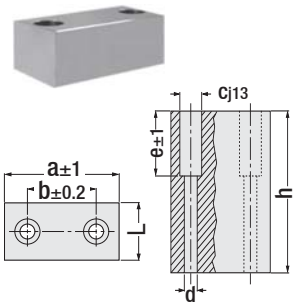
a h5	l mm	a d8	l1 mm	c mm	e
25	100	25	40	8	3
	125				
32	125	32	45	8	3
	220				
40	180	40	63	8	3
	200				
	220				

a h5	l mm	a d8	l1 mm	c mm	e
50	220	50	70	10	5
	250				
	280				
63	250	63	80	10	6
	315				
80	315	80	100	10	8
	355				

Order: G04. a x l

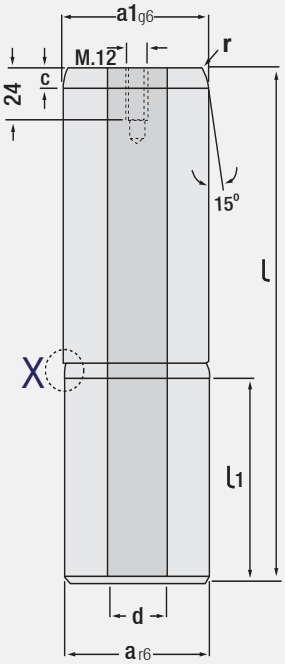
Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Compensation Block
Rerefence: PSA
Code: G81



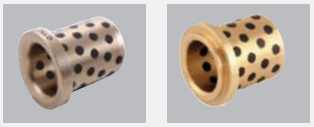
h	a	l	b	c	d	e
55	80	30	55	18	9	20
55	110	40	80	22	14	20
101	80	35	55	18	9	57
137	100	50	60	22	13	55
138	100	45	55	22	14	43
138	120	60	80	22	14	43

Order Example: G81. h x a



Guide Pillar
Code: G05

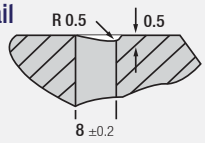
Reference: PSA



Order: G05. a x l

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

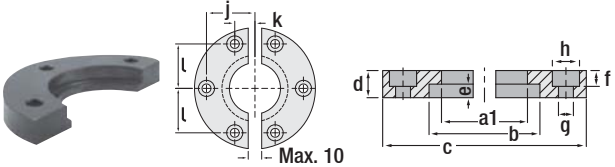
X - Detail



Code: G05

a r6	l mm	a1 g6	l1 mm	c mm	d Ø	r
100	250	100	125	10	50	3
	280					
	315					
	355					
	400					
125	315	125	140	12	65	4
	355					
	400					
	450					

Bush Holder Flange
Code: G118



Bush	a1	b	c	d	e	f	g	h	j	k	l
25	32	41	72	10	5	7	6.6	12	-	20	20
32	40	51	80	12	6	7	6.6	12	-	21	25
40	50	61	100	12	8	7	6.6	12	41	14	38.5
50	63	72	125	16	10	9	9	16	49	17	46
63	80	91	140	20	12	11	11	18	57.5	17	55
80	100	113	180	25	16	13	14	22	72	20	70
100	125	141	200	32	20	13	14	22	85	25	81

Order Example: G118. Bush (G118.25)

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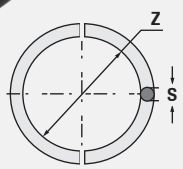
Circlip

Code: G112

G02-G03-G04-G05
G06-G07-G09-G20
It is used with above guide pillars.



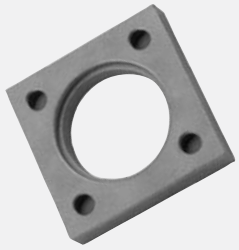
Pillar	z	s
Ø **25**	22.5	2.5
Ø **32**	28	4
Ø **40**	36	4
Ø **50**	46	4
Ø **63**	57	6
Ø **80**	74	6
Ø **100**	94	6

Order: G112. Pillar

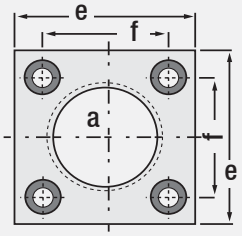
Square Flange for Guide Pillar

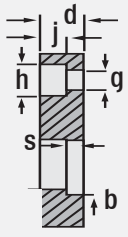
Reference: CNOMO
Reference: PSA

Code: G119



G03
G04
G05
It is used with above guide pillars.





a Pillar	b	d	e	f	g	h	j	s
25	28	10	45	31	6.6	11	7	2.7
32	37	10	56	36	6.6	11	7	4.2
40	45	12	70	50	6.6	11	7	4.2
50	55	14	80	55	9	16	9	4.2
63	70	18	100	70	11	18	11	6.2
80	87	20	110	80	13	22	14	6.2
100	107	20	140	100	13	22	14	6.2

Order: G119. a (pillar)

Code: G03

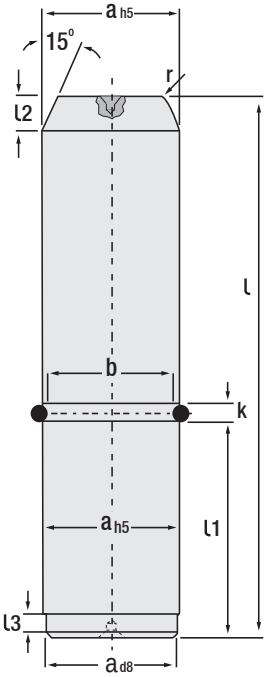
a h5	l mm	b	l1 mm	l2 mm	l3 mm	k	r
25	100	22.3	25	8	8	2.7	2
	125						
	140						
	160						
	180						
	200						
	224						
32	125	27.8	32	10	12	4.2	2
	140						
	160						
	180						
	200						
	224						
	250						
40	180	35.8	63	12	12	4.2	2
	200						
	224						
	250						
	280						
	315						
50	200	45.8	80	16	12	4.2	2.5
	224						
	250						
	280						
	315						
	355						
	400						
63	250	56.8	100	16	18	6.2	2.5
	280						
	315						
	355						
	400						
	450						
	500						
80	315	73.8	125	16	18	6.2	3
	355						
	400						
	450						
	500						
100	355	93.8	160	16	18	6.2	3
	400						
	450						
	500						

Order: G03. a x l

Guide Pillar

Reference: CNOMO

Code: G03

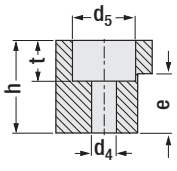


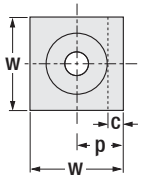
Bush Clamp

Code: G102E

Reference: CNOMO

Order Example:
G102E.40





Bush	w	p	h	e	c	t	d_4	d_5
Ø **40**	18	9.5	12	8	3	7	6.6	11
Ø **50**	22	12	16	10	4	9	9	15
Ø **63**	26	15	20	12	5	11	11	18
Ø **80**	26	15	25	16	5	11	11	18
Ø **100**	26	15	32	20	5	11	11	18

Automotive Standards RENAULT

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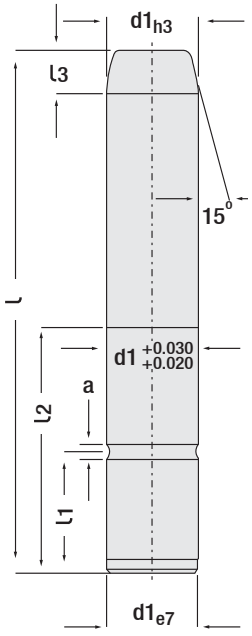
Guide Pillar for Cast Block Bush

Code: G20

Flange Cast Bush - Rectangular

Code: G79

G20 Guide pillar type using with **G80** rectangular flange cast bush.
In progressive form dies, it is reduced disassembly / assembly period of guide pillar & bush. No need to opening of guide pillar & bush holes in die is required. It reduces labor cost and also saves time by shortening production period of die. These are die components consisting of guide bush set inserted into lower and upper case.



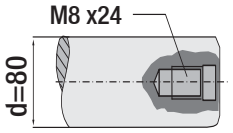
Flange Cast Bush Rectangular

Code: G79

Inner has been honed to Ød +0.015

Dimension details of rectangular flange cast bush are same as other bushes (G80..)

Order: G79. d1



Guide Pillar

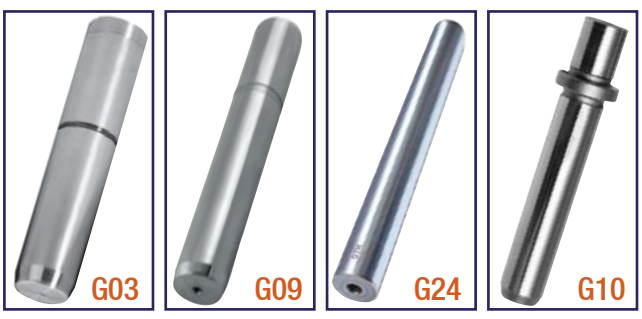
Code: G20

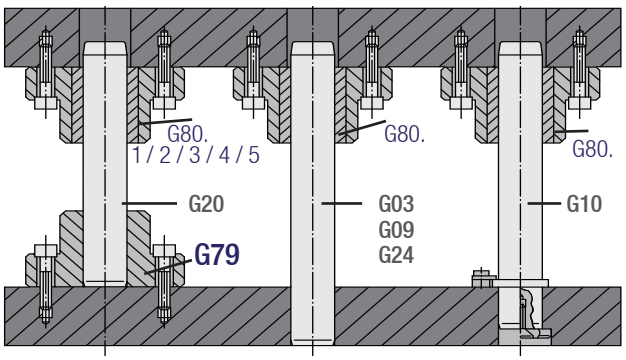
Ø d1	l mm	l1	l2	a	l3
40	180	37	77	8	10
	220				
	260				
	300				
	355				
	400				
50	200	47	95	8	10
	240				
	280				
	315				
	355				
	400				
	450				
63	240	60	120	8	12
	280				
	315				
	355				
	400				
	450				
80	240	60	120	8	16
	280				
	315				
	355				
	400				
	450				
	500				

Order: G20. d1 x l
Cast Bush: G79 x d1

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

IMPORTANT: Check perpendicularity of guide pillars after mounting.





Note: Other guide pillars conforming to rectangular flange cast bush connection. It can be used with **G03 - G09 - G24 - G10 - G20** in dies.

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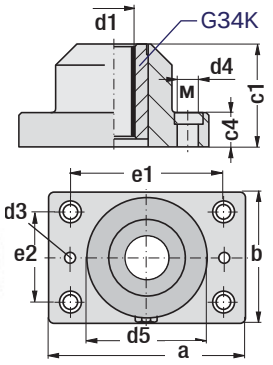
Flange Cast Bush - Rectangular

Steel Type

Code: G80.1

G20 + G79 + G80.1
Set as per request

Order: G80.1 x d1



Steel Type

Code: G80.1

Upper and lower parts of flange cast bushes have been machined **G34K Guide Bush** and grease fitting have been added.

d1	a mm	b mm	c1	c4	d3 Pin	d4 M	Ø d5	e1	e2
40	130	80	77	30	ø10	13 M12	70	95	45
50	160	96	95	35	ø10	15 M14	83	118	55
63	180	110	120	35	ø12	17 M16	94	132	62
80	215	130	120	40	ø14	21 M20	112	160	75

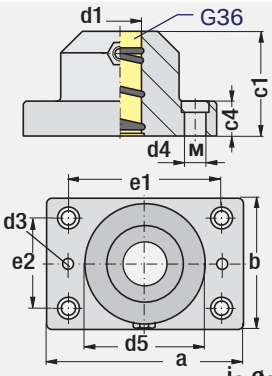
Flange Cast Bush - Rectangular

Bronze Type

Code: G80.2

G20 + G79 + G80.2
Set as per request

Order: G80.2 x d1



Bronze Type

Code: G80.2

Upper and lower parts of flange cast bushes have been machined **G36 Guide Bush** and grease fitting have been added.

d1	a mm	b mm	c1	c4	d3 Pin	d4 M	Ø d5	e1	e2
40	130	80	77	30	ø10	13 M12	70	95	45
50	160	96	95	35	ø10	15 M14	83	118	55
63	180	110	120	35	ø12	17 M16	94	132	62
80	215	130	120	40	ø14	21 M20	112	160	75

Flange Cast Bush - Rectangular

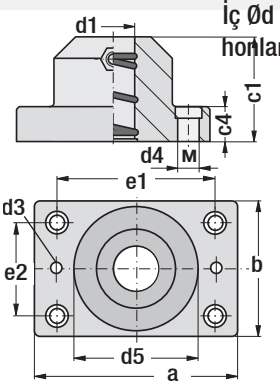
Cast Type

Code: G80.3

G20 + G79 + G80.3
Set as per request

Order: G80.3 x d1

İç Ød +0.015 honlanmıştır.



Cast Type

Code: G80.3

Upper and lower parts of Flange cast bushes have been machined inner hole has been machined as cast bush bearing.

d1 R6	a mm	b mm	c1	c4	d3 Pin	d4 M	Ø d5	e1	e2
40	130	80	77	30	ø10	13 M12	70	95	45
50	160	96	95	35	ø10	15 M14	83	118	55
63	180	110	120	35	ø12	17 M16	94	132	62
80	215	130	120	40	ø14	21 M20	112	160	75

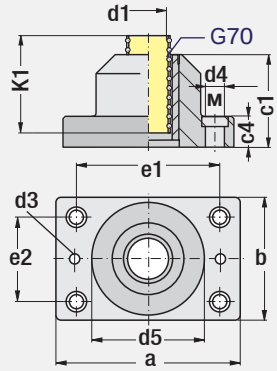
Flange Cast Bush - Rectangular

Ball Cage Type

Code: G80.4

G20 + G79 + G80.4
Set as per request

Order: G80.4 x d1



Ball Cage Type

Code: G80.4

Upper and lower parts of flange cast bushes have been machined **G38 Guide Bush** and **G70 Ball Cage Bush** have been added.

d1	a mm	b mm	c1	c4	d3 Pin	d4 M	Ø d5	e1	e2	K1
40	130	80	77	30	ø10	13 M12	70	95	45	80
50	160	96	95	35	ø10	15 M14	83	118	55	105
63	180	110	120	35	ø12	17 M16	94	132	62	140
80	215	130	120	40	ø14	21 M20	112	160	75	140

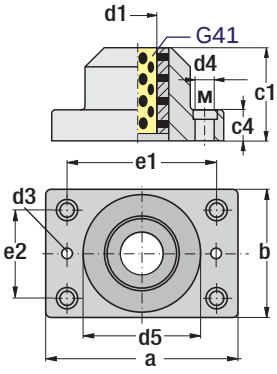
Flange Cast Bush - Rectangular

Self-Lubricating Type

Code: G80.5

G20 + G79 + G80.5
Set as per request

Order: G80.5 x d1



Self-Lubricating Type

Code: G80.5

Upper and lower parts of flange cast bushes have been machined **G41 Self-Lub. Guide Bush** have been added.

d1	a mm	b mm	c1	c4	d3 Pin	d4 M	Ø d5	e1	e2
40	130	80	77	30	ø10	13 M12	70	95	45
50	160	96	95	35	ø10	15 M14	83	118	55
63	180	110	120	35	ø12	17 M16	94	132	62
80	215	130	120	40	ø14	21 M20	112	160	75

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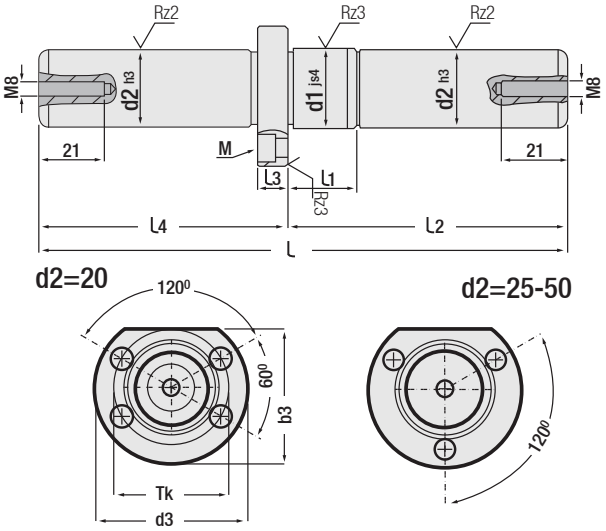
NEW

Guide Pillar with Centre Flange

Code: G135

(Screw clamping guide pillar with centre collar)

It can be used in standard pillar systems with many bearing bush connections. No clamping is necessary for die mounting position. It is fixed with hexagon socket head cap screws. The feature of centre flange: The protruding parts near the plate is prevented and a partial empty area is obtained in die mounting. It can be directly mounted in slots drilled on die plate.
Shrink fit punchdown should not be done during mounting.
It can be inserted with compatible tolerances with medium / shrink fit (bushes) and positioned with screws.



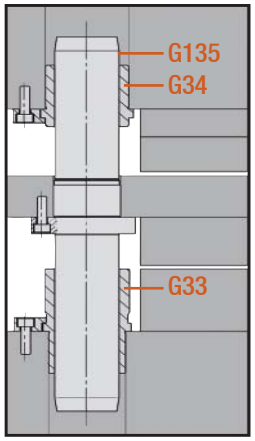
Compatible Bushes

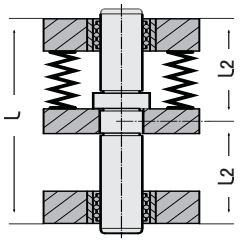
d2	l	l1	l2	l4	l3	d1	d3	b3	Tk	M
20	150	22	80	70	10	22	44	39	33	M5 4 pcs.
	160		90	70						
	180		90	90						
	200		90	110						
25	170	22	90	80	10	26	50	45	38	M5 3 pcs.
	190		110	80						
	210		120	90						
	190		90	100						
	200		100	100						
	260		160	100						
	220		100	120						
30	190	27	100	90	10	32	58	53	46	M5 3 pcs.
	200		110	90						
	260		160	100						
	220		110	110						
	230		120	110						
	250		120	130						
	260		130	130						
32	190	27	100	90	10	34	60	55	48	M5 3 pcs.
	200		110	90						
	260		160	100						
	220		110	110						
	230		120	110						
	250		120	130						
	260		130	130						
40	210	27	110	100	12	42	70	65	56	M6 3 pcs.
	220		120	100						
	240		120	120						
	250		130	120						
	270		130	140						
50	250	36	120	130	15	52	80	75	66	M6 3 pcs.
	260		110	150						
	270		120	150						

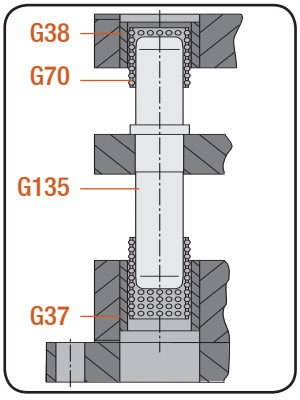
Guide Pillar with Centre Flange

(Ball cage bearing unit)

Dies which are designed with this ball cage bush have high speed and rigid connection. Hole tolerance for shrink fit is N5.
Fixing place of die guide pillar affects securing lateral load resistance of die bushings. In dies with guide plates or having guide pillar mounted to die from bottom or top, if the distance (L) applying power is equal, bending and rotary values of guide pillars are equal. By securing die guide pillar to the guide plate, there will be important improvements at bending values of pillars. Until the distance (L / 2) between application point of power and fastening surface reduces to half, load lifting capacity is increased **8 times**.







Order: G135. d2 x l 2 x l

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

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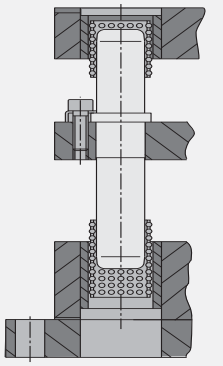
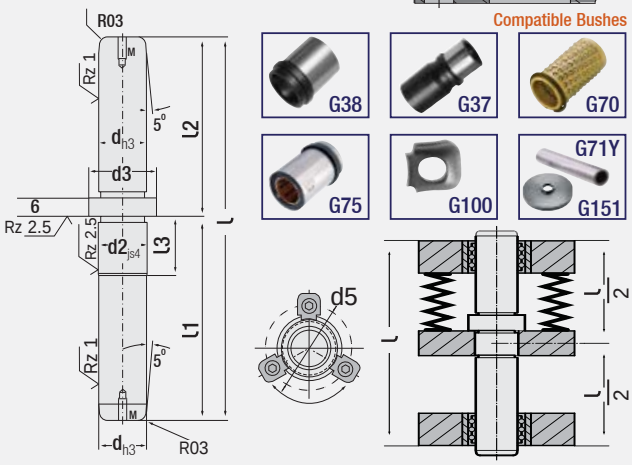
Code: G08

Guide Pillar with Centre Fixing





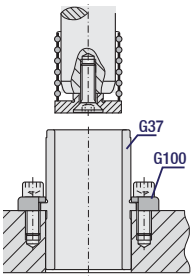
Compatible Bushes

Hole tolerance for shrink fit is N5. Fixing place of die guide pillar affects securing lateral load resistance of die bushings. In dies with guide plates or having guide pillar mounted to die from bottom or top, if the distance (L) applying power is equal, bending and rotary values of guide pillars are equal. By securing die guide pillar to the guide plate, there will be important improvements at bending values of pillars. Until the distance (L / 2) between application point of power and fastening surface reduces to half, load lifting capacity is increased **8 times**.

d	l	l1	l2	l3	d2	d3	d5	M
20	160	90	70	19	20.05	26	37	M8
	170	100	70					
	180	100	80					
	190	110	80					
	200	110	90					
	210	110	100					
25	180	100	80	22	25.05	32	43	M8
	190	110	80					
	200	110	90					
	210	120	90					
	220	120	100					
	230	120	110					
30	180	100	80	25	30.05	38	49	M8
	190	110	80					
	200	110	90					
	210	120	90					
	220	120	100					
	230	130	100					
	240	130	110					
	250	140	110					
40	200	110	90	27	40.05	50	61	M8
	210	120	90					
	220	120	100					
	230	130	100					
	240	130	110					
	250	140	110					

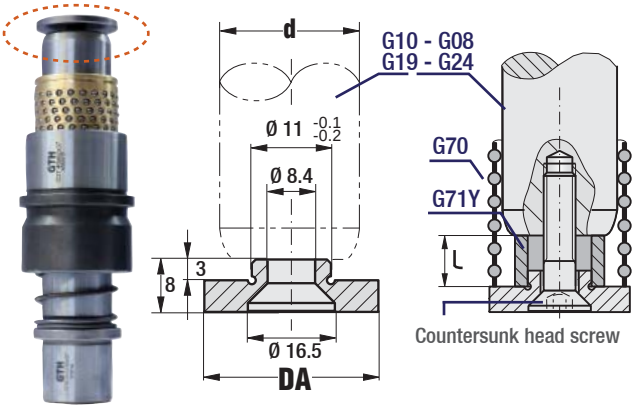
Order: G08. d x l

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC



Code: G151

Ball Cage Holder Flange
(Locking flange for ball cage)



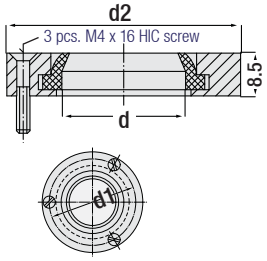
Holder Flange (locking flange for ball cage)
In ball cage bush systems, it prevents detaching of cage **(G70)** from guide pillar during operating. It is practical and provides convenience in die mounting.
In mounting to die: Spacer tube **(G71Y)** of ball cage stroke distance and countersunk head screw **(HIC)** can be adjusted in desired length.

d	DA	Pillar Dia.
20	25	Ø 20
25	30	Ø 25
30	37	Ø 30
40	47	Ø 40

d	DA	Pillar Dia.
50	57	Ø 50
60	67	Ø 60
63	70	Ø 63

Order: G151.d

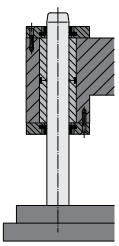
Material: 1.7131 (16MnCr5)



Perforated Flange

Code: G22

Pillar (d)	d1	d2
24 **25**	45	55
32 **30**	55	65
38 **40**	65	75
48 **50**	78	94
60 **63**	92	110



Guide Pillar Protection Flange: Guide pillar protection flange protects dirt to be occurred at dies or thrust etc. Different various usage areas can be created in dies.

Order: G22.d

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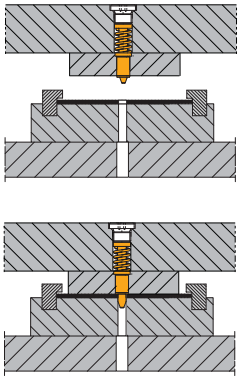
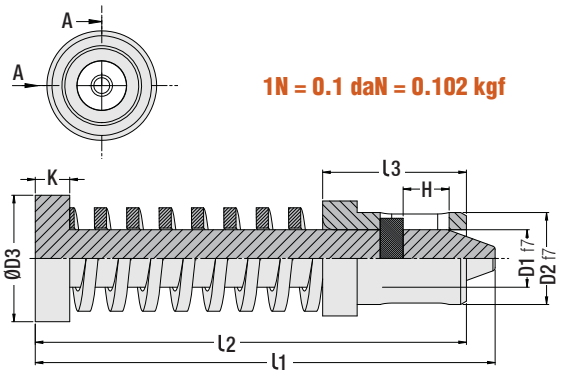
NEW



Pilot Unit

Code: G165

"G165" is used for centering of the moving sheet metal in progressive dies in each step. It is a compact and useful product.

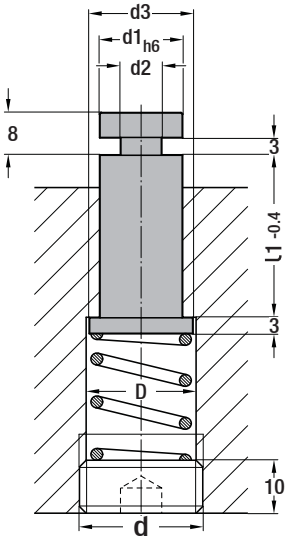


1N = 0.1 daN = 0.102 kgf

Order Code	F0 (N) preloaded	F1 (N) pressed	D1	l1	D2	D3	l2	l3	K	H
G165.05401	11	30	5	40	8	11	36	12	3	4.5
G165.05402	25	70								
G165.05403	30	84								
G165.05404	40	112								
G165.05405	55	155								
G165.05441	11	30	5	44	8	11	40	16	3	4.5
G165.05442	25	70								
G165.05443	30	84								
G165.05444	40	112								
G165.05445	55	155								
G165.08481	44	122	8	48	12	16	41	16	4	4.5
G165.08482	58	164								
G165.08483	79	220								
G165.08484	123	346								
G165.08485	165	460								
G165.08486	189	530								
G165.08521	44	122	8	52	12	16	45	20	4	4.5
G165.08522	58	164								
G165.08523	79	220								
G165.08524	123	346								
G165.08525	165	460								
G165.08526	189	530								
G165.10631	140	391	9.8	63.2	15	18	53	28	4	3.5
G165.10632	245	680								
G165.10633	540	1512								

Sheet Lifting Pin

Code: G23



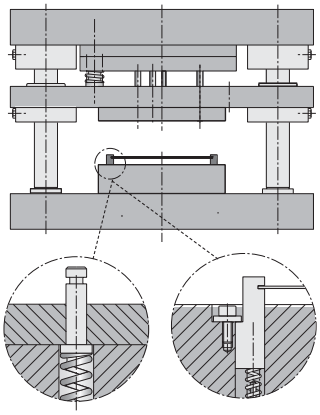
(for sheet lifting) Code: G23

d1 h6	l1-0.4 mm	Ø d2	Ø d3	D d
8	20	5	10	10.5 M.12 x1.5
	25			
	32			
	40			
10	25	6	12	12.5 M.14 x1.5
	32			
	40			
	50			
13	25	7	16	16.5 M.18 x1.5
	32			
	40			
	50			
16	32	8	20	21 M.22 x1.5
	40			
	50			

Order: G23. d1 x l1

Material: 1.7131 (16MnCr5)
Hardness: 58-60 HRC

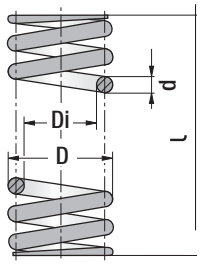
Mounting Example



It is used to align and lifting sheet in progressive / multi-stage forming dies. G145 - Compression spring set screw and round steel spring can be used for mounting.

Round Steel Spring

Code: G23S



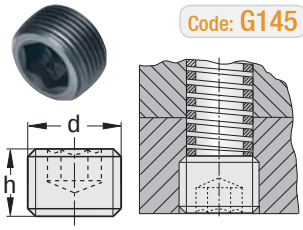
(sheet lifting spring)

D	Di	d	L
10.5	8.5	1.5	40
12.5	10.5	1.5	55
16.5	13	2	40
21	17	2.5	40

L: Spring length / die plate selection as per dimension.

Compression Spring Set Screw

Code: G145



d Thread	dh Hole	h Length	SW Allen
M.12 x 1.5	10.5	10	6
M.14 x 1.5	12.5	10	6
M.18 x 1.5	16.5	10	8
M.22 x 1.5	20.5	10	8

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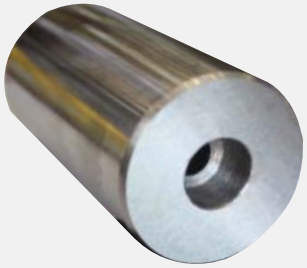
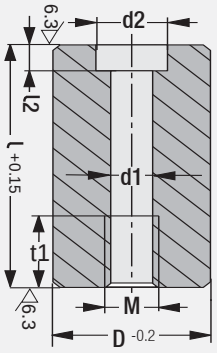




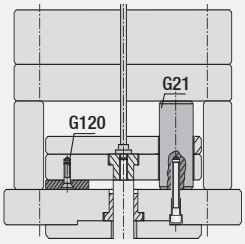
Support Pillar for Injection Mould

(Ejector plate / thrust wedge)

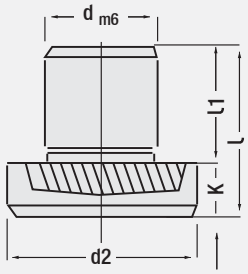
Code: G21

D	l	d1	d2	l2	t1	M
32	47	6.5	11	7.5	15	M8
	57					
	67					
	77					
	87					
	97					
40	47	8.5	15	10	20	M10
	57					
	67					
	77					
50	87					
	97					
	117					
63	57	8.5	15	10	20	M10
	67					
	77					
	87					
80	97	10.5	18	12	25	
	117					
	137					
	157					

In injection moulds;
The thrust wedge that can be used in order to avoid dent / load between support plate (H4) and bottom joint plate (H5A) also can be provided working of ejector plates more rigidly and sensitively.
In order to avoid clicking (gap), **G110 mounting flange** can be used.



Order: G21. D x l



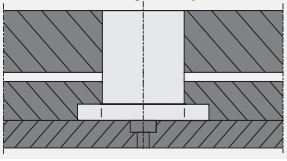
Thrust Pin

Code: G120

Stop / Thrust Pin: It is compatible to use between holder plates of injection moulds or dies.

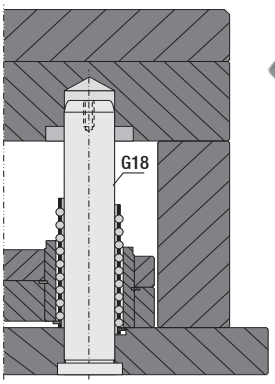
d m6	l mm	l1 mm	d2	K
8	17	12	16	5
14	21	15	24	6

Mounting Example



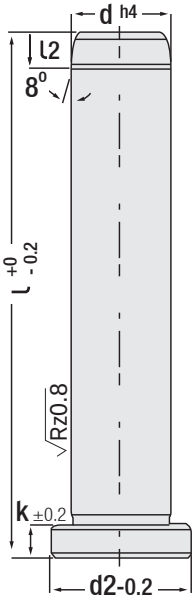
Order: G120. d x l

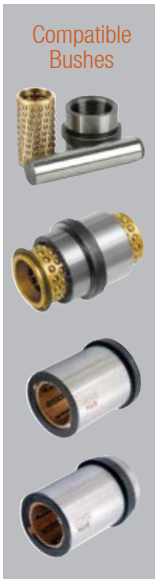
Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC



Guide Pillar for Ball Cage

Code: G18





It is used in ejector plates of injection moulds and ejector plates with ball cage bush working precision and serially. In addition, it is compatible to work with intermediate plate of progressive dies / dies as auxiliary centering component.

Code: G18

d	l	l2	d2	k
12	80	4	16	4
	100			
	120			
18	120	7	22	6
	140			
	160			
20	120	7	24	6
	140			
	160			
	200			
25	140	7	28	6
	160			
	200			
	240			
30	160	7	36	6
	200			
	240			
40	180	10	48	10
	200			
	240			
	300			

Order: G18. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

G18 - Areas of Usage:

* In ejector plates, ball cage bush precision ejector systems.
* It is used in dies as intermediate centering components.

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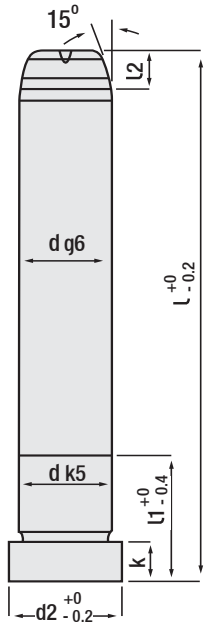
Guide Pillar
(without oil groove)

Code: G17

It is suitable as ejector plates and core systems at injection moulds and as die inner guide pillar in dies. It is compatible using with self-lubricating bronze bushes or bushing components with oil groove.



d	l	l1	l2	d2	k
10	40	13	4	12	3
	60				
	80				
	100	15			
	120				
12	40	18	4	16	6
	60				
	80				
	100				
	120	22			
	140				
	160				
14	60	22	4	18	8
	80				
	100				
	120				
	140	26			
	160				
	180				
16	40	16	7	20	8
	60	24			
	80				
	100				
	120				
	140	26			
	160				
	180				
	200				

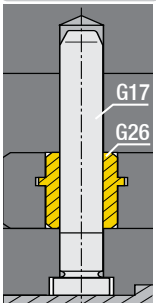
d	l	l1	l2	d2	k
18	60	26	7	22	8
	80				
	100				
	120				
	140	28			
	160				
	180				
	200				
	240				
20	60	28	7	24	8
	80				
	100				
	120				
	140	32			
	160				
	180				
	200				
	240				
22	80	37	7	26	15
	100				
	120				
	140	43			
	160				
	180				
	200				
	220				
	240				
	300				

d	l	l1	l2	d2	k
24	80	39	7	28	15
	100				
	120				
	140	45			
	160				
	180				
	200				
	220				
	240				
	300				
25	80	35	7	28	15
	100				
	120				
	140				
	160	44			
	180				
	200				
	220				
	240				
	300				
30	100	45	7	36	15
	120				
	140				
	160				
	180	53			
	200				
	220				
	240				
	300				
40	160	55	10	48	15
	180				
	200				
	220	63			
	240				
	280				
	300				
	320				
	360				
50	160	65	10	58	15
	200				
	240				
	300				
	360				

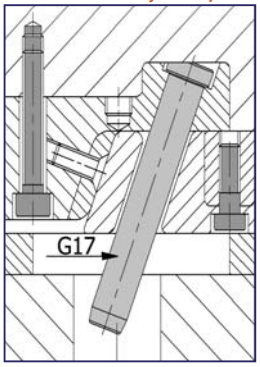
NEW

Note: Ø 25 Series are added in our stocks.

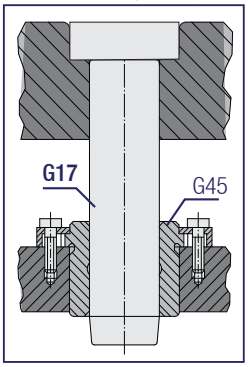
GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).



Mould Mounting Example



Die Mounting Example



Order: G17. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Operating Components: with all lubricated type bushes in injection moulds / dies.

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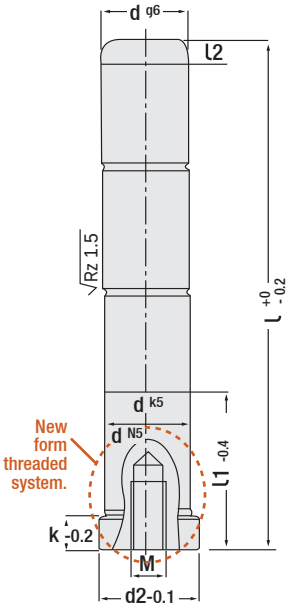
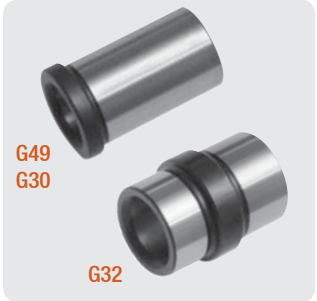
Guide Pillar
(with oil groove)

Code: G11

It can be fixed by thread in cap direction. By disassembling mould / die without dismantling, it provides process iteration advantage. The corners at oil grooves are chamfered (it reduces friction).





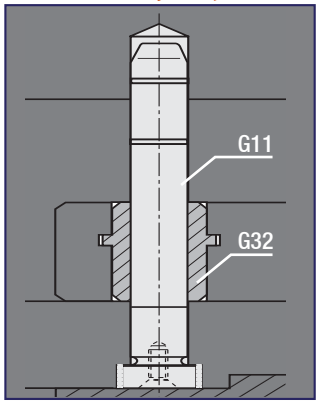
Order: G11. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Operating Components: With all unlubricated steel bushes in injection moulds or dies.

d	l	l1	l2	d2	k	M
10	40	13	4	12	3	-
	60					
	80					
	100	15				
	120					
12	40	18	4	16	6	-
	60					
	80					
	100					
	120	22				
	140					
	160					
14	60	22	4	18	8	-
	80					
	100					
	120					
	140	26				
	160					
	180					
16	40	16	4	20	8	6
	60	24				
	80					
	100					
	120					
	140	26				
	160					
	180					
	200					
	220					
	250					
	300					

Mounting Example



d	l	l1	l2	d2	k	M
18	60	26	4	22	8	8
	80					
	100					
	120					
	140	28				
	160					
	180					
	200					
	240					
20	60	28	6	24	8	8
	80					
	100					
	120					
	140					
	160	32				
	180					
	200					
	220					
	240					
	250					
	300					
	320					
22	80	37	6	26	15	8
	100					
	120					
	140	43				
	160					
	180					
	200					
	220					
	240					
	300					
24	80	39	6	28	15	8
	100					
	120					
	140	45				
	160					
	180					
	200					
	220					
	240					
	300					

d	l	l1	l2	d2	k	M
NEW Note: Ø 25 Series are added in our stocks. 25	80	35	6	29	10	8
	100					
	120					
	140					
	160	44				
	180					
	200					
	220					
	250					
	300					
	320					
	350					
30	100	45	6	36	15	8
	120					
	140					
	160					
	180	53				
	200					
	220					
	240					
	300					
	360					
	400					
40	160	55	10	48	15	8
	180					
	200					
	220	63				
	240					
	280					
	300					
	320					
	360					
50	160	65	10	58	15	8
	200					
	240					
	300	73				
	360					

IMPORTANT!
Injection Mould:
Our guide pillars & bushes cover standard mould systems.
But, guide pillar & bushes with different tolerances should be selected for aluminum injection moulds (high temperature / pressure). It should be requested from our company (production with special materials).

ATTENTION !
Please do not use two products together that have no oil grooves.
One of these products should be oil grooved.

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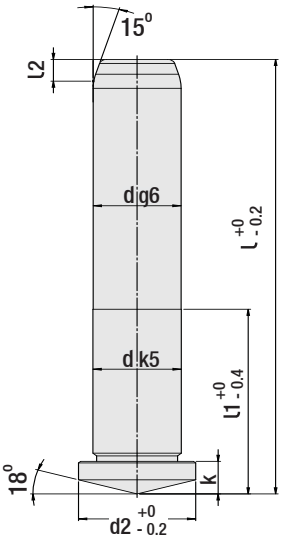
NEW

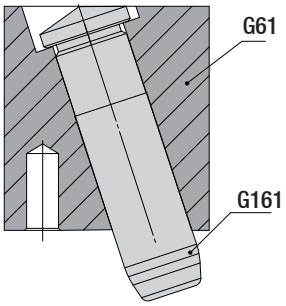
Angled Guide Pillar

Code: G161

- **Compatible Guide Bush:** "G61"
- No reworking necessary before mounting.



Mounting Example



Order: G161. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Code: G161

d	l	l1	l2	d2	k
12	40	34	4	16	6
	60				
	80				
	100				
	120				
	140				
	160				
14	60	34	4	18	8
	80				
	100				
	120				
	140				
	160				
	180				
16	40	43	7	20	8
	60				
	80				
	100				
	120				
	140				
	160				
	180				
	200				
20	60	43	7	24	8
	80				
	100				
	120				
	140				
	160				
	180				
	200				
	240				
25	80	52	7	28	15
	100				
	120				
	140				
	160				
	180				
	200				
	220				
	240				
	300				
30	100	60	7	36	15
	120				
	140				
	160				
	180				
	200				
	220				
	240				
	300				

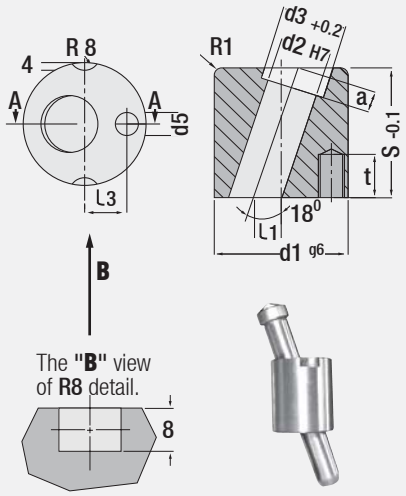
NEW

Angled Guide Bush

Code: G61

(Core pillar holder)

This unit eliminates angular perforation requirement. To insert this unit, only a hole is perforated at the front of the mould. **Angled guide bush** can be used with **G161, G14** or **G17** guide pillar.



Angled Guide Bush

Code: G61

d2 H7	s -0.1	d1 g6	a	d3 +0.2	L1 ±0.15	L3	d5	t
12	36	32	6	17	7	10	M6	11
14	36	36	8	19	7	12	M8	16
16	46	40	8	21	8.5	13.5	M8	16
20	46	45	8	25	8.5	15	M8	16
25	56	50	15	29	10	16	M8	16
30	66	63	15	37	12	21	M10	20

Order: G61. d2

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

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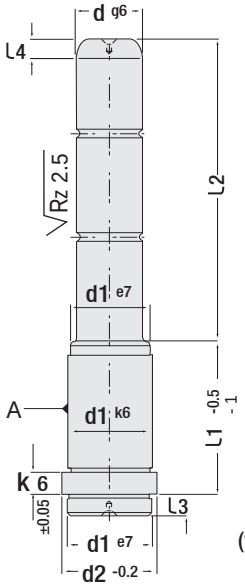
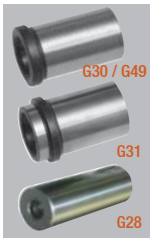
Code: G13

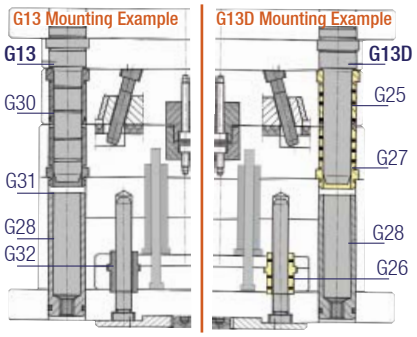
Guide Pillar with Centring Collar
(with oil groove & without oil groove)



Code: G13

(without oil groove)
"As per request"
Code: G13D





Guide Pillar with Centring Collar (with oil groove & without oil groove) Code: G13

d	L1	L2	L3	L4	d1	d2	k
15 **14**	17	35 55 75 95	9	5	20	25	6
15 **14**	22	30 50 70 90 110 125 150	9	5	20	25	6
15 **14**	27	30 45 65 85 105 125 145 165	9	5	20	25	6
15 **14**	36	35 55 75 95 115 125 145 155	9	5	20	25	6
15 **14**	46	35 45 65 85 105 125 145	9	5	20	25	6
15 **14**	56	35 55 75 95 135	9	5	20	25	6
15 **14**	66	55 65 85 95 105 125	9	5	20	25	6
15 **14**	76	35 55 75 95 125	9	5	20	25	6
15 **14**	86	55 75 95	9	5	20	25	6
15 **14**	96	55 75 95	9	5	20	25	6
15 **14**	116	75	9	5	20	25	6
18 **20**	17	35 55 75 120	9	5	26	31	6
18 **20**	22	35 45 65 85 95 115	9	5	26	31	6
18 **20**	27	35 45 65 85 105 125 165 225 245	9	5	26	31	6

Order: **G13.** d x l1 x l2 (with oil groove)

Order: **G13D.** d x l1 x l2 (without oil groove)

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Note: To avoid wrong closing of mould holder plates, 2 different products are used.
Main dimensions: 14 - 20 - 24 - 30 - 40 other **auxiliary dimensions: 15 - 18 - 22 - 32 - 42.**
To avoid wrong closing of mould holder plates, can be used at 3 main dimensions guide pillar and 1 auxiliary dimension guide pillars. **GTH** mould pillars were polished with surface polishing machine at final stage of production.
The products with oil groove are available in our stocks.

To be continued on the next page

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Guide Pillar with Centring Collar

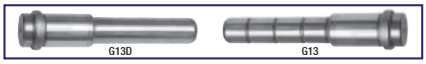
Code: G13 (with oil groove) Code: G13D (without oil groove)

d	l1	l2	l3	l4	d1	d2
18 **20**	36	35	9	5	26	31
		55				
		75				
		95				
		115				
		135				
		165				
		225				
		255				k:6
18 **20**	46	35	9	5	26	31
		45				
		65				
		85				
		105				
		135				
		165				
		245				k:6
18 **20**	56	35	9	5	26	31
		55				
		75				
		95				
		115				
		135				
		155				k:6
18 **20**	66	35	9	5	26	31
		55				
		75				
		95				
		115				
		135				
		145				k:6
18 **20**	76	35	9	5	26	31
		55				
		75				
		95				
		115				
		135				k:6

d	l1	l2	l3	l4	d1	d2
18 **20**	86	55	9	5	26	31
		75				
		95				
		125				
		135				k:6
18 **20**	96	55	9	5	26	31
		75				
		95				
18 **20**	116	75	9	5	26	31
		115				
18 **20**	136	135	9	5	26	31
22 **24**	17	35	9	5	30	35
		55				
		75				
22 **24**	22	35	9	5	30	35
		55				
		75				
		95				
		105				
		130				k:6
22 **24**	27	35	9	5	30	35
		45				
		65				
		85				
		105				
		125				
		165				
		205				
		245				k:6
22 **24**	36	35	9	5	30	35
		55				
		75				
		95				
		115				k:6

d	l1	l2	l3	l4	d1	d2
22 **24**	36	135	9	5	30	35
		165				
		205				
		245				
		285				k:6
22 **24**	46	35	9	5	30	35
		45				
		65				
		85				
		105				
		125				
		165				
		205				k:6
22 **24**	56	35	9	5	30	35
		55				
		75				
		95				
		115				
		135				
		165				
		205				k:6
22 **24**	66	35	9	5	30	35
		55				
		75				
		95				
		115				
		135				
		155				k:6
22 **24**	76	35	9	5	30	35
		55				
		75				
		95				
		115				
		145				k:6
22 **24**	86	55	9	5	30	35
		75				
		95				
		125				
		135				k:6
22 **24**	96	55	9	5	30	35
		75				
		95				
		125				

d	l1	l2	l3	l4	d1	d2
22 **24**	106	55	9	5	30	35
		75				
		95				
		115				
22 **24**	116	75	9	5	30	35
		115				
		155				
22 **24**	136	95	9	5	30	35
		135				
32 **30**	27	35	9	7	42	47
		45				
		65				
		85				
		105				
		125				
		145				
		165				
		185				
		245				
		285				k:6
32 **30**	36	35	9	7	42	47
		55				
		75				
		95				
		115				
		135				
		155				
		245				
		285				k:6
32 **30**	46	45	9	7	42	47
		65				
		85				
		105				
		125				
		145				
		165				
		245				
		285				



Order: G13. d x l1 x l2 (with oil groove)

Order: G13D. d x l1 x l2 (without oil groove)

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

IMPORTANT! Injection Mould: Our guide pillars & bushes cover standard mould systems. But, guide pillar & bushes with different tolerances should be selected for aluminum injection moulds (high temperature / pressure).
It should be requested from our company (production with special materials).

To be continued on the next page →

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Guide Pillar with Centring Collar (with oil groove & without oil groove) Code: G13

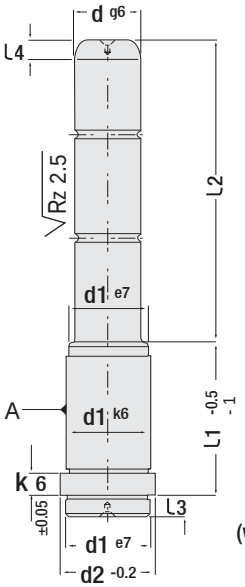
d	l1	l2	l3	l4	d1	d2	k
32 **30**	56	45	9	7	42	47	6
		55					
		75					
		95					
		115					
		135					
		155					
		175					
		245					
		295					
32 **30**	66	45	9	7	42	47	6
		55					
		75					
		95					
		115					
		135					
		155					
		175					
		245					
		295					
32 **30**	76	55	9	7	42	47	6
		75					
		95					
		115					
		135					
		155					
		225					
32 **30**	86	55	9	7	42	47	6
		75					
		95					
		115					
		135					
		155					
		225					
32 **30**	96	55	9	7	42	47	6
		75					
		95					
		115					
		135					
		155					
		205					
32 **30**	106	75	9	7	42	47	6
		95					
		115					
		125					
		145					
		165					

d	l1	l2	l3	l4	d1	d2	k
32 **30**	116	75	9	7	42	47	6
		95					
		115					
		135					
		155					
32 **30**	136	95	9	7	42	47	6
		115					
		135					
		155					
32 **30**	156	115	9	7	42	47	6
		155					
32 **30**	196	155	9	7	42	47	6
		195					
42 **40**	46	95	12	10	54	60	10
		165					
42 **40**	56	75	12	10	54	60	10
		115					
		155					
		195					
42 **40**	66	75	12	10	54	60	10
		135					
42 **40**	76	75	12	10	54	60	10
		115					
		175					
42 **40**	86	75	12	10	54	60	10
		135					
42 **40**	96	75	12	10	54	60	10
		115					
		155					
42 **40**	116	95	12	10	54	60	10
		135					
		195					
42 **40**	136	95	12	10	54	60	10
		135					
		215					
42 **40**	156	115	12	10	54	60	10
		155					
		215					
42 **40**	196	155	12	10	54	60	10
		195					
		235					
42 **40**	246	165	12	10	54	60	10
		245					

Order : G13. d x l1 x l2
(G13D = without oil groove)

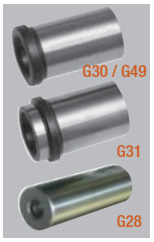
Code: G13

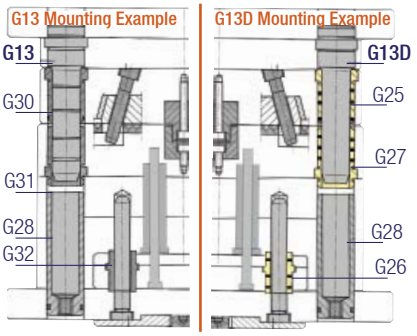
Guide Pillar with Centring Collar
(with oil groove & without oil groove)



Code: G13

(without oil groove)
"As per request"
Code: G13D





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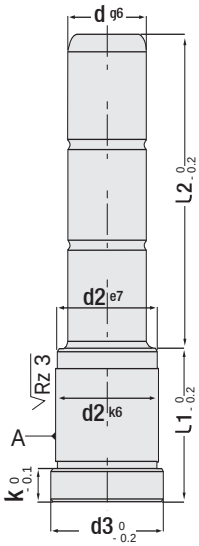
TKS for Turkish Mould Standard

Code: G12

Guide Pillar - Shouldered

(with oil groove & without oil groove)



Code: G12

(with oil groove)

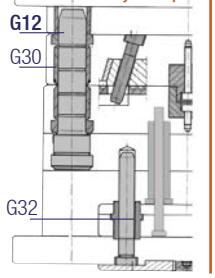
Code: G12D

(without oil groove)

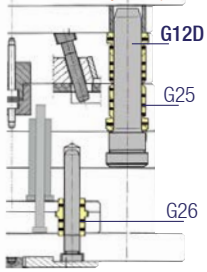
"As per request"

IMPORTANT! Injection Mould: Our guide pillars & bushes cover standard mould systems. But, guide pillar & bushes with different tolerances should be selected for aluminum injection moulds (high temperature / pressure). It should be requested from our company (production with special materials).

G12 Mounting Example



G12D Mounting Example



To be continued on the next page

Guide Pillar Code: G12 (with oil groove) Code: G12D (without oil groove)

d	l1	l2	d2	d3	k
12	26	26	16	19	4
		36			
		46			
		56			
12	36	26	16	19	4
		36			
		46			
		56			
12	46	26	16	19	4
		36			
		46			
		56			
		66			
14	26	26	20	25	6
		36			
		46			
		56			
		66			
		76			
14	36	26	20	25	6
		36			
		46			
		56			
		66			
		86			
14	46	26	20	25	6
		36			
		46			
		56			
		76			
		96			
14	56	26	20	25	6
		36			
		46			
		66			
		86			
		106			
16	26	26	24	28	6
		36			
		46			
		56			
		76			
		96			
16	36	26	24	28	6
		36			
		46			
		56			
		66			
		86			
		106			
16	46	26	24	28	6
		36			
		46			
		56			
		66			
		76			
		96			
		116			

d	l1	l2	d2	d3	k
16	56	26	24	28	6
		36			
		46			
		56			
		66			
		76			
		96			
		116			
16	66	26	24	28	6
		36			
		46			
		56			
		66			
		76			
		86			
		106			
		116			
16	76	26	24	28	6
		36			
		46			
		56			
		66			
		76			
		96			
		116			
16	86	26	24	28	6
		36			
		46			
		56			
		66			
		76			
		96			
		116			
18	26	26	26	31	6
		36			
		46			
		56			
		66			
		86			
18	36	26	26	31	6
		36			
		46			
		56			
		66			
		86			
		106			
18	46	26	26	31	6
		36			
		46			
		56			
		66			
		86			
		106			
		126			

d	l1	l2	d2	d3	k
18	56	26	26	31	6
		36			
		46			
		56			
		66			
		86			
		106			
		126			
18	66	26	26	31	6
		36			
		56			
		76			
		96			
		116			
18	76	26	26	31	6
		46			
		66			
		86			
		106			
		126			
18	86	26	26	31	6
		46			
		66			
		86			
		106			
		126			
20	26	26	28	32	6
		36			
		46			
		56			
		66			
		86			
20	36	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		96			
20	46	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		86			
		106			
20	56	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		96			
		116			

Order : G12. d x l1 x l2

(G12D = without oil groove)

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

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Guide Pillar - Shouldered

for Turkish Mould Standard

Code: G12 (with oil groove)

Code: G12D (without oil groove)

d	l1	l2	d2	d3	k
20	66	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		96			
		116			
20	76	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		86			
		106			
		126			
20	86	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		86			
		106			
		126			
20	96	26	28	32	6
		36			
		46			
		56			
		66			
		76			
		86			
		106			
		126			
25	26	26	34	38	8
		36			
		46			
		56			
		66			
		76			
		96			
25	36	26	34	38	8
		36			
		46			
		56			
		66			
		76			
		86			
		106			
25	46	26	34	38	8
		36			
		46			
		56			
		66			
		76			
		96			
		116			
25	56	26	34	38	8
		36			
		46			

d	l1	l2	d2	d3	k
25	56	56	34	38	8
		66			
		76			
		96			
		116			
25	66	26	34	38	8
		36			
		46			
		56			
		66			
		76			
		86			
		106			
		126			
25	76	26	34	38	8
		36			
		46			
		56			
		66			
		76			
		86			
		106			
		126			
25	86	36	34	38	8
		46			
		56			
		66			
		76			
		86			
		96			
		116			
		136			
25	96	36	34	38	8
		46			
		56			
		66			
		76			
		86			
		96			
		116			
		136			
25	106	46	34	38	8
		56			
		66			
		76			
		86			
		96			
		116			
		136			
30	36	36	39	43	10
		46			
		56			
		66			
		86			
		106			
30	46	36	39	43	10
		46			
		56			

d	l1	l2	d2	d3	k
30	46	66	39	43	10
		76			
		96			
		116			
30	56	36	39	43	10
		46			
		56			
		66			
		76			
		86			
		106			
		126			
30	66	36	39	43	10
		46			
		56			
		66			
		76			
		86			
		96			
		116			
		136			
30	76	36	39	43	10
		46			
		56			
		76			
		96			
		116			
		136			
30	86	36	39	43	10
		46			
		66			
		86			
		106			
		126			
		146			
30	96	46	39	43	10
		66			
		86			
		106			
		126			
		146			
30	106	56	39	43	10
		76			
		96			
		116			
		136			
30	116	56	39	43	10
		76			
		96			
		116			
		136			
40	56	56	54	58	10
		86			
		106			

d	l1	l2	d2	d3	k
40	56	126	54	58	10
		156			
		186			
40	66	66	54	58	10
		96			
		116			
		136			
		166			
		196			
40	76	76	54	58	10
		106			
		126			
		146			
		166			
		196			
		216			
40	86	86	54	58	10
		126			
		146			
		176			
		206			
		226			
40	96	96	54	58	10
		136			
		156			
		186			
		216			
		236			
40	106	106	54	58	10
		126			
		156			
		186			
		226			
		246			
40	116	116	54	58	10
		136			
		166			
		196			
		236			
		256			
40	126	126	54	58	10
		166			
		196			
		236			
		266			
40	136	136	54	58	10
		196			
		226			
		266			

Order : G12. d x l1 x l2
(G12D = without oil groove)

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

To be continued on the previous page

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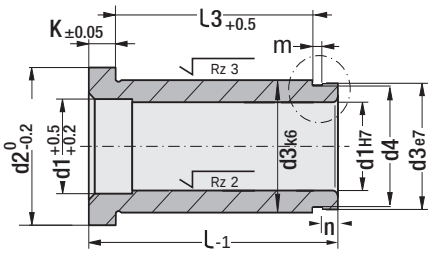
NEW

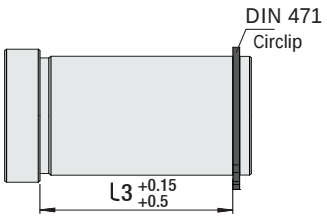
Guide Bush - Headed

Code: G49

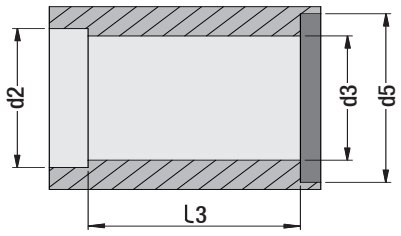
(with circlip slotted)

For general usage in injection mould guide systems - it prevents the bush protrude in free rotating plates (**H6** centre fixing).



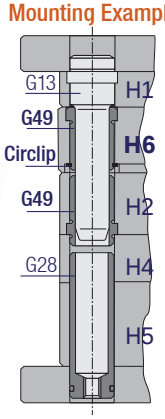


Mounting Dimensions



Compatible Pillars

Mounting Example



Guide Bush - Headed

Code: G49

d1	l	d3	d2	k	L3	m	n	d4	d5	Circlip
12	27	18	25	6	18	1	2	17	26.7	DIN 471 Ø 18
	36				27					
	46				37					
	56				47					
14 15	27	20	25	6	18	1	2	19	29.1	DIN 471 Ø 20
	36				27					
	46				37					
	56				47					
	66				57					
	76				67					
	86				77					
	96				87					
	116				107					
16	27	22	27	6	18	1	2	21	31.7	DIN 471 Ø 22
	36				27					
	46				37					
	56				47					
18 20	27	26	31	6	18	1	2	25	36.3	DIN 471 Ø 26
	36				27					
	46				37					
	56				47					
	66				57					
	76				67					
	86				77					
	96				87					
	116				107					
	136				127					
22 24	27	30	35	6	17	2	2	29	41.4	DIN 471 Ø 30
	36				26					
	46				36					
	56				46					
	66				56					
	76				66					
	86				76					
	96				86					
	116				106					
	136				126					
	156				146					

d1	l	d3	d2	k	L3	m	n	d4	d5	Circlip
30 32	27	42	47	6	15	2	4	40	56	DIN 471 Ø 42
	36				24					
	46				34					
	56				44					
	66				54					
	76				64					
	86				74					
	96				84					
	116				104					
	136				124					
	156				144					
	176				164					
	196				184					
40 42	36	54	60	10	19	2	5	51	69.3	DIN 471 Ø 54
	46				29					
	56				39					
	66				49					
	76				59					
	86				69					
	96				79					
	116				99					
	136				119					
	156				139					
	176				159					
	196				179					
	246				229					
50	76	66	72	10	58	3	5	62	82.7	DIN 471 Ø 65
	96				78					
	116				98					
	136				118					
	156				138					
	196				178					
60	96	80	86	20	68	3	5	77	99.1	DIN 471 Ø 80
	116				88					
	136				108					
	156				128					
	196				168					
	246				218					

Order: **G49.** d1 x l

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

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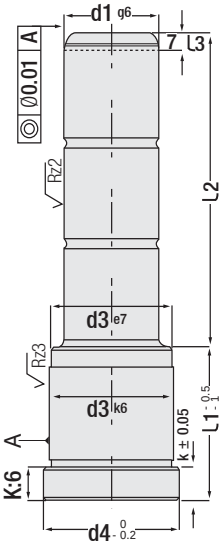
NEW

Code: G50

Guide Pillar - Shouldered

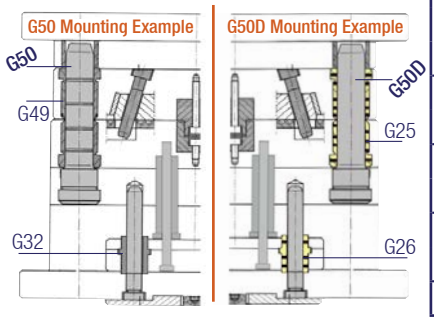


Code: G50
(with oil groove)

Code: G50D
(without oil groove)
"As per request"

The tolerances and working space of our products are determined according to DIN 7161.

IMPORTANT! Injection Mould: Our guide pillars & bushes cover standard mould systems. But, guide pillar & bushes with different tolerances should be selected for aluminum injection moulds (high temperature / pressure). It should be requested from our company (production with special materials).



d1	L1	L2	d3	d4
14	17	35	20	25
		55		
		75		
		95		
14	22	20	20	25
		35		
		40		
		45		
		50		
		55		
		65		
		70		
		90		
		110		
14	27	20	20	25
		35		
		40		
		45		
		55		
		65		
		85		
		105		
14	36	20	20	25
		35		
		40		
		45		
		55		
		65		
		75		
		95		
14	46	20	20	25
		35		
		45		
		65		
		85		
		105		
14	56	20	20	25
		35		
		55		
		75		
		95		
14	66	55	20	25
		65		
		95		
14	76	55	20	25
		95		
14	86	55	20	25
		95		
14	96	55	20	25
		95		
14	116	75	20	25

d1	L1	L2	d3	d4
15	17	35	20	25
		55		
		75		
		95		
15	22	20	20	25
		35		
		40		
		45		
		50		
		55		
		65		
		70		
		90		
		110		
15	27	20	20	25
		35		
		40		
		45		
		55		
		65		
		85		
		105		
15	36	20	20	25
		35		
		40		
		45		
		55		
		65		
		75		
		95		
15	46	20	20	25
		35		
		45		
		65		
		85		
		105		
15	56	20	20	25
		35		
		55		
		75		
		95		
15	66	55	20	25
		65		
		95		
15	76	55	20	25
		95		
15	86	55	20	25
		95		
15	96	55	20	25
		95		
15	116	75	20	25

d1	L1	L2	d3	d4
18	17	35	26	31
		55		
		75		
		95		
18	22	20	26	31
		35		
		40		
		45		
		50		
		55		
		60		
		65		
		70		
		80		
		85		
		115		
18	27	20	26	31
		35		
		40		
		45		
		50		
		55		
		60		
		65		
		70		
		80		
		85		
		105		
		125		
18	36	20	26	31
		35		
		40		
		45		
		50		
		55		
		60		
		65		
		70		
		75		
		80		
		95		
		115		
		135		
18	46	20	26	31
		45		
		65		
		85		
		105		
		135		
		165		

To be continued on the next page

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

Order: G50. d1 x l1 x l2
(G50D = without oil groove)

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

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Guide Pillar - Shouldered

Code: G50 (with oil groove)

Code: G50D (without oil groove)

d1	L1	L 2	d3	d4
18	56	20	26	31
		35		
		55		
		75		
		95		
18	66	55	26	31
		75		
		95		
18	76	55	26	31
		75		
		95		
18	86	55	26	31
		75		
		95		
18	96	55	26	31
		95		
18	116	115	26	31
18	136	135	26	31
20	17	35	26	31
		55		
		75		
		95		
20	22	20	26	31
		35		
		40		
		45		
		50		
		55		
		60		
		65		
		70		
		80		
		85		
		115		
20	27	20	26	31
		35		
		40		
		45		
		50		
		55		
		60		
		65		
		70		
		80		
		85		
		105		
		125		
20	36	20	26	31
		35		
		40		
		45		

d1	L1	L 2	d3	d4
20	36	50	26	31
		55		
		60		
		65		
		70		
		75		
		80		
		95		
		115		
		135		
20	46	20	26	31
		45		
		65		
		85		
		105		
		135		
		165		
20	56	20	26	31
		35		
		55		
		75		
		95		
20	66	55	26	31
		75		
		95		
20	76	55	26	31
		75		
		95		
20	86	55	26	31
		75		
		95		
20	96	55	26	31
		95		
20	116	115	26	31
20	136	135	26	31
22	17	35	30	35
		55		
		75		
22	22	35	30	35
		55		
		75		
		105		
		130		
22	27	25	30	35
		45		
		50		
		60		
		65		
		70		
		80		
		85		

d1	L1	L 2	d3	d4
22	27	105	30	35
		125		
		165		
22	36	25	30	35
		45		
		50		
		55		
		60		
		70		
		75		
		80		
		95		
		115		
		135		
		165		
22	46	25	30	35
		45		
		50		
		60		
		65		
		70		
		80		
		85		
		105		
		125		
		165		
22	56	25	30	35
		45		
		55		
		75		
		95		
		115		
		165		
22	66	55	30	35
		75		
		95		
22	76	25	30	35
		45		
		55		
		75		
		95		
		115		
22	86	55	30	35
		75		
		95		
22	96	55	30	35
		75		
		95		
22	116	75	30	35
		115		
		155		

d1	L1	L 2	d3	d4
22	136	135	30	35
22	156	155	30	35
24	17	35	30	35
		55		
		75		
24	22	35	30	35
		55		
		75		
		105		
		130		
24	27	25	30	35
		45		
		50		
		60		
		65		
		70		
		80		
		85		
		105		
		125		
		165		
24	36	25	30	35
		45		
		50		
		55		
		60		
		70		
		75		
		80		
		95		
		115		
		135		
		165		
24	46	25	30	35
		45		
		50		
		60		
		65		
		70		
		80		
		85		
		105		
		125		
		165		
24	56	25	30	35
		45		
		55		
		75		
		95		
		115		
		165		

d1	L1	L 2	d3	d4
24	66	55	30	35
		75		
		95		
24	76	25	30	35
		45		
		55		
		75		
		95		
		115		
24	86	55	30	35
		75		
		95		
24	96	55	30	35
		75		
		95		
24	116	75	30	35
		115		
		155		
24	136	135	30	35
24	156	155	30	35
30	22	35	42	47
		75		
		130		
30	27	45	42	47
		65		
		105		
		165		
30	36	55	42	47
		75		
		95		
		115		
		155		
30	46	45	42	47
		65		
		85		
		105		
		125		
		165		
30	56	55	42	47
		75		
		95		
		115		
		135		
		175		
30	66	55	42	47
		75		
		95		
		115		
		135		
		175		

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

Order: G50. d1 x l1 x l2
(G50D = without oil groove)

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Code: G50D

Code: G50

To be continued on the next page →

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d1	L1	L 2	d3	d4	L3	k
30	76	55	42	47	7	6
		75				
		95				
		115				
		155				
30	86	55	42	47	7	6
		75				
		95				
		115				
		155				
30	96	55	42	47	7	6
		75				
		95				
		115				
		155				
30	116	75	42	47	7	6
		115				
		155				
30	136	95	42	47	7	6
		115				
		155				
30	156	115	42	47	7	6
		155				
30	176	135	42	47	7	6
		175				
30	196	155	42	47	7	6
		195				
32	22	35	42	47	7	6
		75				
		130				
32	27	45	42	47	7	6
		65				
		105				
		165				
32	36	55	42	47	7	6
		75				
		95				
		115				
		155				
32	46	45	42	47	7	6
		65				
		85				
		105				
		125				
		165				
32	56	55	42	47	7	6
		75				
		95				
		115				
		135				
		175				

d1	L1	L 2	d3	d4	L3	k
32	66	55	42	47	7	6
		75				
		95				
		115				
		135				
		175				
32	76	55	42	47	7	6
		75				
		95				
		115				
		155				
32	86	55	42	47	7	6
		75				
		95				
		115				
		155				
32	96	55	42	47	7	6
		75				
		95				
		115				
		155				
32	116	75	42	47	7	6
		115				
		155				
32	136	95	42	47	7	6
		115				
		155				
32	156	115	42	47	7	6
		155				
32	176	135	42	47	7	6
		175				
32	196	155	42	47	7	6
		195				
40	36	75	54	60	10	10
		135				
40	46	95	54	60	10	10
		165				
40	56	75	54	60	10	10
		115				
		155				
		195				
40	66	75	54	60	10	10
		135				
40	76	75	54	60	10	10
		115				
		175				
40	86	75	54	60	10	10
		135				
40	96	75	54	60	10	10
		115				
		155				

d1	L1	L 2	d3	d4	L3	k
40	115	95	54	60	10	10
		135				
		195				
40	136	95	54	60	10	10
		135				
		215				
40	156	115	54	60	10	10
		155				
		215				
40	176	135	54	60	10	10
		155				
		175				
40	196	155	54	60	10	10
		195				
		235				
42	36	75	54	60	10	10
		135				
42	46	95	54	60	10	10
		165				
42	56	75	54	60	10	10
		115				
		155				
		195				
42	66	75	54	60	10	10
		135				
42	76	75	54	60	10	10
		115				
		175				
42	86	75	54	60	10	10
		135				
42	96	75	54	60	10	10
		115				
		155				
42	115	95	54	60	10	10
		135				
		195				
42	136	95	54	60	10	10
		135				
		215				
42	156	115	54	60	10	10
		155				
		215				
42	176	135	54	60	10	10
		155				
		175				
42	196	155	54	60	10	10
		195				
		235				
50	96	115	66	72	10	10
	116	135				
	136	135				
	156	155				
	196	175				
60	96	115	80	86	10	20
	116	135				
	136	135				
	156	155				
	196	175				
	246	195				

GTH guide pillars are polished with surface polishing machine at final stage of production (after grinding).

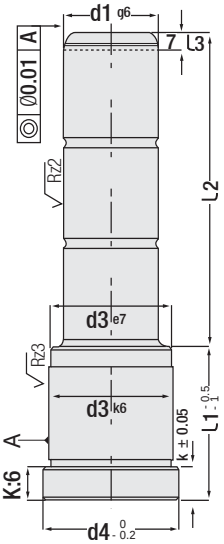
Order: G50. d1 x l1 x l2
(G50D = without oil groove)

Material: 1.1213 (Cf53)
Hardness: 58 - 62 HRC

NEW

Code: G50

Guide Pillar - Shouldered

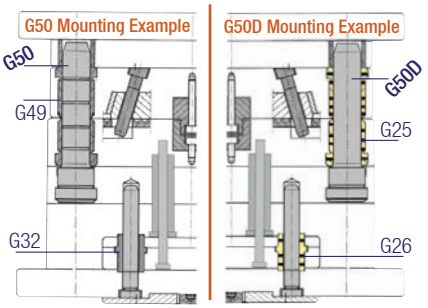


Code: G50
(with oil groove)

Code: G50D
(without oil groove)
"As per request"

The tolerances and working space of our products are determined according to DIN 7161.

IMPORTANT! Injection Mould: Our guide pillars & bushes cover standard mould systems. But, guide pillar & bushes with different tolerances should be selected for aluminum injection moulds (high temperature / pressure). It should be requested from our company (production with special materials).



To be continued on the previous page

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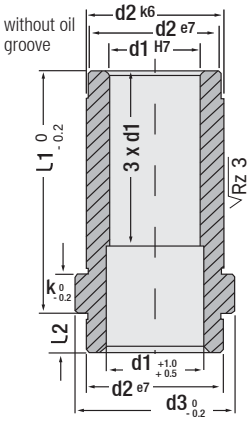
Guide Bush with Centring Collar

Code: G31



d1	l 1	d2	d3	k	l2
15 **14**	17 22 27 36 46 56 66 76 86 96 116	20	25	6	9
18 **20**	17 22 27 36 46 56 66 76 86 96 106 116 136	26	31	6	9
22 **24**	17 22 27 36 46 56 66 76 86 96 106 116 136 156	30	35	6	9

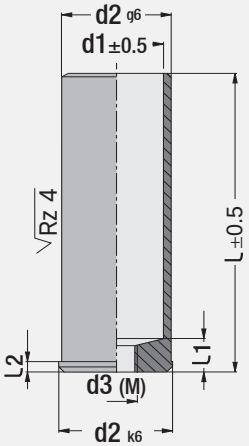
Code: G31

d1	l1	d2	d3	k	l2
32 **30**	27 36 46 56 66 76 86 96 106 116 126 136 156 196	42	47	6	9
42 **40**	46 56 66 76 86 96 116 136 156 196 246	54	60	10	12

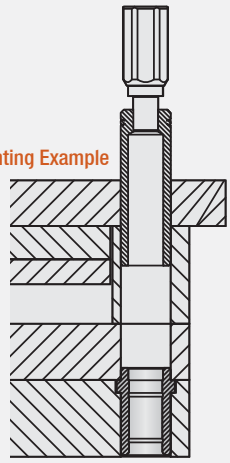
Order: G31. d1 x l1
Material: 1.7131 - Hardness: 58 - 62 HRC

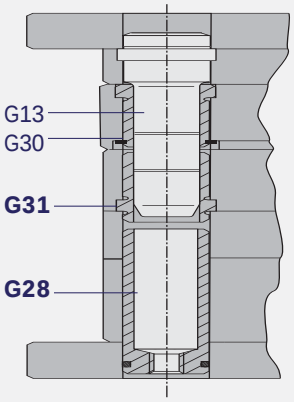
Centring Bush

Code: G28



Mounting Example





Order: G28. d2 x l
Material: 1.7131 - Hardness: 58 - 62 HRC

Code: G28

d2	l	d1	d3	l 1	l 2
20	30 40 60 80 100 120 140 160	16	M. 8	13	2.5
26	30 40 60 80 100 120 140 160 180	21	M. 10	13	2.5
30	40 60 80 100 120 140 160 180 200 240	25	M. 12	13	2.5
42	40 60 80 100 120 140 160 180 200 220 260 300	33	M. 12	13	4.5
54	60 80 120 160 200 240 280	43	M. 12	13	4.5

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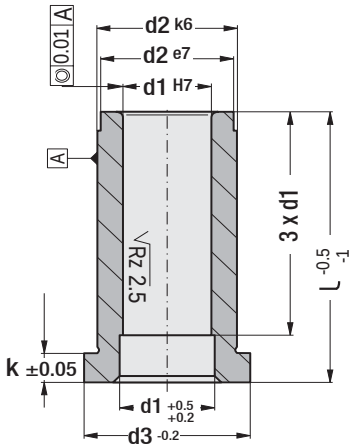
for Turkish Mould Standard

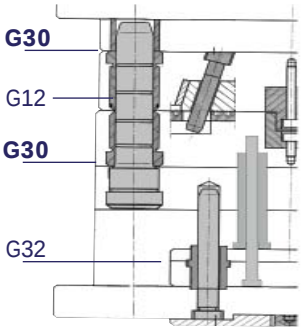


Guide Bush - Headed

Code: G30

d1	l	d2	d3	k
10	17	14	16	3
	27			
	36			
	46			
	56			
12	26	16	19	4
	36			
	46			
	56			
	66			
14	26	20	25	6
	36			
	46			
	56			
	66			
	76			
16	26	24	28	6
	36			
	46			
	56			
	66			
	76			
	86			
18	26	26	31	6
	36			
	46			
	56			
	66			
	76			
	86			
20	26	28	32	6
	36			
	46			
	56			
	66			
	76			
	86			
	96			

d1	l	d2	d3	k
25	26	34	38	8
	36			
	46			
	56			
	66			
	76			
	86			
	96			
	106			
30	36	39	43	10
	46			
	56			
	66			
	76			
	86			
	96			
	106			
	116			
40	46	54	58	10
	56			
	66			
	76			
	86			
	96			
	106			
	116			
	126			
	136			
	146			

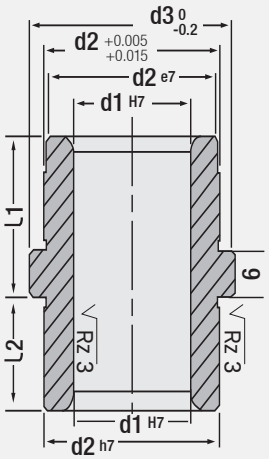


Order: G30. d1 x l

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

Guide Bush with Centre Collar

Code: G32

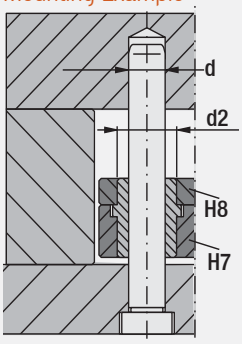


Code: G32

d1	l1	d2	d3	l2
12	16	16	19	12
14	16	20	25	12
16	16	24	28	12
18	16	26	31	12
20	16	28	32	12
24	21	34	38	16
25	21	34	38	16
30	21	39	43	16

Mounting Example

G32 Bushes ensuring the movements of ejector plates in injection moulds be rigid and precise.



Order: G32. d1 x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

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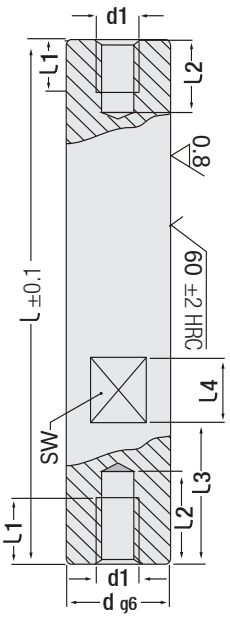
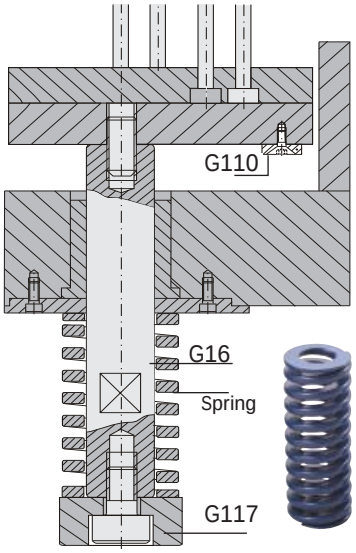
Ejector Rod

Code: G16





Order: G16. d x l

Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

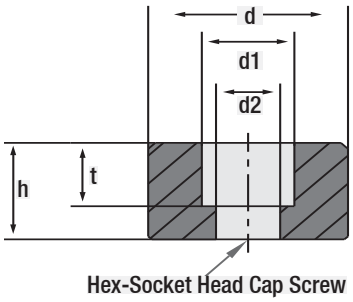
Ejector Rod

Code: G16

d	L	d1	l1	l2	l3	l4	SW
10	60	M.6	10	14	21	16	8
	70						
	80						
	100						
	140						
14	60	M.8	13	16	21	18	10
	80						
	100						
	120						
	140						
	180						
16	60	M. 10	16	20	21	18	12
	70						
	80						
	100						
	120						
	140						
	200						
18	100	M. 10	20	26	30	24	14
	120						
	140						
	160						
	180						
	200						
	220						
	240						
20	120	M. 12	24	30	40	30	14
	140						
	160						
	180						
	200						
	240						
24	120	M. 12	24	30	40	30	17
	140						
	160						
	180						
	200						
	240						
	260						
34	160	M. 16	34	40	50	30	24
	200						
	240						
	260						
	300						

Code: G117

Mounting Washer for Ejector Rod



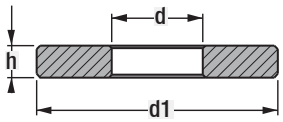
d	h	t	d1	d2
15	10	8.4	11	6.6
22	14	11	14.5	9
36	20	13.5	17.5	11
46	25	15.5	20	14
56	32	21	26	18

Order: G117. d x h

Code: G114

Thick Mounting Washer

Mould inner mounting washer / thick



DIN 6340

Form	d	d1	h	Weight
M6	6.4	17	3	6 gr.
M8	8.4	23	4	10 gr.
M10	10.5	28	4	16 gr.
M12	13	35	5	35 gr.
M14	15	40	5	40 gr.
M16	17	45	6	60 gr.
M18	19	45	6	60 gr.
M20	21	50	6	75 gr.

Order: G114. Form

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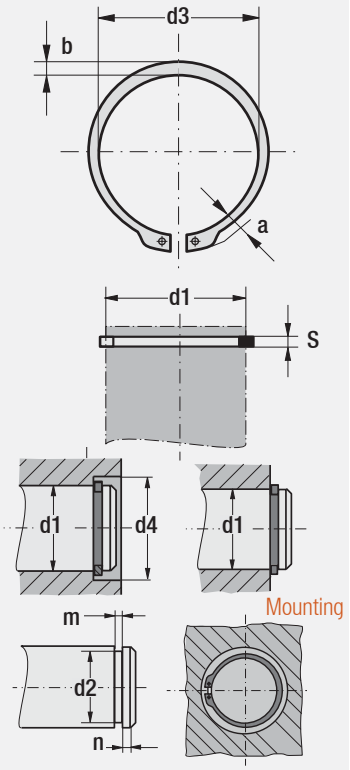
External Circlip Code: DIN471



Code: DIN471

d1	S	a	b	d3	d4	m
16	1.0	3.5	2.2	14.7	24.4	1.1
20	1.2	4.0	2.6	18.5	29.0	1.3
21		4.1	2.7	19.5	30.2	
22		4.2	2.8	20.5	31.4	
24		4.4	3.0	22.2	33.8	
25		4.4	3.0	23.2	34.8	
26		4.5	3.1	24.2	36.1	
28	1.5	4.7	3.2	25.9	38.4	1.6
29		4.8	3.4	26.9	39.6	
30		5.0	3.5	27.9	41.0	
34		5.4	3.8	31.5	45.8	
37	1.75	5.7	4.1	34.2	49.4	1.85
39		5.8	4.2	35.2	50.6	
45		6.7	4.7	41.5	59.4	
50	2.0	6.9	5.1	45.8	64.8	2.15
54		7.1	5.3	49.8	70.0	

Order : DIN471. d1 x S

Code: G77

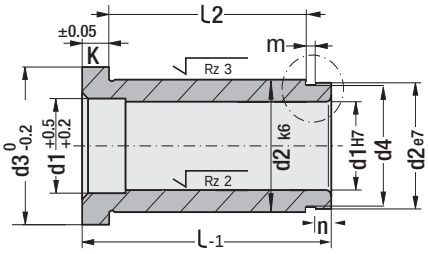
d1	L	d2	d3	K	L2	m	n	d4	d5	Circlip
12	26	16	19	4	16	1.1	4.9	15.2	24.3	DIN 471 Ø 16
	36				26					
	46				36					
	56				46					
	66				56					
14	26	20	25	6	16	1.3	2.7	19	29.1	DIN 471 Ø 20
	36				26					
	46				36					
	56				46					
	66				56					
	76				66					
16	26	24	28	6	16	1.3	2.7	22.9	34	DIN 471 Ø 24
	36				26					
	46				36					
	56				46					
	66				56					
	76				66					
	86				76					
20	26	28	32	6	16	1.6	2.4	26.6	38.5	DIN 471 Ø 28
	36				26					
	46				36					
	56				46					
	66				56					
	76				66					
	86				76					
	96				86					
25	26	34	38	8	14	1.6	2.4	32.3	46.1	DIN 471 Ø 34
	36				24					
	46				34					
	56				44					
	66				54					
	76				64					
	86				74					
	96				84					
	106				94					
30	36	39	43	10	21	1.85	3.15	37	52.1	DIN 471 Ø 39
	46				31					
	56				41					
	66				51					
	76				61					
	86				71					
	96				81					
	106				91					
	116				101					
40	46	54	58	10	28	3.35	5.85	51	71	DIN 471 Ø 54
	56				38					
	66				48					
	76				58					
	86				68					
	96				78					
	106				88					
	116				98					
	126				108					
	136				118					
	146				128					

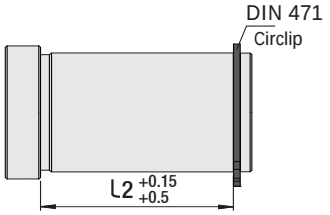
TKS for Turkish Mould Standard

Guide Bush - Headed Code: G77

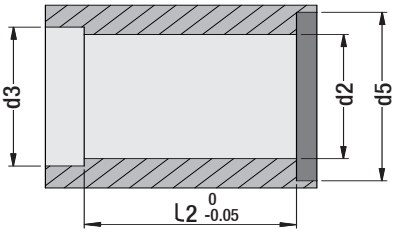
(with circlip slotted)

For general usage in injection mould guide systems - it prevents the bush protrude in free rotating plates (**H6** centre fixing).



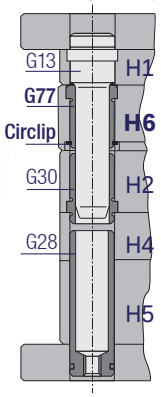


Mounting Dimensions



Compatible Pillars

Mounting Example



Order: G77. d1 x l

Material: 1.7131 - Hardness: 58 - 62 HRC

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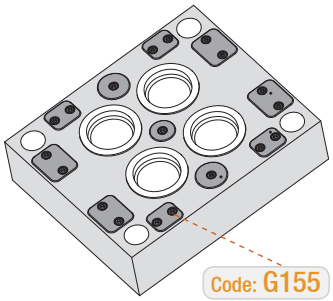
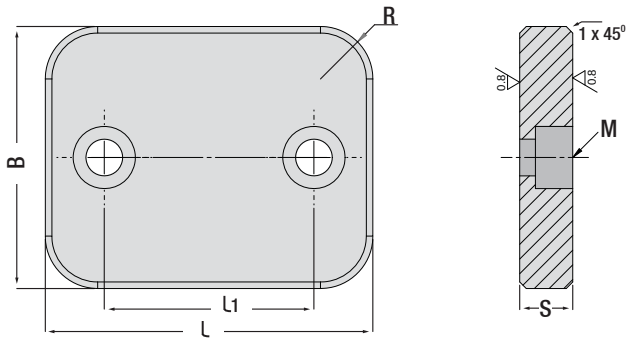


Wear - Shim Plate
(Core bases, for movable or fixed surfaces)



Wear - Shim Plate, Rectangular

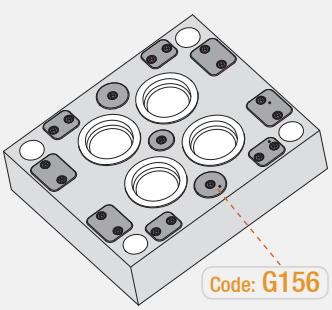
Clamping / locking loads occurred with the support of 1.2842 steel materials and heat treatment during injection and 2nd pressure are equally distributed to mould surfaces except cores, the mould surfaces are protected with this way. It can be used for both (movable and fixed) surfaces when necessary.
Usage: The necessary thickness should be correctly calculated during mounting. The final thickness is achieved by grinding back surface of the product when necessary. Plate to be used for the same core should be ground together. The parts to be used in mould locking should be ground together. The cleanliness and measurements of the mounting surfaces are important. Mounting hole sizes should be bigger than 0.2 (minimum) from one side. Hexagon socket head cap screws in 12.9 quality are used for connections.
***Connecting screws are provided separately**

Code: G155

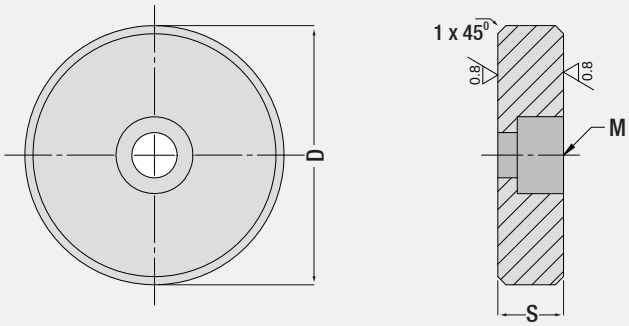
B -0.5	L -0.5	S +0.02 0	L1	R	M
32	40	8.1	24	8	M5
	64		40		M5
	100	10.1	64		M6
40	50	8.1	32	8	M5
	80	10.1	52		M6
	100	12.1	64		
50	64	10.1	40	8	M6
	100	12.1	64		
	125		80		
64	80	10.1	52	8	M6
	100	12.1	64		
	125		80		
	160		100		

Order: G155. B x L

Material: 1.2842 (Heat treated)
Hardness: 54 - 56 HRC



Wear - Shim Plate, Round
(Core bases, for movable or fixed surfaces)



Wear - Shim Plate, Round

In injection mould designs: Injection pressure on mould separation surfaces should be distributed according to a predefined value.
Thus, the mould separation surfaces are aligned correctly and the height differences are easily balanced thanks to innovative **GTH** products such as G155 / G156 / G157 - 1.2842 steel 54 - 56 HRC hardened shim plates are ready to mount with 0.2 mm precision tolerances in embedded mounting holes and round - rectangular versions.

Usage: The necessary thickness should be correctly calculated during mounting. The final thickness is achieved by grinding back surface of the product when necessary. Plate to be used for the same core should be ground together. The parts to be used in mould locking should be ground together. The cleanliness and measurements of the mounting surfaces are important. Mounting hole sizes should be bigger than 0.2 (minimum) from one side. Hexagon socket head cap screws in 12.9 quality are used for connections.
***Connecting screws are provided separately**

Code: G156

D -0.4	S ±0.03	M
20	8.1	M5
32	8.1	M5
40	10.1	M6
50	10.1	M6
64	12.1	M6

Order: G156. D

Material: 1.2842 (Heat treated)
Hardness: 54 - 56 HRC

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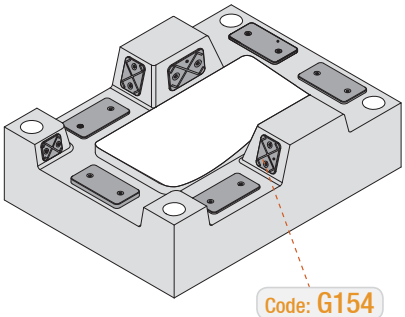
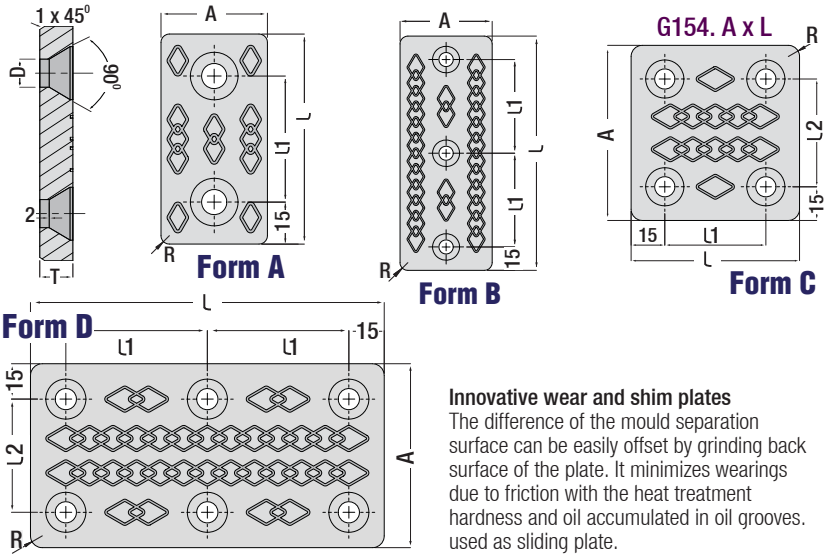
NEW



Code: G154

Wear - Shim Plate (with oil grooves)

(Hard, heat-treated core bases, for movable or fixed surfaces)



Innovative wear and shim plates
The difference of the mould separation surface can be easily offset by grinding back surface of the plate. It minimizes wearings due to friction with the heat treatment hardness and oil accumulated in oil grooves. used as sliding plate.

Clamping / locking loads occurred with the support of 1.2842 steel materials and heat treatment during injection and 2nd pressure are equally distributed to mould surfaces except cores, the mould surfaces are protected with this way. It can be used for both (movable and fixed) surfaces when necessary.

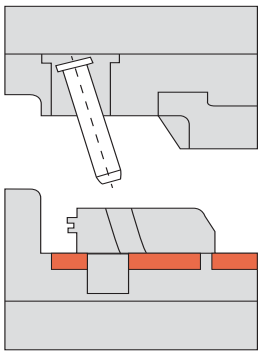
Wear - Shim Plate (with oil grooves) Code: G154

A +0 -0.2	L +0 -0.2	L1 ±0.1	L2 ±0.1	T ±0.02	R	D	Form	Countersunk Head Screws with Hex-Socket
18	50	20	-	7	3	6.5	A	M6 x20 2 pcs.
	75	45						
	100	70						
	150	60					B	M6 x 20 - 3 pcs.
28	50	20	-	7	3	9	A	M8 x 20 2 pcs.
	75	45						
	100	70						
	150	60					B	M8 x 20 - 3 pcs.
38	50	20	-	7	3	9	A	M8 x 20 2 pcs.
	75	45						
	100	70						
	150	60					B	M8 x 20 - 3 pcs.
48	75	45	-	7	5	9	A	M8 x 20 2 pcs.
	100	70						
	125	95						
	150	60					B	M8 x 20 - 3 pcs.
58	75	45	-	7	5	9	A	M8 x 20 2 pcs.
	100	70						
	125	95						
	150	60					B	M8 x 20 - 3 pcs.
78	75	45	48	7	5	9	C	M8 x 20 4 pcs.
	100	70						
	125	95						
	150	60					D	M8 x 20 - 6 pcs.

Usage: The necessary thickness should be correctly calculated during mounting. The final thickness is achieved by grinding back surface of the product when necessary. Mounting hole sizes should be bigger than 0.2 (minimum) from one side.

Order: G154. A x L

Material: 1.2842 (Heat treated)
Hardness: 54 - 56 HRC

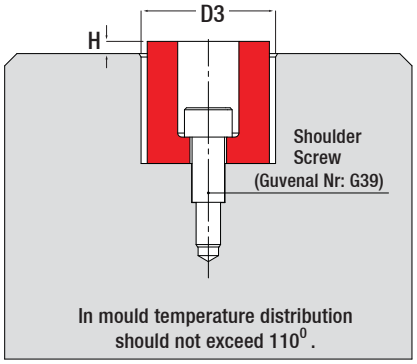


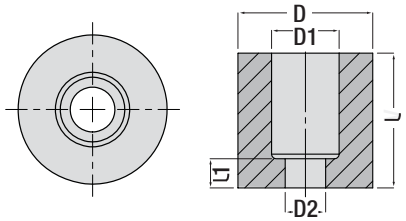
NEW

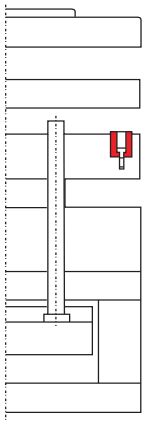
Code: G157

Urethane Spring for Mould Closing

(Cushioning purpose)







Product: Urethane shore hardness 90A.
Usage: All plates / side cores working by clashing each other in injection mould system start mould opening during mould opening before the machine. During closing, cushioning is used and a soft opening is achieved.
This way, it reduces practice surface damages and provides cushioning for high speed operations.

Code: G157

D	L	D1	D2	D3	L1	H	G39 Screw
Ø20	25	Ø11	Ø6.5	Ø22	6.5	3	M5xØ6x12
Ø30	30	Ø15	Ø9	Ø33	6.5	3	M6xØ8x16

Order: G157. D x L
Provided with shoulder screw (G39).

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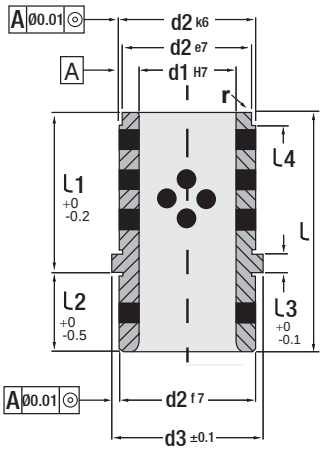
Code: G26

Guide Bush with Centre Collar, Self-Lubricating

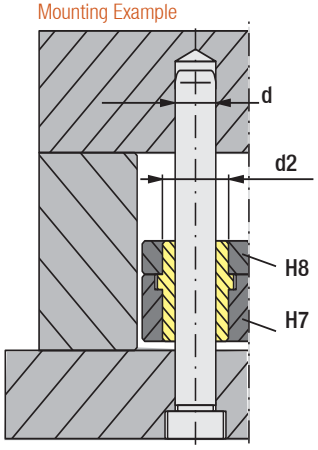


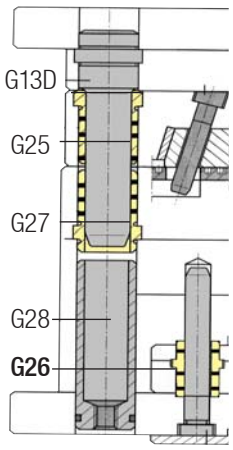
Especially, it can be used in pillar systems of the ejector plates in injection moulds with Guide Pillar without oil groove **(G17)**. Guide bushes are self-lubricating systems.

Heat Resistance: 150^0 C. It can even work in humid environments.

Working Direction

Mounting Example





Code: G26

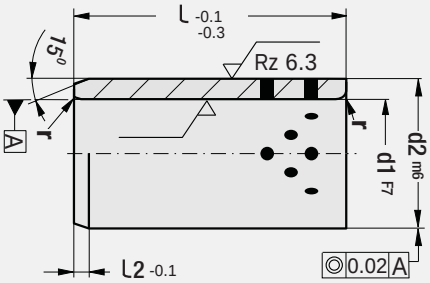
d1	l	d2	d3	l1	l2	l3	l4	r
14	26	20	25	17	9	6	2	1
16	26	20	25	17	9	6	2	1
20	39	26	31	22	17	6	2	1.5
22	49	30	35	27	22	6	4	1.5
25	49	30	35	27	22	6	2	2
30	63	42	47	36	27	6	2	5
40	63	50	60	36	27	8	6	4
50	92	63	72	55	37	8	6	4

Order: **G26.** d1 x l

Material: Bronze + graphite inserts

Code: G48

Guide Bush - Plain, Self-Lubricating



G48 products used in hydraulic press and injection mould machines and especially on plain guide pillars in mould systems.

Working Direction

* Hole tolerance for shrink fit: H7

d1	l	d2	l2	r
8	8	12	2	0.50
	10			
	15			
10	10	14	2	0.50
	12			
	15			
	20			
12	10	18	2	0.50
	12			
	15			
	20			
	25			
	30			
15 **16**	12	22	2	0.75
	16			
	20			
	25			
	30			
	35			
	40			
18 **20**	20	24 28 30	4	0.75
	25			
	30			
	35			
	40			
	50			

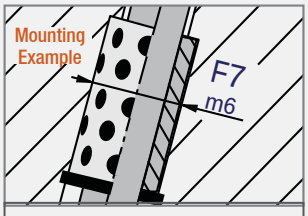
d1	l	d2	l2	r
24 **25**	20	33 35	4	0.75
	25			
	30			
	35			
	40			
	50			
35 **30**	20	38 40 45	4	0.75
	25			
	30			
	35			
	40			
	50			
	60			
38 **40**	25	50 55	4	1.50
	30			
	35			
	40			
	50			
	60			
	80			
42 **45**	30	55 60	4	1.50
	35			
	40			
	50			
	60			

d1	l	d2	l2	r
48 **50**	30	60 62 65	4	1.50
	40			
	50			
	60			
	70			
	80			
	100			
60	40	74 75	4	2.00
	50			
	60			
	80			
	100			
80	40	96 100	4	2.00
	60			
	80			
	100			
	120			
	140			
100	50	120 140 170 180	4	2.00
120	60			
150	80			
160	100			
	120			
	140			
	160			

IMPORTANT! Self-lub. bushes: The friction surface should be lubricated once in order to activate permanent lubricating at the first use.

Lithium Grease - 1kg.

Order Code: W150206



Order: **G48.** d1 x d2 x l

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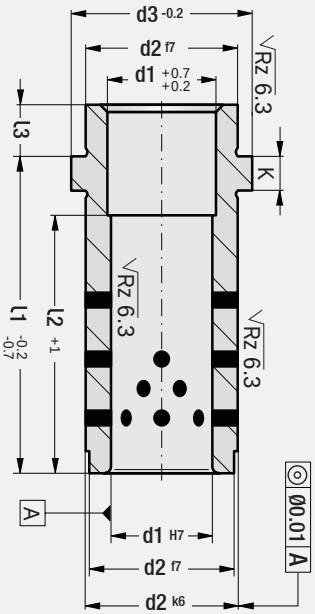
Working Direction



Guide Bush with Collar, Self-Lubricating

Code: G27

G27 products used in injection moulds with **G13D** guide pillars (without oil groove).
Higher stability is achieved with centering of the mould in length. This way, a long-term and precision working environment with other equipment (ejector - core etc.).
H7 tolerance is recommended in guide pillar / bush systems.
It is compatible with the sudden movements during working.
These products are not affected by vibration / impacts.

Heat resistance: 150⁰ c.
It can even work in humid environments.

Code: G27

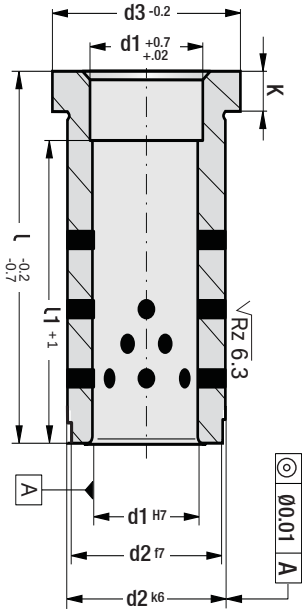
d1	l1	d2	d3	K	l3
14 15	17 22 27 36 46 56	20	25	6	6
			l2 : > 2 - 3 x d1		
16	17 22 27 36 46 56 66 76	20	25	6	8
			l2 : > 2 - 3 x d1		
20 18	17 22 27 36 46 56 66 76 86 96	26	31	6	8
			l2 : > 2 - 3 x d1		
25 22 24	22 27 36 46 56 66 76 86 96 116	30	35	6	8
			l2 : > 2 - 3 x d1		

d1	l1	d2	d3	K	l3
30 32	27 36 46 56 66 76 86 96 116 136	42	47	6	8
			l2 : > 2 - 3 x d1		
40 42	46 56 66 76 86 96 116 136 156 196	54	60	10	12
			l2 : > 2 - 3 x d1		

Sliding bushing systems provide higher stability. These products are lubricated once as a thin layer and this reduces negative effects.

Order: G27. d1 x l1

Working Direction



Guide Bush Headed, Self-Lubricating

Code: G25

G25 products used in injection moulds with **G12D** guide pillars (without oil groove).
H7 tolerance is recommended in guide bush systems. It is compatible with the sudden movements during working.
These products are not affected by vibration / Impacts.

Heat resistance: 150⁰ C.
It Can Even Work in Humid Environments.

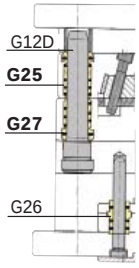
Code: G25

d1	l	d2	d3	K
12	16 21 27 36	18	22	4
			l1 : 2 - 3 x d1	
16 15	27 36 46 56	22	27	6
			l1 : 2 - 3 x d1	
20 18	27 36 46 56 66 76 96	26	31	6
			l1 : 2 - 3 x d1	
25 24 22	36 46 56 66 76 86 96	30	35	6
			l1 : 2 - 3 x d1	

d1	l	d2	d3	K
30 32	36 46 56 66 76 86 96 116	42	47	6
			l1 : 2 - 3 x d1	
40 42	36 46 56 66 76 86 96 116 136	54	60	10
			l1 : 2 - 3 x d1	

Order: G25. d1 x l

Material:
Bronze + graphite inserts



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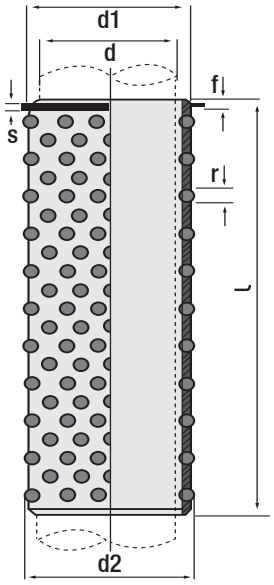
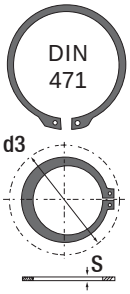
Ball Cage Bush

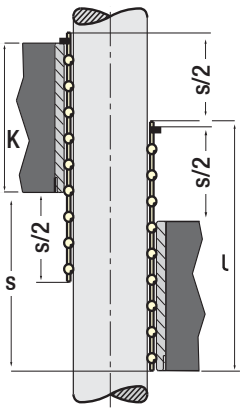
Code: G70

Heat resistance of ball cage is 120° C.
Ball cages are presented with circlips.





Used together



l = K + 0.5 x s

G70
Ball Cage

G70-1
Retaining Spring

G151
Holder Flange

G10
Guide Pillar

G37 - G38
Steel Bushes

Order: **G70. d x l**

Material: Ms58
Ball: 100 Cr6, Tolerance: +0.001

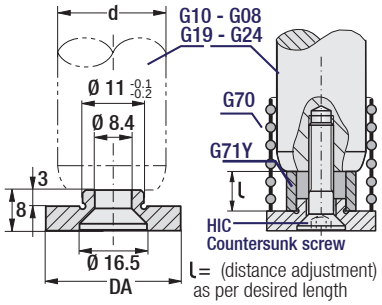
d mm	l mm	Ø d1	Ball d2	Ball r	Circlip d3	Circlip f	Circlip s
12	40 56	15	16	2	20.5	2.5	1.2
15 **16**	45 56 71	20 21	21 22	3	29 30.2	2.7	1.2
18	45 56 71	23	24	3	32.6	2.8	1.2
19 **20**	45 56 71 80 95	24 25	25 26	3	33.2 34.2	2.9	1.2
24 **25**	45 56 71 80 95 105 120	29 30	30 31	3	39.1 40.5	3.2	1.5
32 **30**	45 56 75 80 95 105 120 140	39 37	40 38	4	51.4 49	4.0	1.8
38 **40**	56 71 80 95 105 120 140 160	45 47	46 48	4	59.1 60.0	4.0	1.8
48 **50**	71 80 95 105 120 140 160	55 57	56 58	4	70.2 72.6	4.3	2.0
60 **63**	85 95 105 120 140 160 180 200	67 70	68 71	4	83.1 87	4.8	2.5
80	105 120 140 160 200 240	90	92	6	108.5	6.2	3.0

NEW

Code: G151

Ball Cage Holder Flange

In ball cage bush systems, it prevents detaching of cage **(G70)** from guide pillar during operating. **In mounting to die**: Spacer tube **(G71Y)** of ball cage stroke distance and countersunk head screw (HIC) can be adjusted in desired length.



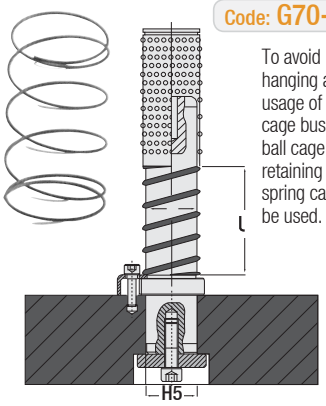
d	DA	Pillar Dia.
20	25	Ø 20
25	30	Ø 25
30	37	Ø 30
40	47	Ø 40
50	57	Ø 50
60	67	Ø 60
63	70	Ø 63

Order: **G151. d (pillar)**

Material: 1.7131 (16MnCr5)

Ball Cage Retaining Spring

Code: G70-1



To avoid hanging at usage of ball cage bush, ball cage retaining spring can be used.

Ø d	l mm	Note:
19	Up to 40 ~ 140	Production in ball systems or other die inner designs as per request. **l: 10 mm ranges**
20		
24	Up to 40 ~ 180	
25		
30	Up to 50 ~ 230	
32		
38	Up to 60 ~ 280	
40		
48	Up to 70 ~ 280	
50		
60	Up to 80 ~ 250	Order: **G70-1. d x l**
63		

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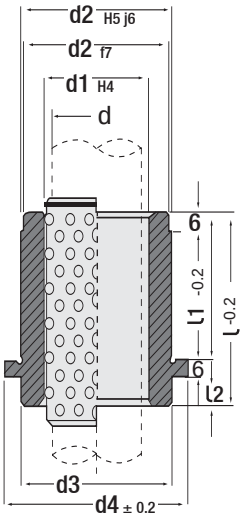
Guide Bush for Ball Cage
(Short type)

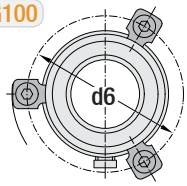
Code: G38

G38 guide bushes work without problem at dies, cuttings under 0.5 mm sheet metal thickness and where cutting space is low and when 200 stamp per minute are exceeded. It is not resistant to the lateral loads. They are preferred in cases that precison should be increased.

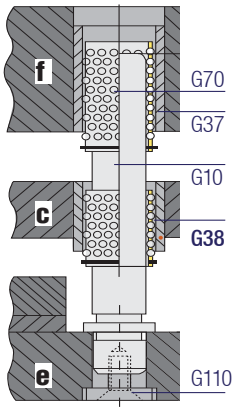


ø d	l mm	ø d1	ø d2	ø d3	ø d4	ø d6	l1 mm	l2 mm
15 **16**	35	21 22	30	30	34	46.8	23	12
19 **20**	35	25 26	32	32	40	48.8	23	12
24 **25**	35	30 31	40	40	48	56.8	23	12
32 **30**	42	40 38	48	48	55	64.8	30	12
38 **40**	52	46 48	58	58	65	74.8	37	15
48 **50**	65	56 58	70	70	80	86.8	47	18
60 **63**	80	68 71	85	85	95	101.8	60	20
80	80	92	105	105	118	121.8	60	20

Clamping Detail
Code: G100



4 pcs. clamp for d1= 38 mm and larger sizes.



Note: Two different products in section (d) are to avoid reverse closing of dies during mounting by using three pcs. main dimensions and one pcs. auxiliary (d= Ø15 -19 - 24 - 32 - 38 - 48 - 60 mm) dimensions at same die, is avoided reverse closing of die plate. Thus, symmetrical die closure is ensured.
Example: In the same die (Ø20 x 3 - Ø19 x 1) = 4 pieces

Note: Should be ordered with **G70.**

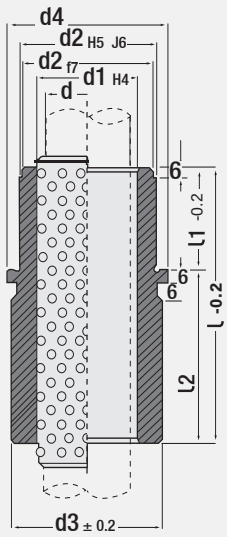
Order: **G38.** d x l x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

Guide Bush for Ball Cage
(Long type)

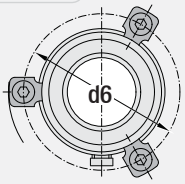
Code: G37

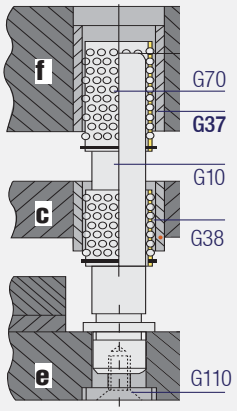
High precision guide bushes for ball cage: Despite providing high reliability at high speeds, contacting balls from one point, brings the system to precision status against impacts and side loads. This disadvantage is compensated to give product diameters up to a certain point in the upper tolerance, the working surface should be precise.



ø d	l mm	ø d1	ø d2	ø d3	ø d4	ø d6	l1 mm	l2 mm
15 **16**	43 59	21 22	30	32	34	46.8	23	20 36
19 **20**	43 59	25 26	32	39	40	48.8	23	20 36
24 **25**	59 79	30 31	40	46	48	56.8	23	36 56
32 **30**	75 93	40 38	48	53	55	64.8	30	45 63
38 **40**	82 108	46 48	58	63	65	74.8	37	45 71
48 **50**	97 127	56 58	70	77	80	86.8	47	50 80
60 **63**	116 150	68 71	85	92	95	101.8	60	56 90
80	120 150	92	105	115	118	121.8	60	60 90

Clamping Detail
Code: G100





Note: Should be ordered with **G70.**

Order: **G37.** d x l x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

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NEW

Plain Guide Bush for Ball Cage

Code: G167

ISO 9448-3

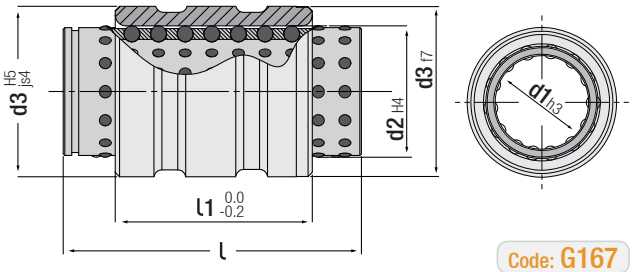
The inner diameter of the products is honed, the outer diameter is precision ground. The grooves on the product are made to provide better adhesion to the hole during mounting.

Advantages of G167: No problem finding the position when changing the bushes. High accuracy and robustness.

Mounting Instruction:

Please secure with adhesive (**Order Code:** GL.64832)

Do not press-fit.



Code: G167

d1 mm	d2 mm	d3 mm	l1 mm	l mm
12	16	22	23	40
			30	40
			37	40
15	21	28	23	45
			30	45
16	**22**		37	45
			47	56
			60	71
19	25	32	23	45
			30	45
			37	45
20	**26**		47	56
			60	71
			77	95
24	30	40	23	45
			30	45
			37	45
25	**31**		47	56
			60	71
			77	95

d1 mm	d2 mm	d3 mm	l1 mm	l mm
30	**38**	48	30	45
			37	50
32	40		47	56
			60	71
			77	95
			95	120
38	46	58	30	45
			37	50
			47	63
40	**48**		60	80
			77	95
			95	120
			120	140
48	56	70	37	50
			47	63
			60	80
50	**58**		77	95
			95	120
			120	140
60	68	85	60	95
			77	95
			95	120
63	**71**		120	140
80	92	105	120	140

Note: Ball Cage "G70" must be ordered separately.

Order: G167. d1 x l1

Material: 1.7131
Hardness: 60 - 64 HRC

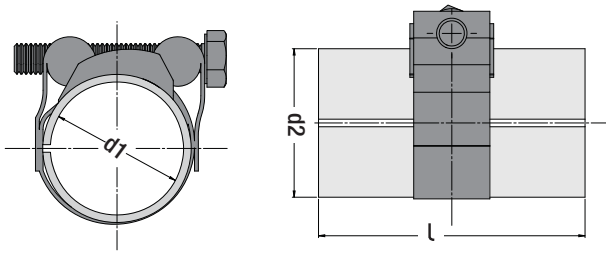
NEW

Limiting Bush

Code: G168

It helps to position the working length of the bushes running on the guide pillars.

Mounting Example



Guide Pillar Ø	d1 mm	d2 mm	l mm
15 / 16	16	20	20
19 / 20	20	30	20
24 / 25	25	30	30
30 / 32	32	40	30
38 / 40	40	50	40
48 / 50	50	60	40
60 / 63	63	70	40

Order: G168. d1

Order Example: G168. 40

Adhesive / Loctite 648

The adhesive provides optimum push retention for **"G167"** bushes. For adhesion of bearings, bushes, screws and other machine components. Very fast adhesion to handling strength.

Heat Resistance: -55^0 / +175^0 C

Package: 55 g.

Order Code: GL.64832

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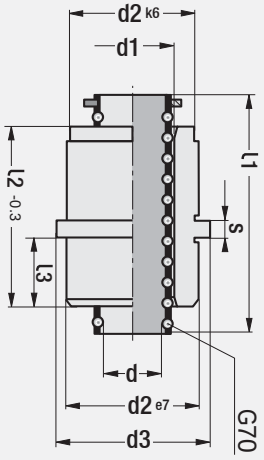
Code: G29

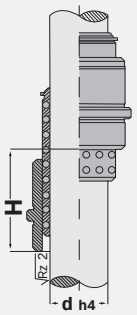
Steel Bush + Ball Cage Bush Set

It provides more precision and rapid motion at ejector plates in injection moulds.



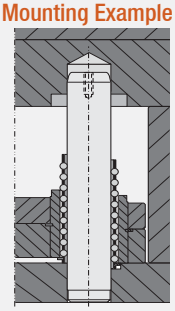
Code: G29

d Ø	l1 mm	l2 mm	l3 mm	d1 Ø	d2 Ø	d3 Ø	S mm	H mm
12	40	24	6	16	22	26	6	50
	56							82
18	45	34	11	24	30	35	6	44
	56							66
	71							96
30	56	54	21	38	46	52	6	32
	75							70
	95							110



more precision and rapid motion

Mounting Example

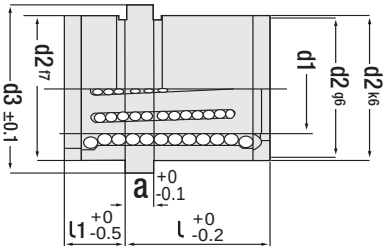


Order: G29. d x l1

Ball Material: 1.3505 (100Cr6)
Cage: Ms58 - **Steel Bush:** 1.7131 (16MnCr5)

Linear Ball Bearing Bush

Code: G75



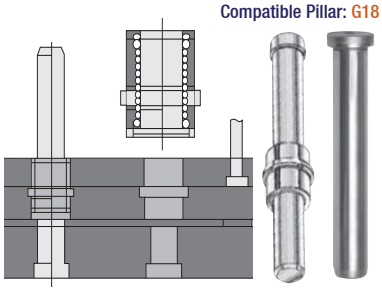
Free stroke, rapid and limitless movement.
New for ejector plate.
Operating Temp.: Max. 200°

Code: G75

d1 Ø	l mm	d2 Ø	d3 Ø	a mm	l1 mm	Ball Ø
12	22	24	28	6	8	3
18	26	30	34	6	9	3
20	26	32	36	6	9	3
	36					
25	26	40	45	6	10	3
	36					
	46					
30	46	48	54	8	12	4
	66					
40	46	60	66	8	12	4
	66					

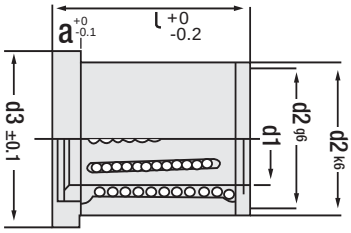
New Linear Ball Bearing Bushes G74 / G75:
There are balls at inclined - serial - parallel intermediate channels - lines inside of linear **G74 & G75** bushes (balls move by rotating in slot and frictionless). In this way, axial motion remains limitlessly free. Also, bearing logic is provided to the steel bush.

Compatible Pillar: G18



Linear Ball Bearing Bush - Headed

Code: G74



WARNING!
During production stage of **G74 & G75** products ball bearings are positioned at a certain angle. Other imitation products has no angle and the balls are at a single centre.

Positioning
Pls. do not make direct fitting. Precision assembly recommended with bronze / brass.

Balls are worked independently by rotating, they are not frictional.
Operating Temp.: Max. 200°

Code: G74

d1 Ø	l mm	d2 Ø	d3 Ø	a mm	Ball Ø	Line Pcs.
18	35	30	34	6	3	6
20	35	32	36	6	3	6
	45					
	55					
30	45	48	54	8	4	8
	63					
40	45	60	66	8	4	8
	63					

The advantage of our new product G75 according to other similar product G29:
Extra stroke distances at unlimited axial direction and robust powerful centering is provided - free motion unlimited with low tolerance absorbs other pinking and tauting.
It is presented unlimited motion advantages with compatibility to high speeds. Linear bush **G75**: Rigidity in centering with free axial motion at long ejector systems of injection moulds - unlimited frictional motion. Linear bush **G74**: Quality control equipments - practical and reliable product for machine and mould production and device design.
For maintenance and cleaning: "Guvenal Signum (order code: W160110)" spray oil is used.

Order:
G75. d1 x l | G74. d1 x l

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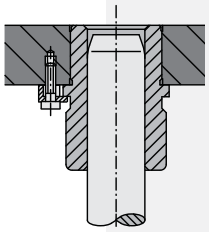
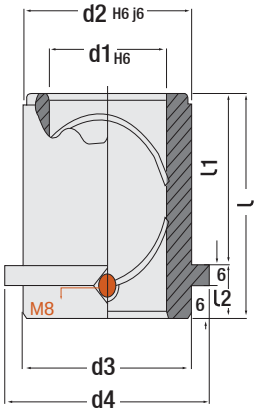


Guide Bush, Thick & Short Type

Code: G34K

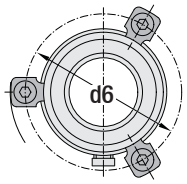
(for heavy dies / with collar & lubricating)

Thick type steel bushes: To provide perpendicularity at bush and guide pillar with new design of **GTH Die Components** on product suitable flange fixation (balanced layout) on bearing area is created. During mounting, shrink fit should not be done. To avoid clamping and surface disorders at products, by inserting soft tight products to the slots, mounting can be ensured with clamps.

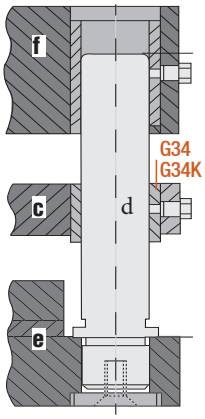


ø d1	l mm	ø d2	ø d3	ø d4	l1 mm	l2 mm
19 **20**	35	32	32	40	23	12
24 **25**	35	40	40	48	23	12
32 **30**	42	48	48	56	30	12
38 **40**	52	58	58	66	37	15
48 **50**	65	70	70	80	47	18
60 **63**	80	85	85	95	60	20
80	80	105	105	118	60	20

Clamping Detail Code: G100



4 pcs. clamp for d1 = 38 mm and larger sizes.



Order: **G34K.** d1 x l x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

IMPORTANT!
Pls. lubricate from grease nipple on bush occasionally.

Lithium Grease - 1kg.

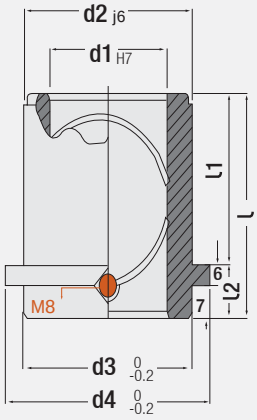
Order Code: W150206

Guide Bush, Thin & Short Type

Code: G34

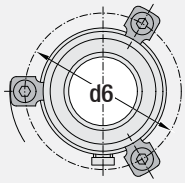
(with collar & lubricating)

For being **GTH Die Components** products having long life and maximum resistance against abrasion, unique precision has provided at surface roughness. This is also created specific bushing system.



ø d1	l mm	ø d2	ø d3	ø d4	l1 mm	l2 mm
16	36	28	28	34	23	13
20	36	28	28	34	23	13
25	36	34	34	39	23	13
30	50	39	39	44	37	13
40	50	50	50	54	37	13
50	60	60	60	64	47	13

Clamping Detail Code: G100



4 pcs. clamp for d1 = 38 mm and larger sizes.

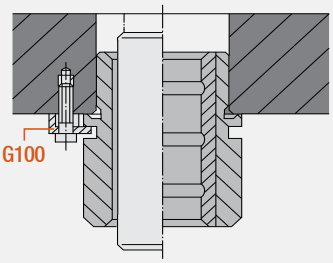
Mounting Details:

Code: G34K

ø d1	d6
20	48.8
25	56.8
30	64.8
40	74.8
50	86.8
63	101.8
80	121.8

Code: G34

ø d1	d6
16	44.8
20	44.8
25	50.8
30	55.8
40	66.8
50	76.8



Order: **G34.** d1 x l x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

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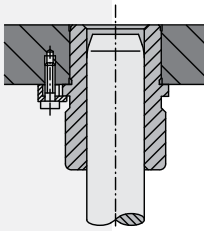
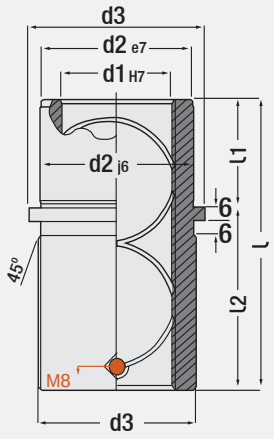


Guide Bush, Thin & Long Type

Code: G33

(with collar & lubricating)

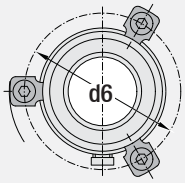
For being **GTH Die Components** products having long life and maximum resistance against abrasion, unique precision has provided at surface roughness. This is also created specific bushing system.



Ø d1	l mm	Ø d2	Ø d3	l1 mm	l2 mm
16	70	28	34	23	47
20	70	28	34	23	47
25	80	34	39	23	57
30	90	39	44	37	53
40	100	50	54	37	63
50	120	60	64	47	73

Clamping Detail

Code: G100



4 pcs. clamp for d1 = 38 mm and larger sizes.

Mounting Details:

Code: G33

Ø d1	d6
16	44.8
20	44.8
25	50.8
30	55.8
40	66.8
50	76.8

Code: G33K

Ø d1	d6
20	48.8
25	56.8
30	64.8
40	74.8
50	86.8
63	101.8
80	121.8

Order: **G33.** d1 x l x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

IMPORTANT!
Pls. lubricate from grease nipple on bush occasionally.

Lithium Grease - 1kg.

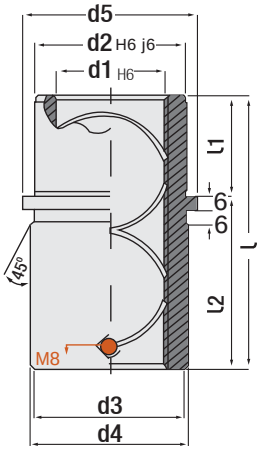
Order Code: W150206

Guide Bush, Thick & Long Type

Code: G33K

(for heavy dies / with collar & lubricating)

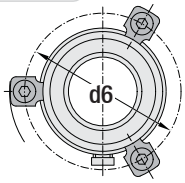
Thick type steel bushes: Please don't use two products without oil groove together. One of product in guide pillar or bushes should be used as set with oil groove. While using guide pillar and bush sets, should be considered that both of them have same brand. Because, grinding tolerance can be different in different guide pillars and bushes. Also, this can be caused big problems during both mounting and operating. The dimensions not giving their tolerance are subjected to general tolerance (production according to standards).



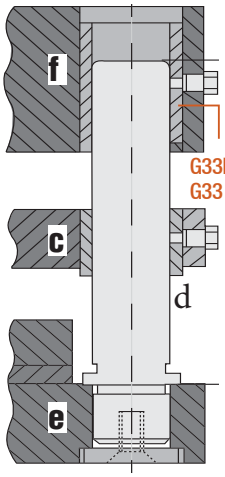
Ø d1	l mm	Ø d2	Ø d3	Ø d4	Ø d5	l1 mm	l2 mm
19 **20**	43	32	32	39	40	23	20
	59						36
24 **25**	59	40	40	46	48	23	36
	79						56
32 **30**	75	48	48	53	56	30	45
	93						63
38 **40**	82	58	58	63	66	37	45
	108						71
48 **50**	97	70	70	77	80	47	50
	127						80
60 **63**	116	85	85	92	95	60	56
	150						90
80	120	105	105	115	118	60	60
	150						90

Clamping Detail

Code: G100



4 pcs. clamp for d1 = 38 mm and larger sizes.



Order: **G33K.** d1 x l x l1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

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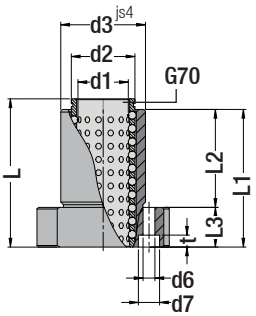
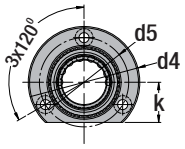
Guide Bush with Flange, for Ball Cage

Code: G72.1

NEW





* 3 pcs **"IMB"** coded screws are used to fixed product.
* Clamping Screws & **"G70"** coded Ball Cage Bush should be ordered separately.

Order: **G72.1** x d1 x L1

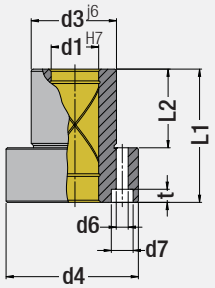
Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

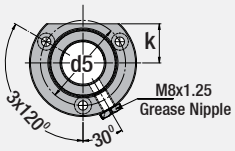
ø d1	ø d2	ø d3	ø d4	ø d5	ø d6	ø d7	t mm	k mm	L1 mm	L2 mm	L3 mm	L mm
19 / **20**	26	32	50	40	4.5	8	5	18	38	23	15	44
									45	30		56
									52	37		72
24 / **25**	31	40	63	50	5.5	10	6	23	38	23	15	44
									55	30	25	44
									62	37		72
30 / 32	38	48	72	58	5.5	10	6	28	45	20	25	55
									62	37		70
									72	47		80
38 / **40**	48	58	85	70	7	11	7	33	55	25	30	65
									67	37		80
									77	47		95
48 / **50**	58	70	104	86	9	15	9	38	62	37	25	80
									89	47	42	95
									102	60		120
60 / **63**	71	85	120	100	9	15	9	46	89	47	42	95
									102	60		120
80	92	105	148	125	11	18	12	56	125	75	50	140

Guide Bush with Flange, Bronze Plated

Code: G72.2

NEW





* 3 pcs **"IMB"** coded screws are used to fixed product.
* Clamping Screws should be ordered separately.

Order: **G72.2** x d1 x L1

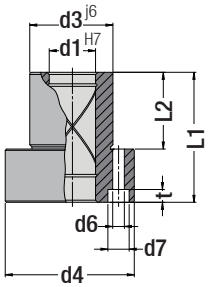
Material: 1.1213 (Cf53)
Bronze Casting

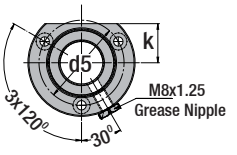
ø d1	ø d3	ø d4	ø d5	ø d6	ø d7	t mm	k mm	L1 mm	L2 mm
19 / **20**	32	50	40	4.5	8	5	18	38	23
								45	30
								52	37
24 / **25**	40	63	50	5.5	10	6	23	38	13
								55	30
								62	37
30 / 32	48	72	58	5.5	10	6	28	45	20
								62	37
								72	47
38 / **40**	58	85	70	6.6	11	7	33	55	25
								67	37
								77	47
48 / **50**	70	104	86	9	15	9	38	62	37
								89	47
								102	60
60 / **63**	85	120	100	9	15	9	46	89	47
								102	60
80	105	146	125	11	18	12	56	125	75

Guide Bush with Flange, Steel

Code: G72.3

NEW





* 3 pcs **"IMB"** coded screws are used to fixed product.
* Clamping Screws should be ordered separately.

Order: **G72.3** x d1 x L1

Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

ø d1	ø d3	ø d4	ø d5	ø d6	ø d7	t mm	k mm	L1 mm	L2 mm
19 / **20**	32	50	40	4.5	8	5	18	38	23
								45	30
								52	37
24 / **25**	40	63	50	5.5	10	6	23	38	13
								55	30
								62	37
30 / 32	48	72	58	5.5	10	6	28	45	20
								62	37
								72	47
38 / **40**	58	85	70	6.6	11	7	33	55	25
								67	37
								77	47
48 / **50**	70	104	86	9	15	9	38	62	37
								89	47
								102	60
60 / **63**	85	120	100	9	15	9	46	89	47
								102	60
80	105	146	125	11	18	12	56	125	75

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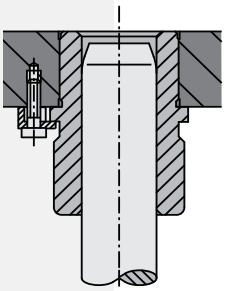
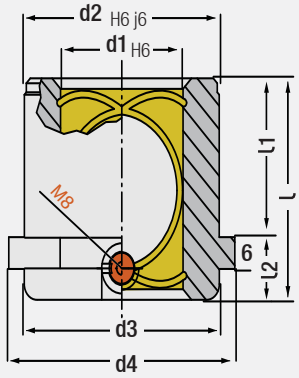
Code: G36



Code: G35

Guide Bush, Bronze Plated & Short Type

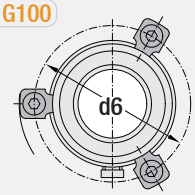
It has helical lubrication and inner lubrication system, its position can be lubricated with grease nipple from outside. Finally, equal distance to all lubrication points is ensured. Due to oil intake feature of bronze plated to inside it, there is no need for frequent lubrication, recommended operating speed is 15-30 mt / min. If some conditions such as lubrication clearance, stroke length, radial load and heat distribution are provided, to reach speed as 600 - 800 stroke per minute is possible.



Ø d1	l mm	Ø d2	Ø d3	Ø d4	l1 mm	l2 mm
19 **20**	35	32	32	40	23	12
24 **25**	35	40	40	48	23	12
32 **30**	42	48	48	56	30	12
38 **40**	52	58	58	66	37	15
48 **50**	65	70	70	80	47	18
60 **63**	80	85	85	95	60	20
80	80	105	105	118	60	20

Clamping Detail

Code: G100



4 pcs. clamps for
d1= 38 mm and larger sizes.

Mounting Details:

Code: G36

Ø d1	d6
20	48.8
25	56.8
30	64.8
40	74.8
50	86.8
63	101.8
80	121.8

Code: G35

Ø d1	d6
20	48.8
25	56.8
30	64.8
40	74.8
50	86.8
63	101.8
80	121.8

In order to avoid reverse closing of die, Ø 19 - 24 - 32 - 38 - 48 - 60 can be used with 1 Pcs. main dimension.

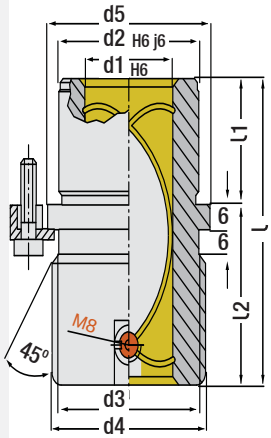
Bronze Plated Bushes:
Due to soft structure of the bronze material, the steel body material is only left in induction hardness.
Accordingly, you need to be careful when fitting during mounting.

Order: **G36.** d1 x l x l1

Material: 1.1213 (Cf53)
Bronze SnBz 10 HB 160 - 180

Guide Bush, Bronze Plated & Long Type

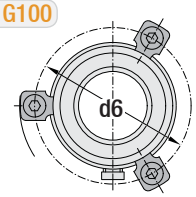
Hardened steel bushing absorbs strong side thrust. Thus, vibrationless rigid operation is ensured and bronze bush is protected against strong thrust made from end head, inner layer plated bronze with centrifugal technique is resistant against abrasion factor with its high quality.
In addition with its excellent heat dissipation feature is ensured rapid distribution of excessive friction temperature.



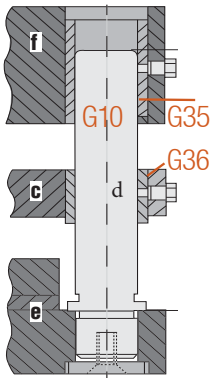
Ø d1	l mm	Ø d2	Ø d3	Ø d4	Ø d5	l1 mm	l2 mm
19 **20**	43	32	32	39	40	23	20
	59						36
24 **25**	59	40	40	46	48	23	36
	79						56
32 **30**	75	48	48	53	56	30	45
	93						63
38 **40**	82	58	58	63	66	37	45
	108						71
48 **50**	97	70	70	77	80	47	50
	127						80
60 **63**	116	85	85	92	95	60	56
	150						90
80	120	105	105	115	118	60	60
	150						90

Clamping Detail

Code: G100



4 pcs. clamps for
d1= 38 mm and larger sizes.



Order: **G35.** d1 x l x l1

Material: 1.1213 (Cf53)
Bronze SnBz 10 HB 160 - 180

IMPORTANT!
Pls. lubricate from grease nipple on bush occasionally.

Lithium Grease - 1kg.

Order Code: W150206

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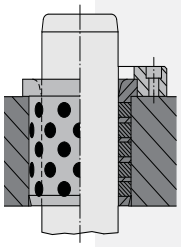


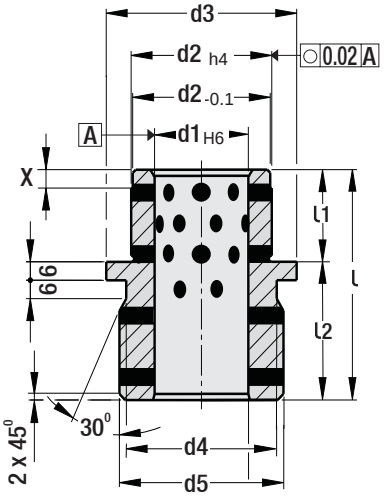
Code: G45

Guide Bush with Centre Collar, Self-Lubricating

DIN 9834 / ISO 9448

Working Direction

Heat Resistance: < 150°C



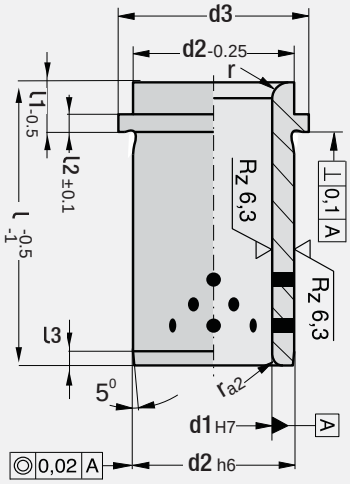
Code: G44

Guide Bush with Collar, Self-Lubricating

DIN 9834 / ISO 9448

Working Direction

Heat Resistance: < 150°C

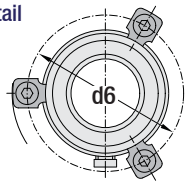


d1	l	d2	d3	d4	d6	d5	l1	l2
19 **20**	32	32	40	32	60.2	-	20	12
	50					34		30
	70					34		50
24 **25**	35	40	48	40	68.2	-	23	12
	60					42		37
	80					42		57
32 **30**	42	48	56	48	76.2	-	30	12
	75					50		45
	95					50		65
38 **40**	50	58	66	58	86.2	-	35	15
	80					60		45
	110					60		75
48 **50**	65	70	80	70	98.2	-	45	20
	90					74		45
	120					74		75

d1	l	d2	d3	d6	l1	l2	l3	r	ra2
20	32	28	34	71.2	12	6.3	3.0	3	1
25	40	32	40	75.2	10	6.3	3.0	3	1
30	50	40	50	83.2	12	6.3	4.0	3	1
32	50	40	50	83.2	12	6.3	4.0	3	1
40	63	50	63	93.2	15	6.3	5.0	3	1
50	71	63	71	106.2	17	6.3	6.3	5	1
63	80	80	90	123.2	19	10	8.0	6	1
80	100	100	112	143.2	22	10	10	8	1
100	125	125	140	168.2	21	10	12.5	10	1
125	160	160	180	203.2	30	10	16	12	1
160	200	200	220	243.2	32	10	16	18	1

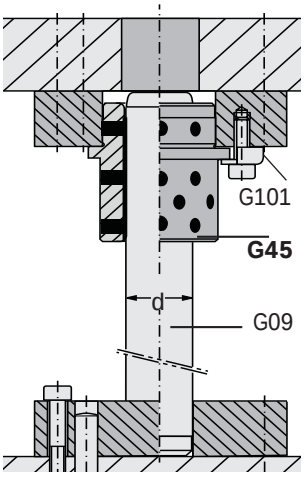
Clamping Detail

Code: G101



Form - A

3 mm
X = d : 19-20
6 mm
X = d > 20



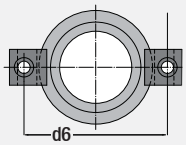
Order: G45. d1 x l

Material: Bronze + graphite inserts

IMPORTANT!
Self-lubricating components should be lubricated once in order to activate permanent lubricating at the first use.

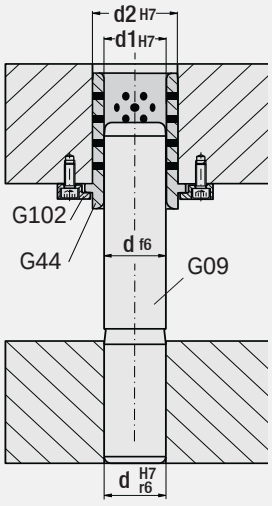
Clamping Detail

Code: G102 Form - D



Order: G44. d1 x l

Material: Bronze + graphite inserts



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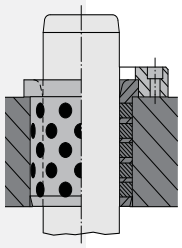
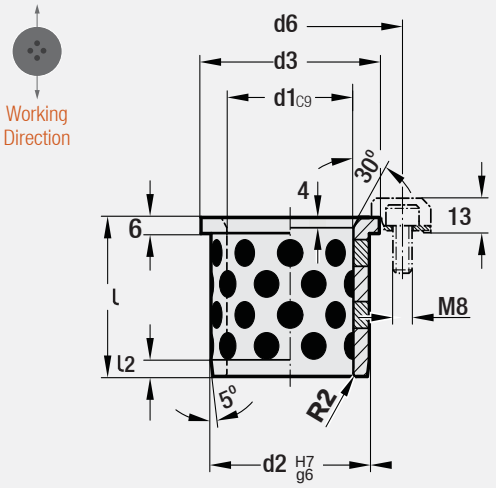


Guide Bush, Headed - NAAMS

Code: G41

Self-Lubricating

Heat Resistance: < 150°C



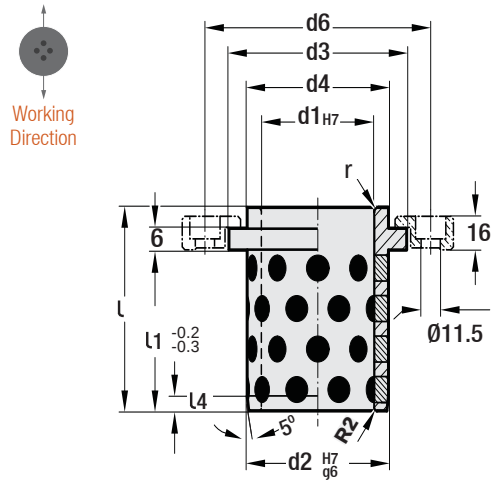
d1	l	d2	d3	d6	l2
25	40	32	40	63.2	4
32	50	40	50	71.2	4
40	55	50	63	81.2	5
50	63	63	71	94.2	6
63	75	80	90	111.2	8
80	90	100	112	131.2	10
100	115	125	140	166.2	12
125	138	160	180	191.2	12

Guide Bush with Collar - NAAMS

Code: G40

Self-Lubricating

Heat Resistance: < 150°C

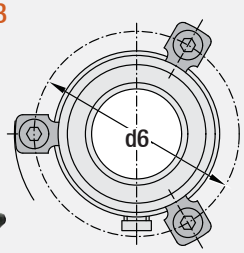


d1	l	d2	d3	d4	d6	l1	l4	r
20	40	28	34	28	71.2	30	3	3
25	40	32	40	32	75.2	30	4	3
30	50	40	50	40	83.2	40	4	3
32	50	40	50	40	83.2	40	4	3
40	63	50	63	50	93.2	50	5	3
50	71	63	71	63	106.2	56	6	5
63	80	80	90	80	123.2	63	8	6
80	100	100	112	100	143.2	80	10	8
100	125	125	140	125	168.2	106	12	10
125	160	160	180	160	203.2	132	12	12

Clamping Detail

Code: G101

Form - B



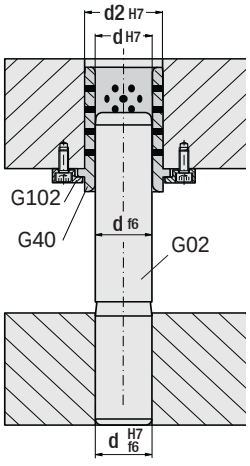
IMPORTANT!
Self-lubricating components should be lubricated once in order to activate permanent lubricating at the first use.

Lithium Grease - 1kg.

Order Code: W150206

Order: G41. d1 x l

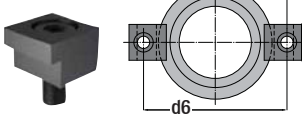
Material: Bronze + graphite inserts



Clamping Detail

Code: G102

Form - D



Order: G40. d1 x l

Material: Bronze + graphite inserts

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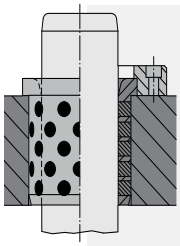


NEW

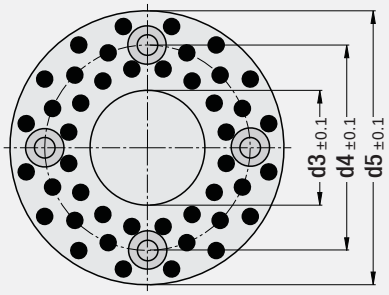
Code: G107

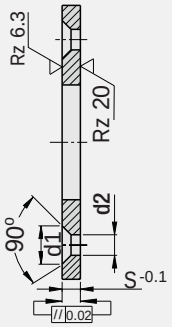
Thrust Washer - Perforated, Self-Lubricating

In-Die & Mould Slide Systems

Heat Resistance: < 150°C

* Spare part for in-die applications
* Spare part in core systems etc. in injection moulds





d3	d5	d4	S	d1	d2	Hole
12.2	40	28	3	6.9	3.0	2
16.2	50	28	3	6.9	3.0	2
20.2	50	35	5	11.5	5.5	2
25.2	55	40	5	11.5	5.5	2
30.2	60	45	5	11.5	5.5	2
35.2	70	50	5	11.5	5.5	2
40.2	80	60	7	13.8	6.6	2
45.3	90	67.5	7	13.8	6.6	2
50.3	100	75	8	13.8	6.6	4
60.3	120	90	8	18.3	9.0	4
70.3	130	100	10	18.3	9.0	4
80.3	150	120	10	18.3	9.0	4

Order: G107. d3 x d5

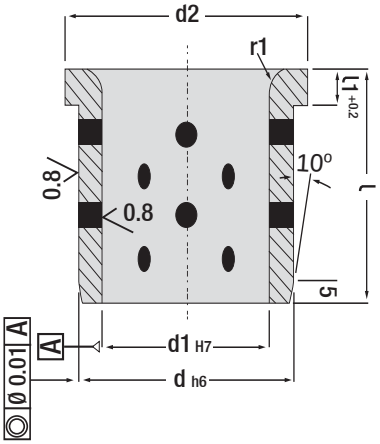
Material: Bronze + graphite inserts

Code: G42

Guide Bush Headed, Self-Lubricating

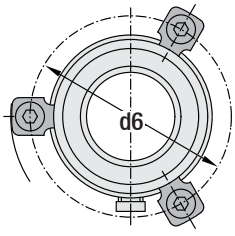
Working Direction

Heat Resistance: < 150°C



d1	l	d	d2	l1	r1
20	35	28	36	8	2
25	40	32	40	8	4
30	55	40	50	8	6
32	55	40	50	8	6
40	70	50	60	8	6
42	70	50	60	8	6
50	75	63	75	12	8
52	75	63	75	12	8
63	80	80	90	12	8
80	100	100	110	12	8
100	125	125	135	12	8

Code: G102



Code: G101

Order: G42. d1 x l

Material: Bronze + graphite inserts

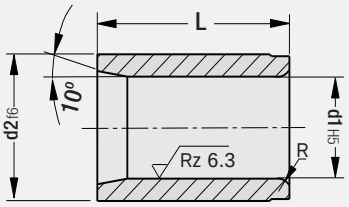
Lithium Grease - 1kg.

Self-lubricating components should be lubricated once in order to activate permanent lubricating at the first use.

Order Code: W150206

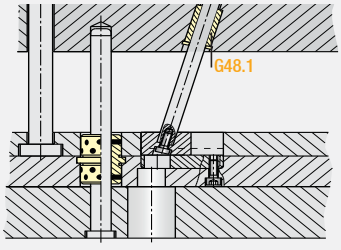
Code: G48.1

Bronze Bush - Plain



Order: G48.1 x d1 x L

d1	L	d2	R
10	14	14	1.0
10	20	14	1.0
12	20	17	1.5
12	25	17	1.5
16	25	22	2.0
16	32	22	2.0



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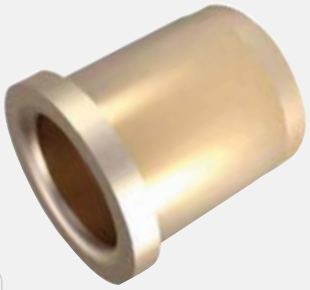
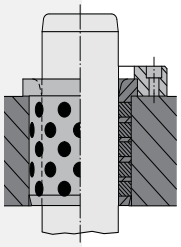




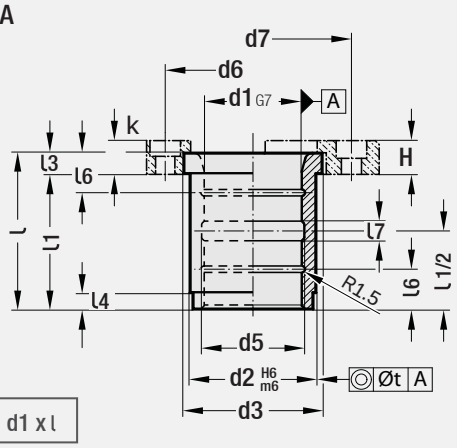
Code: G86

Guide Bush, Bronze

Heat Resistance: < 150°C

CNOMO / PSA

Working Direction



Order: G86. d1 x l

d1	l	d2	d3	d5	d6	d7	l1	l3	l4	l6	l7	h	k
20	32	28	32	22	-	48	28	4	3	-	5	10	-
25	40	35	40	27	-	56	35	5	5	-	5	10	-
32	50	44	50	34	-	65	44	6	8	12	5	12	-
40	63	52	60	42	75	82	55	8	8	16	8	12	12
50	80	63	71	52	90	98	70	10	8	20	10	16	16
63	100	80	90	65	111	115	88	12	10	25	12	20	20
80	125	100	112	82	133	144	109	16	10	32	16	25	25
100	160	125	140	102	162	170	140	20	10	40	20	32	32

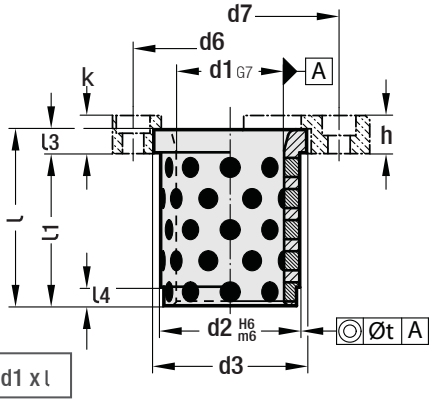
Guide Bush, Headed - CNOMO

Code: G43

Self-Lubricating

Heat Resistance: < 150°C

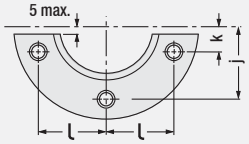
Working Direction

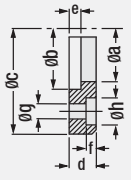


Order: G43. d1 x l

d1	l	d2	d3	d6	d7	l1	l3	l4	h	k	(A)t
20	32	28	32	-	48	28	4	3	10	-	0.01
25	40	35	40	-	56	35	5	5	10	-	0.01
32	50	44	50	-	65	44	6	5	12	-	0.01
40	63	52	60	75	82	55	8	8	12	12	0.02
50	80	63	71	90	98	70	10	8	16	16	0.02
63	100	80	90	111	115	88	12	10	20	20	0.02
80	125	100	112	133	144	109	16	10	25	25	0.02
100	160	125	140	162	170	140	20	10	32	32	0.02

Bush Holder Flange





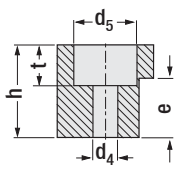
Order: G118. Bush

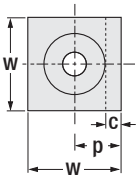
Code: G118

Bush	a	b	c	d	e	f	g	h	j	k	l
25	32	41	72	10	5	7	6.6	12	-	20	20
32	40	51	80	12	6	7	6.6	12	-	21	25
40	50	61	100	12	8	7	6.6	12	41	14	38.5
50	63	72	125	16	10	9	9	16	49	17	46
63	80	91	140	20	12	11	11	18	57.5	17	55
80	100	113	180	25	16	13	14	22	72	20	70
100	125	141	200	32	20	13	14	22	85	25	81

Bush Clamp

CNOMO





Order: G102E. Bush

FORM - E

Code: G102E

Bush	w	p	h	e	c	t	d_4	d_5
Ø 40	18	9.5	12	8	3	7	6.6	11
Ø 50	22	12	16	10	4	9	9	15
Ø 63	26	15	20	12	5	11	11	18
Ø 80	26	15	25	16	5	11	11	18
Ø 100	26	15	32	20	5	11	11	18

Note: Used with G03 / G43 guide pillars and bushes. Instead of this clamp in these standards, the clamps with code nr. G102 may be used.

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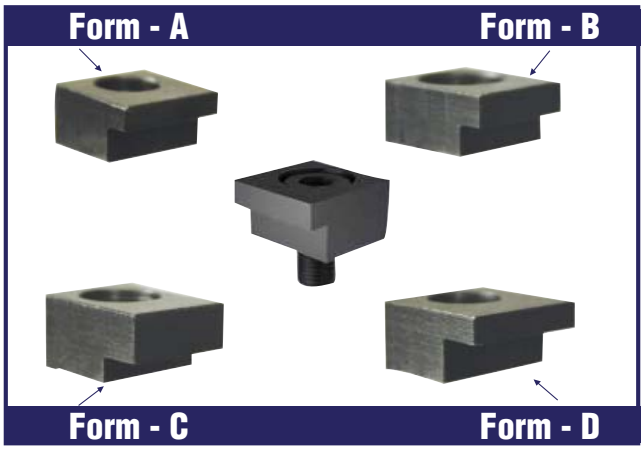
Clamps for Guide Components

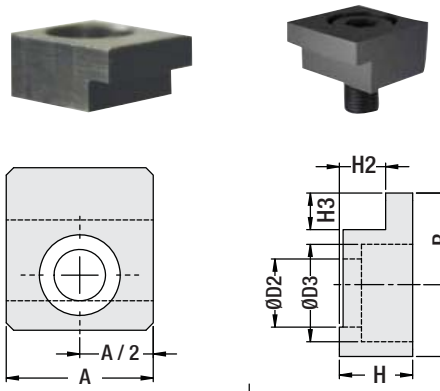


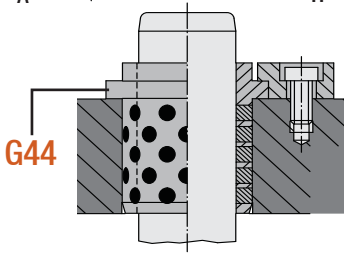
Guide Bush Clamp

Form: A-B-C-D

Code: G102

It is used to fix from cap or flange portion at guide pillar and self lubricating bush. While using for self-lubricating guide bushes and other bush components with bushes for Ø ≤ 63 - 2 pcs. and for Ø ≥ 80 - 3 pcs. clamps are used. Mounting screws should be supplied separately.



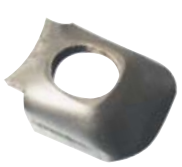


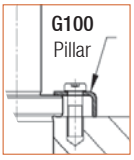
Code: G102

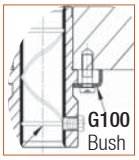
Ø d - d1 Pillar / Bush	A mm	B mm	l mm	H mm	H2 mm	H3 mm	D2 Ø	D3 Ø	Form Screw
25 - 32 40 - 50	20	12.5	20	10	6.3	5	7	11	**A** **M6x16**
63 - 80 100 - 125 160	20	15	25	12	6.3	5	9	15	**B** **M8x20**
63 - 80 100 - 125	25	21	32	16	6.3	10	11	18	**C** **M10x20**
63 - 80 100 - 125 160	32	21	32	16	10	10	11.5	17.5	**D** **M10x20**

Order: **G102.** Form

Order Example: G102.A



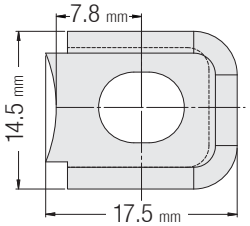


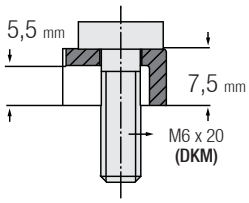


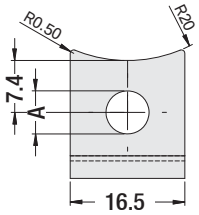
Guide Pillar & Bush Clamp

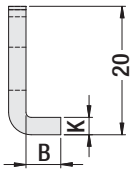
Order Code: G100

Can be used in clamping of demountable guide pillars (**G10 - G15 - G01 - G08**) in clamping system of guide pillars.









Guide Pillar & Bush Clamp

Code: G143

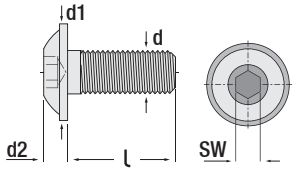
Thick and walled clamps used in clamping of guide pillar / bush sets in dies.

Form Screw	A	B	K
A **M6**	6.20	4.80	2.5
B **M8**	8.40	5.80	4

Order: **G143.** Form

Order Example: G143.B

NEW



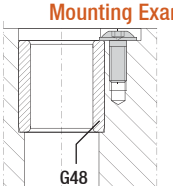
Hex-socket Button Head Screw with Flange

Code: IMBF

ISO 7380-2 **10.9 Zinc Plated**

d	l	d1	d2	SW
M6	10 12 16	13.6	3.3	4
M8	16 20	17.8	4.4	5
M10	20	21.9	5.5	6

Mounting Example



Order: IMBF. d x l

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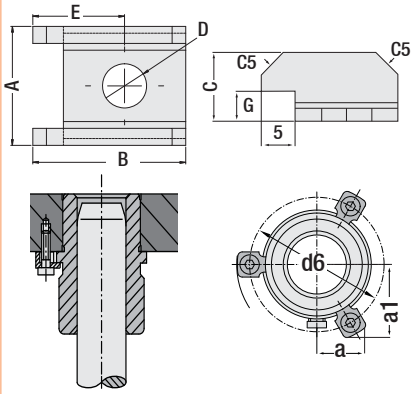
Guide Bush Clamp

Code: G101

While using for self-lubricating guide bushes and other bush components with bushes for Ø ≤ 63 2 pcs. and for Ø ≥ 80 3 pcs. clamps are used. Mounting screws are supplied separately.



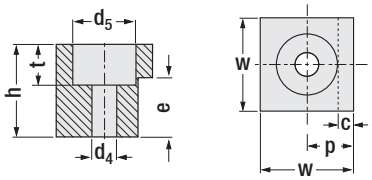
Code: G101

ø d Bush	A mm	B mm	C mm	D mm	E mm	G mm	Form
32 / 40 50 / 63 63 / 80 100 115	17.5	22.5	12	6.5	13.5	6	A M6 x 20
32 / 40 50 / 63 63 / 80 100 115 125	21	25.5	13.5	8.5	15	5.5	B M8 x 20

Order: G101. Form

Bush Clamp

Code: G102E



Order Example: G102E.40

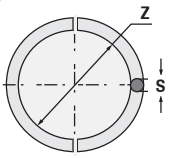
Reference: CNOMO

Bush	w	p	h	e	c	t	d_4	d_5
Ø 40	18	9.5	12	8	3	7	6.6	11
Ø 50	22	12	16	10	4	9	9	15
Ø 63	26	15	20	12	5	11	11	18
Ø 80	26	15	25	16	5	11	11	18
Ø 100	26	15	32	20	5	11	11	18

Circlip

Code: G112

G02-G03-G04-G05
G06-G07-G09-G20
It is used with above guide pillars.



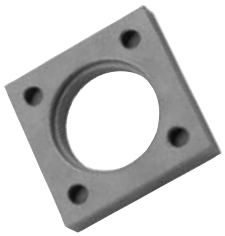
Pillar	z	s
Ø 25	22.5	2.5
Ø 32	28	4
Ø 40	36	4
Ø 50	46	4
Ø 63	57	6
Ø 80	74	6
Ø 100	94	6

Order: G112. Pillar

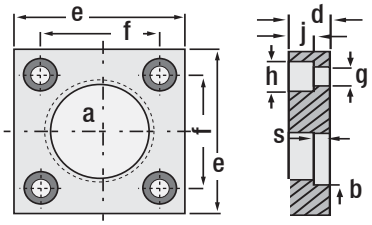
Square Flange for Guide Pillar

Reference: CNOMO
Reference: PSA

Code: G119

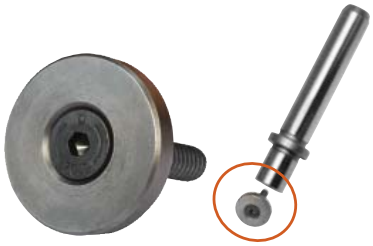


G03
G04
G05
It is used with above guide pillars.



a Pillar	b	d	e	f	g	h	j	s
25	28	10	45	31	6.6	11	7	2.7
32	37	10	56	36	6.6	11	7	4.2
40	45	12	70	50	6.6	11	7	4.2
50	55	14	80	55	9	16	9	4.2
63	70	18	100	70	11	18	11	6.2
80	87	20	110	80	13	22	14	6.2
100	107	20	140	100	13	22	14	6.2

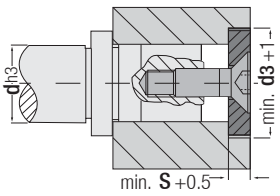
Order: G119. a (pillar)

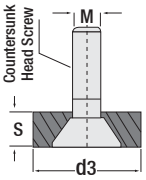


Mounting Flange

Code: G110

Guide pillar fixation & Support washer





★ Reliable product used for guide pillar with centre collar mountings min. d3+1

★ It can also be used to support for ejector plates in injection moulds / etc.

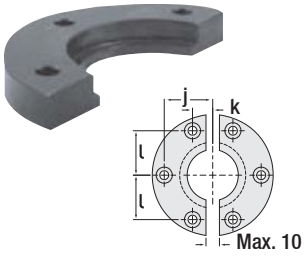
Ø d3	Pillar Diameter d	Flange S	Screw M
22	Ø 15 / 16	5.5 mm	M8 x 20
25	Ø 19 / 20		
32	Ø 24 / 25		
40	Ø 32 / 30	7.5	
50	Ø 38 / 40	9.5 mm	
60	Ø 48 / 50		
73	Ø 60 / 63		
93	Ø 80	12	M12 x 20

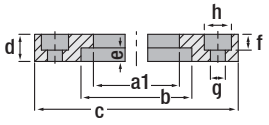
Order: G110 . d3

Guide pillar fixation (Die)
Support washer (Mould)

Bush Holder Flange

Code: G118





* For product selection and details, refer to page 40

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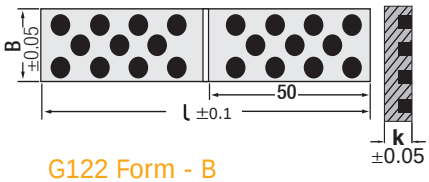
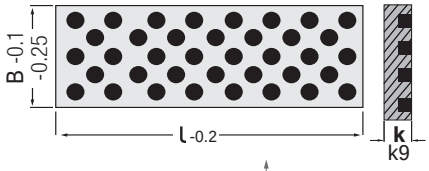
Wear Plate, Plain Type
Self-Lubricating

G122 Form - A



G122 Form - B



Heat Resistance 150°C — Working Direction

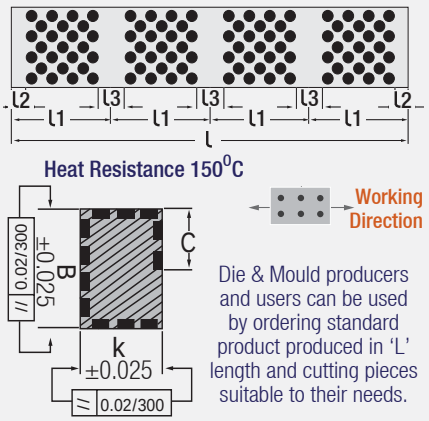
Code: G122

k	l	B	Form
5.3	302	20	A
		35	
		50	
10.3	302	20	A
		35	
		50	
5	50	25	B
	71		
	90		
5	50	40	B
	71		
	80		
	90		
6	100	40 63	B
	125		
	160		
	200		

Order: **G122.** k x l x B x Form

Long strip wear plates is compatible for use by perforated connection holes and cutting by user (in desired length). **Working surfaces should be lubricated for once.**

Wear Plate, Two-Way Sliding Type
Self-Lubricating

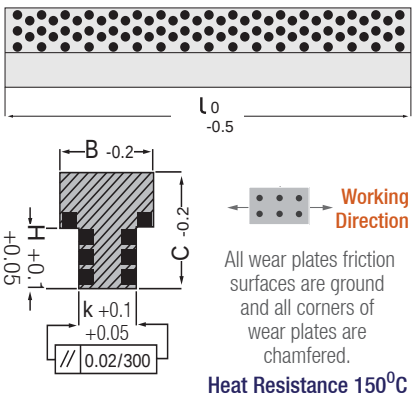


Die & Mould producers and users can be used by ordering standard product produced in 'L' length and cutting pieces suitable to their needs.

Code: G123

k	B	l	C	l1	l2	l3
10.3	**15.3**	75	6	25	3	6
		100				
		150				
		200				
		250				
		300				
15.3	**25.3**	105	8	35	4	8
		140				
		175				
		210				
		245				
		280				
		315				
		350				
		385				
		420				
		455				
		490				
25.3	**35.3**	135	12	45	5	10
		180				
		225				
		270				
		315				
		360				
		405				
		450				
		496				
35.3	**45.3**	165	16	55	6	12
		220				
		275				
		330				
		385				
		440				
		495				

Order: **G123.** k x l x B



All wear plates friction surfaces are ground and all corners of wear plates are chamfered.

Heat Resistance 150°C

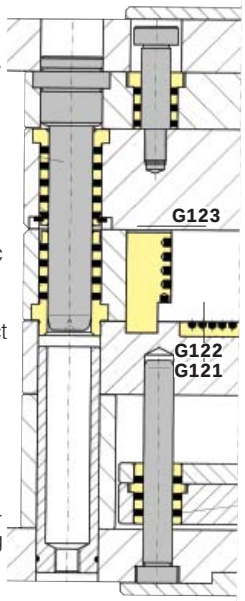
Wear Plate, "T" Shaped
Self-Lubricating

Code: G121

C	l	B	k	H
12	350	18	8	5
25	350	22	12	15
35	350	28	18	20

Usage of self-lub. wear plates on injection moulds:

Self-lubricating components provides load carrying capacity beyond expectations in low sliding speeds and a wide temperature range. The graphite inserts are positioned with an appropriate geometric structure.
By this means, maximum lubricating effect is achieved during sliding.
They especially work better with hardened and ground bearings. Sliding surfaces should be slightly lubricated before starting to work.



Order: **G121.** C x l

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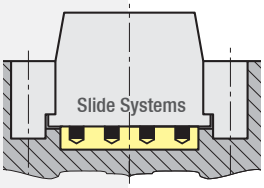


Wear Plate, Self-Lubricating

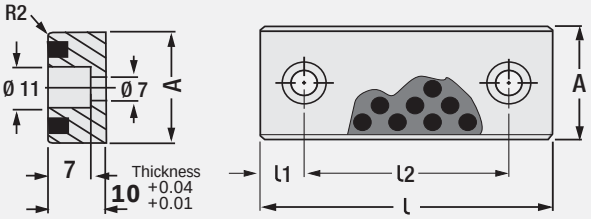
Code: G85

Thickness: 10 mm / with 2 holes

Self-lubricating components provides load carrying capacity beyond expectations in low sliding speeds and a wide temperature range.
The graphite inserts are positioned with an appropriate geometric structure. By this means, maximum lubricating effect is achieved during sliding. They especially work better with hardened and ground bearings. Sliding surfaces should be slightly lubricated with lithium grease during mounting before starting to work. 25-30% of the surface in plain, self-lubricating bearings and pillar bearings are formed with graphite inserts. The part corresponding to self-lubricating bearing component should be ground and fixed to the sliding axis in parallel.

Heat Resistance 150°C

Working Direction



Code: G85

A	l	l1	l2	Hole
18	75	15	45	2 pcs. M6 x 20
	100	25	50	
	125		75	
	150		100	
28	75	15	45	
	100	25	50	
	125		75	
	150		100	
38	75	15	45	
	100	25	50	
	125		75	
	150		100	
48	75	15	45	
	100	25	50	
	125		75	
	150		100	

Order: G85. A x l

Material: Bronze + graphite inserts

Lithium Grease - 1kg.

Self-lubricating components should be lubricated once in order to activate permanent lubricating at the first use.

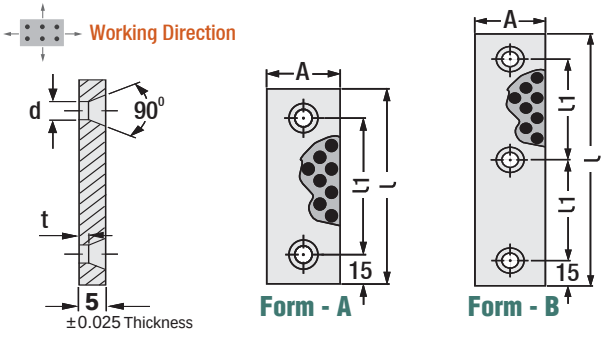
Order: W150206

Wear Plate, Self-Lubricating

Code: G83

Thickness: 5 mm / Form: A - B - C - D

Self-lubricating plates are generally preferred because of their strength against lateral loads in large dies or injection moulds (cores).
They are maintenance-free, self-lubricating and work long time.



Code: G83

A	l	l1	b	d	t	Form	Screw
18	50	20	-	6.5	1	A	2 pcs. M6 x 10
	75	45					
	100	70					
	150	60				B	3 pcs.
28	50	20	-	9	0.5	A	2 pcs. M8 x 10
	75	45					
	100	70					
	150	60				B	3 pcs.
38	50	20	-	9	0.5	A	2 pcs. M8 x 16
	75	45					
	100	70					
	150	60				B	3 pcs.
48	75	45	-	9	0.5	A	2 pcs. M8 x 16
	100	70					
	125	95					
	150	60				B	3 pcs.
75	75	45	45	9	0.5	C	4 pcs. M8 x 16
	100	70					
	125	95					
	150	60				D	6 pcs.
100	100	70	70	9	0.5	C	4 pcs. M8 x 16
	125	95					
	150	60				D	6 pcs.

Order: G83. A x l

Material: Bronze + graphite inserts

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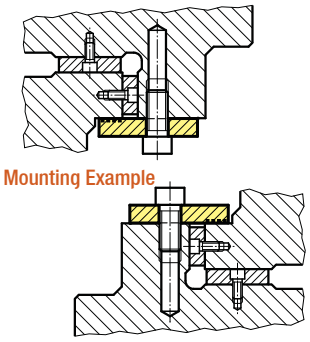
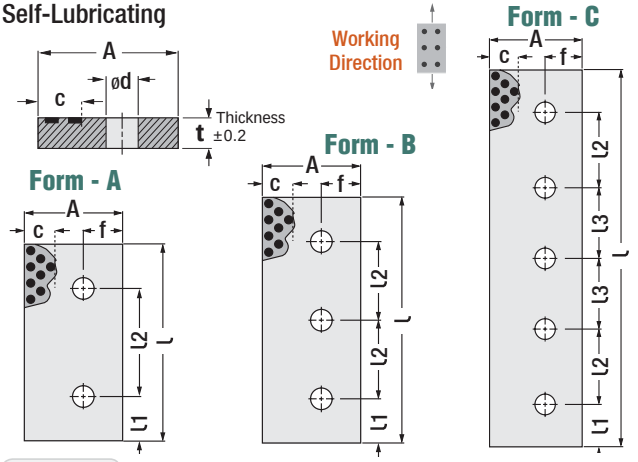


Code: G94C
(steel type)

Wear Plate, VDI 3357

Code: G95

Self-Lubricating



Code: G95

A	l	l1	l2	l3	t	c	f	d	Form
35	160	45	70	-	10	10	15	11	A
	200		110						
	250		80						B
45	160	45	70	-	15	15	15	13.5	A
	200		110						
	250		80						B
55	160	45	70	-	15	20	20	17.5	A
	200		110						
	250		80						B
75	160	45	70	-	25	25	35	17.5	A
	200		110						
	250		80						B
100	160	45	70	-	25	30	40	17.5	A
	200		110						
	250		80						B
	400		80	75					C
	160		70	-	30			22	A
	200		110						
	250		80						B
	400		80	75					C
125	160	45	70	-	30	30	50	22	A
	200		110						
	250		80						B
	400		80	75					C

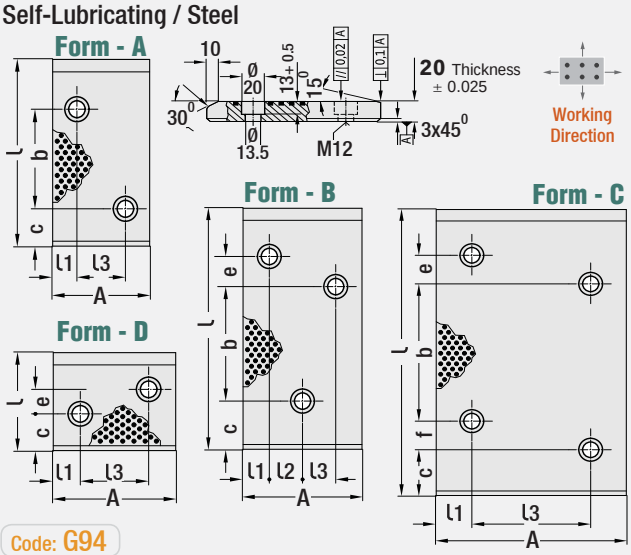
Order: G95. A x l x t

Material: Bronze + graphite inserts

Wear Plate, NAAMS

Code: G94

Self-Lubricating / Steel



Code: G94

A	l	l1	l2	l3	c	f	b	e	Hole	Form
50	100	25	-	-	30	-	30	-	2	A
	150						80			
	200				40		120			
80	100	20	-	40	30	-	30	-	2	A
	150						80			
	200				40		120			
	250						170			
	315		20	20			210	25	3	B
100	50	22	-	56	14	-	-	13	2	D
	80				30			20		
	100						30	-		A
	150						80			
	200		28	28	40		95	25	3	B
	250						145			
	315						210			
125	80	25	-	75	30	-	-	20	2	D
	100						30	-		A
	150						80			
	200		37	38	40		95	25	3	B
	250						145			
	315		-	75		25	185		4	C
160	100	30		100	30	-	30	-	2	A
	150						80			
	200		50	50	40		95	25	3	B
	250			100		25	120		4	C
	315					25	185			

* G94: Bronze + self-lubricating type.
* G94C: Steel type.
* The dimensions of G94 & G94C are same.

Order: G94 or G94C. A x l

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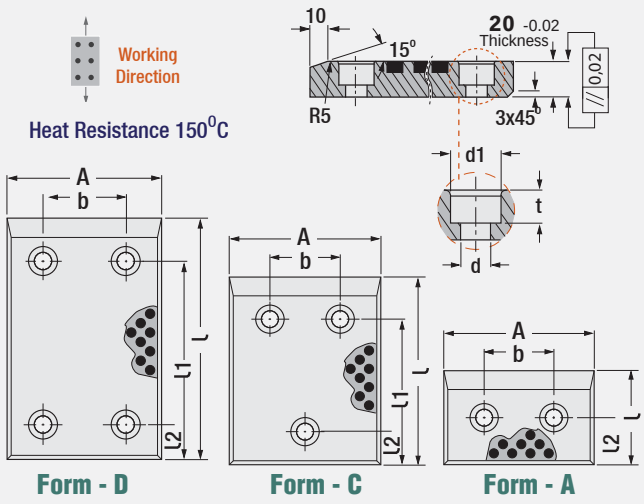
Wear Plate, VDI 3357

Code: G91

Self-Lubricating, Thickness: 20 mm / Form: A - C - D



* Please specify Form A - C - D when placing order.

Code: G91

A	l ±0.2	l1	l2 ±0.2	b ±0.2	d H13	d1 H13	t	Form	Screw
80	50	-	25	30	9	15	9	A	M8x25
100	50	-	25	50	13.5	20	13	A	2 pcs. M12x25
	80		40						
125	50	-	25	75	13.5	20	13	A	2 pcs. M12x25
	80		40						
	100	75	25	75	13.5	20	13	C	3 pcs. M12 x 25
	125	100							
	160	135							
	200	175							
	250	210	40						
	315	275							
160	50	-	25	110	13.5	20	13	A	2 pcs. M12x25
	80		40						
	100	75	25	110	13.5	20	13	C	3 pcs. M12 x 25
	125	100							
	160	135							
	200	175							
	250	210	40						
	315	275							
160	250	210	40	110	13.5	20	13	D	4 pcs. M12x25
	315	275							

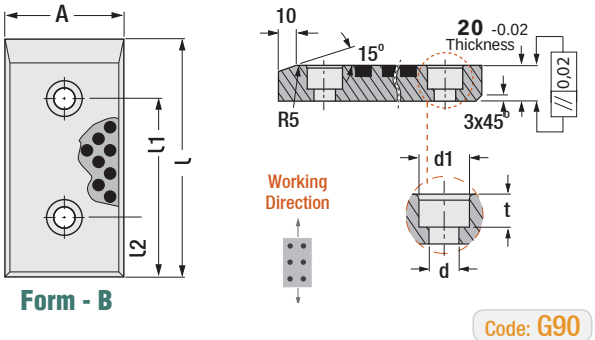
Order:
G91 or G91C. A x l x Form

* G91: Bronze + self-lubricating type.
* G91C: Steel type.
* The dimensions of G91 & G91C are same.

Wear Plate, VDI 3357

Code: G90

Self-Lubricating, Thickness: 20 mm



Code: G90

A	l ±0.2	l2 ±0.2	l1	d H13	d1 H13	t	Form	Screw
50	80	25	55	9	15	9	B	M8x25
	100		75	13.5	20	13		2 pcs. M12 x 25
	125		100					
	160		135					
	200		175					
80	80	25	55	13.5	20	13	B	2 pcs. M12 x 25
	100		75					
	125		100					
	160		135					
	200		175					
	250	40	210					
	315		275					
100	100	25	75	13.5	20	13	B	2 pcs. M12 x 25
	125		100					
	160		135					
	200		175					
	250	40	210					
	315		275					

Order:
G90 or G90C. A x l

* G90: Bronze + self-lubricating type.
* G90C: Steel type.
* The dimensions of G90 & G90C are same.

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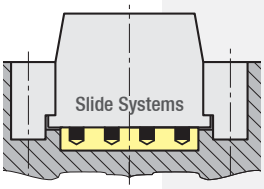
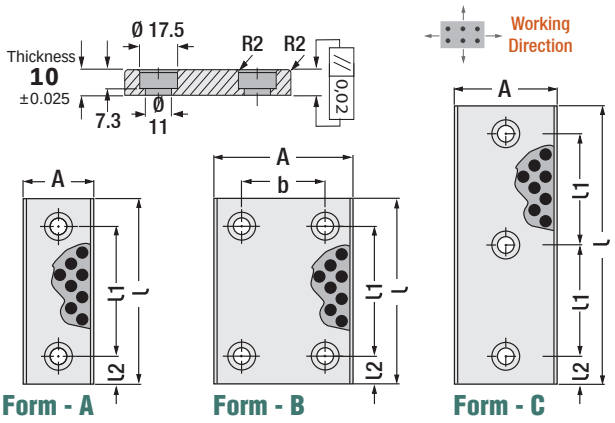


(steel type) Code: G87C

Wear Plate

Code: G84

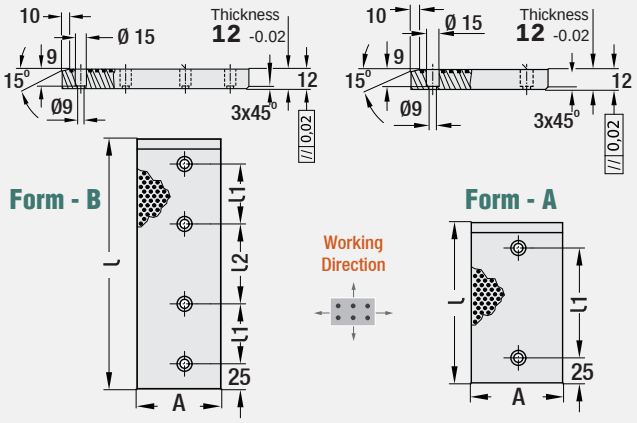
Self-Lubricating, Thickness: 10 mm / Form: A - B - C



Wear Plate, VDI 3357

Code: G87

Self-Lubricating, Thickness: 12 mm / Form: A - B



Code: G84

A	l	l1	l2	b	Form
28	75	45	15	-	A
	100	50	25		
	125	75			
	150	100			
38	75	45	15	-	A
	100	50	25		
	125	75			
	150	100			
48	75	45	15	-	A
	100	50	25		
	125	75			
	150	100			
	200		50		
58	75	45	15	-	A
	100	50	25		
	125	75			

A	l	l1	l2	b	Form
58	150	100	25	-	A
	200		50		
75	75	45	15	-	A
	100	50	25		
	125	75			
	150	100			
	200	75	25	-	C
100	100	50	25	50	B
	125	75			
	150	100			
	200	150			
	250	200			
125	150	100	25	50	B
	200	150			
	250	200			
150	150	100	25	100	B
	200	150			

Order: G84. A x l

* Fixing screws: M10x20.

Code: G87

A	l	l1	l2	Hole	Form
30	80	30	-	2	A
	100	50			
	125	75			
	160	110			
	200	150			
	225	175			
	250	60	80	4	B
	260		90		
	280		110		
	300	80	90		
	320		110		
40	80	30	-	2	A
	100	50			
	125	75			
	160	110			
	200	150			
50	80	30	-	2	A
	100	50			
	125	75			
	160	110			
	200	150			
	225	175			
	250	60	80	4	B
	300	80	90		
	350	100	100		
	400	120	110		

A	l	l1	l2	Hole	Form
60	80	30	-	2	A
	100	50			
	125	75			
	160	110			
	200	150			
	225	175			
	240	60	70	4	B
	250		80		
	260		90		
	280		110		
80	80	30	-	2	A
	100	50			
	125	75			
	160	110			
	200	150			
	225	175			
	240	60	70	4	B
	250		80		
	260		90		
	280		110		
100	260	60	90	4	B
	280		110		

* G87: Bronze + self-lubricating type.
* G87C: Steel type.
* The dimensions of G87 & G87C are same.
* Fixing screws: M8.

Order: G87 or G87C. A x l

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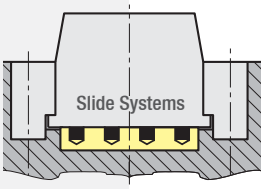
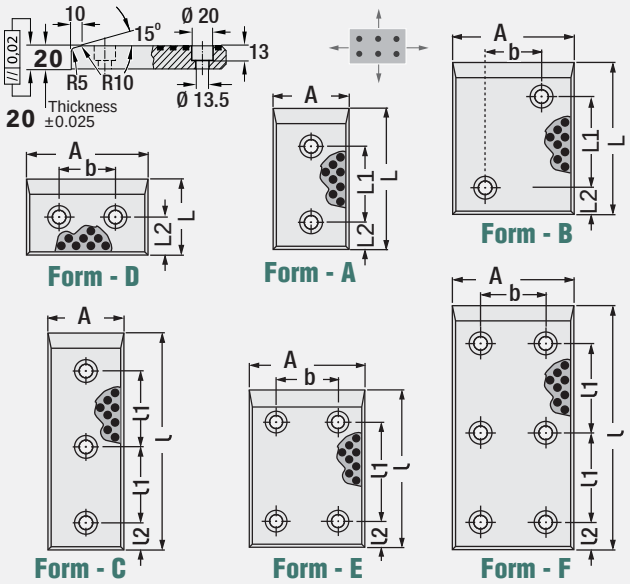


Wear Plate, ISO 9183-1

Code: G89

Self-Lubricating, Thickness: 20 mm / Form: A - B - C - D - E - F



Code: G89

A	l	l1	l2	b	Form
50	80	35	20	-	A
	100	55			
	125	80			
	160	115			
	200	155			
	250	100			C
80	50	-	25	40	D
	80	35	20	40	B
	100	55			
	125	80			
	160	115	20	40	E
	200	155			
	250	100	20	40	F
	315	132			
100	50	-	25	60	D
	80	35	20	60	B
	100	55			
	125	80	20	60	E
	160	115			
	200	155			
	250	100	20	60	F
	315	132			

A	l	l1	l2	b	Form
125	50	-	25	85	D
	80	35	20	85	B
	100	55	20	85	E
	125	80			
	160	115			
	200	155			
	250	100	20	85	F
	315	132			
160	50	-	25	120	D
	80	35	20	120	E
	100	55			
	125	80			
	160	115			
	200	155			
	250	100	20	120	F
	315	132			

* Heat Resistance 150°C.

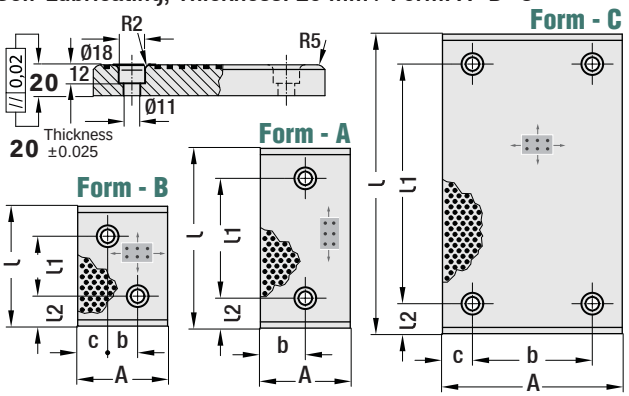
* Fixing screws: M12 x 25.

Order: **G89.** A x l

Wear Plate

Code: G88

Self-Lubricating, Thickness: 20 mm / Form: A - B - C



* Please specify Form A - B - C when placing order.

Code: G88

A	l	l1	l2	c	b	Form
28	75	45	15	-	14	A
	100	50	25			
	125	75				
	150	100				
38	75	45	15	-	19	A
	100	50	25			
	125	75				
	150	100				
	200	150				
48	75	45	15	-	24	A
	100	50	25			
	125	75				
	150	100				
	200	150				
58	75	45	15	-	29	A
	100	50	25			
	150	100				
75	75	45	15	-	37.5	A
	75	25	25	25	25	B
	100	50	25	-	37.5	A
	100	50		25	25	B
	125	75		-	37.5	A
	150	100				
	200	150				

A	l	l1	l2	c	b	Form
100	100	50	25	25	50	C
	125	75				
	150	100				
	200	150				
	250	200				
	300	250				
125	125	75	25	37.5	50	C
	150	100				
	200	150				
	250	200				
	300	250				
	350	300				
150	150	100	25	25	100	C
	200	150				
	250	200				
	300	250				
200	200	150	25	25	150	C
	250	200				
	300	250				

* Heat Resistance 150°C.

* Fixing screws: M10 x 25.

Order: **G88.** A x l x Form

Advantages of Self-Lub. Wear Plate:

- Highly compatible with sudden movements.
- Maximum load carrying capacity at low speeds.
- Can be used under water or with chemical solutions.
- Wide range of temperature resistance.
- Resistant to impact in case of vibration.

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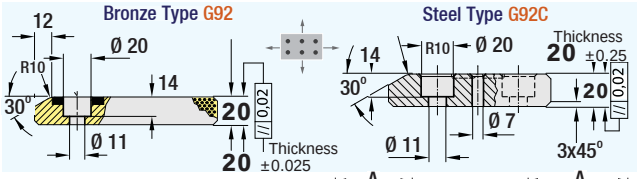
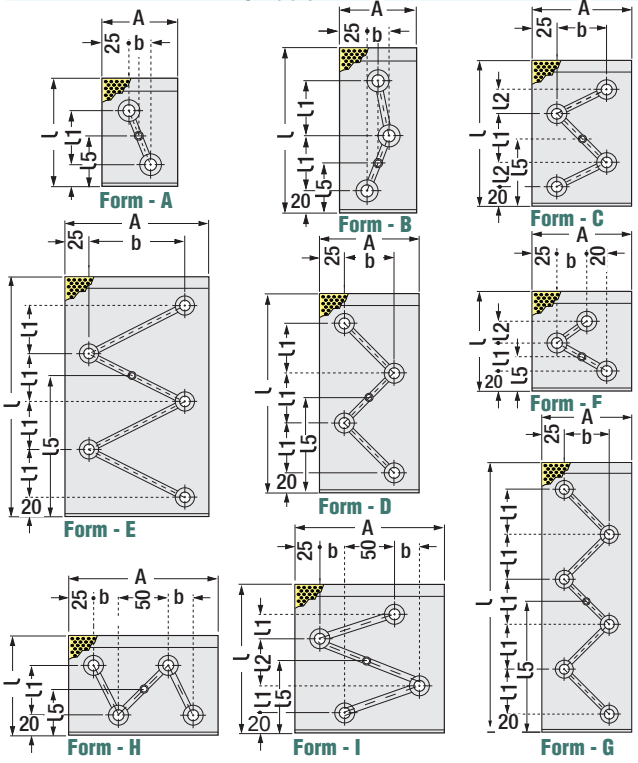
Wear Plate, AFNOR / ISO 9183-2

Code: G92

Form A - B - C - D - E - F - G - H - I

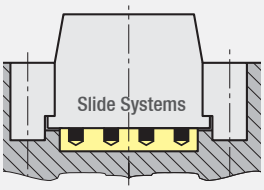




A	l	b	l1	l2	l5	Hole	Form
70	100	20	50	-	45	2	A
	150	10			45	3	B
	200	20			95	4	D
100	150	50	50	25	70	4	C
	200			-	95	4	D
	250				145	5	E
150	200	100	50	-	95	4	D
	250				145	5	E
100	100	30	25	25	32.5	3	F
	300	50	50	-	145	6	G
150	100	25	50	-	45	4	H
	150		25	50	70	4	I
	300	100	50	-	145	6	G
200	100	50	50	-	45	4	H

Order: G92 or G92C. A x l

* G92: Bronze + self-lubricating type.
* G92C: Steel type.
* Fixing screws: M10.

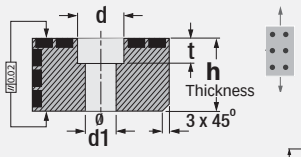


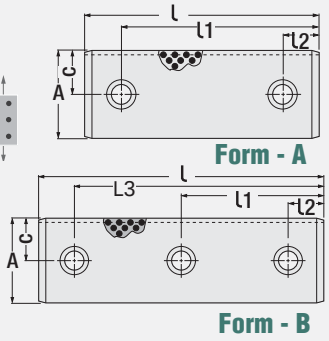
Wear Plate, VDI 3357

Code: G96

Self-Lubricating / Two-Way Sliding Type

Form: A - B



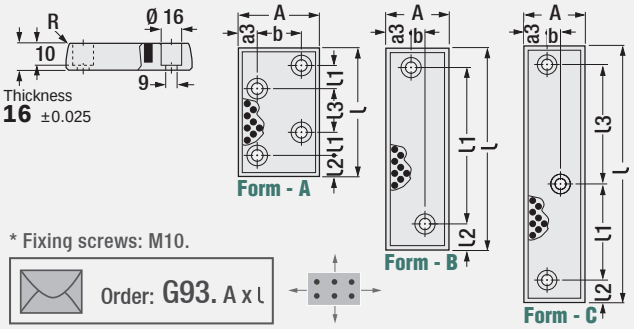


Order: G96. A x l x h x Form

A -0.02	l	l1 ±0.2	l2	l3 ±0.2	c	h -0.02	d H13	d1 H13	t +0.5	Form
25	110	85	25	-	12.5	12	15	9	8.5	A
	120	95								
	110	85				15	18	11	10.5	
	120	95								
60	125	100	25	-	30	30	20	13.5	13	A
	150	125								
	160	135								
60	200	100	25	175	30	30	20	13.5	13	B
	125	100		-		40				A
	150	125		-						
	160	135		-						
	200	100		175						B

Wear Plate, CNOMO

Code: G93



* Fixing screws: M10.

Order: G93. A x l

A	l	l1	l2	l3	b	a3	Hole	Form
50	63	39	12	-	20	15	2	B
50	160	126	21	-	12	19	2	B
50	250	100	21	116	12	19	3	C
63	100	18	15	34	39	12	4	A

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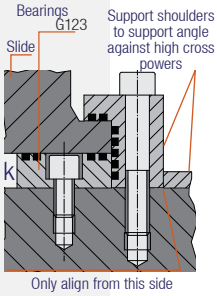
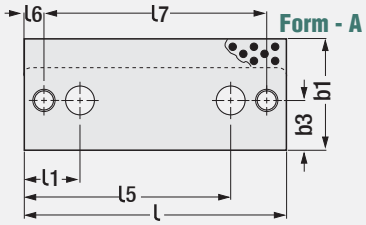
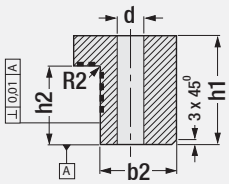


Wear Plate, "L" Shaped

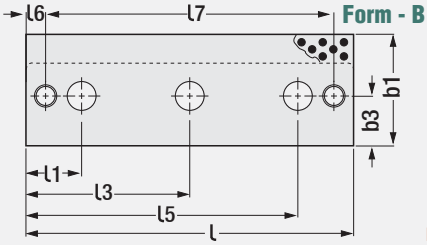
Code: G104

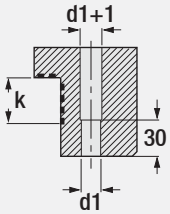
Self-Lubricating & Two-Way Sliding Type

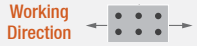


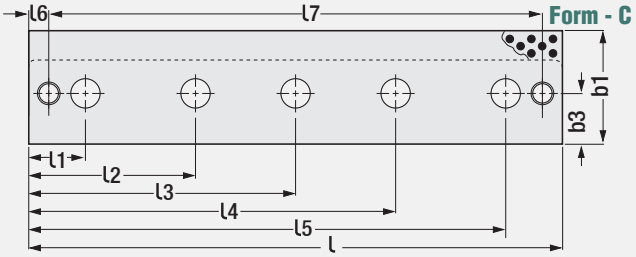


Pin Bearing Detail





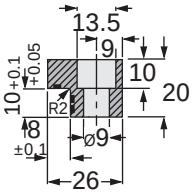




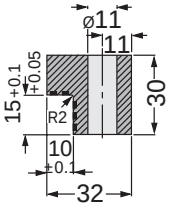
Wear Plate, "L" Shaped

Code: G105

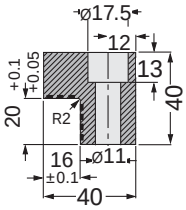
Self-Lubricating & Two-Way Sliding Type



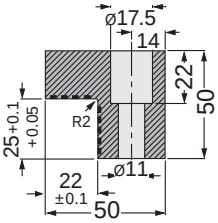
Form - A



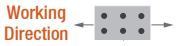
Form - B



Form - C

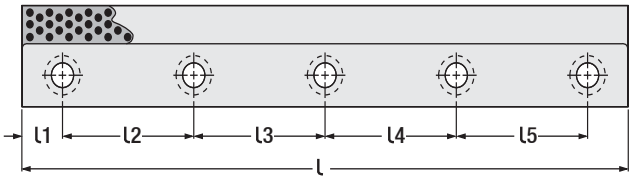


Form - D



Advantages of Self-Lub. Wear Plate:

- Highly compatible with sudden movements.
- Maximum load carrying capacity at low speeds.
- Can be used under water or with chemical solutions.
- Wide range of temperature resistance.
- Resistant to impact in case of vibration.
- General usage area is up to 150°C. Custom-made products as per request.



Code: G104

Form	b1	h1	b2	b3	d	d1	k	h2
A A	55	55	37	20	13.5	10	23	39
A A B C	70	75	50	30	17.5	12	35	55
A A B C	85	90	63	38	22	16	45	65

Form	l	l1	l2	l3	l4	l5	l6	l7
A	100	27.5	-	-	-	72.5	10	80
A	160					132.5		140
A	160	35	-	-	-	125	12.5	135
A	200					165		175
B	250	35	-	125	-	215	12.5	225
C	400		125	200	275	365		375
A	160	42.5	-	-	-	117.5	15	130
A	200					157.5		170
B	250		-	125		207.5		220
C	400		125	200	275	357.5		370

Code: G105

Form	l	l1	l2	l3	l4	l5	Hole
A	100	20	60	-	-	-	2
	150		55	55	-		3
	200		55	50	55		4
B	100	20	60	-	-	-	2
	150		55	55	-		3
	200		55	50	55		4
	250		70	70	70		4
C	160	15	130	-	-	-	2
	250			80			3
D	200	20	55	50	55	-	4
	250		70	70	70	-	4
	300		65	65	65	65	5
	350		80	75	75	80	5

Order: G104. b1 x h1 x l

Material: Bronze + graphite inserts

Order: G105. Form x l

Order Example: G105. A x 200

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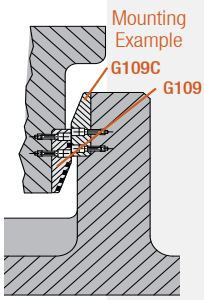
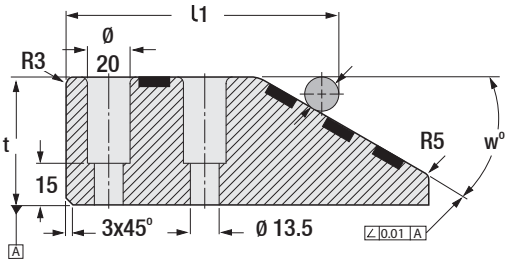


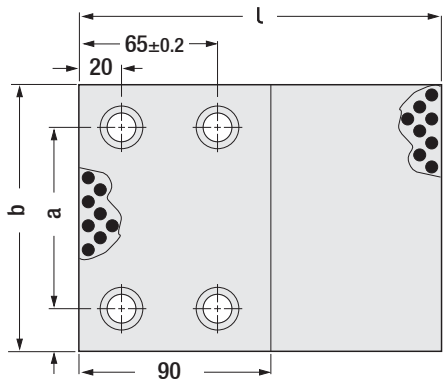
Cam Driver Plate, VDI 3357

Code: G109

Self-Lub. Angular Wear Plates for Upper and Lower Body of Cam Units

Tolerance between hole distances is ± 0.25.
± 0.25 is used for all dimensions where tolerance is not specified.





Code: G109

b	l	t	l1	a	w
100	170	45	143.37	60	20°
125	170	45	143.37	85	20°
150	170	45	143.37	110	20°
100	150	45	127.86	60	30°
100	170	60	127.86	60	30°
125	150	45	127.86	85	30°
125	170	60	127.86	85	30°
150	150	45	127.86	110	30°
150	170	60	127.86	110	30°

Order: **G109.** b x l x t

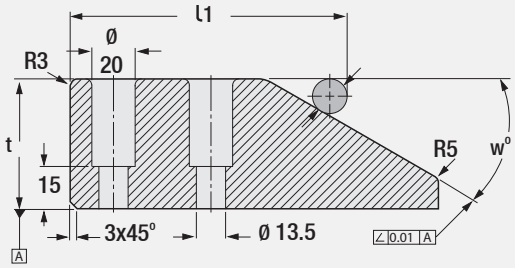
Material: Bronze + graphite inserts

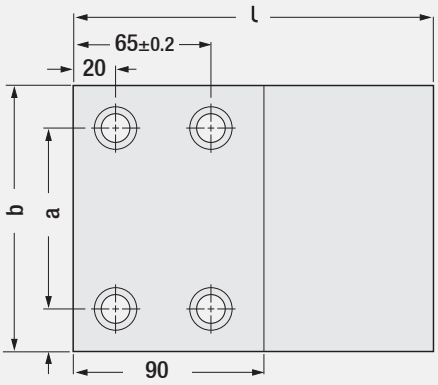
Cam Driver Plate, VDI 3357

Code: G109C

Steel Type, Angular Wear Plates for Upper and Lower Body of Cam Units

Tolerance between hole distances is ± 0.25.
± 0.25 is used for all dimensions where tolerance is not specified.





Code: G109C

b	l	t	l1	a	w
100	170	45	143.37	60	20°
125	170	45	143.37	85	20°
150	170	45	143.37	110	20°
200	170	45	143.37	160	20°
100	150	45	127.86	60	30°
100	170	60	127.86	60	30°
125	150	45	127.86	85	30°
125	170	60	127.86	85	30°
150	150	45	127.86	110	30°
150	170	60	127.86	110	30°
200	150	45	127.86	160	30°
200	170	60	127.86	160	30°

Material: 1.2379
Steel Hardness: 63 - 65 HRC

Order: **G109C.** b x l x t

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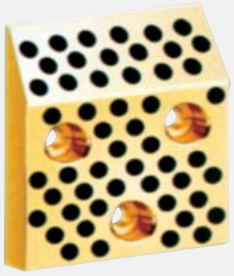


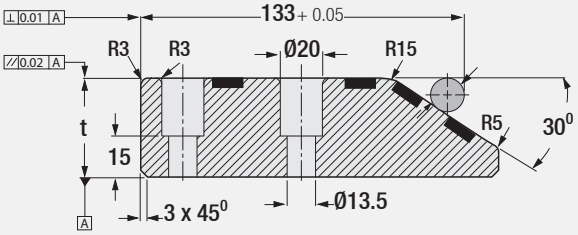
Code: G108C (steel type)

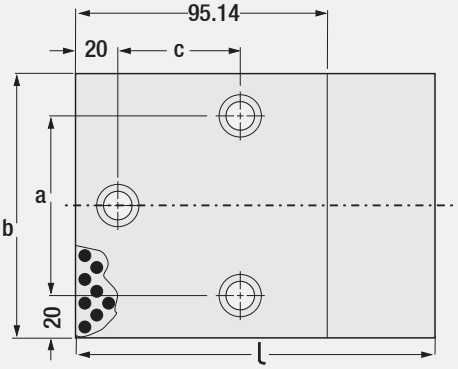
Cam Driver Plate

Code: G108

Self-Lub. & Steel Angular Wear Plates for Upper and Lower Body of Cam Units

Tolerance between hole distances is ± 0.25.
± 0.25 is used for all dimensions where tolerance is not specified.





Code: G108

b	l	t	a	c
100	125	30	60	50
	150	45		45
	170	60		45
125	125	30	85	50
	150	45		45
	170	60		45
160	125	30	120	50
	150	45		45
	170	60		45

Order:
G108 or G108C. b x l

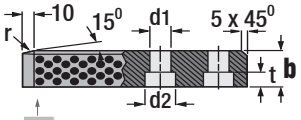
* The dimensions of G108 & G108C are same.
* Fixing screws: M12

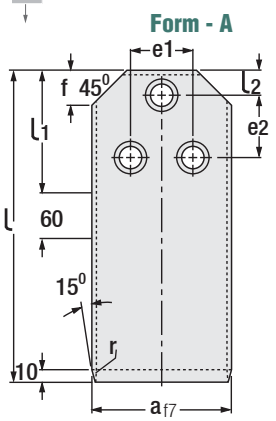
Code: G106C (steel type)

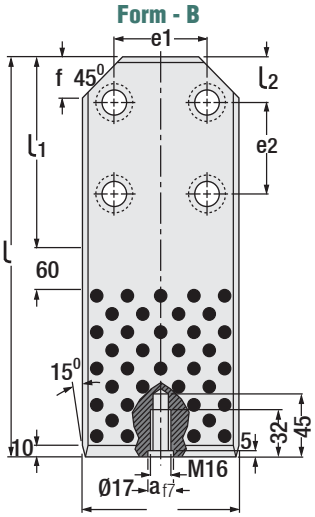
Guide Bar, VDI 3387

Code: G106

Self-Lubricating & Steel Types







Code: G106

a	b	l	l1	l2	e1	e2	f	r	d1	d2	t	Form
63	36	200	90	20	36	50	18	16	14	20	16	A
71												
90	45		100		50		28	25	18	26	21	
112												
112		250										
140	45	315	150	40	90	80	36	31.5	22	33	25.5	B
140		400										
140	56											
190												
240		500	250		160	160			26	40	30.5	
240		630										

Material: Bronze with graphite inserts

Material: 1.2379
Steel Hardness: 63 - 65 HRC

Order:
G106 or G106C. a x b x l

Order Example:
G106. 140 x 45 x 400

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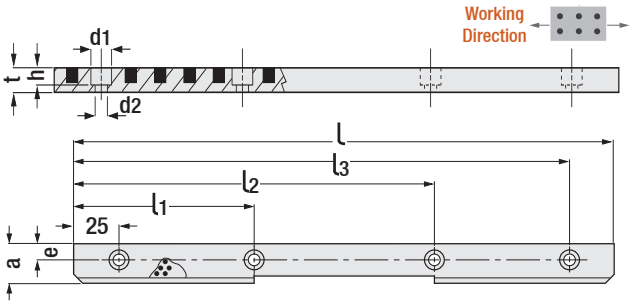
Wear Plate, Replaceable

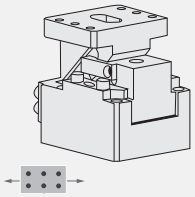
Code: G138

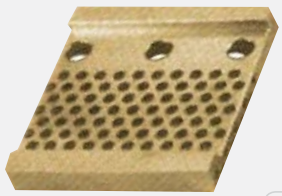


a	l	l1	l2	l3	t	h	e	d1	d2
22	100	-	-	75	10	7	9	11	6.5
	150	75	-	125					
	200	75	125	175					
	250	100	150	225					
	300	100	200	275					
50	150	75	-	125	12	9	22	14	9
	200	75	125	175					
	250	100	150	225					
	300	100	200	275					

Order: G138. a x l

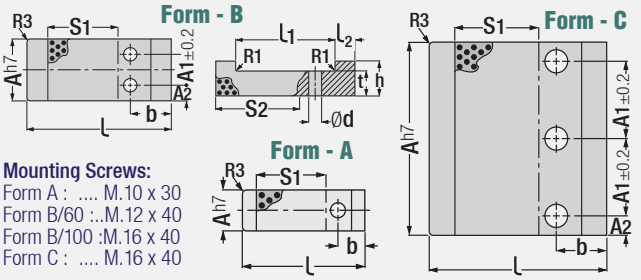
Material: Bronze with graphite inserts





Cam Plate

Code: G137



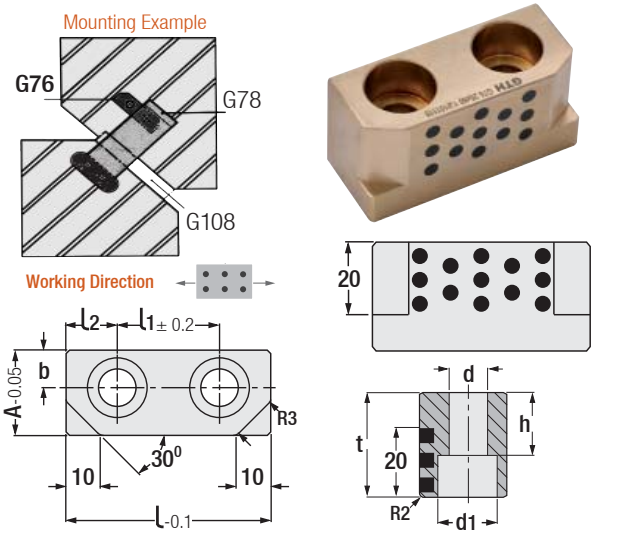
Mounting Screws:
Form A : .... M.10 x 30
Form B/60 :..M.12 x 40
Form B/100 :M.16 x 40
Form C : .... M.16 x 40

Form	A	l	h	l1	l2	A1	A2	S1	S2	b	d	t
A	30	70	17	50	10	-	-	30	40	20	11	12
		90		70				50	60			
B	45	70	25	50	10	22	11.5	30	40	20	11	15
		90		70				50	60			
B	60	120	35	80	20	30	15	40	60	40	13	25
		140		100				60	80			
		160		120				80	100			
B	100	120	35	80	20	70	15	40	60	40	18	25
		140		100				60	80			
		160		120				80	100			
C	150	120	35	80	20	60	15	40	60	40	18	25
		140		100				60	80			
		160		120				80	100			
		180		140				100	120			

Order: G137. Form x A x l

Return Cam Plate

Code: G76



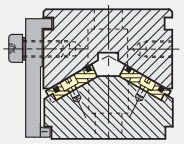
A	l	b	t	l1	l2	d	d1	h
25	60	11	30	30	15	11	17.5	18
32	60	16	38	30	15	13	20	23
32	80	16	38	40	20	13	20	23

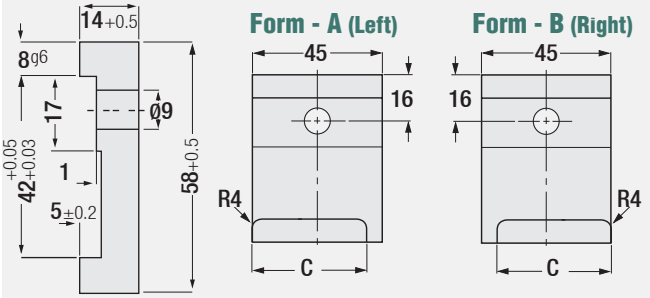
Order: G76. A x l

Material: Bronze with graphite inserts

Positive Return Plate

Code: G78





* **"C" dimension** in the technical drawing is determined by the customer.

Form	Direction
AB	Both sides
A	Left
B	Right

Order: G78. Form

Material: 1.2343
Hardness: 40 - 45 HRC

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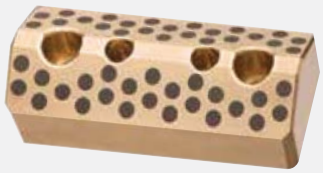
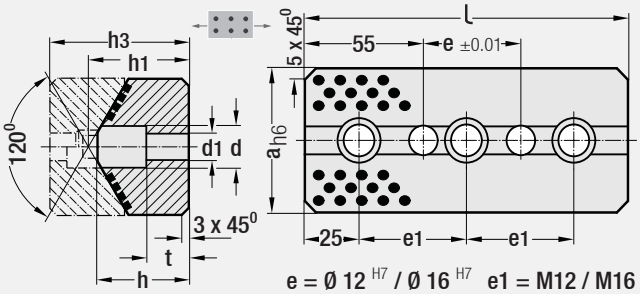


Cam Plate, "V" Guide

Code: G111

Self-Lubricating

There is ± 0.12 tolerance between fixing holes and ± 0.10 tolerance between pin holes.



e = Ø 12 H7 / Ø 16 H7 e1 = M12 / M16

a	l	h1	h	h3	e	e1	d	d1	t	Hole
65	150	47	44	65	45	100	20	13.5	20	2
	200				95	150				
	250				145	100				3
	300				195	125				
125	150	52	47	85	45	100	26	17.5	15	2
	200				95	150				
	250				145	100				3
	300				195	125				

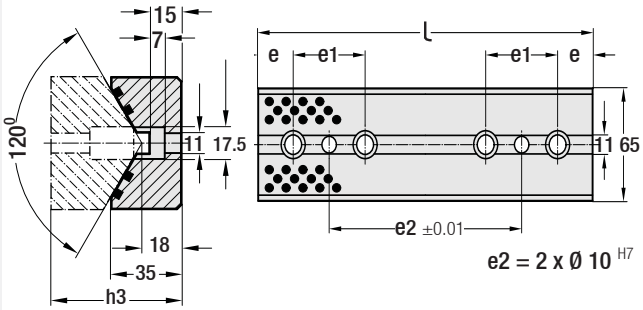
Material: Bronze with graphite inserts

Order: G111. a x l

Cam Plate, "V" Guide

Code: G139

Self-Lubricating



e2 = 2 x Ø 10 H7

h3	l	e	e1	e2	Hole
65	100	20	60	20	2
	150	25	50	50	3
	200			100	4
	250			150	5
	300			200	6

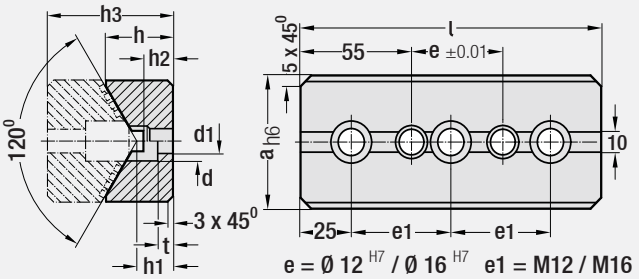
Material: Bronze with graphite inserts

Order: G139. h3 x l

Cam Plate, "V" Guide

Code: G111C

Steel



e = Ø 12 H7 / Ø 16 H7 e1 = M12 / M16

a	l	h1	h	h2	h3	e	e1	d	d1	t	Hole
65	150	18	35	17	65	45	100	20	13.5	8	2
	200					95	150				
	250					145	100				3
	300					195	125				
125	150	33	60	32	85	45	100	26	17.5	15	2
	200					95	150				
	250					145	100				3
	300					195	125				

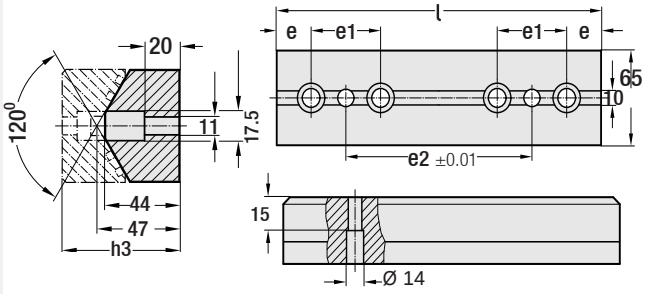
Material: 1.2379
Steel Hardness: 63 - 65 HRC

Order: G111C. a x l

Cam Plate, "V" Guide

Code: G139C

Steel



h3	l	e	e1	e2	Hole
65	100	20	60	20	2
	150	25	50	50	3
	200			100	4
	250			150	5
	300			200	6

Material: 1.2379
Steel Hardness: 63 - 65 HRC

Order: G139C. h3 x l

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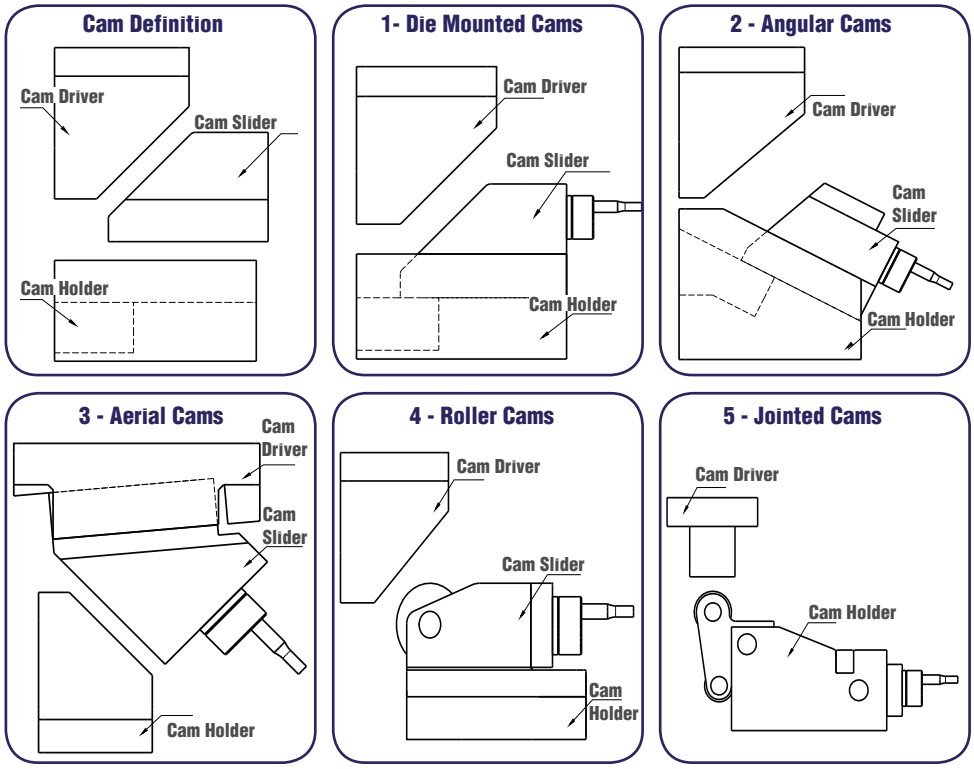
Cam Units Short Definitions

Cam Units: In dies, by turning vertical motion of press to horizontal motion within the die, drilling - cutting - form processes are provided in dies. These cam units are standard compact design components, and grouped as die mounted / angular or aerial cam types. As well as standard cam models are suitable to many general usages, also special models are produced as per request. Also, upper casing holes can be finished (with reamer / H7). Also, plate lock systems or gas spring options may be selected.
Cam Units: They can be connected to different angles - they can be worked at wide force and stroke ranges. **Giving 10% stroke tolerance is recommended.**

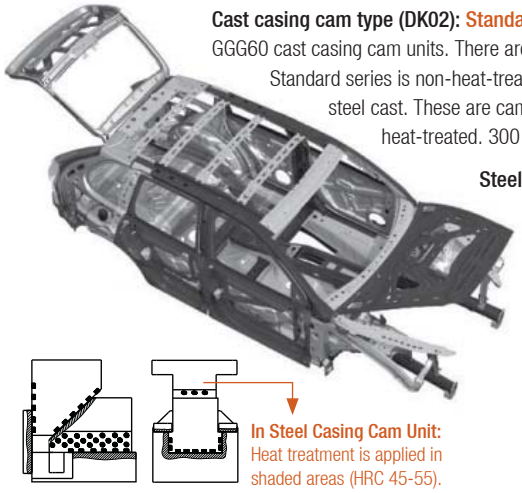
Cam Unit Code	Nominal Size
DK Die Mounted Cam Units	52
	65
	100
	150 ~ 300
	400 ~ 600
DAK Angular Cam Units	65
	100
	150
AKSD	52
AKSCD	52
AKHTF	65
AKUC Aerial Cam Units	50
	65
	80
	150
AKSUK	65
	100
	200
AKBK	65 ~ 200
AKUG Aerial Cam Units	50
	65
	80 ~ 200
	300
AKUSL	500 ~ 1000
AKUNR	70
	80
	165 ~ 400
AKCD	52
	90
AKKP	50
	80
	200 ~ 300
AKKSL	500 ~ 1000
AKUSV	60 ~ 110
	165 ~ 400
RK	01 ~ 03
MK	01 ~ 02

Safety and Working Conditions: Lateral loads should be avoided. Cam unit should not be exposed to dirt and burrs (friction surfaces may get damaged).
* To maintain repeated operation of cam unit, it should be secured to the die robustly.
* Steel or die gas spring used at cam units are nnsured to bring cam to same starting point at every turn at returns.
* In case of any adhesion, side guide arms are with safety system to provide bringing cam to starting point.
* When cam units are mounted with replaceable self-lubricating wear plates, they should be lubricated with thin oil regularly.
* In case of replacement of worn plates, you should be sure that all and centering elements are in their right position.
* If necessary, technical setting should be remade and fixed.
* For technical service, you can contact with our company.

Cam Units Group and Types:



Cam products selection: You can select cam products from our catalogue according to the feature of sheet metal used in your dies in production and load calculations or you can use our technical support service for this matter.
The main purpose in die production is to minimize die production process in terms of time and cost and to simplify the die. This simplification can only be ensured by using standard products as far as possible. In some cases, cam units may be customized according to the operation conditions they will be used. In such cases, if you contact us about product selection or design, we can offer solutions for you.



Cast casing cam type (DK02): Standard (delivery from stock).
GGG60 cast casing cam units. There are 2 models: Heat-treated and non-heat-treated cams. Standard series is non-heat-treated. **Heat-treated cams:** Are produced from hardenable steel cast. These are cams of which friction surfaces (cam holder - slider) are heat-treated. 300 - 500 grade is suitable for sheet metals press.

Steel casing cam type (DK01) : Order as per request.
Cams with mono block steel casing, of which friction surfaces (lower casing and driver) are applied heat treatment. It has a feature to be used in die 400 - 650 grade and over. They work efficiently in performance 1.5 - 2 times better than load values specified in catalogue in proportion to the normal cast type cams and they give better results in high quantity productions (150.00 - 200.00 pieces / year).
If periodic maintenance, cleaning and lubrication is done, cams can press 1.000.000 pieces and over.

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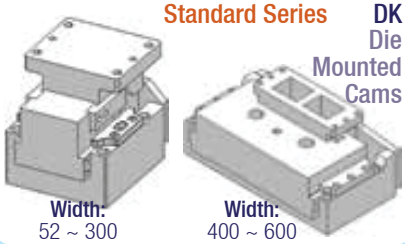
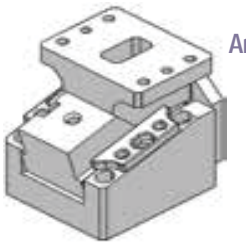
Standard Series
DK
Die Mounted Cams



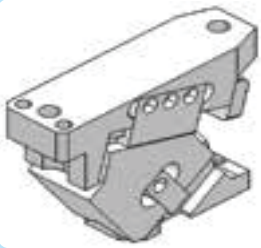
Width: 52 ~ 300
Width: 400 ~ 600

DAK
Angular Cams
Standard Series



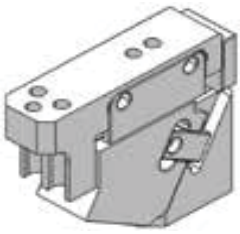
Width: 65 ~ 150

AKSD
Aerial Cams



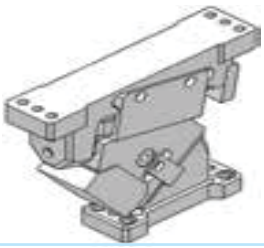
Width: 52

AKSCD
Aerial Cams



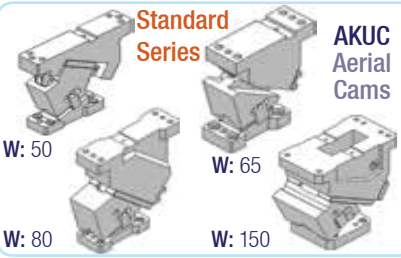
Width: 52

AKHTF
Aerial Cams



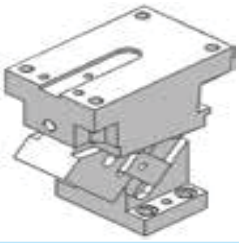
Width: 65

Standard Series
AKUC
Aerial Cams



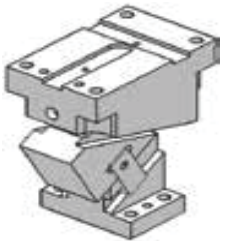
W: 50
W: 65
W: 80
W: 150

AKSOUK
Aerial Cams



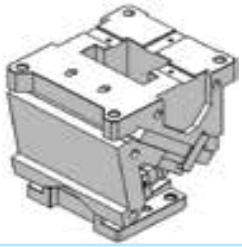
Width: 65 ~ 200

AKBK
Aerial Cams



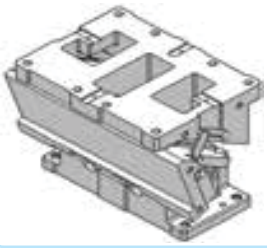
Width: 65 ~ 100 ~ 200

AKSB
Aerial Cams



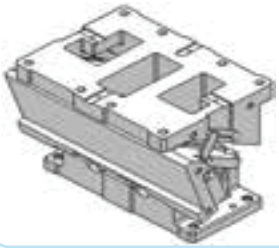
Width: 200 ~ 600

AKUG
Aerial Cams



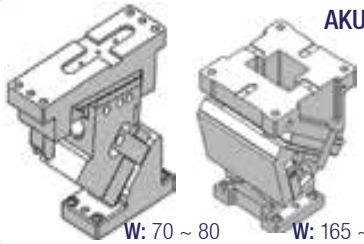
Width: 50 ~ 300

AKUSL
Aerial Cams



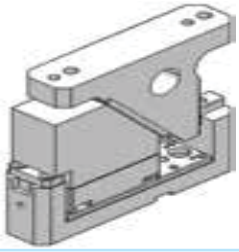
Width: 500 ~ 1000

AKUNR



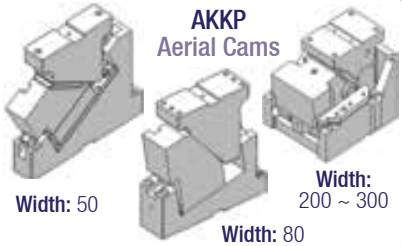
W: 70 ~ 80
W: 165 ~ 400

AKCD
Aerial Cams



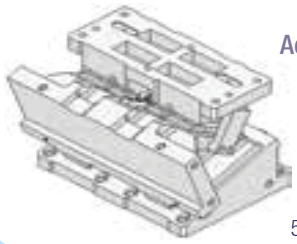
Width: 52 ~ 90

AKKP
Aerial Cams



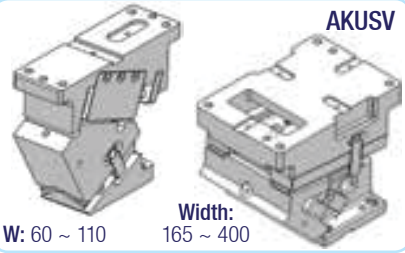
Width: 50
Width: 200 ~ 300
Width: 80

AKKSL
Aerial Cams



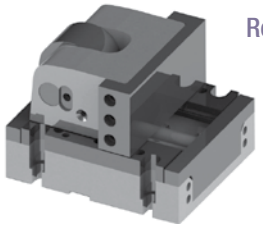
Width: 500 ~ 1000

AKUSV



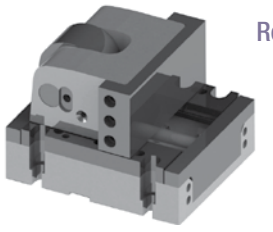
W: 60 ~ 110
Width: 165 ~ 400

RK 01
Roller Cams



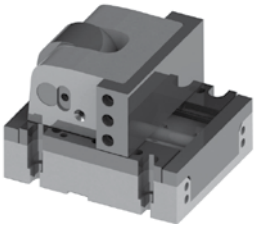
Width:
63
90
135

RK 02
Roller Cams



Width:
68
88
132 - 196

RK 03
Roller Cams



Width:
50
63
90
135
200

MK 01
Jointed Cams

Punch Dia.
Ø 1,5 ~ Ø 6
Ø 12
Ø 16
Ø 25
Ø 32
Ø 50

MK 02
Jointed Cams

Punch Dia.
Ø 12 - Ø 16
Ø 25 - Ø 32

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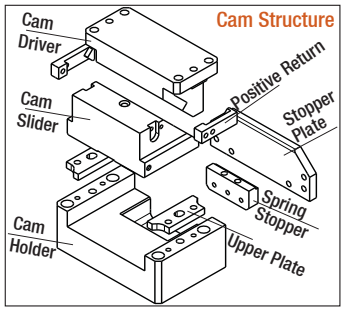
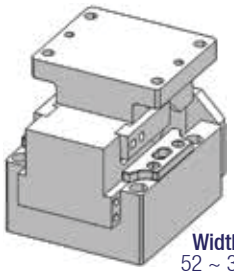
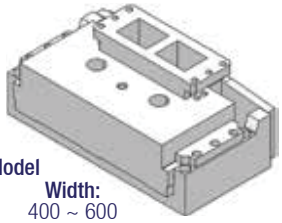


Die Mounted Cam Unit

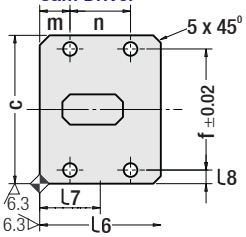
Code: DK02



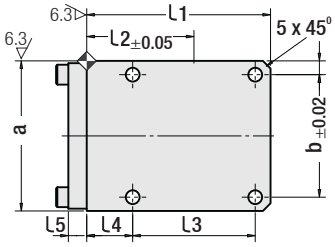


Model
Width: 52 ~ 300
Width: 400 ~ 600

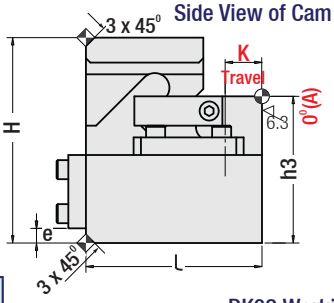
Cam Driver



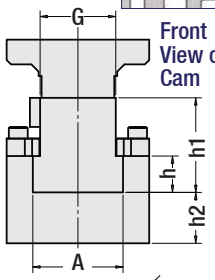
Cam Holder



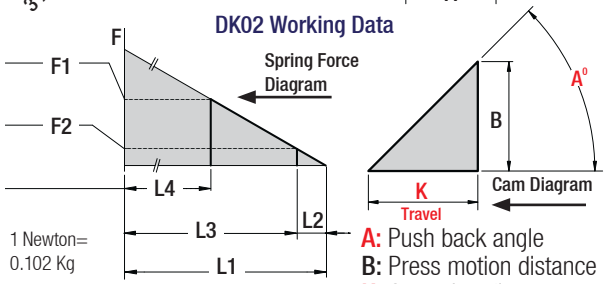
Side View of Cam



Front View of Cam



DK02 Working Data



A: Push back angle
B: Press motion distance
K: Operation distance

"Order" DK02	Working & Spring Force							Cam Diagram		
	F N/mm	F1 kg.	F2 kg.	L1 mm	L2 mm	L3 mm	L4 mm	A° Angle	B mm	K Travel
52 25	9	60.7	14.7	70	8	62	37	45°	25	25
52 40	6.3	61.4	10.2	100	8	92	52		40	40
52 60	4.2	62.8	11.2	150	13	137	77		60	60
65 40	7.8	76.8	12.8	100	8	92	52	45°	40	40
65 60	5.2	77.4	13.8	150	13	137	77		60	60
100 40	11.8	115	19	100	8	92	52	45°	40	40
100 60	7.8	117	21	150	13	137	77		60	60
100 80	7.1	133	18	200	12	188	108		80	80
150 40	19.2	188	32	100	8	92	52	45°	40	40
150 60	12.7	190	34	150	13	137	77		60	60
200 40	19.2	282	47	100	8	92	52	45°	40	40
200 60	12.7	285	51	150	13	137	77		60	60
250 40	25.1	369	62	100	8	92	52	45°	40	40
250 60	16.7	372	66	150	13	137	77		60	60
300 40	25.1	369	62	100	8	92	52	45°	40	40
300 60	16.7	372	66	150	13	137	77		60	60
400 60	37.7	953	31	150	2	148	88	45°	60	60
500 60										
600 60										

Spring Diagram (Technical Drawing) Detail

F: Load = N / mm (Final load)
F1: Final load = (Process pressure spring force)
F2: Initial load N = Spring initial loading
L1: Spring free length mm = Open spring length
L2: Spring initial loading mm = Clamping
L3: Spring length under first load mm
L4: Spring length under last load
Optional (As per request) **P:** Self-lubricating wear plate model
F8: Front Holes Ø 8 H7 finish pin hole may be changed
GY: Gas spring may be used. **I:** Heat treatment may be applied.

Order Example: DK02.6540

"Order" DK02	Working Force		Cam W.	Cam Front View (mm)					Cam Side View (mm)					Cam Driver (mm)							Cam Holder (mm)						
	Standard	Allowable	Kg.	G	A	h	h1	h2	K Travel	L	H	h3	e	c	f	m	n	L6	L7	L8	a	b	L1	L2	L3	L4	L5
52 25	1.5 Ton	3 Ton	8	52	62	25	65	35	25	120	140	100	10	98	80	20	40	80	40	9	98	80	120	70	80	30	12
52 40			8						40	135							50	90	45				135	80	95		
52 60			14						60	180							70	110	55				180	55	140		
65 40	2 Ton	4 Ton	20	65	80	30	70	45	40	140	160	115	25	130	105	20	60	100	50	12.5	130	105	145	80	100	30	12
65 60			21						60	190							70	110	55				180	105	125	40	
100 40	3 Ton	6 Ton	37	100	120	40	100	50	40	190	200	150	30	165	140	20	80	120	60	12.5	175	140	190	105	130	45	16
100 60			38						60	210							100	140	70				130				
100 80			44						80	250			10				110	150	75				220	135	160		15
150 40	6 Ton	9 Ton	63	150	180	40	100	70	40	190	220	170	45	230	200	20	80	120	60	15	260	210	190	105	125	45	19
150 60			69						60	210							100	140	70				200	110	135		
200 40	8 Ton	12 Ton	82	200	230	40	110	70	40	200	240	180	40	280	250	20	90	130	65	15	310	260	200	110	135	45	20
200 60			84						60	220							110	150	75				210	120	145		
250 40	10 Ton	15 Ton	106	250	280	50	130	80	40	210	270	210	50	330	300	20	100	140	70	15	360	310	200	105	135	45	20
250 60			127						60	230							120	160	80				220	125	155		
300 40	12 Ton	18 Ton	106	300	330	50	130	80	40	210	270	210	50	380	350	20	100	140	70	15	410	360	200	105	135	45	20
300 60			128						60	230							120	160	80				220	125	155		
400 60	14	21	203	400	435	60	125	125	60	320	250	195	15	360	300	20	100	140	70	15	525	142	300	210	280	70	50
500 60			237	500	535																625	162					
600 60			279	600	635																725	192					

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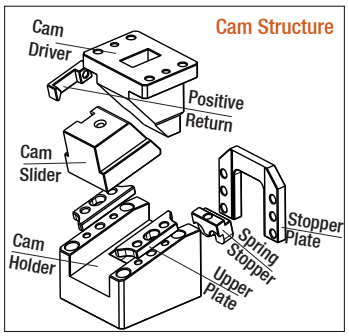
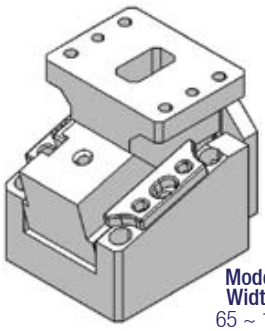
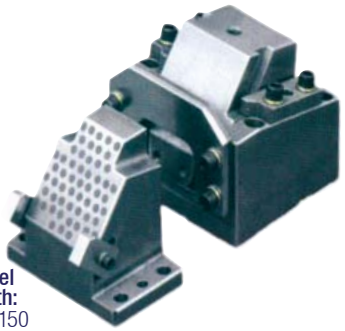


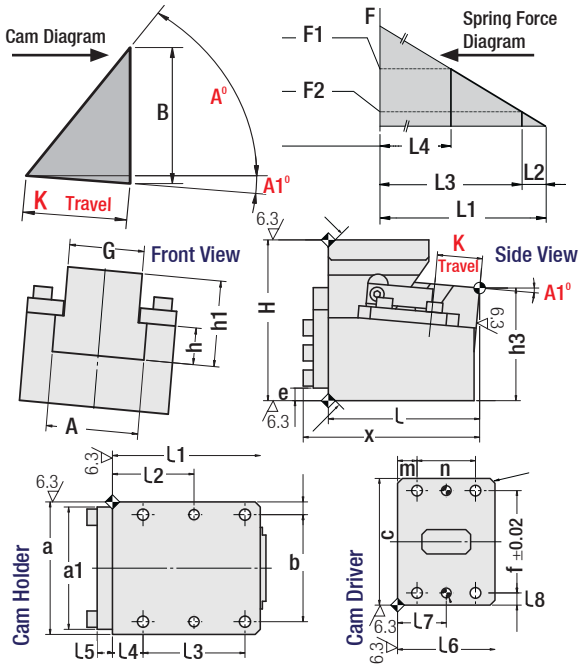


Model Width: 65 ~ 150



Die Mounted - Angular Cam Unit

Code: DAK02



"Order" DAK02	Working & Spring Force							Cam Diagram			
	F N/mm	F1 kg.	F2 kg.	L1 mm	L2 mm	L3 mm	L4 mm	A° Angle	A1° Angle	B mm	K Trav.
65 05 45	6.3	75.5	18	125	14	111	66	55°	5°	67.9	45
65 05 70	5.6	99	19.4	175	17	158	88			105.7	70
65 10 45	6.3	75.5	18	125	14	111	66	50°	10°	60.6	45
65 10 70	5.6	99	19.4	175	17	158	88			94.3	70
65 15 45	6.3	75.5	18	125	14	111	66	45°	15°	55.1	45
65 15 70	5.6	99	19.4	175	17	158	88			85.7	70
65 20 45	6.3	75.5	18	125	14	111	66	40°	20°	50.8	45
65 20 70	5.6	99	19.4	175	17	158	88			79.1	70
100 05 45	9.4	113	27	125	14	111	66	55°	5°	67.9	45
100 05 70	6.8	117	20	175	14.5	161	91			105.7	70
100 10 45	9.4	113	27	125	14	111	66	50°	10°	60.6	45
100 10 70	6.8	117	20	175	14.5	161	91			94.3	70
100 15 45	9.4	113	27	125	14	111	66	45°	15°	55.1	45
100 15 70	6.8	117	20	175	14.5	161	91			85.7	70
100 20 45	9.4	113	27	125	14	111	66	40°	20°	50.8	45
100 20 70	6.8	117	20	175	14.5	161	91			79.1	70
150 05 45	15.3	184	44	125	14	111	66	55°	5°	67.9	45
150 05 70	11	188	32	175	14	161	91			105.7	70
150 10 45	15.3	184	44	125	14	111	66	50°	10°	60.6	45
150 10 70	11	188	32	175	14	161	91			94.3	70
150 15 45	15.3	184	44	125	14	111	66	45°	15°	55.1	45
150 15 70	11	188	32	175	14	161	91			85.7	70
150 20 45	15.3	184	44	125	14	111	66	40°	20°	50.8	45
150 20 70	11	188	32	175	14	161	91			79.1	70

"Order" DAK02	Working Force		Cam W.	Cam Front View (mm)				Cam Side View (mm)						Cam Driver (mm)							Cam Holder (mm)							
	Standard	Allowable	Kg.	G	A	h	h1	K	L	x	H	h3	e	c	f	m	n	L6	L7	L8	a	a1	b	L1	L2	L3	L4	L5
65 05 45	2 Ton	4 Ton	19	65	80	30	70	45	151	176	160	112	12.5	130	105	20	60	100	50	12.5	130	120	105	145	80	100	30	15
65 05 70			22.2					70	195	220	170	123	25											180	65	125	40	
65 10 45	2 Ton	4 Ton	20	65	80	30	70	45	155	180	160	109	25	130	105	20	60	100	50	12.5	130	120	105	145	79	100	30	15
65 10 70			20.5					70	199	224	170	111												180	65	125	40	
65 15 45	2 Ton	4 Ton	22	65	80	30	70	45	158	183	170	105	25	130	105	20	60	100	50	12.5	130	120	105	145	80	100	30	15
65 15 70								70	202	227		104	40				70	110	55					180	65	125	40	
65 20 45	2 Ton	4 Ton	22	65	80	30	70	45	160	185	170	101	30	130	105	20	60	100	50	12.5	130	120	105	145	80	100	30	15
65 20 70			21					70	203	228		96	40				70	110	55					180	65	125	40	
100 05 45	4 Ton	8 Ton	33	100	120	40	90	45	172	197	200	145	27.5	165	140	20	60	100	50	12.5	175	150	140	160	90	105	40	15
100 05 70			38					70	207	234		147	30				80	120	60					190	70	130	45	
100 10 45	4 Ton	8 Ton	33	100	120	40	90	45	178	205	200	135	30	165	140	20	60	100	50	12.5	175	150	140	160	90	105	40	15
100 10 70			38					70	213	240		134					80	120	60					190	70	130	45	
100 15 45	4 Ton	8 Ton	33	100	120	40	90	45	183	210	200	129	32.5	165	140	20	70	110	55	12.5	175	150	140	160	90	105	40	15
100 15 70			38					70	217	244		130	35				90	130	65					190	70	130	45	
100 20 45	4 Ton	8 Ton	32	100	120	40	90	45	186	213	200	118	35	165	140	20	70	110	55	12.5	175	150	140	160	90	105	40	15
100 20 70			39					70	219	246		121	45				90	130	65					190	70	130	45	
150 05 45	6.6 Ton	10 Ton	62	150	180	40	100	45	193	229	220	159	30	230	200	20	70	110	55	15	260	220	210	190	105	125	45	20
150 05 70			73					70	218	254		167	40				90	130	65				320	200	120	135		
150 10 45	6.6 Ton	10 Ton	63	150	180	40	100	45	200	236	220	152	40	230	200	20	70	110	55	15	260	220	210	190	105	125	45	20
150 10 70			73					70	224	260		153					90	130	65					200	120	135		
150 15 45	6.6 Ton	10 Ton	65	150	180	40	100	45	205	240	220	144	40	230	200	20	80	120	60	15	260	220	210	190	105	125	45	20
150 15 70			77					70	229	265	230	153	55				100	140	70					200	120	135		
150 20 45	6.6 Ton	10 Ton	66	150	180	40	100	45	208	224	220	136	40	230	200	20	80	120	60	15	260	220	210	190	105	125	45	20
150 20 70			75					70	232	268	230	137	55				100	140	70					200	120	135		

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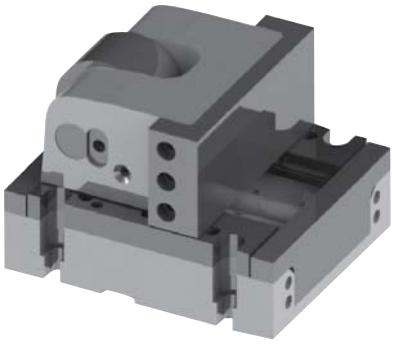
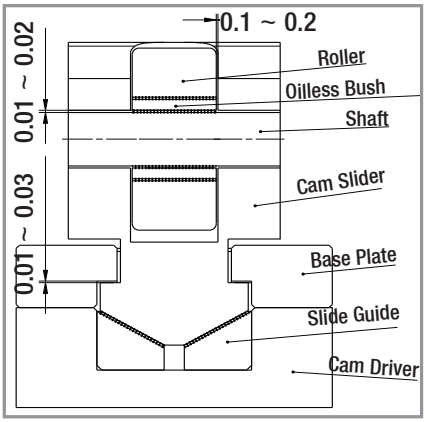
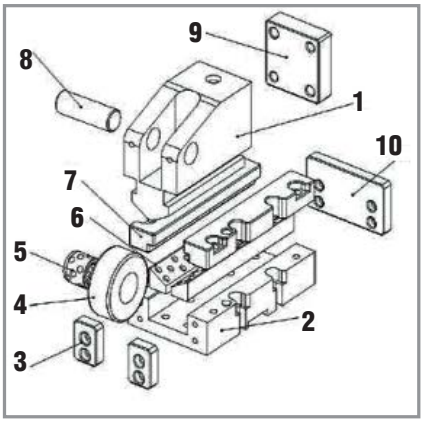


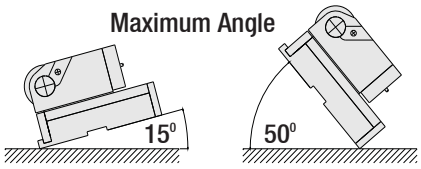
Roller Cam Unit

Code: RK





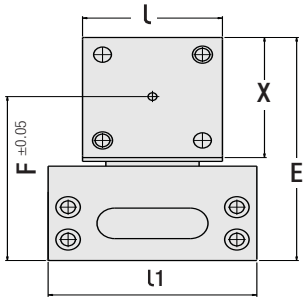
Maximum Angle

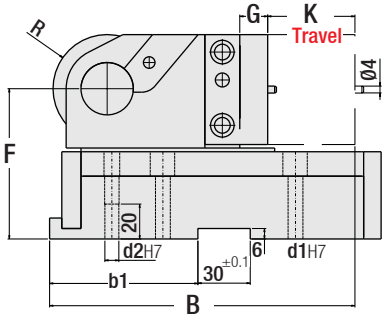


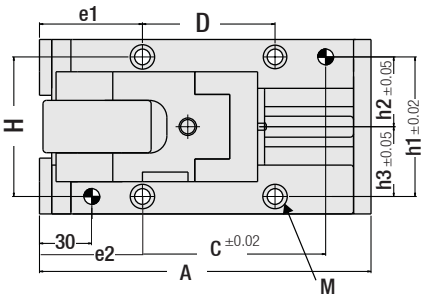
N - Newton = (0.102)Kg.
daN -10 Newton = (1.020)Kg.

Table of Components	Part No.	Description	Material
	1	Cam Slider	CK45
	2	Cam Driver	CK45
	3	Stopper Plate	CK45
	4	Roller	1.7131
	5	Oilless Bush	SAE 430B

Table of Components	Part No.	Description	Material
	6	Slide Guide	SAE 430B
	7	Base Plate	SAE 430B
	8	Shaft	1.7131
	9	Punch Plate	CK45
	10	Spring Plate	CK45







Order Codes Model / Dimension	Punch Force Max.	Return Spring Force daN Min.	Return Spring Force daN Max.	K Travel	Dimension / mm L	X	F	E	L1	A	B	C	D	H	G	b1	h1	h2	h3	e1	e2	M	d1	R
RK01 3000 50	3000 daN	300	440	50	63	63	86	117	94	190	198	56	88	79	20	75	79	39.5	39.5	51	67	4 x M8	Ø 8	31
RK01 3000 80		350	580	80						220	228	86	118											
RK01 5000 50	5000 daN	300	440	50	90	74	103	140	120	190	198	56	88	105	20	75	105	52.5	52.5	51	67	4 x M8	Ø 8	36
RK01 5000 80		350	580	80						220	228	86	118											
RK01 5000 100				100			120	157		260	268	126	158		30									
RK01 15000 50	15000 daN	570	1070	50	135	90	120	165	170	190	198	56	88	155	20	75	155	77.5	77.5	51	67	4 x M8	Ø 8	45
RK01 15000 80		500	870	80						220	228	86	118											
RK01 15000 100		500	870	100						260	268	126	158		30									
RK02 3000 50	3000 daN	300	440	50	68	63	117	86	100	200	208	56	116	82	-	90.5	82	41	41	48	76	4 x M8	Ø 8	31
RK02 3000 80				80						230	238	86	146											
RK02 3000 100		350	580	100						260	258	106	166											
RK02 5000 50	5000 daN	300	440	50	88	74	140	103	120	200	208	59	116	102	-	90.5	102	51	51	48	73	4 x M8	Ø 8	36
RK02 5000 80				80						230	238	89	146											
RK02 5000 100		350	580	100						260	258	109	166											
RK02 15000 50	15000 daN	570	1070	50	132	92	165	120	170	220	216	47	123	150	-	96.5	150	75	75	50	88	4 x M10	Ø 10	45
RK02 15000 80				80						250	246	77	153											
RK02 15000 100		500	870	100						270	266	97	173											
RK02 20000 50	20000 daN	750	1490	50	196	110	150	205	240	250	258	67	143	222	-	102	222	111	111	52	90	4 x M12	Ø 12	55
RK02 20000 80				80						280	288	97	173											
RK02 20000 100				100						300	308	117	193											
RK03 2000 22	2000 daN	200	460	22	50	50	63	85	75	115	103	30	50	63	15	65	63	31.5	31.5	32.5	43	4 x M6	Ø 6	23
RK03 2000 35				35						136	137	51	71											
RK03 3000 50	3000 daN	300	450	50	63	63	86	117	100	190	167	134	76	80	16	85	80	40	40	59	-	4 x M8	Ø 8	31
RK03 3000 80		350	580	80						220	227	164	106											
RK03 3000 100				100		87	110	141		260	287	204	146											
RK03 5000 50	5000 daN	300	440	50	90	74	103	140	130	190	167	134	76	110	16	85	110	55	55	59	-	4 x M8	Ø 8	36
RK03 5000 80		350	580	80						220	227	164	106											

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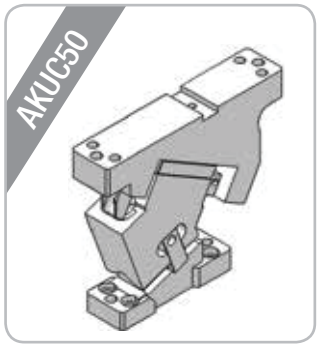
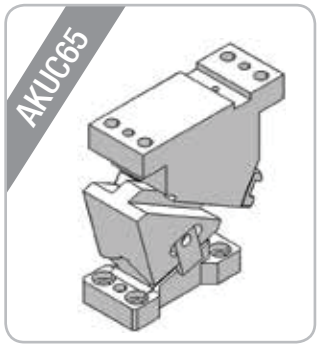
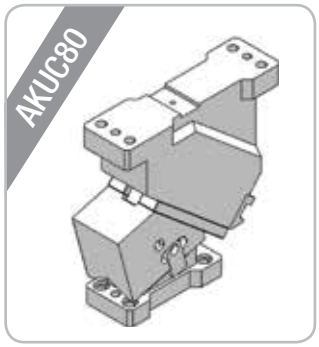
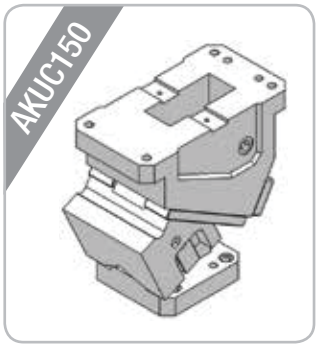
Aerial Cam Unit

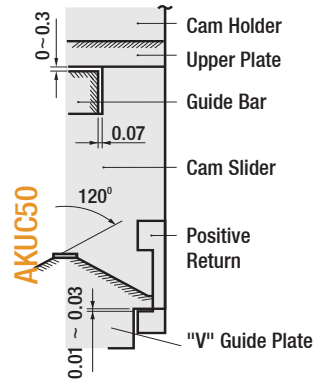
Code: AKUC

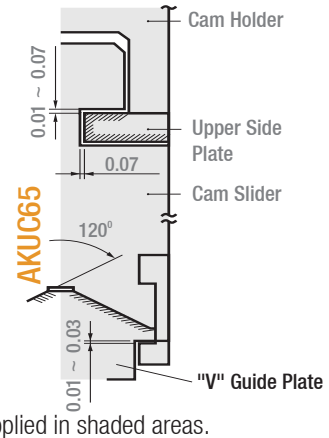


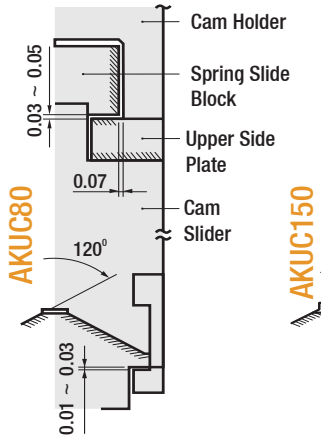


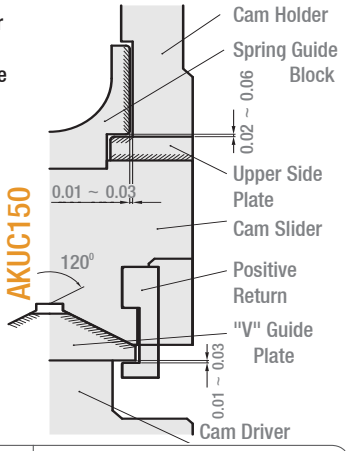




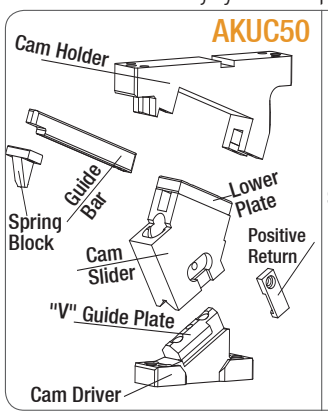


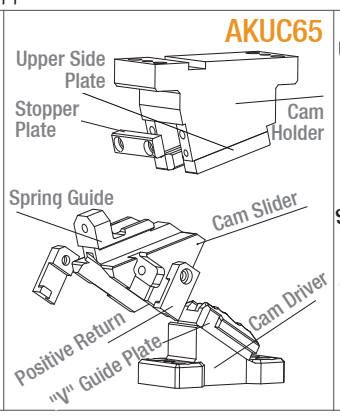


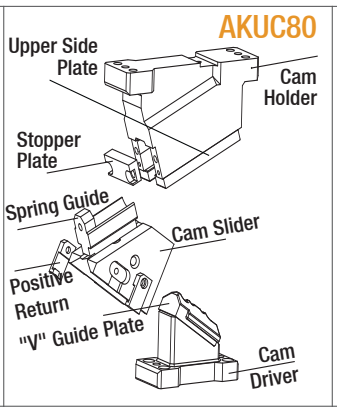


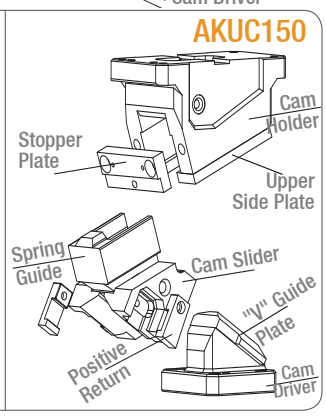


Note: Self-lubricating system is applied in shaded areas.









AKUC50

Order		Angle	Travel
AKUC 50 00	Width: 50 mm	00	30.2
AKUC 50 05		05	30.5
AKUC 50 10		10	30.3
AKUC 50 15		15	30.5
AKUC 50 20		20	30.4
AKUC 50 25		25	30.0
AKUC 50 30		30	32.0
AKUC 50 35		35	35.4
AKUC 50 40		40	38.6
AKUC 50 45		45	42.3
AKUC 50 50		50	46.7
AKUC 50 55		55	52.1
AKUC 50 60		60	59.1
AKUC 50 65		65	58.3
AKUC 50 70		70	57.6

AKUC65

Order		Angle	Travel
AKUC 65 00	Width: 65 mm	00	15
AKUC 65 05		05	15.1
AKUC 65 10		10	15.2
AKUC 65 15		15	15.5
AKUC 65 20		20	16.5
AKUC 65 25		25	17.1
AKUC 65 30		30	18.5
AKUC 65 35		35	19.6
AKUC 65 40		40	21.5
AKUC 65 45		45	23.3
AKUC 65 50		50	26.5
AKUC 65 55		55	29.7
AKUC 65 60		60	35.0
AKUC 65 65		65	41.3
AKUC 65 70		70	51.1

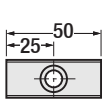
AKUC80

Order		Angle	Travel
AKUC 80 00	Width: 80 mm	00	32.1
AKUC 80 05		05	38.4
AKUC 80 10		10	38.9
AKUC 80 15		15	39.7
AKUC 80 20		20	46.1
AKUC 80 25		25	47.8
AKUC 80 30		30	54.3
AKUC 80 35		35	57.4
AKUC 80 40		40	64.3
AKUC 80 45		45	69.6
AKUC 80 50		50	77.8
AKUC 80 55		55	87.2
AKUC 80 60		60	98.5
AKUC 80 65		65	81.6
AKUC 80 70		70	86.4

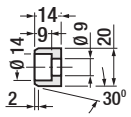
AKUC150

Order		Angle	Travel
AKUC 150 00	Width: 150 mm	00	32.1
AKUC 150 05		05	32.3
AKUC 150 10		10	38.9
AKUC 150 15		15	39.7
AKUC 150 20		20	46.1
AKUC 150 25		25	47.8
AKUC 150 30		30	54.3
AKUC 150 35		35	57.4
AKUC 150 40		40	64.3
AKUC 150 45		45	69.6
AKUC 150 50		50	77.8
AKUC 150 55		55	87.2
AKUC 150 60		60	98.5
AKUC 150 65		65	93.2
AKUC 150 70		70	86.4

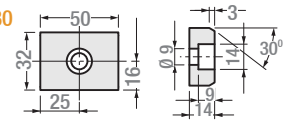
Key / Lock Systems:



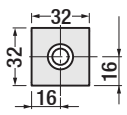
AKUC50
AKUC65



AKUC80



AKUC150



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Stable and reliable Die & Mould production is obtained with components having a reliable quality. Guvenal - GTH tends towards the highest quality standards with all development and test efforts.

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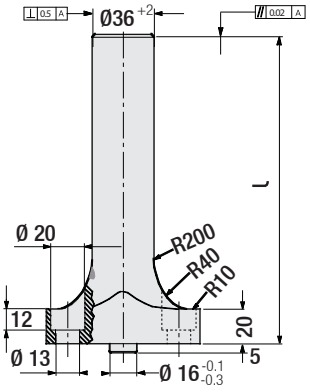
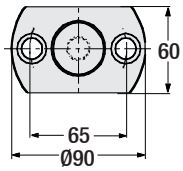
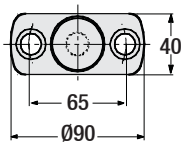


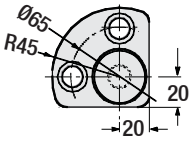
Form A



Form B



Form C



Air Pin VDI 3002

Code: G69B

l
150 mm
155 mm
160 mm
165 mm
170 mm
175 mm
180 mm
185 mm
190 mm
195 mm
200 mm
205 mm
210 mm

l
215 mm
220 mm
225 mm
230 mm
235 mm
240 mm
245 mm
250 mm
255 mm
260 mm
265 mm
270 mm

l
275 mm
280 mm
285 mm
290 mm
295 mm
300 mm
310 mm
320 mm
330 mm
340 mm
350 mm
360 mm

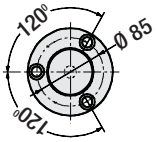
Material: CK45
800 ÷ 1000 N / mm² Forged

Max. Load (kN): 50

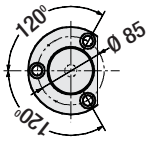
Order: G69B. l . Form

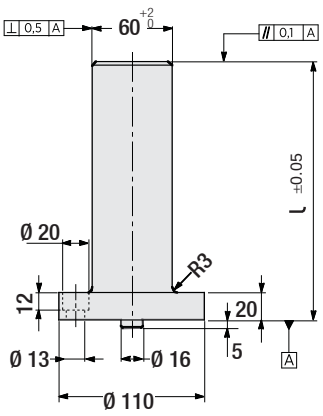
Order Example:
G69B.160.C

Form A



Form B





Air Pin

Code: G69-1

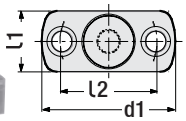
Order Code	Form	Max. Load kN	l
G69-1.A. (l)	A	80	optional
G69-1.B. (l)	B	80	optional

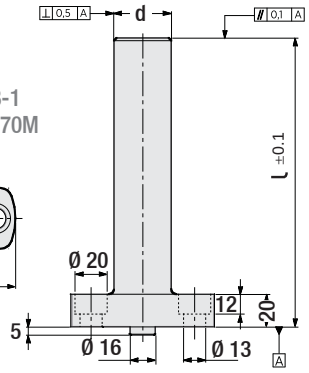
The length (l) is specified by the customer.

Material: CK45
800 ÷ 1000 N/mm² Forged

Order Example:
G69-1.A.400

Reference:
BMW B2 2615 12
OPEL F33 15
VW AUDI 39D 638-1
FORD WVDX 17 - 70M





Air Pin

Code: G69

Order Code	d	d1	l1	l2	Max. Load kN	l
G69-36. (l)	36	90	40	65	50	optional
G69-45. (l)	45	100	50	75	70	optional

The length (l) is specified by the customer.

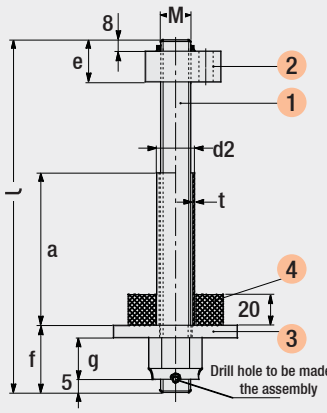
Material: CK45
800 ÷ 1000 N/mm² Forged

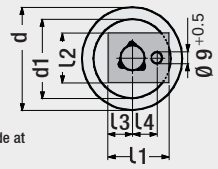
Order Example:
G69-36.200

NEW

Retainer Bolt
FCA - FORD

Code: G169





Order Code	M	d	d1	d2	e	f	g	l1	l2	l3	l4	t	Max. Load (kg)
G169.M16. (l . a)	M16	65	50	22	28	30	19	50	35	20	20	2	250
G169.M20. (l . a)	M20	82	63	25	28	35	22	50	40	20	20	2	450
G169.M24. (l . a)	M24	105	80	30	28	42	27	50	45	20	20	2.5	750
G169.M30. (l . a)	M30	130	100	38	33	50	33	63	50	28	26	2.5	1250

1. **Material:** 1.6511
   Screw: 8.8
2. **Material:** St 37
3. **Material:** CK45
4. **Material:** Polyurethane 92 Shore

Order Example:
G169.M16.200.160

The lengths (l and a) are specified by the customer.

* Please pay attention to the Max. Load.

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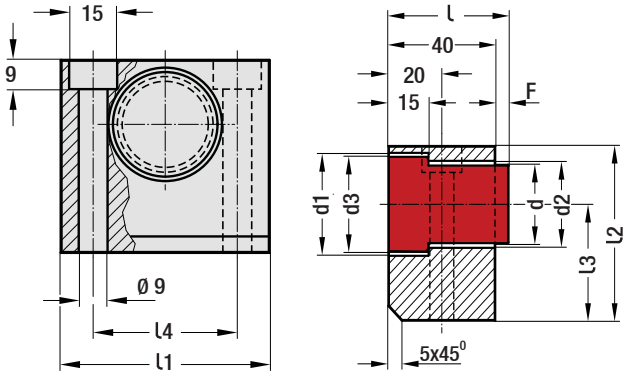
Slide Stop Block

Code: G97

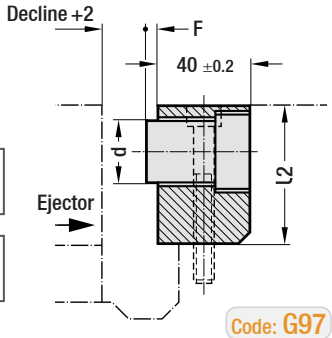
Note: Fixing screws (M8 cylinder head cap screws) should be provided separately.



Reference:
BMW - Ford - VW - Audi

Order: G97. l1

Material: CK45 Steel
Polyurethane 90 Shore



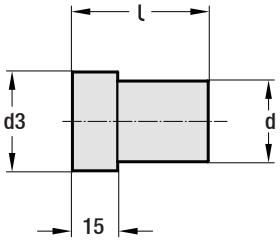
Code: G97

l1	Load N	d	d1	d2	d3	l	l1	l2	l3	l4	F
65	5200	27	35	30	34	45	65	60	40	45	5
75	9800	36	45	40	44	45	75	70	45	55	5

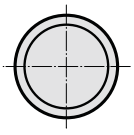
Slide Stopper

Code: G97A

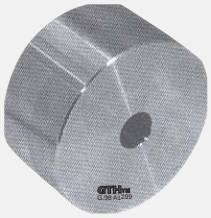
Slide stopper for is 90 Shore.
Used with slide stop block.



d	d3	L
27	34	45
36	44	45



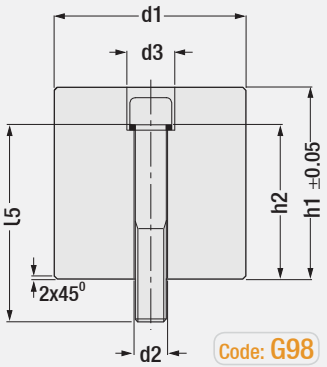
Order: G97A. d



Cylinder Stopping Block

Code: G98

Note: Fixing screws
should be provided separately.



Order: G98. d1

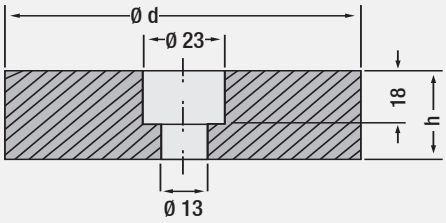
Material: 1.7131 (16MnCr5)
Hardness: 60 - 64 HRC

Code: G98

d1	Screw	d2	d3	h1	h2	L5
40	M.10	11	18	30 ~ 60	20	30 - 40
60	M.12	14	20	40 ~ 80	22	40 - 50
80	M.12	14	20	56 ~ 100	42	50 - 60
100	M.16	18	26	80 ~ 160	62	80
120	M.20	22	33	104 ~ 160	82	100
150	M.20	22	33	124 ~ 160	102	120

Cylinder Stopping Block

Code: G98B



Reference: FCA

Code: G98B

d	h
Diameter 80 mm	Thickness 25 mm
Diameter 80 mm	Thickness 30 mm
Diameter 100 mm	Thickness 25 mm
Diameter 100 mm	Thickness 30 mm
Diameter 120 mm	Thickness 25 mm
Diameter 120 mm	Thickness 30 mm

Order: G98B. d x h

Material: 1.7131 (16MnCr5)
Hardness: 60 - 64 HRC

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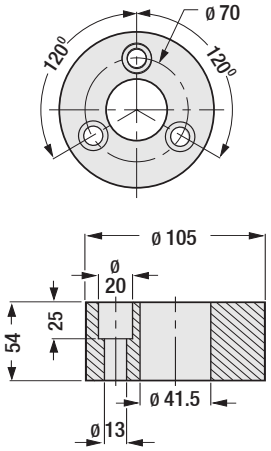
Code: G99

Cylinder Locating Block

(FCA Code: CNT_ST_01)

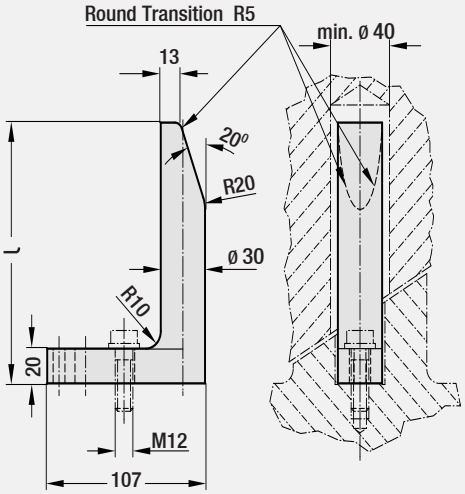


Order: G99.105

Material: 1.7131 (16MnCr5)
Hardness: 60 - 64 HRC

Guide

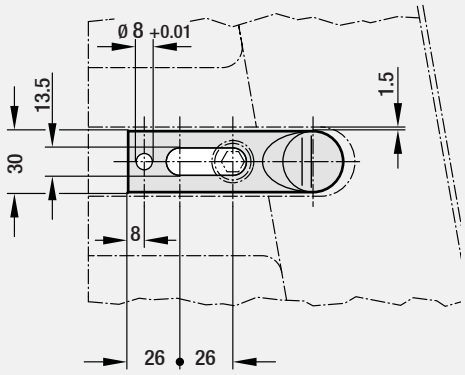
Code: G67 - G67S



Code: G67
Material: CK45 Forged

Code: G67S
Material: CK45 Forged Hardened 50 - 55 HRC

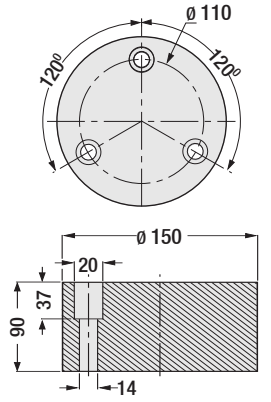
Order Code		l
G67.065	G67S.065	65 mm
G67.090	G67S.090	90 mm
G67.120	G67S.120	120 mm
G67.150	G67S.150	150 mm
G67.180	G67S.180	180 mm
G67.250	G67S.250	250 mm
G67.300	G67S.300	300 mm
G67.350	G67S.350	350 mm



Code: G99B

Cylinder Locating Block

Reference: PSA

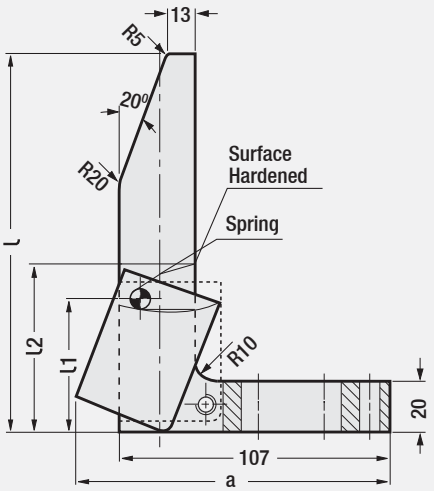


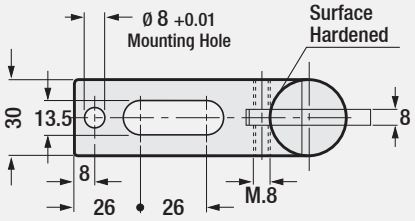
Order: G99B.150

Material: 1.7131 (16MnCr5)
Hardness: 60 - 64 HRC

Guide with Part Position Control

Code: G68





Order Code	l	l1	l2	a
G68.120	**120**	55	70	120
G68.150	**150**	55	70	120
G68.180	**180**	105	120	124
G68.250	**250**	105	120	124

Material: CK45 Forged Hardened 50 - 55 HRC

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Centring Pin — Code: G65

VW / AUDI **Ref.:** 39V 1205

BMW **Ref.:** B2 4068 2

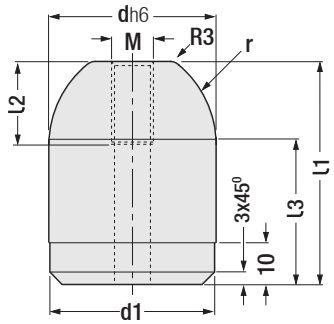
Centring Pin — Code: G62

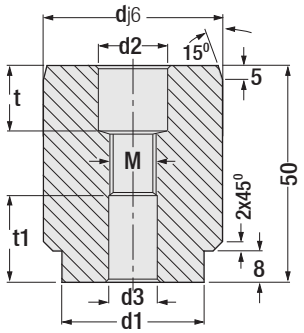
Mercedes-Benz Standard
Ref.: B8 0602 321 008 801

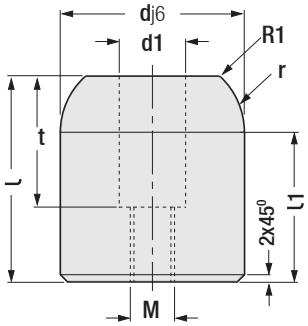
Centring Pin — Code: G66

FCA
Ref.: STQ.40015

Centring Pins: It is used for centring of perforated parts. Using centring pin provides centring repeatedly with high sensitivity at dies and fixtures. Mounted parts are centered with high sensitivity and quickly. Screws used for mounting of products should be provided by user.







Code: G65

d	l1	l2	l3	d1	M	r
22	45	16	35	21.95	M8	15
22	55	16	45	21.95	M8	15
32	50	20	35	31.95	M10	20
40	55	20	35	39.95	M10	25
40	65	20	45	39.95	M10	25
50	55	20	35	49.95	M10	25

Order: **G65.** d x l1

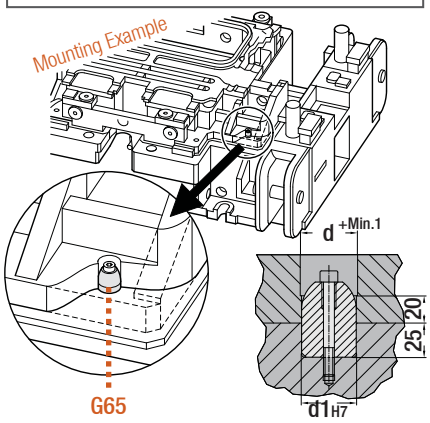
Material: 1.7131 (16MnCr5)
Hardness: 58 - 62 HRC

All dimensions without tolerance are in EN 22768 - 1 (m) standards.

Code: G62

d	d1	d2	d3	M	t	t1
22	16	11	9	M8	13	16
25	18	11	9	M8	13	16
32	25	11	9	M8	13	16
40	32	15	11	M10	16	20
50	42	15	11	M10	16	20

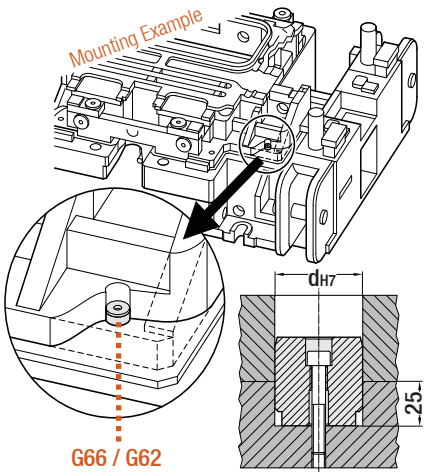
Order: **G62.** d



Code: G66

d	l	l1	d1	t	M	r
22	45	37.5	14	25	M10	20
32	50	40	18	35	M12	20
40	55	40	18	35	M12	20
50	55	40	18	35	M12	20

Order: **G66.** d



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NEW

Code: G82

Tapered Locating Unit, Headed

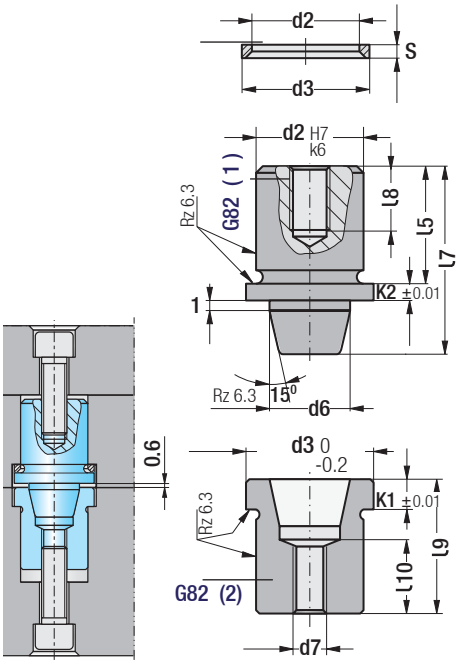
Code: G59

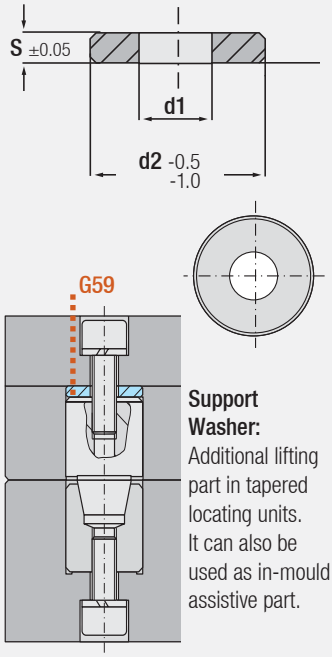
Support Washer

Code: G60

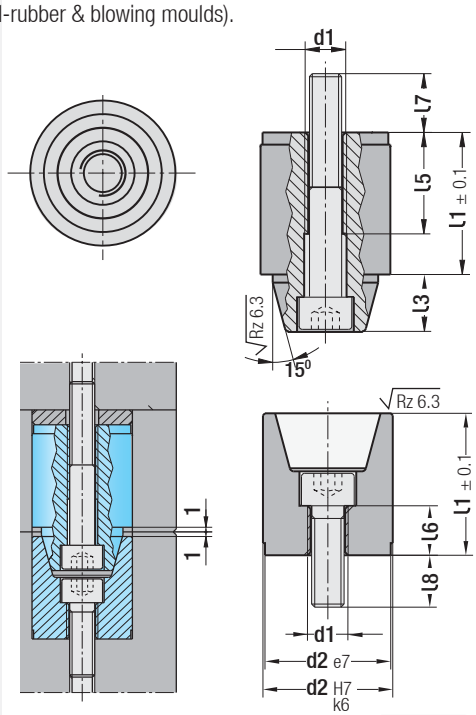
Tapered Locating Unit

Tapared Locating Units: They are used to increase speed of repeatability while providing precision centring in dies and moulds. Mounting screws are provided with products and the support washer (G59) can be provided as per request.
Headed Type: It is suitable to be used for centring in female and male plates in moulds (seal-rubber & blowing moulds).





Support Washer: Additional lifting part in tapered locating units. It can also be used as in-mould assistive part.



Code: G82

d2	d3	d6	d7	K1	K2
14	17	12	M.8	4	2.5
24	28	20	M.8	6	4
34	38	30	M.8	8	5
42	46	35	M.8	8	5

d2	l5	l7	l8	l9	l10	S
14	17	24.5	15	19.5	13	1.7
24	27	42	20	32	18	2.0
34	28	42	20	32	18	3.0
42	28	48	20	47	28	3.0

Order: **G82. d2**

Material: 1.7131 (16MnCr5)
Hardness: 60 - 62 HRC

Code: G59

d2	S	d1
12	5	6.5
	10	
14	5	6.5
	10	
16	5	6.5
	10	
17	5	8.5
	10	
20	5	8.5
	10	
	20	
25	5	8.5
	10	
	20	

d2	S	d1
26	5	8.5
	10	
	20	
30	5	10.5
	10	
32	5	10.5
	10	
40	5	10.5
	10	
42	5	10.5
	10	
50	5	13
	10	

Order: **G59. d2 x S**

Code: G60

d2	l1	l3	l5	l6	l7	l8	Screw d1
12	16	4.5	9.6	7	8	7.5	M4
14	16	6	12.4	6	6	6	M5
16	16	6	12.4	6	6	6	M5
20	26	9	19.7	10.5	12	9.5	M8
25	26	10	19.7	10.5	11	11	M8
30	35	14	25	11.5	15	13	M10
32	35	14	25	12.4	15	13	M10
42	45	18	27	18.5	16	13	M10

Order: **G60. d2**

Material: 1.7131 (16MnCr5)
Hardness: 60 - 62 HRC

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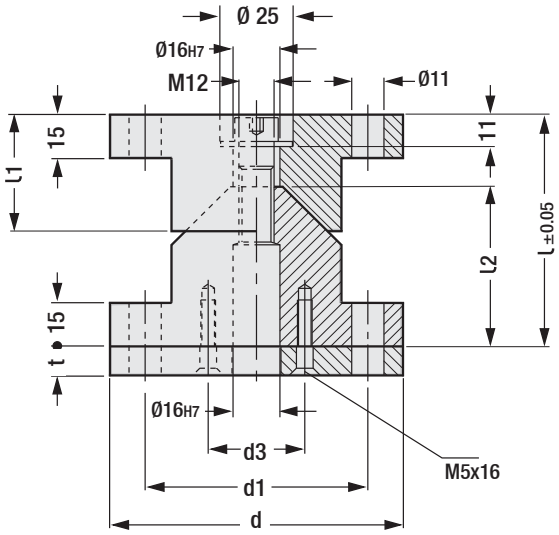
Locating Cone

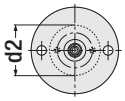
Code: G64

Shim plates are with the unit in thickness (t) specified dimensions as a standard. Except this, other form (A - B - C) shim plates can be ordered as per request. Mounting screws are excluded.

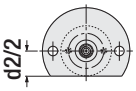
Material: 1.7131 / **Hardness:** 60 - 64 HRC



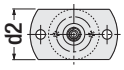
Form - A



Form - B



Form - C



Code: G64

d	l	d1	d2	d3	l1	l2	t	Form
100	80	76	58	40.5	40	55	5.5	A
120	90	96	78	50.5	50	65		
100	80	76	58	40.5	40	55	5.5	B
120	90	96	78	50.5	50	65		
100	80	76	58	40.5	40	55	5.5	C
120	90	96	78	50.5	50	65		
100	80	76	58	40.5	40	55	10	A
120	90	96	78	50.5	50	65		
100	80	76	58	40.5	40	55	10	B
120	90	96	78	50.5	50	65		
100	80	76	58	40.5	40	55	10	C
120	90	96	78	50.5	50	65		
100	80	76	58	40.5	40	55	10.5	C
120	90	96	78	50.5	50	65		

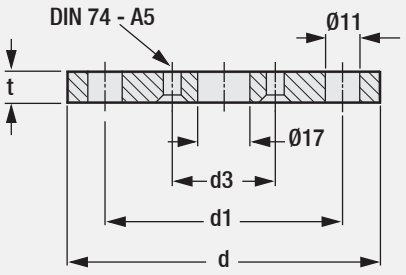
Order:
G64. d x l x t x Form

Order Example:
G64. 120 x 90 x 10 x A

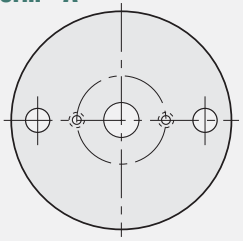
Shim Plate for Locating Cone

Code: G64A

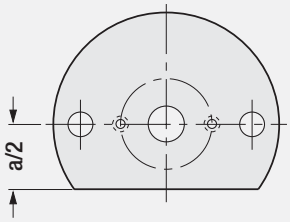
(Custom-made products as per request)



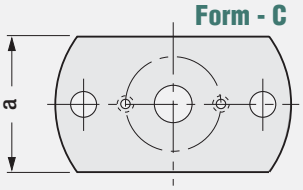
Form - A



Form - B



Form - C



Note: Fixing screws will be provided separately.

Code: G64A

d	t	d1	d3	a	Form
100	5.5	76	40.5	58	A
120		96	50.5	78	
100	5.5	76	40.5	58	B
120		96	50.5	78	
100	5.5	76	40.5	58	C
120		96	50.5	78	
100	10	76	40.5	58	A
120		96	50.5	78	
100	10	76	40.5	58	B
120		96	50.5	78	
100	10	76	40.5	58	C
120		96	50.5	78	
100	10.5	76	40.5	58	C
120		96	50.5	78	

Order:
G64A. d x t x Form

Material: 1.0503 (CK45)

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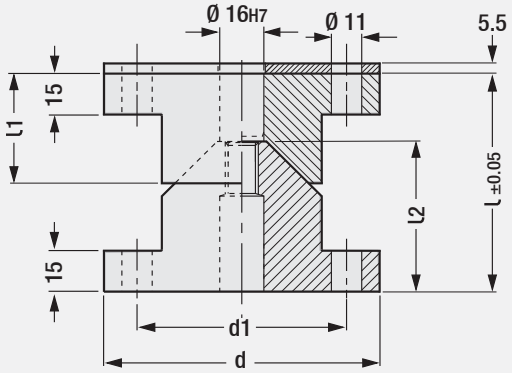
Locating Cone - NAAMS

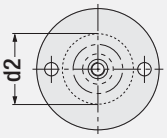
Code: G63

Shim Plate (as per request, Form A - B)

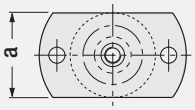
Reference: NAAMS G91

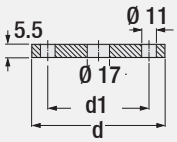


Form - A



Form - B





Code: G63

d	l	d1	d2	l1	l2	Form
100	80	76	58	40	55	A
120	90	96	78	50	65	
100	80	76	58	40	55	B
120	90	96	78	50	65	

Shim plates are with locating cones in (5.5 mm) dimension as a standard. For your custom-made shim plate orders, you can make selections from the following table.

Order: G63. d x Form

Material: 1.7131 (16MnCr5)
Hardness: 60 - 64 HRC

Shim Plate

Code: G63A

d	d1	a	Form
100	76	-	A
120	96	-	
100	76	58	B
120	96	78	

Order: G63A. d x Form

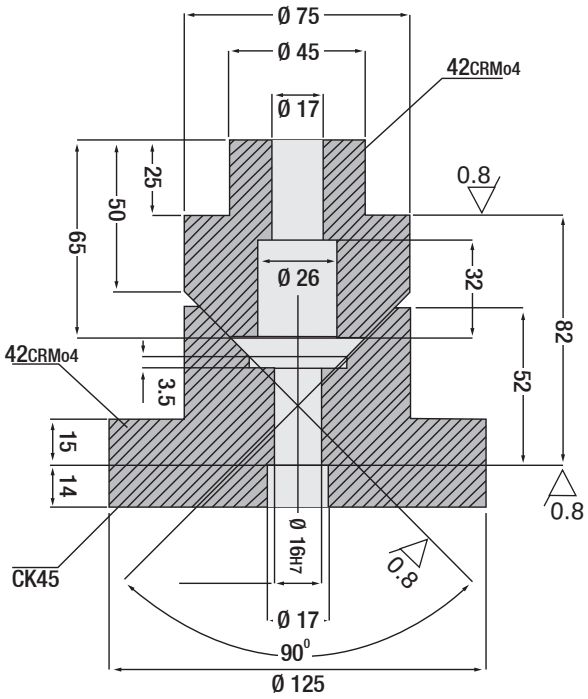
Material: 1.0503 (CK45)

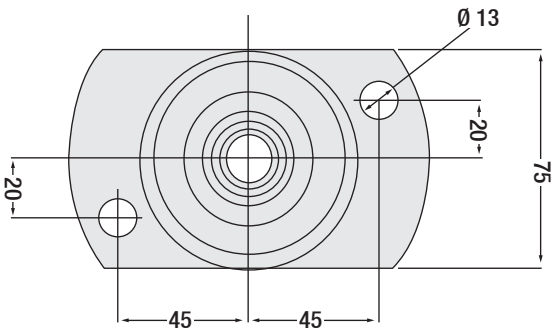
Locating Cone

Code: G46

(Custom-made products as per request)

Note: For all dimensions without tolerance according to EN 22768-1 (m), all corners will be chamfered.





Order: G46

Material:
See Technical Drawing

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NEW

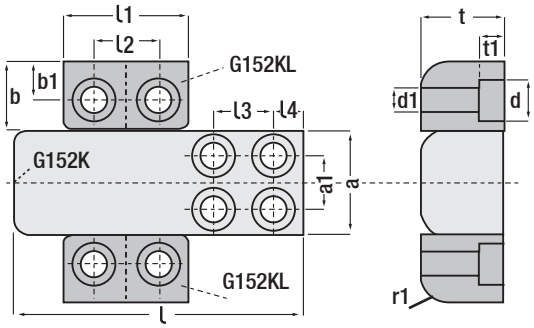
Bar Lock Slide Block Code: G152K

It provides making selections among ready-made products for wide moulds with movable plates more than one for mould designers. During production, insert locks and only wipe outer surfaces. **Please do not touch thin layer of lubrication in joints.**

Order: G152K. a x l

Material: 1.2343
Hardness: 58 - 62 HRC

Bar Lock System Code: G152



Order: G152. t x l

Bar Lock Guide Jaw Code: G152KL

All parts, including part holder rings, are applied a thin layer of oil (fit for food industry) before all areas dry and get hardened. **G152KL** product can be used in group applications for each mould as 2 pieces and multi bar lock guide jaws can be used in different designs. There are 2 pcs jaws in 1 set.

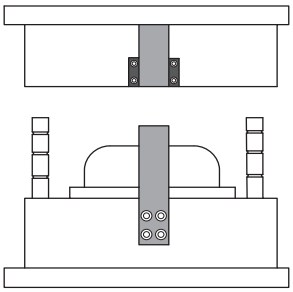
Order: G152KL. l1 x b

Material: 1.2343
Hardness: 52 - 54 HRC

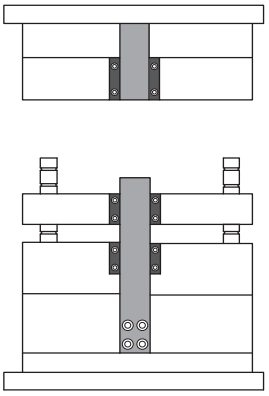
Bar Lock System Contents (G152): G152K= 1 pcs. + **G152KL**= 1 set (2 pcs).

a g5	l -0.1 / -0.2	l3	l4	a1	t -0.1	l1	b g5	l2	b1	d1 Ø	d Ø	t1 mm	r1
32	**70** **90** **112**	18	9	14	**22**	**36**	**20**	16	10	6.6 M6	11	6.8	6
50	**90** **125** **150**	21	12	24	**30**	**46**	**25**	24	11	9 M8	15	9	8
60	**112** **150** **175**	26	15	30	**32**	**56**	**32**	30	16	11 M10	18	11	10
80	**112** **150** **175**	26	15	44	**35**	**56**	**35**	30	16	11 M10	18	11	12
100	**175** **200** **250**	32	18	55	**50**	**76**	**40**	40	17	13.5 M12	20	13	15
120	**200** **250** **300**	35	20	75	**65**	**86**	**45**	50	20	13.5 M12	20	13	15

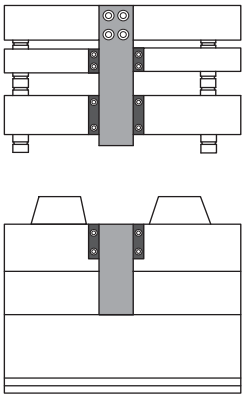
Wide Mould Applications



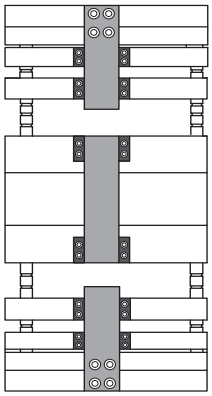
Stripper Plate Appications



Triple Plate Applications



Sequence Mould Application



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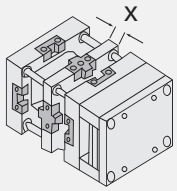
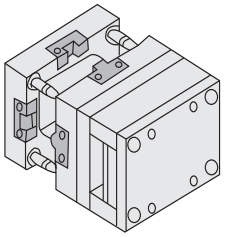
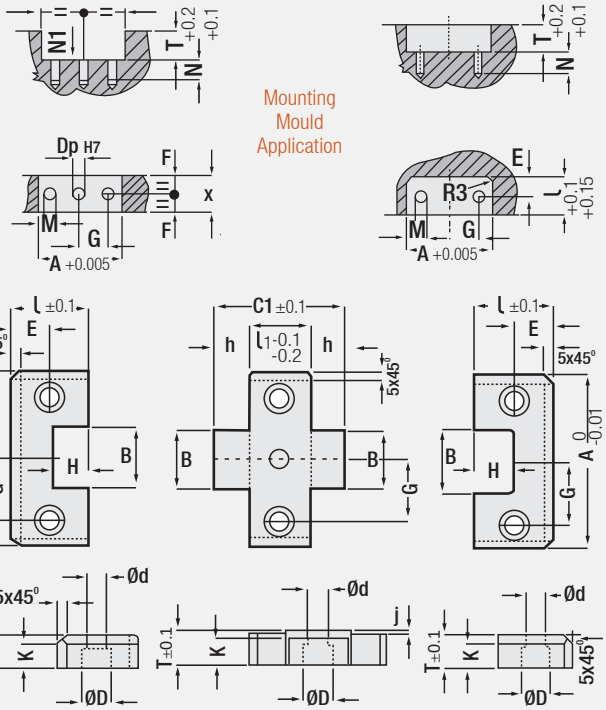


Oil grooves were created on the working surfaces of the products.



Group Locating - Centring Unit

Code: G127



Code: G127

A	X	B	C1	D	d	E	F	G	h
50	26	17	43	10.5	6.5	11	13	17	8.5
	36		53				18		
75	26	25	54	16.5	10.5	18	13	25	14
	36		64				18		
100	36	35	76	16.5	10.5	22	18	35	20
	46		86				23		
125	36	45	76	16.5	10.5	22	18	42	20
	46		86				23		

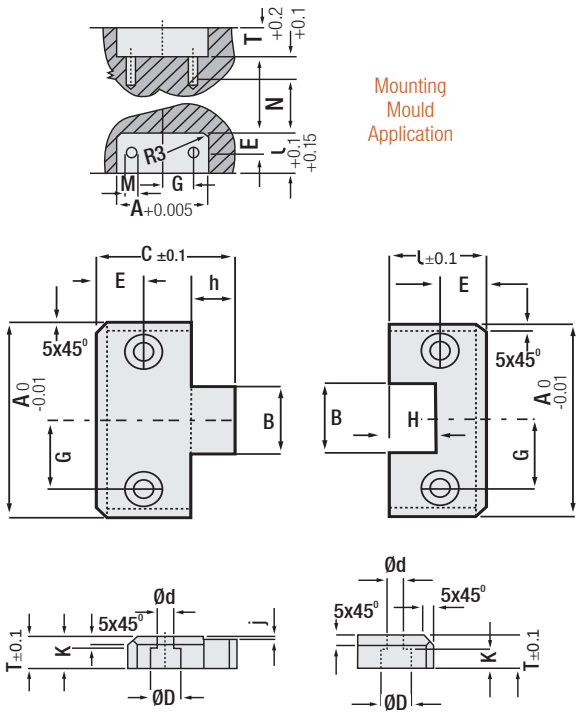
A	H	j	K	l	l1	T	M	N	Dp	N1
50	9.5	1.5	8	21.5	26	16	M6	15	6	17
					36					
75	15	1.5	12	36	26	19	M10	20	10	22
					36					
100	21	1.5	12	45	36	19	M10	20	10	22
					46					
125	21	1.5	12	45	36	25	M10	20	12	22
					46					

Order: G127. A . X

Material: 1.2510
Hardness: 52 - 54 HRC

Square Locating - Centring Unit

Code: G128



Code: G128

A	G	E	M	l	T	N
38	11	7	M5	17	13	15
50	17	11	M6	21.5	16	15
75	25	18	M10	36	19	20
100	35	22	M10	45	19	20
125	42	22	M10	45	25	20

A	B	C	d	D	h	H	j	K
38	11	30	5.5	9.5	8	9	1.5	5.5
50	17	30	6.5	10.5	8.5	9.5	1.5	8
75	25	50	10.5	16.5	14	15	1.5	12
100	35	65	10.5	16.5	20	21	1.5	12
125	45	65	10.5	16.5	20	21	1.5	12

Order: G128. A

Material: 1.2510
Hardness: 52 - 54 HRC

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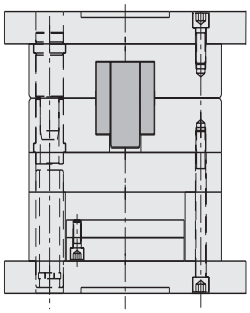
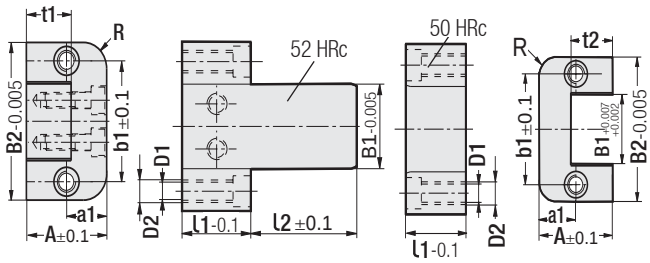


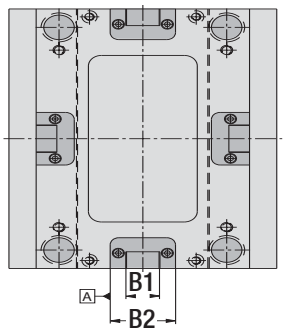
Square Locating - Centring Unit

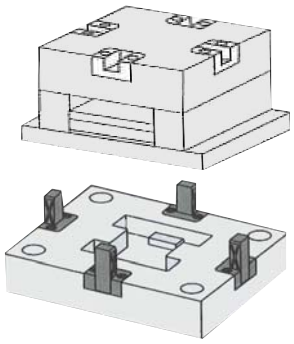
Code: G130



Code: G130

B1	l1	l2	A	B2	D1	D2	a1	b1	t1	t2	R
16	20	20 40	22	45	6.8	M8	11	30	11.5	12	8
30	26	40 63	35	60	6.8	M8	17.5	46	19.5	20	10
48	36	32 50 63 80	46	100	10.3	M12	23	74	25.5	26	12.5
77	56	50 71 100	60	150	14	M16	30	114	35.5	36	16





Order: G130. B1 x l1 x l2

Material: 1.2510 Hardness: 52 - 54 HRC

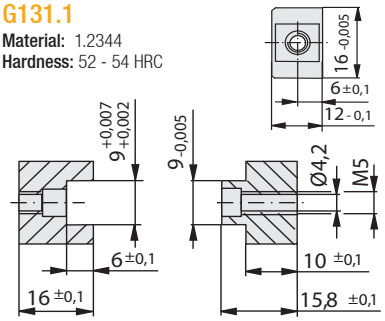
Centring Unit - DLC Coated

Code: G131

This product is suitable for rotational multi component moulds.

G131.1

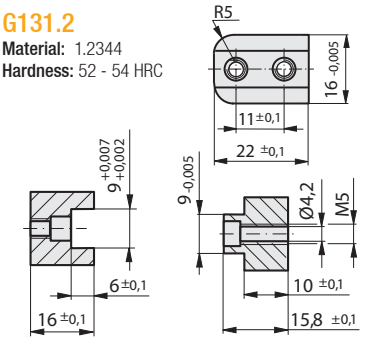
Material: 1.2344
Hardness: 52 - 54 HRC



Order: G131.1

G131.2

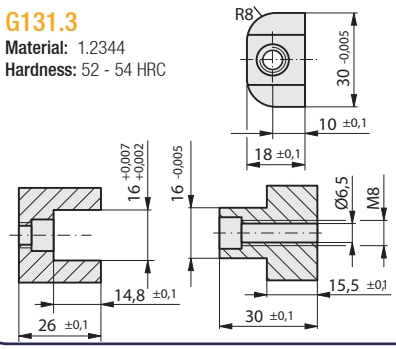
Material: 1.2344
Hardness: 52 - 54 HRC



Order: G131.2

G131.3

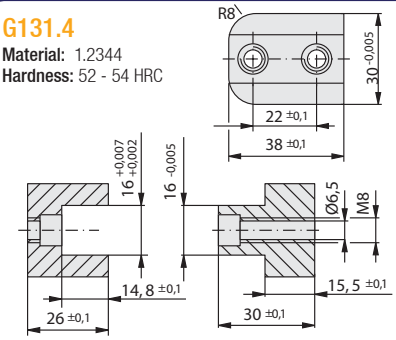
Material: 1.2344
Hardness: 52 - 54 HRC



Order: G131.3

G131.4

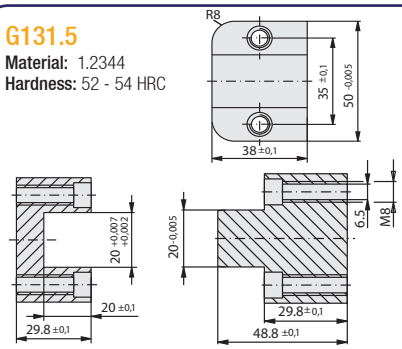
Material: 1.2344
Hardness: 52 - 54 HRC



Order: G131.4

G131.5

Material: 1.2344
Hardness: 52 - 54 HRC



Order: G131.5

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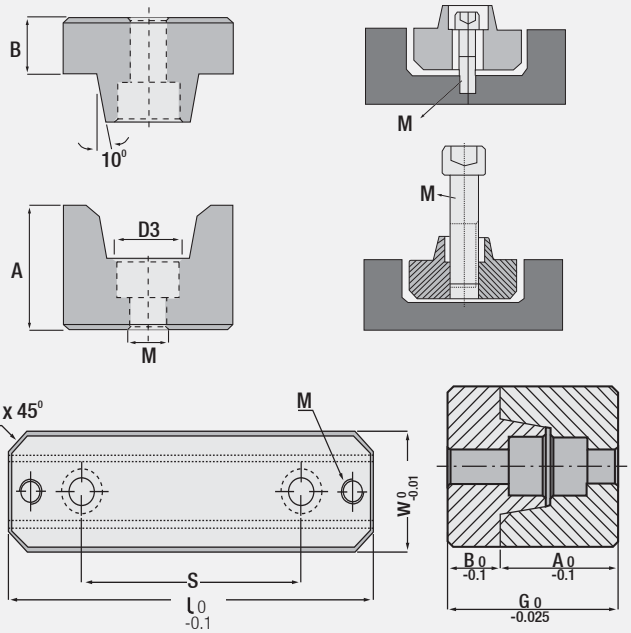
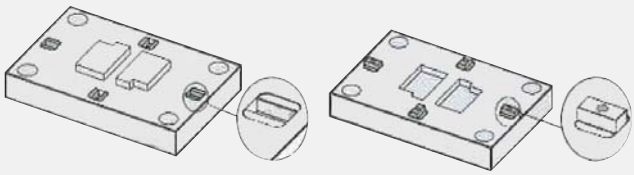
Locating - Centring Unit

Code: G132





Code: G132

W	L	A	B	G	S	D3	M
25	50	17.5	8	25.5	-	9.6	M5
30	100	22	10	32	60	11	M6
40	150	25	13	38	100	14	M8

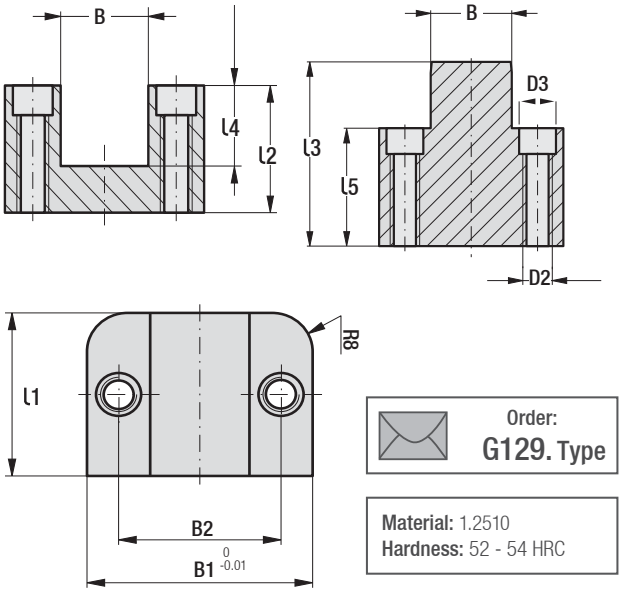
Order: **G132.W**

Material: 1.2510
Hardness: 52 - 54 HRC

Oil grooves were created on the working surfaces of the products.

Locating - Centring Unit

Code: G129



Order: **G129.Type**

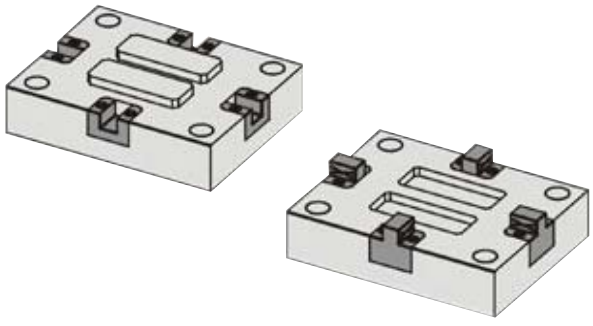
Material: 1.2510
Hardness: 52 - 54 HRC

Code: G129

Type	B	B1	B2	L1	L2	L3	L4	L5	D3	D2
1	12.7	38.1	25.5	25.4	22.2	22	13.3	9.5	9	M.5
2	25.5	63.5	44.5	38.1	34.9	34.8	19.5	15.9	11	M.6
3	36.6	88.9	63.5	50.8	44.5	44.2	25.7	19	18	M.10

Note: This product is not suitable for the rotational (multi component) moulds. Please use "G131" products for the rotational multi component moulds.

Mounting Example



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PROGRESSIVE COMPONENTS

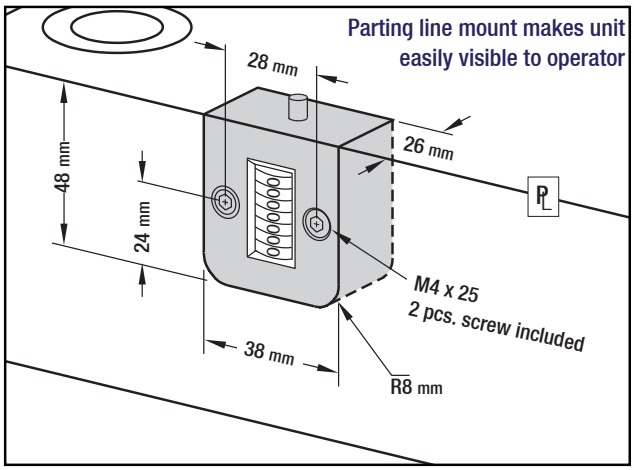
Progressive
Patented System
Ref: 2.166.237

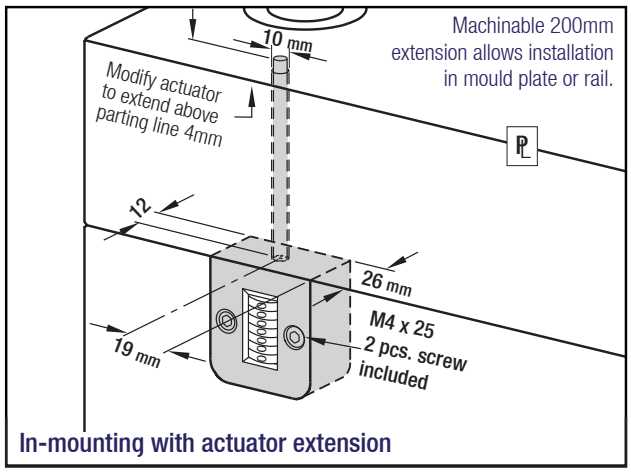
Europe Patent:
EP726129

Cycle Counter

Code: CVPL.200

* Maximum operating temperature is 120^{0}C.
* Non-resettable, 7-digit mechanical counter.
* Material: Glass fibre reinforced polyester casing.





Advantages of product:

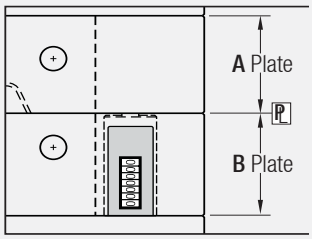
* The product has a non-resettable 7-digit mechanical counter.
* It provides creating or developing protective maintenance programs by evaluating process follow-up systems and confirming records kept manually.
* Mould producers and authorized sellers can keep permanent records related to cycle status of the moulds out of the working area.
* It is very important for mould producers to communicate correctly in situations where especially cycle guarantee is given.

Order: CVPL.200

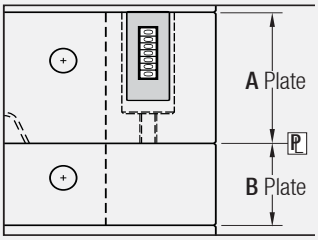
Cycle Counter - Round Type

Code: CVR

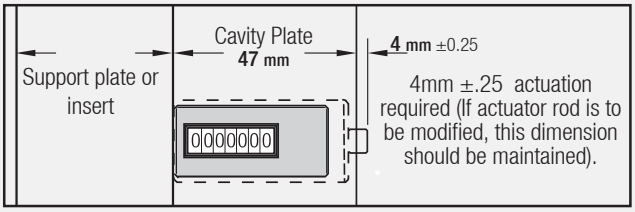
* Maximum operating temperature is 120^{0}C.
* Non-resettable, 7-digit mechanical counter.
* Material: Glass fibre reinforced polyester casing.



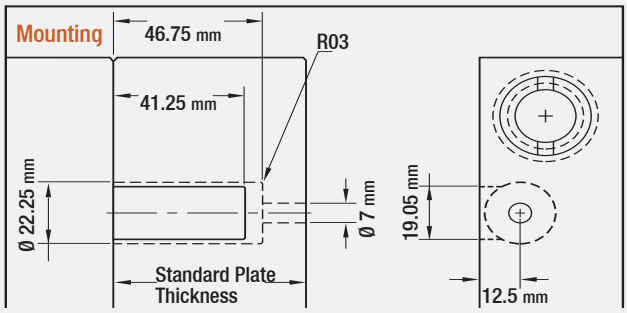
Right hand (actuated with parting line on the right) Cycle Counter mounted in B Plate (CVR-18 shown).



Left hand (actuated with parting line on the left) Cycle Counter mounted in A Plate (CVR-23 shown).



The R-Series CounterView can be installed in the A or B plates with a minimum thickness of 47mm. Larger plates utilize a threaded rod (included with each) that is pre-machined to the appropriate length for standard plate thicknesses to provide consistent actuation.



Parting line at right

Parting line at left

Order	Plate Thickness
CVR - 56	56 mm
CVR - 66	66 mm
CVR - 76	76 mm
CVR - 96	96 mm
CVR - 116	116 mm
CVR - 196	196 mm

Order	Plate Thickness
CVRL - 56	56 mm
CVRL - 66	66 mm
CVRL - 76	76 mm
CVRL - 96	96 mm
CVRL - 116	116 mm
CVRL - 196	196 mm

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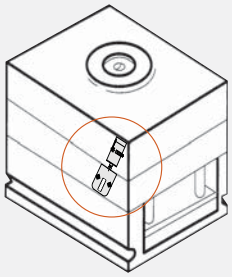
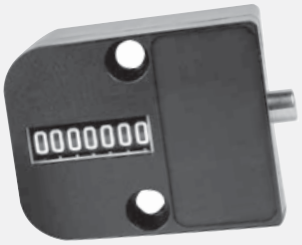
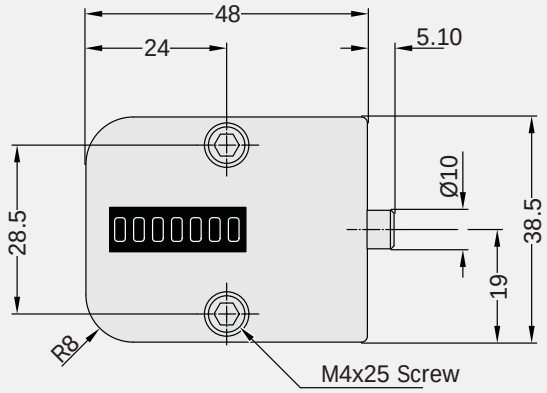
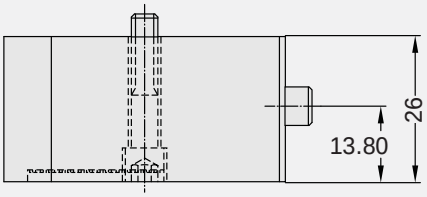




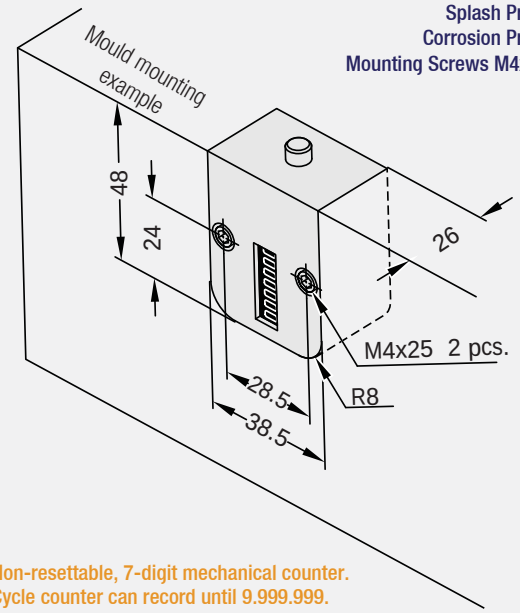
Cycle Counter
(economic type)

Code: G124





Max. Operation Temperature 120^{0}C
Splash Proof
Corrosion Proof
Mounting Screws M4x25

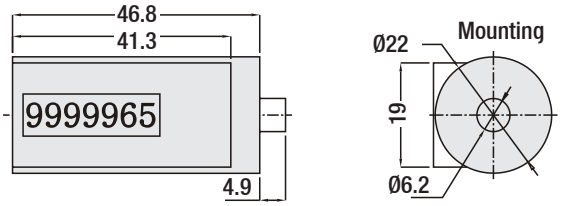


* Non-resettable, 7-digit mechanical counter.
* Cycle counter can record until 9.999.999.

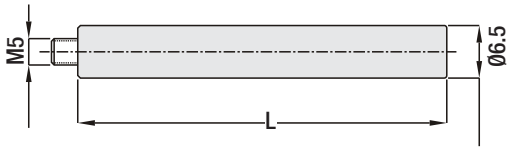
Order: G124

Cycle Counter - Round Type
(economic type)

Code: G142



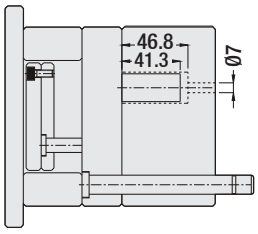
Actuator Extension Rod (processable in desired dimension)

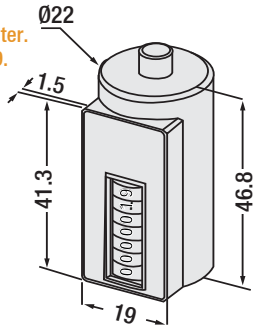


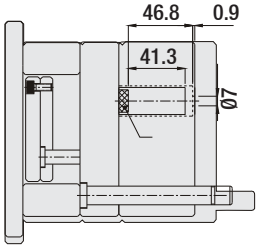
Round Cycle Counter: Production counter / unite has round (cylindrical structure and can be mounted inside of support plate according to the following drawings (if your mould support / holder is in suitable position). In case your support / holder is high / long, additional operation can be provided with extension rod.

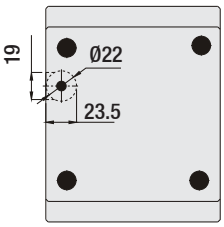
Processing Advantage: During mounting of round cycle counter to mould, only mounting slot is opened with drill (22,5 mm), (42 x 17) housing is generated. According to the standard model, it is provided mounting practicability at application. Maximum operation temperature is 120^{0}C.

* Non-resettable, 7-digit mechanical counter.
* Cycle counter can record until 9.999.999.









Order: G142

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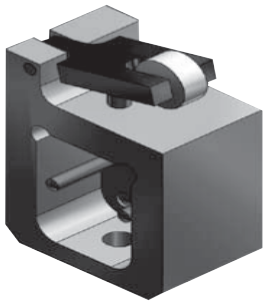
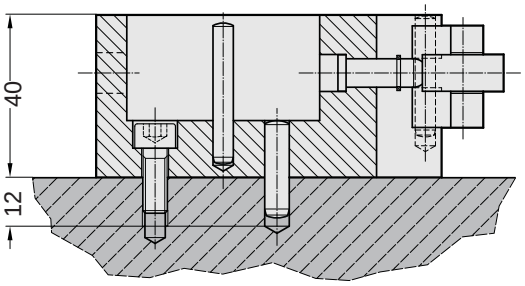
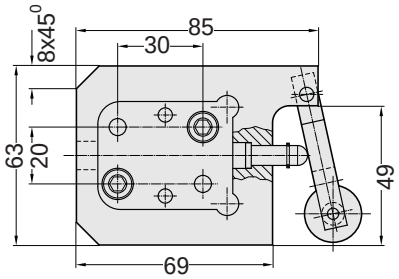
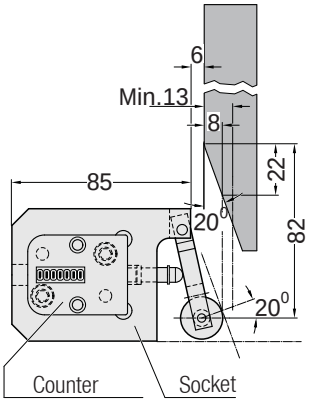


Installation Socket for Cycle Counter Code: G124.1

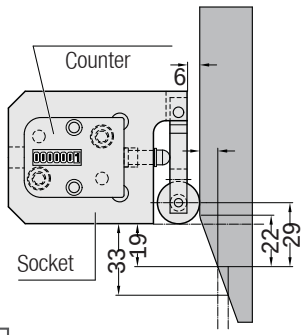






Mounting:
Please fix cycle counter in the hole of socket and use 2 pcs. of cylinder head cap screws and dowel pin.

Operation Mode:
Cycle counter is non-detachable when mounted.



Order: G124.1

Mechanical Counters

Professional Type
* 5 - digit
* Overhead pulsative
* Side zeroing

Order: RS207

Economic Type
* 5 - digit
* Overhead pulsative
* Side zeroing

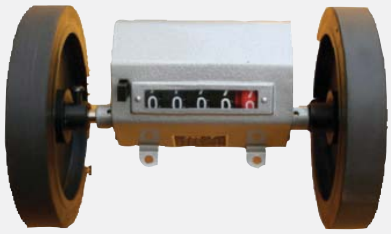
Order: 13701

Economic Type
* 5 - digit
* Overhead pulsative
* Side zeroing

Order: D29003

Economic Type
* 5 - digit
* Pulling Counter
* Knob Type

Order: D29002



Counter
* 5 - digit
* With the rubber wheel for meter

Order: D29001

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Standard & Reverse Number Stamping Sets

Nickel - Inox Type Sets

Standard & Reverse Letter Stamping Sets

Number & Letter Stamping Kit

Percussive Stamps: High performance steel - precision, depth limited. Excellent CNC engraving, readable with regard to quality for very clear text view, high qualified steel casings, fully hardened handle and percussive places (markings) are chemical nickel plated and are also enabled to stamp on threaded materials. It can be used for marking of strength materials up to 2000 N / mm² and is packaged as serial in plastic box.
Standard Letter Stamping: So, the markings stamped on part can be read directly at marking with hammering.
Reverse Letter Stamping: Character stamped on die / mould is showed straight on the product (mirror image). Especially, at injection moulds.

Number & Letter Stamping Sets / Order Table

Number Set 9's Set Box "Number Size"	L (mm) Dia.	Length	Standard Stamping	Reverse Stamping	Nickel Inox
1 mm Set.	6 x 6	65	Order: 14859	Order: 14889	Order: 14867
1.5 mm Set.	6 x 6	65	Order: 14860	Order: 14890	Order: 14868
2 mm Set.	6 x 6	65	Order: 14861	Order: 14891	Order: 14869
2.5 mm Set.	6 x 6	65	Order: 14862	Order: 14892	Order: 14870
3 mm Set.	6 x 6	65	Order: 14863	Order: 14893	Order: 14871
4 mm Set.	7 x 7	65	Order: 14864	Order: 14894	Order: 14872
5 mm Set.	8 x 8	65	Order: 14865	Order: 14895	Order: 14873
6 mm Set.	9 x 9	75	Order: 14866	Order: 14896	Order: 14874
8 mm Set.	11 x 11	76	Order: 14875	Order: 14897	Order: 14882
10 mm Set.	12 x 12	80	Order: 14876	Order: 14898	Order: 14883
12 mm Set.	14 x 14	80	Order: 14877	Order: 14899	Order: 14884
16 mm Set.	16 x 16	85	Order: 14879	Set in plastic box	Order: 14886
18 mm Set.	15 x 25	101	Order: 14880		Order: 14887
20 mm Set.	15 x 25	101	Order: 14881		Order: 14888

Letter Set 27's Set Box "Letter Size"	L (mm) Dia.	Length	Standard Stamping	Reverse Stamping	Nickel Inox
1 mm Set.	6 x 6	65	Order: 14900	Order: 14930	Order: 14908
1.5 mm Set.	6 x 6	65	Order: 14901	Order: 14931	Order: 14909
2 mm Set.	6 x 6	65	Order: 14902	Order: 14932	Order: 14910
2.5 mm Set.	6 x 6	65	Order: 14903	Order: 14933	Order: 14911
3 mm Set.	6 x 6	65	Order: 14904	Order: 14934	Order: 14912
4 mm Set.	7 x 7	65	Order: 14905	Order: 14935	Order: 14913
5 mm Set.	8 x 8	65	Order: 14906	Order: 14936	Order: 14914
6 mm Set.	9 x 9	75	Order: 14907	Order: 14937	Order: 14915
8 mm Set.	11 x 11	76	Order: 14916	Order: 14938	Order: 14923
10 mm Set.	12 x 12	80	Order: 14917	Order: 14939	Order: 14924
12 mm Set.	14 x 14	80	Order: 14918	Order: 14940	Order: 14925
16 mm Set.	16 x 16	85	Order: 14920	Set in plastic box	Order: 14927
18 mm Set.	15 x 25	101	Order: 14921		Order: 14928
20 mm Set.	15 x 25	101	Order: 14922		Order: 14929

Steel Letter and Number Set; can be applied to metal surfaces applicable hardness and dimensional tolerance.
"Nickel" Steel Letter and Number Set; can be applied especially to the stainless / inox surfaces.

Surface appearance after stamped

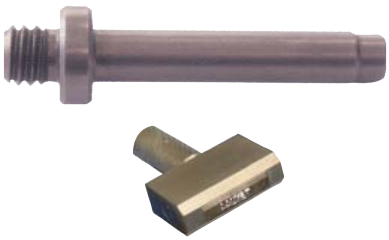
106 Pieces Letter (word formation) & Number or Date Stamping Set

Minimum 2 pieces or maximum 3 pieces from existing letter and numbers and blank (unwritten) characters for word formation are available in set. You can write the desired work or date by marking with hammering and also by coupling to press with press mounting arbour.

Order No.	Dimension mm	Length mm	Character Qty.
14941	3	19	13 qty.
14942	4		10 qty.
14943	5		8 qty.

Press Mounting Arbour

It is an inserting press machine.



Order No.	Dimension mm
14944	10 x 40

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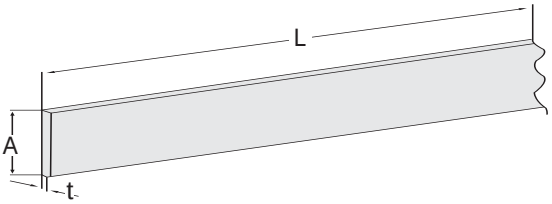
Precision Feeler Gauge Tape

Code: HLB

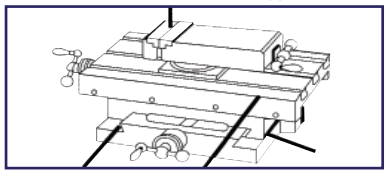
A: 13 mm x L: 5 mt.
Tolerance: T.3

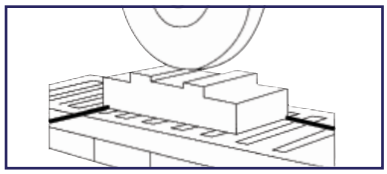


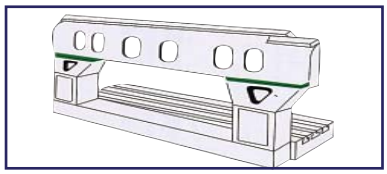
Thickness t (mm)	Tolerance D ±
0.01	0.002
0.02	
0.03	0.003
0.04	
0.05	
0.06	
0.07	0.004
0.08	
0.09	
0.10	
0.12	
0.15	0.005
0.20	0.006
0.25	0.007
0.30	
0.35	0.008
0.40	0.009
0.45	
0.50	0.010
0.60	
0.70	0.012
0.80	0.013
0.90	
1.00	0.017

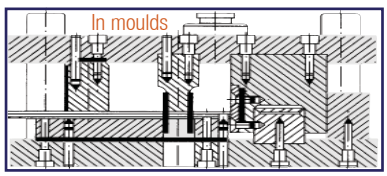
Cold - rolled, spring hardness and high plain precision shim steel strip. Gauge tapes with shiny surface resistant to rust or acid.
Usage: It is used for adjusting machine parts in fixture and set processes, straightening of workpieces as base foil, in all kinds of tolerance dimensions, in controlling of inserts and slides with tolerances, for adjusting of dyeing and stamping rolls and mould / die repairs etc.

Some Applied Pictures









Order: HLB. t

Package
Width: 13 mm Length: 5 mt.

Id Card for Die & Mould

Moulds

Code: G125

Red mould id card is for plastic injection moulds.

Dies

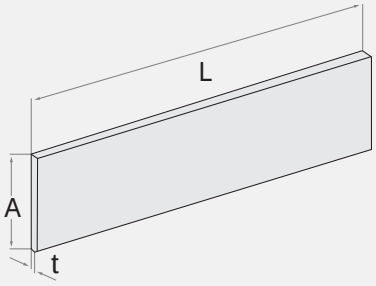
Code: G125S

Black mould id card is for metal injection moulds.

ID Card Marking and Writing Pens

Code: G126

Red narrow id card is for general dies.



Simple Mounting - Economic Die / Mould Id Card:
Your id card will add style to your die / mould prepared as a result of long run labour. Also, id card will gain high value with your company information and will present a concession.
Your id card, will not be exposed to unwanted intervention among multi moulds (dirty painting / dirty text / scraping etc.) at production, mould monitoring facility always will be presented to the mould user with important technical messages specified on card, will be provided working of mould safely with monitoring, your problems such as repeatable possible / frequent mould repair will be decreased, the safety will be ensured with warnings, will be shown different at multi mould shelf system - it is a useful product to be appreciated at long term productions.

Order	A	L	t	Aluminium Sheet
G125	44	90 mm	0,5 mm	Mould id card
G126	22			Die id card

Custom-made Id Card: Please request unit price for id card with company logo as per request or data sheet involving different definition.
Other Special Id card: Please request unit price for your designs with different dimension and material.
Mounting Instruction: Id card is presented with mounting rivet in its packing. The slots are opened by retaining to suitable place from hole places on Id card (diameter 2,5 x 10 mm depth) with electrical drill. The rivets with its card is swelled with hammering in its slot, your simple easy mounting has finished, you can be proud of your work created with small detail.

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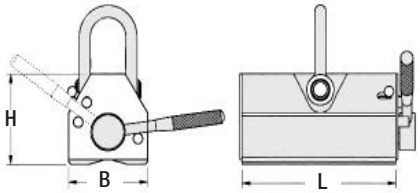
Code: ELM

Permanent Lifting Magnet
Safety Factor: x3.5 times

It features powerful magnetic force, with 3.5 times safety factor makes more safety in use. It is very practical, suitable for move plate steel, block steel and round steel, such as dies, moulds, machine parts and iron materials etc..

It is designed according to the self temporary continuous magnetic carrier block rotary pole logic. When ON - OFF open - close position is on the workpieces, it is taken / turned to ON / open position. When it is in idle position, it absolutely should be in OFF / close position.

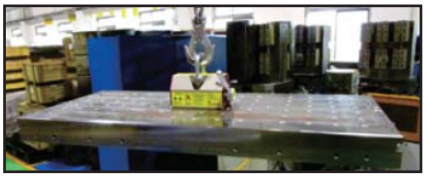
Carrying capacity can change according to the surface cleaning, thickness, quality, planarity and shape (flat / round) of metal material, also magnetic block and interval of workpiece. It does not require any power supply. There is no relation with electric interruptions, thus eliminating hazards due to failure wiring system as electric type. The handling ring is movable and it is compatible with balanced load bearing. It lifts and handles the load and it is easy to mount.

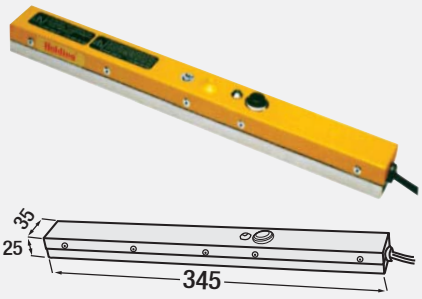


Code: ELM

Order Code	Dimensions B x L x H (mm)	Min. Thickness	Lifting Capacity (Kg.)	Safety Factor	Weight Kg.
ELM100	60 x 84 x 71	15mm	100		2.5
ELM300	90 x 155 x 93	25mm	300		8.6
ELM600	115 x 224 x 120	30mm	600	x3.5	21
ELM1000	165 x 245 x 169	40mm	1000		46
ELM2000	216 x 360 x 215	55mm	2000		118
ELM3000	216 x 530 x 222	60mm	3000	x3.0	181

Note: You can request the full dimensions of the "ELM" product from our company.





Demagnetizer Rod for inside of Die & Mould

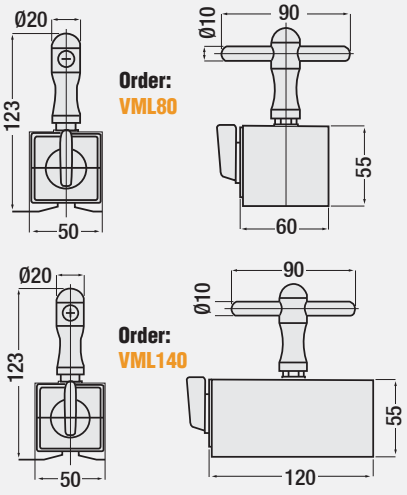
Code: EHDB210

It especially eliminates magnetization generated on die plates and guide bushes and it protects them against burrs and magnetic effects.
It works excellent in places which are narrow and hard to reach in wide surfaces without demounting die / mould. The EHDB product demagnetizes the area with magnetic eliminating effect. It prolongs life of dies / moulds and components. By waiting 4 minutes, it eliminates magnetic effect in the area in 1 minute, mobile / travel unit are used in any area.

Order	Current	Voltage	Effect Area	Weight
EHDB210	1.2 A	220 V	100 mm	1 Kg.

Magnetic Lifter

Code: VML



Carrying Capacity: VML.80 (80 Kg) / **VML.140** (140 Kg).
Unit Weight: VML.80 (1.2 Kg) / **VML.140** (2.2 Kg).
It holds work pieces easily and elastically and is a useful carrying product.

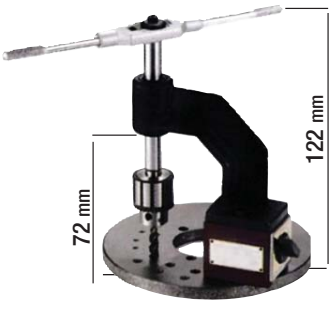
NEW

Order Code: VTM13

Magnetic Tapper Stand

Magnetic base unit travels on workpieces, it is easy to use with on-off system. It helps tapping on workpieces which are too heavy to carry without moving them. It is easy and quick to replace tapping thanks to tap chuck spanner. Flawless tapping is ensured during tapping of all components. It provides you to tap in absolute 90^0 precision which allows using of all kinds of tapping sets. This way, the risk of breaking of tapping set is eliminated. Besides, it provides precision and rigit tapping. Especially, it makes it easy to precision tapping even in all kinds of thread surfaces of machines and in mould plug holes and horizontal / vertical side walls thanks to its magnetic base.

* **Tap Chuck Capacity:** M3-M12
* **Max. Operating Distance:** 60 mm
* **Magnetic Holding Force:** 80 Kgf.
* **Horizontal / Vertical Clamping**



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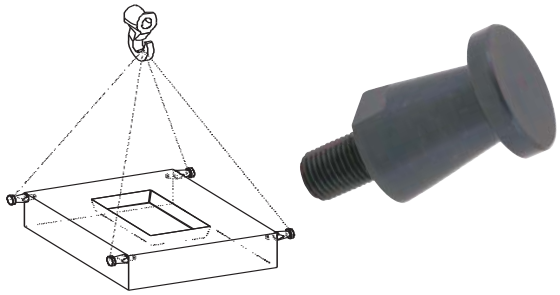
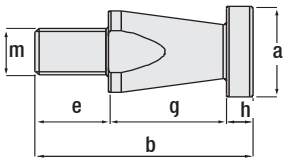
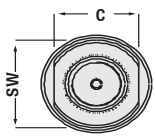


Die Lifting Bolt

Code: 2730



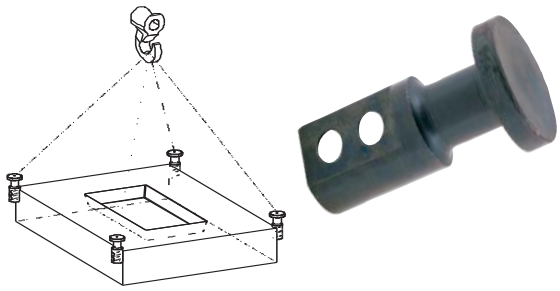


Carrying Bolt Thread Dimensions: M 16 x 2 thread - M20 x 2.5 thread
Carrying Load of a Lug : 2730.16 / 660 Kg.
2730.20 / 1000 Kg.

m	a	b	c	SW	e	g	h
M16	39	85	35	30	30	45	10
M20	39	85	35	30	30	45	10

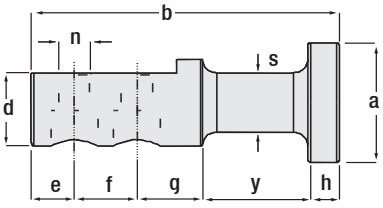
Order: 2730.m

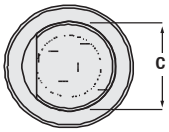
Material: CK45 DIN
Black Coated



Die Lifting Lug

Order Code: 2750.44





Lug Clamping Screw Size : M10 x 35 cylinder head cap screw "12.9" / 2 pcs.
Carrying Load of a Lug : 400 Kg. **/ Example:** 4 lugs 2.5 tons

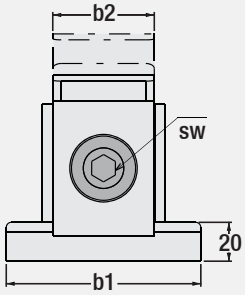
a	b	c	d	e	f	g	h	ı	n	s
44	108	32	27	15	22	23	11	37	11	22

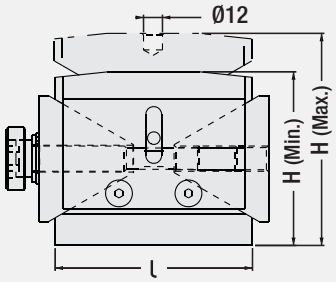
Wedge - Support Block

Code: 1520

With this block, lifting and sliding positions of large die / mould are provided.

Centering hole with spherical, buttress gear head is 12 mm





Block surface is machined precision and is designed especially supporting or lifting of heavy parts. Quite robust construction is allowed to do precision and smooth height setting as 1 / 10 mm precisely, height setting can be done with knurled screw or allen key, double effects are generated precision vertical motion without great stroke and lateral sliding. It can be used at large machine tools and processing of heavy cast and forging especially after stamping.

Code: 1520

H / Min.	H / Max.	b1	b2	L	sw	Kgf ↓	Weight Kg.
50	63	-	40	63	8	4000	1.90
100	125	115	60	125	14	10000	9.90
170	190	145	80	175	22	25000	28.4

Support Block
* This product is especially designed to support and carry heavy parts.
* Material: CK45 DIN
* Hardness: 35 -38 HRC
* Black Coated

Order Example: 1520.5063

Order: 1520. H min. x H max.

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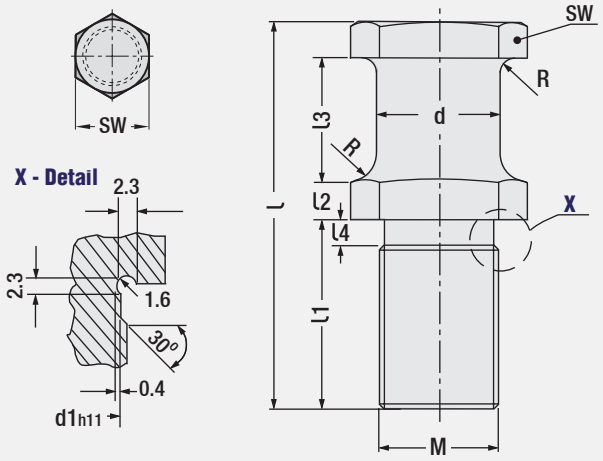
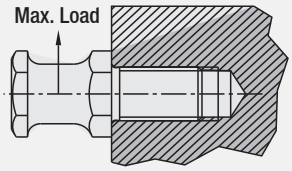
Die Lifting Bolt - Heavy Duty

Code: G47

VDI 3366





It can be mounted on lateral surface of die plate.

Reference: VDI 3366

When used for transport purpose 4 pcs.
When used for die turning 2 pcs. of bolts are used.
Max. load should not be exceeded during operation.

Code: G47

M Thread	1 Bolt Max. Load Kg.	Ø d	Ø d1	l mm	l1 mm	l2 mm	l3 mm	l4 mm	Radius R	Head SW
M16	250	16	12	58	28	5	20	3	5	24
M20	500	20	16	68	34	6	22	3	5	30
M24	1000	25	19	78	38	8	25	4	6	36
M30	1500	32	24	95	45	10	32	5	6	41
M36	2500	40	30	118	56	12	40	5	8	50

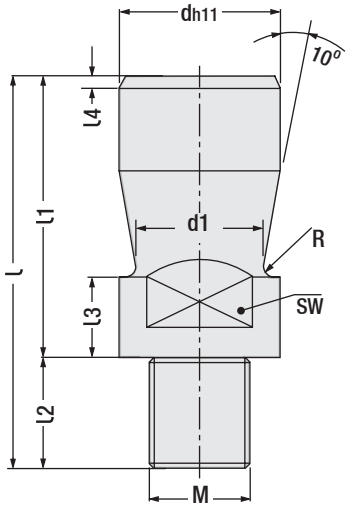
Order: G47. M

Material: CK45
700 - 800 N mm²

Die Lifting Bolt

Code: G54

DIN ISO 10242-1



Clamping bolts are components providing connection of upper group of die to the ram group of press.
Clamping bolt is mounted to the die by the help of threaded, due to exposed forces such as press counting force etc. it should be mounted to the upper plate very well.

Code: G54

M Thread	Ø d	Ø d1	l mm	l1 mm	l2 mm	l3 mm	l4 mm	r	SW
M16 x 1.5	20	15	58	40	18	12	2	2.5	17
	25	20	68	45	23	16	2.5		21
M20 x 1.5	25	20	68	45	23	16	2.5	2.5	21
	32	25	79	56		16	3		27
M24 x 1.5	32	25	79	56	23	16	3	2.5	27
	40	32	93	70		26	4	4	36
M27 x 2	40	32	93	70	23	26	4	4	36
M30 X 2	40	32	93	70	23	26	4	4	36
	50	42	108	80	28		5		41
M42 x 3	65	53	128	100	28	26	8	6.5	55

Order: G54. M x d

Reference: DIN ISO 10242 - 1

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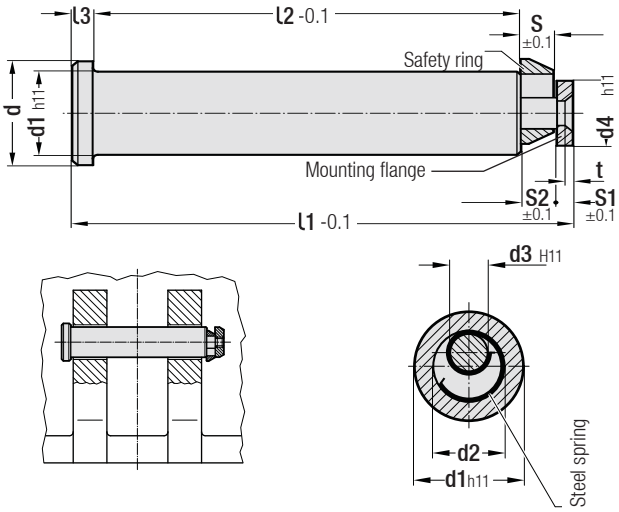
Die Lifting Pin - CNOMO

Code: G153

CNOMO Norm EM24.50.4000 02/2014



Code: G153

d1	d	d2	d3	d4	l1	l2	l3
32	40	22	12	25	154	132	6
40	50	28	16	32	197.75	170	8
50	63	36	20	40	247.6	212	10
63	80	45	25	50	309	265	12

Code: G153

d1	S	S1	S2	t	Max. Cap. 2 Pins
32	10	5	11	2.5	12000 Kg
40	12.5	6	13.75	3	18.000 Kg
50	16	8	17.6	4	28.000 Kg
63	20	10	22	5	45.000 Kg

Order: G153.d1

Material: CK45

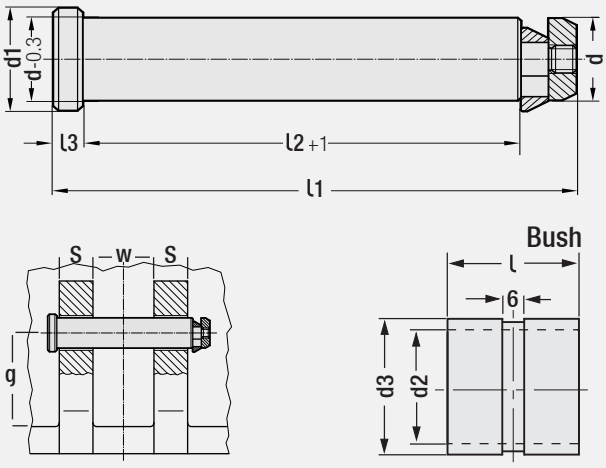
Bush for Lifting Pin

Code: G51.1

Code: G51

Die Lifting Pin / WDX 22 - 60

FORD Norm WDX 22 - 60



Code: G51 Code: G51.1

d	d1	l1	l2	l3	S	w	g	d2	d3	l
35	45	165	124	10	30	50	60	**37**	45	30
50	63	230	189	10	50	70	65	**52**	60	50
63	76	320	279	10	80	100	70	**65**	75	80
80	89	370	319	15	100	100	80	**82**	90	100

Lifting Pin Capacity

d	Max. Load	Max. Capacity
35	1500 Kg	3000 Kg
50	5000 Kg	10000 Kg
63	20000 Kg	40000 Kg
80	30000 Kg	60000 Kg

* Due to safety reasons, die weight should not exceed maximum load that 2 lifting pins can bear (max. capacity). Max. load should be considered.
* Lifting equipment should be correctly mounted on workpieces on which they are used.
* Damaged - broken parts should not be used.

G51.d (Pin)
G51.1 .d2 (Bush)

Material: CK45

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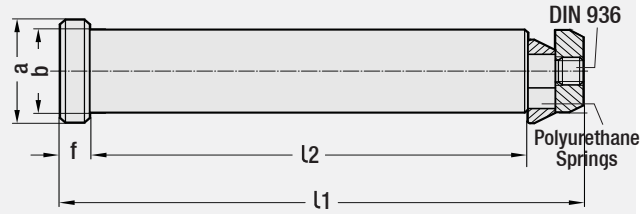
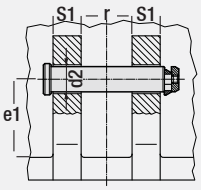
Die Lifting Pin - FCA

Code: G55

1- Reference: FCA Norm STQ4002 04 / 12 / 2014
2- Reference: FCA Norm STQ4001 04 / 12 / 2014





* Lifting equipment should be correctly mounted on workpieces on which they are used.
* Damaged - broken parts should not be used.

2- Reference: FCA Norm STQ4001 04 / 12 / 2014

a	b h11	d2	e1	f	l1	l2	R	S1	Max. Load Kg	Max. Capacity Kg
25	15.6	16	28	6	102.5	77	11	29.5	600	1200
30	20.6	21	29	6	113.5	86	13	33	1000	2000
35	25.6	26	40	6	128.5	100	20	35	2000	4000
43	33	34	55	6	166.5	135	55	35	4000	8000
53	43	44	60	8	210.5	175	60	50	7000	14000

1- Reference: FCA Norm STQ4002 04 / 12 / 2014

a	b h11	d2	e1	f	l1	l2	R	S1	Max. Load Kg	Max. Capacity Kg
38	29	30	60	6	178.5	150	60	40	2000	4000
43	33	35	65	6	200.5	170	60	50	3200	6400
53	43	45	85	8	233	195	80	50	5000	10000
65	53	55	105	10	282	235	100	60	8000	16000
65	53	55	75	10	227	180	65	50	8000	16000
78	63	65	130	12	352.5	295	120	80	12000	24000
78	63	65	100	12	272.5	215	80	60	13000	26000
95	78	81	150	14	421.5	355	140	100	30000	60000

Due to safety reasons, die weight should not exceed maximum load that 2 lifting pins can bear.

Order: STQ1 G55. a x l2

Order: STQ2 G55. a x l2

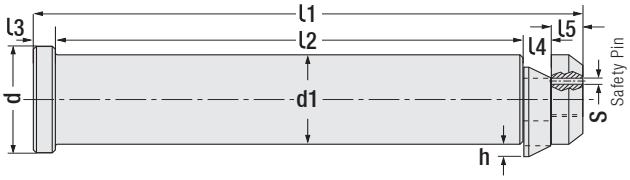
Bush for Lifting Pin

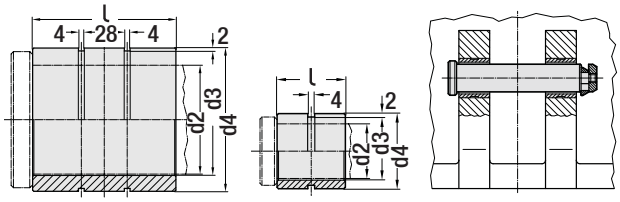
Code: G52.1

Die Lifting Pin - VDI 3366

Code: G52

Reference: VDI 3366 Standard 03 / 1997





Form - B Form - A

Code: G52

d1 h11	d Ø	l1 +1	l2 +1	l3 mm	l4 mm	l5 mm	h +0.2	S Safety Pin
32	40	175	145	10	9	10	4	3x10
40	50	225	188	10	13	13	6	4x12
50	65	273	230	11	15	16	6	4x15
63	75	347	295	14	17	20	7.5	5x20
76	95	422	360	15	19	27	8	5x25

Code: G52.1

d1 h11	Max. Load Kg.	Max. Capacity Kg.	d2 +1	d3	d4	l	Form
32	3200	6400	32	34	44	40	Form A
40	5000	10000	40	42	52	50	
50	8000	16000	50	52	62	60	
63	12500	25000	63	65	75	80	
76	31500	63000	76	78	100	100	Form B
-	-	-	76	78	105	100	

G52. d1 (Pin)
G52.1 . d2 x d4 (Bush)

Material: CK45

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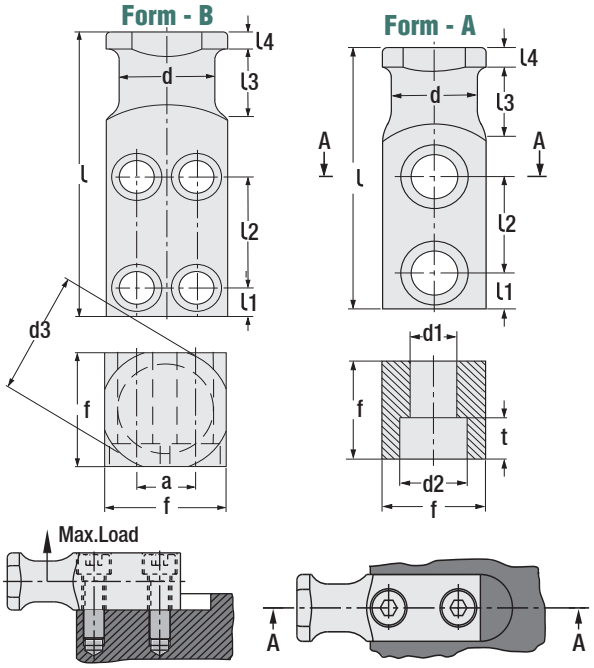
Die Lifting Lug - VDI 3366

Code: G134

NEW

Die Lifting Lug with Rope Stop Safety

Code: G58



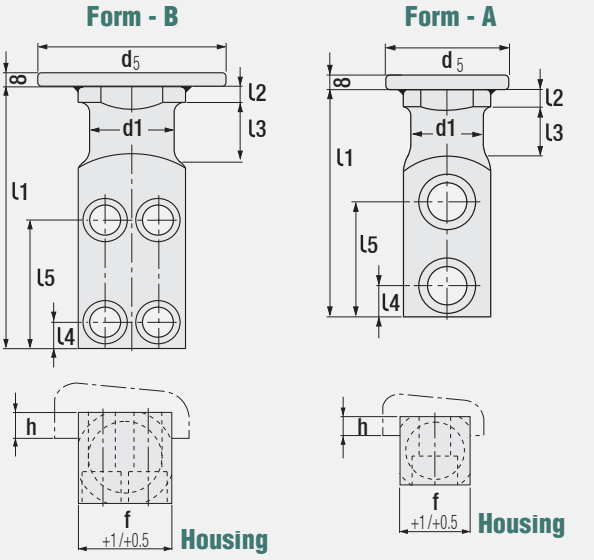
f	l	l1	l2	l3	l4	Screw	a	Form
20	80	10	34	20	6	M8 x25	-	Form A
25	90	10	37	25	8	M10 x30	-	
35	100	12	38	30	8	M12 x40	-	
40	120	16	46	32	10	M16 x45	-	
50	140	18	56	40	10	M20 x60	-	
60	160	22	59	45	12	M24 x70	-	
80	200	20	78	50	12	M20 x90	40	Form B
100	250	25	100	65	15	M24 x110	50	
120	300	30	125	80	15	M30 x130	60	

f	d	d1	d2	d3	t	Max.Load	Max.Capacity
20	16	9.5	14.5	24	9	320 Kg.	640 Kg.
25	20	11.5	17.5	30	11	630 Kg.	1260 Kg.
35	25	14	20	40	13	1250 Kg.	2500 Kg.
40	32	18	26	50	17.5	2000 Kg.	4000 Kg.
50	40	23	33	60	21.5	3200 Kg.	6400 Kg.
60	50	27	39	70	25.5	5000 Kg.	10000 Kg.
80	63	23	33	90	21.5	8000 Kg.	16000 Kg.
100	80	27	39	110	25.5	12500 Kg.	25000 Kg.
120	100	33	48	130	32	20000 Kg.	40000 Kg.

Due to safety reasons, die weight should not exceed maximum load that 2 lifting lugs can bear.

Order: G134. f

Material: CK45
700 - 800 N mm^2



Code: G58

f	h	l1	l2	l3	l4	l5	Screw	Form
20	6	80	6	20	10	44	M8 x25	Form A
25	8	90	8	25	10	47	M10 x30	
35	10	100	8	30	12	50	M12 x40	
40	10	120	10	32	16	62	M16 x45	
50	12	140	10	40	18	72	M20 x60	
60	14	160	12	45	22	81	M24 x70	
80	16	200	12	50	20	98	M20 x90	Form B
100	18	250	15	65	25	125	M24 x110	
120	20	300	15	80	30	155	M30 x130	

f	d1	d5	Max.Load	Max.Capacity	Form
20	16	60	320 Kg.	640 Kg.	Form A
25	20	70	630 Kg.	1260 Kg.	
35	25	70	1250 Kg.	2500 Kg.	
40	32	110	2000 Kg.	4000 Kg.	
50	40	110	3200 Kg.	6400 Kg.	
60	50	150	5000 Kg.	10000 Kg.	
80	63	150	8000 Kg.	16000 Kg.	Form B
100	80	150	12500 Kg.	25000 Kg.	
120	100	150	20000 Kg.	40000 Kg.	

Order: G58. f

Material: CK45
700 - 800 N mm^2

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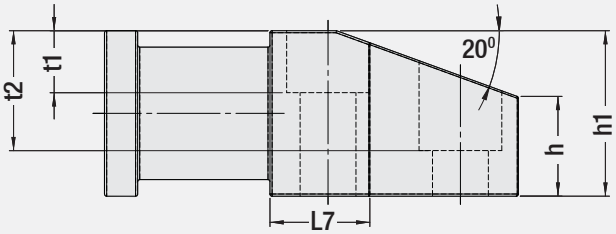
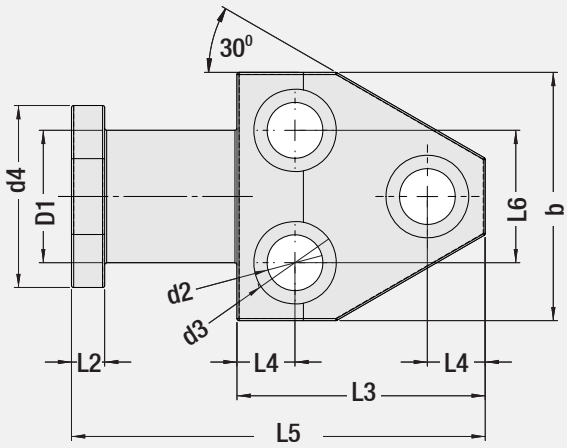
NEW

Die Lifting Lug

Code: G160





Due to safety reasons, die weight should not exceed maximum load that 2 lifting lugs can bear.

Code: G160

D1	b	d2	d3	d4	h	h1	L2	L3
32	60	13.5	20	44	24	40	8	60
40	80	17.5	26	60	32	50	10	70
50	100	22	33	70	40	65	12	88

D1	L4	L5	L6	L7	t1	t2	Max. Load Kg.
32	14	100	32	24	15	29	2000
40	16	120	44	26	20	35.5	3500
50	20	145	56	30	25	46.5	6000

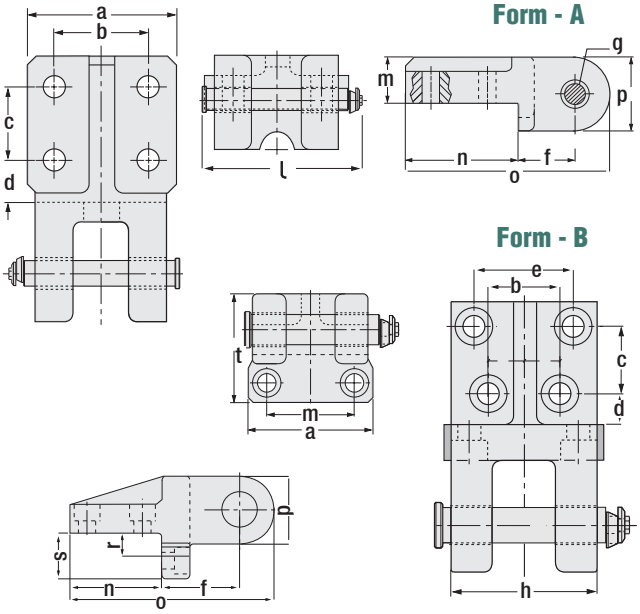
Order: G160. D1

Order Example: G160.50

Die Lifting Bracket - FCA

Code: G53

Reference: FCA Norm STQ 40001 04 / 12 / 2014



Code: G53

a	b	c	d	e	f	Form	Max. Load Kg.	Max. Capacity Kg.
80	50	40	22.5	-	39	Form A	600	1200
90	60	40	27.5	-	42		1000	2000
100	65	65	32.5	-	60		2000	4000
135	56	60	20	84	85	Form B	4000	8000
180	80	70	30	110	100		7000	14000

a	g	h	l	m	n	o	r	s	t	p
80	16	70	102.5	32	80	145	-	-	-	52
90	21	79	113.5	36	90	160	-	-	-	56
100	26	90	128.5	50	120	215	-	-	-	70
135	34	125	166.5	96	100	221	30	50	111	72
180	44	160	210.5	130	125	270	35	60	40	90

Order: G53. a x Form

Order Example: G153. 80. A

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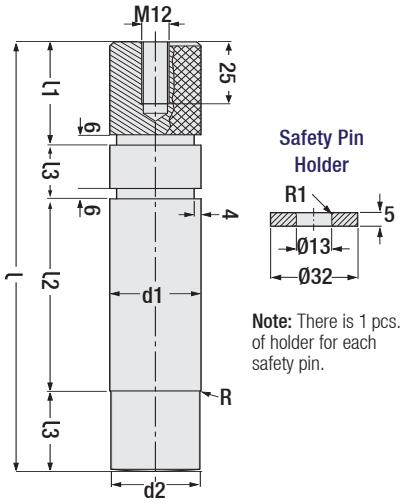
Safety Pin - VDI

Code: G57

Reference: VDI 3365



Note: There is 1 pcs. of holder for each safety pin.

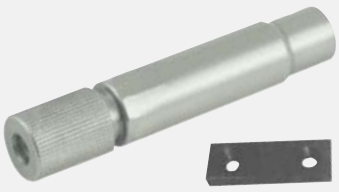
Code: G57

d1 e8	d2 +0.05	R	Load Capacity
32	29	4	500 Kg
32	29	4	500 Kg
40	37	5	750 Kg
40	37	5	750 Kg
50	47	6	1250 Kg
50	47	6	1250 Kg
63	60	6	2500 Kg
63	60	6	2500 Kg

d1 e8	l	l1	l2	l3
32	130	22	58	25
32	147	22	75	25
40	171	32	75	32
40	191	32	95	32
50	207	32	95	40
50	232	32	120	40
63	252	32	120	50
63	287	32	155	50

Order: G57. d1 x l

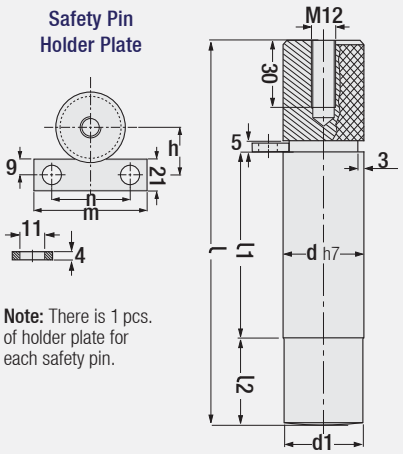
Material: 1.7131



Safety Pin - FCA

Code: G56

Reference: FCA 230.GSG.16



Note: There is 1 pcs. of holder plate for each safety pin.

Code: G56

d	d1	h	m	n
30	29	22	50	35
40	39	27	65	45
50	49	32	70	50

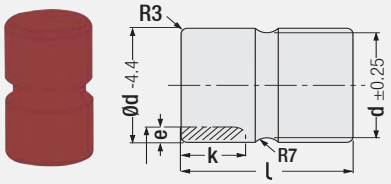
d	l	l1	l2
30	155	87	33
40	193	109	39
50	229	131	43

Order: G56. d

Material: 1.7131

Shock Absorber for Safety Pin

Code: G56.1



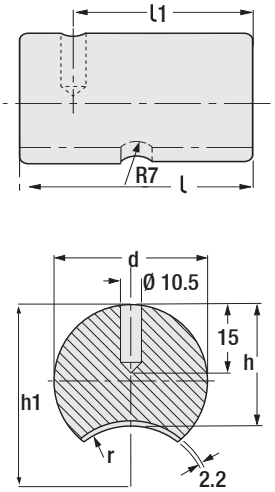
Pin Diameter	d	l	e	k	Max. Press
40	50	70	8	25	%16
50	63	80	8	30	%12

Order: G56.1 x d

Material: Polyurethane 90 Shore

Code: G57.2

Shock Absorber for Safety Pin



Code: G57.2

d ± 0.25	h	h1	r
40	32	50	18
50	40	63	23
63	51	86	35

d ± 0.25	l	l1
40	60	45
50	80	60
63	80	60

* It should be used with safety pins. G57.2 product is compatible with the product code G57.
* It is an impact and speed retarder product.
* Hardness of polyurethane material is 90 shore.
* All dimensions without tolerance are in EN 22 768-1 mm standards.

Order: G57.2 x d

Material: Polyurethane 90 Shore

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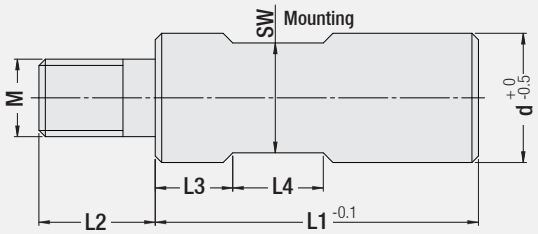
NEW

Support Bolt

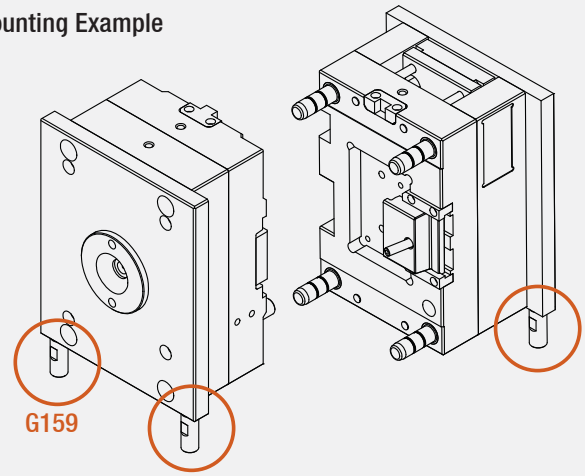
Code: G159

These bolts form a gap on mould surfaces in order to prevent damage to water unions and cooling hose systems protruding on injection mould surfaces and hydraulic - pneumatic core systems. Minimum four bolts should be used according to each mould size. Especially, it is used to protect protruding parts of moulds during shelf forming.



d - 0.5	M Metric	L1 mm	L2 mm	L3 mm	L4 mm	SW Mounting
20	M12	35	18	14	12	17
		50				
		80				
32	M16	35	24	18	12	27
		50				
		80				
		120				
39	M20	80	30	24	16	32
		120				

Mounting Example



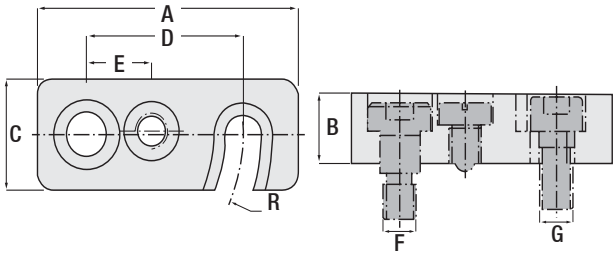
Order: G159. d x L1

Material: CK45

CE

Die & Mould Safety Latch

Code: G103



A mm	B mm	C mm	D mm	E mm	F mm	G mm	R rdy
50	12	20	30	14	M6	M6	30
63	16	25	38	17	M8	M8	38
80	20	32	48	20	M10	M10	48

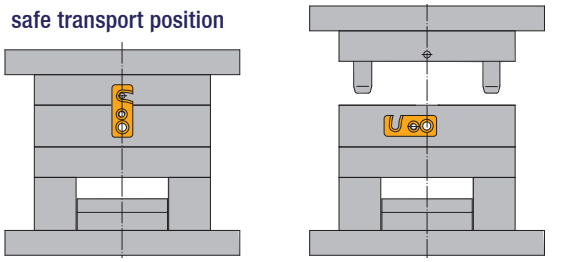
Order: G103. A

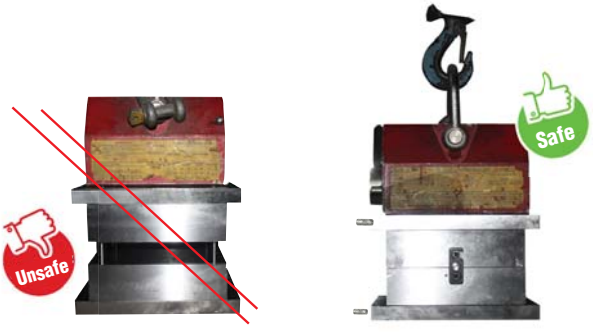
Material: 1.0503 Steel Forging Sandblasting

Die & Mould Safety Latch: This system is mounted outside of the die & mould. It is used to carry the mould safely. It is fixed on the mould with a cylinder head cap screw. Other cylinder head cap screw hole is drilled at the opposite party. Mounting or demounting can be easily done with spring plunger. It is a compact product having no loose parts. It has no protruding parts as a clamping lock.

safe transport position

in working position





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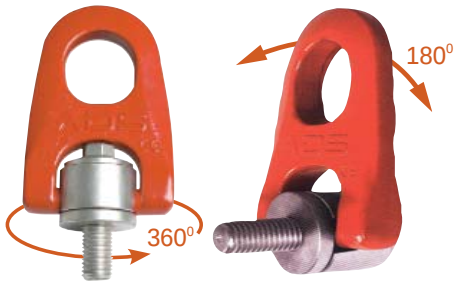
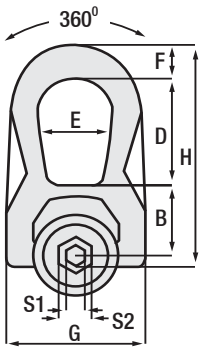


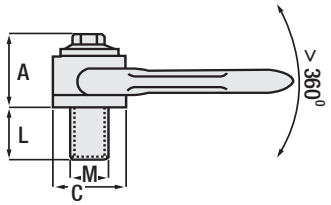
Double Swivel Ring - Eyebolt

Code: AK400

Class > 8CE
Safety Factor
5 : 1

Min. Breaking
Load (MBL)
= 5 x WLL Ton



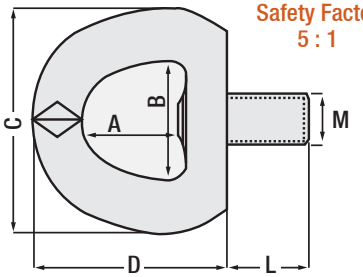


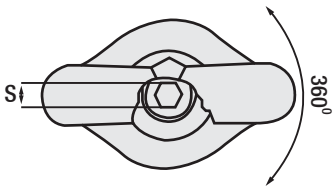
Lifting equipment manufactured as forging in Turkey, has been registered that its production quality is in European standards with **"Approval of Material Manufacturer"** certificate given by Germanischer Lloyd.

Heavy Tonnage Swivel Ring Eyebolt

Code: AK450

Class > 8CE
Safety Factor
5 : 1





Code: AK400

p : Load / Capacity — Eyebolt

Code: AK450

M	L	S1	S2	A	B	C	D	E	F	G	H
M8	15	8	16	33	30	30	27	29	14	53	85
M10	20	8	16	33	30	30	27	29	14	53	85
M12	20	8	16	33	30	30	27	29	14	53	85
M14	35	8	20	45	42	45	36	38	17	76	120
M16	35	8	20	45	42	45	36	38	17	76	120
M18	35	8	20	45	42	45	36	38	17	76	120
M20	35	8	20	45	42	45	36	38	17	76	120
M24	40	14	24	62	55	60	55	60	25	117	165
M30	40	14	24	62	55	60	55	60	25	117	165

M	L	S	A	B	C	D
M8	12	6	38	45	90	78
M10	15	6	38	45	90	78
M12	18	8	38	45	90	78
M16	27	8	38	45	90	78
M20	30	8	38	45	90	78
M24	36	14	58	70	134	115
M30	45	14	58	70	134	115
M36	54	14	88	94	190	166
M42	63	14	88	94	190	166
M48	68	19	88	94	190	166

Maximum Lifting Load (Safety Factor ≥ 5:1) P=Ton

M	p	p	p	p	45° p	60° p	45° p	60° p
M8	0.3	0.6	0.3	0.6	0.4	0.3	0.6	0.3
M10	0.6	1.2	0.6	1.2	0.8	0.6	1.3	0.6
M12	1.0	2.0	1.0	2.0	1.4	1.0	2.1	1.0
M14	1.3	2.6	1.3	2.6	1.8	1.3	2.7	1.3
M16	1.6	3.2	1.6	3.2	2.2	1.6	3.4	1.6
M18	2.0	4.0	2.0	4.0	2.8	2.0	4.2	2.0
M20	2.5	5.0	2.5	5.0	3.5	2.5	5.3	2.5
M24	4.0	8.0	4.0	8.0	5.6	4.0	8.4	4.0
M30	6.3	12.6	6.3	12.6	8.8	6.3	13.2	6.3

Maximum Lifting Load (Safety Factor ≥ 5:1) P=Ton

M	p	p	p	p	45° p	60° p	45° p	60° p
M8	0.3	0.6	0.3	0.6	0.4	0.3	0.6	0.3
M10	0.6	1.2	0.6	1.2	0.8	0.6	1.3	0.6
M12	1.0	2.0	1.0	2.0	1.4	1.0	2.1	1.0
M16	1.6	3.2	1.6	3.2	2.2	1.6	3.4	1.6
M20	2.5	5.0	2.5	5.0	3.5	2.5	5.3	2.5
M24	4.0	8.0	4.0	8.0	5.6	4.0	8.4	4.0
M30	6.3	12.6	6.3	12.6	8.8	6.3	13.2	6.3
M36	10.0	20.0	10.0	20.0	14.0	10.0	21.0	10.0
M42	12.5	25.0	12.5	25.0	17.5	12.5	26.3	12.5
M48	15.0	30.0	15.0	30.0	21.0	15.0	31.5	15.0

Order:
AK400. M

Material: Class > 8CE Safety Certificated

Order:
AK450. M

Material: Class > 8CE Safety Certificated

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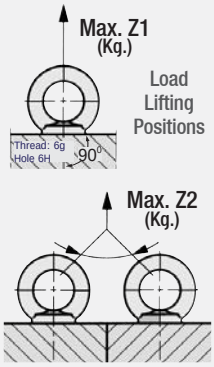
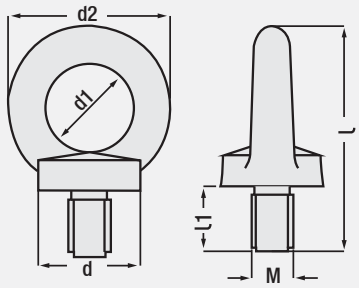


Lifting Eyebolt

DIN 580

Code: G141



Order:
G141. M

Material: C15 Forged
EYEBOLT: Class > 8
EYENUT: Class > 8

Usage:
Standard: G141
Heavy Duty: AK-580C

Lifting Eyebolt: It is loaded only with forces making maximum 45° angle with vertical or circular plane, not allowed to other loadings, however such liftings are oftenly unavoidable. Please plan selection of eyebolt suitable to safety bearing in advance (its safety is provided).

Code: G141

M x Thread	d	d2	d1	l	l1	Weight	Z1 Ton	Z2 Ton
M8 x 1.25	20	36	20	49	13	70 gr.	0.15	0.09
M10 x 1.50	25	45	25	63	17	100 gr.	0.23	0.15
M12 x 1.75	30	54	30	73.5	20.5	180 gr.	0.34	0.20
M14 x 2.0	30	54	30	73.5	20.5	200 gr.	0.46	0.30
M16 x 2.0	35	63	35	89	27	280 gr.	0.70	0.50
M18 x 2.50	35	63	35	89	27	330 gr.	0.90	0.60
M20 x 2.50	40	72	40	101	30	420 gr.	1.20	0.80
M24 x 3.0	50	90	50	126	36	830 gr.	1.80	1.25
M30 x 3.50	65	108	60	154	45	1.66 kg.	3.60	2.50
M36 x 4.0	75	126	70	182	54	2.65 kg.	5.10	3.60
M42 x 4.50	85	144	80	210	63	4.03 kg.	7.00	4.90
M48 x 5.0	100	166	90	236	68	8.80 kg.	8.60	5.90

For Heavy Duty Parts

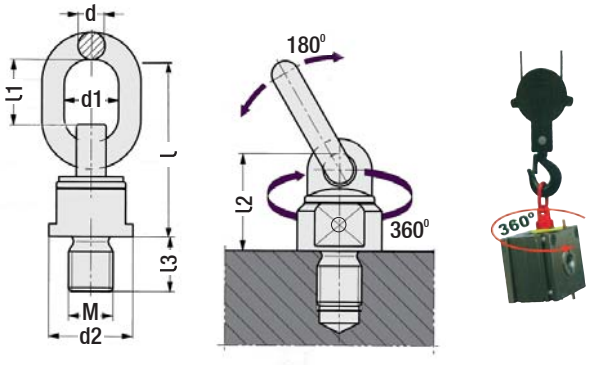
Order:
AK-582S
EYENUT

Order:
AK-580C
EYEBOLT

EYEBOLT (Heavy d.) AK - 580C: M27 / M30 / M36 / M42 / M45 / M48 / M56 / M60
EYENUT (Heavy d.) AK - 582S: M27 / M30 / M36 / M42 / M45 / M48 / M56 / M60

Rotary Safety Eyebolt

Code: G140



Rotary Safety Eyebolt: By absorbing sudden and rigid motion during lifting - bending and breaking of sling / rope / chain that can be occurred due to swinging of load, it will amortise costs above possible damages with safety lifting and carrying. Special forged steel (class 8) product, 4 times safety against fracture in rotation direction of full load, hinged rotary design that can be taken correct position and be turned axially by aligning movable ring 180° in loaded position.

Code: G140

M x Thread	d	d1	d2	l	l1	l2	l3	Weight
M8 x 1.25	12	30	40	98	44	46	12	0.5 kg.
M10 x 1.50	12	30	40	98	44	46	19	0.5 kg.
M12 x 1.75	12	30	40	98	44	46	19	0.5 kg.
M16 x 2.0	12	30	40	98	44	46	31.8	0.5 kg.
M20 x 2.50	20	40	70	160	67	75	38.1	2.5 kg.
M24 x 3.0	20	40	70	160	67	75	38.1	2.5 kg.
M30 x 3.50	22	51	79	206	95	91	50	4.0 kg.
M36 x 4.0	22	51	79	206	95	91	54	4.0 kg.
M42 x 4.50	26	65	93	230.5	108	100.5	63	6.0 kg.
M48 x 5.0	26	65	93	230.5	108	100.5	68	6.0 kg.
M56 x 5.5	32	70	105	278	120	132	84	11.0 kg.
M64 x 6.0	32	70	105	278	120	132	95	11.0 kg.

Maximum Lifting Load (Safety Factor ≥ 5:1) P=Ton

Product	Vertical 0°	Lateral 90°	Two Angled 0-45°	Two Angled 45-60°	Four Angled 0-45°	Four Angled 45-60°
M8 x 1.25	0.6	0.3	0.4	0.3	0.6	0.4
M10 x 1.50	0.9	0.45	0.6	0.45	0.9	0.6
M12 x 1.75	1.2	0.6	0.8	0.6	1.2	0.9
M16 x 2.0	2.6	1.3	1.8	1.3	2.7	1.9
M20 x 2.50	4	2	2.8	2	4.2	3
M24 x 3.0	7	3.5	4.9	3.5	7.3	5.2
M30 x 3.50	10	5	7	5	10.5	7.5
M36 x 4.0	15	8	11.2	8	16.8	12
M42 x 4.50	17	12	16.8	12	25.2	18
M48 x 5.0	18	13	18.2	13	27.3	19.5
M56 x 4.0	28	16	22.4	16	33.6	24
M64 x 6.0	28	16	22.4	16	33.6	24

Order: G140. M

Order Example:
G140. M24

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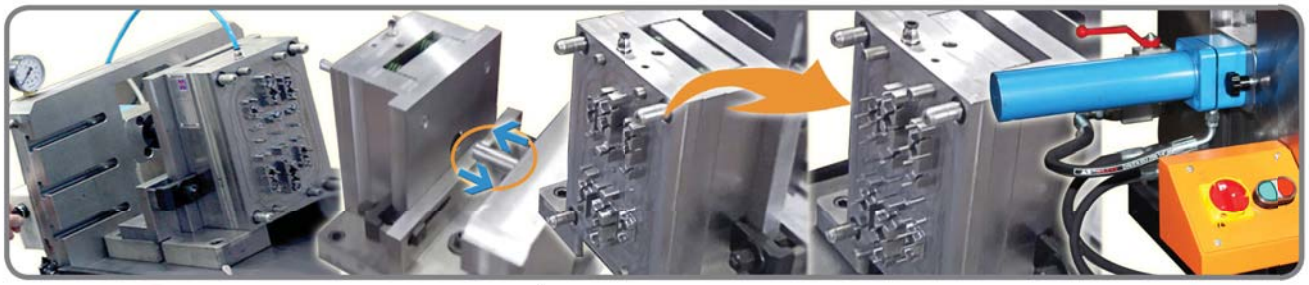
Mould Testing & Assembly Unit CE

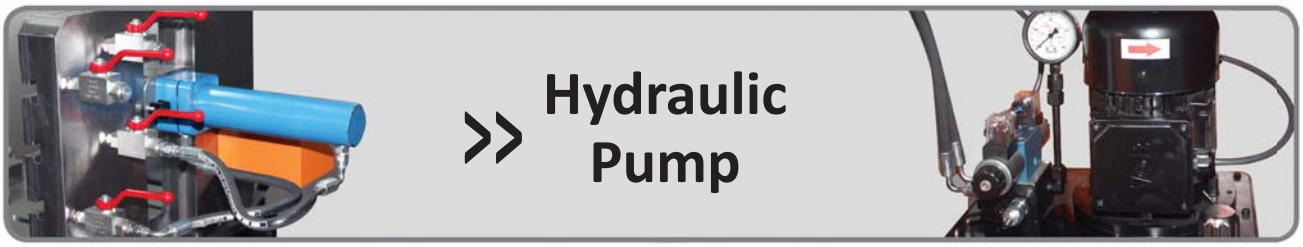
Mould Delivery: No problem / successful

We maintain our innovative investments with the force we have taken from mould masters. We also present **"Mould Testing & Assembly Unit"** and **"Core System with Hydraulic Piston"** (page 282) which we hope that they support mould production with proud. We are sure that these products will be useful for mould collection and offer you a joyful working environment with quick and easy mounting.

Mould Testing Unit: It provides easy mounting and control possibility for your moulds with its suitable sizes and durable steel construction in anywhere of your workshop (by forklift). It enables to open your mould bases / to separate plates easily by providing sliding motions with air cushions on the table of the unit. In this way, the plates can be moved forward - backward easily (with the logic of cnc machine) and your operations on moulds are ready.



Hydraulic Power is mounted in the unit; the controls of Hydraulic System which can be mounted to the mould if required and Injection Motion controls, especially Ejector Motions and Other Lifter / Slide Systems are monitored. And their adjustments may be done in precision position on the unit.
All these motions can also be monitored.



Compressed Air Energy: The air equipment on the unit enables you to test water/cooling channels in your moulds with a Manometer (air bar measuring) by installing it in your existing air system in the workshop. It provides support for you to detect leakages and problems in the water cooling channels with the pressure monitored in Manometer counter. This system prevents corrosion in your new moulds because it does not use water. The existing air energy will make contribution to your other mounting works.

Except above mentioned important working possibilities of mould testing unit, it is a compact (with no effusing part) and innovative product equipped with table safety retainers / supports, mould angulation thrusts - electrical panel, air control buttons - hydraulic unit control counter - hydraulic valve - hydraulic piston tool - moving piston slot and holder - fixed plate and pins - moving plate control - mould ejector and connection plates.
All spare part and services are given by our company.

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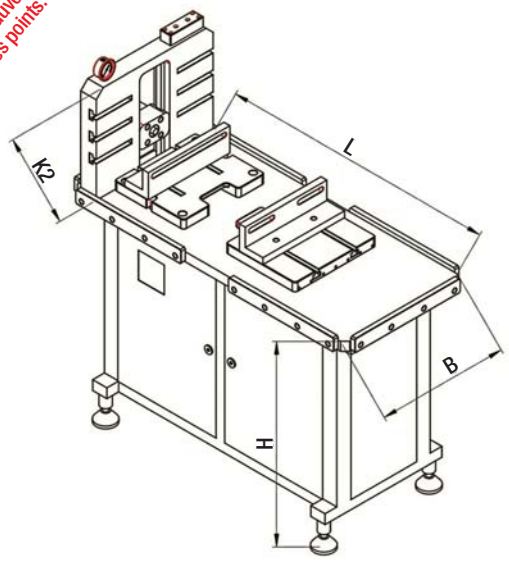
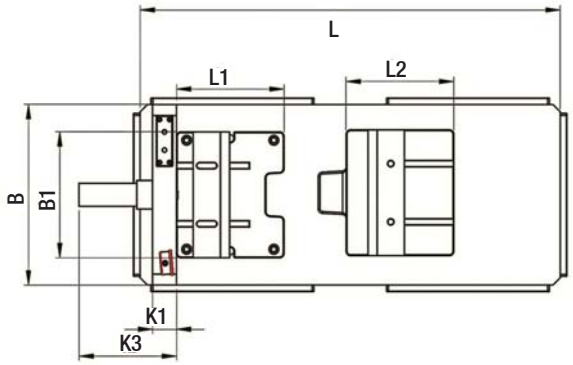
NEW Only at Güvenal sales points.

CE

Mould Testing & Assembly Unit

Code: GTH-00..





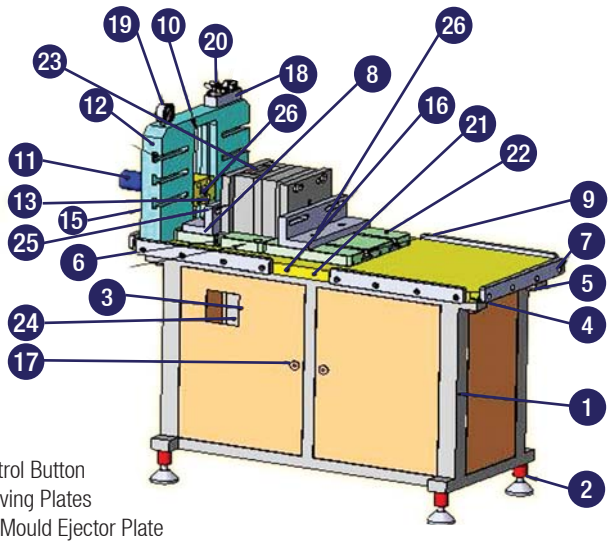
Perfect mould table that enables fast / easy opening and closing of moulds in accordance with the occupational safety principles and carrying out repair and mounting works on moulds and monitoring precision and performing many tests.

Video

Order Code	Max. Capacity Loading	Air Power	Electrical Motor Power	Unit Weight	L mm	H mm	L1 mm	L2 mm	B mm	B1 mm	K1 mm	K2 mm	K3 mm	Special Offer
GTH-001	3000 Kg.	6 Bar	3 Kw	530 Kg.	1156	854	296	296	496	346	66	400	268	4.590 €
GTH-002	3000 Kg.	6 Bar	3 Kw	720 Kg.	1396	854	346	696	696	596	76	600	280	6.490 €
GTH-003	5000 Kg.	8 Bar	5 Kw	-	1596	664	446	896	896	746	96	646	300	9.690 €

Mould Testing Unit Schema / Descriptions:

1 - Steel Profile (60 x 40 x 3) Chassis
2 - Powerful Metal Screw Pressing Feet
3 - Hydraulic Pressure Plexy Transparent Indicator
4 - Moving (precision ground) Unit Table
5 - Table Chassis Skid Plates
6 - Fixed Plate Pins
7 - Table Safety Side Holders
8 - Fixed (precision ground) Plate for Mould
9 - Chuck "T" Channels
10 - Moving Piston Slot
11 - Hydraulic Piston Arm
12 - Air Outlet for Water / Cooling Channel Test
13 - Moving, Hydraulic Piston Holder
14 - Precision Ground (for small moulds) Set Square
15 - Electrical Panel
16 - Air Control Button
17 - Openable Unit Cover
18 - Extra Hydraulic Distribution Control Button
19 - Air Control / Manometer
20 - Hydraulic Distribution Valves



21 - Moving Plate Control Button
22 - Air Cushioned Moving Plates
23 - Precision Ground Mould Ejector Plate
24 - Hydraulic Unit
25 - Precision Ground Mould Connection Plates
26 - Hydraulic Piston Extension Tool

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NEW

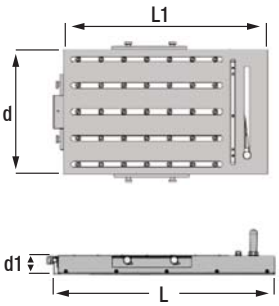
Die Changing Table (1Ton)

Code: 1024-500670

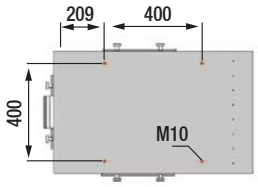
Die Changing Cart (1Ton)

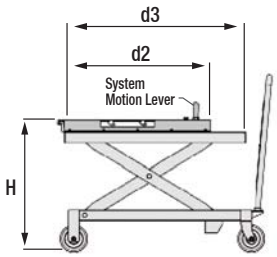
Code: 1024-500671

Die Changing Cart & Die Changing Table

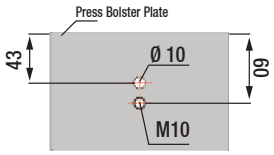


► Mounting Holes for Cart and Similar Equipment





► Hole Template

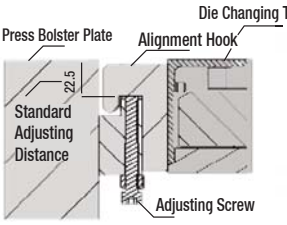


Die Changing Cart

Code: 1024

* Dies up to "1 ton" weight, it reduces surface contact when it desired to be moved during changing to be placed on the press bolster plate or shelves. Thus, it provides the possibility of changing the dies easily and quickly without the need for much power.

* It can be mounted on pallet truck or forklifts and can be easily used.



Advantages:

* Time-saving
* Flexible application-possibilities
* Gentle transport
* Exact positioning
* Safe positioning of the cart by parking brake

Order Code	d mm	d1 mm	d2 mm	d3 mm	L mm	L1 mm	H Min. - Max.	Type	Capacity
1024-500670	500	71	-	-	1015	670	-	Table	1 Ton
1024-500671	500	-	818	1015	-	670	480 - 1050	Cart	1 Ton

Some Applications:

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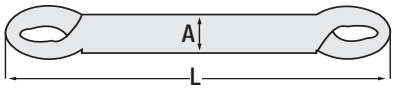
Lifting Sling

Code: GPS

(Double-layer, polyester)



Load Capacity	A mm	L Sling Length (Meter) 1	2	3	4	5	6	8	10
1 Ton	25	■	■	■	■	■	■		
2 Ton	50	■	■	■	■	■	■	■	
3 Ton	75		■	■	■	■	■	■	■
4 Ton	100		■	■	■	■	■	■	■
5 Ton	125			■	■	■	■	■	■
6 Ton	150			■	■	■	■	■	■
8 Ton	200			■	■	■	■	■	■
10 Ton	250			■	■	■	■	■	■

Safety coefficient of polyester sling in accordance with **EN1492 -1** is 6 times of each type of slings. It is produced from 100% double layer polyester webbing. Reinforcement lifting eye - colour / load coded low coefficient of elongation - EN1492-1 : 2000.

Lifting Position / Capacity, Ton

Sling Colour Load	% 100	% 80	% 200	0°-45° % 140	45°-60° % 100
Purple	1 Ton	0.8	2 Ton	1.4	1 Ton
Green	2 Ton	1.6	4 Ton	2.8	2 Ton
Yellow	3 Ton	2.4	6 Ton	4.2	3 Ton
Grey	4 Ton	3.2	8 Ton	5.6	4 Ton
Red	5 Ton	4.0	10	7.0	5 Ton
Brown	6 Ton	4.8	12	8.4	6 Ton
Blue	8 Ton	6.4	16	11.2	8 Ton
Orange	10	8.0	20	14	10

Order:
GPS. Load x Lenght

Ratchet Strap

Code: NL35.08 (8 Meters)

Code: NL50.10 (10 Meters)

Work Safety Products

Footwear with protective steel toe

Code : EA

Safety Footwear

Order	Number
EA.39	No.39
EA.40	No.40
EA.41	No.41
EA.42	No.42
EA.43	No.43
EA.44	No.44
EA.45	No.45

Order	Product
IGZ	Safety Goggles
TGB	Face Mask
SGK	Face Guard

Code: NTEL

Code: TDEL

Code: ASPEST

Industiral Gloves

Order	Product
NTEL	Industrial Glove - Basic
TDEL	Safety Glove - Leather
ASPEST	Thermal Protection Glove
KDEL	Welder Glove
MLEL	Latex Glove
KBEL	Cloth Glove
BLEL	Rubber Glove
NTKL	Nitrile Glove - Basic

Code: KLK

Code: KBK

Code: EBBR

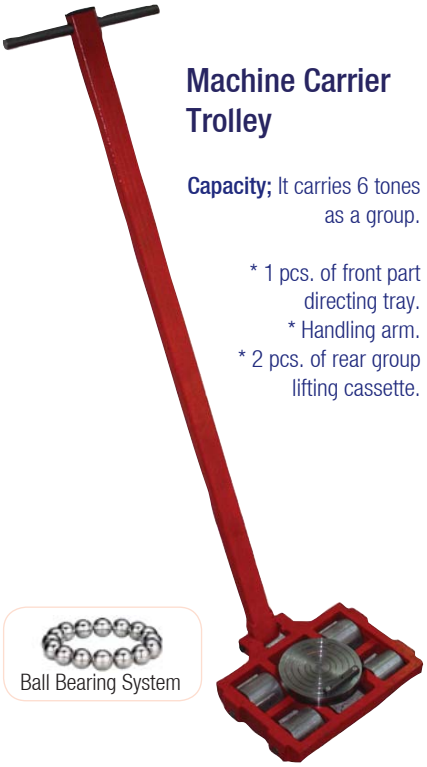
Work Safety Products

Order	Product
EBBR	Safety Helmet
EBBH	Safety Helmet with Air Channel
KBK	Ear Protection
KLK	Earplug
STM	Dust Mask
VTM	Dust Mask with Valve

Machine Carrier Trolley

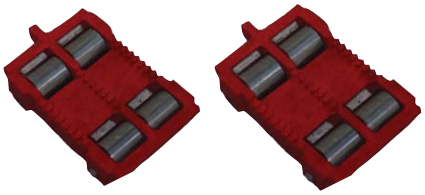
Capacity; It carries 6 tones as a group.

* 1 pcs. of front part directing tray.
* Handling arm.
* 2 pcs. of rear group lifting cassette.



Ball Bearing System

Rear group lifting cassettes



Order Code: DMZARB6

The trolleys are designed as hard balanced and without deformation. The trolleys are equipped with quite high robust **metal structured**, non-deformed wheels. For safety operation, it should be used when the **linking arm** is inserted to the cassette.
It means that all movable / traveler rotary jointed wheels are loaded equally even unleveled surfaces in case of closed cassette. Thanks to closed cassette, it provides to move high resistant, bearing preventing friction even at heavy loads. It is used at concrete surfaces in internal and external environment. For heavier or larger loads, a few cassette may be used simultaneously. If required, it is combined with linking arm.

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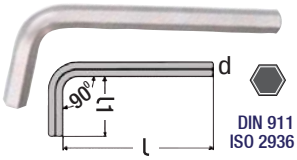
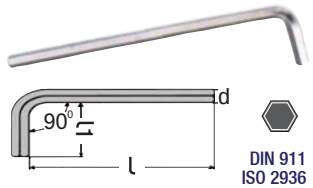
Allen Wrench



DIN 911
ISO 2936

Order	d	l	l1
AA.15	1.5	45	15
AA.20	2	50	17
AA.25	2.5	57	20
AA.30	3	64	22
AA.35	3.5	68	25
AA.40	4	72	28
AA.45	4.5	78	30
AA.50	5	83	32
AA.60	6	94	37
AA.70	7	99	40
AA.80	8	105	43
AA.90	9	111	46
AA.100	10	119	49
AA.120	12	134	56
AA.140	14	140	56
AA.160	16	165	75
AA.170	17	160	63
AA.190	19	180	70
AA.220	22	200	80
AA.240	24	224	90
AA.270	27	250	100

Allen Wrench, Long Type



DIN 911
ISO 2936

Order	d	l	l1
AU.20	2	100	16
AU.25	2.5	112	18
AU.30	3	126	20
AU.35	3.5	135	21
AU.40	4	140	25
AU.45	4.5	150	25
AU.50	5	160	28
AU.60	6	180	32
AU.70	7	190	34
AU.80	8	200	36
AU.90	9	212	38
AU.100	10	224	40
AU.110	11	240	42
AU.120	12	250	45
AU.130	13	266	50
AU.140	14	280	56
AU.170	17	320	63

Allen Wrench Set

Order	Diameter
AAS10 (10pcs)	2-2.5-3-4 5-6-7-8 9-10
AAS12 (12pcs)	2-2.5-3-4 5-6-7-8-9 10-12

Die & Mould Mounting Kit

Code: IW3C14

Capacity: 16 mm
Max. Torque: 1492 Nm (150Kg.)
Length: 190 mm
Min. Hose Size: 10 mm
Air Pressure: 6.3 Bar

1/2" Air Nutrunner

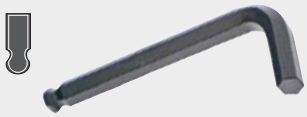
1/2" Allen End

Code: 111300610..

There is 1 pcs. allen end per dimension in the Die & Mould Mounting Kit.

Order	d	l	In Kit
11130061006	6	60 mm	1 pcs.
11130061008	8		1 pcs.
11130061010	10		1 pcs.
11130061012	12		1 pcs.
11130061014	14		1 pcs.

Round Head Allen Wrench

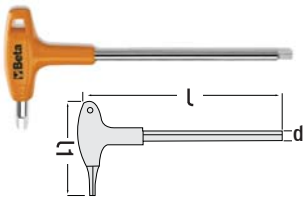


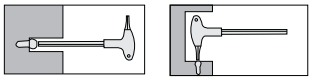
Order	d	l	l1
BA.20	2	50	16
BA.25	2.5	60	18
BA.30	3	63	20
BA.40	4	70	25
BA.50	5	80	28
BA.60	6	90	32
BA.80	8	100	36
BA.100	10	112	38

Key Wrench for Torx Head

Order	d	l	l1
TX.T6	T6	42	16
TX.T7	T7	48	16
TX.T8	T8	48	16
TX.T9	T9	48	16
TX.T10	T10	51	17
TX.T15	T15	54	18
TX.T20	T20	57	19
TX.T25	T25	60	20

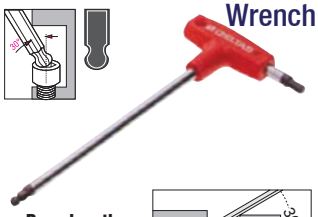
Hexagon Key Wrench



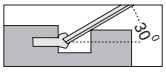


Order	d	l	l1
TA.20	2	139	52
TA.25	2.5	153	55
TA.30	3	153	55
TA.35	3.5	179	70
TA.40	4	179	70
TA.45	4.5	200	84
TA.50	5	200	84
TA.60	6	221	103
TA.70	7	236	106
TA.80	8	255	117
TA.100	10	285	132

Round Head Hex. Key Wrench

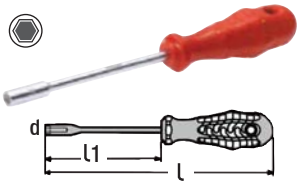


Round on the long side



Order	d	l	l1
BT.25	2.5	153	55
BT.30	3	153	55
BT.40	4	179	70
BT.50	5	200	84
BT.60	6	221	103
BT.80	8	255	117

Hexagon Socket Wrench

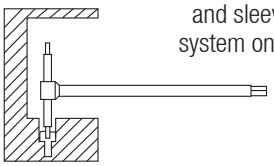


Order	d	l	l1
LA.4	4	210	125
LA.6	6	210	125
LA.7	7	220	125
LA.8	8	220	125
LA.10	10	220	125
LA.12	12	230	125
LA.14	14	230	125

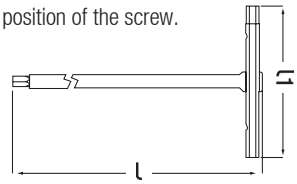
NEW "T" Allen Wrench

Code: AKH

Functional use with strong steel thick body and sleeve system on it



"T" Type Triple Hexagon Head Allen Wrench: Free / quick rotating via cold-rolled hexagon profile and sleeve on it and it is ready to process with robust and free insert handle. Chrome vanadium steel and black ends are suitable for screws in depth under high torques. Thanks to its handle, screwdriver set can be optimally adapted according to the position of the screw.



Order (AKH)	Dia	l	l1
AKH.03	3	125	63
AKH.04	4	180	87
AKH.05	5	180	90
AKH.06	6	210	105
AKH.08	8	250	125
AKH.10	10	300	145
AKH.12	12	320	160
AKH.14	14	340	165

360° Rotary Arm

Please visit www.guvenal.net for product video.

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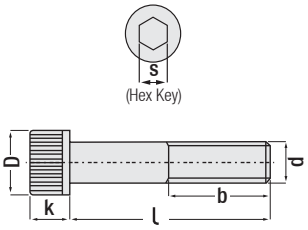
Code: IMBP

Inox
Hex-socket Head Cap Screw

DIN 912 ISO 4762, A2-A4



d	l mm	b	D	k	s
M3 x 05	6	6	5.5	3	2.5
	8	8			
	10	8.5			
	12	12			
	15	15			
	16	16			
	20	18			
	25	23			
	30	20			
	35	33			
	40	20			
M4 x 07	8	6	7	4	3
	10	8			
	12	10			
	16	15			
	20	18			
	25	23			
	30	20			
	35	20			
	40	20			
	45	20			
	50	20			
M5 x 08	8	6	8.5	5	4
	10	8			
	12	12			
	16	15			
	20	18			
	25	23			
	30	22			
	35	22			
	40	22			
	45	22			
	50	22			
	60	22			
	70	22			
	80	22			
	90	22			
	100	22			

d	l mm	b	D	k	s
M6 x 1	10	7	10	6	5
	12	12			
	16	16			
	20	17			
	25	22			
	30	27			
	35	24			
	40	24			
	45	24			
	50	24			
	60	24			
	70	24			
	80	24			
	90	24			
	100	24			
	110	24			
	120	24			
	130	24			
M8 x 1.25	10	8	13	8	6
	15	13			
	20	17			
	25	22			
	30	27			
	35	32			
	40	28			
	45	28			
	50	28			
	60	28			
	70	28			
	80	28			
	90	28			
	100	28			
	110	28			
	120	28			
	130	28			
	140	28			
	150	28			
M10 x 1.50	16	16	16	10	8
	20	16			
	25	21			
	30	26			
	35	31			
	40	36			
	45	32			
	50	32			
	60	32			
	70	32			
	80	32			
	90	32			
	100	32			
	110	32			
	120	32			
	130	32			
	140	32			
	150	32			

Code: IMBP

d	l mm	b	D	k	s
M12 x 1.75	20	15	18	12	10
	25	20			
	30	25			
	35	30			
	40	35			
	45	40			
	50	45			
	60	36			
	70	36			
	80	36			
	90	36			
	100	36			
	110	36			
	120	36			
	130	36			
	140	36			
	150	36			

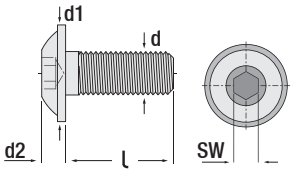
Order: IMBP. d x l

NEW

Code: IMBF

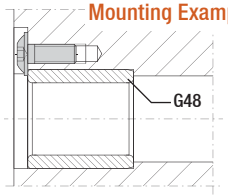
Hex-socket Button Head Screw with Flange

ISO 7380-2 10.9
Zinc Plated



d	l	d1	d2	SW
M6	10	13.6	3.3	4
	12			
	16			
M8	16	17.8	4.4	5
	20			
M10	20	21.9	5.5	6

Mounting Example

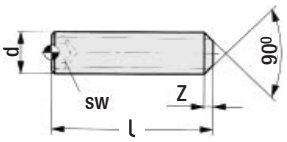


Order: IMBF. d x l

Code: SECP

Inox Hex-socket Set Screw

DIN 916 ISO 4029, A2-A4



d	l mm	Z	SW
M3 x 05	8	0.5	1.5
	10		
	16		
M4 x 07	8	0.7	2
	10		
	16		
	20		
M5 x 08	10	0.75	2.5
	16		
	20		
	25		
	30		
M6 x 1	10	1.0	3.0
	16		
	20		
	25		
	30		
	35		
	40		
M8 x 1.25	10	1.2	4.0
	16		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
M10 x 1.50	10	1.5	5.0
	16		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
M12 x 1.75	10	2.0	6.0
	16		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
	55		
	60		

Order: SECP. d x l

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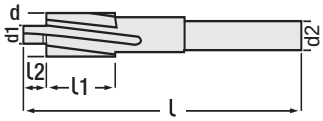
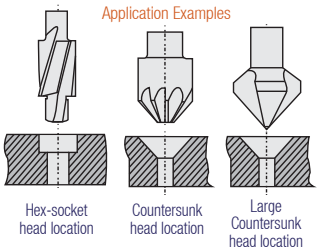
Code: ICF

Socket Cap Screw Counterbore

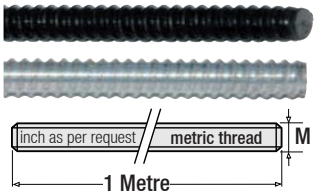




M	d	d1	d2	l	l1	l2
M3	6	3.2	5	71	14	4
M4	8	4.3				
M5	10	5.3	8	80	18	6
M6	11	6.4				
M8	15	8.4	12.5	100	22	8
M10	18	10.5				10
M12	20	13				12
M14	24	15				14
M16	26	17				16
M18	30	19				18
M20	33	20				20

Order: ICF. M x d

Straight Stud

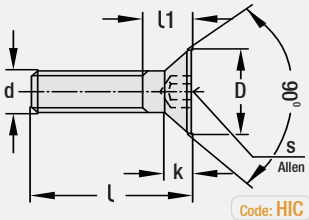


Order	M	Steel	INOX
GSM.3	M3	√	
GSM.4	M4	√	
GSM.5	M5	√	
GSM.6	M6	√	√
GSM.8	M8	√	√
GSM.10	M10	√	√
GSM.12	M12	√	√
GSM.14	M14	√	√
GSM.16	M16	√	√
GSM.18	M18	√	
GSM.20	M20	√	
GSM.22	M22	√	
GSM.24	M24	√	

Order / Code: HIC. d x L

Countersunk Head Screw

Class: 10.9 DIN 7991

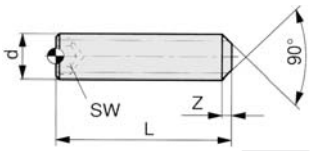


Code: HIC

d	l mm	l1	D	k	s
M3 x 05	8	3.2	6	1.7	2
	10				
	15				
M4 x 07	10	4.4	8	2.3	2.5
	15				
	20				
	25				
	30				
M5 x 08	10	5.2	10	2.8	3
	15				
	20				
	25				
	30				
	35				
	40				
M6 x 1	10	6.3	12	3.3	4
	15				
	20				
	25				
	30				
	35				
	40				
M8 x 1.25	10	8.2	16	4.4	5
	15				
	20				
	25				
	30				
	35				
	40				
	50				
M10 x 1.50	15	10	20	5.5	6
	20				
	25				
	30				
	35				
	40				
	50				
	60				
M12 x 1.75	20	11.8	24	6.5	8
	25				
	30				
	35				
	40				
	50				
	60				
M16 x 2	25	15.4	30	8.5	10
	30				
	35				
	40				
	50				
	60				
	70				

Order / Code: SEC. d x L

Hex-socket Set Screws



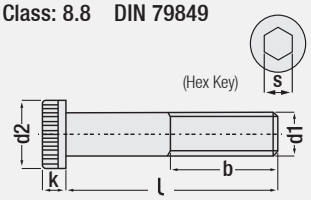
Code: SEC

d	l mm	Z	SW
M3 x 05	8	0.5	1.5
	10		
	15		
M4 x 07	8	0.7	2
	10		
	15		
	20		
M5 x 08	10	0.75	2.5
	15		
	20		
	25		
	30		
M6 x 1	10	1.0	3.0
	15		
	20		
	25		
	30		
	35		
	40		
M8 x 1.25	10	1.2	4.0
	15		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
M10 x 1.50	10	1.5	5.0
	15		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
M12 x 1.75	10	2.0	6.0
	15		
	20		
	25		
	30		
	35		
	40		
	45		
	50		
	55		
	60		
M14 x 2	20	2	7
	25		
	30		
	35		
	40		
	50		
	60		
M16 x 2	20	2	8
	25		
	30		
	35		
	40		
	50		
	60		

Order / Code: DKM. d1 x L

Low Head Socket Cap Screw

Class: 8.8 DIN 79849



Code: DKM

d1	l mm	b	d2	k	s
M4	10	8	7	2.8	2.5
	12	10			
	16	14			
	20	14			
	25	14			
M5	10	8	8,5	3,5	3
	12	10			
	16	14			
	20	16			
	25	16			
	30	16			
	35	16			
	40	16			
	50	16			
M6	10	8	10	4	4
	12	10			
	16	14			
	20	18			
	25	18			
	30	18			
	35	18			
	40	18			
	50	18			
M8	16	14	13	5	5
	20	18			
	25	22			
	30	22			
	35	22			
	40	22			
	50	22			
	60	22			
M10	16	14	16	6	7
	20	18			
	25	22			
	30	26			
	35	26			
	40	26			
	50	26			
	60	26			
M12	20	18	18	7	8
	25	23			
	30	28			
	35	30			
	40	30			
	50	30			
	60	30			

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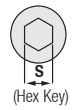
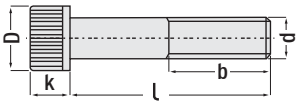
Hex-socket Head Cap Screw

Code: IMB



DIN 912 ISO 4762
Class: 12.9



d	l mm	b	D	k	s
M3 x 05	10	8.5	5.5	3	2.5
	15	15			
	20	18			
	25	23			
	30	20			
M4 x 07	10	8	7	4	3
	15	14			
	20	18			
	25	23			
	30	20			
	35	20			
	40	20			
	45	20			
	50	20			
	60	20			
	70	20			
	80	20			
	90	20			
	100	20			
M5 x 08	10	8	8.6	5	4
	15	14			
	20	18			
	25	23			
	30	22			
	35	22			
	40	22			
	45	22			
	50	22			
	60	22			
	70	22			
	80	22			
	90	22			
	100	22			
	110	22			
	120	22			
	130	22			
	150	22			

Order: IMB. d x l

d	l mm	b	D	k	s
M6 x 1	10	7	10	6	5
	15	13			
	20	17			
	25	22			
	30	27			
	35	24			
	40	24			
	45	24			
	50	24			
	55	24			
	60	24			
	70	24			
	80	24			
	90	24			
	100	24			
	120	24			
	130	24			
	150	24			
	160	24			
M8 x 1.25	10	8	13	8	6
	15	13			
	20	17			
	25	22			
	30	27			
	35	32			
	40	28			
	45	28			
	50	28			
	55	28			
	60	28			
	70	28			
	80	28			
	90	28			
	100	28			
	120	28			
	130	28			
	140	28			
	150	28			
	160	28			
	180	28			
	200	28			
M10 x 1.50	20	16	16	10	8
	25	21			
	30	26			
	35	31			
	40	36			
	45	32			
	50	32			
	55	32			
	60	32			
	70	32			
	80	32			
	90	32			
	100	32			
	110	32			
	120	32			
	130	32			
	150	32			
	160	32			
	180	32			
	200	32			
	260	32			
	300	32			

d	l mm	b	D	k	s
M12 x 1.75	20	15	18	12	10
	25	20			
	30	25			
	35	30			
	40	35			
	45	40			
	50	45			
	55	36			
	60	36			
	70	36			
	80	36			
	90	36			
	100	36			
	110	36			
	120	36			
	130	36			
	150	36			
	160	36			
	180	36			
	200	36			
	260	36			
	300	36			
M14 x 2	30	24	21	14	12
	35	29			
	40	34			
	45	39			
	50	44			
	60	44			
	70	44			
	80	44			
	90	44			
	100	44			
	110	44			
	120	44			
	130	44			
	150	44			
	160	44			
	180	44			
	200	44			
	240	44			
	260	44			
	300	44			
M16 x 2	30	24	24	16	14
	35	29			
	40	34			
	45	39			
	50	44			
	55	49			
	60	54			
	70	44			
	80	44			
	90	44			
	100	44			
	110	44			
	120	44			
	130	44			
	140	44			
	150	44			
	160	44			
	180	44			
	200	44			
	220	44			
	240	44			
	260	44			
	300	44			

d	l mm	b	D	k	s
M18 x 2.50	40	34	27	18	14
	50	43			
	60	53			
	70	52			
	80	52			
	100	52			
	120	52			
	140	52			
	160	52			
	180	52			
	200	52			
	220	52			
	240	52			
	260	52			
	300	52			
M20 x 2.50	40	34	30	20	17
	50	43			
	60	53			
	70	52			
	80	52			
	90	52			
	100	52			
	120	52			
	140	52			
	160	52			
	180	52			
	200	52			
	220	52			
	240	52			
	260	52			
	300	52			
M24 x 3	50	50	36	24	19
	60	52			
	70	61			
	80	71			
	90	60			
	100	60			
	120	60			
	140	60			
	150	60			
	160	60			
	180	60			
	200	60			
	220	60			
	240	60			
	260	60			
	300	60			

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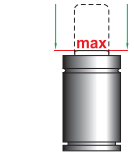
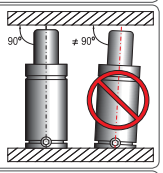
Operating Instruction !

Do not use gas spring cylinders out of max. values specified.



Set up the gas spring in vertical position. Use it vertical.

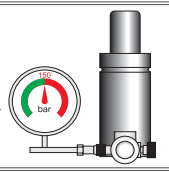


Do not apply any mechanical process on the body or the shaft.

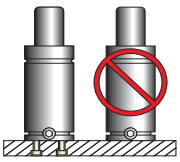
Please do not allow to become polluted the surface of the cylinder with solid and liquid contaminants.

Please do not charge the gas cylinder with any gas other than nitrogen / N2.

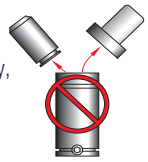
Do not charge gas cylinder with pressure over 150 bar.



Do not mount the gas cylinder without securing it.

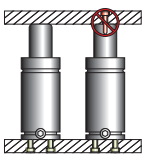


Do not demount the cylinder. When compulsory, the gas cylinders can be used as reversed.

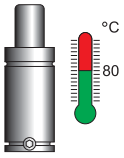


The gas cylinder should not be mounted / maintained other than the authorized personnel.

Do not use the hole on the shaft while securing the gas cylinder.

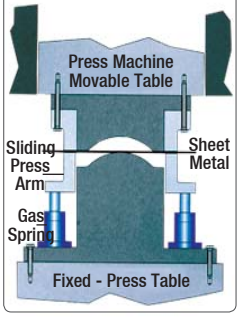


When using the gas cylinder, do not allow to exceed 80°C of the die temperature.

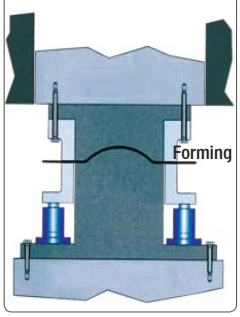


Gas Spring Controlled Tour / Cycle

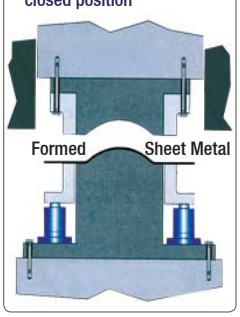
- Starting of running cycle
- Die gas spring is released



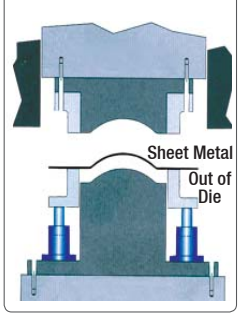
- Press die in closed position
- Gas springs in loading



- Press die in open position
- Gas springs are pending in closed position

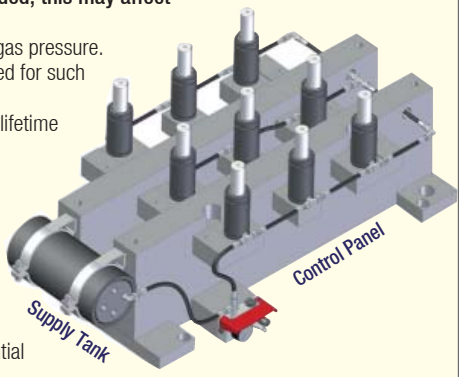


- Press die in open position
- Gas springs are released

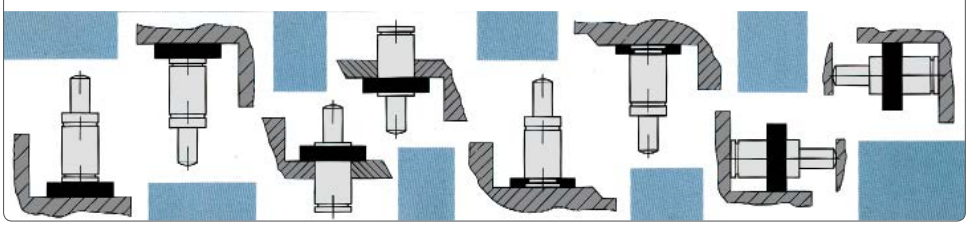


Guvenal - GTH Gas Springs: The gas springs are coded with colours according to their spring forces.
All springs are designed independent on their spring forces. The reason that the forces are different from each other is that the gas is filled under different pressures. At the bottom of the spring, the pressure of the spring can be adjusted. All gas springs are delivered filled with nitrogen (N2) gas as a standard.
As per request; it is delivered empty for systems with series connection hoses. You can fill the gas.
To use the die gas springs safely and for a long time, follow the instructions below !

* During mounting gas spring into the hole, it should be inserted loosely (+1).
* They are designed with a stroke reserve between 1 to 3 mm. Thus, the nominal value can totaly be applied. However, it is recommended that 90% of the stroke value given should not be exceeded in order to avoid any stroke risk due to in-die changes and errors.
  Otherwise, it may cause damages / explosions, hazards in the cylinders.
* The thread tapped in the gas spring piston is not used for mounting purposes. The thread for repair purposes is for the maintenance of the thread at the top of the piston. Do not use this part.
* Do not allow the gas spring piston release suddenly. This causes damage to the gas spring.
* The gas springs should not be exposed to lateral loads.
* Ensure that the gas spring is inserted parallel to the forces to come.
* The working surface of the gas spring piston should be reinforced with a plate hardened enough.
* The gas spring piston should be protected from mechanical damages and liquids.
* **We do not recommend that the last 5 mm of the GTH gas spring strokes or 10% of the total stroke is used!**
* **The recommended filling pressure should not be exceeded; this may affect the safety of the gas spring.**
* In some special cases, it should be necessary to check the gas pressure. In such cases, the pressure measurement equipment required for such measurement should be used.
* Exceeding temperature value recommended will reduce the lifetime of the gas spring.
* The whole piston / working surfaces should be used.
* Do not exceed the max. pressure level recommended for each model when filling the spring.
* During discharging the gas spring, keep the gas flow in the opposite direction to the operator.
* Before disposing the gas spring ensure that all pressure remaining is completely discharged.
* When the gas springs are reversed, it is seen that a substantial improvement is achieved.



Mounting: GTH gas springs can be used in any mounting position as long as they are not affected by external forces. The gas springs should be placed to surface on flat and in vertical position, the surface should encountered the gas spring force. The gas springs should be fixed in the die or the machine securely. You can use the holes or flanges at the bottom of the gas springs. When connecting, do not exceed the torque value of these screws (M6 = 10 Nm - M8 = 24 Nm - M10 = 45 Nm - M12 = 80 Nm) If there is a vibration, retighten the screws according to their torque values.



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Gas Spring Production Series Selection

Model	Stroke mm	Initial Force	Final Force	Cylinder Dia.	Piston Dia.	Length mm
KN 19	10 ~ 100	125 Kg.	250 Kg.	Ø 19	Ø 10	65 ~ 245
KN 25	10 ~ 125	150 Kg.	260 Kg.	Ø 25	Ø 12	65 ~ 295
SN 150	10 ~ 125	150 Kg.	200 Kg.	Ø 32	Ø 12	70 ~ 300
SN 250	10 ~ 125	250 Kg.	360 Kg.	Ø 38	Ø 15	70 ~ 300
SN 500	13 ~ 160	500 Kg.	725 Kg.	Ø 45	Ø 20	110 ~ 405
SN 700	13 ~ 300	750 Kg.	1230 Kg.	Ø 50	Ø 25	120 ~ 695
SN 1500	25 ~ 300	1500 Kg.	2250 Kg.	Ø 75	Ø 36	160 ~ 710
SN 3000	25 ~ 300	3000 Kg.	4800 Kg.	Ø 95	Ø 60	170 ~ 720
SN 5000	25 ~ 300	5000 Kg.	8500 Kg.	Ø 120	Ø 65	1190 ~ 740
SN 7500	25 ~ 300	7500 Kg.	12300	Ø 150	Ø 80	205 ~ 755
SN 10000	25 ~ 300	10000 Kg.	16000	Ø 195	Ø 95	210 ~ 760
Y 300	10 ~ 125	300 Kg.	550 Kg.	Ø 32	Ø 16	70 ~ 300
Y 500	10 ~ 125	500 Kg.	1050 Kg.	Ø 38	Ø 20	70 ~ 300
Y 7000	13 ~ 160	700 Kg.	1100 Kg.	Ø 45	Ø 24	110 ~ 405
Y 1000	13 ~ 300	1000 Kg.	1750 Kg.	Ø 50	Ø 30	120 ~ 695
Y 2400	13 ~ 300	2400 Kg.	4250 Kg.	Ø 75	Ø 45	160 ~ 710
Y 4200	13 ~ 300	4200 Kg.	7700 Kg.	Ø 95	Ø 60	170 ~ 720
Y 6600	13 ~ 300	6600 Kg.	12500	Ø 120	Ø 75	190 ~ 740
YO 200	5 ~ 50	200 Kg.	300 Kg.	Ø 25	Ø 12	40 ~ 130
YO 300	5 ~ 125	300 Kg.	550 Kg.	Ø 32	Ø 16	40 ~ 280
YO 500	5 ~ 125	500 Kg.	950 Kg.	Ø 38	Ø 20	40 ~ 280
YO 700	5 ~ 125	700 Kg.	1400 Kg.	Ø 45	Ø 24	50 ~ 282
YO 1000	5 ~ 125	1000 Kg.	2250 Kg.	Ø 50	Ø 30	58 ~ 288
YO 1500	5 ~ 125	1500 Kg.	2950 Kg.	Ø 63	Ø 36	64 ~ 294
YO 2400	10 ~ 125	2400 Kg.	4850 Kg.	Ø 75	Ø 45	55 ~ 170
YO 4200	16 ~ 125	4200 Kg.	8600 Kg.	Ø 95	Ø 60	97 ~ 315
YO 6600	16 ~ 125	6600 Kg.	13200	Ø 120	Ø 75	107 ~ 325
YO 11800	19 ~ 125	11800 Kg.	20500	Ø 150	Ø 100	116 ~ 328
MG 170	7 ~ 125	173 Kg.	280 Kg.	Ø 19	Ø 10	44 ~ 285
MG 320	7 ~ 125	320 Kg.	500 Kg.	Ø 25	Ø 15	44 ~ 285
MG 500	10 ~ 125	500 Kg.	770 Kg.	Ø 38	Ø 20	50 ~ 280
MG 750	10 ~ 125	750 Kg.	1200 Kg.	Ø 45	Ø 25	52 ~ 828
MG 1000	13 ~ 125	1000 Kg.	1550 Kg.	Ø 50	Ø 28	64 ~ 288
MG 1500	13 ~ 125	1500 Kg.	2400 Kg.	Ø 63	Ø 36	70 ~ 294
GC 420	6 ~ 50	420 Kg.	840 Kg.	Ø 25	Ø 12	56 ~ 195
GC 750	6 ~ 50	750 Kg.	1200 Kg.	Ø 25	Ø 20	63 ~ 195
GC 1000	6 ~ 50	1000 Kg.	1450 Kg.	Ø 32	Ø 20	61 ~ 230
GC 1800	6 ~ 50	1800 Kg.	2700 Kg.	Ø 32	Ø 30	66 ~ 220
GC 3000	10 ~ 50	3000 Kg.	4650 Kg.	Ø 50	Ø 38	85 ~ 205
GC 4700	10 ~ 50	4700 Kg.	6350 Kg.	Ø 75	Ø 50	80 ~ 240
GC 7500	10 ~ 50	7500 Kg.	10500	Ø 95	Ø 65	90 ~ 255
GC 12000	10 ~ 50	12000 Kg.	16200	Ø 120	Ø 80	100 ~ 260
GC 18500	10 ~ 50	18500 Kg.	26820	Ø 150	Ø 105	110 ~ 270

BVQI

BUREAU VERITAS

CE 0062

PED 97/23/EC

Advantages of Nitrogen Die Gas Springs

* For the same operating range and force, advantages such as reducing die area at a height and more space in the dies according to wire die springs.
* No pre-loading. Easier and quicker mounting.
* Same force advantage at each contact point.
* The forces can be located at required points, advantage of monitoring the system pressure all the time.
* Maximum control on the parts when forming and designing.
* Using of gas cylinders in order to provide required real force, usage guarantee for specified forces, advantages of using flexibly for different force applications of the same cylinder, dynamism is ensured in any die solutions. All these advantages also provides economic saving.

GTH Gas Springs:
They are filled with N2 gas and they do not need an additional energy. They operate for a long time without any problem as long as they are mounted meticulously. You only need to lubricate the piston part occasionally.
Mounting / series connections should be made by the authorized personnel. They can be used in any mounting position unless it is affected by external forces.

Guvenal - GTH Gas Springs produced in accord with the European Instructions and tested by our authorized engineers.

Guvenal - GTH Gas Springs are producing in Turkey

Model	Stroke mm	Initial Force	Final Force	Cylinder Dia.	Piston Dia.	Length mm
AD 500	6 ~ 125	500	700	45	20	62 ~ 300
AD 750	6 ~ 125	750	1150	50	25	62 ~ 300
AD 1500	25 ~ 100	1500	2300	75	36	110 ~ 260
AD 3000	25 ~ 100	3000	4600	95	50	120 ~ 270

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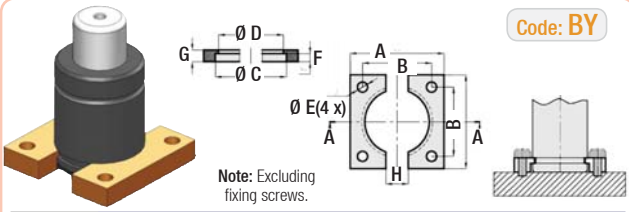
Gas Spring Fixing Elements, Mounting

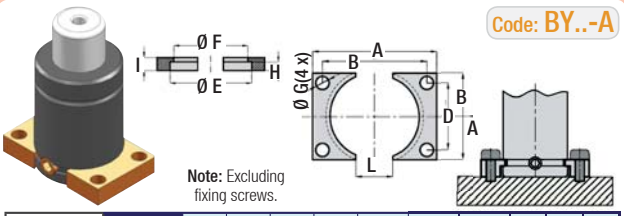
Code: BY



Note: Excluding fixing screws.

Order	Cylinder Ø	A	B	C	D	E	F	G	H
BY.32	Ø 32	50	35	32.5	28.5	6.6	4	7	5
BY.38	Ø 38	55	40	38.5	34.5	6.6	4	7	5
BY.45	Ø 45	70	50	45.5	41.5	9	4	7	20
BY.50	Ø 50	75	56.5	50.5	44.5	9	8	12	24
BY.63	Ø 63	85	63.5	63.5	57.5	11	8	12	24
BY.75	Ø 75	100	73.5	75.5	68.5	11	8	12	24
BY.95	Ø 95	120	92	95.5	88.5	13.5	8	12	24
BY.120	Ø 120	140	109.5	20.5	113.5	13.5	8	12	24
BY.150	Ø 150	190	138	150.5	143.5	17.5	8	12	24
BY.195	Ø 195	210	170	195.5	188	17.5	8	13	24

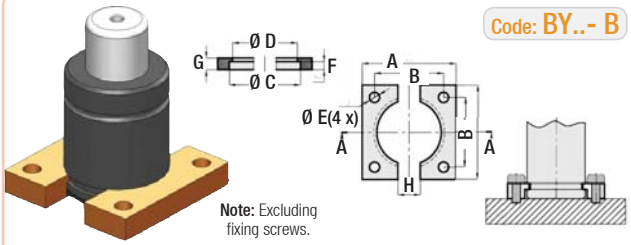
Code: BY..-A



Note: Excluding fixing screws.

Order	Cylinder Ø	A	B	C	D	E	F	G	H	I	L
BY.32-A	Ø 32	50	27	40	18	32.5	28.5	6.6	4	7	20
BY.38-A	Ø 38	55	33	44	20	38.5	34.5	6.6	4	7	20
BY.45-A	Ø 45	70	40	57	27	45.5	41.5	9	4	7	25
BY.50-A	Ø 50	75	45	62	32	50.5	44.5	9	8	12	25
BY.63-A	Ø 63	85	58	69	42	63.5	57.5	11	8	12	30
BY.75-A	Ø 75	100	70	84	54	75.5	68.5	11	8	12	30
BY.95-A	Ø 95	120	90	100	70	95.5	88.5	13.5	8	12	40
BY.120-A	Ø 120	140	115	120	95	120.5	113.5	13.5	8	12	50
BY.150-A	Ø 150	190	145	165	120	150.5	143.5	17.5	8	12	60
BY.195-A	Ø 195	210	190	185	165	195.5	188	17.5	8	12	80

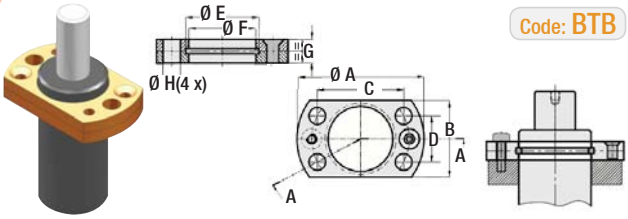
Code: BY..- B



Note: Excluding fixing screws.

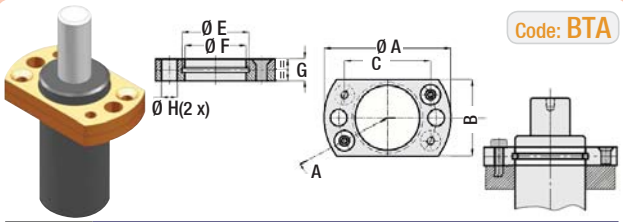
Order	Cylinder Ø	A	B	C	D	E	F	G	H
BY.32-B	32	50	35	32.5	28.5	6.6	4	7	12
BY.38-B	38	55	40	38.5	34.5	6.6	4	7	12
BY.63-B	63	100	73.5	64	57.5	11	8	12	24

Code: BTB



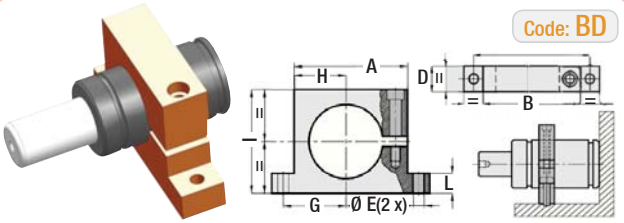
Order	Cylinder Ø	A	B	C	D	E	F	G	H	Ring
BTB.19	Ø 19	44	25	30	12	6.6	M4	19.5	9	Ø 2
BTB.25	Ø 25	50	30	34	18	6.6	M4	25.5	9	Ø 2

Code: BTA



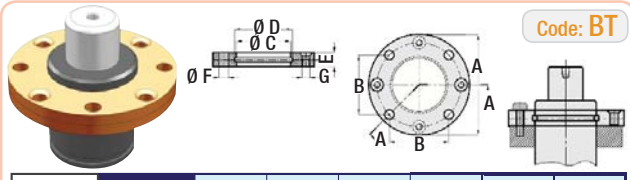
Order	Cylinder Ø	A	B	C	E	F	G	H	Ring
BTA.12	Ø 12	34	21	24	6.6	M3	13.7	9	Ø 1.6
BTA.15	Ø 15	37	24	27	6.6	M3	16.7	9	Ø 1.6
BTA.19	Ø 19	45	25	32	6.6	M4	19.5	9	Ø 2
BTA.25	Ø 25	50	30	38	6.6	M4	25.5	9	Ø 2
BTC.19	Ø 19	45	25	32	6.6	M3	19.5	7	Ø 2

Code: BD



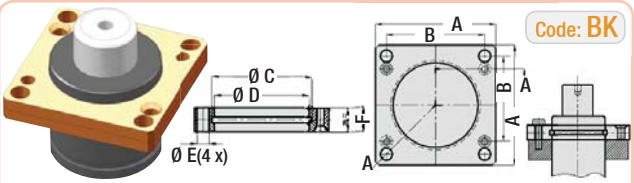
Order	Cylinder Ø	A	B	C	D	E	F	G	H	I	L	F
BD.32	32	90	54	32	20	9	72	31	22	45	15	M8
BD.38	38	95	59	38	20	9	77	34	25	55	15	M8
BD.45	45	100	64	45	20	9	82	37	28	60	15	M8
BD.50	50	130	90	50	30	9	110	50	40	80	20	M8
BD.75	75	160	115	75	30	11	137	63.5	52.5	105	20	M10
BD.95	95	195	145	95	30	13.5	170	80	67.5	125	20	M12
BD.120	120	220	165	120	30	13.5	195	92.5	77.5	148	20	M12
BD.195	195	260	200	195	30	13.5	230	110	95	200	20	M12

Code: BT



Order	Cylinder Ø	A	B	C	D	E	F
BT.32	32	60	35	34	32.5	9	7
BT.38	38	68	40	40	38.5	9	7
BT.45	45	86	50	47	45.5	13	9
BT.50	50	95	56.5	54	50.5	13	9
BT.63	63	122	73.5	67	63.5	16	11
BT.75	75	122	73.5	80	75.5	16	11
BT.95	95	150	92	100	95.5	18	13.5
BT.120	120	175	109.5	125	120.5	21	13.5
BT.150	150	220	138	155	150.5	27	17.5
BT.195	195	290	170	200	195.5	27	17.5

Code: BK



Order	Cylinder Ø	A	B	C	D	E	F	Ring	J
BK.32	32	45	35	9	32.5	7	M4	2	17
BK.38	38	52	40	9	38.5	7	M4	2	17
BK.45	45	64	50	13	45.5	9	M5	2	23
BK.50	50	70	56.5	13	50.5	9	M5	4	24
BK.63	63	90	73.5	16	63.5	11	M5	5	27
BK.75	75	90	73.5	16	75.5	11	M6	5	29
BK.95	95	110	92	18	95.5	13	M6	5	33
BK.120	120	130	109.5	21	120.5	13	M6	5	36
BK.150	150	162	138	27	150.5	17.5	M6	5	41
BK.195	195	210	170	27	195.5	17.5	M6	5	47
BK.63-1	63	80	64	16	63.5	11	M5	5	27

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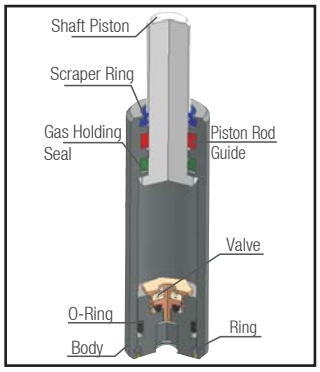
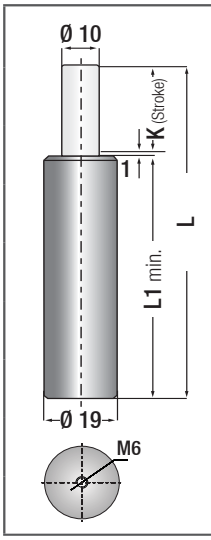
KN Series, Gas Spring - Mini & Low Force

Adjustable forces, maximum flexibility.
KN Series; In many series such as die fixtures ejector, shock absorber fixing and it is also used as die matrix remover. All gas springs are designed the same without depending on the spring forces. The reason that the forces are different is that they are filled with the gas in different pressures. The pressure of the spring can be adjusted at the bottom of the spring. Do not repair worn springs. The worn springs should be completely replaced.

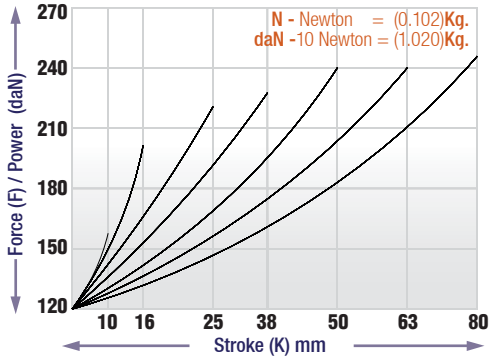
Max. Pressure: **150 Bar** - Max. Speed : **0.6 m/s** - Max. Temp. : **0-80^{0}C**



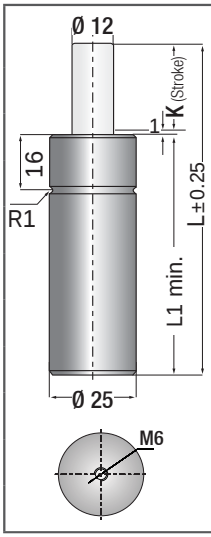
KN Series, Gas Spring - Mini & Low Force



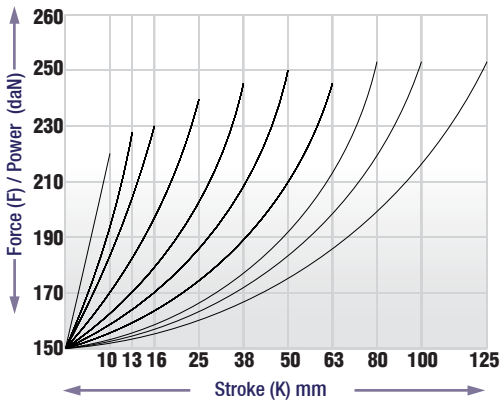
Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
KN.19.10	10	55	65	120 Kg.	250 Kg.	0.09
KN.19.16	16	61	77			0.10
KN.19.25	25	70	95			0.11
KN.19.38	38	83	121			0.14
KN.19.50	50	95	145			0.15
KN.19.63	63	108	171			0.18
KN.19.80	80	125	205			0.20
KN.19.100	100	145	245			0.26



Note: According to the **20^{0}C** value calculated nominally, any variation at temperature can cause a change in gas pressure (**P**). In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change.



Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
KN.25.10	10	55	65	150 Kg.	260 Kg.	0.15
KN.25.13	13	59	71			0.16
KN.25.16	16	61	77			0.17
KN.25.25	25	70	95			0.19
KN.25.38	38	83	121			0.22
KN.25.50	50	95	145			0.25
KN.25.63	63	108	171			0.29
KN.25.80	80	125	205			0.33
KN.25.100	100	145	245			0.38
KN.25.125	125	170	295			0.45

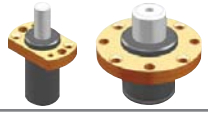


Spring forces according to spring diagram

Stroke increase / spring force relocation

The pressure increase factor consider relocations, however you should consider the external effects.

Fixing with screw from the bottom is only recommended for stroke lengths up to 25m.
Mounting selections:
BT - BTA - BTB



Mounting at the housing
Volume
Ø
+1.0
+0.5

Bottom mount
M6

Supported
Ø
+1.0
+0.5

Gas Spring Mounting Examples:
Mount gas springs directly via threaded holes at the bottom or by using fixing elements. Generally for other fitting position of gas springs that are completed their mounting by extractor with screw from bottom in compliance with your die, you can select fitting type specified at drawing.

All Gas Spring Cylinders: They are designed with a stroke reserve between 1 to 3 mm. Thus, the nominal value (stroke) can be totally implemented.
However, it is recommended not to exceed 90% of the stroke value in order to avoid an extra stroke risk caused by the changes or errors in the system.
Otherwise, it may cause irreparable damages to the cylinders and serious dangers for the personnel.

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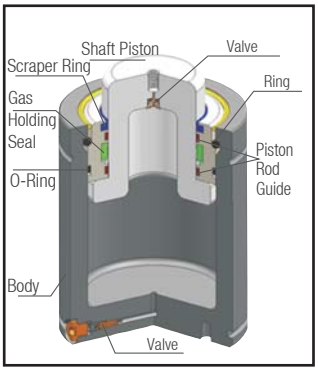
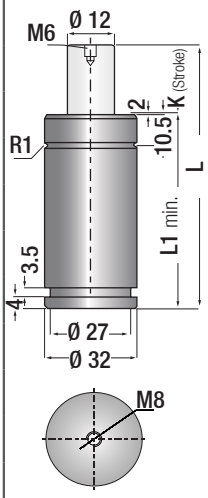
SN Series, Gas Spring - ISO 11901

Standard gas springs with series connection and wide selection. It can be connected to hose systems with wide selections among standard series in compliance with ISO 11901. Do not be confused about recommended maximum cycle/minute specified in diagrams for a certain type of product group and maximum speed. The force curves are especially related to stroke (20^{0}C). So, the decrease in the gas volume and other factors are not taken into consideration. The wide connections and accessories for all kinds of applications are recommended when these standard series connection supply tanks are used.

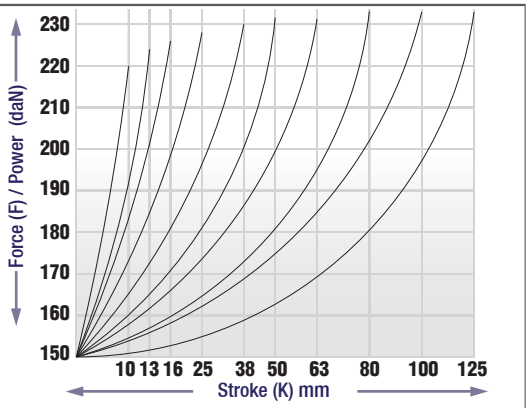
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80^{0}C**



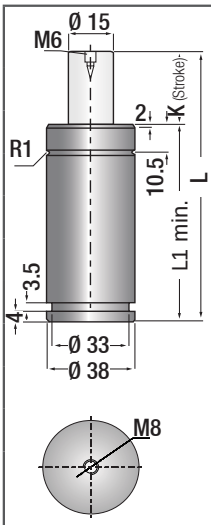
SN Series, Gas Spring - ISO 11901



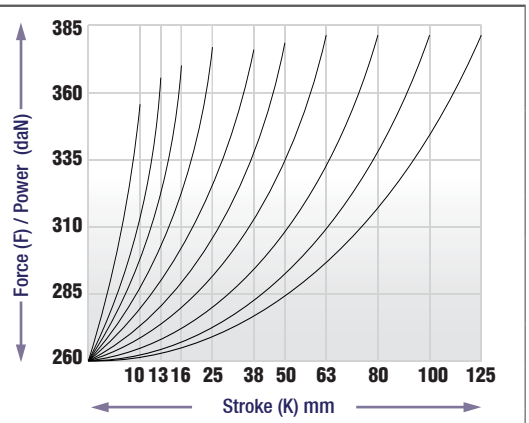
Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
SN.150.10	10	60	70	150 Kg.	200 Kg.	0.28
SN.150.13	13	62.7	75			0.29
SN.150.16	16	66	82			0.30
SN.150.25	25	75	100			0.33
SN.150.38	38	88	126			0.36
SN.150.50	50	100	150			0.40
SN.150.63	63	113.5	177			0.44
SN.150.80	80	130	210			0.49
SN.150.100	100	150	250			0.55
SN.150.125	125	175	300			0.64



Pressure Increse: During operation, the piston of the gas spring inserts into the body and the volume of the gas inside gradually decreases. As a result, the pressure increase can be seen as the multiplication factor in the gas spring diagram. The spring force can be easily calculated by multiplying the initial force and the pressure increase factor.

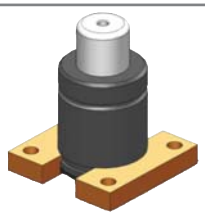


Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
SN.250.10	10	60	70	250 Kg.	360 Kg.	0.40
SN.250.13	13	62.7	75			0.41
SN.250.16	16	66	82			0,43
SN.250.19	19	69	88			0.45
SN.250.25	25	75	100			0.48
SN.250.38	38	88	126			0.54
SN.250.50	50	100	150			0.60
SN.250.63	63	113.5	177			0.66
SN.250.80	80	130	210			0.74
SN.250.100	100	150	250			0.81
SN.250.125	125	175	300			0.98



Spring forces according to spring diagram

Adjusting filling pressure: It can be adjusted according to the spring force and determined by using spring diagram in advance.



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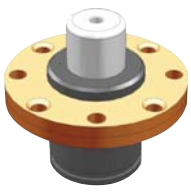

Code: BT

Bottom mount
M6

Mounting at the housing
Volume
Ø
+1.0
+0.5

SN.150 & SN.250 Mounting Recommendations:

* The gas spring should be positioned on the surface.
* The spring force should be encountered by the surface.
* It is not recommended when the gas springs are connected each other.

Gas Spring Usage Rules: The screw at the top of the piston head must not be used for mounting of gas spring! This screw is just for maintenance...
Wrong tapping causes wearing in sealing elements and shortening their lifetime. The gas spring should be mounted in parallel to the force to be applied.
The body bottom or retaining flange should be positioned vertically for the force. The surfaces that contacting the bottom and the piston should be hardened.

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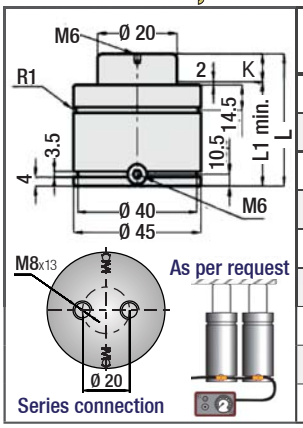
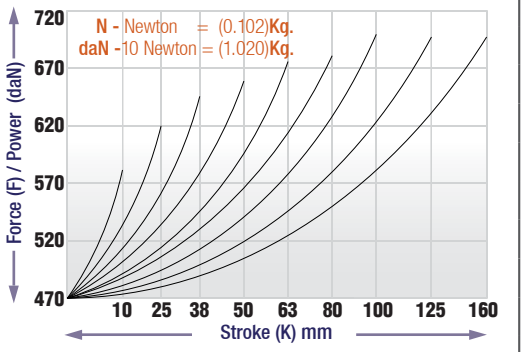
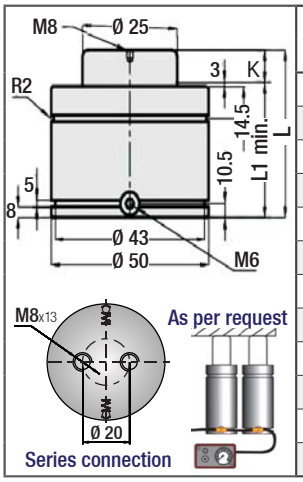
SN Series, Gas Spring - ISO 11901

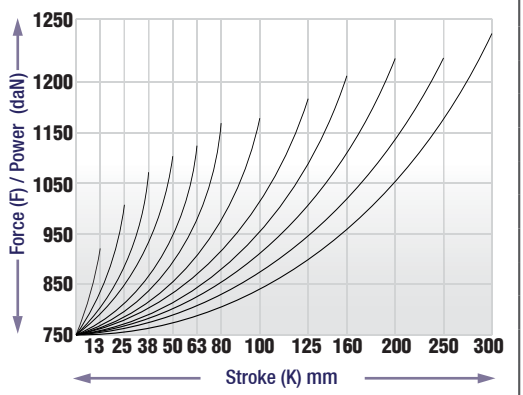


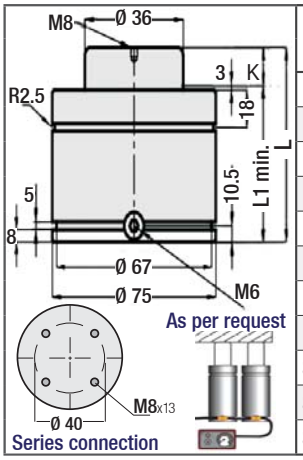
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.500.13	13 mm	97.7	110.4	500 Kg.	725 Kg.	1.00
SN.500.25	25 mm	110	135			1.09
SN.500.38	38 mm	123	161			1.20
SN.500.50	50 mm	135	185			1.29
SN.500.63	63 mm	148.5	212			1.38
SN.500.80	80 mm	165	245			1.50
SN.500.100	100 mm	185	285			1.64
SN.500.125	125 mm	210	335			1.85
SN.500.160	160 mm	245	405			2.10



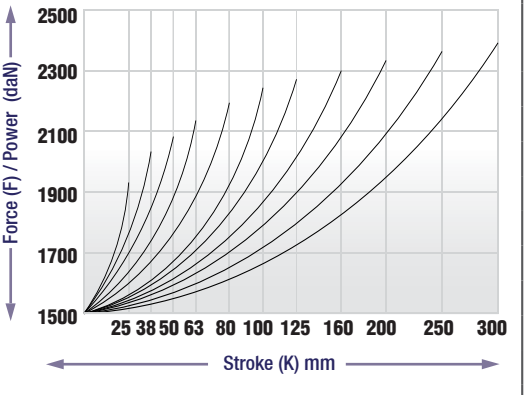


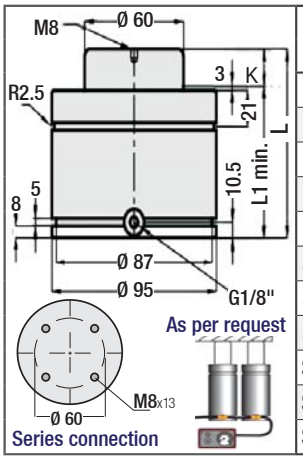
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.750.13	13 mm	107.7	120	750 Kg.	1230 Kg.	1.28
SN.750.25	25 mm	120	145			1.38
SN.750.38	38 mm	133	171			1.48
SN.750.50	50 mm	145	195			1.58
SN.750.63	63 mm	158.5	222			1.69
SN.750.80	80 mm	175	255			1.82
SN.750.100	100 mm	195	295			1.99
SN.750.125	125 mm	220	345			2.19
SN.750.160	160 mm	255	415			2.52
SN.750.200	200 mm	295	495			2.92
SN.750.250	250 mm	345	595			3.40
SN.750.300	300 mm	395	695			3.90



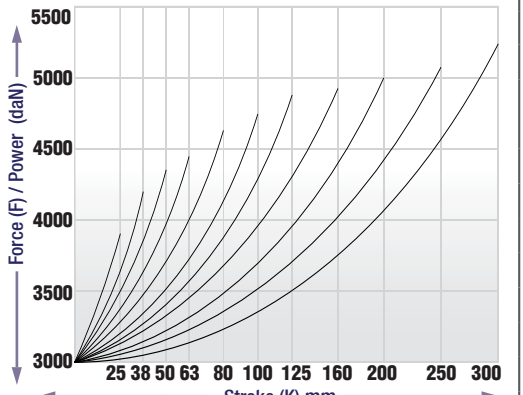


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.1500.25	25 mm	135	160	1500 Kg.	2250 Kg.	3.47
SN.1500.38	38 mm	148	186			3.66
SN.1500.50	50 mm	160	210			3.84
SN.1500.63	63 mm	173.5	237			4.05
SN.1500.80	80 mm	190	270			4.30
SN.1500.100	100 mm	210	310			4.60
SN.1500.125	125 mm	235	360			4.98
SN.1500.160	160 mm	270	430			5.51
SN.1500.200	200 mm	310	510			6.14
SN.1500.250	250 mm	360	610			7.10
SN.1500.300	300 mm	410	710			8.05





Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.3000.25	25 mm	145	170	3000 Kg.	4800 Kg.	6.00
SN.3000.38	38 mm	158	196			6.29
SN.3000.50	50 mm	170	220			6.57
SN.3000.63	63 mm	183.5	247			6.90
SN.3000.80	80 mm	200	280			7.30
SN.3000.100	100 mm	220	320			7.78
SN.3000.125	125 mm	345	370			8.38
SN.3000.160	160 mm	380	440			9.22
SN.3000.200	200 mm	320	520			10.19
SN.3000.250	250 mm	370	620			11.40
SN.3000.300	300 mm	420	720			12.84



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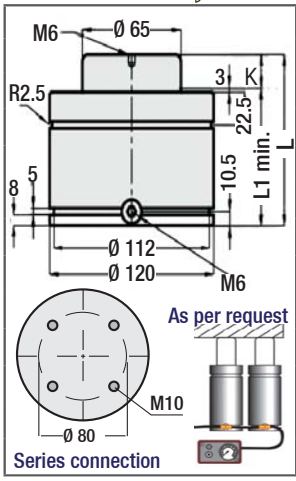
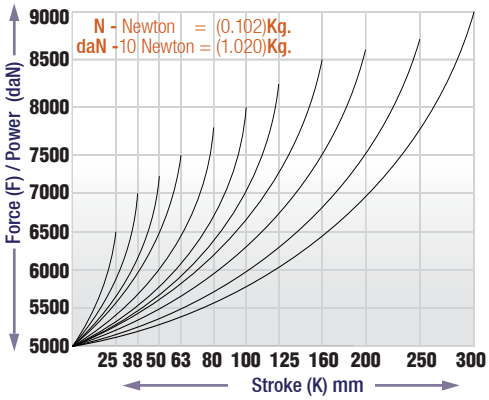
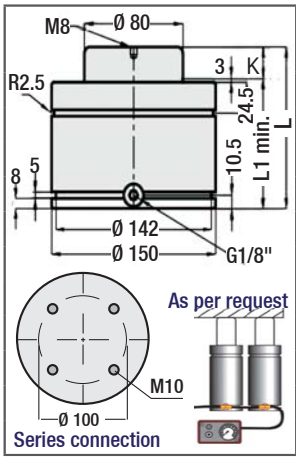
SN Series, Gas Spring - ISO 11901

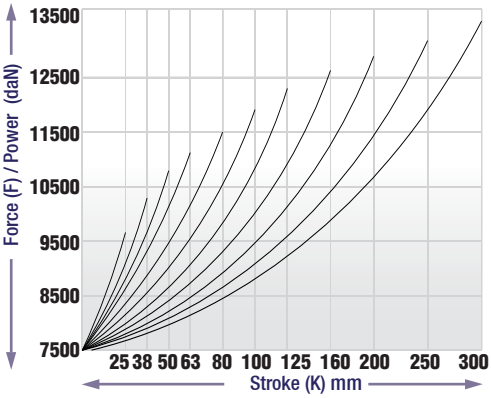


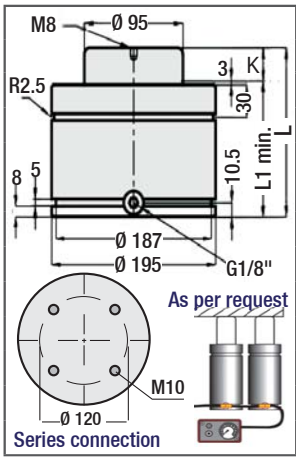
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.5000.25	25 mm	165	190	5000 Kg.	8500 Kg.	11.07
SN.5000.38	38 mm	178	216			11.60
SN.5000.50	50 mm	190	240			12.08
SN.5000.63	63 mm	203.5	267			12.70
SN.5000.80	80 mm	220	300			13.28
SN.5000.100	100 mm	340	340			14.08
SN.5000.125	125 mm	365	390			15.10
SN.5000.160	160 mm	300	460			16.50
SN.5000.200	200 mm	340	540			18.10
SN.5000.250	250 mm	390	640			20.10
SN.5000.300	300 mm	440	740			22.12



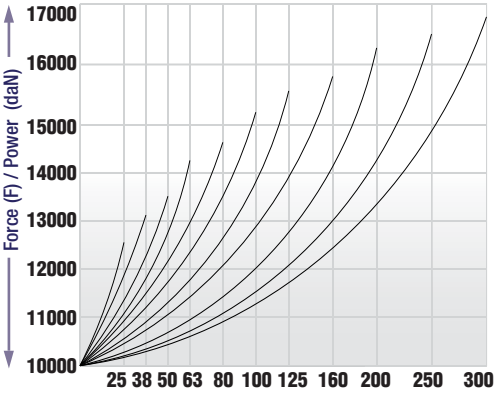


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.7500.25	25 mm	180	205	7500 Kg.	12300 Kg.	19.10
SN.7500.38	38 mm	193	231			19.95
SN.7500.50	50 mm	205	255			20.70
SN.7500.63	63 mm	218.5	282			21.50
SN.7500.80	80 mm	235	315			22.50
SN.7500.100	100 mm	255	355			23.70
SN.7500.125	125 mm	280	405			25.20
SN.7500.160	160 mm	315	475			27.40
SN.7500.200	200 mm	355	555			29.80
SN.7500.250	250 mm	405	655			32.90
SN.7500.300	300 mm	455	755			35.90

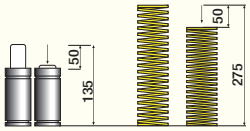




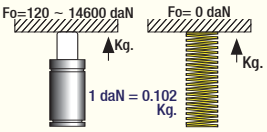
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.10000.25	25 mm	185	210	10000 Kg.	16000 Kg.	35.09
SN.10000.38	38 mm	198	236			36.55
SN.10000.50	50 mm	210	260			37.89
SN.10000.63	63 mm	223.5	287			39.40
SN.10000.80	80 mm	240	320			41.24
SN.10000.100	100 mm	260	360			43.48
SN.10000.125	125 mm	285	410			46.28
SN.10000.160	160 mm	320	480			50.12
SN.10000.200	200 mm	360	560			55.15
SN.10000.250	250 mm	410	660			61.85
SN.10000.300	300 mm	460	760			68.54



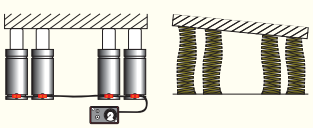
Gas Spring Usage Advantages



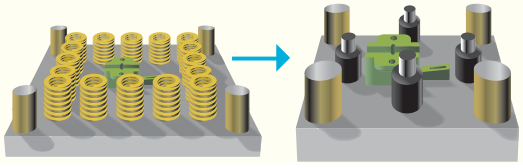
With the same operating stroke and force increase, the length is shortened. It provides length saving and spring structure advantage.



For higher performance, easier and faster mounting is provided with a small pre-loading (0.5 - 1 mm).



At each contact point, the same forces can be positioned continously and the system can be monitored in terms of pressure.



With the gas spring usage, the necessary application area, height, the occupied volume, the retainig spring number for pre-loading are decreased significanlty.

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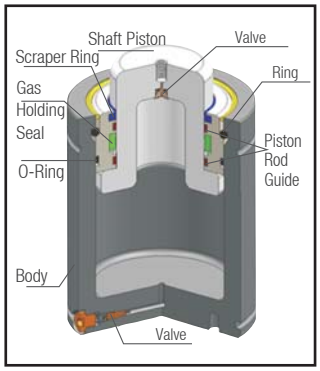
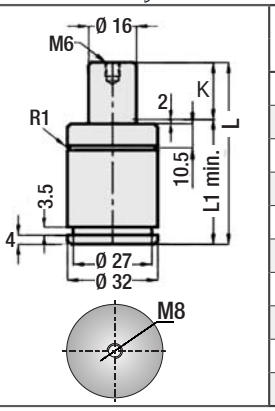
Y Series, Gas Spring - Space Saving

It may be connected to hose systems (after Y.500) and used in different measurements for space saving in SN / ISO series. Do not be confused about recommended maximum cycle/minute specified in diagrams for a certain type of product group and maximum speed. The force curves are especially related to stroke (20^0C). So, the decrease in the gas volume and other factors are not taken into consideration.
The wide connections and accessories for all kinds of applications are recommended when these standard series connection supply tanks are used. In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change.

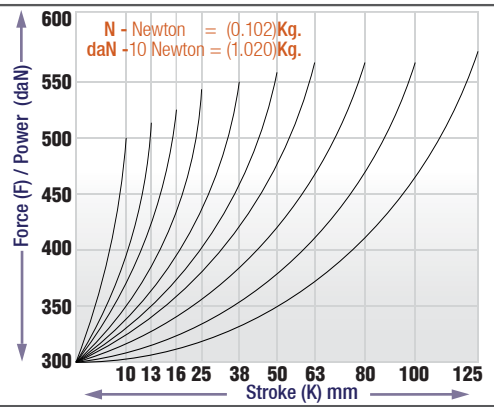
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80^{0}C**

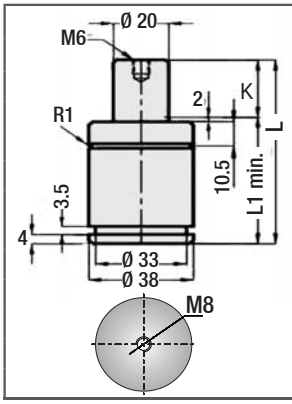


Y Series, Gas Spring - Space Saving

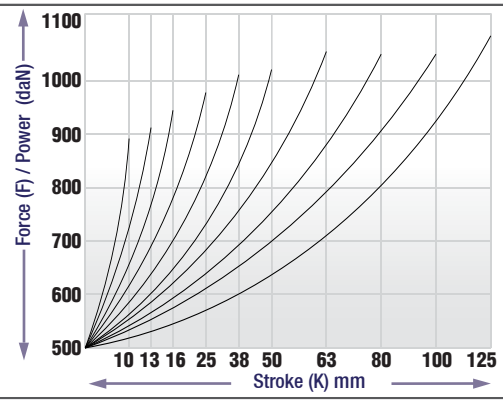


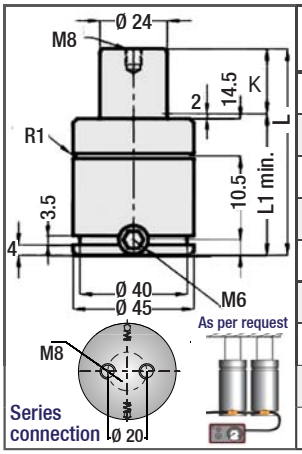
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.300.10	**10** mm	60	70	300 Kg.	550 Kg.	0.29
Y.300.13	**13** mm	62.7	75			0.30
Y.300.16	**16** mm	66	82			0.31
Y.300.25	**25** mm	75	100			0.34
Y.300.38	**38** mm	88	126			0.38
Y.300.50	**50** mm	100	150			0.43
Y.300.63	**63** mm	113.5	177			0.48
Y.300.80	**80** mm	130	210			0.54
Y.300.100	**100** mm	150	250			0.61
Y.300.125	**125** mm	175	300			0.69



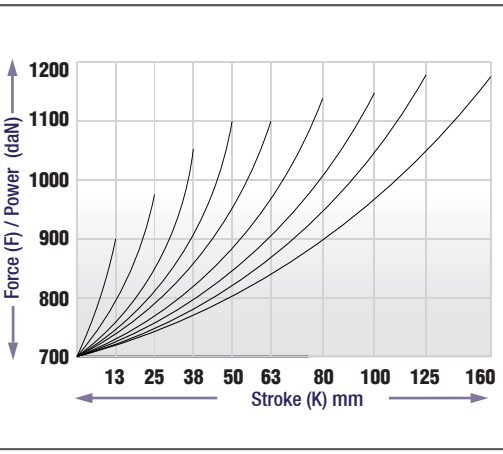


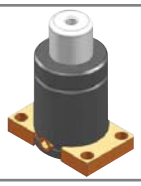
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.500.10	**10** mm	60	70	500 Kg.	1050 Kg.	0.42
Y.500.13	**13** mm	62.7	75			0.43
Y.500.16	**16** mm	66	82			0.45
Y.500.19	**19** mm	69	88			0.48
Y.500.25	**25** mm	75	100			0.50
Y.500.38	**38** mm	88	126			0.56
Y.500.50	**50** mm	100	150			0.63
Y.500.63	**63** mm	113.5	177			0.70
Y.500.80	**80** mm	130	210			0.79
Y.500.100	**100** mm	150	250			0.89
Y.500.125	**125** mm	175	300			1.08



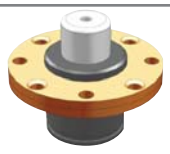


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.700.13	**13** mm	97.7	110	700 Kg.	1100 Kg.	0.69
Y.700.25	**25** mm	110	135			0.77
Y.700.38	**38** mm	123	161			0.86
Y.700.50	**50** mm	135	185			0.94
Y.700.63	**63** mm	148.5	212			1.03
Y.700.80	**80** mm	165	245			1.14
Y.700.100	**100** mm	185	285			1.51
Y.700.125	**125** mm	210	335			1.68
Y.700.160	**160** mm	245	405			1.92





For perpendicular type series / hose connection systems
Code: BY..A



Code: BT - BK - BD

Bottom mount
M6

Mounting at the housing
Volume
Ø
+1.0
+0.5

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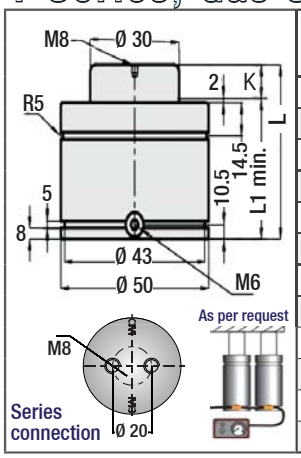
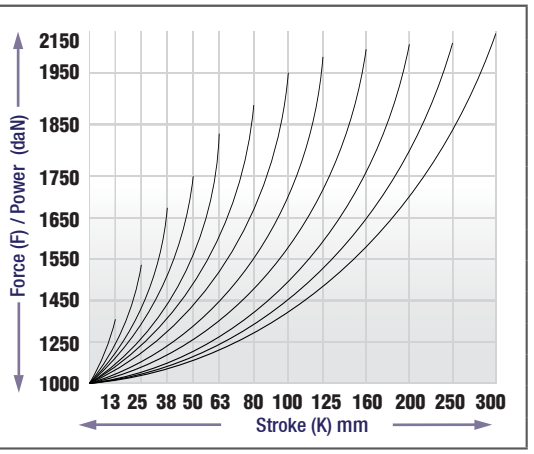
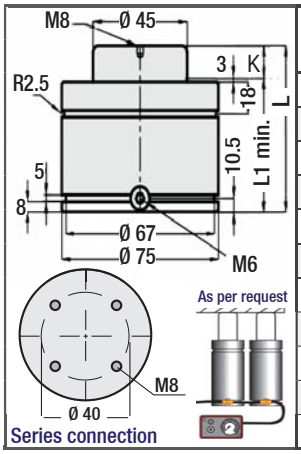
Y Series, Gas Spring - Space Saving

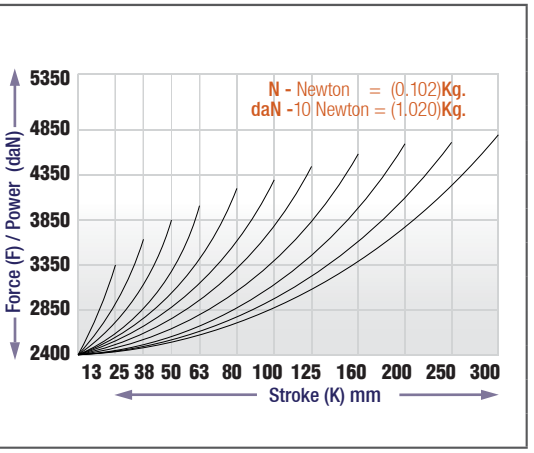


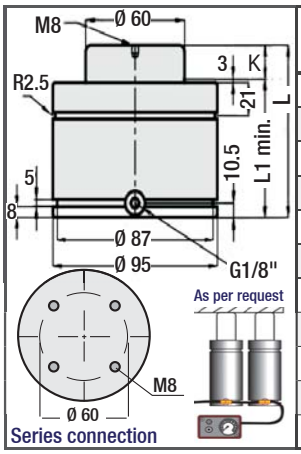
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.1000.13	13 mm	107.7	120	1000 Kg.	1750 Kg.	0.97
Y.1000.25	25 mm	120	145			1.08
Y.1000.38	38 mm	133	171			1.19
Y.1000.50	50 mm	145	195			1.29
Y.1000.63	63 mm	158.5	222			1.40
Y.1000.80	80 mm	175	255			1.54
Y.1000.100	100 mm	195	295			1.90
Y.1000.125	125 mm	220	345			2.17
Y.1000.160	160 mm	255	415			2.47
Y.1000.200	200 mm	295	495			2.80
Y.1000.250	250 mm	345	595			3.22
Y.1000.300	300 mm	395	695			3.64



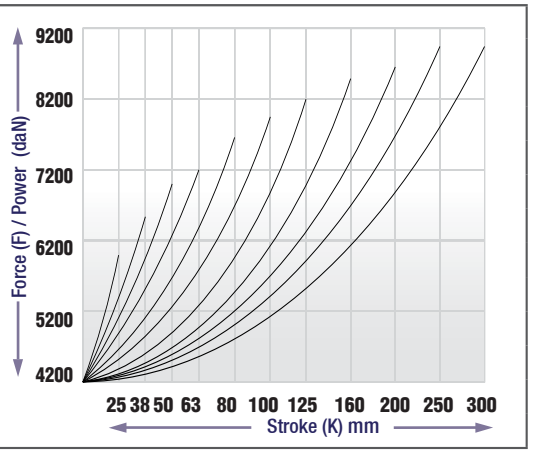


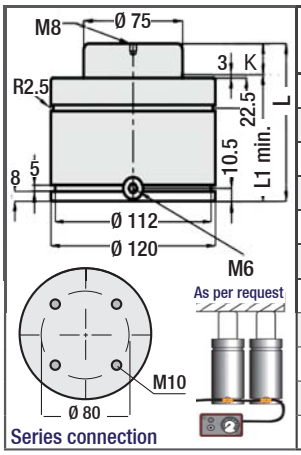
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.2400.25	25 mm	135	160	2400 Kg.	4250 Kg.	2.50
Y.2400.38	38 mm	148	186			2.70
Y.2400.50	50 mm	160	210			2.90
Y.2400.63	63 mm	173.5	237			3.12
Y.2400.80	80 mm	190	270			3.39
Y.2400.100	100 mm	210	310			4.45
Y.2400.125	125 mm	235	360			4.86
Y.2400.160	160 mm	270	430			5.43
Y.2400.200	200 mm	310	510			6.08
Y.2400.250	250 mm	360	610			6.90
Y.2400.300	300 mm	410	710			7.72



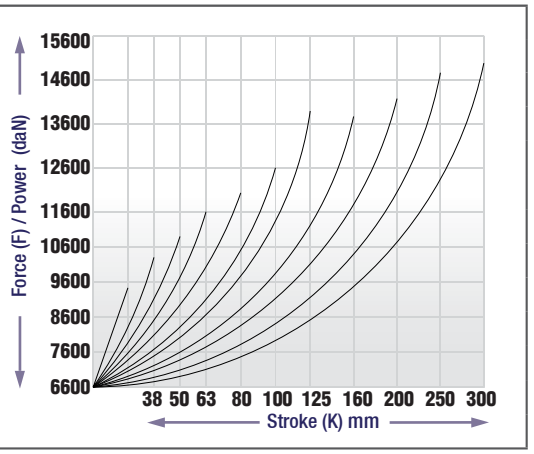


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.4200.25	25 mm	145	170	4200 Kg.	7700 Kg.	4.29
Y.4200.38	38 mm	158	196			4.62
Y.4200.50	50 mm	170	220			4.93
Y.4200.63	63 mm	183.5	247			5.27
Y.4200.80	80 mm	200	280			5.57
Y.4200.100	100 mm	220	320			7.80
Y.4200.125	125 mm	245	370			8.50
Y.4200.160	160 mm	280	440			9.45
Y.4200.200	200 mm	320	520			10.55
Y.4200.250	250 mm	370	620			11.92
Y.4200.300	300 mm	420	720			13.29





Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.6600.25	25 mm	165	190	6600 Kg.	12500 Kg.	8.10
Y.6600.38	38 mm	178	216			8.60
Y.6600.50	50 mm	190	240			9.10
Y.6600.63	63 mm	203.5	267			9.70
Y.6600.80	80 mm	220	300			10.30
Y.6600.100	100 mm	240	340			13.50
Y.6600.125	125 mm	265	390			14.50
Y.6600.160	160 mm	300	460			15.90
Y.6600.200	200 mm	340	540			17.50
Y.6600.250	250 mm	390	640			19.60
Y.6600.300	300 mm	440	740			21.70



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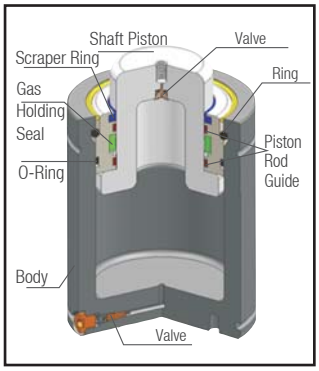
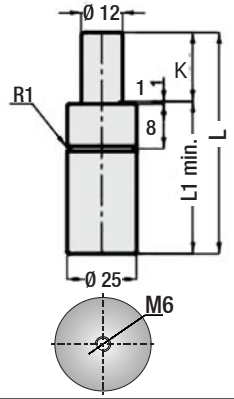
YO Series, Gas Spring - High Force

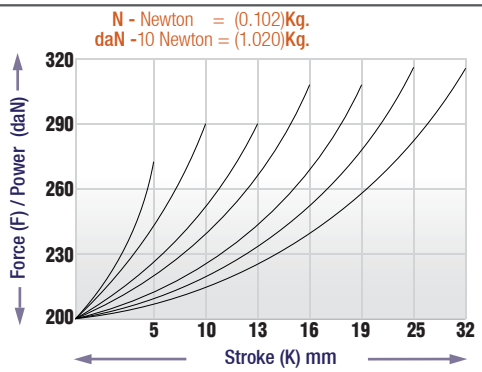
YO series are designed to save space and they provide minimum height as possible today with the highest forces. They can be connected in series to the hose systems. Wide connection range and accessories for all kinds of applications.
When filling / charging the gas spring, the maximum pressure level recommended for each model should not be exceeded (150 bar). This standard series connection is recommended when supply tanks are used. In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change.
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80^{0}C**



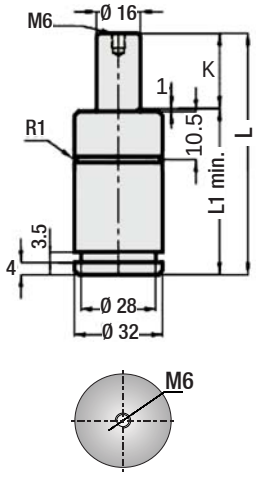
YO Series, Gas Spring - High Force



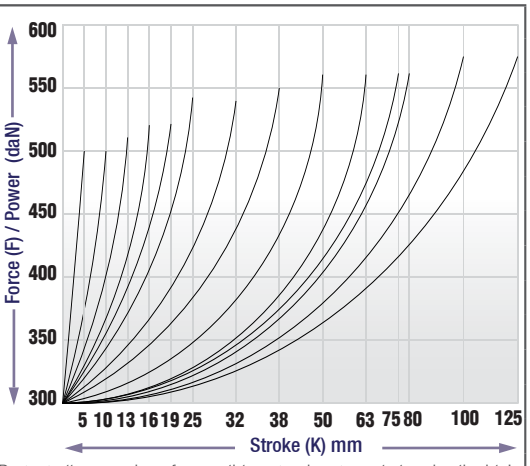
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.200.5	**5** mm	35	40	200 Kg.	300 Kg.	0.09
YO.200.10	**10** mm	40	50			0.10
YO.200.13	**13** mm	43	56			0.10
YO.200.16	**16** mm	46	62			0.11
YO.200.19	**19** mm	49	68			0.12
YO.200.25	**25** mm	55	80			0.13
YO.200.32	**32** mm	62	94			0.16
YO.200.38	**38** mm	71	106			0.19
YO.200.50	**50** mm	83	130			0.28



Pressure Increse: During operation, the piston of the gas spring inserts into the body and the volume of the gas inside gradually decreases. As a result, the pressure increase can be seen as the multiplication factor in the gas spring diagram. The spring force can be easily calculated by multiplying the initial force and the pressure increase factor.
Adjusting filling pressure: It can be adjusted according to the spring force and determined by using spring diagram in advance.
Spring forces according to spring diagram: The stroke increase / spring force replacement, pressure increase factor and replacements are considered, however you should take into consideration external effects. Lateral loads should not be applied on gas springs.
When press goes down, the lateral forces and the vibrations from the die should be checked.



Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.300.5	**5** mm	35	40	300 Kg.	550 Kg.	0.17
YO.300.10	**10** mm	40	50			0.18
YO.300.13	**13** mm	43	56			0.19
YO.300.16	**16** mm	46	62			0.20
YO.300.19	**19** mm	49	68			0.22
YO.300.25	**25** mm	55	80			0.25
YO.300.32	**32** mm	62	94			0.27
YO.300.38	**38** mm	68	106			0.29
YO.300.50	**50** mm	80	130			0.34
YO.300.63	**63** mm	93	156			0.39
YO.300.75	**75** mm	105	180			0.42
YO.300.80	**80** mm	110	190			0.45
YO.300.100	**100** mm	130	230			0.53
YO.300.125	**125** mm	155	280			0.68

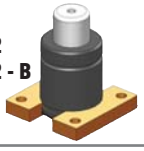


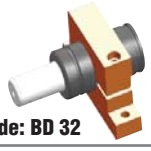
Protect all gas springs from solid contaminants and abrasive liquids! If it is not protected, clean the residue from the cylinders by using air stream regularly. When the cylinders are reversed, a significant improvement is obtained.

Bottom mount
M6

Mounting at the housing
Volume
Ø
+1.0
+0.5

Code: BY 32
Code: BY 32 - B





Code: BD 32

Code: BT 32

Code: BK 32

Mounting: The gas springs should be placed to surface on flat and in vertical position, the surface should encountered the gas spring force. Do not repair worn springs. The worn springs should be replaced.

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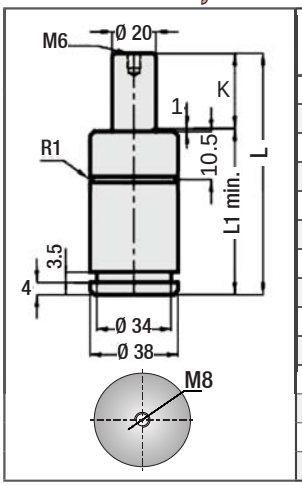
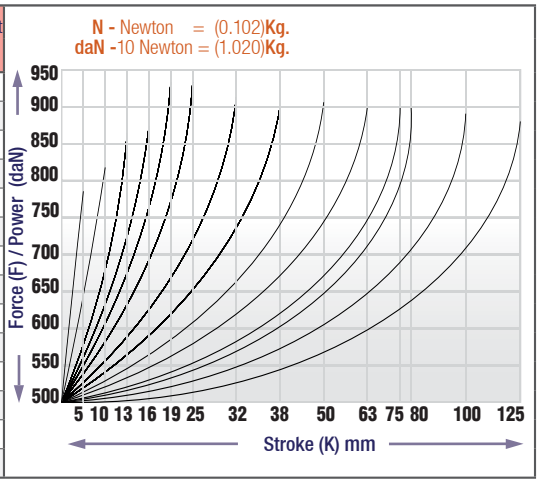
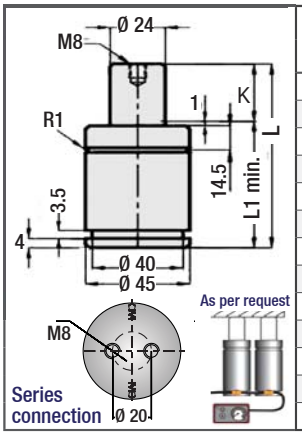
YO Series, Gas Spring - High Force

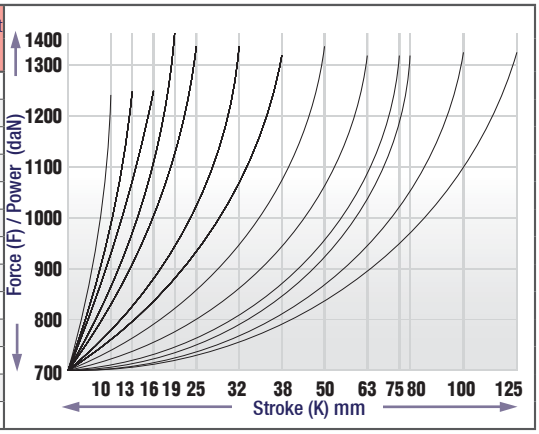


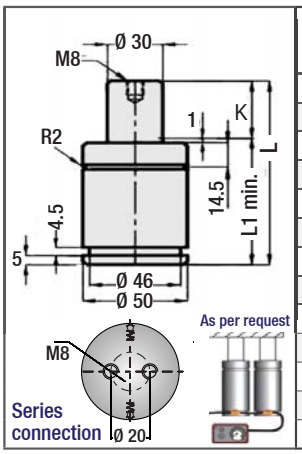
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.500.5	5 mm	35	40	500 Kg.	950 Kg.	0.25
YO.500.10	10 mm	40	50			0.27
YO.500.13	13 mm	43	56			0.29
YO.500.16	16 mm	46	62			0.31
YO.500.19	19 mm	49	68			0.33
YO.500.25	25 mm	55	80			0.36
YO.500.32	32 mm	62	94			0.40
YO.500.38	38 mm	68	106			0.44
YO.500.50	50 mm	80	130			0.50
YO.500.63	63 mm	93	156			0.57
YO.500.75	75 mm	105	180			0.61
YO.500.80	80 mm	110	190			0.66
YO.500.100	100 mm	130	230			0.77
YO.500.125	125 mm	155	280			0.90



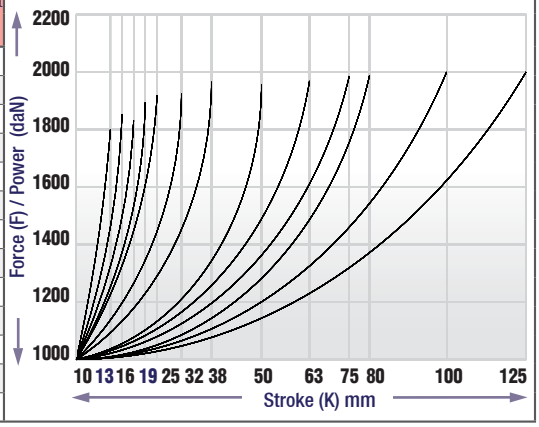


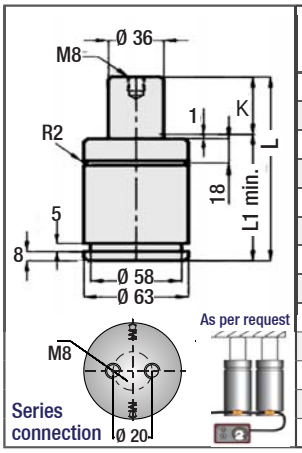
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.700.10	10 mm	42	52	700 Kg.	1400 Kg.	0.39
YO.700.13	13 mm	45	58			0.42
YO.700.16	16 mm	48	64			0.45
YO.700.19	19 mm	51	70			0.48
YO.700.25	25 mm	57	82			0.53
YO.700.32	32 mm	64	96			0.58
YO.700.38	38 mm	70	108			0.62
YO.700.50	50 mm	82	132			0.71
YO.700.63	63 mm	95	158			0.81
YO.700.75	75 mm	107	182			0.85
YO.700.80	80 mm	112	192			0.93
YO.700.100	100 mm	132	232			1.04
YO.700.125	125 mm	157	282			1.28



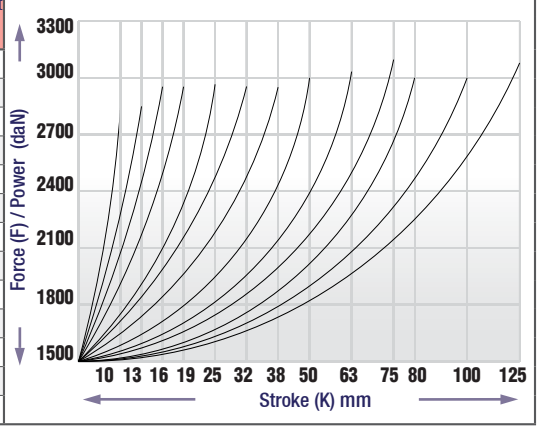


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.1000.10	10 mm	48	58	1000 Kg.	2250 Kg.	0.57
YO.1000.13	13 mm	51	64			0.59
YO.1000.16	16 mm	54	70			0.62
YO.1000.19	19 mm	57	76			0.65
YO.1000.25	25 mm	63	88			0.70
YO.1000.32	32 mm	70	102			0.77
YO.1000.38	38 mm	76	114			0.83
YO.1000.50	50 mm	88	138			0.94
YO.1000.63	63 mm	101	164			1.07
YO.1000.75	75 mm	113	188			1.16
YO.1000.80	80 mm	118	198			1.21
YO.1000.100	100 mm	138	238			1.43
YO.1000.125	125 mm	163	288			1.70





Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.1500.10	10 mm	54	64	1500 Kg.	2950 Kg.	1.02
YO.1500.13	13 mm	57	70			1.05
YO.1500.16	16 mm	60	76			1.10
YO.1500.19	19 mm	63	82			1.15
YO.1500.25	25 mm	69	94			1.25
YO.1500.32	32 mm	76	108			1.35
YO.1500.38	38 mm	82	120			1.44
YO.1500.50	50 mm	94	144			1.61
YO.1500.63	63 mm	107	170			1.81
YO.1500.75	75 mm	119	194			1.90
YO.1500.80	80 mm	124	204			2.06
YO.1500.100	100 mm	144	244			2.38
YO.1500.125	125 mm	169	294			2.86



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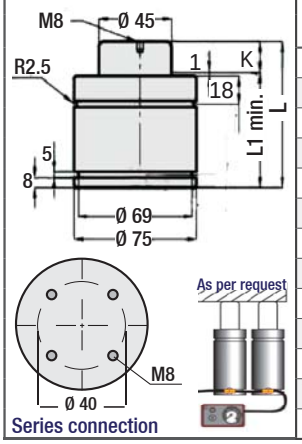
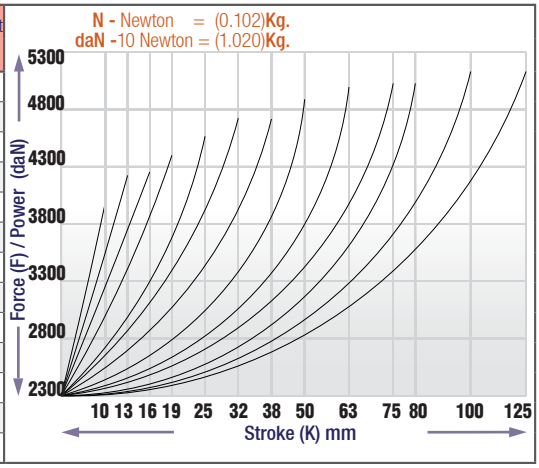
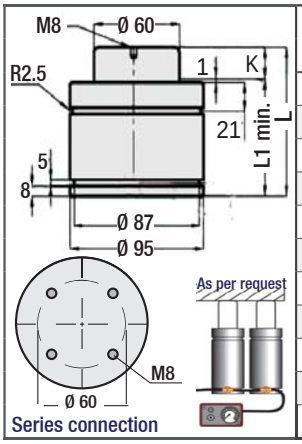
YO Series, Gas Spring - High Force

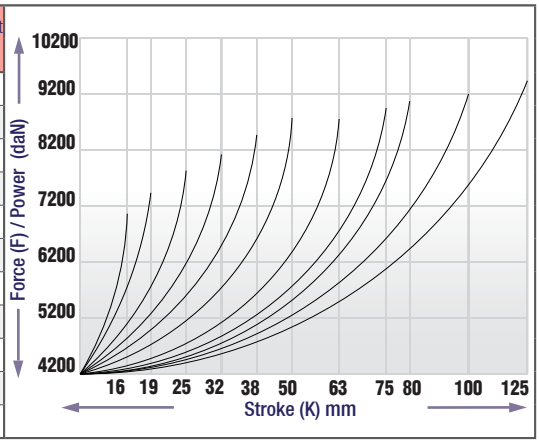


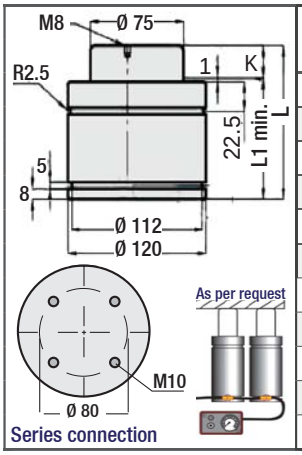
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.2400.10	**10** mm	55	65	2400 Kg.	4850 Kg.	1.47
YO.2400.13	**13** mm	58	71			1.52
YO.2400.16	**16** mm	61	77			1.58
YO.2400.19	**19** mm	64	83			1.65
YO.2400.25	**25** mm	70	95			1.77
YO.2400.32	**32** mm	77	109			1.93
YO.2400.38	**38** mm	83	121			2.05
YO.2400.50	**50** mm	95	145			2.30
YO.2400.63	**63** mm	108	171			2.55
YO.2400.75	**75** mm	120	195			2.75
YO.2400.80	**80** mm	125	205			2.85
YO.2400.100	**100** mm	145	245			3.28
YO.2400.125	**125** mm	170	295			3.93



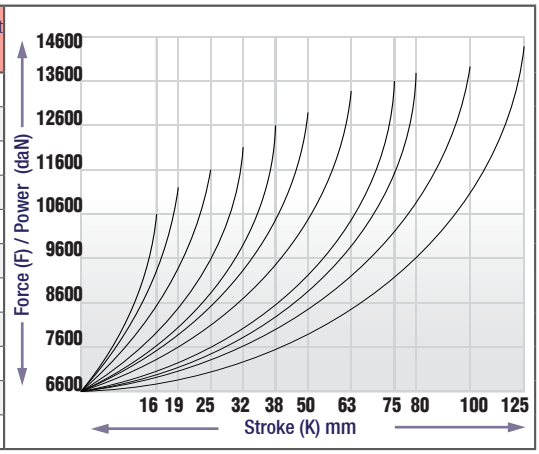


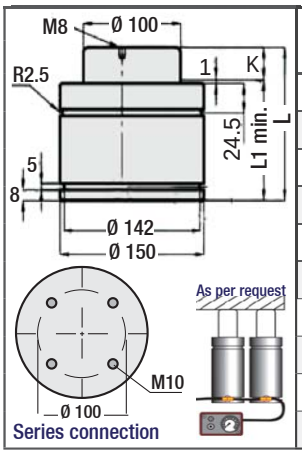
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.4200.16	**16** mm	81	97	4200 Kg.	8600 Kg.	3.40
YO.4200.19	**19** mm	84	103			3.45
YO.4200.25	**25** mm	90	115			3.65
YO.4200.32	**32** mm	97	129			3.82
YO.4200.38	**38** mm	103	141			4.00
YO.4200.50	**50** mm	115	165			4.44
YO.4200.63	**63** mm	128	191			4.95
YO.4200.75	**75** mm	140	215			5.20
YO.4200.80	**80** mm	145	225			5.41
YO.4200.100	**100** mm	165	265			6.00
YO.4200.125	**125** mm	190	315			6.70



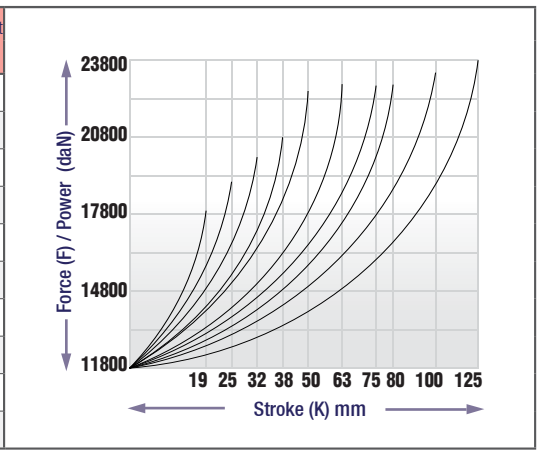


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.6600.16	**16** mm	91	107	6600 Kg.	13200 Kg.	6.60
YO.6600.19	**19** mm	94	113			6.65
YO.6600.25	**25** mm	100	125			6.82
YO.6600.32	**32** mm	107	139			7.18
YO.6600.38	**38** mm	113	151			7.57
YO.6600.50	**50** mm	125	175			8.18
YO.6600.63	**63** mm	138	201			8.81
YO.6600.75	**75** mm	150	225			8.95
YO.6600.80	**80** mm	155	235			9.10
YO.6600.100	**100** mm	175	275			10.70
YO.6600.125	**125** mm	200	325			12.50





Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.11800.19	**19** mm	97	116	11800 Kg.	20500 Kg.	9.57
YO.11800.25	**25** mm	103	128			9.96
YO.11800.32	**32** mm	110	142			10.41
YO.11800.38	**38** mm	116	154			10.81
YO.11800.50	**50** mm	128	178			11.59
YO.11800.63	**63** mm	141	204			11.88
YO.11800.75	**75** mm	153	228			12.21
YO.11800.80	**80** mm	158	238			12.43
YO.11800.100	**100** mm	178	278			13.51
YO.11800.125	**125** mm	203	328			15.14



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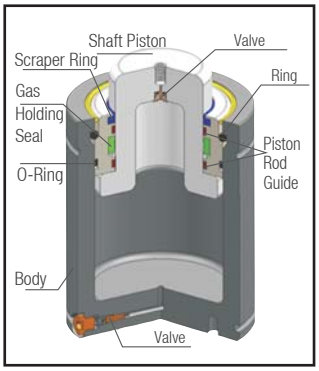
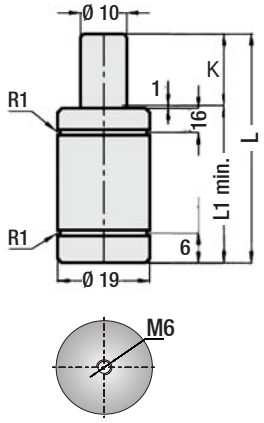
MG Series, Gas Spring - High Stroke Rates

High force - strong gas spring cylinders provide die cost reduction, wide stroke / stroke option adjustments with optimum bearing and the highest increased spring forces. Wide range of connections and accessories for all kinds of applications. When filling / charging the gas spring, the maximum pressure level recommended for each model should not be exceeded (150 bar). This standard series connection is recommended when supply tanks are used. In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change.

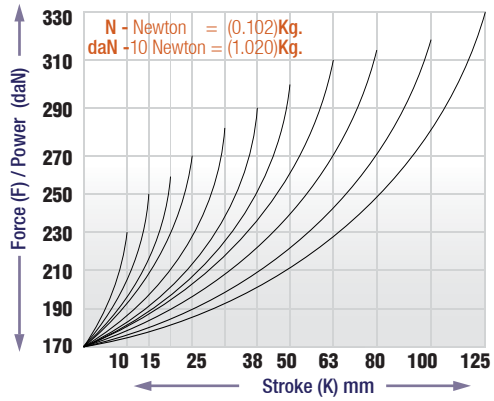
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80^{0}C**



MG Series, Gas Spring - High Stroke Rates



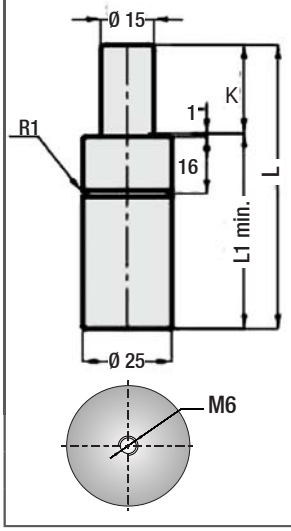
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.170.07	**7** mm	37	44	170 Kg.	280 Kg.	0.06
MG.170.10	**10** mm	40	50			0.06
MG.170.15	**15** mm	45	60			0.07
MG.170.19	**19** mm	49	68			0.07
MG.170.25	**25** mm	55	80			0.08
MG.170.38	**38** mm	68	106			0.09
MG.170.50	**50** mm	80	130			0.10
MG.170.63	**63** mm	93	156			0.12
MG.170.75	**75** mm	110	185			0.14
MG.170.80	**80** mm	115	195			0.14
MG.170.100	**100** mm	135	235			0.17
MG.170.125	**125** mm	160	285			0.19



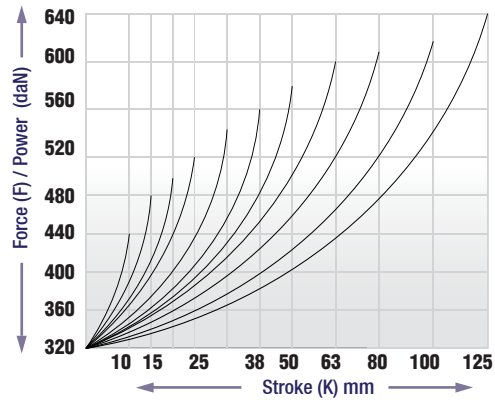
Bottom mount M6

Mounting at the housing
Ø
+1.0
+0.5

Code: BTA 25
Code: BTB 25

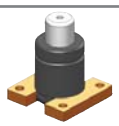


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.320.07	**7** mm	37	44	320 Kg.	520 Kg.	0.10
MG.320.10	**10** mm	40	50			0.10
MG.320.15	**15** mm	45	60			0.11
MG.320.19	**19** mm	49	68			0.12
MG.320.25	**25** mm	55	80			0.13
MG.320.32	**32** mm	62	94			0.14
MG.320.38	**38** mm	68	106			0.15
MG.320.50	**50** mm	80	130			0.17
MG.320.63	**63** mm	93	156			0.19
MG.320.75	**75** mm	110	185			0.22
MG.320.80	**80** mm	115	195			0.23
MG.320.100	**100** mm	135	235			0.26
MG.320.125	**125** mm	160	285			0.30

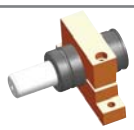


Prefer for square flange fixing elements, non-rotating and gas springs are connected in series. If there is vibration during operation, retighten the screws meticulously.

Bottom mount M6



Code: BY 32
Code: BY 32 - B



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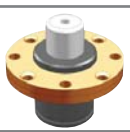

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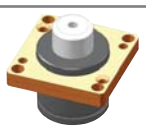

Code: BK 32

All Die Gas Spring Cylinders: They are designed with a stroke reserve between 1 to 3 mm. Thus, the nominal value (stroke) can be totally implemented. However, it is recommended not to exceed 90% of the stroke value in order to avoid an extra stroke risk caused by the changes or errors in the system. Otherwise, it may cause irreparable damages to the cylinders and serious dangers for the personnel.

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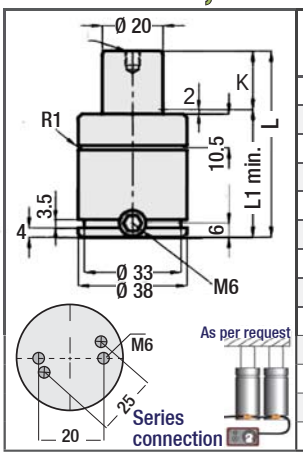
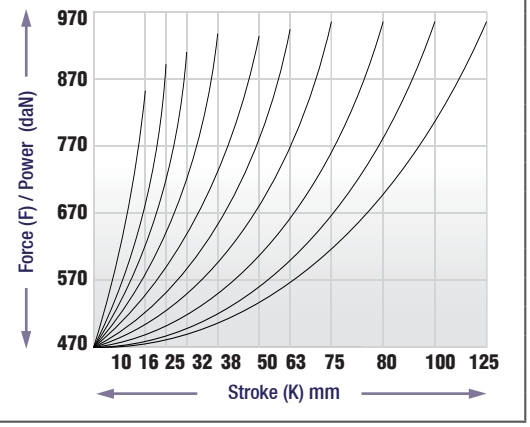
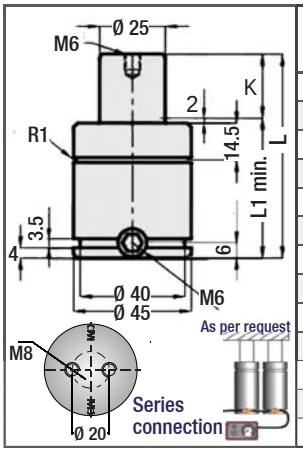
MG Series, Gas Spring - High Stroke Rates

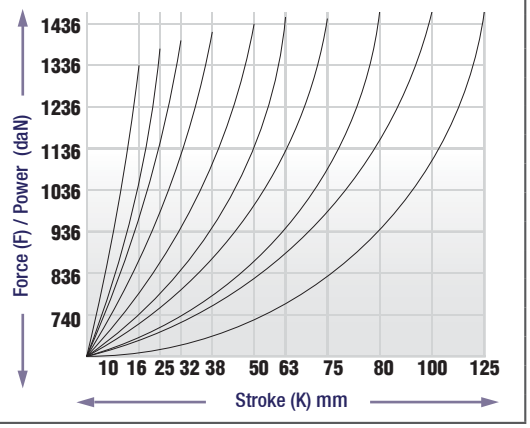


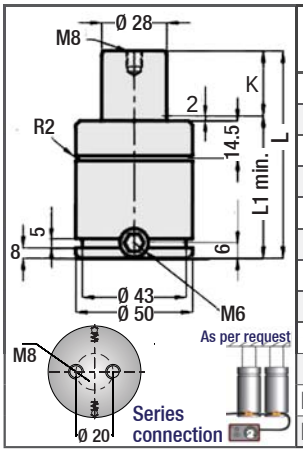
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.500.10	**10** mm	40	50	500 Kg.	770 Kg.	0.24
MG.500.13	**13** mm	43	56			0.25
MG.500.16	**16** mm	46	62			0.26
MG.500.19	**19** mm	49	68			0.28
MG.500.25	**25** mm	55	80			0.31
MG.500.32	**32** mm	62	94			0.34
MG.500.38	**38** mm	68	106			0.37
MG.500.50	**50** mm	80	130			0.42
MG.500.63	**63** mm	93	156			0.48
MG.500.75	**75** mm	105	180			0.54
MG.500.80	**80** mm	110	190			0.56
MG.500.100	**100** mm	130	230			0.66
MG.500.125	**125** mm	155	280			0.77



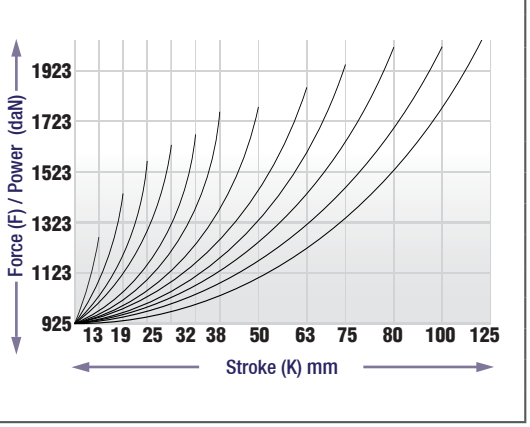


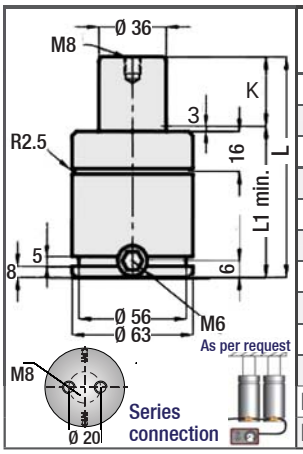
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.750.10	**10** mm	42	52	750 Kg.	1200 Kg.	0.36
MG.750.13	**13** mm	45	58			0.38
MG.750.16	**16** mm	48	64			0.39
MG.750.19	**19** mm	51	70			0.41
MG.750.25	**25** mm	57	82			0.45
MG.750.32	**32** mm	64	96			0.50
MG.750.38	**38** mm	70	108			0.54
MG.750.50	**50** mm	82	132			0.61
MG.750.63	**63** mm	95	158			0.70
MG.750.75	**75** mm	107	182			0.77
MG.750.80	**80** mm	112	192			0.81
MG.750.100	**100** mm	132	232			0.93
MG.750.125	**125** mm	157	282			1.10



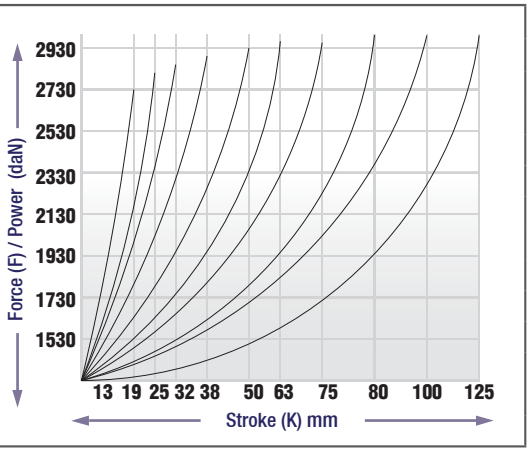


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.1000.13	**13** mm	51	64	1000 Kg.	1550 Kg.	0.51
MG.1000.16	**16** mm	54	70			0.54
MG.1000.19	**19** mm	57	76			0.56
MG.1000.25	**25** mm	63	88			0.61
MG.1000.32	**32** mm	70	102			0.67
MG.1000.38	**38** mm	76	114			0.71
MG.1000.50	**50** mm	88	138			0.81
MG.1000.63	**63** mm	101	164			0.91
MG.1000.75	**75** mm	113	188			1.05
MG.1000.80	**80** mm	118	198			1.09
MG.1000.100	**100** mm	138	238			1.21
MG.1000.125	**125** mm	163	288			1.41





Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.1500.13	**13** mm	57	70	1500 Kg.	2400 Kg.	0.92
MG.1500.16	**16** mm	60	76			0.96
MG.1500.19	**19** mm	63	82			0.99
MG.1500.25	**25** mm	69	94			1.06
MG.1500.32	**32** mm	76	108			1.14
MG.1500.38	**38** mm	82	120			1.21
MG.1500.50	**50** mm	94	144			1.35
MG.1500.63	**63** mm	107	170			1.51
MG.1500.75	**75** mm	119	194			1.65
MG.1500.80	**80** mm	124	204			1.71
MG.1500.100	**100** mm	144	244			1.94
MG.1500.125	**125** mm	169	294			2.23



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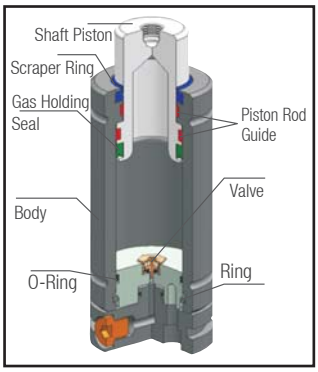
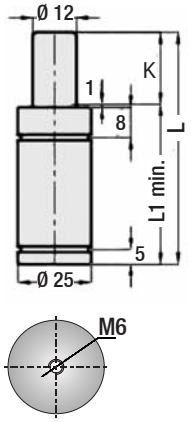
GC Series, Gas Spring - Super Pressure

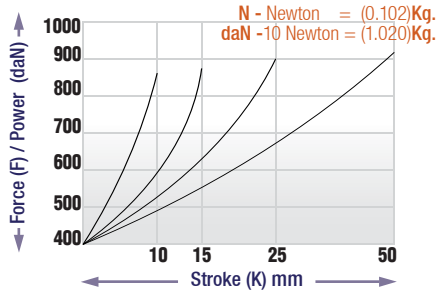
Compact super pressure gas springs: The series which has piston sealing for maximum force has the highest forces, high pressure but shorter lifetime. It can be connected in series to the hoses. Wide connection range and accessories for all kinds of applications.
When filling / charging the gas spring, the maximum pressure level recommended for each model should not be exceeded (150 bar).
This standard series connection is recommended when supply tanks are used. In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change.
Max. Pressure: **150 Bar** - Max. Speed : **0.5 m/s** - Max. Temp. : **0-80^{0}C**



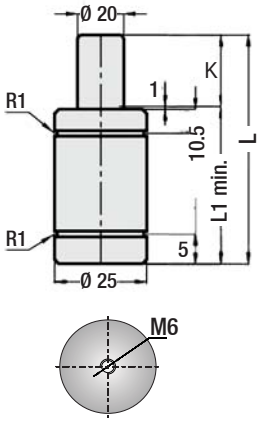
GC Series, Gas Spring - Super Pressure



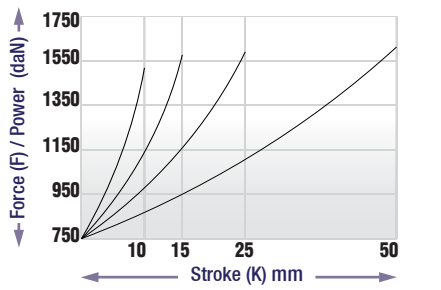
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.420.06	**6** mm	50	56	420 Kg.	840 Kg.	0.14
GC.420.10	**10** mm	60	70			0..16
GC.420.16	**16** mm	75	91			0.19
GC.420.25	**25** mm	95	120			0.23
GC.420.32	**32** mm	108	140			0.25
GC.420.40	**40** mm	125	165			0.28
GC.420.50	**50** mm	145	195			0.32



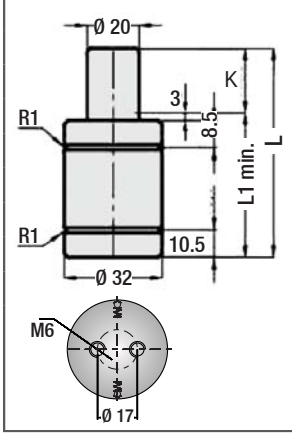
Pressure Increse: During operation, the piston of the gas spring inserts into the body and the volume of the gas inside gradually decreases. As a result, the pressure increase can be seen as the multiplication factor in the gas spring diagram. The spring force can be easily calculated by multiplying the initial force and the pressure increase factor.



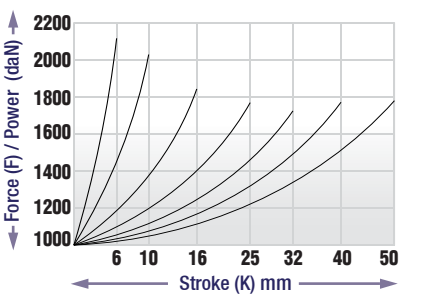
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.750.06	**6** mm	57	63	750 Kg.	1200 Kg.	0.23
GC.750.10	**10** mm	65	75			0.25
GC.750.16	**16** mm	77	93			0.28
GC.750.25	**25** mm	95	120			0.33
GC.750.32	**32** mm	108	140			0.37
GC.750.40	**40** mm	125	165			0.42
GC.750.50	**50** mm	145	195			0.47



Adjusting filling pressure: It can be adjusted according to the spring force and determined by using spring diagram in advance. Spring forces according to spring diagram: The stroke increase / spring force replacement, pressure increase factor and replacements are considered, however you should take into consideration external effects.
Lateral loads should not be applied on gas springs. When press goes down, the lateral forces and the vibrations from the die should be checked.



Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.1000.06	**6** mm	55	61	1000 Kg.	1450 Kg.	0.33
GC.1000.10	**10** mm	68	78			0.38
GC.1000.16	**16** mm	84	100			0.44
GC.1000.25	**25** mm	110	135			0.53
GC.1000.32	**32** mm	135	167			0.62
GC.1000.40	**40** mm	155	195			0.70
GC.1000.50	**50** mm	180	230			0.79



Bottom mount M6

Mounting at the housing Ø +1.0 +0.5

Code: **BY**

Code: **BK**

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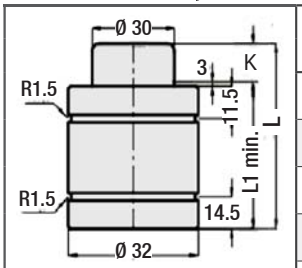
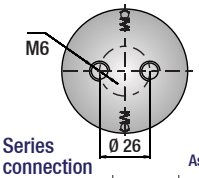
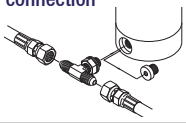
GC Series, Gas Spring - Super Pressure





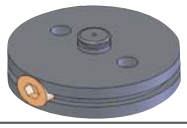
Series connection



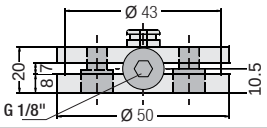
As per request

Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.1800.06	6 mm	60	66	1800 Kg.	2700 Kg.	0.62
GC.1800.10	10 mm	70	80			0.68
GC.1800.16	16 mm	90	106			0.80
GC.1800.25	25 mm	110	135			0.92
GC.1800.32	32 mm	130	162			1.05
GC.1800.40	40 mm	150	190			1.17
GC.1800.50	50 mm	170	220			1.30

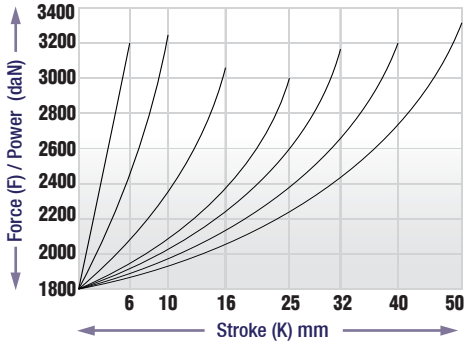
Base with valve

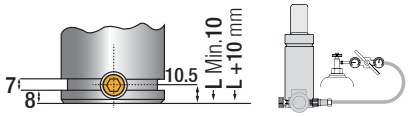


Series connection adapter

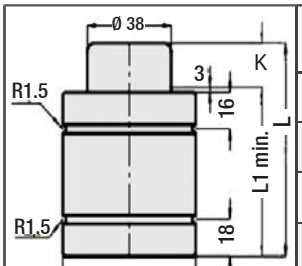


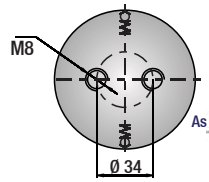
N - Newton = (0.102)Kg.
daN -10 Newton = (1.020)Kg.





Keep pressure level for each model !





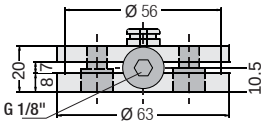
Series connection

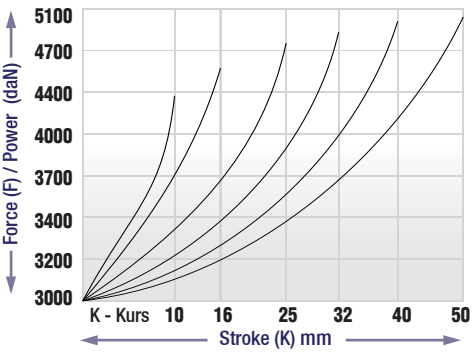
As per request

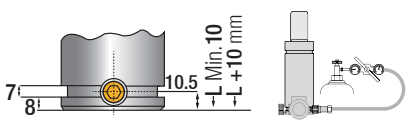
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.3000.10	10 mm	75	85	3000 Kg.	4650 Kg.	1.23
GC.3000.16	16 mm	87	103			1.35
GC.3000.25	25 mm	105	130			1.54
GC.3000.32	32 mm	118	150			1.68
GC.3000.40	40 mm	135	175			1.86
GC.3000.50	50 mm	155	205			2.07

Base with valve

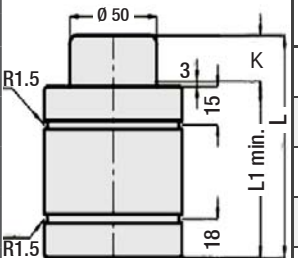
Series connection adapter

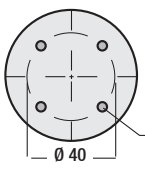






Keep pressure level for each model !





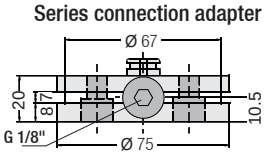
Series connection

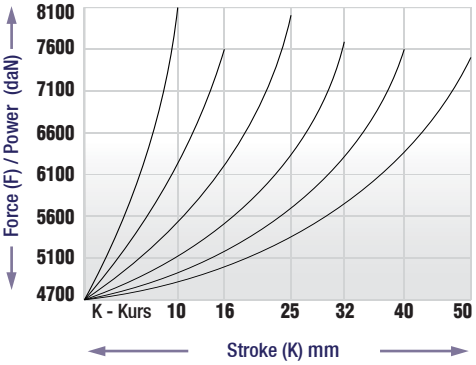
As per request

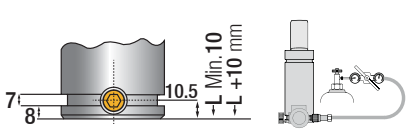
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.4700.10	10 mm	70	80	4700 Kg.	6350 Kg.	1.60
GC.4700.16	16 mm	90	106			1.83
GC.4700.25	25 mm	110	135			2.07
GC.4700.32	32 mm	135	167			2.37
GC.4700.40	40 mm	160	200			2.66
GC.4700.50	50 mm	190	240			3.01

Base with valve

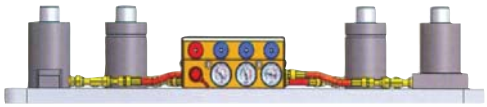
Series connection adapter



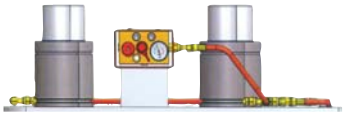




Keep pressure level for each model !



Valve inlets of the series connection cylinders;
Specify 1 or 2 valves when placing order!



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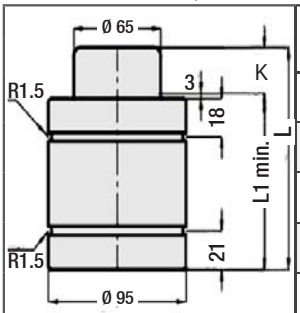
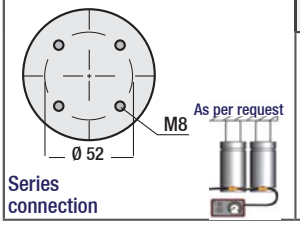
GC Series, Gas Spring - Super Pressure

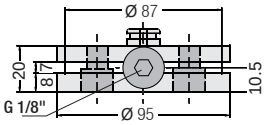




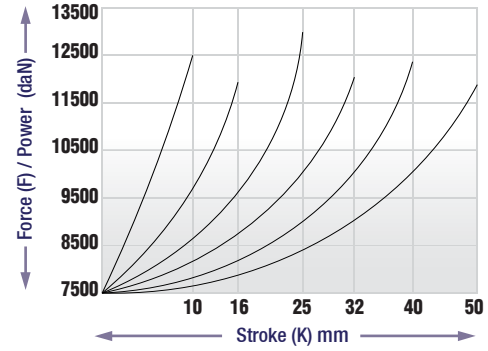
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.7500.10	10 mm	80	90	7500 Kg.	10500 Kg.	2.87
GC.7500.16	16 mm	100	116			3.23
GC.7500.25	25 mm	120	145			3.62
GC.7500.32	32 mm	150	182			4.16
GC.7500.40	40 mm	170	210			4.54
GC.7500.50	50 mm	205	255			5.17

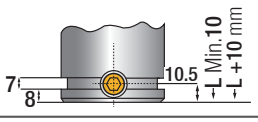
Base with valve

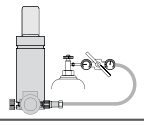
Series connection adapter



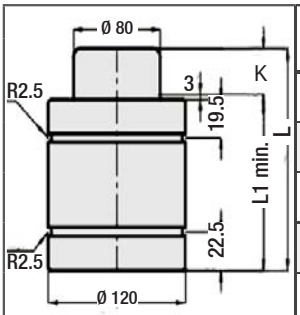
N - Newton = (0.102)Kg.
daN -10 Newton = (1.020)Kg.

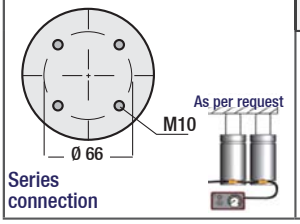






Keep pressure level for each model !

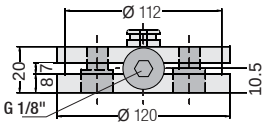


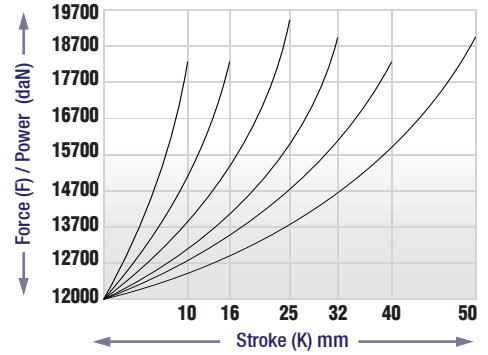


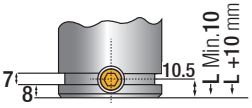
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.12000.10	10 mm	90	100	12000 Kg.	16200 Kg.	5.50
GC.12000.16	16 mm	110	126			6.10
GC.12000.25	25 mm	130	155			6.77
GC.12000.32	32 mm	155	187			7.54
GC.12000.40	40 mm	180	220			8.31
GC.12000.50	50 mm	210	260			9.25

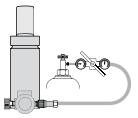
Base with valve

Series connection adapter

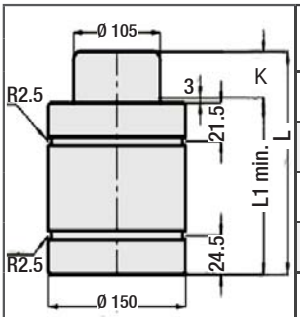


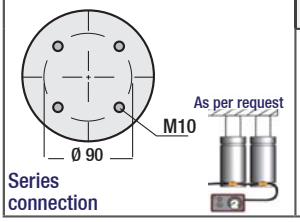






Keep pressure level for each model !

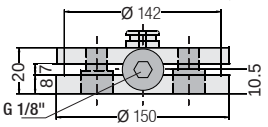


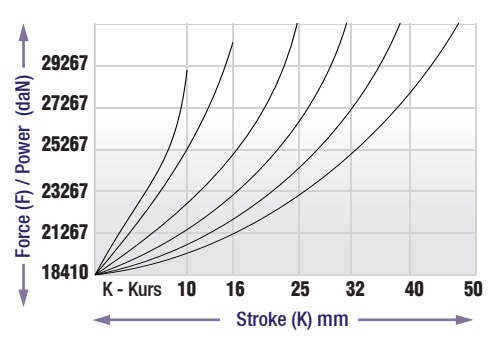


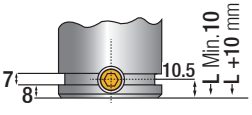
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.18500.10	10 mm	100	110	18500 Kg.	26820 Kg.	9.23
GC.18500.16	16 mm	120	136			10.20
GC.18500.25	25 mm	140	165			11.22
GC.18500.32	32 mm	165	197			12.43
GC.18500.40	40 mm	195	235			13.85
GC.18500.50	50 mm	220	270			15.11

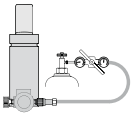
Base with valve

Series connection adapter

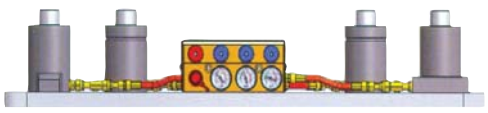




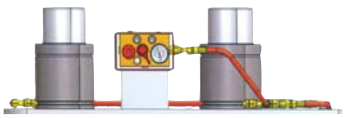




Keep pressure level for each model !



Valve inlets of the series connection cylinders;
Specify 1 or 2 valves when placing order!



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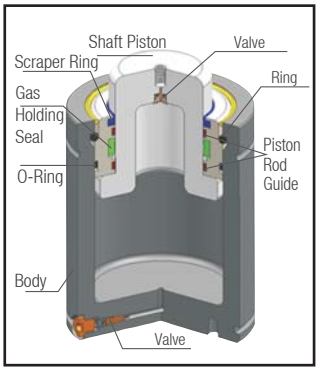
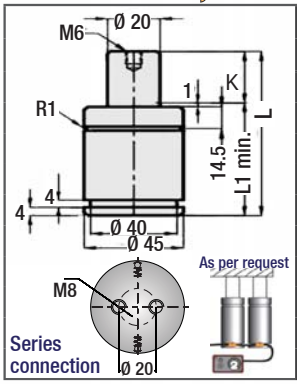
AD Series, Gas Spring - Low Profile

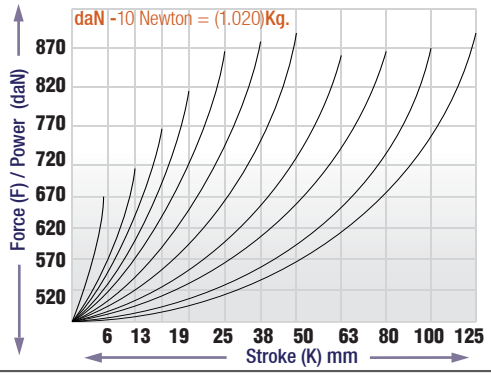
With its compact series features, requirement of protection from liquids, high stroke forces. 30% maximum pressure increase compared to the "Y Series" having similar sizes. Two layers of permanent lubrication. Ideal product for forming / shaping dies. It can be connected to the hose systems. Wide range of connection / fixing elements and accessories for all kinds of application. This standard series connection is recommended when supply tanks are used. In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change. Do not repair the worn springs.
The worn springs should be replaced.
Max. Pressure: **150 Bar** - Max. Speed : **0.5 m/s** - Max. Temp. : **0-80⁰C**

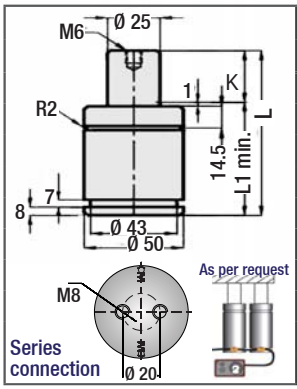


AD Series, Gas Spring - Low Profile

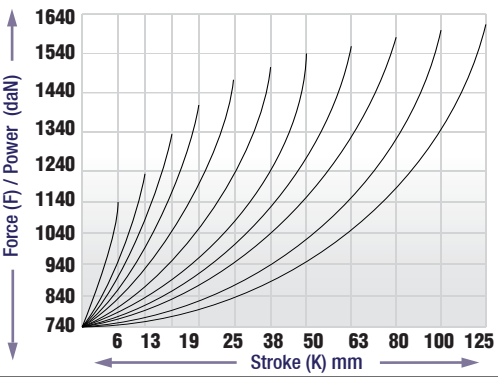


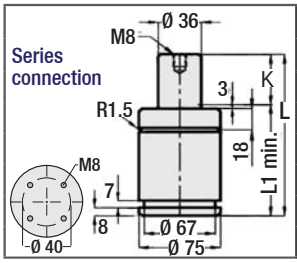
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.500.06	**6** mm	56	62			0.51
AD.500.13	**13** mm	62.7	75			0.56
AD.500.19	**19** mm	69	88			0.60
AD.500.25	**25** mm	75	100			0.65
AD.500.38	**38** mm	88	126	500 Kg.	700 Kg.	0.74
AD.500.50	**50** mm	100	150			0.83
AD.500.63	**63** mm	113.5	177			0.96
AD.500.80	**80** mm	130	210			0.99
AD.500.100	**100** mm	150	250			1.14
AD.500.125	**125** mm	175	300			1.32



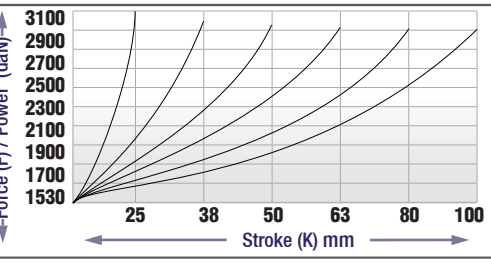


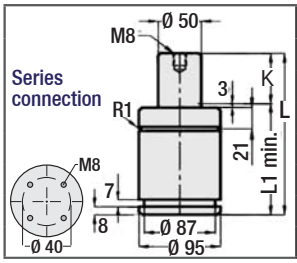
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.750.06	**6** mm	56	62			0.59
AD.750.13	**13** mm	62.7	75			0.65
AD.750.19	**19** mm	69	88			0.70
AD.750.25	**25** mm	75	100			0.76
AD.750.38	**38** mm	88	126	750 Kg.	1150 Kg.	0.80
AD.750.50	**50** mm	100	150			1.00
AD.750.63	**63** mm	113.5	177			1.10
AD.750.80	**80** mm	130	210			1.70
AD.750.100	**100** mm	150	250			1.96
AD.750.125	**125** mm	175	300			2.07



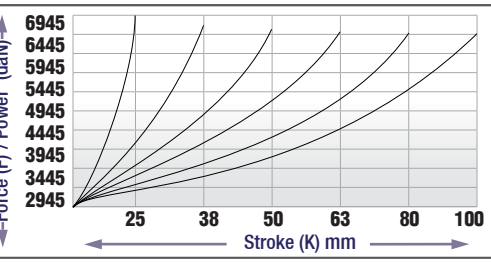


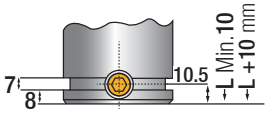
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.1500.25	**25** mm	85	110			1.93
AD.1500.38	**38** mm	99	136			2.18
AD.1500.50	**50** mm	110	160	1500 Kg.	2300 Kg.	3.64
AD.1500.63	**63** mm	123.5	187			3.91
AD.1500.80	**80** mm	140	230			4.28
AD.1500.100	**100** mm	160	260			4.72

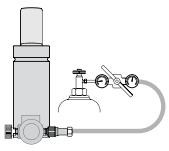




Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.3000.25	**25** mm	95	120			4.07
AD.3000.38	**38** mm	108	146			4.53
AD.3000.50	**50** mm	120	170	3000 Kg.	4600 Kg.	5.16
AD.3000.63	**63** mm	133.5	197			5.44
AD.3000.80	**80** mm	150	230			6.05
AD.3000.100	**100** mm	170	270			6.78







Keep pressure level for each model !

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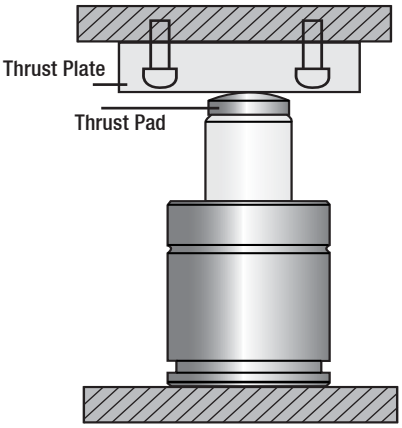
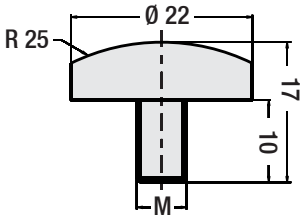
Mounting Example





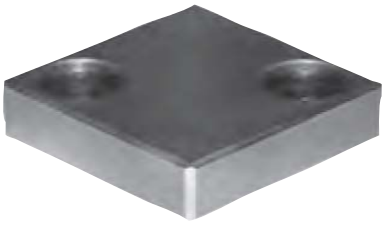
Thrust Pad for Gas Springs

Code: HRM

Piston protection head (balancing / straightening)

Order Code	M
HRM.6	M6 x 10
HRM.8	M8 x 10

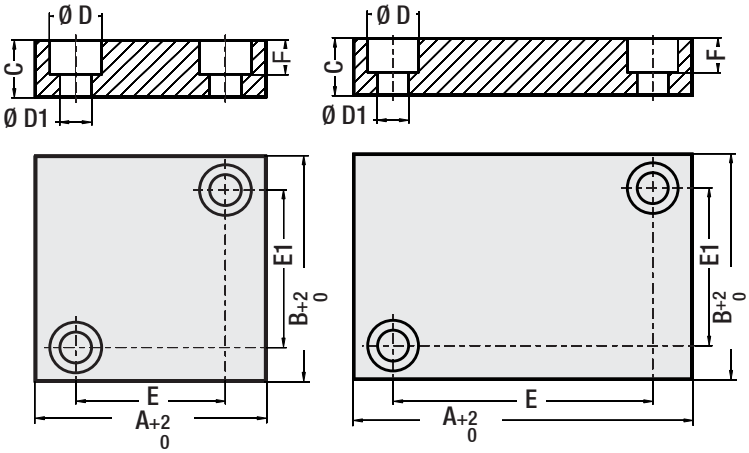
It is a useful product which protects piston head and absorbs vibrations in the die. The hardened thrust pad reduces lateral pressure in cases of declined pressure or laterally replacing parts. The lateral load resistance of the gas springs is increased by using the thrust pads and the thrust plates together. It does that by reducing friction. Even though no thrust pad is used, a thrust plate will be very useful for your system.



Thrust Plate for Gas Springs

Code: EP

It reduces lateral pressure in cases of declined pressure or laterally replacing parts. The lateral load resistance of the gas springs is increased by using the thrust pads and the thrust plates together. It does that by reducing friction. Even though no thrust pad is used, a thrust plate will be very useful for your system.



Order Code	A mm	B mm	C mm	Ø D	Ø D1	E	E1	F	Gas Spring Code
EP.40	40	40	15	15	9	21	21	10	SN:150-250-500 / Y:300-500 / YO:300-500 / G:40-75-100
EP.56	56	56	20	18	11	32	32	13	SN:750-1500 / Y:700-1000 / YO:700-1000-1500 / G:180
EP.71	71	71	20	18	11	48	48	13	SN:3000-5000 / Y:2400 / YO:2400-4200 / G:470-750
EP.50	50	25	12	11	7	32	8	8	SN:250 / Y:300 / YO:300
EP.55	55	30	12	11	7	40	14	8	SN:500 / Y:500 / YO:500 / G:40-75-100
EP.70	70	35	15	15	9	48	14	10	SN:750 / Y:700 / YO:700
EP.75	75	50	15	15	9	56	30	10	SN:1500 / Y:1000 / YO:1000-1500 / G:180
EP.85	85	60	15	15	9	66	40	10	SN:3000 / Y:2400 / YO:2400 / G:470
EP.100	100	80	20	18	11	72	56	12	SN:5000 / Y:4200 / YO:4200 / G:750
EP.110	110	100	20	18	11	85	45	12	SN:7500-10000 / Y:6600 / YO:6600-11800 / G:1200

Note: We recommend using the thrust pad and the thrust plate combination in gas springs with wide stroke capacity.

Material: CK45
Surface Hardened

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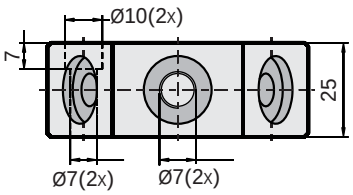
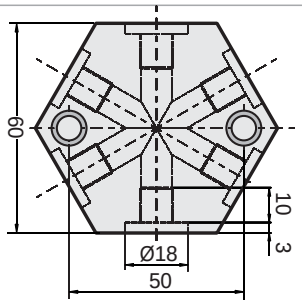
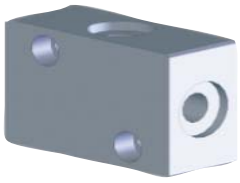
Gas Spring Distribution Blocks

Code: DB

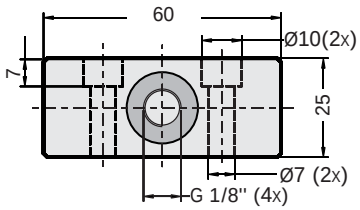
Order Code: DBC.6

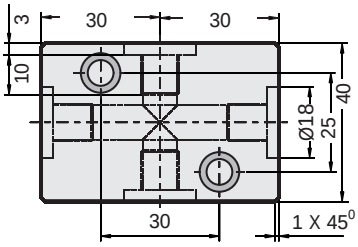


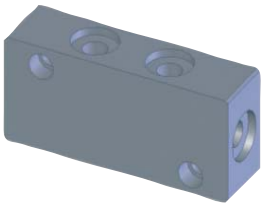




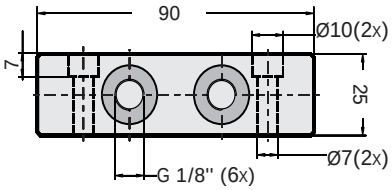
Order Code: DB.4

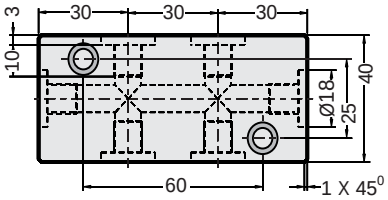


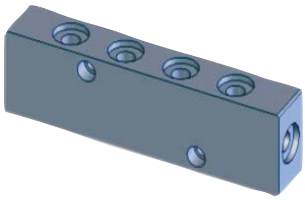




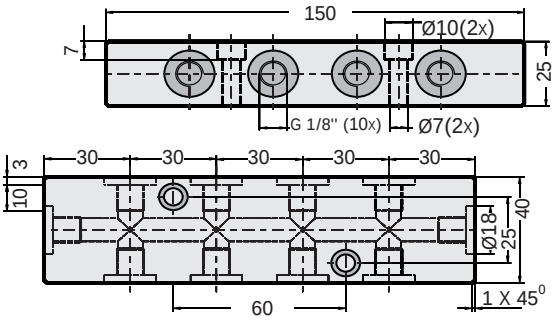
Order Code: DB.6

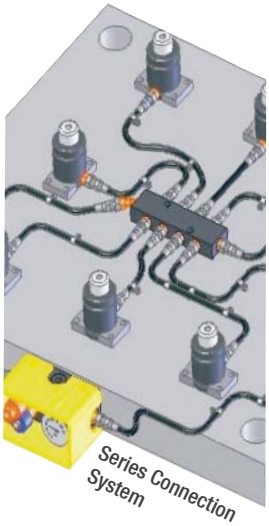


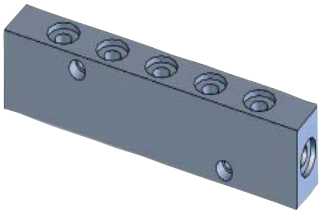




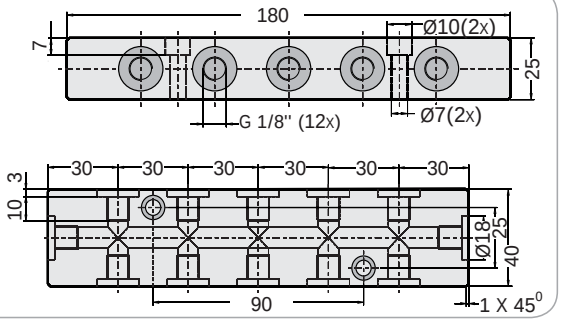
Order Code: DB.10







Order Code: DB.12



Material: CK 45 / Surface Hardened
"Custom-made production (material) as per request"

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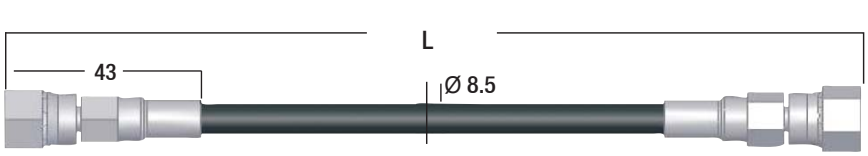
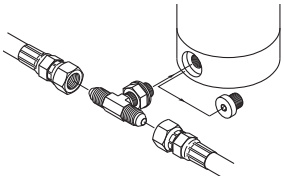


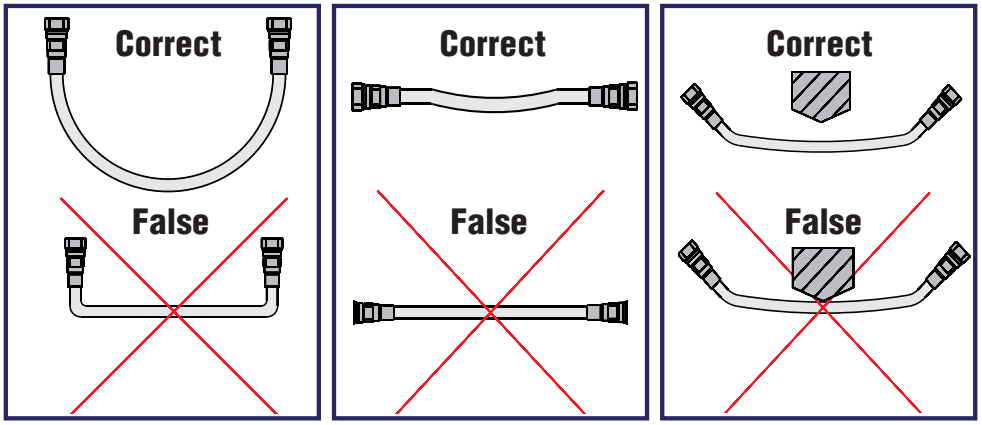


Hose for Gas Spring Distribution Blocks

Code: GHS

Order Code	L (Length) mm
GHS.180	180
GHS.200	200
GHS.300	300
GHS.400	400
GHS.500	500
GHS.630	630
GHS.800	800
GHS.1000	1000
GHS.1250	1250
GHS.1500	1500
GHS.2000	2000

Criteria for inserting hoses in a correct way:



System with hoses:

From SN.500 up to SN.1000

From Y.700 up to Y.6600

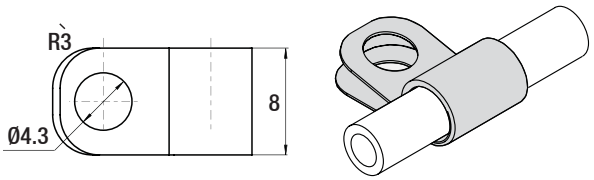
From YO.700 up to YO.11800

From G.180 up to G.1200

Before beginning this process, ensure that all pressure is discharged and piston is withdrawn completely. In cases that any mounting / inserted part is removed, ensure that control pressure is discharged completely over control panel.
Hoses should be stable in flat position in the system. (bending radius is 13 mm).
Working temperature: + 80^{0}C max.

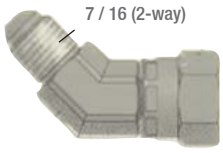
Hose Clamp

Order Code: HK



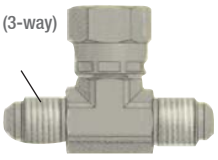
It is used as hose clamp in connection systems.

Gas Spring Fittings



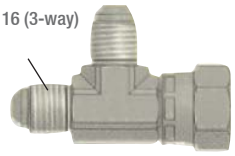
7/16''UNF

Order: SD.45



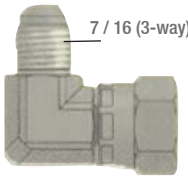
7/16''UNF

Order: SBT



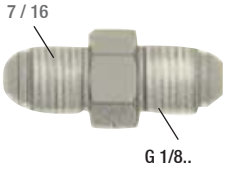
7/16''UNF

Order: SBYT



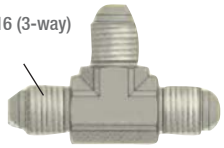
7/16''UNF

Order: SD 90



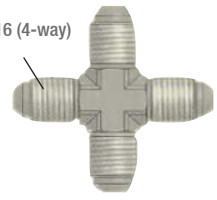
7/16''UNF - G1/8''

Order: DR



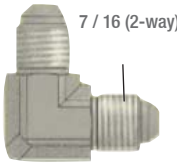
7/16''UNF

Order: DT



7/16''UNF

Order: DDB



7/16''UNF

Order: DD

Liquid Sealant with Teflon (PTFE)

Thread & pipe sealant are sealed threaded bolts against water, oil, gas and chemicals safely.
* High quality sealant. * -55^{0}C / +150^{0}C heat protection.

Order Code: W610511 Package: 50 ml.

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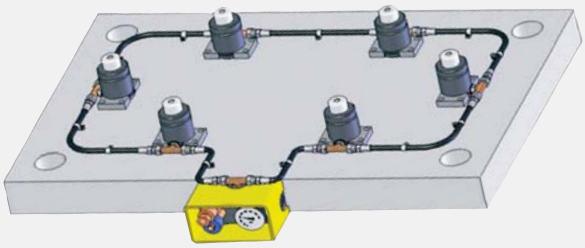
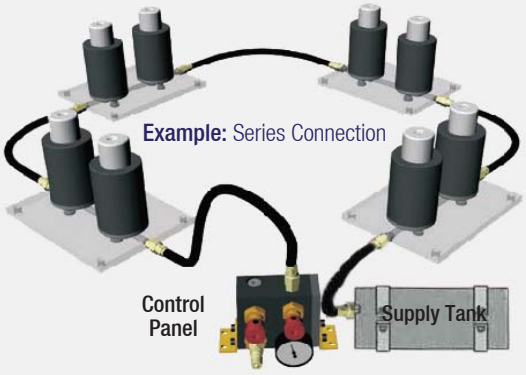
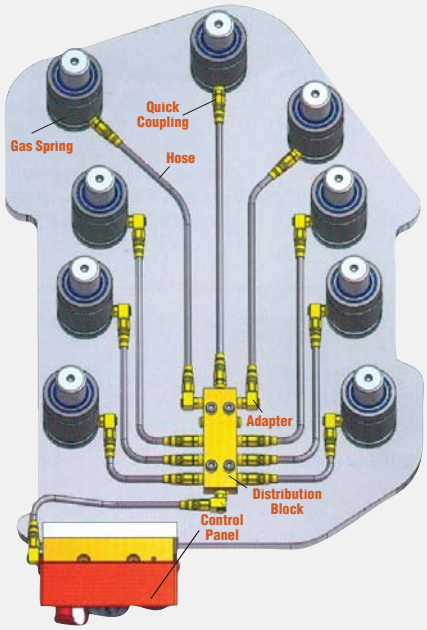
Serial Connection, Practical Examples

To make gas spring connection with a system, it enables to monitor gas spring pressure out of die and to adjust and correct it by increasing - reducing gas.



The springs are connected each other and there should be a control line to the distribution installation.





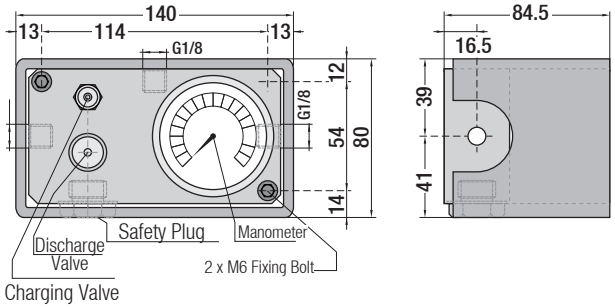
Each gas spring should have a direct connection to the distribution installation. The springs may be added to the installation by using a general pressure source. Hence, the gas filling / charging and discharging settings can be generally done. The springs in the series can be filled / charged and discharged individually.

Control Panel for Gas Spring

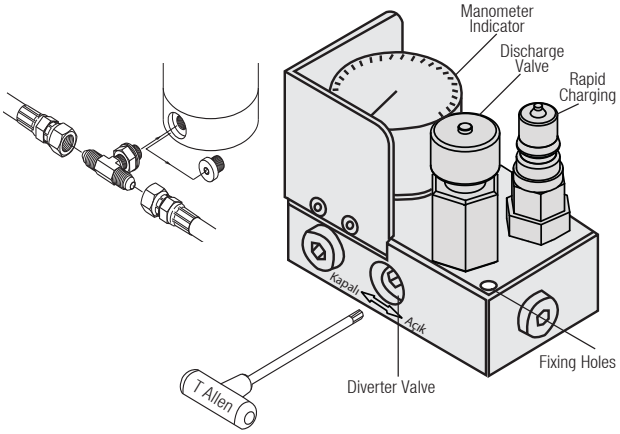
Order Code: KPA

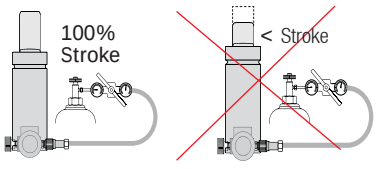
(series connection systems, router unit)

These standard products with wide connection and accessory options are used for all kind of applications that supply tanks are used.



Standard control panel to change pressure, to adjust and to control connection system. It is consisted from manometer connected, steel plate, charging and discharge valves, 3 pieces outlet and steel casing that safety disc can be connected when desired.





While controlling gas springs, you must remove gas spring valve!

While filling / charging, ensure that piston arm is 100% removed. In cylinders not having threaded hole on rod, to remove arm completely, first fill up to 5 bar (75 psi), and then fill up to required level..

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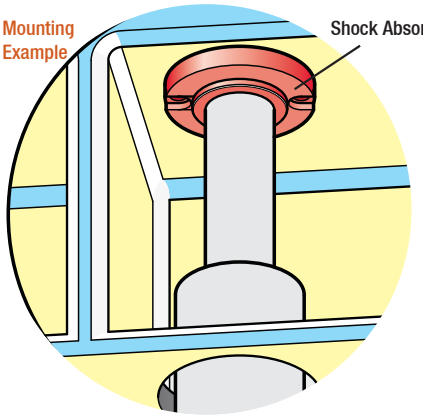
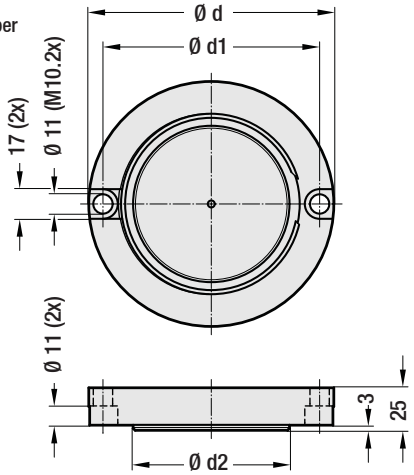




Code: G113

Shock Absorbing for Gas Spring

(daN) 1 Newton : 0.102 Kg.

Order Code	Gas Spring Force F: (daN)	d	d1	d2
G113.58	750 - 1500	108	91	58
G113.92	> 1500 - 6600	143	126	92
G113.112	> 6600 - 10000	167	150	112

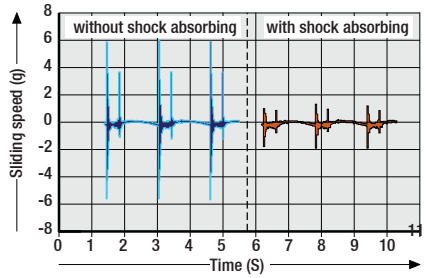
Shock absorbing thrust plates are designed to minimize main problems of dies. Specially designed shock absorbing unit has been developed to reduce following the issues.
- Excessive impact.
- High costs in terms of press maintenance and corresponding units.
- High noise levels.
- Low quality production risk.

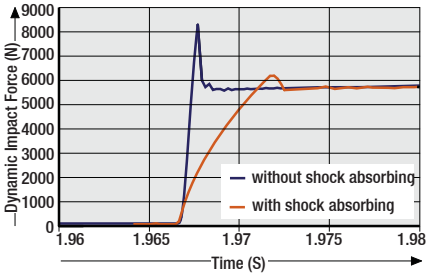
In case of using shock absorbing plates with gas springs:
- After maximum 3 mm shock absorbing stroke, gas spring shock absorbing pressure plate reaches its previous spring power.
- Shock absorbing thrust plate should be mounted between die plate and gas spring piston shaft.

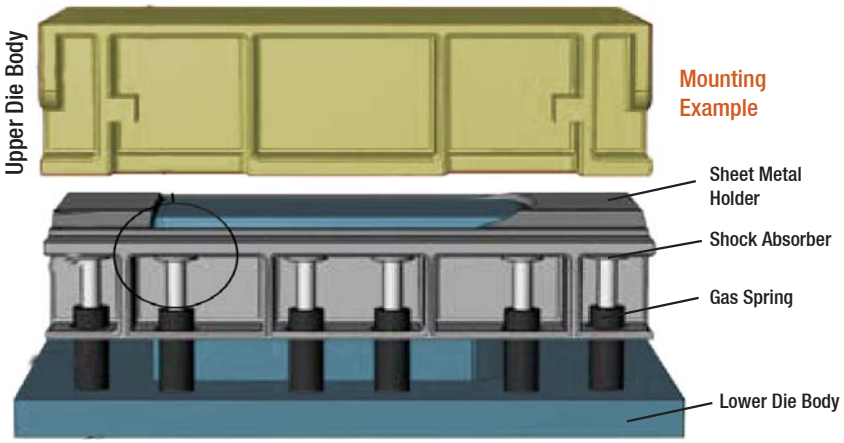
Working temperature: between 0° and 80°C.
Recommended stroke / minute: 20
Max. stroke speed: 1.6 m / s
Max. shock absorbing stroke: 3 mm

Material: Polyurethane
Steel (nitrided)

Shock Absorbing Working Diagram (function)







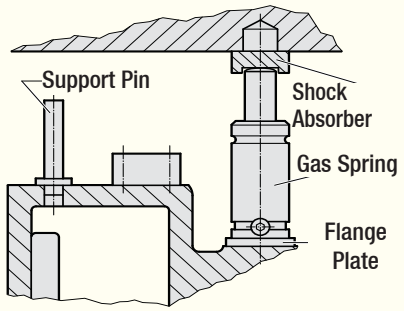
Application of Gas Springs

Using gas springs at large is becoming increasingly popular. Gas springs are mounted to both upper and lower body. The processes on the gas springs should be done after removing the die from the press. In application examples-1 & 2, special shock absorber is shown, these products placed to the place that gas spring will be pressed when die positioned in press and before stamping. During removing from press or storage period, upper die body stays on gas springs.

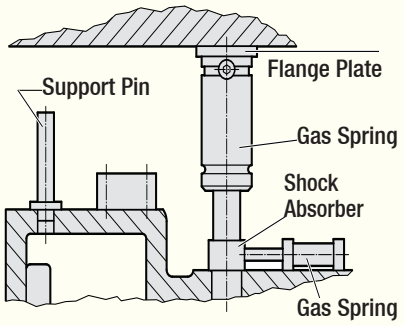
Support pins are for security after gas spring process. When dies are stacked, increased weight can cause crushing of springs, in this case, they are fitted on upper die support pins. When upper die is lifted, gas springs lift the upper body again. While preparing for production, springs enable reach various parts of dies. When die is mounted to press, support pins should be removed (before stamping).

In significant situations: Warning signs should be placed on the die. Gas springs within die may not be visible from the outside.

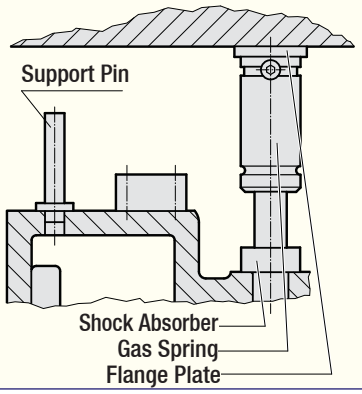
1 - Gas Spring Mounted to Lower Body



2 - Gas Spring Mounted to Upper Body



3 - Gas Spring Mounted to Upper Body



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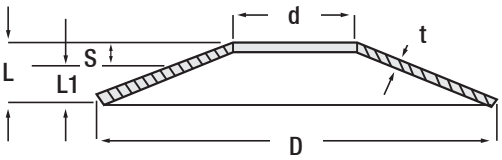
Code: DCY

d Ø	D Ø	t mm	L mm	L1 mm	F Nw
3.2	8	0.30	0.55	0.36	104
		0.50	0.70	0.55	357
4.2		0.40	0.60	0.45	209
3.2	10	0.30	0.65	0.39	98
		0.40	0.70	0.48	179
4.2		0.50	0.75	0.56	294
		0.60	0.85	0.66	502
5.2		0.40	0.70	0.48	209
		0.50	0.75	0.56	325
4.2	12	0.40	0.80	0.50	178
		0.50	0.85	0.59	284
5.2		0.50	0.90	0.60	349
		0.60	0.95	0.69	506
6.2		0.50	0.85	0.59	326
		0.60	0.95	0.69	551
6.2	12.5	0.50	0.85	0.59	293
		0.70	1.00	0.78	659
7.2	14	0.50	0.90	0.60	279
		0.80	1.10	0.87	796
5.2	15	0.40	0.95	0.54	175
		0.60	1.05	0.71	407
6.2		0.50	1.00	0.63	289
		0.70	1.10	0.80	577
8.2		0.70	1.10	0.80	665
		0.80	1.20	0.90	982
8.2	16	0.40	0.90	0.53	154
		0.60	1.05	0.71	410
		0.90	1.25	0.99	1012
6.2	18	0.50	1.10	0.65	245
		0.70	1.25	0.84	552
8.2		0.80	1.30	0.92	582
		1.00	1.40	1.10	1181
9.2		0.70	1.20	0.83	566
		1.00	1.40	1.10	1253
8.2	20	0.60	1.30	0.77	412
		0.80	1.40	0.95	751
		1.00	1.55	1.14	1294
10.2		0.80	1.35	1.94	748
		1.00	1.55	1.14	1414

d Ø	D Ø	t mm	L mm	L1 mm	F Nw
8.2	23	0.80	1.55	0.99	718
		0.90	1.60	1.07	918
10.2		1.00	1.70	1.17	1315
12.2	25	0.70	1.60	0.92	599
		0.90	1.60	1.07	862
10.2	28	0.80	1.75	1.04	661
		1.00	1.90	1.23	1129
14.2		0.80	1.80	1.05	801
		1.00	1.80	1.20	1107
16.3	31.5	1.25	2.15	1.48	1912
		1.50	2.40	1.73	3228
12.3	34	1.25	2.35	1.53	1814
		1.50	2.50	1.75	2719
14.3		1.25	2.40	1.54	1988
		1.50	2.55	1.76	2982
16.3		1.50	2.55	1.76	3153
		2.00	2.85	2.21	5779
14.3	40	1.50	2.75	1.81	2544
		2.00	3.05	2.26	4766
16.3		1.50	2.80	1.83	2748
		2.00	3.10	2.28	5166
20.4		2.00	3.10	2.28	5698
		2.50	3.45	2.74	9384
22.4	45	1.75	3.05	2.08	3644
		2.50	3.50	2.75	7712
20.4	50	2.00	3.50	2.38	4685
		2.50	3.85	2.84	7915
25.4		2.00	3.40	2.35	4760
		2.50	3.90	2.85	9058
		3.00	4.10	3.28	11970
20.5	60	2.50	4.70	2.95	7293
		3.00	5.20	3.42	11563
30.5		3.00	4.70	3.42	13219
		3.50	5.00	3.88	18143
40.5	70	4.00	5.70	4.04	23338
		5.00	6.40	5.30	33653
31	80	4.00	6.10	4.50	19384
41		3.00	5.30	3.58	10512
		5.00	6.70	5.42	33541
41	100	5.00	7.75	5.69	32344
51		6.00	8.20	6.55	47995

Disc Springs
DIN 2093

Code: DCY



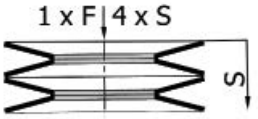
d: Inner hole diameter
D: Outer diameter
t: Thickness
L: Free length
L1: Loading length
F max: Flex force
S: Flex length stroke / motion

Disc Springs: It provides resistance to higher forces at very short working strokes. The advantage of springs with very short spring is that when the pressure is applied, it produces high power with less motion. Disc springs sometimes can be used alone and also as stacked array sets.

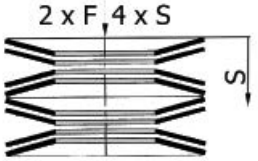
Tension Resistance N: 25 / + 200 50 CrV **Heat Resistance:** -15 / +150°

Disc Spring Working Strokes: Applied forces (F / N) should be designed according to the working strokes. Specifying the working strokes should be according to the hole thickness (t) internal wall.
L: 0.25 (1/4) or 0.50 (1/2) of free length.
In addition, with motion up to 0.75 (3/4), different forces (F/N) per each stroke value may be applied.
F=N / S = mm / stroke

Disc Spring Array (load application) / 1 Newton : 0.102 Kg.

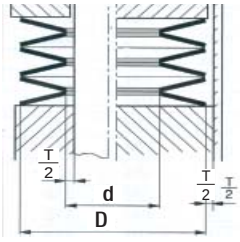


1 F (force / N) in application 0.25
4 times S (stroke)
Light Duty



2 F (force / N) in application 0.50
4 times S (stroke)
Heavy Duty

3 F (force / N) in application 0.75
4 times S (stroke)
Extra Heavy Duty



T = working space

Order:
DCY. d x D x t

Fixing Disc Spring with Shaft

D	T
> 8 - 16	0.2 mm
> 16 - 20	0.3 mm
> 20 - 26	0.4 mm
> 26 - 34	0.5 mm
> 34 - 50	0.6 mm
> 50 - 100	0.8 mm

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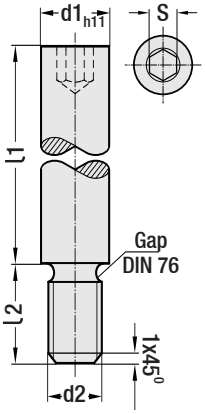
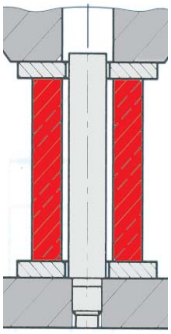
Code: PYP

Guide Bolt for Polyurethane Spring

During guiding of polyurethane springs, countersunk allen head metric thread connected guide bolts can be used as single spring as well as cluster by dividing springs.



Polyurethane bolt mounting drawing



Code: PYP

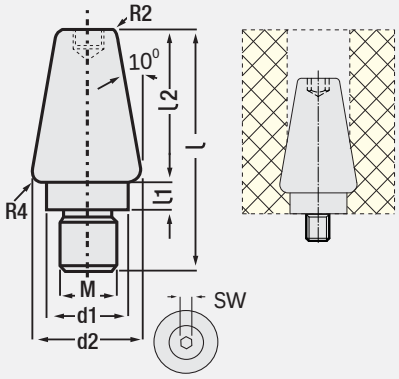
d1	l1	d2	l2	S	Spring Ø
Ø 6 mm	20	M4	6 mm	3	Ø 16 x 6.5
	25				
	32				
Ø 8 mm	25	M6	9 mm	4	Ø 20 x 8.5
	32				
	40				
	50				
Ø 10 mm	25	M8	15 mm	5	Ø 25 x 10.5
	32				
	40				
	50				
	63				
Ø 13 mm	32	M10	15 mm	6	Ø 32 /40 x 13.5
	40				
	50				
	63				
	80				
	95				
Ø 16 mm	32	M12	18 mm	8	Ø 50 /63 x 17
	40				
	50				
	63				
	80				
	95				
	118				
	140				
Ø 20 mm	40	M16	25 mm	10	Ø 80 /100 x 21
	50				
	63				
	80				
	95				
	118				
	140				
	180				

Order: PYP. d1 x l1

Material: CK45

Code: PSP

Locating Bolt for Polyurethane Spring



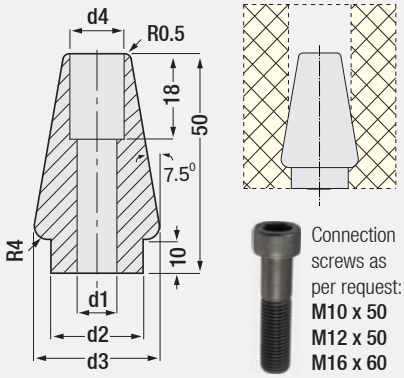
M	l	d1	d2	l1	l2	SW	Spring Ø
M12	56	19	28	8	30	6	63
M16	74	22	32	10	40	8	80-100
M20	100	28	38	15	55	10	125-140

Order: PSP. M x l

Material: 1.7131 (16MnCr5)

Code: PMV

Locating Pin for Polyurethane Spring



Connection screws as per request:
M10 x 50
M12 x 50
M16 x 60

Upper screwed locating pins for polyurethane springs

M	d1	d2	d3	d4	Spring Ø
M10	11	18	28	17	63
M12	13.5	22	32	19	80-100
M16	17.5	28	38	25	125

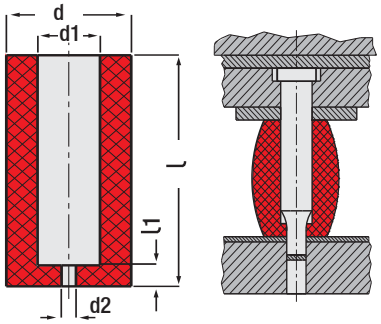
Order: PMV. M

Material: 1.7131 (16MnCr5)

Code: PYB

Polyurethane Punch Stripper

Overspread on punch (shock absorber)



In dies that polyurethane punch stripper is used, there is no need to dismantle stripper plate to make repair whetting and modification on die components, there is not any effect on precise parts, it is excellent for all painted / anodized, plastic plated and polished parts. It is compatible to use with oil and grease.
It is overspread on punch. Placement is done according to the stripper hardness. There is no need for extra holder. Stepped-punch hole will be opened at the first stroke of press on stripper edge.
Especially, in large dies requiring very wide stripper plate, this product is very compatible.

Code: PYB

Order	d1 Ø	d Ø	d2 Ø	l1 mm	l mm	Punch Length
PYB.445	4.0	17	1.6	5.0	45	56 / 63
PYB.655	6.0	19			55	63 71 80 90
PYB.855	8.0	21	3.0 Punch Hole			
PYB.1055	10	23				
PYB.1355	13	26				
PYB.1655	16	30				
PYB.2055	20	38				100
PYB.2555	25	50				

d2: (1.6 - 3.0 mm) (d1) while opening hole diameter / drilling, polyurethane (punch) bush should be applied and drilled in pressed (S max) position. Spring load is obtained while extending outwards.

In S. max flexion, load coefficient data daN / Kg.

d mm	17	19	21	23	26	30	38	50
S daN 3 mm	60 daN	65 daN	70 daN	90 daN	110 daN	140 daN	210 daN	370 daN
S daN 6 mm	115 daN	120 daN	130 daN	160 daN	190 daN	230 daN	360 daN	650 daN
S daN 9 mm	-	180 daN	210 daN	240 daN	300 daN	370 daN	550 daN	1020 daN

S max: Load coefficient daN = Kg. / (10 newton), while polyurethane bush S max in pressed, load data is advisory.

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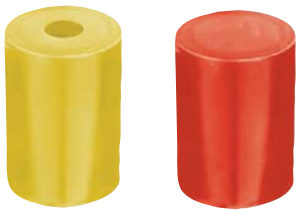
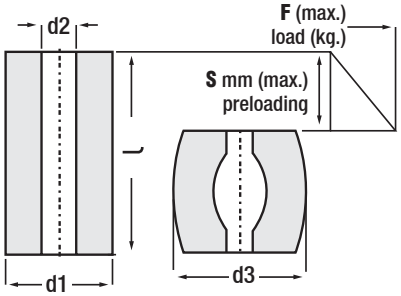




90 Shore / Red Springs Code: PMK

80 Shore / Yellow Springs Code: PMS

D = Solid / **B** = Hollow

Compression (Length)
Red / 90 Shore: % 25
Yellow / 80 Shore: % 35

Polyurethane Compression Spring

They do not create any problem at water / oil emulsions (resistance to thermal shock). They do not have any abrasion effects that can be distinguished with fixed and high load under normal temperature and environmental conditions at serial motion dies. Especially, they are efficient in ambient that do not require magnetization. Polyurethane springs can be machining with ordinary machine tools (such as lathe) as well as can be machining with traditional cutting tools (with sharp cutting edge). Polyurethane compression spring is incompressible material, spring load is obtained by extending outwards. Most of the expansion is reflected outwards. When desired higher flexion, selected spring is cut into two pieces from centre, then metal thick washer is inserted, thus flexion is increased two times. Pin diameter of polyurethane compression springs should be less than the inner diameter of spring.

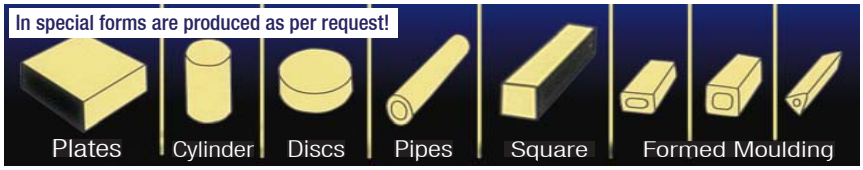
Ø d1 mm	L mm	Ø d2 mm	Ø d3 mm	% 25 90 Shore (red) Max. Force S mm	% 25 90 Shore (red) Max. Force F Kg	% 35 80 Shore (yellow) Max. Force S mm	% 35 80 Shore (yellow) Max. Force F Kg
16	12	6.5	21	3.6	171	4.3	104
	16			4.8	169	5.6	100
	20			6.0	165	7.0	97
	25			7.5	161	8.7	96
20	16	8.5	36	4.8	265	5.6	156
	20			6.0	260	7.0	154
	25			7.5	258	8.7	153
	32			9.6	255	10.6	152
25	20	10.5	32	6.0	439	7.0	265
	25			7.5	428	8.7	260
	32			9.6	423	10.6	257
	40			12.0	420	14.0	255
32	32	13.5	42	9.6	653	10.6	398
	40			12.0	648	14.0	393
	50			15.0	643	17.5	390
	63			18.9	638	22.0	388
40	32	13.5	52	9.6	1122	10.6	683
	40			12.0	1112	14.0	673
	50			15.0	1101	17.5	668
	63			18.9	1097	22.0	663
	80			24.0	1092	28.0	661
50	32	17	65	9.6	1775	10.6	1102
	40			12.0	1765	14.0	1061
	50			15.0	1734	17.5	1041
	63			18.9	1698	22.0	1020
	80			24.0	1683	28.0	1015
	100			30.0	1673	35.0	1010
63	32	17	81	9.6	3070	11.2	1902
	40			12.0	3009	14.0	1836
	50			15.0	2947	17.5	1785
	63			18.9	2856	22.0	1734
	80			24.0	2805	28.0	1683
	100			30.0	2784	35.0	1652
	125			37.5	2733	43.7	1632
80	32	21	104	9.6	5406	11.2	3213
	40			12.0	5151	14.0	3070
	50			15.0	4896	17.5	3049
	63			18.9	4743	22.0	2937
	80			24.0	4641	28.0	2886
	100			30.0	4579	35.0	2866
	125			37.5	4488	43.7	286
100	32	21	130	9.6	9180	11.2	5712
	40			12.0	8649	14.0	5304
	50			15.0	8262	17.5	5100
	63			18.9	7956	22.0	4845
	80			24.0	7650	28.0	4590
	100			30.0	7446	35.0	4416
	125			37.5	7242	43.7	4233
125	32	37	160	9.6	15300	11.2	9384
	40			12.0	14535	14.0	8670
	50			15.0	13464	17.5	8160
	63			18.9	12750	22.0	7650
	80			24.0	12036	28.0	7242
	100			30.0	11730	35.0	7191
	125			37.5	11526	43.7	7140
	160			48.0	11352	56.0	6936

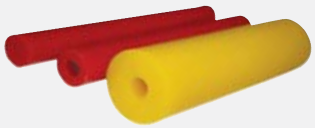
Order: Code - D or B . d1 . L

Order Example: PMS-B.25.40

Heat resistance: 70°C

Note: Under 18°C gradual increase in hardness.



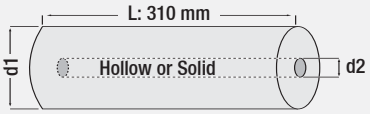


Polyurethane Compression Spring

90 Shore / Red Springs Code: PYK

80 Shore / Yellow Springs Code: PYS

D = Solid / **B** = Hollow



Solid Type	d2 Hollow	d1
90 Shore: Flexion %25 Loaded Spring	6.5	16
	8.5	20
	10.5	25
	13.5	32
	13.5	40
	17.0	50
	17.0	63
	21.0	80
	21.0	100
	27.0	125

Length (L): 310 mm

Solid Type	d2 Hollow	d1
80 Shore: Flexion % 35 Loaded Spring	6.5	16
	8.5	20
	10.5	25
	13.5	32
	13.5	40
	17.0	50
	17.0	63
	21.0	80
	21.0	100
	27.0	125

Length (L): 310 mm

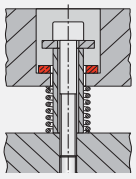
Order: Code - D or B . d1

Order Example: PYK-D.32

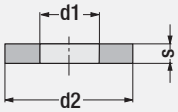
Polyurethane Shock Absorbing Washer

Code: PRPS

Code: PRPK



90 Shore - red / %25
80 Shore - yellow / %35



d2	d1	s
Ø 16	6.5	3 mm
	11	4 mm
Ø 20	8.5	3 mm
	11	4 mm
	13	5 mm
Ø 25	10.5	3 mm
	12	4 mm
	14	5 mm
Ø 32	13.5	3 mm
	18	4 mm
	21	5 mm
	23.5	6 mm
	25	7 mm

d2	d1	s
Ø 40	13.5	5 mm
	17	6 mm
	21	7 mm
	32	8 mm
Ø 50	17	6 mm
	26	7 mm
	32	8 mm
	37	10 mm
Ø 63	17	6 mm
	32	10 mm
Ø 80	21	8 mm
	42	10 mm
Ø 100	21	10 mm

Order: Code. d1 x d2 x s

Order Example: PRPS. 11 x 20 x 4

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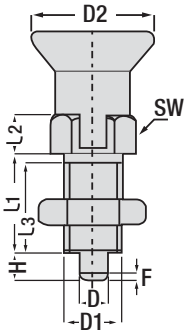
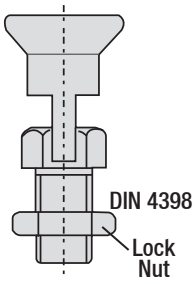
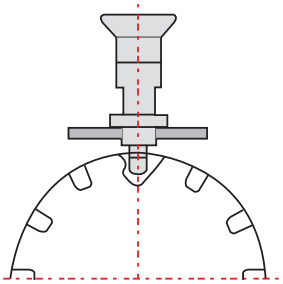




Indexing Plunger with Lock Nut

Movable Support Pin

Code: MM102ST



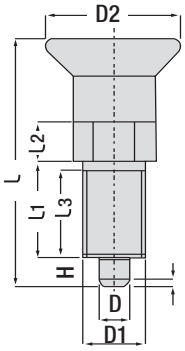
Material Structure : Coated steel material (or stainless steel - 304)

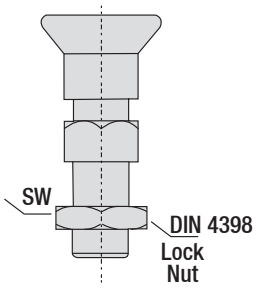
Locking Pin : Hardened steel (or stainless steel - 304)

Handle : Plastic (PA6) black non-demountable head

Code: MM102ST

Order Code	D -0.02 / -0.04	D1	D2	L	L1	L2	L3	H	SW
MM102ST05	**5**	M10 x 1.0	21	43.7	17	7	15	5	12
MM102ST06	**6**	M12 x 1.5	25	51.7	20	7	17	6	14
MM102ST08	**8**	M16 x 1.5	33	68.7	26	10	23	8	19
MM102ST10	**10**	M20 x 1.5	33	74	28	12	25	10	22
MM102ST12	**12**	M20 x 1.5	33	78	28	14	25	12	22





Indexing Plunger

Fixed Support Pin

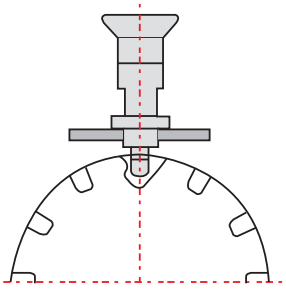
Code: MM101ST

Order Code	D -0.02 / -0.04	D1	D2	L	L1	L2	L3	H	SW
MM101ST05	**5**	M10 x 1.0	21	43.7	17	7	15	5	12
MM101ST06	**6**	M12 x 1.5	25	51.7	20	7	17	6	14
MM101ST08	**8**	M16 x 1.5	33	68.7	26	10	23	8	19
MM101ST10	**10**	M20 x 1.5	33	74	28	12	25	10	22
MM101ST12	**12**	M20 x 1.5	33	78	28	14	25	12	22

Material Structure : Coated steel material (or stainless steel - 304)

Locking Pin : Hardened steel (or stainless steel - 304)

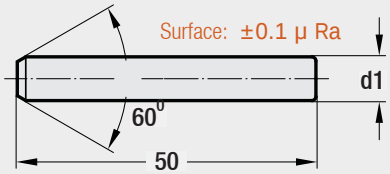
Handle : Plastic (PA6) black non-demountable head



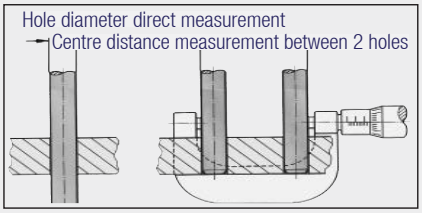
Precision Pin Gauge Kit

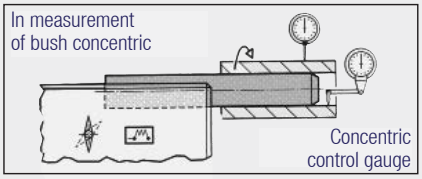
Code: PKMS

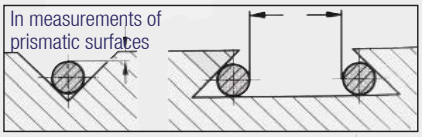
DIN 2269 - Dia. tolerance: ± 0.001 / 2

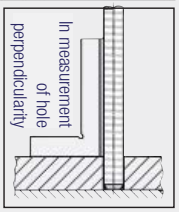


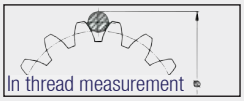
Small Set: 91 pieces measurement / control pin between Ø 1 -10 mm. in 0.1 mm stepped complete wooden box.
Large Set: 273 pieces measurement / control pin between Ø 1 -10 mm. in 0.1 mm stepped complete wooden box. For each pin, over 0.01 mm and under 0.01 mm pins are available.
In addition, pins are protected with plastic tube.
The measures of all measurement pins over 3 mm are stamped on them.

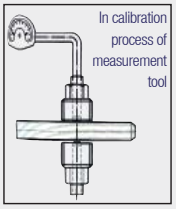












Material: 1.3343 HSS
Hardness: 62 - 64 HRC

Order:
PKMS.1 (Small Set)
PKMS.2 (Large Set)

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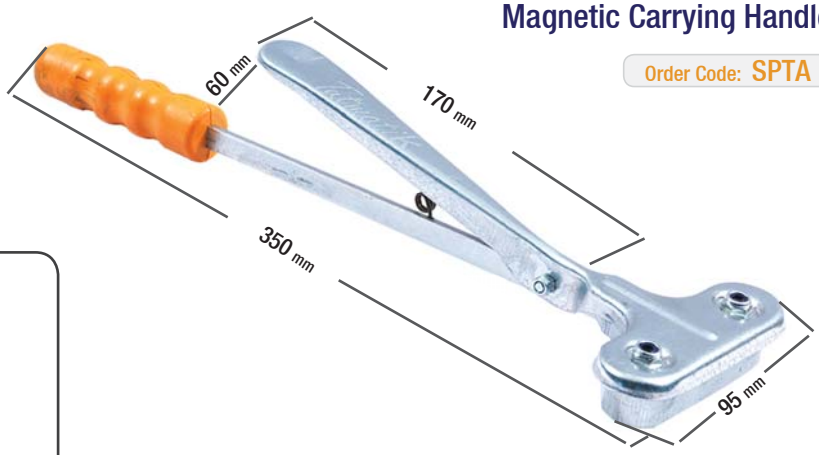
NEW

Magnetic Carrying Handle

Order Code: SPTA



Sheet Holding Tool for Dies

Modern dies are generally built with closed system and feeder machines. Most of the occupational accidents occur in eccenteric press machines during operation of open position dies with traditional systems and obligatory workpiece designs. These accidents occur because of chopping or crushing of fingers in the dies when press is operating. There is a security gap in this matter or companies endeavour to take measures with their own means. So, this simply designed magnetic handle / sheet holding tool is created.

Product is lightweight (260 g.) and can be used with single hand.
It does not require force as the spring tongs do. It can strongly hold the material via its magnetic jaw.
Thus, hands are protected when eccenteric press is lowered in open dies operating with functionally simple systems via magnetic carrier tool in the open die.
So, the problems happened in the past will not be encountered again.

Please visit www.guvenal.net for usage video.

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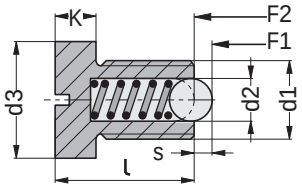
Code: SBS

Spring Plunger with Slotted Head

Mounting: Fixing with screwdriver.



It is for locking, compressing upwards and downwards. Fixable with screwdriver.
Heat Resistance Maximum: 250^{0}C.

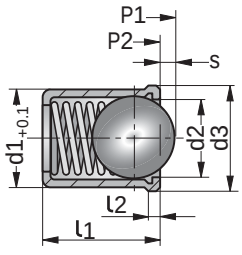
d1	l	s	d2	d3	K	F1(N)	F2(N)
M6	14	1	3.5	10	5	11	18
M8	16.5	1.5	4.5	13	5	18	31
M10	20	2	6	16	6	24	45
M12	22	2.5	8	18	7	24	49

Order: SBS. d1 | **Material:** Steel quality 5.8

Code: KBS

Spring Plunger with Bushing

For systems such as elevator and sliding etc.



Hole mounting with reamer

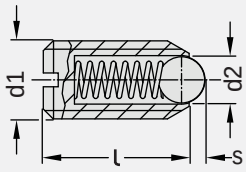
d1	l1	d2	d3	l2	s	P1(N)	P2(N)
4	5	3.0	4.6	1	0.90	2	5
5	6	4.0	5.6		1.00	4	7
6	7	5.0	6.5		1.50	6	12
8	9	6.5	8.5		1.80	6	12

Order: KBS. d1 | **Material:** Steel quality 5.8

Code: BSM

Spring Plunger

Mounting: Fixing with screwdriver.



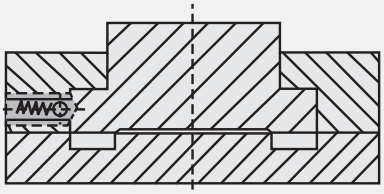
Usage Area:
- Locating
- Pulling, pushing
- Extractor
- Clamping

It is used as core / slide lock etc. in injection mould. As stamp extractor in die and also can be used for bushing of threaded shafts, limiting the torque tools and positioning of level adjuster.
Material structure; machinable steel bushing - hardened bearing steel ball - winding steel spring.
Heat Resistance Maximum: 250^{0}C.

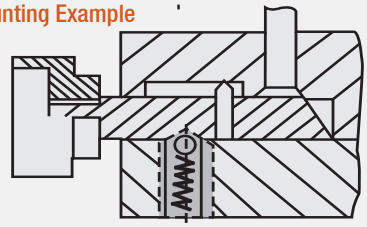
Code: BSM

d1 (thread)	l mm	S mm	d2 mm	Initial Force	Final Force
M4	9	0.8	2.5	6 Nw	12 Nw
M5	12	0.9	3.0	7 Nw	13 Nw
M6	14	1.0	3.5	9 Nw	15 Nw
M8	16	1.5	5.0	20 Nw	35 Nw
M10	19	2.0	6.0	25 Nw	45 Nw
M12	22	2.5	8.0	35 Nw	60 Nw
M16	24	3.5	10	65 Nw	110 Nw

*** Please don't exceed the force values.**



Mounting Example



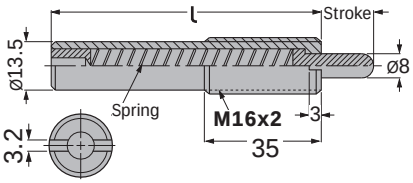
N - Newton = (0.102)**Kgf**
daN -10 Newton = (1.020)**Kgf**

Order: BSM. d1 | **Material:** Steel quality 5.8

Code: PSK

Spring Plunger

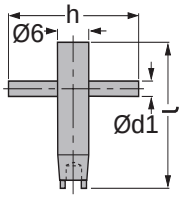
Mounting: Fixing with "PMT" mounting kit.



Protective plating that prevents oxidation on the part surface is available. The ball is from steel material and is hardened and polished.
*** Please don't exceed the force values.**

Stroke	l mm	Initial Force	Final Force
20	80	24 Nw	186 Nw
40	150	59 Nw	177 Nw
60	150	11 Nw	45 Nw
80	200	2 Nw	38 Nw

Order: PSK. Stroke | **Material:** Pin 1.1273 **Hardness:** 40 HRC



Code: PMT

Mounting Kit for Spring Plungers

Spring Plunger (M)	h mm	d Ø	d1 Ø	l mm
M5 - M6	40	6	3	40
M8	45	8	4	45
M10	45	10	4	45
M12	80	12	5	50
M16	70	16	8	52
M24	80	24	12	62
M30	100	30	15	73

Order: PMT. d | **Material:** Steel 5.8 **Hardness:** 36 - 40 HRC

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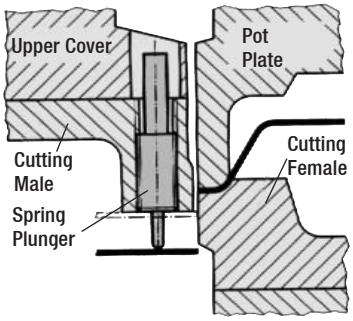


Spring Plunger

Code: PS1

Mounting: Fixing with "PMT" mounting kit.

It is for locking, compressing upwards and downwards. The lock prevents the reaching of liquids and oils to the pin.

Working Temperature: Between -30 C and +80 C

Pin: Polished steel + Protective coating

Spring plunger can be used in many designs such as die and equipment production. Especially, it is operated as extractor - dampener - stabilizer and retaining pin.

*** Please don't exceed the force values.**

Spring Plunger

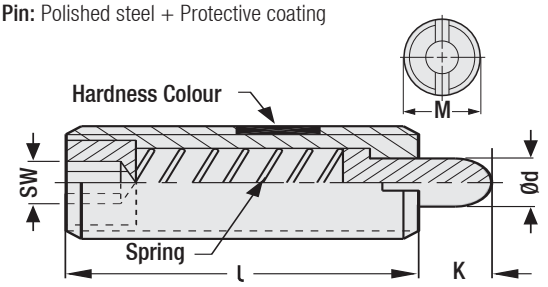
Code: PS2

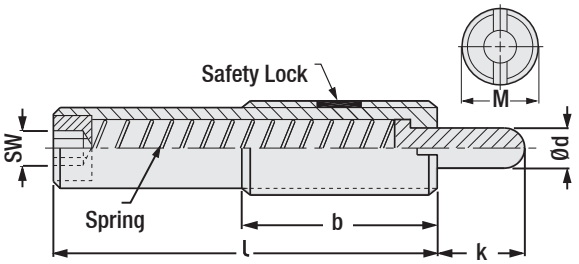
Mounting: Fixing with "PMT" mounting kit.

It is for locking, compressing upwards and downwards. The lock prevents the reaching of liquids and oils to the pin.

Working Temperature: Between -30 C and +80 C

Pin: Polished steel + Protective coating





Code: PS1

Series	M Thread	k mm	l mm	d Ø	SW	Initial Force N (Kgf)	Final Force N (Kgf)
1	M3x0.5	1.5	10	1.0	0.8	0.4 (0.05)	2.9 (0.3)
2	M4x0.7	2.0	12	1.6	0.8	1.9 (0.2)	9.8 (1.0)
3	M5x0.8	3.0	20	2.0	1.5	3.9 (0.4)	19.6 (2.0)
4	M5x0.8	3.0	13	2.0	1.5	1.9 (0.2)	7.8 (0.8)
5	M5x0.8	3.0	20	2.0	1.5	1.9 (0.2)	9.8 (1.0)
6	M6x1.0	3.0	25	2.5	2.0	2.9 (0.3)	9.8 (1.0)
7	M6x1.0	3.0	25	2.5	2.0	7.8 (0.8)	29.4 (3.0)
8	M8x1.25	3.0	25	3.1	2.5	2.9 (0.3)	9.8 (1.0)
9	M8x1.25	3.0	25	3.1	2.5	7.8 (0.8)	29.4 (3.0)
10	M10x1.5	5.0	30	3.8	3.0	2.9 (0.3)	14.7 (1.5)
11	M10x1.5	5.0	30	3.8	3.0	9.8 (1.0)	49.0 (5.0)
12	M12x1.75	5.0	30	5.5	4.0	1.9 (0.2)	9.8 (1.0)
13	M12x1.75	5.0	30	5.5	4.0	9.8 (1.0)	49.0 (5.0)

Code: PS2

Series	M Thread	k mm	l mm	b mm	d Ø	SW	Initial Force N (Kgf)	Final Force N (Kgf)
14	M12x1.75	10	43	35	5.5	4	3.9 (0.4)	19.6 (2)
15	M12x1.75	10	43	35	5.5	4	6.8 (0.7)	39.2 (4)
16	M16x2.0	10	50	35	8	5	9.8 (1)	49.0 (5)
17	M16x2.0	10	50	35	8	5	19.6 (2)	98.0 (10)
18	M16x2.0	10	60	35	8	5	12.7 (1.3)	39.2 (4)
19	M16x2.0	10	60	35	8	5	26.4 (2.7)	78.4 (8)
20	M16x2.0	15	60	35	8	5	9.8 (1)	39.2 (4)
21	M16x2.0	15	60	35	8	5	14.7 (1.5)	78.4 (8)
22	M16x2.0	20	60	35	8	5	12.7 (1.3)	39.2 (4)
23	M16x2.0	20	85	35	8	5	16.6 (1.7)	78.4 (8)
24	M16x2.0	30	125	35	8	5	17.6 (1.8)	39.2 (4)
25	M16x2.0	30	125	35	8	5	19.6 (2)	78.4 (8)
26	M16x2.0	50	155	35	8	8	19.6 (2)	49.0 (5)
27	M16x2.0	50	155	35	8	8	29.4 (3)	98.0 (10)
28	M24x3.0	15	60	45	10	8	19.6 (2)	98.0 (10)
29	M24x3.0	15	60	45	10	8	39.2 (4)	196.1 (20)
30	M30x3.5	20	70	45	15	12	29.4 (3)	147.0 (15)
31	M30x3.5	20	70	45	15	12	49.0 (5)	294.1 (30)

* Blue products are medium force in the table.

* Red products are high force in the table.

Order: PS1. Series

Material: Case 1.7220
Pin: 1.1273 / HRC 36-40

Order: PS2. Series

Order Example:
PS2.14

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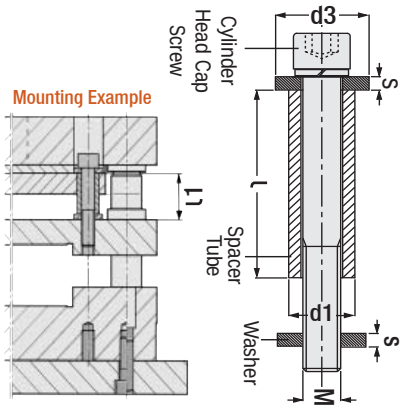
Spring and Spacer Unit Code: G71

Assembly of Spring and Spacer Unit:
Spring and Spacer Units are ground equally after mounted to punch retainer plate. When punches are ground due to abrasion, for loosing unit as 0.1 mm, the length of junction should adjust.
Note: This product is with o-ring and o-ring should be removed before mounting.

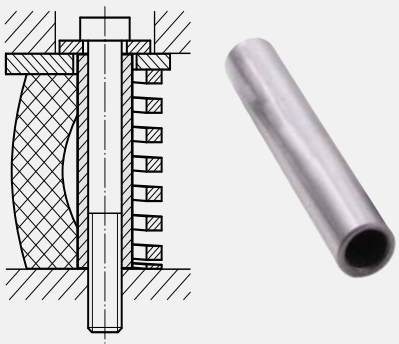


Code: G71

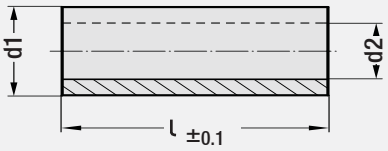
d1	l1	d3	l	s	M
13	33	18	29	4	M8 x50
	43		39		M8 x60
	53		49		M8 x70
	63		59		M8 x80
	73		69		M8 x90
15	33	20	29	4	M10 x60
	43		39		M10 x70
	53		49		M10 x80
	63		59		M10 x90
	73		69		M10 x100

Order: G71. d1x l1

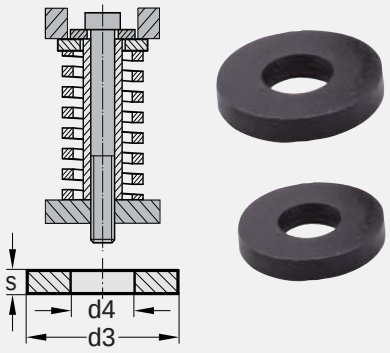
Material: 1.7131
Hardness: 58 ± 2 HRC



Spacer Tube Code: G71B



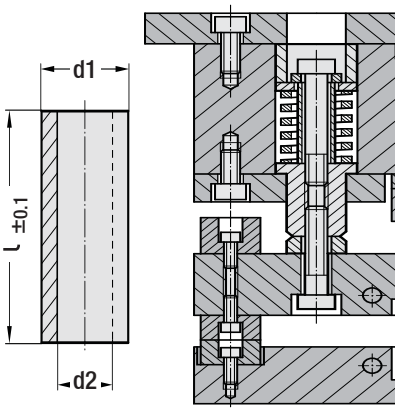
Order Code	d1	l	d2
G71B.1329	13	29	8.2
G71B.1339		39	8.2
G71B.1349		49	8.2
G71B.1359		59	8.2
G71B.1369		69	8.2
G71B.1529	15	29	10.2
G71B.1539		39	10.2
G71B.1549		49	10.2
G71B.1559		59	10.2
G71B.1569		69	10.2



Washer Code: G71P

Order Code	d3	d4	s
G71P.18	18	8.4	4
G71P.20	20	10.5	4

Spacer Tube Code: G71Y



Code: G71Y

d1	l	d2
10 Ø 20 Spring	20	6.5
	25	
	30	
	32	
	40	
	50	
	63	
	80	
	100	
12 Ø 25 Spring	20	8.5
	25	
	30	
	40	
	50	
	63	
	80	
	100	
	125	
	140	
16 Ø 32 Spring	30	11
	40	
	50	
	63	
	80	
	100	
	125	
	140	
	160	

d1	l	d2
20 Ø 40 Spring	30	13
	40	
	50	
	63	
	80	
	100	
	125	
	140	
	160	
	200	
25 Ø 50 Spring	40	17
	50	
	63	
	80	
	100	
	125	
	140	
	160	
	200	
	250	
38 Ø 63 Spring	63	25
	80	
	100	
	125	
	140	
	160	
	200	
	250	

Order: G71Y. d1x l

Material: 1.7131
Hardness: 58 ± 2 HRC

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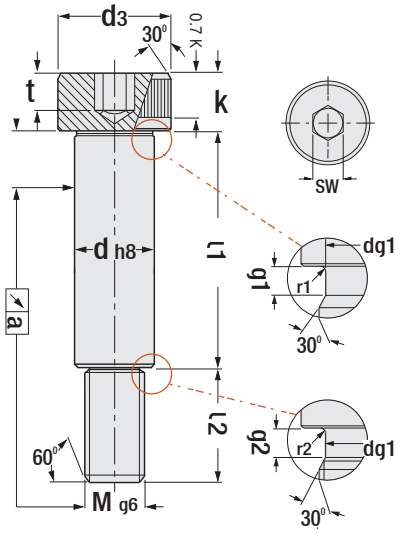
Code: G39

d	l1 (Js11)	M	d3	l2 (± 0.25)	k	SW
6	10 12 16 20 25 30 35 40 45 50 55 60	M5	d3: 10 g1 ±0.25 1.85 g2 ±0.15 1.80	L2: 9.5 r1 ±0.2 0.4 r2 ±0.15 0.5	k: 4.5 t: 2.4 dg1 ±0.1 5.52	3 Clamping Torque Nm: 7
8	10 12 16 20 25 30 35 40 45 50 55 60 65 70 80 90 100	M6	d3: 13 g1 ±0.25 1.85 g2 ±0.15 2.3	L2: 11 r1 ±0.2 0.6 r2 ±0.15 0.6	k: 5.5 t: 3.3 dg1 ±0.1 7.52	4 Clamping Torque Nm: 13
10	16 20 25 30 35 40 45 50 55 60 65 70 80 90 100	M8	d3: 16 g1 ±0.25 1.85 g2 ±0.15 2.6	L2: 13 r1 ±0.2 0.6 r2 ±0.15 0.7	k: 7 t: 4.2 dg1 ±0.1 9.52	5 Clamping Torque Nm: 32
12	16 20 25 30 35 40 45 50 55 60 65 70 80 90 100 120	M10	d3: 18 g1 ±0.25 1.85 g2 ±0.15 2.80	L2: 16 r1 ±0.2 0.8 r2 ±0.15 0.9	k: 9 t: 4.9 dg1 ±0.1 11.5	6 Clamping Torque Nm: 65
16	30 35 40 45 50 55 60 65 70 80 90 100 120	M12	d3: 24 g1 ±0.25 1.85 g2 ±0.15 3.8	L2: 18 r1 ±0.2 0.8 r2 ±0.15 1.0	k: 11 t: 6.3 dg1 ±0.1 15.5	8 Clamping Torque Nm: 120
20	40 45 50 55 60 65 70 80 90 100 120	M16	d3: 30 g1 ±0.25 2.65 g2 ±0.15 4.6	L2: 22 r1 ±0.2 1.0 r2 ±0.15 1.1	k: 14 t: 8.8 dg1 ±0.1 19.5	10 Clamping Torque Nm: 290
24	50 55 60 65 70 80 90 100 120	M20	d3: 36 g1 ±0.25 2.65 g2 ±0.15 5.4	L2: 27 r1 ±0.2 1.0 r2 ±0.15 1.3	k: 16 t: 10 dg1 ±0.1 23.5	12 Clamping Torque Nm: 500

Shoulder Screw

Code: G39

ISO 7379 / Class: 12.9



In Spring Use (steel / polyurethane spring):
For precise and secure placement in spring use, also suitable to setting position to injection mould plates. Our production is available in desired dimensions materials and lengths.

Spring working area: h8

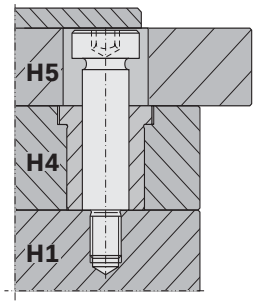
Yield stress: Rp = 1080 N / mm^2

Class: 12.9
* Heat treated
* High strength steel
* HRC 39 - 44
* Knurled head

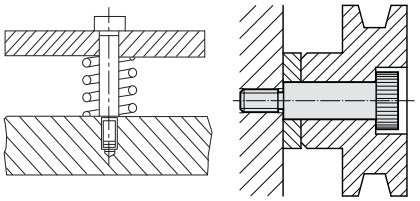
Impact test:
KCU 15 J Min.

Elasticity:
A = 8% Min.

Tensile stress:
Rm= 1200 N / mm^2



Mounting Example



Order: G39. M x d x l1

Order Example:
G39. M10 x 12 x 50

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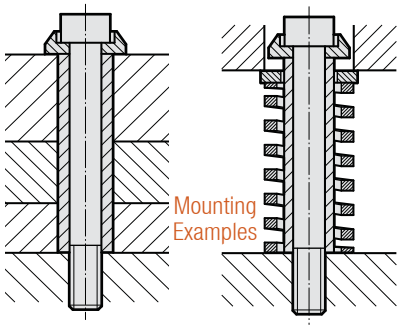
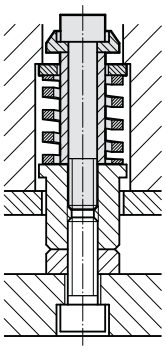
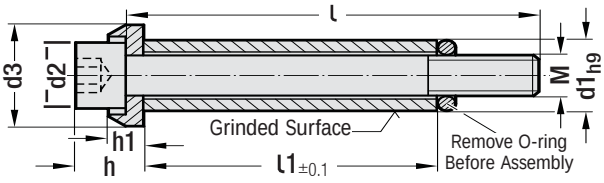
Code: G146

Spring and Spacer Unit







Spring and Spacer Unit: Since it is ground, it provides very precision length setting that can be adjusted. Different usage types can be created (reference: mounting examples).
External diameter is ground at h9 tolerance. It is with cylinder head cap screw. O-ring should be removed before mounting.
Tensile Force: 1200 -1300 n / mm²

Code: G146

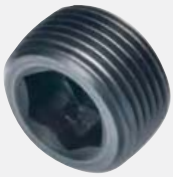
d1 Ø	M (g6)	l1 mm	l mm	d3 Ø	h mm	h1 mm
10	M6 d2: 10	20	35	15	10	5.5
		25	40			
		30	45			
		35	50			
		40	55			
		45	60			
		50	65			
		55	70			
		60	80			
		70	90			
		80	100			
		90	110			
12.5	M8 d2: 13	30	45	19	13	6.5
		35	50			
		40	55			
		45	60			
		50	65			
		55	70			
		60	80			
		70	90			
		80	100			
		90	110			
		100	120			
15	M10 d2: 16	30	50	23	15	7.5
		35	55			
		40	60			
		45	65			
		50	70			
		55	75			
		60	80			

d1 Ø	M (g6)	l1 mm	l mm	d3 Ø	h mm	h1 mm
15	M10 d2: 16	70	90	23	15	7.5
		80	100			
		90	110			
		100	120			
		120	140			
17.5	M12 d2: 18	40	60	27	18	9
		45	65			
		50	70			
		55	80			
		60	90			
		70	100			
		80	110			
		90	120			
		100	130			
		110	140			
		120	150			
		140	180			
23	M16 d2: 24	50	80	34	24	11
		60	90			
		70	100			
		80	110			
		90	120			
		100	130			
		110	140			
		120	150			
		140	180			
		150	180			
		160	200			

Order: G146. M x d1 x l1

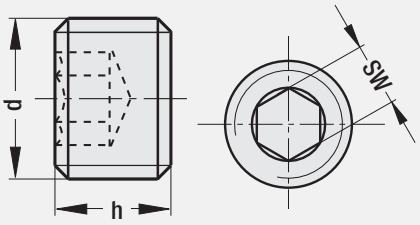
Order Example: G146. M10 x 15 x 80

Material: Cyl.Head Cap Screw
Tube: 1.7131 (58 HRC)

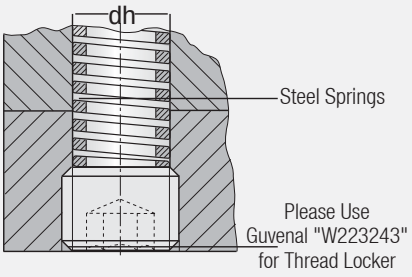


Code: G145

Compression Spring Set Screw



These products can be used as adjustable spring stoppers.
Spring tension can be adjusted from bottom plug (set screw) with allen without doing any dismantles process. Steel springs can be changed from bottom plug (set screw) slot without dismantling die / mould.
Open hole should be created instead of blind hole to place spring.



Code: G145

d (thread)	Spring Dia.	dh (slot)	h	SW
M12 x 1.5	10	10.5	10	6
M14 x 1.5	12.5	12.5	10	6
M18 x 1.5	16	16.5	10	8
M22 x 1.5	20	20.5	10	8
M28 x 1.5	25	26.5	12	10
M35 x 1.5	32	33.5	12	10
M42 x 1.5	40	40.5	12	10

Order: G145. d

Material: 1.0503 (C45)

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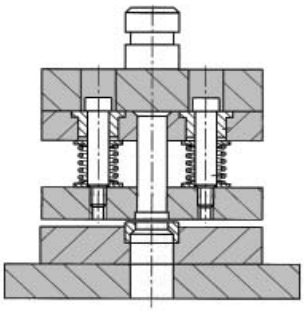
Code: YYH

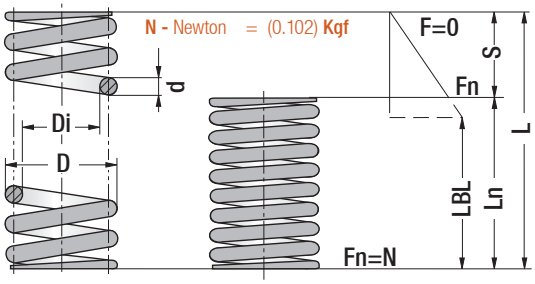
Round Wire Compression Spring
Light Duty & High Stroke



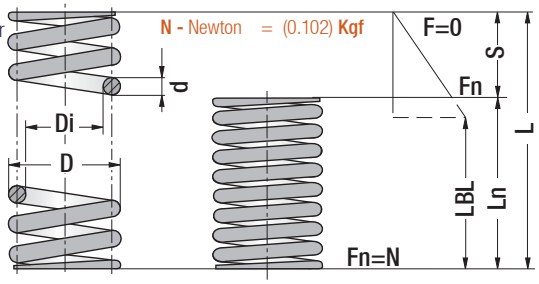
Pre-loading force and deviation should be determined by the designer.
Initially, 5 mm pre-loading should be applied.

Code: YYS

Round Wire Compression Spring
Standard Performance



D: Average outer diameter
Di: Slot diameter
d: Spring wire diameter
S: Total clamping
L: Free length
Ln: Length at load
LBL: Closed spring length
F: Force / Newton
Fn: Pressure force



These springs from spring steel as winding / with high tension heat treated are used in table data standards **DIN 2095** or optionally both inactive and oscillatory loads. Optionally, they can be used in cases that are posed due to severe, hard impacts and vibrant load or when there are high expectations from spring life. Both types have flattened, forged coils and their surface are homogenized with shot blasting process. All springs are supplied as lubricated.
All these springs can be produced in the desired lengths and diameters. Maximum working temperature: 200°C.

Code: YYH

D	L	Di	d	S	Fn	Ln	LBL
10	40	7.00	1.50	18.9	148	21.1	18.0
12	55	9.00	1.50	30.0	103	25.0	22.0
14	40	10.0	2.00	19.1	243	20.9	18.0
14	50	10.0	2.00	24.0	228	26.0	23.0
15	40	11.0	2.00	19.5	221	20.5	16.0
15	100	11.0	2.00	58.5	245	41.5	39.0
17	85	12.5	2.25	41.0	265	44.0	32.0
17.5	45	11.5	3.00	13.0	422	32.0	30.0
17.5	50	11.5	3.00	15.0	434	35.0	33.0
18	83	10.0	4.00	18.0	1198	65.0	62.0
19	35	11.0	4.00	5.0	697	30.0	28.0
19	90	10.0	4.50	17.0	1669	73.0	70.0
19.5	35	14.5	2.50	14.0	186	21.0	19.0
19.5	40	13.5	3.00	14.0	398	36.0	24.0
20.5	95	15.5	2.50	54.0	262	41.0	39.0
21	40	13.0	4.00	11.0	1148	29.0	27.0
21.5	45	15.5	3.00	20.0	436	25.0	23.0
21.5	50	13.5	4.00	15.0	1099	35.0	32.0
22	45	16.0	3.00	21.7	387	23.3	19.5
22	70	16.0	3.00	29.4	387	40.6	28.5
22	100	16.0	3.00	38.7	387	61.3	40.5
23	130	16.0	3.50	43.4	579	86.6	59.5
23	160	16.0	3.50	54.6	579	105.4	73.3
23	190	16.0	3.50	64.8	579	125.2	86.0
24	220	16.0	4.00	62.4	765	157.6	112.0
24	250	16.0	4.00	71.6	765	178.4	128.0
25	24	17.0	4.00	7.00	790	17.0	16.0
27.8	70	13.8	7.00	8.00	3014	62.0	62.0
30	70	22.0	4.00	32.5	739	37.5	32.0
30	150	17.0	6.50	34.0	3142	116.0	107.0

Code: YYS

D	L	Di	d	S	Fn	Ln	LBL
13	55	10.0	1.50	25.2	112	25.3	12.0
15	50	11.0	2.00	21.2	250	25.0	9.50
16	40	12.0	2.00	17.0	220	20.0	7.00
18	85	13.4	2.30	37.4	260	41.0	14.0
19	50	13.0	3.00	13.6	480	34.0	8.50
20.5	90	11.5	4.50	15.0	1714	72.4	4.00
21	40	15.0	3.00	11.9	450	26.0	5.50
22	95	17.0	2.50	41.5	200	46.2	17.0
23	50	15.0	4.00	13.3	1160	34.4	6.50
26.5	24	18.5	4.00	6.10	960	16.8	2.00
30	70	16.0	7.00	9.30	3750	59.0	8.00
32	70	24.0	4.00	28.9	822	36.0	6.00
34	125	22.0	6.00	27.2	2150	93.0	11.5
44	130	28.0	8.00	30.6	3895	94.0	10.0
48	67	28.0	10.0	7.60	5760	58.0	3.50
49	50	32.0	8.50	9.30	3707	39.0	2.50
58	50	42.0	8.00	11.9	2117	36.0	2.50
63	180	41.0	11.0	36.6	5203	137	10.0

Order: YYH. D x L

Material: Spring Steel, Hardened.

Order: YYS. D x L

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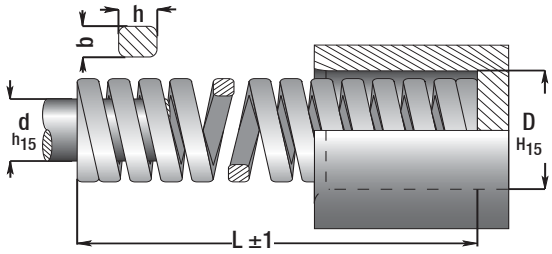
Wire Die & Mould Springs

ISO 10243 / Rectangular Section
Round Section



Technical Specifications and Production Characteristics

Research & Development ongoing in parallel of quality assurance procedures in compliance with ISO 9001, ensure high sensitivity, durability and reliability criteria. Continuous improvement in our springs performance is monitored directly in the factory through comparative and destructive tests. The excellences of these products are verified with the increasing number of the customers selecting our springs in their dies and moulds.

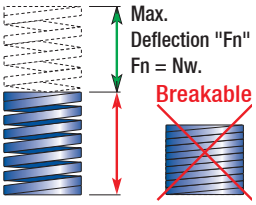
The following main characteristics show the superiority of our springs:

* Special profile / section usage to increase steel characteristics.
* Usage of special spring winding machine.
* Usage of special heat treatment developed by especially spring production.
* Maximum care showing grinding and closing of spring ends in order to warranty optimum vertical and parallel acceleration.
* All springs are coil shaped in order to warranty significant decrease of load losses in working conditions.
* Special remoulding stroke methods in order to increase resistance against metal abrasion.
* Special pretreatment and powder coating applications of our springs in order to ensure the best protection, preservation and completion.
* Intensive control performed during production and final stage in order to warranty dimensional compliance and precision.
* **Spring load coefficient tolerances - nominal rate at all springs is +10%.**

Values & Descriptions of the Table on the Spring Pages

N - Newton = (0.102) **Kgf** **daN** -10 Newton = (1.020) **Kgf**

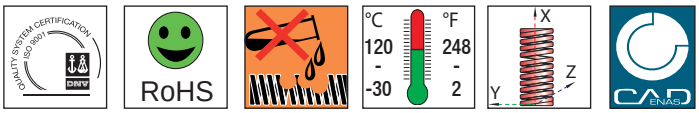
Spring Dimensions		Length	Load	Spring Capacity / Recommended Deflection - Criteria			
D	d	L	LOAD COEFFICIENT R (±10 %) Required load for 1.0 mm deflection	%..A Long spring life 3.000.000	%..B Minimum deflection 1.500.000	%..C Maximum deflection	%..D Full deflection
b x h							
mm	mm	mm	N / mm	mm x N	mm x N	mm x N	mm x N



Code	Colour Series	Wire Section	Colour	Load	Max. Deflection
AYY			Light Green	Extra Light	at 50 % length
YY	ISO 10243		Green	Light	at 40 % length
MY	ISO 10243		Blue	Medium	at 37.5 % length
KY	ISO 10243		Red	Heavy	at 30 % length
SY	ISO 10243		Yellow	Extra Heavy	at 25 % length
GY			Silver	Ultra Heavy	at 15 % length
TVY			Green	Light	at 40 % length
TBM			Blue	Medium	at 37.5 % length
TRK			Red	Heavy	at 30 % length

Force = Deflection (A.B.C) x Load Coefficient (R): Load x Newton / Kg.

* Please select springs carefully during the design period.
* The bigger the guide the longer the lifetime. It is essential to always use guide pin for all springs with a free length / diameter ratio exceeding x3.5.
* Ensure support and perpendicularity of springs to the compression area.
* If possible, use long springs at lower loadings (preloading should be increased properly).
* Please apply minimum preloading of 5% of the free length.
* Never apply pressure to the springs over maximum stroke.
* Tool maintenance can vary the original working deflection of the springs. Always check and re-set the original working stroke. High risk of early failures or damages of the die / mould.
* Please protect springs from abrasive activities.
* In the temperature range of 120 ÷ 250°C consider a loss between 1 to 2% of the load every 40°C.
* Pleases don't change a spring at a time, instead of this, use programmed maintenance procedure that all springs can be changed at the same time.
* Any alteration on the surface of the springs (cutting, grinding, scratches, etc.) may significantly reduce the lifetime. Always replace the damaged springs with new ones.
* Shoulder screw (Guvenal code: G39) should be used in usage of precision mechanical spring.



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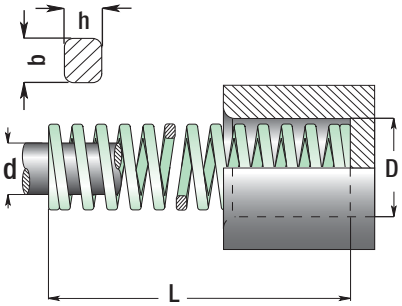
Extra Light Load Spring Code: AYY

Colour: Light Green



Especially suitable to injection mould systems.

Long Life Usage of Wire Springs:
It depends on the quality of spring material, working conditions and design conditions that are used. In all applications using springs, preloading and compression rates specified for long life usage should be adhered. Appropriate tension values can be found at the loading value table and tension / spring life table.

For long life usage, shear stress on the basis of oscillation should be maximum 800 N /mm². 400 N /mm² of this value will be used by the stress variation on the basis of spring oscillation.

By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.
Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

Order: **AYY.** D x L

Usage: It is compatible with injection mould systems and equipment designs.

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 30	B Min. Deflect. % 40	C Max. Deflect. % 50	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
10	5.0	25	8.5	7.5	10.0	11.2	14.1
		32	6.5	9.6	12.8	14.4	18.5
		38	5.5	11.4	15.2	17.1	22.5
		44	4.8	13.2	17.6	19.8	23.2
		51	4.2	15.3	20.4	22.9	27.5
		64	3.3	19.2	25.6	28.8	34.0
		76	2.7	22.8	30.4	34.2	40.4
1.65x1.0		305	0.65	91.5	122	137.2	172
13	6.3	25	16	7.5	10.0	11.2	13.6
		32	12.2	9.6	12.8	14.4	17.9
		38	10.3	11.4	15.2	17.1	21.9
		44	8.7	13.2	17.6	19.8	26.4
		51	7.5	15.3	20.4	22.9	29.6
		64	5.8	19.2	25.6	28.8	37.1
		76	4.7	22.8	30.4	34.2	44.9
		89	4.1	26.7	35.6	40.0	53.2
		102	3.6	30.6	40.8	45.9	59.4
2.3x1.3		305	1.25	91.5	122	137.2	186
16	8	25	20.2	7.5	10	11.2	14.0
		32	16	9.6	12.8	14.4	18.7
		38	12.3	11.4	15.2	17.1	22.0
		44	10.6	13.2	17.6	19.8	26.1
		51	8.9	15.3	20.4	22.9	30.4
		64	7	19.2	25.6	28.8	38.8
		76	5.8	22.8	30.4	34.2	46.4
		89	4.8	26.7	35.6	40.0	54.2
		102	4.1	30.6	40.8	45.9	62.4
		115	3.9	34.5	46.0	51.7	70.6
3.05x1.5		305	1.5	91.5	122	137	190
20	10	25	29.4	7.50	10.0	12.5	13.9
		32	22.6	9.60	12.8	16.0	18.2
		38	18.6	11.4	15.2	19.0	22.0
		44	15.7	13.2	17.6	22.0	25.8
		51	13.7	15.3	20.4	25.5	30.3
		64	11.3	19.2	25.6	32.0	38.9
		76	9.80	22.8	30.4	38.0	47.0
		89	8.30	26.7	35.6	44.5	55.7
		102	7.40	30.6	40.8	51.0	64.2
		115	6.40	34.5	46.0	57.5	72.9
		127	5.90	38.1	50.8	63.5	80.7
		139	5.40	41.7	55.6	69.5	88.4
		152	4.90	45.6	60.8	76.0	96.7
4.3x1.7		305	2.50	91.5	122	153	196
25	12.5	25	53.9	7.50	10.0	12.5	12.9
		32	42.2	9.60	12.8	16.0	17.2
		38	35.8	11.4	15.2	19.0	20.7
		44	31.4	13.2	17.6	22.0	24.4
		51	27.0	15.3	20.4	25.5	28.5
		64	21.6	19.2	25.6	32.0	36.5
5.4x2.2		76	18.1	22.8	30.4	38.0	43.9

Extra Light Load Spring Code: AYY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 30	B Min. Deflect. % 40	C Max. Deflect. % 50	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
25	12.5	102	13.2	30.6	40.8	51.0	59.3
		115	11.8	34.5	46.0	57.5	67.2
		127	10.6	38.1	50.8	63.5	74.4
		139	9.60	41.7	55.6	69.5	81.6
		152	8.80	45.6	60.8	76.0	89.5
		178	7.60	53.4	71.2	89.0	105
		203	6.70	60.9	81.2	102	121
5.4x2.2		305	4.40	91.5	122.0	153	182
32	16	38	43.1	11.4	15.2	19.0	19.9
		44	37.3	13.2	17.6	22.0	23.5
		51	32.4	15.3	20.4	25.5	27.6
		64	25.5	19.2	25.6	32.0	35.2
		76	21.6	22.8	30.4	38.0	42.4
		89	18.1	26.7	35.6	44.5	50.0
		102	15.7	30.6	40.8	51.0	57.6
		115	14.2	34.5	46.0	57.5	65.5
		127	12.7	38.1	50.8	63.5	72.5
		139	11.6	41.7	55.6	69.5	79.4
		152	10.6	45.6	60.8	76.0	87.3
		178	9.00	53.4	71.2	89.0	103
		203	7.80	60.9	81.2	102	118
		254	6.40	76.2	102.0	127.0	148
6.5x2.6		305	5.30	91.5	122.0	153	178
40	20	51	48.1	15.3	20.4	25.5	28.0
		64	39.2	19.2	25.6	32.0	36.2
		76	33.3	22.8	30.4	38.0	43.7
		89	28.4	26.7	35.6	44.5	51.7
		102	24.5	30.6	40.8	51.0	59.8
		115	22.1	34.5	46.0	57.5	67.9
		127	19.6	38.1	50.8	63.5	75.2
		139	17.7	41.7	55.6	69.5	82.4
		152	16.2	45.6	60.8	76.0	90.6
		178	13.7	53.4	71.2	89.0	106
		203	12.3	60.9	81.2	101	122
		254	9.80	76.2	102.0	127.0	154
8.0x3.4		305	8.30	91.5	122.0	152	185
50	25	64	86.3	19.2	25.6	32.0	35.1
		76	70.6	22.8	30.4	38.0	42.2
		89	59.8	26.7	35.6	44.5	50.3
		102	52.0	30.6	40.8	51.0	58.4
		115	46.1	34.5	46	57.5	66.1
		127	42.2	38.1	50.8	63.5	73.8
		139	38.2	41.7	55.6	69.5	80.9
		152	34.3	45.6	60.8	76.0	89.0
		178	29.4	53.4	71.2	89.0	105.0
		203	25.5	60.9	81.2	101	121.0
		254	20.6	76.2	102.0	127.0	152.0
10.5x4.1		305	17.2	91.5	122.0	152	184.0

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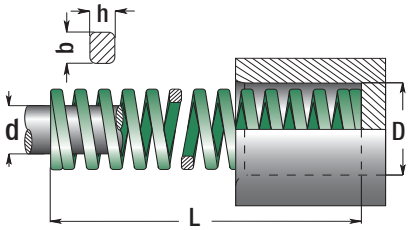
Light Load Spring

Code: YY

ISO 10243 / Colour: Green



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 40	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
10	5	25	10.0	6.30	7.50	10.0	13.5
		32	8.50	8.00	9.60	12.8	17.5
		38	6.80	9.50	11.4	15.2	20.8
		44	6.00	11.0	13.2	17.6	23.9
		51	5.00	12.8	15.3	20.4	28.9
		64	4.30	16.0	19.2	25.6	36.1
		76	3.20	19.0	22.8	30.4	43.2
1.7x1.1		305	1.10	76.3	91.5	122	178
13	6.3	25	17.9	6.30	7.50	10.0	13.2
		32	16.4	8.00	9.60	12.8	18.0
		38	13.6	9.50	11.4	15.2	21.0
		44	12.1	11.0	13.2	17.6	24.0
		51	11.4	12.8	15.3	20.4	28.7
		64	9.30	16.0	19.2	25.6	35.8
		76	7.10	19.0	22.8	30.4	42.7
		89	5.40	22.3	26.7	35.6	50.4
		102	4.10	25.5	30.6	40.8	58.4
2.4x1.4		305	1.40	76.3	91.5	122	172
16	8	25	23.4	6.3	7.5	10.0	12.6
		32	22.9	8.0	9.6	12.8	16.4
		38	19.3	9.5	11.4	15.2	19.7
		44	17.1	11.0	13.2	17.6	22.5
		51	15.7	12.8	15.3	20.4	26.3
		64	10.7	16.0	19.2	25.6	33.3
		76	10.0	19.0	22.8	30.4	40.2
		89	8.60	22.3	26.7	35.6	47.6
		102	7.80	25.5	30.6	40.8	55.4
		115	6.60	28.8	34.5	46.0	60.8
3.2x1.5		305	2.50	76.3	91.5	122	165
20	10	25	55.8	6.3	7.5	10.0	12.1
		32	45.0	8.0	9.6	12.8	15.3
		38	33.3	9.5	11.4	15.2	18.9
		44	30.0	11.0	13.2	17.6	21.5
		51	24.5	12.8	15.3	20.4	25.0
		64	20.0	16.0	19.2	25.6	31.1
		76	16.0	19.0	22.8	30.4	37.3
		89	14.0	22.3	26.7	35.6	44.5
		102	12.0	25.5	30.6	40.8	51.1
		115	10.9	28.8	34.5	46.0	58.2
		127	9.50	31.8	38.1	50.8	64.9
		139	8.40	35.0	42.0	56.0	71.5
		152	7.50	38.0	45.6	60.8	78.8
4 x 2.1		305	4.00	76.3	91.5	122	157
25	12.5	25	100	6.3	7.5	10.0	11.9
		32	80.3	8.0	9.6	12.8	16.0
		38	62.0	9.5	11.4	15.2	18.3
		44	52.9	11.0	13.2	17.6	21.4
		51	44.0	12.8	15.3	20.4	24.9
		64	35.2	16.0	19.2	25.6	31.4
		76	28.0	19.0	22.8	30.4	37.5
		89	24.0	22.3	26.7	35.6	43.5
		102	21.1	25.5	30.6	40.8	51.1
		115	18.7	28.8	34.5	46.0	58.1
		127	16.7	31.8	38.1	50.8	64.1
		139	15.3	35.0	42.0	56.0	70.4
		152	14.0	38.0	45.6	60.8	77.1
		178	12.5	44.5	53.4	71.2	93.1
		203	10.4	50.8	60.9	81.2	103
5.4x2.7		305	7.00	76.3	91.5	122	156
32	16	38	94.0	9.5	11.4	15.2	18.3
		44	79.5	11.0	13.2	17.6	21.5
		51	67.0	12.8	15.3	20.4	25.5
		64	53.0	16.0	19.2	25.6	31.9

Light Load Spring

Code: YY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 40	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
32	16	76	44.0	19.0	22.8	30.4	38.6
		89	37.2	22.3	26.7	35.6	46.5
		102	32.0	25.5	30.6	40.8	53.2
		115	29.0	28.8	34.5	46.0	60.0
		127	25.0	31.8	38.1	50.8	66.7
		139	23.0	35.0	42.0	56.0	71.8
		152	21.5	38.0	45.6	60.8	78.5
		178	18.2	44.5	53.4	71.2	94.4
		203	15.8	50.8	60.9	81.2	107
		254	12.5	63.5	76.2	102.0	136
6.8x3.3		305	10.3	76.3	91.5	122.0	163
40	20	51	92.0	12.8	15.3	20.4	25.5
		64	73.0	16.0	19.2	25.6	31.4
		76	63.0	19.0	22.8	30.4	37.8
		89	51.0	22.3	26.7	35.6	44.3
		102	43.0	25.5	30.6	40.8	50.7
		115	39.6	28.8	34.5	46.0	58.1
		127	37.0	31.8	38.1	50.8	64.6
		139	32.0	35.0	42.0	56.0	70.1
		152	28.0	38.0	45.6	60.8	76.6
		178	25.2	44.5	53.4	71.2	90.4
		203	22.7	50.8	60.9	81.2	102
		254	17.0	63.5	76.2	102.0	129
8.1x4		305	14.8	76.3	91.5	122.0	156
50	25	64	156.0	16.0	19.2	25.6	31.0
		76	125.0	19.0	22.8	30.4	37.2
		89	109.0	22.3	26.7	35.6	43.6
		102	94.0	25.5	30.6	40.8	50.3
		115	81.0	28.8	34.5	46.0	58.1
		127	71.0	31.8	38.1	50.8	63.7
		139	66.5	35.0	42.0	56.0	69.5
		152	60.0	38.0	45.6	60.8	76.5
		178	52.0	44.5	53.4	71.2	91.9
		203	44.0	50.8	60.9	81.2	105
		254	35.0	63.5	76.2	102	131
10.9x5.3		305	28.5	76.3	91.5	122	155
63	38	76	189.0	19.0	22.8	30.4	36.5
		89	158.0	22.3	26.7	35.6	43.4
		102	131.0	25.5	30.6	40.8	49.7
		115	116.0	28.8	34.5	46.0	55.6
		127	103.0	31.8	38.1	50.8	62.7
		152	84.3	38.0	45.6	60.8	77.1
		178	71.5	44.5	53.4	71.2	92.2
		203	61.7	50.8	60.9	81.2	103
		254	47.0	63.5	76.2	102	130
11x7.8		305	38.2	76.3	91.5	122	157

Order: **YY. D x L**

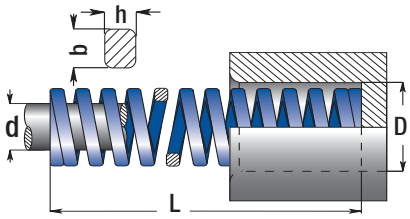
Usage: It is compatible with injection mould systems and equipment designs.

ООО "ВИВТЕХ" 127254, Москва, ул. Руставели д. 14, стр. 6 +7 (495) 755-91-45 info@vivtech.ru www.vivtech.ru

Medium Load Spring

Code: MY

ISO 10243 / Colour: Blue



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
10	5	25	16.0	6.30	7.50	9.40	10.2
		32	13.0	8.00	9.60	12.0	14.2
		38	11.9	9.50	11.4	14.3	16.8
		44	10.3	11.0	13.2	16.5	19.4
		51	8.90	12.8	15.3	19.1	23.4
		64	7.50	16.0	19.2	24.0	28.2
		76	5.30	19.0	22.8	28.5	34.2
1.9X1.3		305	1.60	76.3	91.5	114	134
13	6.3	25	30.0	6.30	7.50	9.40	11.9
		32	24.8	8.00	9.60	12.0	16.2
		38	21.4	9.50	11.4	14.3	18.7
		44	18.5	11.0	13.2	16.5	21.3
		51	15.5	12.8	15.3	19.1	25.6
		64	12.1	16.0	19.2	24.0	32.4
		76	10.2	19.0	22.8	28.5	39
		89	8.40	22.3	26.7	33.4	45.9
		102	6.30	25.5	30.6	38.3	52.3
2.5X1.5		305	2.10	76.3	91.5	114	153
16	8	25	49.4	6.30	7.50	9.40	10.5
		32	37.1	8.00	9.60	12.0	13.2
		38	33.9	9.50	11.4	14.3	17.2
		44	30.0	11.0	13.2	16.5	19.4
		51	26.4	12.8	15.3	19.1	24.2
		64	20.5	16.0	19.2	24.0	29.2
3.2x2.0		76	17.8	19.0	22.8	28.5	36.3
16	8	89	15.2	22.3	26.7	33.4	41.7
		102	13.5	25.5	30.6	38.3	48.9
		115	11.8	28.8	34.5	43.1	53.1
3.2x2.0		305	4.8	76.3	91.5	114	142
20	10	25	98.0	6.30	7.50	9.40	10.5
		32	72.6	8.00	9.60	12.0	13.9
		38	56.0	9.50	11.4	14.3	16.6
		44	47.5	11.0	13.2	16.5	18.8
		51	41.7	12.8	15.3	19.1	23.1
		64	32.3	16.0	19.2	24.0	27.5
		76	25.1	19.0	22.8	28.5	33.8
		89	22.0	22.3	26.7	33.4	39.7
		102	19.8	25.5	30.6	38.3	47.3
		115	18.1	28.8	34.5	43.1	52.5
		127	16.6	31.8	38.1	47.6	56.9
		139	15.1	35.0	42.0	52.5	62.1
		152	13.2	38.0	45.6	57.0	67.6
4.1X2.4		305	6.1	76.3	91.5	114	143
25	12.5	25	147	6.30	7.50	9.4	10.2
		32	118	8.00	9.60	12.0	13.7
		38	93.0	9.50	11.4	14.3	15.7
		44	80.8	11.0	13.2	16.5	18.2
		51	68.6	12.8	15.3	19.1	21.7
		64	53.0	16.0	19.2	24.0	26.0
		76	43.2	19.0	22.8	28.5	32.3
		89	38.2	22.3	26.7	33.4	38.0
		102	33.0	25.5	30.6	38.3	43.0
		115	28.0	28.8	34.5	43.1	48.6
		127	25.9	31.8	38.1	47.6	53.7
		139	23.2	35.0	42.0	52.5	59.4
		152	20.8	38.0	45.6	57.0	63.8
		178	17.8	44.5	53.4	66.8	76.6
		203	15.8	50.8	60.9	76.1	88.4
5.4x3.3		305	10.2	76.3	91.5	114	135
32	16	38	185	9.50	11.4	14.3	16.3
		44	158	11.0	13.2	16.5	18.9
		51	134	12.8	15.3	19.1	23.1
		64	99.0	16.0	19.2	24.0	28.5
		76	80.5	19.0	22.8	28.5	34.2
		89	69.1	22.3	26.7	33.4	40.4
		102	58.8	25.5	30.6	38.3	48.0
		115	51.5	28.8	34.5	43.1	54.3
6.8x4.0		127	44.8	31.8	38.1	47.6	59.2

Medium Load Spring

Code: MY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
32	16	139	42.3	35.0	42.0	52.5	65.3
		152	37.8	38.0	45.6	57.0	73.0
		178	32.5	44.5	53.4	66.8	84.5
		203	28.9	50.8	60.9	76.1	96.9
		254	21.4	63.5	76.2	95.3	121
6.8x4.0		305	18.3	76.3	91.5	114	147
40	20	51	182	12.8	15.3	19.1	21.4
		64	140	16.0	19.2	24.0	26.8
		76	108	19.0	22.8	28.5	32.7
		89	90.7	22.3	26.7	33.4	39.0
		102	81.0	25.5	30.6	38.3	44.1
		115	71.8	28.8	34.5	43.1	50.6
		127	62.7	31.8	38.1	47.6	55.9
		139	57.5	35.0	42.0	52.5	61.8
		152	51.6	38.0	45.6	57.0	67.5
		178	44.1	44.5	53.4	66.8	77.2
		203	36.7	50.8	60.9	76.1	91.8
		254	30.1	63.5	76.2	95.3	113
8.2X4.7		305	24.6	76.3	91.5	114	138
50	25	64	209	16.0	19.2	24.0	28.2
		76	168	19.0	22.8	28.5	34.9
		89	140	22.3	26.7	33.4	39.2
		102	119	25.5	30.6	38.3	47.3
		115	106	28.8	34.5	43.1	52.6
		127	97.0	31.8	38.1	47.6	59.8
		139	87.0	35.0	42.0	52.5	65.1
		152	80.0	38.0	45.6	57.0	70.8
		178	69.5	44.5	53.4	66.8	84.2
		203	59.8	50.8	60.9	76.1	96.5
		229	50.9	57.3	68.7	85.9	108
		254	43.9	63.5	76.2	95.3	122
11x5.8		305	38.6	76.3	91.5	114	147
63	38	76	312	19.0	22.8	28.5	30.7
		89	260	22.3	26.7	33.4	36.5
		102	221	25.5	30.6	38.3	43.6
		115	187	28.8	34.5	43.1	48.9
		127	168	31.8	38.1	47.6	54.2
		152	136	38.0	45.6	57.0	65.7
		178	114	44.5	53.4	66.8	76.5
		203	100	50.8	60.9	76.1	88.0
		229	89.2	57.3	68.7	85.9	104
		254	78.4	63.5	76.2	95.3	112
11.5x9.1		305	64.7	76.3	91.5	114	134

Order: **MY.** D x L

Usage: It is compatible with injection mould / die systems and equipment designs.

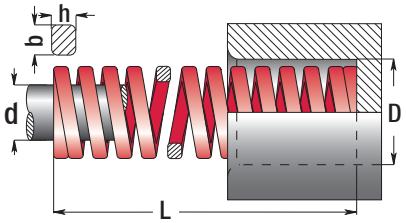
Order Example:
MY. 40 x 89

ООО "ВИВТЕХ" 127254, Москва, ул. Руставели д. 14, стр. 6 +7 (495) 755-91-45 info@vivtech.ru www.vivtech.ru

Heavy Load Spring

Code: KY

ISO 10243 / Colour: Red



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 20	B Min. Deflect. % 25	C Max. Deflect. % 30	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
10	5	25	22.1	5.00	6.30	7.50	9.20
		32	17.5	6.40	8.00	9.60	12.1
		38	17.1	7.60	9.50	11.4	13.2
		44	15.0	8.80	11.0	13.2	15.1
		51	12.8	10.2	12.8	15.3	19.5
		64	10.7	12.8	16.0	19.2	21.8
		76	7.5	15.2	19.0	22.8	27.9
1.9x1.5		305	2.1	61.0	76.3	91.5	127
13	6.3	25	42.1	5.00	6.30	7.50	9.80
		32	33.2	6.40	8.0	9.60	13.6
		38	29.3	7.60	9.50	11.4	14.6
		44	24.6	8.80	11.0	13.2	18.1
		51	19.6	10.2	12.8	15.3	22.3
		64	15.0	12.8	16.0	19.2	27.3
		76	13.2	15.2	19.0	22.8	33.1
		89	11.4	17.8	22.3	26.7	38.9
		102	8.40	20.4	25.5	30.6	43.8
2.4x1.9		305	2.80	61.0	76.3	91.5	140

Order: **KY.** D x L

Usage: It is compatible with die systems and machine equipment designs.

Heavy Load Spring

Code: KY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 20	B Min. Deflect. % 25	C Max. Deflect. % 30	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
16	8	25	75.7	5.00	6.30	7.50	8.40
		32	52.8	6.40	8.00	9.60	10.5
		38	48.5	7.60	9.50	11.4	13.6
		44	42.8	8.80	11.0	13.2	15.9
		51	37.1	10.2	12.8	15.3	18.9
		64	30.3	12.8	16.0	19.2	24.9
		76	25.7	15.2	19.0	22.8	29.2
		89	21.7	17.8	22.3	26.7	34.5
		102	19.3	20.4	25.5	30.6	39.1
		115	15.7	23.0	28.8	34.5	44.0
3.1x2.5		305	7.10	61.0	76.3	91.5	104
20	10	25	216	5.00	6.30	7.50	8.30
		32	168	6.40	8.00	9.60	10.9
		38	129	7.60	9.50	11.4	12.5
		44	112	8.80	11.0	13.2	15.0
		51	94.0	10.2	12.8	15.3	17.6
		64	72.1	12.8	16.0	19.2	22.6
		76	59.7	15.2	19.0	22.8	27.5
		89	50.5	17.8	22.3	26.7	31.7
		102	44.2	20.4	25.5	30.6	37.5
		115	38.4	23.0	28.8	34.5	42.6
		127	34.1	25.4	31.8	38.1	45.5
		139	31.0	28.0	35.0	42.0	50.1
		152	28.2	30.4	38.0	45.6	55.8
4 x 3.3		305	15.0	61.0	76.3	91.5	114
25	12.5	25	375	5.00	6.30	7.50	8.5
		32	297	6.40	8.00	9.60	11.0
		38	219	7.60	9.50	11.4	12.6
		44	187	8.80	11.0	13.2	14.8
		51	156	10.2	12.8	15.3	17.9
		64	123	12.8	16.0	19.2	23.1
		76	99.0	15.2	19.0	22.8	26.3
		89	84.0	17.8	22.3	26.7	30.5
		102	73.0	20.4	25.5	30.6	37.3
		115	65.0	23.0	28.8	34.5	41.9
		127	57.7	25.4	31.8	38.1	46.2
		139	52.7	28.0	35.0	42.0	49.3
		152	47.8	30.4	38.0	45.6	55.7
		178	41.0	35.6	44.5	53.4	65.1
		203	35.8	40.6	50.8	60.9	74.5
5.5x4.2		305	22.9	61.0	76.3	91.5	110
32	16	38	388	7.60	9.5	11.4	12.5
		44	324	8.80	11.0	13.2	14.9
		51	272	10.2	12.8	15.3	17.8
7.1x5.4		64	212	12.8	16.0	19.2	22.4

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 20	B Min. Deflect. % 25	C Max. Deflect. % 30	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
32	16	76	172	15.2	19.0	22.8	26.1
		89	141	17.8	22.3	26.7	30.8
		102	122	20.4	25.5	30.6	36.8
		115	107	23.0	28.8	34.5	41.4
		127	93.0	25.4	31.8	38.1	44.4
		139	86.0	28.0	35.0	42.0	48.5
		152	78.0	30.4	38.0	45.6	54.8
		178	67.2	35.6	44.5	53.4	63.6
		203	59.1	40.6	50.8	60.9	72.5
		254	46.4	50.8	63.5	76.2	92.8
7.1x5.4		305	38.0	61.0	76.3	91.5	112
40	20	51	350	10.2	12.8	15.3	17.0
		64	269	12.8	16.0	19.2	21.9
		76	219	15.2	19.0	22.8	26.7
		89	190	17.8	22.3	26.7	31.3
		102	163	20.4	25.5	30.6	37.1
		115	142	23.0	28.8	34.5	41.0
		127	128	25.4	31.8	38.1	46.5
		139	115	28.0	35.0	42.0	53.1
		152	105	30.4	38.0	45.6	56.1
		178	89.0	35.6	44.5	53.4	67.4
		203	77.0	40.6	50.8	60.9	76.2
		254	61.0	50.8	63.5	76.2	96.2
8.4x6.2		305	51.0	61.0	76.3	91.5	115
50	25	64	413	12.8	16.0	19.2	22.4
		76	339	15.2	19.0	22.8	26.5
		89	288	17.8	22.3	26.7	31.5
		102	245	20.4	25.5	30.6	37.6
		115	215	23.0	28.8	34.5	42.7
		127	192	25.4	31.8	38.1	47.5
		139	168	28.0	35.0	42.0	51.8
		152	154	30.4	38.0	45.6	57.8
		178	134	35.6	44.5	53.4	68.5
		203	117	40.6	50.8	60.9	77.6
		254	89.0	50.8	63.5	76.2	97.9
11x7.6		305	73.0	61.0	76.3	91.5	121
63	38	76	618	15.2	19.0	22.8	24.7
		89	515	17.8	22.3	26.7	30.0
		102	438	20.4	25.5	30.6	35.1
		115	370	23.0	28.8	34.5	37.5
		127	333	25.4	31.8	38.1	45.9
		152	269	30.4	38.0	45.6	56.5
		178	226	35.6	44.5	53.4	66.8
		203	198	40.6	50.8	60.9	78.8
		254	155	50.8	63.5	76.2	102
11.6x12.3		305	128	61.0	76.3	91.5	122

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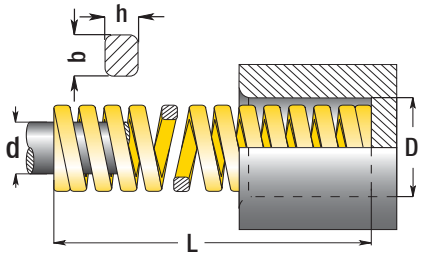
Extra Heavy Load Spring Code: SY

ISO 10243 / Colour: Yellow



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 17	B Min. Deflect. % 20	C Max. Deflect. % 25	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
10	5	25	36.8	4.30	5.00	6.30	7.70
		32	27.9	5.40	6.40	8.00	10.6
		38	23.7	6.50	7.60	9.50	12.6
		44	19.2	7.50	8.80	11.0	13.8
		51	16.5	8.70	10.2	12.8	16.2
		64	13.2	10.9	12.8	16.0	20.4
		76	10.9	12.9	15.2	19.0	25.2
1.9X1.6		305	2.60	51.9	61.0	76.3	111
13	6.3	25	58.5	4.30	5.00	6.30	8.10
		32	43.9	5.40	6.40	8.00	9.90
		38	36.0	6.50	7.60	9.50	12.9
		44	30.3	7.50	8.80	11.0	14.1
		51	26.2	8.70	10.2	12.8	17.4
		64	21.2	10.9	12.8	16.0	21.0
		76	17.1	12.9	15.2	19.0	26.4
		89	14.5	15.1	17.8	22.3	31.5
		102	12.7	17.3	20.4	25.5	36.0
2.6X2.0		305	4.30	51.9	61.0	76.3	111
16	8	25	118	4.30	5.00	6.30	8.50
		32	89.0	5.40	6.40	8.00	11.0
		38	72.1	6.50	7.60	9.50	13.2
		44	60.9	7.50	8.80	11.0	14.7
		51	52.3	8.70	10.2	12.8	17.7
		64	41.2	10.9	12.8	16.0	21.9
3.2X2.9		76	34.1	12.9	15.2	19.0	27.8
16	8	89	29.5	15.1	17.8	22.3	31.2
		102	25.6	17.3	20.4	25.5	37.9
		115	22.4	19.6	23.0	28.8	44.5
3.2X2.9		305	8.4	51.9	61.0	76.3	113
20	10	25	293	4.30	5.00	6.30	6.90
		32	224	5.40	6.40	8.00	9.40
		38	177	6.50	7.60	9.50	12.0
		44	149	7.50	8.80	11.0	13.5
		51	128	8.70	10.2	12.8	16.2
		64	99.0	10.9	12.8	16.0	21.2
		76	81.7	12.9	15.2	19.0	24.7
		89	69.5	15.1	17.8	22.3	28.8
		102	60.6	17.3	20.4	25.5	34.8
		115	53.0	19.6	23.0	28.8	39.0
		127	47.5	21.6	25.4	31.8	43.0
		139	43.0	23.8	28.0	35.0	45.3
		152	39.0	25.8	30.4	38.0	50.4
4.1X3.8		305	21.2	51.9	61.0	76.3	103
25	12.5	25	459	4.30	5.00	6.30	7.30
		32	374	5.40	6.40	8.00	10.7
		38	300	6.50	7.60	9.50	12.0
		44	244	7.50	8.80	11.0	14.4
		51	208	8.70	10.2	12.8	17.4
		64	161	10.9	12.8	16.0	21.4
		76	131	12.9	15.2	19.0	26.9
		89	111	15.1	17.8	22.3	30.9
		102	96.3	17.3	20.4	25.5	36.7
		115	85.7	19.6	23.0	28.8	40.3
		127	76.3	21.6	25.4	31.8	45.1
		139	66	23.8	28.0	35.0	47.6
		152	63.5	25.8	30.4	38.0	53.5
		178	53.9	30.3	35.6	44.5	63.9
		203	47.0	34.5	40.6	50.8	70.2
5.4X4.6		305	30.9	51.9	61.0	76.3	110
32	16	38	480	6.50	7.60	9.50	11.4
		44	390	7.50	8.80	11.0	13.7
		51	320	8.70	10.2	12.8	15.6
		64	269	10.9	12.8	16.0	20.0
		76	219	12.9	15.2	19.0	24.4
		89	180	15.1	17.8	22.3	29.7
		102	155	17.3	20.4	25.5	35.1
		115	140	19.6	23.0	28.8	39.0
7.3X5.9		127	124	21.6	25.4	31.8	42.8

Extra Heavy Load Spring Code: SY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 17	B Min. Deflect. % 20	C Max. Deflect. % 25	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
32	16	139	112	23.8	28.0	35.0	48.6
		152	102	25.8	30.4	38.0	52.4
		178	88.2	30.3	35.6	44.5	60.9
		203	76	34.5	40.6	50.8	69.2
		254	60.8	43.2	50.8	63.5	88.1
7.3X5.9		305	49	51.9	61.0	76.3	104
40	20	51	628	8.7	10.2	12.8	15.0
		64	487	10.9	12.8	16.0	19.5
		76	379	12.9	15.2	19.0	23.3
		89	321	15.1	17.8	22.3	26.7
		102	281	17.3	20.4	25.5	33.8
		115	245	19.6	23.0	28.8	36.2
		127	221	21.6	25.4	31.8	40.7
		139	195	23.8	28.0	35.0	44.5
		152	168	25.8	30.4	38.0	49.6
		178	150	30.3	35.6	44.5	59.9
		203	132	34.5	40.6	50.8	67.1
		254	107	43.2	50.8	63.5	86.3
8.4X7.5		305	87.8	51.9	61.0	76.3	104
50	25	64	709	10.9	12.8	16.0	19.3
		76	572	12.9	15.2	19.0	24.2
		89	475	15.1	17.8	22.3	28.0
		102	405	17.3	20.4	25.5	33.5
		115	352	19.6	23.0	28.8	38.6
		127	316	21.6	25.4	31.8	41.4
		139	289	23.8	28.0	35.0	47.3
		152	239	25.8	30.4	38.0	50.2
		178	215	30.3	35.6	44.5	61.1
		203	187	34.5	40.6	50.8	67.7
		254	153	43.2	50.8	63.5	87.0
11X9.0		305	127	51.9	61.0	76.3	104
63	38	76	952	12.9	15.2	-	15.5
		89	819	15.1	17.8	-	20.0
		102	700	17.3	20.4	25.5	30.7
		115	620	19.6	23	28.8	34.9
		127	565	21.6	25.4	31.8	38.0
		152	458	25.8	30.4	38.0	47.2
		178	384	30.3	35.6	44.5	55.8
		203	337	34.5	40.6	50.8	64.8
		254	263	43.2	50.8	63.5	86.7
11.6x14.9		305	218	51.9	61.0	76.3	106

Order: **SY.** D x L

Usage: It is compatible with die systems and machine equipment designs.

Order Example:
SY. 50 x 127

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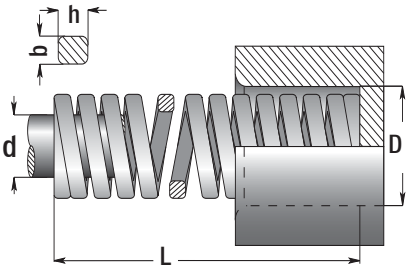
Ultra Heavy Load Spring Code: GY

Colour: Silver



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.
Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

Application Information for Long Lived Usage of Springs:

High tension levels only should be used when limited life is expected or in case of static loading. Under dynamic loading conditions, at the same time, exposing column spring to extraordinary temperatures, tensile loadings, lateral loadings, sudden loadings and high frequency usage limits the life time of springs. In all these cases, decreasing of tension / deflection values assists in terms of better spring life.

Order: **GY.** D x L

Usage: It is compatible with die systems and machine equipment designs.

Ultra Heavy Load Spring Code: GY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 10	B Min. Deflect. % 12	C Max. Deflect. % 15	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
25	12.5	64	644	6.40	7.70	9.60	13.0
		76	556	7.60	9.10	11.4	16.0
		89	462	8.90	10.7	13.4	20.0
		102	390	10.2	12.2	15.3	23.0
		115	360	11.5	13.8	17.3	26.0
		127	326	12.7	15.2	19.1	28.0
		152	255	15.2	18.2	22.8	34.0
		178	230	17.8	21.4	26.7	39.0
		203	202	20.3	24.4	30.5	45.0
5.6x7.5		305	136	30.5	36.6	45.8	63.0
32	16	64	1077	6.40	7.70	9.60	13.0
		76	874	7.60	9.10	11.4	16.0
		89	721	8.90	11.0	13.3	20.0
		102	620	10.0	12.0	15.3	23.0
		115	560	12.0	14.0	17.2	26.0
		127	496	13.0	15.0	19	28.0
		152	408	15.0	18.0	22.8	34.0
		178	353	18.0	21.0	26.7	39.0
		203	304	20.0	24.0	30.4	45.0
		254	243	25.0	30.0	38.1	62.0
7.5X9.2		305	196	31.0	37.0	45.7	75.0

Ultra Heavy Load Spring Code: GY

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 10	B Min. Deflect. % 12	C Max. Deflect. % 15	D Full Deflect. Breakable
b x h		mm	Nw.	mm	mm	mm	mm
40	20	89	880	8.90	10.7	13.4	20.0
		102	762	10.2	12.2	15.3	23.0
		115	679	11.5	13.8	17.3	26.0
		127	622	12.7	15.2	19.1	28.0
		152	509	22.8	18.2	22.8	36.0
		178	429	17.8	21.4	26.7	43.0
		203	374	20.3	24.4	30.5	49.0
		254	296	25.4	30.5	38.1	62.0
8.5x11		305	246	30.5	36.6	45.8	75.0
50	25	89	1410	8.90	10.7	13.4	19.0
		102	1215	10.2	12.2	15.3	22.0
		115	1076	11.5	13.8	17.3	25.0
		127	968	12.7	15.2	19.1	28.0
		152	806	15.2	18.2	22.8	34.0
		178	698	17.8	21.4	26.7	40.0
		203	612	20.3	24.4	30.5	45.0
		254	472	25.4	30.5	38.1	58.0
11.8x13.5		305	388	30.5	36.6	45.8	70.0

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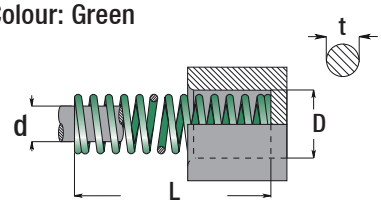
NEW

Code: TVY

Round Wire, Light Load Spring

Colour: Green



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

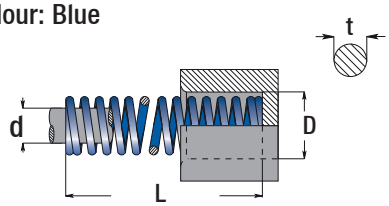
D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 40	D Full Deflect. Breakable
t		mm	Nw.	mm	mm	mm	mm
10	5	25	4.4	6.3	7.5	10.0	13.2
		32	3.4	8.0	9.6	12.8	16.5
		38	2.8	9.5	11.4	15.2	19.8
		44	2.4	11.0	13.2	17.6	23.1
		51	2.1	12.8	15.3	20.4	26.9
		64	1.6	16.0	19.2	25.6	33.3
		76	1.3	19.0	22.8	30.4	39.6
1.1		305	0.3	76.3	91.5	122.0	157
13	6.3	25	8.5	6.3	7.5	10.0	13.5
		32	6.5	8.0	9.6	12.8	16.8
		38	5.3	9.5	11.4	15.2	20.3
		44	4.4	11.0	13.2	17.6	23.9
		51	3.8	12.8	15.3	20.4	26.9
		64	2.9	16.0	19.2	25.6	33.3
		76	2.5	19.0	22.8	30.4	41.1
		89	2.1	22.3	26.7	35.6	48.3
1.5		305	0.6	76.3	91.5	122.0	163
16	8	25	17.9	6.3	7.5	10.0	14.7
		32	13.5	8.0	9.6	12.8	18.5
		38	10.5	9.5	11.4	15.2	22.4
		44	8.8	11.0	13.2	17.6	25.9
		51	7.6	12.8	15.3	20.4	30.0
		64	5.9	16.0	19.2	25.6	37.8
		76	4.8	19.0	22.8	30.4	45.2
		89	4.0	22.3	26.7	35.6	52.8
		102	3.5	25.5	30.6	40.8	60.7
2.0		305	1.1	76.3	91.5	122.0	184

Order: **TVY.** D x L

Code: TBM

Round Wire, Medium Load Spring

Colour: Blue



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

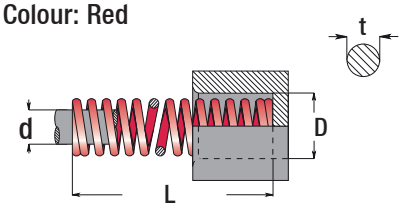
D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 25	B Min. Deflect. % 30	C Max. Deflect. % 37.5	D Full Deflect. Breakable
t		mm	Nw.	mm	mm	mm	mm
10	5	25	12.3	6.3	7.5	9.4	10.4
		32	9.5	8.0	9.6	12.0	13.2
		38	7.8	9.5	11.4	14.3	16.0
		44	6.5	11.0	13.2	16.5	18.5
		51	5.6	12.8	15.3	19.1	21.1
		64	4.5	16.0	19.2	24.0	26.4
		76	3.7	19.0	22.8	28.5	31.8
1.5		305	0.9	76.3	91.5	114	129
13	6.3	25	21.7	6.3	7.5	9.4	11.2
		32	16.8	8.0	9.6	12.0	14.0
		38	13.8	9.5	11.4	14.3	17.3
		44	11.6	11.0	13.2	16.5	19.8
		51	10.0	12.8	15.3	19.1	22.9
		64	7.8	16.0	19.2	24.0	28.4
		76	6.4	19.0	22.8	28.5	34.3
		89	5.6	22.3	26.7	33.4	41.4
1.8		305	1.5	76.3	91.5	114	139
16	8	25	31.9	6.3	7.5	9.4	10.9
		32	24.0	8.0	9.6	12.0	13.7
		38	19.4	9.5	11.4	14.3	16.5
		44	16.1	11.0	13.2	16.5	19.3
		51	13.8	12.8	15.3	19.1	22.1
		64	10.7	16.0	19.2	24.0	27.4
		76	8.8	19.0	22.8	28.5	33.0
		89	7.5	22.3	26.7	33.4	38.6
		102	6.5	25.5	30.6	38.3	44.5
2.2		305	2.1	76.3	91.5	114	134

Order: **TBM.** D x L

Code: TRK

Round Wire, Heavy Load Spring

Colour: Red



By multiplying spring coefficient (R) with compression / load rate (mm) simply, spring force value is reached.

Example: R x (A.B.C)

Nw - Newton = (0.102) **Kgf**

D Outer Dia.	d Rod Dia.	L Length	R Load Rate	A Long Life % 20	B Min. Deflect. % 25	C Max. Deflect. % 30	D Full Deflect. Breakable
t		mm	Nw.	mm	mm	mm	mm
10	5	25	20.7	5.0	6.3	7.5	8.6
		32	16.1	6.4	8.0	9.6	10.9
		38	13.0	7.6	9.5	11.4	13.2
		44	10.9	8.8	11.0	13.2	14.7
		51	9.6	10.2	12.8	15.3	17.8
		64	7.7	12.8	16.0	19.2	22.9
		76	6.3	15.2	19.0	22.8	26.9
1.6		305	1.5	61.0	76.3	91.5	110
13	6.3	25	37.5	5.0	6.3	7.5	8.9
		32	28.9	6.4	8.0	9.6	11.2
		38	23.5	7.6	9.5	11.4	13.7
		44	19.6	8.8	11.0	13.2	15.7
		51	17.3	10.2	12.8	15.3	18.8
		64	13.5	12.8	16.0	19.2	23.6
		76	11.2	15.2	19.0	22.8	28.4
		89	9.5	17.8	22.3	26.7	33.0
2.2		305	2.7	61.0	76.3	91.5	114
16	8	25	81.6	5.0	6.3	7.5	9.1
		32	61.3	6.4	8.0	9.6	11.4
		38	49.9	7.6	9.5	11.4	14.2
		44	40.8	8.8	11.0	13.2	16.3
		51	35.6	10.2	12.8	15.3	18.8
		64	27.8	12.8	16.0	19.2	23.9
		76	22.8	15.2	19.0	22.8	29.0
		89	19.6	17.8	22.3	26.7	34.3
		102	17.0	20.4	25.5	30.6	39.4
2.8		305	5.4	61.0	76.3	91.5	119

Order: **TRK.** D x L

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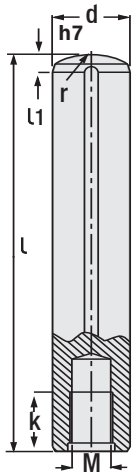


Tolerance **h7**

Dowel Pin with Internal Thread
with Air Channel - DIN 7979 / ISO 8735

Code: CTPh7

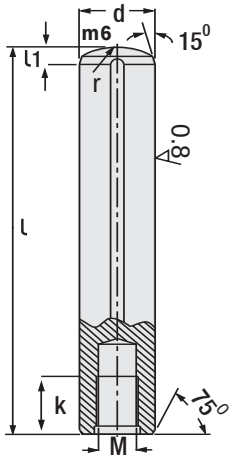
d	l	l1	k	M	r
Ø 6 mm	20	2.1 mm	6 mm	M4	6
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
Ø 8 mm	20	2.6 mm	8 mm	M5	8
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
	120				
Ø10 mm	20	3 mm	10 mm	M6	10
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
	120				

d	l	l1	k	M	r
Ø12 mm	20	3.8 mm	10 mm	M6	12
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
	120				
Ø14 mm	30	4 mm	12 mm	M8	14
	36				
	40				
	45				
	50				
	60				
	70				
	80				
	90				
	100				
	120				
	140				
Ø16 mm	30	4.7 mm	12 mm	M8	16
	36				
	40				
	45				
	50				
	60				
	70				
	80				
	90				
	100				
	120				
	140				
Ø20 mm	30	6 mm	16 mm	M10	20
	36				
	40				
	50				
	60				
	70				
	80				
	90				
	100				
	120				
	150				

Material: 1.7131 (16MnCr 5)
Hardness: 60 - 62 HRC (Depth 0.8)

Order: CTPh7. d x l

Order Example:
CTPh7. 8 x 40



Tolerance **m6**

Dowel Pin with Internal Thread
with Air Channel - DIN 7979 / ISO 8735

Code: CTPm6

d	l	l1	k	M	r
Ø 5 mm	20	1.7 mm	6 mm	M3	5
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
Ø 6 mm	20	2.1 mm	6 mm	M4	6
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
Ø 8 mm	20	2.6 mm	8 mm	M5	8
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
	120				
Ø10 mm	20	3 mm	10 mm	M6	10
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
	120				

d	l	l1	k	M	r
Ø12 mm	20	3.8 mm	10 mm	M6	12
	24				
	30				
	36				
	40				
	45				
	50				
	55				
	60				
	70				
	80				
	90				
	100				
	120				
Ø14 mm	30	4 mm	12 mm	M8	14
	36				
	40				
	45				
	50				
	60				
	70				
	80				
	90				
	100				
	120				
	140				
Ø16 mm	30	4.7 mm	12 mm	M8	16
	36				
	40				
	45				
	50				
	60				
	70				
	80				
	90				
	100				
	120				
	140				
Ø20 mm	30	6 mm	16 mm	M10	20
	36				
	40				
	50				
	60				
	70				
	80				
	90				
	100				
	120				
	150				

Order: CTPm6. d x l

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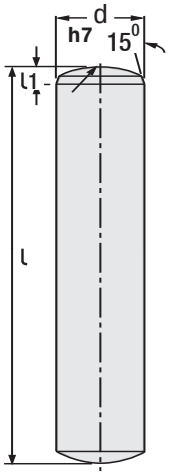


Tolerance
h7

Dowel Pin
Straight - DIN 6325 / ISO 9734

Code: DTPh7

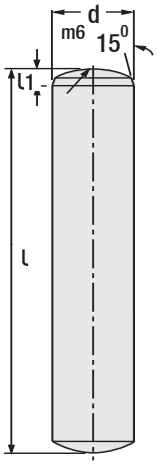
d	l	l1	r
Ø 5 mm	10	1.2 mm	5
	16		
	20		
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
Ø 6 mm	10	1.5 mm	6
	16		
	20		
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
Ø 8 mm	10	2.0 mm	8
	16		
	20		
	24		
	30		
	36		

d	l	l1	r
Ø 8 mm	40	2.0 mm	8
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
Ø10 mm	20	2.5 mm	10
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
Ø12 mm	20	3.0 mm	12
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
	140		

d	l	l1	r
Ø14 mm	30	3.5 mm	14
	36		
	40		
	45		
	50		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
Ø16 mm	30	4.0 mm	16
	36		
	40		
	45		
	50		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
Ø20 mm	30	5.0 mm	20
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
	150		

Order: DTPh7. d x l

Material: 1.7131 (16MnCr 5)
Hardness: 60 - 62 HRC (Depth 0.8)



Tolerance
m6

Dowel Pin
Straight - DIN 6325 / ISO 9734

Code: DTPm6

d	l	l1	r
Ø 3 mm	10	0.8 mm	3
	16		
	20		
	24		
	30		
	36		
Ø 4 mm	10	1.0 mm	4
	16		
	20		
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
Ø 5 mm	10	1.2 mm	5
	16		
	20		
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
Ø 6 mm	10	1.5 mm	6
	16		
	20		
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		

d	l	l1	r
Ø 8 mm	10	2.0 mm	8
	16		
	20		
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
Ø10 mm	20	2.5 mm	10
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
Ø12 mm	20	3.0 mm	12
	24		
	30		
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
	140		

d	l	l1	r
Ø14 mm	30	3.5 mm	14
	36		
	40		
	45		
	50		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
Ø16 mm	30	4.0 mm	16
	36		
	40		
	45		
	50		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
Ø20 mm	30	5.0 mm	20
	36		
	40		
	45		
	50		
	55		
	60		
	70		
	80		
	90		
	100		
	120		
	140		
	150		

Order: DTPm6. d x l

Order Example:
DTPm6. 10 x 30

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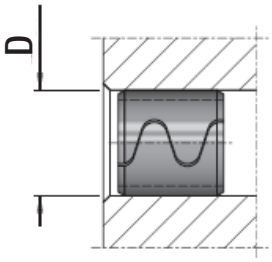
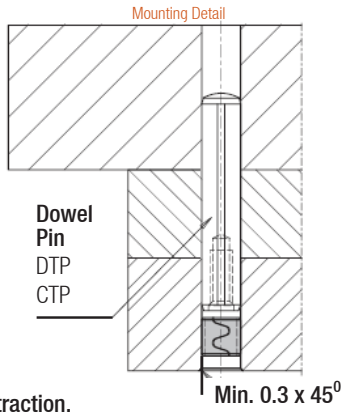
NEW

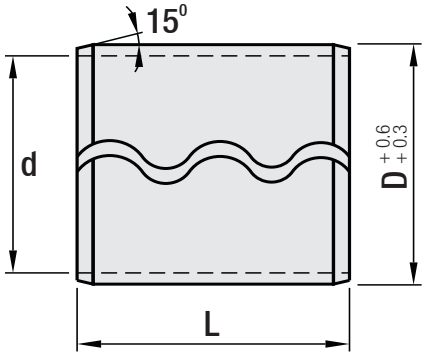




Dowel Pin Retaining Sleeve

Code: TPS

Used for positioning of dowel pins in hole at the desired level or as a dowel pin stopper preventing extraction.



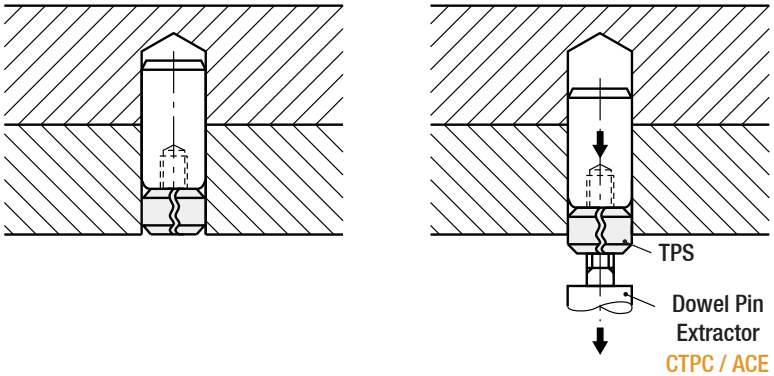
Parts are centered with dowel pins in dies & moulds. After inserting / removing processes, these dowel pins creates gaps and they can be easily inserted / removed. This situation may cause the pin be removed and fall into the die / mould and damage to die / mould parts. In order to avoid such situations, after inserting dowel pin in mounting place, the dowel pin retaining sleeve is attached. It provides safety against falling of pin. It is used as ring in the hole for dowel pins.

Pull-out Strength: Pull-out strength is the average value of 10 time repeated pull-outs from a H7 hole. Pull-out strength will vary depending on factors and these factors include "D" measurement tolerance of retaining sleeve, surface roughness and press-fit tolerances.

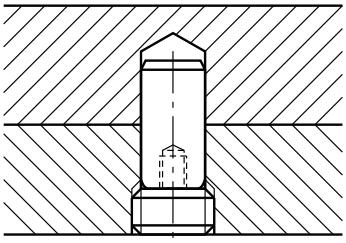
Order Code	Ø D	Ø d	L	Pull-out Strength
	mm	mm	mm	Newton (Kgf)
TPS06	6	4.4	6	392 N (40 kgf)
TPS08	8	5.6	8	1373 N (140 kgf)
TPS10	10	6.4	12	2354 N (240 kgf)
TPS12	12	8.0		1765 N (180 kgf)
TPS16	16	11.0		1422 N (145 kgf)

Used for positioning of dowel pins in hole at the desired level or as a dowel pin stopper preventing extraction.

When "dowel pin retaining sleeve" is used:



When "hex-socket set screw" is used:



The advantage of "TPS" product when compared with usage of hex-socket set screw:
* Tapping is not necessary.
* It is possible to extract the dowel pins directly when required.

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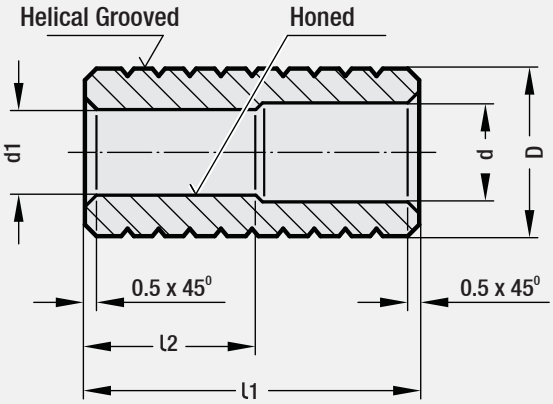
Bush for Dowel Pin, with Bonding

Code: YTB

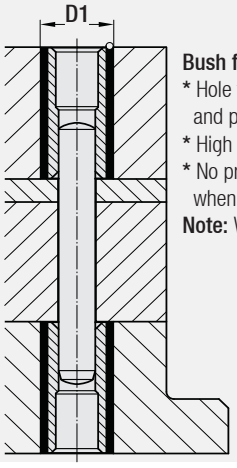
*** YTB** products are suitable for "**m6** tolerance dowel pins".

Hardened liner bushes solves friction problems in soft / unhardened parts which are frequently removed and changed. They are aligned in a mutual axis with close pin fixture and bonded (with Superglue) to cutting gaps roughly opened and inserted. Liner bushes for dowel pins in hardened parts helps eliminating failure caused by heat-treatment.
Retainer holes for liner dowel pin bushes should be 2 mm larger in diameter than the bush outer diameter, a rough finish is desired.
Following exact positioning, a superglue is used for bonding and bush mounting is completed.



Code: YTB

d1	d	D	D1	l1	l2
6	7	10	12	25	12
8	9	12	14	30	16
10	11	16	18	36	20



Bush for Dowel Pin, with Bonding:
* Hole tolerance "D" gives extraction fit of bush place and provides best bush retaining.
* High precision and hardness.
* No problem is encountered for finding positions when replacing bushes.
Note: We do not recommend press-fit for bushes.

Order: YTB. d1 x l1

Material: 1.7131 (16 MnCr 5)
Hardness: 54 - 58 HRC

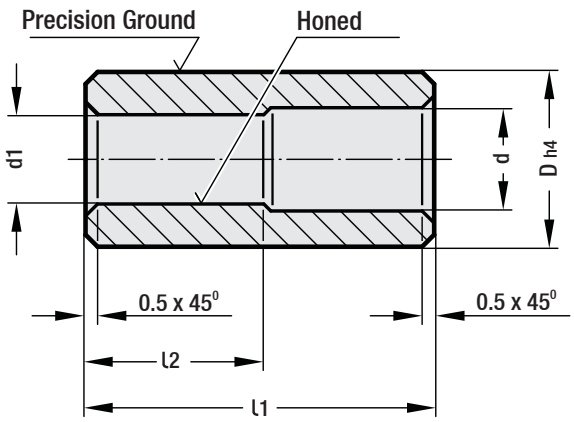
Bush for Dowel Pin, with Push Fit

Code: CTB

*** CTB** products are suitable for "**m6** tolerance dowel pins".

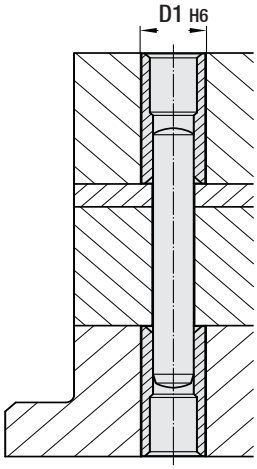
Bush position is given by push fit hole tolerance H6, thus high precision is provided.
* High precision and hardness.
* No problem is encountered for finding positions when replacing bushes.

Note: We do not recommend press-fit for bushes.



Code: CTB

d1	d	D	D1 H6	l1	l2
6	7	10	10	25	12
8	9	12	12	30	16
10	11	16	16	36	20



Order: CTB. d1 x l1

Material: 1.7131 (16 MnCr 5)
Hardness: 54 - 58 HRC

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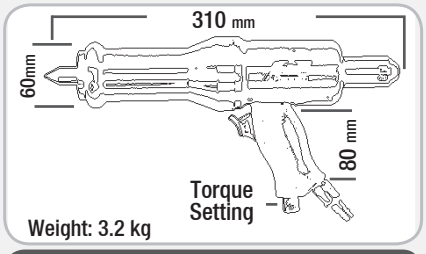
NEW

Order Code:
ACE016

It is designed to solve problems encountered during pulling and extracting dowel pins.

Dowel Pin Extractor - Puller Kit

* Dowel pins may trip and not be removed. Since the hook system is inserted type, it is not necessary to replace hooks at every pin extracting process.
* Hammering is not necessary. You only need to pull the trigger. It extracts inner threaded dowel pin easily and fastly.
* The extraction process is less dangerous, more precise, faster and more reliable in comparison to manual product in terms of occupational safety. It is used in machine assembly process.
* Its size is reduced in half in comparison to manual extraction.
* It can be use to extract dowel pins even under press machine.
* Thanks to torque setting, it prevents excessive fitting of dowel pins, it provides rigid assembly.



Ergonomical and small design

Special plastic bag packaging

Pneumatic: Please use pneumatic system with compressor and lubricating system in dry/non-humid air.

Fitting: Process is operated with 6 bar air power and with the forward-backward motion of the external body. When the fitting end is located on the dowel pin and the trigger is pulled, the mechanism moving forward-back helps the pin be fitted or extracted.

Extraction: Process is operated with 6 bar air and with the motion of forward-back of the outer case.
A screw (threaded bolt) is inserted in the fitted pin.
The extraction end is inserted in the screw over the dowel pin and the trigger is pulled and when it is pulled back, the mechanism moving forward-back helps the pin extracted.
This process is pretty practical.

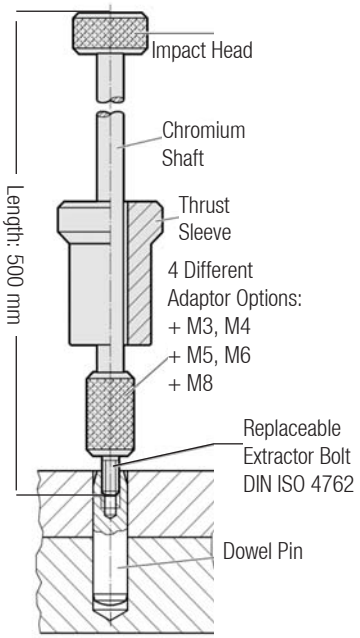
Please visit "www.guvenal.net" to watch videos and mounting process.

Dowel Pin Extractor - Puller Kit

Manual Type

Order Code: CTPC

DIN EN ISO 8735 - ISO 8735



This product is designed to dismantle threaded dowel pins quickly and safely.
In addition, it can be used on other threaded machine components.
This extractor tool is supplied in plastic bag with adaptors between M3-M8.

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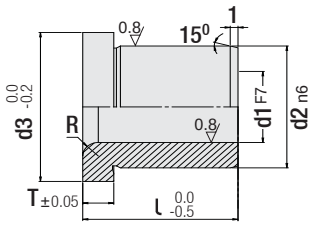
Code: G163

Drill Bush - Headed
DIN 172, Form A



Material: 1.0718
Hardness: 60 HRC

d1 mm	l mm	d2 mm	d3 mm	T mm	R mm
0.5	6	3	6	2	1
1.0	6	3	6	2	1
	9				
1.1	6	4	7	2	1
	9				
1.2	6				
	9				
1.3	6				
	9				
1.4	6				
	9				
1.5	6				
	9				
1.6	6				
	9				
1.7	6				
	9				
1.8	6				
	9				
1.9	6	5	8	2	1
	9				
2.0	6				
	9				

d1 mm	l mm	d2 mm	d3 mm	T mm	R mm
2.1	6	5	8	2	1
	9				
2.2	6				
	9				
2.3	6				
	9				
2.4	6				
	9				
2.5	6				
	9				
2.6	6				
	9				
2.7	8	6	9	2.5	1
	12				
2.8	8				
	12				
2.9	8				
	12				
3.0	8				
	12				
	16				
3.1	8				
	12				
	16				
3.2	8				
	12				
	16				
3.3	8				
	12				
	16				
3.4	8	7	10	2.5	1
	12				
	16				
3.5	8				
	12				
	16				
3.6	8				
	12				
3.7	8				
	12				
3.8	8				
	12				
3.9	8				
	12				
4.0	8				
	12				
	16				
4.1	8	8	11	2.5	1
	12				
4.2	8				
	12				
4.3	8				
	12				

d1 mm	l mm	d2 mm	d3 mm	T mm	R mm
4.4	8	8	11	2.5	1
	12				
4.5	8				
	12				
4.6	8				
	12				
4.7	8				
	12				
4.8	8				
	12				
5.0	8				
	12				
	16				
5.1	10	10	13	3	1.5
	16				
5.2	10				
	16				
5.3	10				
	16				
5.4	10				
	16				
5.5	10				
	16				
	20				
5.6	10				
	16				
5.7	10				
	16				
5.8	10				
	16				
5.9	10				
	16				
6.0	10				
	16				
	20				
6.1	10	12	15	3	1.5
	16				
	20				
6.2	10				
	16				
	20				
6.3	10				
	16				
	20				
6.4	10				
	16				
	20				
6.5	10				
	16				
	20				
7.0	10				
	16				
	20				
7.5	10				
	16				
	20				

DIN 172, Form A

d1 mm	l mm	d2 mm	d3 mm	T mm	R mm
8.0	10	12	15	3	1.5
	16				
	20				
8.5	12	15	18	3	2
	20				
	25				
9.0	12				
	20				
	25				
9.5	12				
	20				
	25				
10.0	12				
	20				
	25				
10.2	12	18	22	4	2
	20				
	25				
10.5	12				
	20				
	25				
11.0	12				
	20				
	25				
12.0	12				
	20				
	25				
13.0	16	22	26	4	2
	28				
	36				
14.0	16				
	28				
	36				
15.0	16				
	28				
	36				
16.0	16	26	30	4	2
	28				
	36				
17.0	16				
	28				
	36				
18.0	16				
	28				
	36				
19.0	20	30	34	5	3
	36				
	45				
20.0	20				
	36				
	45				
22.0	20				
	36				
	45				
25.0	20	35	39	5	3
	36				
	45				

Order:
G163. d1 x l

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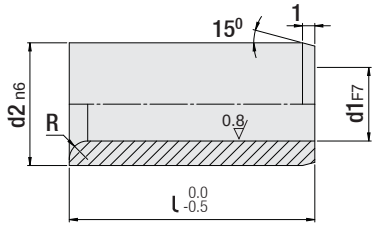
Code: G164

Drill Bush - Plain
DIN 179, Form A



Material: 1.0718 **Hardness:** 60 HRC

d1 mm	l mm	d2 mm	R mm
0.5	6	3	1
0.6			
0.7			
0.8			
0.9			
1.0	6	3	1
	9		
1.1	6	4	1
	9		
1.2	6		
	9		
1.3	6		
	9		
1.4	6		
	9		
1.5	6		
	9		
1.6	6		
	9		
1.7	6		
	9		
1.8	6		
	9		
1.9	6	5	1
	9		
2.0	6		
	9		

d1 mm	l mm	d2 mm	R mm
2.1	6	5	1
	9		
2.2	6		
	9		
2.3	6		
	9		
2.4	6		
	9		
2.5	6		
	9		
2.6	6		
	9		
2.7	8	6	1
	12		
2.8	8		
	12		
2.9	8		
	12		
3.0	8		
	12		
	16		
3.1	8		
	12		
	16		
3.2	8		
	12		
	16		
3.3	8		
	12		
	16		
3.4	8	7	1
	12		
	16		
3.5	8		
	12		
	16		
3.6	8		
	12		
3.7	8		
	12		
3.8	8		
	12		
3.9	8		
	12		
4.0	8		
	12		
	16		
4.1	8	8	1
	12		
4.2	8		
	12		
4.3	8		
	12		

d1 mm	l mm	d2 mm	R mm
4.4	8	8	1
	12		
4.5	8		
	12		
4.6	8		
	12		
4.7	8		
	12		
4.8	8		
	12		
5.0	8		
	12		
	16		
5.1	10	10	1.5
	16		
5.2	10		
	16		
5.3	10		
	16		
5.4	10		
	16		
5.5	10		
	16		
	20		
5.6	10		
	16		
5.7	10		
	16		
5.8	10		
	16		
5.9	10		
	16		
6.0	10		
	16		
	20		
6.1	10	12	1.5
	16		
	20		
6.2	10		
	16		
	20		
6.3	10		
	16		
	20		
6.4	10		
	16		
	20		
6.5	10		
	16		
	20		
7.0	10		
	16		
	20		
7.5	10		
	16		
	20		

DIN 179, Form A

d1 mm	l mm	d2 mm	R mm
8.0	10	12	1.5
	16		
	20		
8.5	12	15	2
	20		
	25		
9.0	12		
	20		
	25		
9.5	12		
	20		
	25		
10.0	12		
	20		
	25		
10.2	12	18	2
	20		
	25		
10.5	12		
	20		
	25		
11.0	12		
	20		
	25		
12.0	12		
	20		
	25		
13.0	16	22	2
	28		
	36		
14.0	16		
	28		
	36		
15.0	16		
	28		
	36		
16.0	16	26	2
	28		
	36		
17.0	16		
	28		
	36		
18.0	16		
	28		
	36		
19.0	20	30	3
	36		
	45		
20.0	20		
	36		
	45		
22.0	20		
	36		
	45		
25.0	20	35	3
	36		
	45		

Order:
G164. d1 x l

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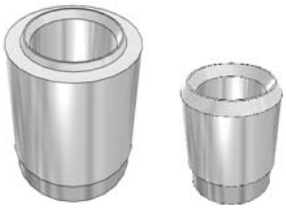
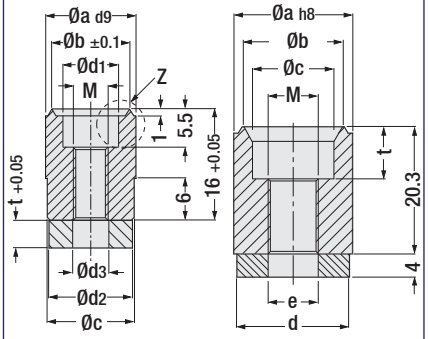


Locating Punch

Code: KZ2 - KZG

Reference: FCA / STQ 40007



Code: KZ2 Code: KZG

Order: KZ2 x a

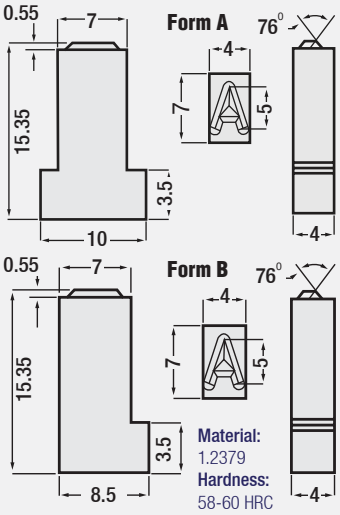
a	b	d1	M	c	d2	d3	t
10	8	6	M4	9.9	9.5	4.2	4
13	11.2	8	M5	12.5	12	5.2	

Order: KZG x a

a	b	c	M	t	d	e
19	16	13	M8	8	18	8
25	18	16	M10	12	24	9

Marking Stamp

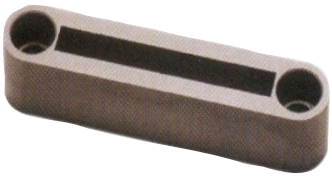
Code: MZG



Material: 1.2379
Hardness: 58-60 HRC

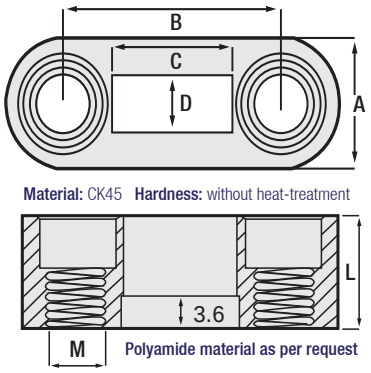
Marking Stamps: Symbol and dimensions can be machined as per request.

Order: MZG. Form x Symbol



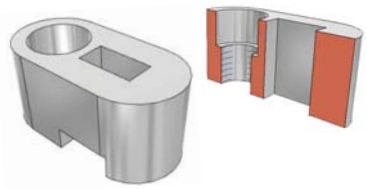
Stamp Retainer

Code: MTU



A	B	L	C	D	Pcs.	M
14.90	28	12.0	16.10	7.10	4	M6
	32		20.10		5	
	34		24.10		6	
	44		32.10		8	
	52		40.10		10	

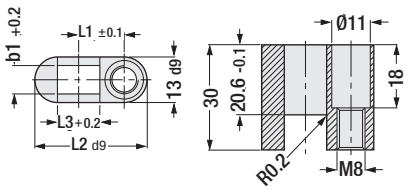
Order: MTU. A x B



Stamp Retainer

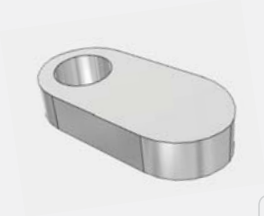
Code: MTG

Reference: FORD / WDX20-66



L1	L2	L3	b1
9	24	4.1	8.1
11	28	8.1	
13	32	12.1	
9	24	4.1	6.1
11	28	8.1	
13	32	12.1	

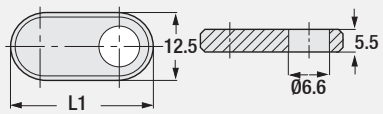
Order: MTG. b1 x L1



Code: MEG

Backing Plate for Stamp Retainer

Reference: FORD

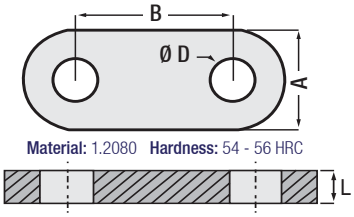


L1	Figure Size
23.5	3.5
27.5	3.5
31.5	3.5
23.5	2.0
27.5	2.0
31.5	2.0

Order: MEG. L1 x Figure Size

Code: MEU

Backing Plate for Stamp Retainer



A	B	L	D
15	28	5	6.7
	32		
	36		
	44		
	52		

Order: MEU. A x B

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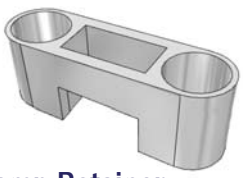
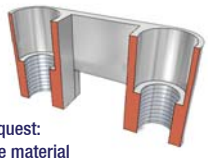



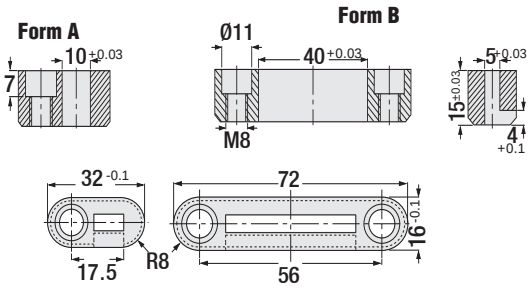
As per request:
Polyamide material

Stamp Retainer

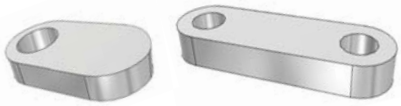
Code: ZTF

Reference: FORD / WDX20-70

Material: 1.2379 **Hardness:** 60 - 62 HRC



Order: ZTF. Form

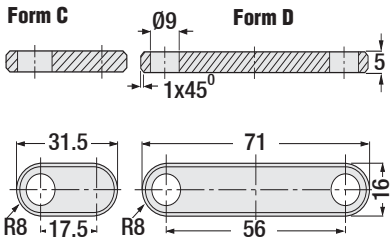


Backing Plate for Stamp Retainer

Code: MD2

Reference: FORD / WDX20-70

Material: 1.0503 **Hardness:** 60 - 62 HRC



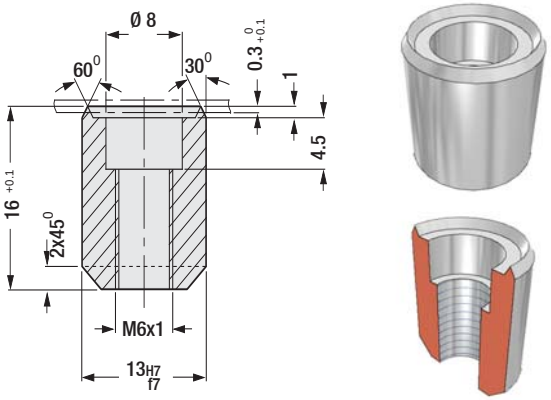
Order: MD2. Form

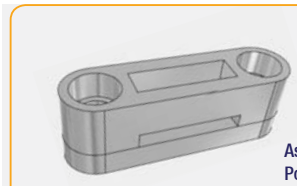
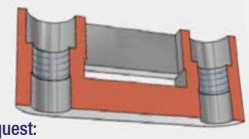
Locating Punch

Order Code: KZF

Reference: FORD / WDX20-70-0101

Material: 1.2080 **Hardness:** 60 - 64 HRC



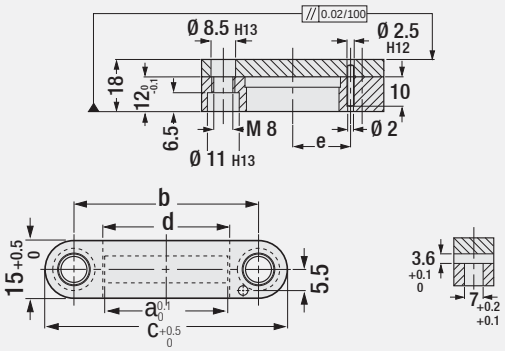



As per request:
Polyamide material

Stamp Retainer

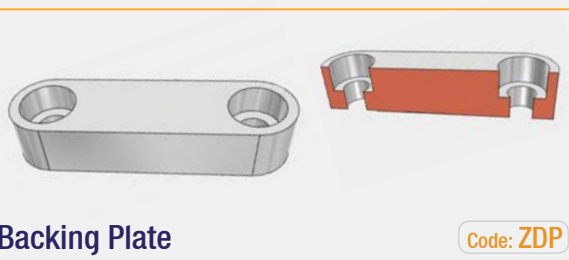
Code: ZTP

Reference: PSA E24.64.100.G



Punch pcs.	a	b	c	d	e
4	16	32	47	17	12
6	24	40	55	25	-
8	32	48	63	33	20
10	40	56	71	41	24

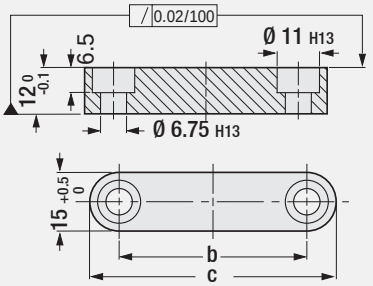
Order: ZTP. c



Backing Plate

Code: ZDP

Reference: PSA E24.64.100.G



Punch pcs.	b	c
4	32	47
6	40	56
8	48	63
10	56	71

Order: ZDP. c

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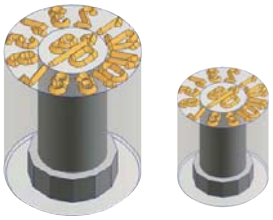
NEW



Embossing Date Stamp

Code: GCM09

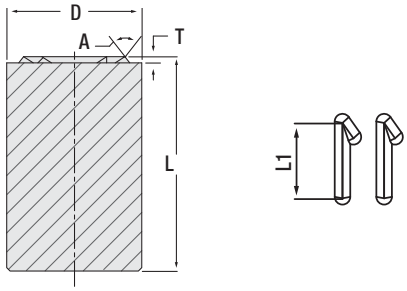
for sheet metal

It is suitable to be used in all die systems. The product specifies 12 months and 1 year.

***** Please provide the desired "year" for your GCM09 orders.

The insert (inner hub) of GCM09 is a replaceable type. When you need to change the year of insert (inner hub), you can order it separately.

Material: 1.2379 **Hardness:** 58 - 60 HRC



Order Code	ØD	L mm	T mm	L1 mm	A mm
GMC09.08S	8	12.35	0.35	1.20	76°
GMC09.08L		19.05		1.20	
GMC09.10S	10	12.35		1.60	
GMC09.10L		19.05		1.60	
GMC09.12S	12	12.45	0.45	2.00	
GMC09.12L		19.05		2.00	
GMC09.16S	16	12.55	0.55	2.50	
GMC09.16L		19.05		2.50	
GMC09.20SA	20	12.55		3.00	
GMC09.20SB		12.55		3.50	
GMC09.20LA		19.05		3.00	
GMC09.20LB		19.05		3.50	
GMC09.24	24	24.00		4.00	
GMC09.32A	32	32.00	0.65	5.00	
GMC09.32B		32.00		6.00	

*** Please provide the desired "year" for your GCM09 orders.**

Order Example:
GCM09.10S = "2020"

Die Spare Parts

Precision machining / Custom-made

Die systems, sheet metal cutting / spinning - bending form dies, complicate dies and progressive dies. In addition, we produce your custom-made parts belonging to other die systems within technical drawing details, as precision heat treated and in desired materials with complete ground operations. Centering pins, compression and clutch plates, balancing blocks, backing and shim plates, special wedges, matrix holders, special guide shaft coupling nut, separator - holder and adjustor parts, conical centering components, special washers and inserts etc.

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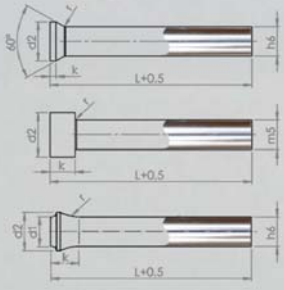
Why Güvenal GTH Die & Mould Components 1976 ?

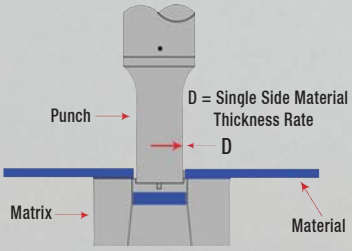
- **Conical Head Punch DIN 9861 / ISO 6752**
- **Cylinder Head Punch ISO 8020**
- **Bottle-neck Punch**



Standard punches in DIN / ISO norms available in our stocks as 1.3343 (M2) material.

Heat-treatment: 62-64 HRC
Head Hardness: 52 ±3 HRC

High Performance Special Material Selection



According to applications to be performed out of standards, we obtain better results by providing special solutions with the contribution of our engineers.

1.3343 - M2

It is suitable to apply as coated in soft sheet metals. Surface wear resistance is high in hard sheet metals. Suitable for sheet metal thickness less than 5 mm. This material should not be preferred in operation involving heavy impacts.

1.3243 - M35

It is suitable to use in stainless, siliceous and spring steel and etc., bolt dies, deep drilling and forming.

ASP30 / PS - Powder Metal

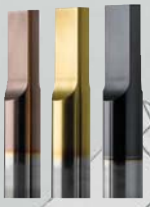
Surface wear resistance is in maximum level.
It is highly compatible with PVD coating.
Correct material choice is important because there are different processes in powder metal products.

GTH Is a brand of Guvenal, you can use confidently.

Precision Grinding / Measurement Completeness

You can have special punch, matrix, retainer and die accessories produced by using our experience and machine line. Please ask offer for custom-made part with the technical drawing.

Coating Technologies



As the production methods develop, the coating technology improves each passing day in order to obtain the highest performance from the available materials. You can try our coating types in order to get more efficiency from your punches.

Guvenal "XKH" Coating (TiCN)

It can be used in punches which high hardness is desired. It is grey-blue. It provides high resistance to cracks in punches. It is suitable to use in high speeds. It provides longer punch life. It is the most efficient standard coating type of Guvenal - GTH punch production.

Guvenal "XKP" Coating (AlTin)

It is ideal for dies and punches working in high temperatures. It is black-purple. It requires less dressing and maintenance thanks to its high speed working and heat conductivity.
It provides longer punch life.

Guvenal "XKT" Coating (TiN - PVD TiN)

It is a general purpose coating type. It is golden yellow. It prevents heat occurring as a result of friction of two metal, it increases lubricity, it reduces problems such as adhesion, winding. Since its heat conductivity is low, it increases punch life by preventing heat transfer.

Note: There are many other coating types than traditional coating types. In case that you give information about field of application and its function, our engineers will help you for choosing coating.

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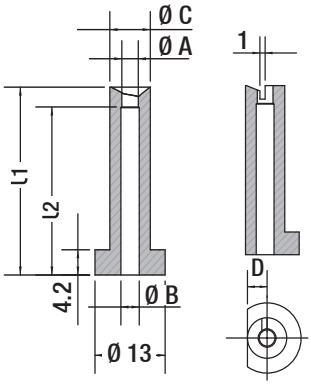
Screw Form Punch & Die Button Unit

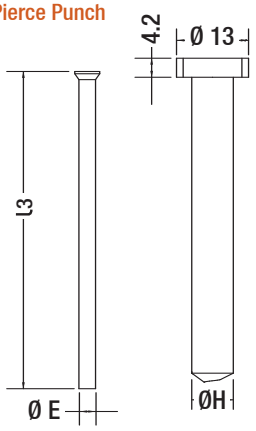
Code: VYZ

Consists of 3 basic parts. **1-** Hss pierce punch **2-** Embossing die punch **3-** Die button.
In terms of working systematics; in all cutting and forming dies, it creates screw forms with the purpose of connecting two sheet metal strips.
Usage: Hss pierce punch is brought to press operation by inserting in die button. While the embossing on the end of the die button bends and embosses, the hss pierce punch forms hole. The sheet metals are prepared to be screwed. The unit forms a hole in screw thread dimension tolerance and helical thread grooves with embossing for screwing and tightening (putting together).
The unspecified tolerances will be according to DIN ISO 2768 T1 (f).

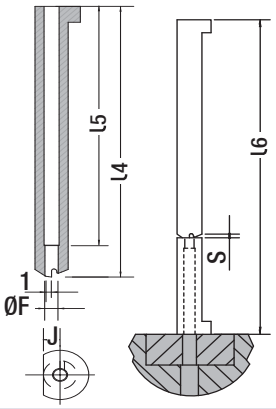
Die Button



HSS Pierce Punch



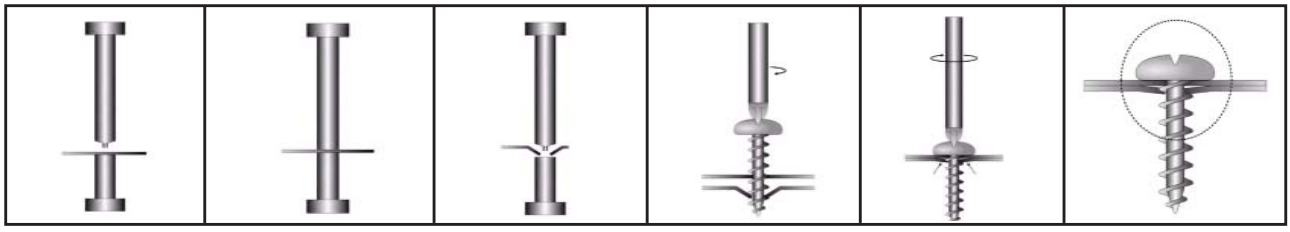
Embossing Die Punch



Screw Diameter Thread Dimension:
B 3.5
B 3.9
B 4.2
B 4.8
B 5.5
B 6.3

Sheet Metal Thickness: (S)
Screw 3.5mm: Max.0.50 mm. Thickness
Screw 3.9mm: Max.0.63 mm. Thickness
Screw 4.2mm: Max.0.75 mm. Thickness
Screw 4.8mm: Max.0.88 mm. Thickness
Screw 5.5mm: Max.1.00 mm. Thickness
Screw 6.3mm: Max.1.20 mm. Thickness

Order Code	Ø Screw	A H7	B Ø -mm	C h6	D k6	E Ø -h6	F Ø -H7	H Ø -h6	J k6	l1 mm	l2 mm	l3 mm	l4 mm	l5 mm	l6 Length	S Sheet
VYZB35	**B3.5**	2.75	3.2	7.5	3.75	2.7	2.7	7.5	3.75	31.3	28	74.5	71.5	60	101.72	0.5
VYZB39	**B3.9**	3.05	3.4	7.5	3.75	3.0	3.0	7.5	3.75	31.3	28	74.5	71.5	60	101.85	0.63
VYZB42	**B4.2**	3.15	3.5	8.5	4.25	3.1	3.1	8.0	4.0	31.3	28	74.5	71.5	60	101.97	0.75
VYZB48	**B4.8**	3.85	4.2	9.0	4.50	3.8	3.8	8.0	4.0	31.3	28	74.5	71.5	60	102.10	0.88
VYZB55	**B5.5**	4.35	4.8	9.0	4.50	4.3	4.3	8.0	4.0	31.3	28	74.5	71.5	60	102.22	1.00
VYZB63	**B6.3**	4.85	5.3	10.5	5.25	4.8	4.8	10.0	5.0	31.3	28	74.5	71.5	60	102.42	1.20



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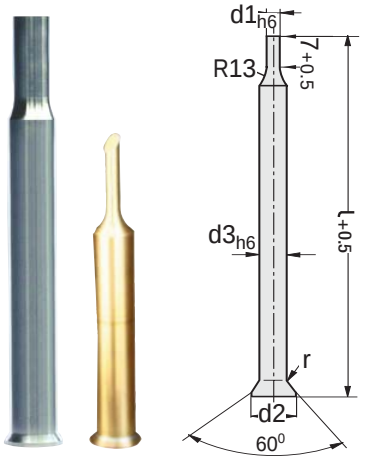


Conical Head Punches - Stepped

DIN 9861 Form C

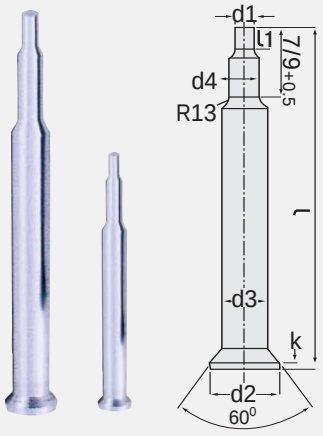
Code: HKZ

According to DIN 9861 norm, there is limitation for body and cutting diameter. In this norm, while body diameter for conical head stepped punch is max. 3 mm, cutting diameter can be max. 2.95 mm.

Material: 1.3343 (M2) **Hardness: 62 - 64 HRC**

d1	l	d3	d2	r
0.8	71	2 mm	3 mm	0.4
	80			
1.0	71			
	80			
1.2	71			
	80			
1.5	71	2.5 mm		
	80			
1.6	71			
	80			
1.8	71			
	80			
1.0	71	3 mm	4.5 mm	0.6
	80			
1.5	71			
	80			
1.8	71			
	80			
2.2	71			
	80			
2.3	71			
	80			
2.6	71			
	80			
2.8	71			
	80			

Order: HKZ. d3 x d1 x l



Conical Head Punches - Stepped

DIN 9861 Form E

Code: H2K

It is preferred for thin work pieces and light duty works. As per request, our punch production is available in the desired material and dimensions and also in shapes.

Material: 1.3343 (M2) **Hardness: 62 - 64 HRC**

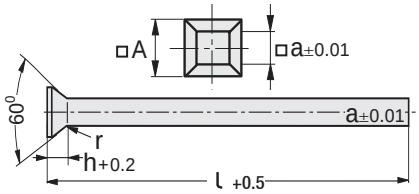
d1	d4	d3	d2	l	l1
1.0	1.4	Ø 3.0	4.5 mm	71 80 100	2 mm
1.2	1.6				
1.5	1.8				
1.7	2.1				
2.2	2.6				
2.5	2.8				
1.6	2.2	Ø 4.0	5.5 mm	71 80 100	2.5 mm
1.8	2.3				
2.3	2.8				
2.6	3.0				
3.0	3.5				
3.2	3.7				
2.4	3.0	Ø 5.0	6.5 mm	71 80 100	3 mm
2.8	3.5				
3.2	4.0				
3.6	4.2				
4.2	4.6				
4.5	4.8				
2.5	3.2	Ø 6.0	8 mm	71 80 100	3 mm
3.0	3.8				
3.5	4.2				
4.0	4.8				
4.5	5.3				
5.0	5.5				
5.5	5.8				

Order: H2K. d1 x d4 x d3 x l x l1

Square Head Punch, Slot - Shaped

Slot - Form DA (forged head)

Code: HFK



a	l	□A	h
1.0	71	1.8	1.2
2.0		3.0	1.4
3.0		4.5	1.8
4.0		5.5	1.8
5.0		6.5	1.8
6.0		8.0	2.2

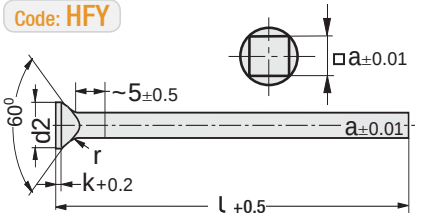
a	l	□A	h
7.0	71	9.0	2.8
8.0		10.0	
9.0		11.0	
10.0		12.0	
12.0		14.0	

Order: HFK. a x l

Material: 1.3343 (M2)
Hardness: 62 - 64 HRC

Conical Head Punch - Shaped

Code: HFY



a	l	d2	k
1.0	71	1.8	0.5
2.0		3.0	
3.0		4.5	
4.0		6.0	
5.0		7.5	
6.0		9.0	

a	l	d2	k
7.0	71	10.5	1.0
8.0		12.0	
9.0		13.5	
10.0		15.0	
12.0		18.0	

Excluding product types in tables, our production such as headless and different slot types, also punches as per request are available.

Order: HFY. a x l

Material: 1.3343 (M2)
Hardness: 62 - 64 HRC

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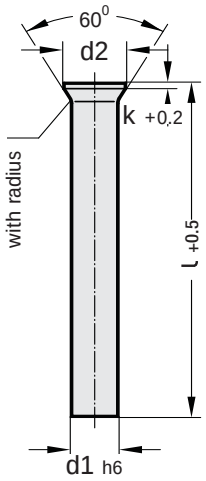
Code: HBZ

DIN 9861 / ISO 6752

d1	l	d2	k
10	71	12	1.0
	80		
	100		
	125		
	160		
10.5	71	13	1.0
	80		
	100		
	125		
	160		
11	71	14	1.0
	80		
	100		
	125		
	160		
11.5	71	14	1.0
	80		
	100		
12	71	14	1.0
	80		
	100		
	125		
	160		
12.5	71	15	1.0
	80		
	100		
13	71	15	1.0
	80		
	100		
	125		
	160		
13.5	71	16	1.5
	80		
	100		
14	71	16	1.5
	80		
	100		
	125		
	160		
14.5	71	17	1.5
	80		
	100		
15	80	17	1,5
	100		
	125		
	160		
16	71	18	1.5
	80		
	100		
	125		
	160		
17	80	19	1.5
	100		
18	80	21	1.5
	100		
19	80	21	1.5
	100		
20	71	22	1.5
	80		
	100		
	125		
	160		

d1	l	d2	k
6.6	71	9.0	1.0
6.7	80		
	100		
6.8	71	9.0	1.0
6.9	80		
	100		
7.0	71	9.0	1.0
	80		
	100		
	125		
	160		
7.1	71	9.0	1.0
7.2	80		
	100		
7.3	71	9.0	1.0
7.4	80		
	100		
7.5	71	10	1.0
	80		
	100		
	125		
	160		
7.6	71	10	1.0
7.7	80		
	100		
7.8	71	10	1.0
7.9	80		
	100		
8.0	71	10	1.0
	80		
	100		
	125		
	160		
8.1	71	10	1.0
8.2	80		
	100		
8.3	71	10	1.0
8.4	80		
	100		
8.5	71	11	1.0
	80		
	100		
	125		
	160		
8.6	71	11	1.0
8.7	80		
	100		
8.8	71	11	1.0
8.9	80		
	100		
9.0	71	11	1.0
	80		
	100		
9.5	125	12	1.0
	160		

d1	l	d2	k
4.1	71	5.5	0.5
4.2	80		
	100		
4.3	71	5.5	0.5
4.4	80		
	100		
4.5	71	6.0	0.5
	80		
	100		
	125		
	160		
4.6	71	6.0	0.5
4.7	80		
	100		
4.8	71	6.0	0.5
4.9	80		
	100		
5.0	71	6.5	0.5
	80		
	100		
	125		
	160		
5.1	71	6.5	0.5
5.2	80		
	100		
5.3	71	6.5	0.5
5.4	80		
	100		
5.5	71	7.0	0.5
	80		
	100		
	125		
	160		
5.6	71	7.0	0.5
5.7	80		
	100		
5.8	71	7.0	0.5
5.9	80		
	100		
6.0	71	8.0	0.5
	80		
	100		
	125		
	160		
6.1	71	8.0	0.5
6.2	80		
	100		
6.3	71	8.0	0.5
6.4	80		
	100		
6.5	71	9.0	1.0
	80		
	100		
	125		
	160		



Punch as per request:

TIN / TIC Coating

Complete Coating

ASP (powder metal)

Sintered Carbide

Code: HBZ

Conical Head Punch, DIN 9861 / ISO 6752

With our wide range and dimensional products of "**GTH** Punch and Matrix Sets" from our stocks, we are in top location with our sectoral experience in quality / price formation. In addition, we provide other special requests with the shortest delivery time. Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding. For harder work pieces, ASP / PS (powder metal) and for very hard and abrasive work pieces, sintered carbide punches are preferred.

Conical Head Punch - Form D
Heat Treated: (64 HRC ± 2)
Surface: ≥ 950 HV 0.3

Material: < Ø12.5= 1.3343 (HSS) Completely ground
≥ Ø12.5= 1.2379 (HWS) Completely ground
Head Hardness: (52 ±3 HRC)

d1	l	d2	k
3.0	71	4.5	0.5
	80		
	100		
	125		
	160		
3.1	71	4.5	0.5
3.2	80		
	100		
3.3	71	4.5	0.5
3.4	80		
	100		
3.5	71	5.0	0.5
	80		
	100		
	125		
	160		
3.6	71	5.0	0.5
3.7	80		
	100		
3.8	71	5.0	0.5
3.9	80		
	100		
4.0	71	5.5	0.5
	80		
	100		
	125		
	160		

d1	l	d2	k
1.8	71	2.8	0.5
1.9	80		
	100		
2.0	71	3.0	0.5
	80		
	100		
	125		
	160		
2.1	71	3.2	0.5
2.2	80		
	100		
2.3	71	3.5	0.5
2.4	80		
	100		
2.5	71	3.5	0.5
	80		
	100		
	125		
	160		
2.6	71	4.0	0.5
2.7	80		
	100		
2.8	71	4.0	0.5
2.9	80		
	100		

d1	l	d2	k
0.5	71	0.9	0.2
	80		
	100		
0.6	71	1.1	0.2
	80		
	100		
0.7	71	1.3	0.2
	80		
	100		
0.8	71	1.4	0.4
	80		
	100		
0.9	71	1.6	0.4
	80		
	100		
1.0	71	1.8	0.5
1.1	80		
	100		
1.2	71	2.0	0.5
1.3	80		
	100		
1.4	71	2.2	0.5
1.5	80		
	100		
1.6	71	2.5	0.5
1.7	80		
	100		

Order: HBZ. d1 x l

Order Example:
HBZ. 6 x 100

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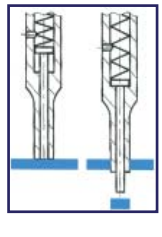
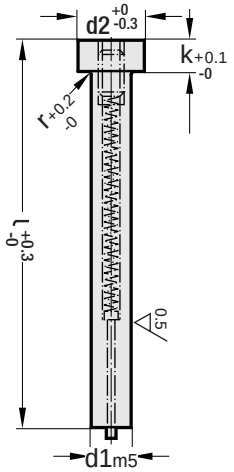
Coating as per request





Cylinder Head Punch with Ejector

Code: SFZ

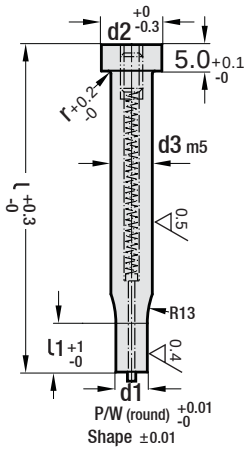
(Blank type) ISO 8020

Material: 1.3343 (M2) completely ground
Heat Treated: 62 - 64 HRC
Head Hardness: 52 ± 3 HRC
Surface: ≥ 950 HV 0.3

d1	l	d2	k	r
5.0	63	8	5 mm	0.3
6.0		9		
8.0	71	11		
10	80	13		
13		16		
16	100	19		
20	125	23		
25	160	28		
32		35		

Order: SFZ. d1 x l

Material: 1.3343 (M2)
Hardness: 62 - 64 HRC



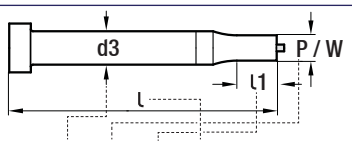
Cylinder Head Stepped Punch with Ejector

Order Codes: **SFY - SFO - SFK - SFD - SFA - SFM - SFX - SFP**

Please refer to the table on the right side →

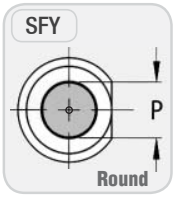
Order d3	Head d2	d1 / Shape (SFY) Round P	d1 / Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
SF..05	8	1.6 ~ 4.99	1.6 - 5.0	13	10	-	63
SF..06	9	2.5 ~ 5.99	2.5 - 6.0	13	10	-	71
SF..08	11	3.2 ~ 7.99	3.2 - 8.0	19	13	19	80
SF..10	13	4.5 ~ 9.99	4.5 - 10	19	13	25	90
SF..13	16	6.0 ~ 12.99	6.0 - 13	19	13	25	100
SF..16	19	8.0 ~ 15.99	7.5 - 16	19	13	25	125
SF..20	23	10 ~ 19.99	8.0 - 20	19	13	25	
SF..25	28	12 ~ 24.99	9.0 - 25	19	13	25	
SF..32	35	16 ~ 31.99	10 - 32	25	19	30	

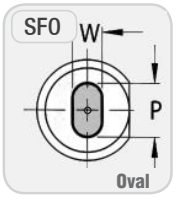
How to order:
Shape
d3
P/W
l1
l
Material

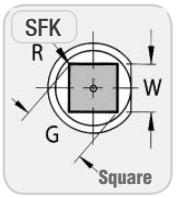


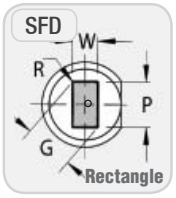
SFY x 10 x P7.0 x 13 x 80 - M2
SFO x 10 x P8.2 x W5.2 x 25 x 100 - M2

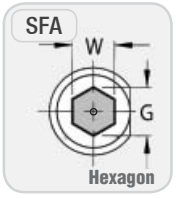
Shapes

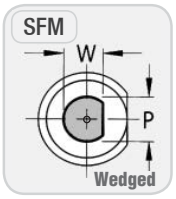


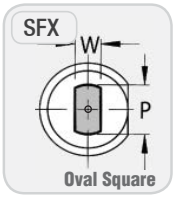


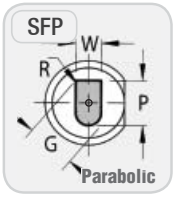


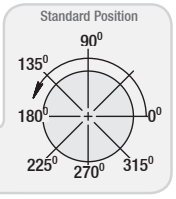






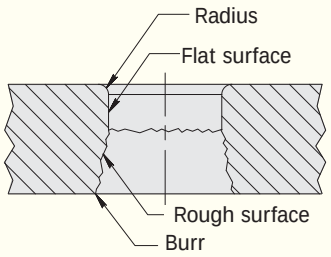






Definition of Gap Between Punch and Die

Gap between punch and die depends on material type of stamped work pieces, material thickness, finish requirement of hole and desired tool life.
This is indicated as total percentage of stamped material thickness.
It should be remembered that hole diameter of punch specifies the dimension of part to be processed. Generally, ideal gap provides serial, clear and smooth punching process with minimum tool force. When insufficient gap is left, minimum radius and burrs are obtained. However, depending on high tool forces, it shortens tool life. As a result of excessive gap, wide radius creates deformation, but tool life is increased. Some general values are presented for different materials in the following table (it is an advisory). Expressed values are total die gap recommended for non-ejector punch holes. Increasing gap to 2 times by using ejector punch, will significantly increase estimated tool life. Abrasion occurring in the most of the punches occurs by scraper forces when the punch is pulled back. Increasing gap with using ejector punches will hold abrasion on tool surface in minimum.
Punches used in dies should be mounted in perpendicular position as 90⁰ completely.



Material	Soft	Hard
Aluminum	% 10	% 12
Brass / Copper	% 6	% 8
Low Carbon Steel	% 10	% 12
High Carbon Steel	% 18	% 20

The standard location of key flats is at 0⁰.
Alternate locations of 90⁰, 180⁰ or 270⁰ can be specified.

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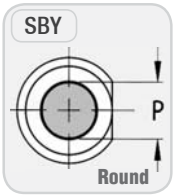
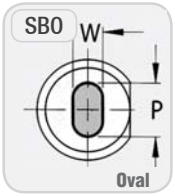
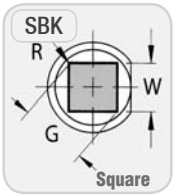
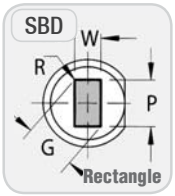
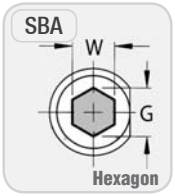
Shapes

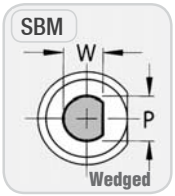


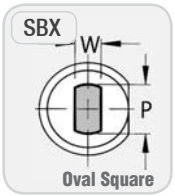


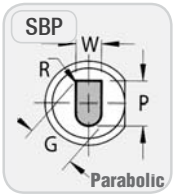


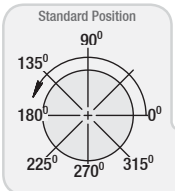


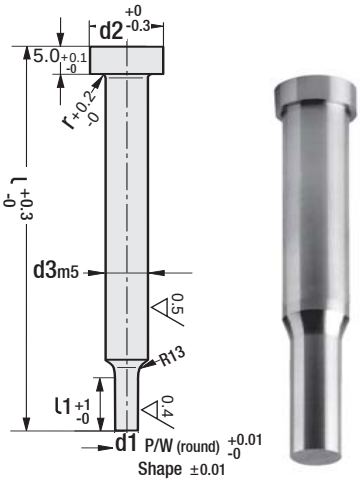












ISO 8020

Cylinder Head Stepped Punch

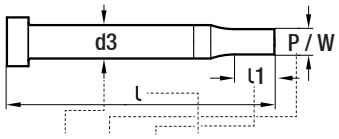
Code: SB..

Order Codes: **SBY - SBO - SBK - SBD - SBA - SBM - SBX - SBP**

Please refer to the table on the left side

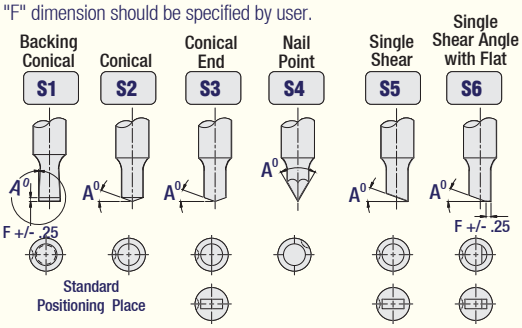
Order d3	Head d2	d1 / Shape (SBY) Round P	d1 / Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
SB..04	6	1.6 ~ 3.99	1.6 - 4.0	8	10	-	50 63 71 80 90 100 125
SB..05	8	1.6 ~ 4.99	1.6 - 5.0	13	10	-	
SB..06	9	1.6 ~ 5.99	1.6 - 6.0	13	10	-	
SB..08	11	2.5 ~ 7.99	2.5 - 8.0	19	13	-	
SB..10	13	3.2 ~ 9.99	3.2 - 10	19	13	25	
SB..13	16	5.0 ~ 12.99	4.5 - 13	19	13	25	
SB..16	19	8.0 ~ 15.99	6.0 - 16	19	13	25	
SB..20	23	10 ~ 19.99	8.0 - 20	19	13	25	63 71 80 90 100 125
SB..25	28	12 ~ 24.99	9.0 - 25	19	13	25	
SB..32	35	16 ~ 31.99	10 - 32	25	19	30	
SB..40	43	30 ~ 39.99	14 - 40	25	19	30	

How to order:
Shape
d3
P/W
l1
l
Material



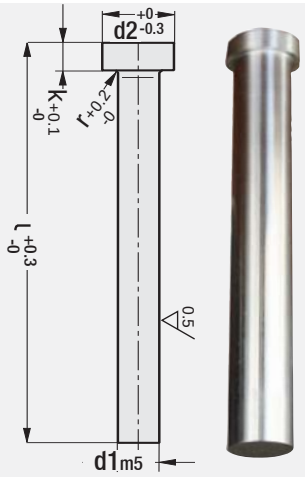
SBY x 10 x P7.0 x 13 x 80 - M2
SBO x 10 x P8.2 x W5.2 x 25 x 100 - M2

Cutting Angles (special tools): In case of demand, "A" angle and "F" dimension should be specified by user.

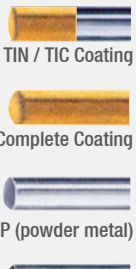


Note: Parts are viewed in die position looking from above the die.
Punches are viewed looking through the body.
Matrixes are viewed through top face.

The standard location of key flats is at 0⁰.
Alternate locations of 90⁰, 180⁰ or 270⁰ can be specified.



Punch as per request:



Cylinder Head Punch - ISO 8020

Code: SBZ

Mounting of cylinder head type punch to the holder plate during usage is planned, guiding process is provided by the stripper plate.
By mounting punches in this style, the elimination of axial errors that resulted from incorrect mounting of die set or press is more easier.
The use of this mounting method provided the alteration between the transmission of punching power and bearing.

Material: 1.3343 (M2) completely ground
Heat Treated: 62 - 64 HRC
Head Hardness: 52 ± 3 HRC
Surface: ≥ 950 HV 0.3

Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding. For harder work pieces, ASP / PS (powder metal) and for very hard and abrasive work pieces, sintered carbide punches are preferred.

Code: SBZ

d1	l	d2	k	r
2.0 2.5	71 80 100	5.0	3	0.2
3.0 3.5	71 80 100	6.0	3	
4.0 4.5	71 80 100	7.0 7.5	5	0.3
5	71 80 100	8.0	5	
6.0	71 80 100 125	9.0	5	
8.0	71 80 100 125	11	5	
10	71 80 100 125	13	5	0.3
13	71 80 100 125	16	5	
16	71 80 100 125	19	5	
20	80 100 125 160	23	5	
25	80 100 125 160	28	5	
32	80 100 125 160	35	5	

Order: SBZ. d1 x l

Order Example:
SBZ. 10 x 100

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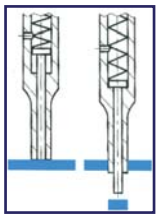
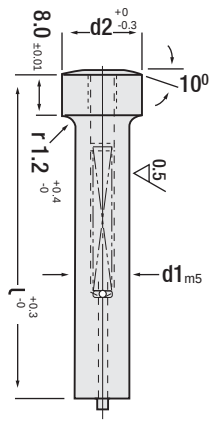
NEW

Coating as per request





Heavy Duty Headed Punch with Ejector

Code: SFZF

* Larger-headed

(Blank type)

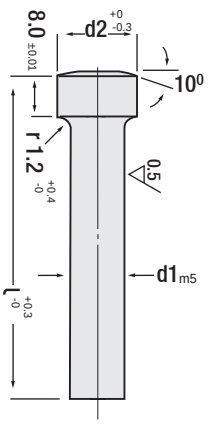
d1	l	d2
8	70 80 100	13
10		15
12		17
13		18
16		21
20		25
25		30

Material:
1.3343 (M2) completely ground
Heat Treated:
60 - 63 HRC
Head Hardness:
40 - 55 HRC

Order: SFZF. d1 x l

Order Example: SFZF. 20 x 100

NEW



Heavy Duty Headed Punch

Code: SBZF

* Larger-headed

(Blank type)

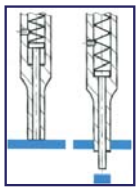
d1	l	d2
6	70 80 100	11
8		13
10		15
12		17
13		18
16		21
20		25
25		30

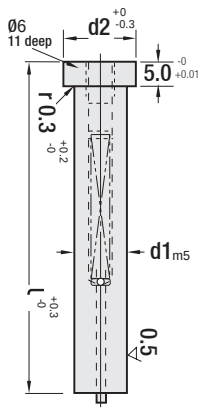
Material:
1.3343 (M2) completely ground
Heat Treated:
60 - 63 HRC
Head Hardness:
40 - 55 HRC

Order: SBZF. d1 x l

Order Example: SBZF. 8 x 80

NEW





Center Dowel Headed Punch with Ejector

Code: DFZ

(Blank type)

ISO 8020, with center dowel

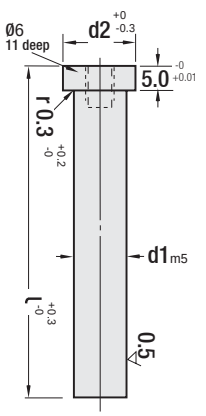
d1	l	d2
10	71 80 90 100	13
13		16
16		19
20		23
25		28
32		35

Material:
1.3343 (M2) completely ground
Heat Treated:
60 - 63 HRC
Head Hardness:
40 - 55 HRC

Order: DFZ. d1 x l

Order Example: DFZ. 13 x 100

NEW



Center Dowel Headed Punch

Code: DSZ

(Blank type)

ISO 8020, with center dowel

d1	l	d2
10	71 80 90 100	13
13		16
16		19
20		23
25		28
32		35

Material:
1.3343 (M2) completely ground
Heat Treated:
60 - 63 HRC
Head Hardness:
40 - 55 HRC

Order: DSZ. d1 x l

Order Example: DSZ. 10 x 71

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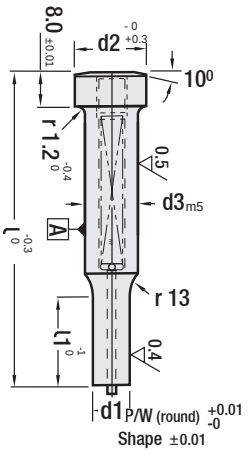


Heavy Duty Stepped Punch with Ejector

Code: SF..F

* Larger-headed

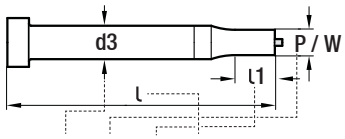
Order Codes:

SFYF - SFOF - SFKF - SFDF - SFAF - SFMF - SFXF - SFPF

Please refer to the table on the right side →

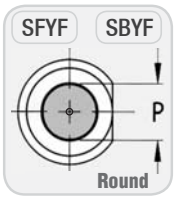
Order d3	Head d2	d1 / Shape (SFYF) Round P	d1 / Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
SF..F08	13	4.0 ~ 7.99	4.0 - 8	13	13	25	60
SF..F10	15	5.0 ~ 9.99	5.0 - 10	13	13	25	70
SF..F13	18	6.0 ~ 12.99	6.0 - 13	13	13	25	80
SF..F16	21	10 ~ 15.99	6.0 - 16	19	13	25	90
SF..F20	25	13 ~ 19.99	6.0 - 20	19	13	25	100
SF..F25	30	18 ~ 24.99	6.0 - 25	19	13	25	

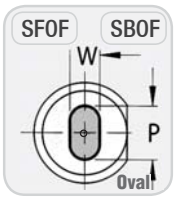
How to order:
Shape
d3
P/W
l1
l
Material

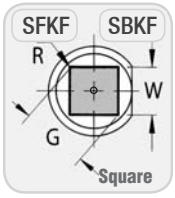


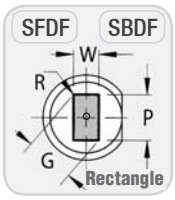
SFYF x 10 x P7.0 x 13 x 80 - M2
SFOF x 10 x P8.2 x W5.2 x 25 x 100 - M2

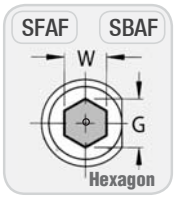
Shapes

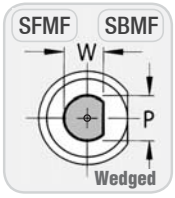


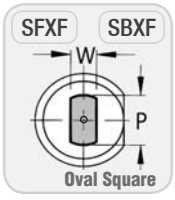


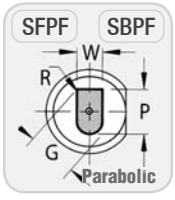


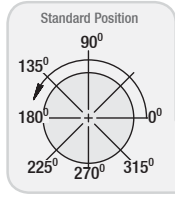


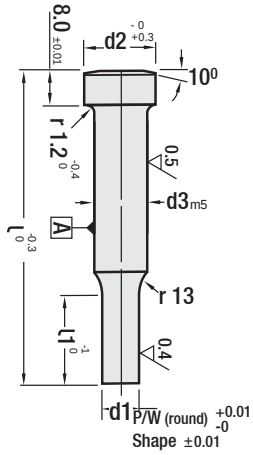












Heavy Duty Stepped Punch

Code: SB..F

* Larger-headed

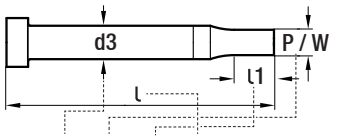
Order Codes:

SBYF - SBOF - SBKF - SBDF - SBAF - SBMF - SBXF - SBPF

← Please refer to the table on the left side

Order d3	Head d2	d1 / Shape (SBYF) Round P	d1 / Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
SB..F08	13	3.0 ~ 7.99	3.0 - 8	13	13	25	60
SB..F10	15	3.0 ~ 9.99	3.0 - 10	13	13	25	70
SB..F13	18	6.0 ~ 12.99	3.0 - 13	13	13	25	80
SB..F16	21	10 ~ 15.99	4.0 - 16	19	13	25	90
SB..F20	25	13 ~ 19.99	5.0 - 20	19	13	25	100
SB..F25	30	18 ~ 24.99	6.0 - 25	19	13	25	

How to order:
Shape
d3
P/W
l1
l
Material



SBYF x 10 x P7.0 x 13 x 80 - M2
SBOF x 10 x P8.2 x W5.2 x 25 x 100 - M2

The standard location of key flats is at 0°.
Alternate locations of 90°, 180° or 270° can be specified.

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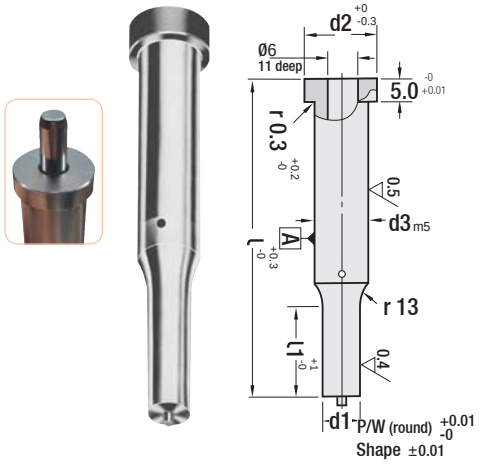


Code: DF..

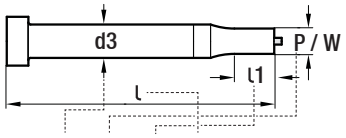
Center Dowel Stepped Punch with Ejector

Order Codes: **DFY - DFO - DFK - DFD - DFA - DFM - DFX - DFP**

Please refer to the table on the right side →

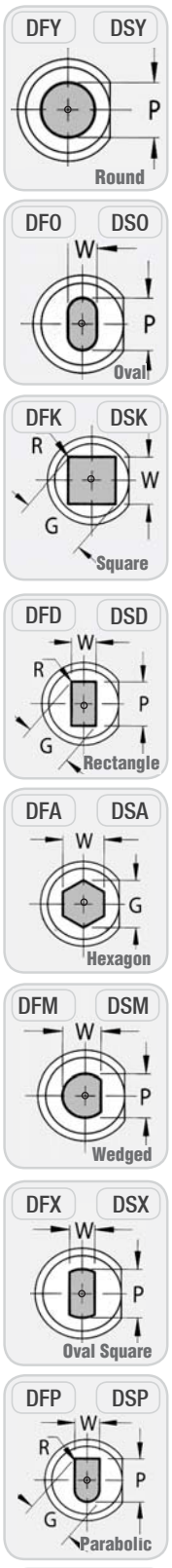
Order d3	Head d2	d1 / Shape (DFY) Round P	d1 / Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
DF..10	13	4.5 ~ 9.99	4.5 - 10	19	13	25	
DF..13	16	6.0 ~ 12.99	6.0 - 13	19	13	25	63
DF..16	19	8.0 ~ 15.99	7.2 - 16	19	13	25	71
DF..20	23	10 ~ 19.99	8.0 - 20	19	13	25	80 90
DF..25	28	12 ~ 24.99	9.0 - 25	19	13	25	100
DF..32	35	16 ~ 31.99	10.0 - 32	25	19	30	

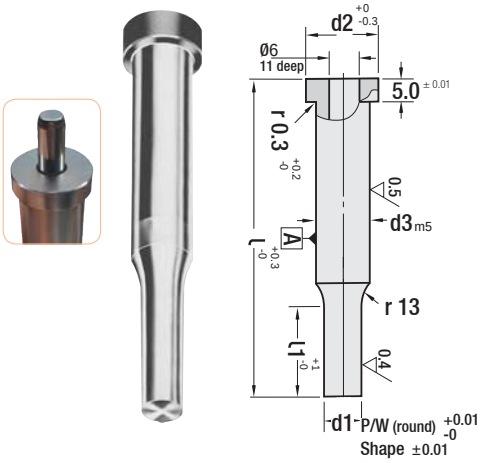
How to order:
Shape
d3
P/W
l1
l
Material



DFY x 10 x P7.0 x 13 x 80 - M2
DFO x 10 x P8.2 x W5.2 x 25 x 100 - M2

Shapes





Code: DS..

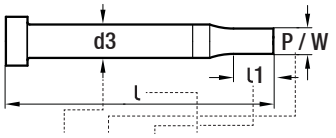
Center Dowel Stepped Punch

Order Codes: **DSY - DSO - DSK - DSD - DSA - DSM - DSX - DSP**

← Please refer to the table on the left side

Order d3	Head d2	d1 / Shape (DSY) Round P	d1 / Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
DS..10	13	4.5 ~ 9.99	4.5 - 10	19	13	25	
DS..13	16	6.0 ~ 12.99	6.0 - 13	19	13	25	63
DS..16	19	8.0 ~ 15.99	7.2 - 16	19	13	25	71
DS..20	23	10 ~ 19.99	8.0 - 20	19	13	25	80 90
DS..25	28	12 ~ 24.99	9.0 - 25	19	13	25	100
DS..32	35	16 ~ 31.99	10.0 - 32	25	19	30	

How to order:
Shape
d3
P/W
l1
l
Material



DSY x 10 x P7.0 x 13 x 80 - M2
DSO x 10 x P8.2 x W5.2 x 25 x 100 - M2

The standard location of key flats is at 0⁰.
Alternate locations of 90⁰, 180⁰ or 270⁰ can be specified.

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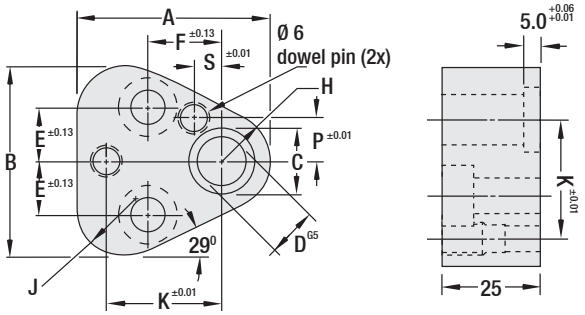
Punch Retainer

Code: GPR

For round punches / ISO 8020

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Retainer includes 2 dowel pins + 2 screws.



Code: GPR

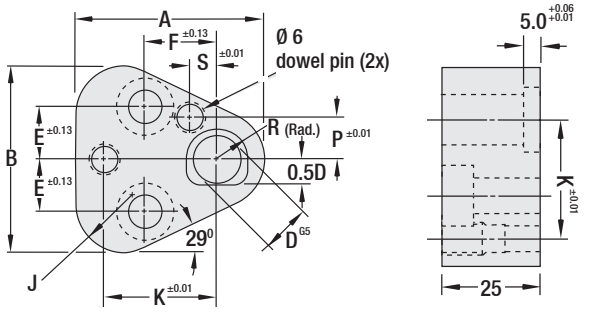
Order	GPR. 10	GPR. 13	GPR. 16	GPR. 20	GPR. 25	GPR. 32
D (punch)	10	13	16	20	25	32
A	44.5	50.8	54.0	60.3	69.9	69.9
B	43.7	50.0	53.2	59.5	69.1	69.1
C	14.0	17.0	20.0	24.0	29.0	36.0
E	11.1	14.3	15.9	17.5	19.8	19.8
F	19.0	19.0	19.0	19.0	23.8	23.8
H	9.5	12.7	14.3	17.5	22.2	22.2
J	12.0	15.2	16.8	20.0	24.7	24.7
K	26.925	29.970	31.750	33.530	40.640	40.640
P	9.0	12.0	13.5	16.5	22.0	22.0
S	7.5	6.5	6.0	5.0	7.0	7.0
Screw	M8	M8	M8	M10	M12	M12

Punch Retainer

Code: GPRS

For shaped punches / ISO 8020

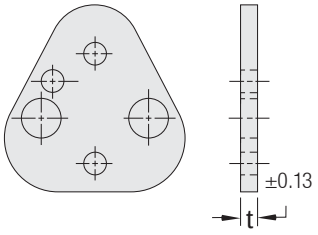
- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Retainer includes 2 dowel pins + 2 screws.



Code: GPRS

Order	GPRS. 10	GPRS. 13	GPRS. 16	GPRS. 20	GPRS. 25	GPRS. 32
D (punch)	10	13	16	20	25	32
A	44.5	50.8	54.0	60.3	69.9	69.9
B	43.7	50.0	53.2	59.5	69.1	69.1
E	11.1	14.3	15.9	17.5	19.8	19.8
F	19.0	19.0	19.0	19.0	23.8	23.8
R	7.0	8.5	10.0	12.0	14.5	18.0
H	9.5	12.7	14.3	17.5	22.2	22.2
J	12.0	15.2	16.8	20.0	24.7	24.7
K	26.925	29.970	31.750	33.530	40.640	40.640
P	9.0	12.0	13.5	16.5	22.0	22.0
S	7.5	6.5	6.0	5.0	7.0	7.0
Screw	M8	M8	M8	M10	M12	M12

Shim & Backing Plate for Punch Retainer



Shim Plate
t = 1.8 (soft)

Code: PRSP

Order Code	Compatible Retainer	D	t
PRSP.1018	GPR / GPRS	10	1.8
PRSP.1318	GPR / GPRS	13	1.8
PRSP.1618	GPR / GPRS	16	1.8
PRSP.2018	GPR / GPRS	20	1.8
PRSP.2518	GPR / GPRS	25	1.8
PRSP.3218	GPR / GPRS	32	1.8

Backing Plate
t = 4.8 (55 HRC)

Code: PRBP

Order Code	Compatible Retainer	D	t
PRBP.1048	GPR / GPRS	10	4.8
PRBP.1348	GPR / GPRS	13	4.8
PRBP.1648	GPR / GPRS	16	4.8
PRBP.2048	GPR / GPRS	20	4.8
PRBP.2548	GPR / GPRS	25	4.8
PRBP.3248	GPR / GPRS	32	4.8

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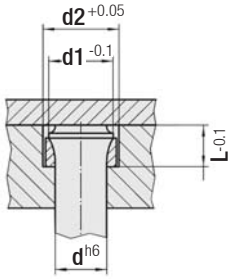
NEW



Mounting Ring for Bottle-neck Punch Code: G162

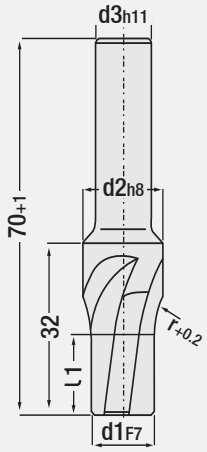
"G162" is used for more practical mounting of Bottle-neck Punches on the retainer plate.

Advantages:

* Cylindrical counter bore in the retainer plate is sufficient.
* Tempered Mounting Ring reduces the shrinking in the untempered retainer plate.
* You can take advantage of the positive features of Bottle-neck Punches without complex installation.

Material: Tempered Steel

Order Code	d mm	d1 mm	d2 mm	L mm
G162.30	3.0	4.5	6	7
G162.35	3.5	5.0	7	7
G162.40	4.0	5.5	7	8
G162.50	5.0	7.0	9	11
G162.51	5.1	7.0	9	11
G162.55	5.5	8.0	10	11
G162.60	6.0	9.0	11	11
G162.65	6.5	10.0	12	11
G162.70	7.0	10.0	12	11
G162.75	7.5	11.0	13	11
G162.80	8.0	11.0	13	12
G162.85	8.5	13.0	15	12
G162.90	9.0	13.0	15	12
G162.95	9.5	14.0	16	12
G162.100	10.0	14.0	16	13
G162.110	11.0	15.0	17	13
G162.120	12.0	16.0	18	13
G162.130	13.0	17.0	19	13
G162.140	14.0	18.0	20	13
G162.150	15.0	19.0	21	13
G162.160	16.0	20.0	22	13
G162.170	17.0	21.0	23	13
G162.180	18.0	22.0	24	13
G162.190	19.0	23.0	25	13
G162.200	20.0	25.0	27	14



Piloted Counterbore Punch Code: UFT

(for tapered head)

d1	d2	d3	r	l1	x (d1)
2.0	3.3	3.3	3.5	5	01
2.1 ~ 2.2	3.5	3.5	5.0		
2.3 ~ 2.5	3.8	3.8			
2.6 ~ 2.9	4.3	4.3	6.0	7	
3.0 ~ 3.4	4.9	4.9			
3.5 ~ 3.9	5.4	5.4	8.0		
4.0 ~ 4.4	5.9	5.9		8	
4.5 ~ 4.9	6.4	6.4			
5.0 ~ 5.4	7.4	7.4	10	10	
5.5 ~ 5.9	8.5	8.5			
6.0	9.5	10	12	12	05
6.5 ~ 7.0	10.5				
7.5 ~ 8.0	11.5				
8.5 ~ 9.0	13.5		15		
9.5 ~ 10	14.5				
10.5 ~ 11	15.5			15	
11.5 ~ 12	16.5				
12.5 ~ 13	17.5				
13.5 ~ 14	18.5				
14.5 ~ 15	19.5				
15.5 ~ 16	20.5				
16.5 ~ 17	21.5	16			
17.5 ~ 18	22.5				
18.5 ~ 19	23.5				
19.5 ~ 20	25.5				

Order: UFT. d1

Material: 1.3343 (M2)
Hardness: 62 - 66 HRC

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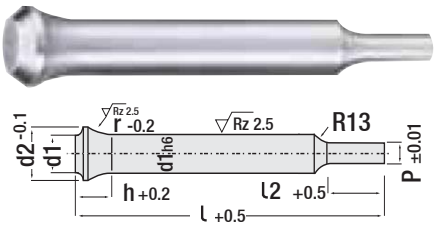


Bottle-neck Punch, Stepped

Code: UKZ

(Trambone type, form D)

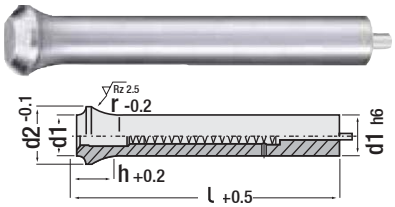
Material: 1.3343 (M2) **Hardness:** 62 - 66 HRC

Head Hardness: 45 - 55 HRC

P	l	d1	l2	d2	r	h
0.8 ~ 2.9	71	3	10	4.5	6.5	6.03
1.0 ~ 3.9		4		5.5	8	7.38
1.2 ~ 4.9		5		7.0	10	8.36
1.6 ~ 5.9		6		9.0	10	9.27
2.5 ~ 7.9	80	8	13	11	12	9.81
4.0 ~ 9.9	100	10	17	14	15	11.48
5.0 ~ 12.9		13	17	17	15	11.48
8.0 ~ 15.9		16	17	20	15	11.48
12 ~ 19.9		20	17	25	15	12.29

Note: Special dimensions on request.

Order: UKZ. d1 x P x l2 x l



Bottle-neck Punch with Ejector

Code: UFZ

(Blank type)

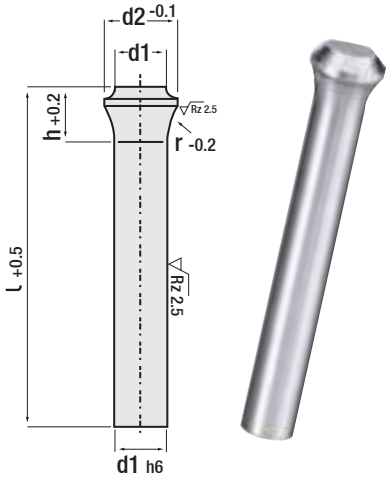
Material: 1.3343 (M2) **Hardness:** 62 - 66 HRC

Head Hardness: 45 - 55 HRC

d1	l	d2	h	r
5.0	80	7	8.36	10
	100			
6.0	80	9	9.27	10
	100			
7.0	80	10	9.81	12
	100			
8.0	80	11	9.81	12
	100			
9.0	100	13	11.48	15

d1	l	d2	h	r
10.0	100	14	11.48	15
11.0	100	15	11.48	15
12.0	100	16	11.48	15
13.0	100	17	11.48	15
15.0	100	19	11.48	15
16.0	100	20	11.48	15
20.0	100	25	12.29	15
25.0	100	31	13.00	15

Order: UFZ. d1 x l



Bottle-neck Punch

Code: UBZ

(Trambone type, form D) (Blank type)

Material: 1.3343 (M2) **Hardness:** 62 - 66 HRC

Head Hardness: 45 - 55 HRC

d1	l	d2	h	r
2.0	80	3	4.80	3.5
	100			
2.1	100	3.2	5.28	5
2.2	100	3.2	5.18	5
2.3	100	3.5	5.37	5
2.4	100	3.5	5.28	5
2.5	80	3.5	5.18	5
	100			
2.6	100	4	5.93	6.5
2.7	100	4	5.83	6.5
2.8	100	4	5.73	6.5
2.9	100	4	5.62	6.5
3.0	80	4.5	6.03	6.5
	100			
3.1	100	4.5	5.93	6.5
3.2	100	4.5	5.83	6.5
3.3	100	4.5	5.73	6.5
3.4	100	4.5	5.62	6.5
3.5	80	5	6.38	8
	100			
3.6	100	5	6.27	8
3.7	100	5	6.16	8
3.8	100	5	6.04	8
3.9	100	5	5.92	8
4.0	80	5.5	7.38	8
	100			
4.1	100	5.5	7.27	8
4.2	100	5.5	7.16	8
4.3	100	5.5	7.04	8

Order: UBZ. d1 x l

Code: UBZ

d1	l	d2	h	r
4.4	100	5.5	6.92	8
4.5	80	6	7.38	8
	100			
4.6	100	6	7.27	8
4.7	100	6	7.16	8
4.8	100	6	7.04	8
4.9	100	6	6.92	8
5.0	80	7	8.36	10
	100			
5.1	100	7	8.25	10
5.2	100	7	8.15	10
5.3	100	7	8.03	10
5.4	100	7	7.92	10
5.5	80	8	8.84	10
	100			
5.6	100	8	8.75	10
5.7	100	8	8.66	10
5.8	100	8	8.56	10
5.9	100	8	8.46	10
6.0	80	9	9.27	10
	100			
6.1	100	9	9.19	10
6.2	100	9	9.10	10
6.3	100	9	9.02	10
6.4	100	9	8.93	10
6.5	100	10	10.24	12
7.0	100	10	9.81	12
7.5	100	11	10.24	12
8.0	80	11	9.81	12
	100			
8.5	100	13	11.90	15
9.0	100	13	11.48	15
9.5	100	14	11.90	15
10.0	100	14	11.48	15
10.5	100	15	11.90	15
11.0	100	15	11.48	15
11.5	100	16	11.90	15
12.0	100	16	11.48	15
12.5	100	17	11.90	15
13.0	100	17	11.48	15
13.5	100	18	11.90	15
14.0	100	18	11.48	15
15.0	100	19	11.48	15
16.0	100	20	11.48	15
17.0	100	21	11.48	15
18.0	100	22	11.48	15
19.0	100	23	11.48	15
20.0	100	25	12.29	15

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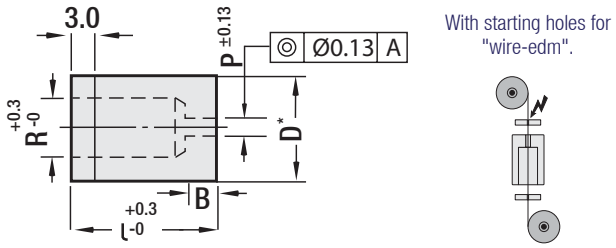
Matrix with Counter-bore Relief

Code: MKB

Blank type & with starting holes for wire-edm ISO 8977

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC



* = n5 (Ø8.0 ~ 30.0) / j6 (Ø32.0 ~ 40.0)

D mm	P mm	B point length		R mm	l mm
		S (standard)	A (optional)		
8.0	0.8	-	-	-	20
10.0	0.8	4	8	6.0	22
13.0	1.6	5	8	8.0	25
16.0	1.6	5	8	9.5	28
20.0	1.6	5	12	12.0	30
22.0	1.6	6	12	15.0	32
25.0	1.6	6	12	17.5	35
28.0	1.6	6	12	17.5	40
30.0	1.6	6	12	17.5	60
32.0	1.6	6	12	21.0	Selection as per request
35.0	1.6	6	12	21.0	
38.0	1.6	8	12	27.0	
40.0	1.6	8	12	27.0	
45.0	3.2	8	12	36.0	
50.0	3.2	8	12	41.0	

Order: MKB. D x l - B

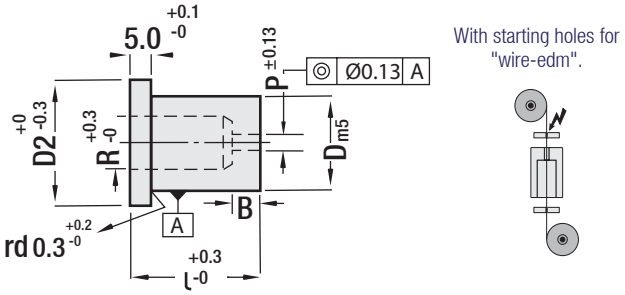
Order Example: MKB. 20 x 32 - S

Headed Matrix with Counter-bore Relief

Code: MLB

Blank type & with starting holes for wire-edm ISO 8977

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC



D mm	D2 mm	P mm	B point length		R mm	l mm
			S (standard)	A (optional)		
8.0	11	0.8	-	-	-	20
10.0	13	0.8	4	8	6.0	22
13.0	16	1.6	5	8	8.0	25
16.0	19	1.6	5	8	9.5	28
20.0	23	1.6	5	12	12.0	30
22.0	25	1.6	6	12	15.0	32
25.0	28	1.6	6	12	17.5	35
28.0	31	1.6	6	12	17.5	40
30.0	33	1.6	6	12	17.5	Selection as per request
32.0	35	1.6	6	12	21.0	
35.0	38	1.6	6	12	21.0	
38.0	41	1.6	8	12	27.0	
40.0	43	1.6	8	12	27.0	

Order: MLB. D x l - B

Order Example: MLB. 25 x 30 - S

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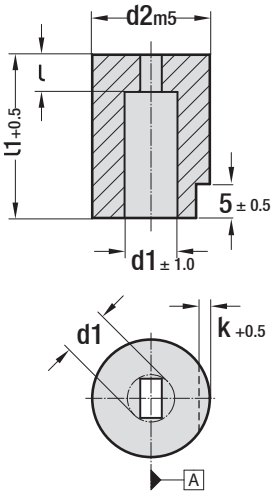
Matrix - Straight

Code: MK..

ISO 8977



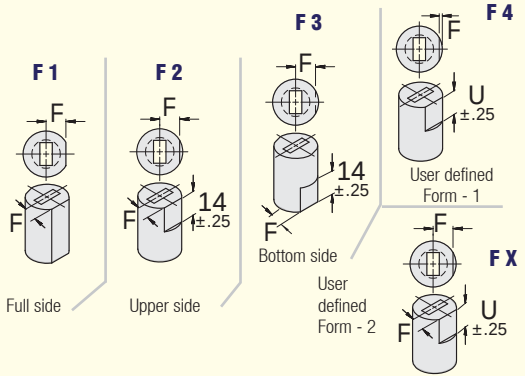
Specification: Diameter d1, d2 and lead-in radius ground.
Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC
*** d1:** Size on corners "key flat" (F size) should be specified as per request.

Types: **MKY - MKO - MKK - MKD - MKA - MKM - MKX - MKP**

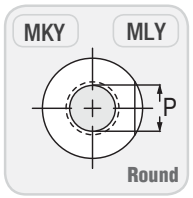
Order: MK(type). d2 x l1 x shape (P/W/R/G)

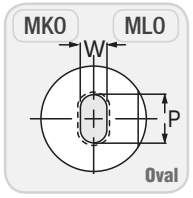
d1 = shape	d2	k	l	l1
1.8 ~ 3.2	8	1	3	20
2 ~ 5	10	1	3	22
3 ~ 7	13	1.5	3	25
5 ~ 8	16	1.5	5	28
7 ~ 11	20	1.5	5	30
11 ~ 16	25	2.5	5	32
16 ~ 19	32	2.5	7	35
19 ~ 28	40	2.5	7	40

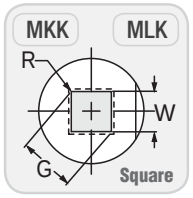
Positioning for "key flat" matrixes:

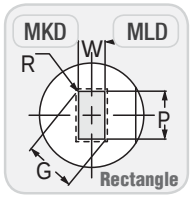


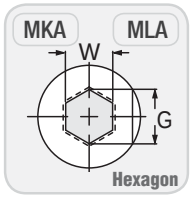
Shapes

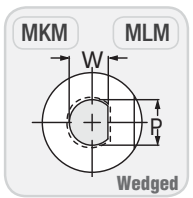


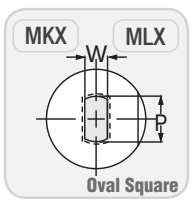


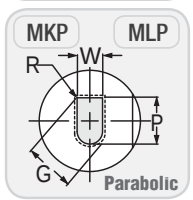


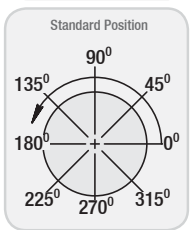








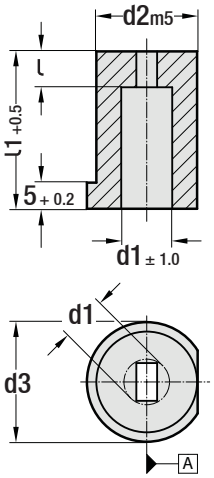




Matrix - Headed

Code: ML..

ISO 8977



Specification: Diameter d1, d2 and lead-in radius ground.
Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC
*** d1:** Size on corners "key flat" (F size) should be specified as per request.

Types: **MLY - MLO - MLK - MLD - MLA - MLM - MLX - MLP**

Order: ML(type). d2 x l1 x shape (P/W/R/G)

d1 = shape	d2	d3	k	l	l1
1.8 ~ 3.2	8	11	1	3	20
2 ~ 5	10	13	1	3	22
3 ~ 7	13	16	1.5	3	25
5 ~ 8	16	19	1.5	5	28
7 ~ 11	20	23	1.5	5	30
11 ~ 16	25	28	2.5	5	32
16 ~ 19	32	35	2.5	7	35
19 ~ 28	40	43	2.5	7	40

Information for positioning:

Key flat matrixes: "F" size used for "F1 - F2 - F3" has been specified in drawings on the left. "FX" size is defined by the user and while ordering, "key flat" dimension "F" and "U" should be specified.

Body Diameter	"F" +0.2
10	4.0
13	5.5
16	7.0
20	8.5
22	9.5
25	11

Body Diameter	"F" +0.2
32	14
38	17
40	18
45	20.5
50	23
56	26

Body Diameter	"F" +0.2
63	29.5
71	33.5
76	35.5
85	40
90	42.5
100	47.5

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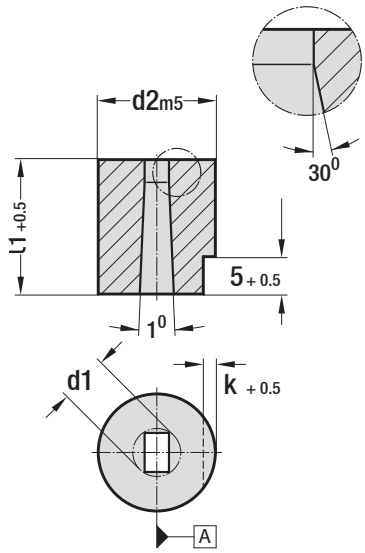
Matrix, Straight - Tapered

Code: MP..



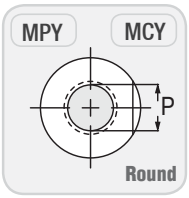
Specification: Diameter d1, d2 and lead-in radius ground.
Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC
*** d1:** Size on corners "key flat" (F size) should be specified as per request.

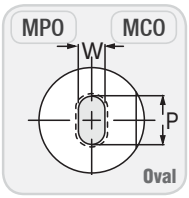
Types: **MPY - MPO - MPK - MPD - MPA - MPM - MPX - MPP**

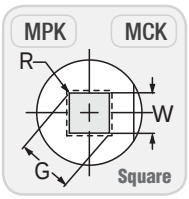
Order: MP(type). d1 x d2 x l1 x shape (P/W/R/G)

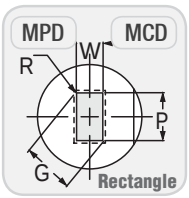
d1 = shape	d2	k	L1
1.6 ~ 3.2	8	1	16
2 ~ 5	10	1	
3 ~ 7	13	1.5	19
5 ~ 8	16	1.5	22
7 ~ 11	20	1.5	25
11 ~ 16	25	2.5	28
16 ~ 19	32	2.5	32
19 ~ 28	40	2.5	

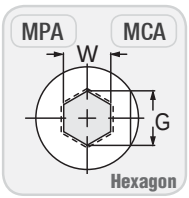
Shapes

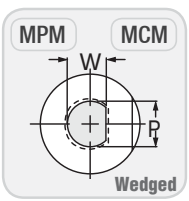


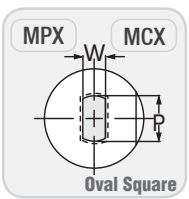


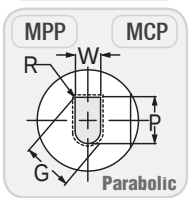


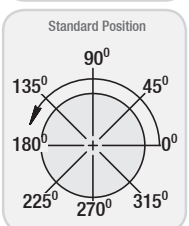






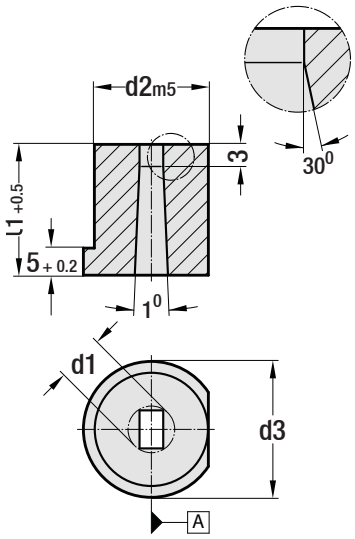






Matrix, Headed - Tapered

Code: MC..



Specification: Diameter d1, d2 and lead-in radius ground.
Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC
*** d1:** Size on corners "key flat" (F size) should be specified as per request.

Types: **MCY - MCO - MCK - MCD - MCA - MCM - MCX - MCP**

Order: MC(type). d1 x d2 x d3 x l1 x shape (P/W/R/G)

d1 = shape	d2	d3	k	L1
1.6 ~ 3.2	8	11	1	16
2 ~ 5	10	13	1	
3 ~ 7	13	16	1.5	19
5 ~ 8	16	19	1.5	22
7 ~ 11	20	23	1.5	25
11 ~ 16	25	28	2.5	28
16 ~ 19	32	35	2.5	32
19 ~ 28	40	43	2.5	

Information for positioning:

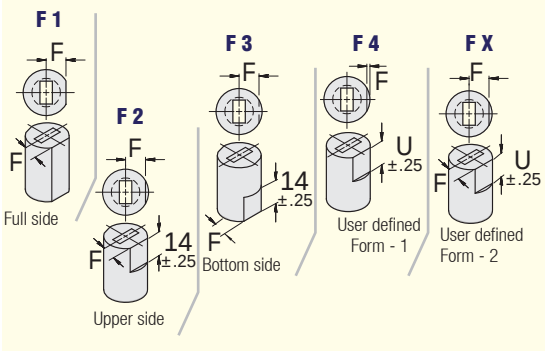
Key flat matrixes: "F" size used for "F1 - F2 - F3" has been specified in drawings on the left. "FX" size is defined by the user and while ordering, "key flat" dimension "F" and "U" should be specified.

Body Diameter	"F" +0.2
10	4.0
13	5.5
16	7.0
20	8.5
22	9.5
25	11

Body Diameter	"F" +0.2
32	14
38	17
40	18
45	20.5
50	23
56	26

Body Diameter	"F" +0.2
63	29.5
71	33.5
76	35.5
85	40
90	42.5
100	47.5

Positioning for "key flat" matrixes:



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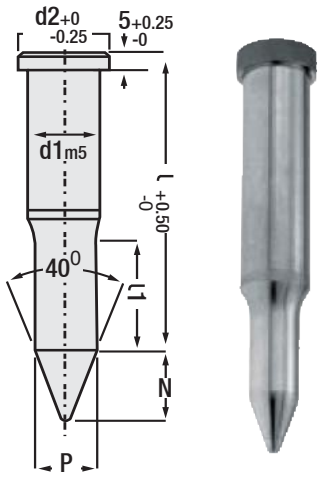


Pilot with Taper End

Code: SPK

Standard Tolerances

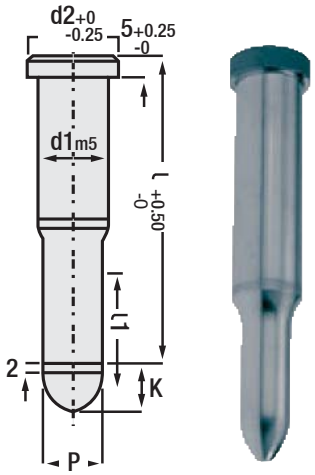
Round / P$^{+01}_{-00}$ | ,01 | From P to d1

When P = d1, shank / body tolerances apply.

Material: 1.3343 (M2) **Hardness:** 62 - 64 HRC

Ø d1	Ø d2	Taper Ø P	N mm	Ref. P	l1 mm Standard	l1 mm Alternative	l mm
10	13	4.85 ~ 10	8	5.6	19	25	71
13	16	6.30 ~ 13	10	7.1			80
16	19	9.95 ~ 16	15	10.8			100
20	23	13.6 ~ 20	20	14.4			125
25	28	17.3 ~ 25	25	18			140
32	35	20.9 ~ 32	30	21.7	25	30	

Order: SPK. d1 x P x l1 x l



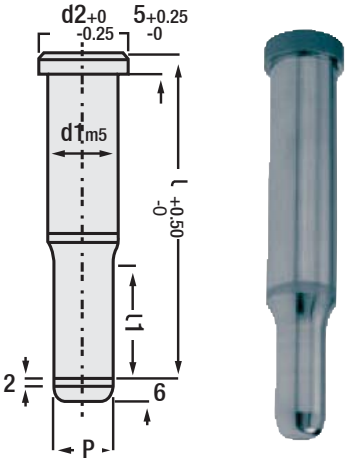
Pilot - Spherical

Code: SPX

Standard Tolerances

Round / P$^{+01}_{-00}$ | ,01 | From P To d1

When P = d1, shank / body tolerances apply.



Pilot - Parabolic Type

Code: SPP

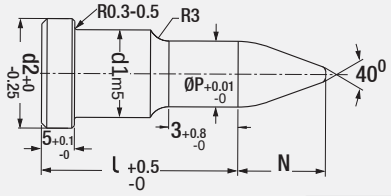
Material: 1.3343 (M2)
Hardness: 62 - 64 HRC

Code: SPX - SPP

Ø d1	Ø d2	K mm	Taper Ø P	Standard l1	Alternative l1 min.	Alternative l1 max	l mm
4	7	4	1.55 ~ 4	8	10	-	50
5	8		1.55 ~ 5	13	10	-	
6	9		1.55 ~ 6	13	10	-	60
8	11		2.45 ~ 8	19	13	-	
10	13	10	3.15 ~ 10	19	13	25	71
13	16		4.95 ~ 13	19	13	25	
16	19		7.95 ~ 16	19	13	25	80
20	23		9.95 ~ 20	19	13	25	100
25	28		11.95 ~ 25	19	13	25	
32	35		15.95 ~ 32	25	19	30	

Order: SPX. d1 x P x l1 x l

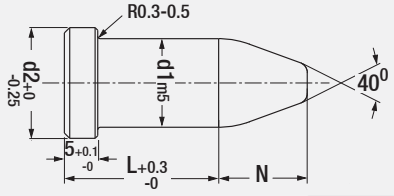
Order: SPP. d1 x P x l1 x l



Pilot - Compact Type

Code: SMK

d1	P	N	d2	l Length
4	1.95 ~ 3.99	4	7.0	20
5	2.65 ~ 4.99	5	8.0	
6	3.30 ~ 5.99	6	9.0	22
8	4.10 ~ 7.99	7	11.0	
10	4.80 ~ 9.99	8	13.0	25
13	6.25 ~ 12.99	10	16.0	
16	9.85 ~ 15.99	15	19.0	28
20	13.50 ~ 19.99	20	23.0	
25	17.20 ~ 24.99	25	28.0	35
32	20.80 ~ 31.99	30	35.0	



Pilot - Compact & Spherical

Code: SMX

d1	N	d2	l Length
3.01 ~ 4.0	4	7	20
4.01 ~ 5.0	5	8	
5.01 ~ 6.0	6	9	22
6.01 ~ 8.0	7	11	25
8.01 ~ 10	8	13	
10.01 ~ 13	10	16	28
13.01 ~ 16	15	19	35
16.01 ~ 20	20	23	

Compact Pilots

Code: SMK
Pointed End

Code: SMX
Spherical End

Order: SMK. d1 x P x N x l

Order: SMX. d1 x N x l

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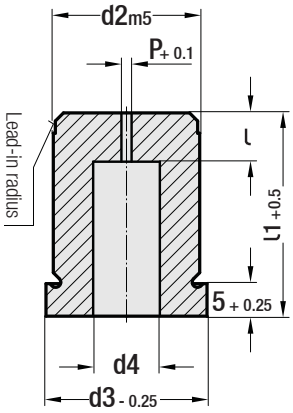
Matrix with Locking Device

Code: MF..

ISO 8977



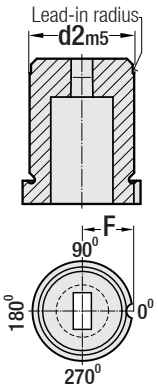
Specification: Diameter d1, d2 and lead-in radius ground.
Material: 1.3343 (M2)
Hardness: 60 - 62 HRC
*** d1:** Size on corners "key flat" (F size) should be specified as per request.

d2	d3	d4	P	l	l1
5	8	2.8	0.8	2	16 20 22 25 28 30 32 35 as per request
6	9	3.5	1	3	
8	11	4.0	1	4	
10	13	5.8	1.2	4-8	
13	16	8.0	1.2	5-8	
16	19	9.5	1.5	8-12	
20	23	12	1.5	8-12	
22	25	15	1.5	8-12	
25	28	17.3	1.5	8-12	
32	35	20.7	1.5	8-12	
40	43	27.7	1.5	8-12	
50	53	37	1.5	8-12	

l length: with 2 alternatives
l1 length: to be selected as per request.

Order: MF(type).
d2 x l x l1 x shape (P/W/R/G)

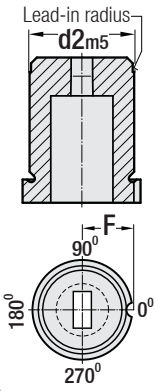
Locking Device



Dowel : Ø3 mm

d2	F
8	5.5
10	6.5
13	8
16	9.5
20	11.5
22	12.5
25	14
32	17.5
40	21.5
50	26.5

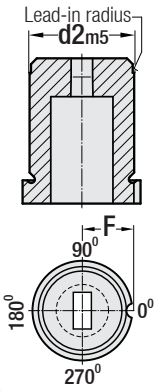
Locking Device



Dowel : Ø4 mm

d2	F
8	6
10	7
13	8.5
16	10
20	12
22	13
25	14.5
32	18
40	22
50	27

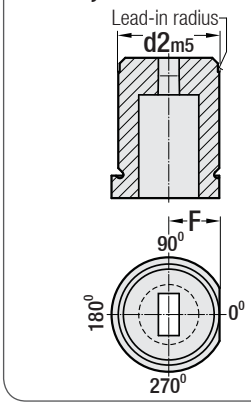
Locking Device



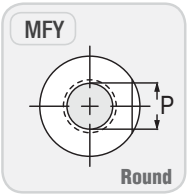
Dowel : Ø6 mm

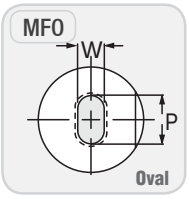
d2	F
8	7
10	8
13	9.5
16	11
20	13
22	14
25	15.5
32	19
40	23
50	28

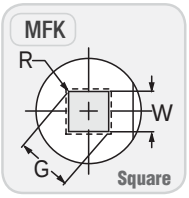
Locking Device

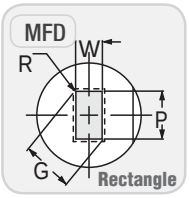


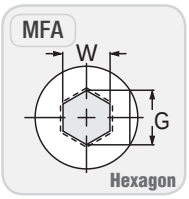
Shapes

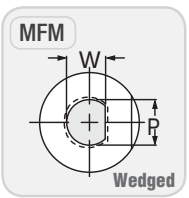


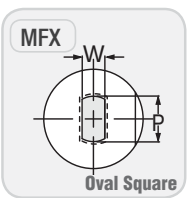


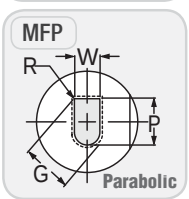


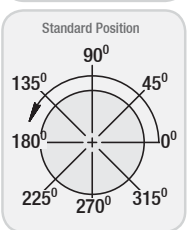


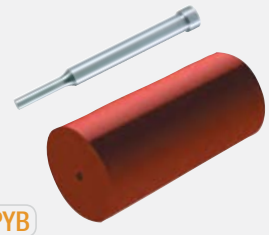








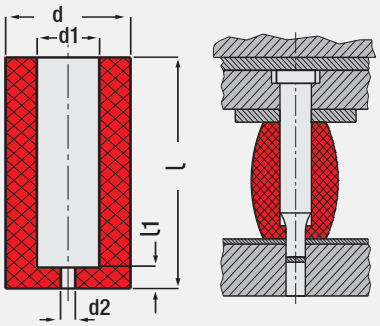




Code: PYB

Polyurethane Punch Stripper

Overspread on punch (shock absorber)



In dies that polyurethane punch stripper is used, there is no need to dismantle stripper plate to make repair whetting and modification on die components, there is not any effect on precise parts, it is excellent for all painted / anodized, plastic plated and polished parts.
It is compatible to use with oil and grease.
It is overspread on punch. Placement is done according to the stripper hardness. There is no need for extra holder. Stepped-punch hole will be opened at the first stroke of press on stripper edge.
Especially, in large dies requiring very wide stripper plate, this product is very compatible.

Code: PYB

Order	d1 Ø	d Ø	d2 Ø	l1 mm	l mm	Punch Length
PYB.445	4.0	17	1.6	5.0	45	56 / 63
PYB.655	6.0	19			55	63 71 80 90
PYB.855	8.0	21	3.0 Punch Hole			
PYB.1055	10	23				
PYB.1355	13	26				
PYB.1655	16	30				100
PYB.2055	20	38				
PYB.2555	25	50				

d2: (1.6 - 3.0 mm) (d1) while opening hole diameter / drilling, polyurethane (punch) bush should be applied and drilled in pressed (S max) position. Spring load is obtained while extending outwards.

In S. max flexion, load coefficient data daN / Kg.

d mm	17	19	21	23	26	30	38	50
S daN 3 mm	60 daN	65 daN	70 daN	90 daN	110 daN	140 daN	210 daN	370 daN
S daN 6 mm	115 daN	120 daN	130 daN	160 daN	190 daN	230 daN	360 daN	650 daN
S daN 9 mm	-	180 daN	210 daN	240 daN	300 daN	370 daN	550 daN	1020 daN

S max: Load coefficient daN = Kg. / (10 newton), while polyurethane bush S max in pressed, load data is advisory.

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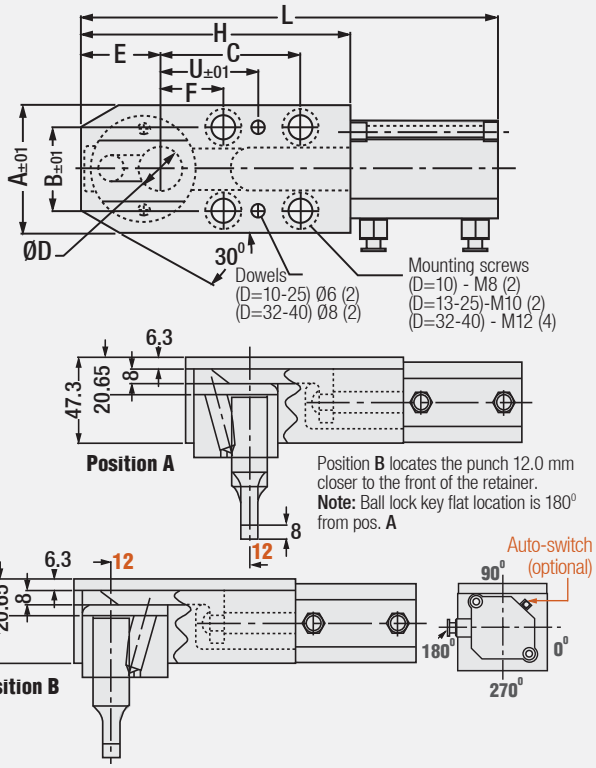
LIGHT DUTY

HEAVY DUTY

Ball Lock Retainer with Air Cylinder

Code: MRA

Dual-position advantage



Thanks to its powerful block tructure, there is no need for extra security.

"MRA - Ball Lock Retainer" do not create additional tooling cost and it provides to add or remove hole without interrupting production. It is compatible with NAAMS standards and leading automotive standards. Position B enables the punch to get closer to the front end of the retainer (edge) 12 mm.

D Order	L	A	B	C		E		F	
				Pos.A	Pos.B	Pos.A	Pos.B	Pos.A	Pos.B
MRA.10	161	46	30	-	-	28	16	21	33
MRA.13	172.5	50	30	-	-	28	16	25	37
MRA.16	177	50	30	-	-	31	19	25	37
MRA.20	191.5	58	38	-	-	32.5	20.5	29	41
MRA.25	206.5	58	38	-	-	35	23	29	41
MRA.32	260	80	56	100	112	38	26	38	50
MRA.40	264	80	56	100	112	42	30	38	50

Air Fitting: 10 -25 M5 x 0.8 (2) 32 - 40 1/8 NPT (2) **Min. Pressure :** 45 PSI

Recommended Air Pressure: 4.60 - 5.3 Kgf / cm^2 (65 - 75 PSI) **Max. Pressure:** 145 PSI

D Order	H	U		Screw
		Pos.A	Pos.B	
MRA.10	93.5	37	49	M8
MRA.13	100	41	53	M10
MRA.16	104.5	41	53	M10
MRA.20	113.5	45	57	M10
MRA.25	123.5	45	57	M10
MRA.32	152	60	72	M12
MRA.40	156	60	72	M12

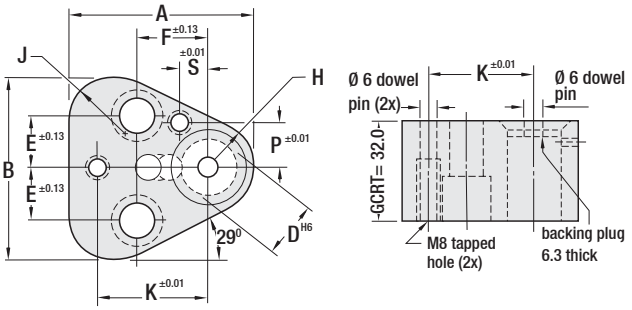
Note: Necessary screws, dowel pins and air cylinder are given with the product. Air connection tubes and auto-switch are not given with the product. They should be ordered separately. Ask information for additional accessories.

LIGHT DUTY

Ball Lock Punch Retainer - Light Duty

Code: GCRT

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Shaped punches use the secondary dowel for precise alignment; round punches need only one.
- The precision-ground ball hole assures perfect alignment of any punch shape – even if you replace the retainer.
- Retainer includes; 2 dowel pins + 2 screws + 1 ball + 1 spring + 1 ball release screw.

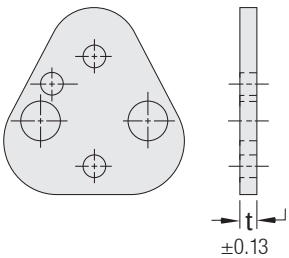


Code: GCRT

Order	GCRT. 10	GCRT. 13	GCRT. 16	GCRT. 20	GCRT. 25
D (punch)	10	13	16	20	25
A	44.5	50.8	54.0	60.3	69.9
B	43.7	50.0	53.2	59.5	69.1
E	11.1	14.3	15.9	17.5	19.8
F	19.0	19.0	19.0	19.0	23.8
H	9.5	12.7	14.3	17.5	22.2
J	12.0	15.2	16.8	20.0	24.7
K	26.925	29.970	31.750	33.530	40.640
P	9.0	12.0	13.5	16.5	22.0
S	7.5	6.5	6.0	5.0	7.0
Screw	M8	M8	M8	M10	M12

Shim & Backing Plate for Punch Retainer

Please check Code: PRSP and PRBP for shim and backing plates.



Shim Plate t = 1.8 (soft)

Code: PRSP

Backing Plate t = 4.8 (55 HRC)

Code: PRBP

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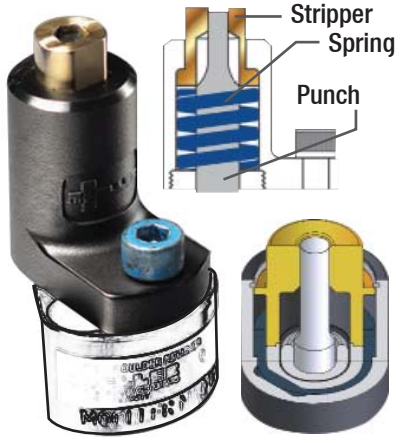
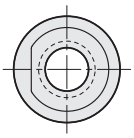
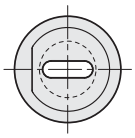


Code: MTX



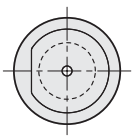
ROUND
for stepped
round type
punches

Code: MTW

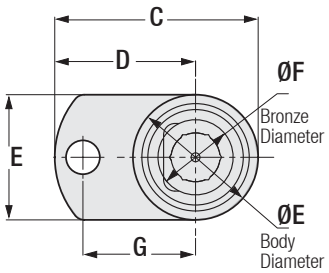


SHAPE
for stepped
form / shape
type punches

Code: MTV



BLANK
for standard
blank punches
and light duty
ball lock



Ball Lock Stripper Retainer LIGHT DUTY

If retainer and punch are required, please purchase as additional line items at time of order.

Note: Only available in 80 mm & 90 mm punch lengths.

Stripper Types:

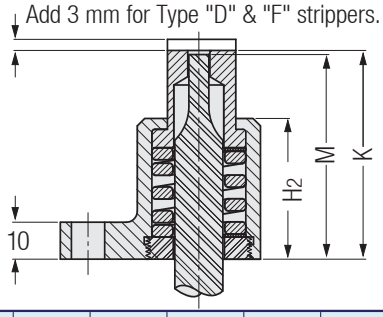
Standard Bronze

Long Bronze for Contour

Contoured Bronze to Customer Shape

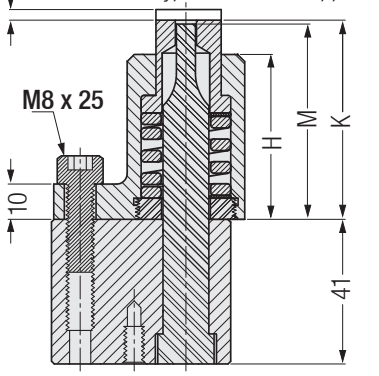
Long Reach / Compact Unit

Add 3 mm for Type "D" & "F" strippers.



Standard Unit

Add 3 mm for Type "D" & "F" strippers.



Order	C	D	E	F	G	H	H2	K	M	Stroke	Long Reach / Compact Max. Stroke	HEX Tool Length
MTV13 - 71/S	54.1	37.5	33.3	20	30	37.74	-	46.5	46	6.5	-	1/2"
MTV13 - 80/S	54.1	37.5	33.3	20	30	46.74	37.74	55.5	55	6.5	6.5	1/2"
MTV13 - 90/S	54.1	37.5	33.3	20	30	54.52	37.74	65.5	65	8.5	6.5	1/2"
MTV16 - 71/S	58.7	38.7	40	27	31.8	37.74	-	46.5	46	7.9	-	5/8"
MTV16 - 80/S	58.7	38.7	40	27	31.8	46.74	37.74	55.5	55	7.9	7.9	5/8"
MTV16 - 90/S	58.7	38.7	40	27	31.8	54.52	37.74	65.5	65	9.5	7.9	5/8"
MTV20 - 71/S	65.4	42.4	46.1	33	33.5	37.74	-	46.5	46	7.3	-	3/4"
MTV20 - 80/S	65.4	42.4	46.1	33	33.5	46.74	37.74	55.5	55	7.3	7.3	3/4"
MTV20 - 90/S	65.4	42.4	46.1	33	33.5	54.52	37.74	65.5	65	8.1	7.3	3/4"
MTV25 - 71/S	74.9	47.1	55.6	42.5	40.6	37.74	-	46.5	46	8.5	-	24 mm
MTV25 - 80/S	74.9	47.1	55.6	42.5	40.6	46.74	37.74	55.5	55	8.5	8.5	24 mm
MTV25 - 90/S	74.9	47.1	55.6	42.5	40.6	54.52	37.74	65.5	65	9.3	8.5	24 mm
MTV32 - 71/S	78.9	47.1	63.5	50.6	40.6	37.74	-	46.5	46	7.7	-	1 - 1/4"
MTV32 - 80/S	78.9	47.1	63.5	50.6	40.6	46.74	37.74	55.5	55	7.7	7.7	1 - 1/4"
MTV32 - 90/S	78.9	47.1	63.5	50.6	40.6	54.52	37.74	65.5	65	7.7	7.7	1 - 1/4"

Specify dimensions of ends of punches to be used in "MT retainers" during ordering.

Order Example:

Size	Punch Shoulder Style			Punch Body Diameter	Punch Length			Punch Stripper			Long Reach
Metric	Round	Shape	Blank		71	80	90	B	D	F	LR
M	X	W	V								

MTV 10 - 71 / SB / LR

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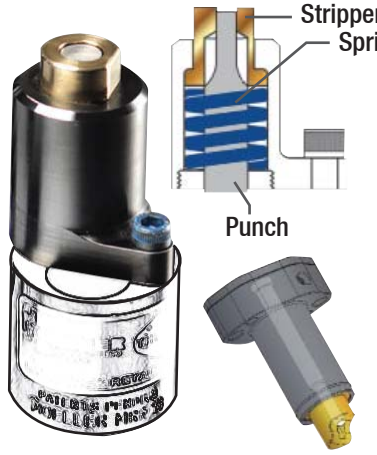
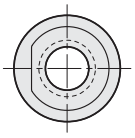
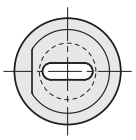


Code: MTJ



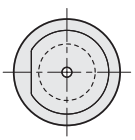
ROUND
for stepped
round type
punches

Code: MTK

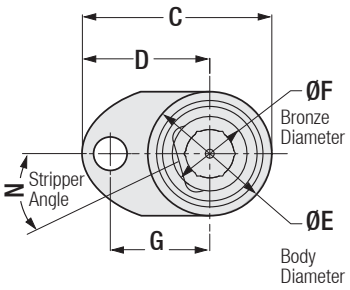


SHAPE
for stepped
form / shape
type punches

Code: MTL



BLANK
for standard
blank punches
and light duty
ball lock



Ball Lock Stripper Retainer

HEAVY DUTY

If retainer and punch are required, please purchase as additional line items at time of order.

Note: Only available in 90 mm & 100 mm punch lengths.

Stripper Types:

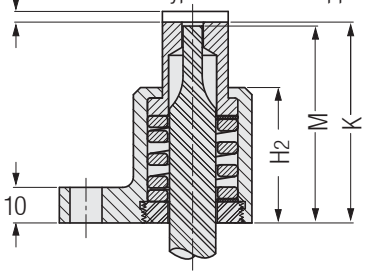
Standard Bronze

Long Bronze for Contour

Contoured Bronze to Customer Shape

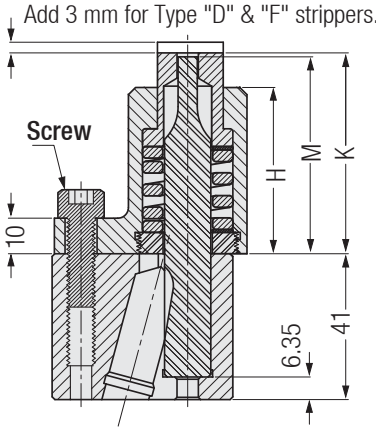
Long Reach / Compact Unit

Add 3 mm for Type "D" & "F" strippers.



Standard Unit

Add 3 mm for Type "D" & "F" strippers.



Order	C	D	E	F	G	H	H2	K	M	Stroke	Long Reach / Compact Max. Stroke	Screw	HEX Tool Length
MTL13 - 80/S	46.1	29.4	33.3	20	23.9	37.74	-	46.46	45.35	6.5	-	M6x25	1/2"
MTL13 - 90/S	46.1	29.4	33.3	20	23.9	46.74	37.74	56.46	55.35	6.5	6.5	M6x25	1/2"
MTL13 - 100/S	46.1	29.4	33.3	20	23.9	54.52	37.74	66.46	65.36	8.5	6.5	M6x25	1/2"
MTL16 - 80/S	50	30	40	27	24.5	37.74	-	46.85	45.35	7.9	-	M6x25	5/8"
MTL16 - 90/S	50	30	40	27	24.5	46.74	37.74	56.85	55.35	7.9	7.9	M6x25	5/8"
MTL16 -100/S	50	30	40	27	24.5	54.52	37.74	67.95	65.36	9.5	7.9	M6x25	5/8"
MTL20 - 80/S	59	36	46.1	33	29	37.74	-	46.85	45.35	7.3	-	M8x25	3/4"
MTL20 - 90/S	59	36	46.1	33	29	46.74	37.74	56.85	55.35	7.3	7.3	M8x25	3/4"
MTL20 - 100/S	59	36	46.1	33	29	54.52	37.74	66.86	65.36	8.1	7.3	M8x25	3/4"
MTL25 - 80/S	68.3	40.5	55.6	42.5	33.5	37.74	-	46.85	45.35	8.5	-	M8x25	24 mm
MTL25 - 90/S	68.3	40.5	55.6	42.5	33.5	46.74	37.74	56.85	55.35	8.5	8.5	M8x25	24 mm
MTL25 - 100/S	68.3	40.5	55.6	42.5	33.5	54.52	37.74	66.86	65.36	9.3	8.5	M8x25	24 mm
MTL32 - 80/S	79.4	47.6	63.5	50.6	40.6	37.74	-	46.85	45.35	7.7	-	M8x25	1 - 1/4"
MTL32 - 90/S	79.4	47.6	63.5	50.6	40.6	46.74	37.74	56.85	55.35	7.7	7.7	M8x25	1 - 1/4"
MTL32 - 100/S	79.4	47.6	63.5	50.6	40.6	54.52	37.74	66.86	65.36	7.7	7.7	M8x25	1 - 1/4"
MTL40 - 80/S	87.2	51	72.5	59.7	44	37.74	-	46.85	45.35	7.6	-	M8x25	1 - 1/2"
MTL40 - 90/S	87.2	51	72.5	59.7	44	46.74	37.74	56.85	55.35	7.6	7.6	M8x25	1 - 1/2"
MTL40 - 100/S	87.2	51	72.5	59.7	44	54.52	37.74	66.86	65.36	7.6	7.6	M8x25	1 - 1/2"

Size	Punch			Punch Body Diameter	Punch Length			Punch Stripper			Long Reach
Metric	Ball Lock										
	Round	Shape	Blank								
M	J	K	L		80	90	100	B	D	F	LR

Specify dimensions of ends of punches to be used in "MT retainers" during ordering.

MTL 10 - 80 / SB / LR

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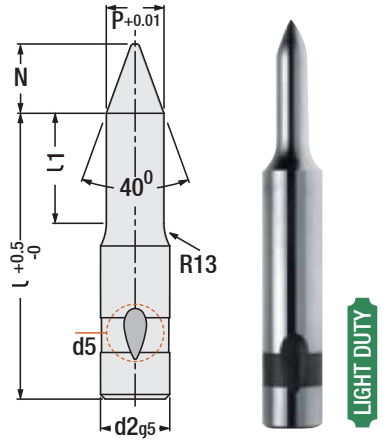


Ball Lock Pilot - Conical Code: BPK

"N" becomes = 1.2 x "P" minimum when "P" is below (see table).

Standard Tolerances

Round / P +01 -00 | ,01 | From P to d2

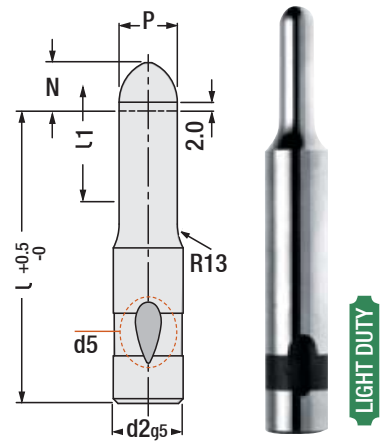
When P = d2, shank / body tolerances apply.

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC

d2	d5	P	L1	N	l
10	8 mm	5.9 ~ 9.9	19	8	71
13		9.9 ~ 12.9	19	10	80
16		12.9 ~ 15.9	25	15	100
20		15.9 ~ 19.9	25	20	71
25		19.9 ~ 24.9	25	25	80
32		24.9 ~ 31.9	25	30	100 125
38		31.9 ~ 37.9	30	35	140

Note: P / L selection as per request.
- Special dimensions on request.

Order: **BPK.** d2 x P x l



Ball Lock Pilot - Spherical Code: BPX

- It is length of "L" pilot except end.
- 2 mm length is guided to punch before punch contacting sheet metal.

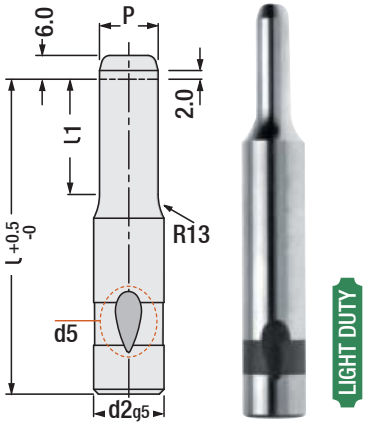
	P	N
10.1 mm	≤ 10 mm	8 mm
	- 15 mm	12 mm
	> 15 mm	15 mm

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC

d2	d5	P	L1	N	l
6	6	2.9 ~ 5.9	13	-	63 71 80 90 100
10	8 mm	5.9 ~ 9.9	19	8	
13		9.9 ~ 12.9	19	10	
16		12.9 ~ 15.9	25	15	
20		15.9 ~ 19.9	25	15	
25		19.9 ~ 24.9	25	20	
32		24.9 ~ 31.9	25	25	

Note: P / L selection as per request.
- Special dimensions on request.

Order: **BPX.** d2 x P x l



Ball Lock Pilot - Parabolic Code: BPP

Standard Tolerances

Round / P +01 -00 | ,01 | From P to d2

When P = d2, shank / body tolerances apply.

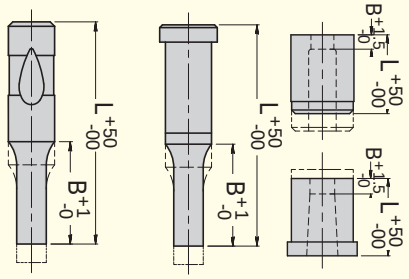
Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC

d2	d5	P	L1	l
6	6	2.2 ~ 6.0	13	63 71 80 90 100
10	8 mm	2.5 ~ 10	19	
13		5.0 ~ 13	19	
16		8.0 ~ 16	19	
20		12~ 20	19	
25		16~ 15	19	

Note: P / L selection as per request.
- Special dimensions on request.

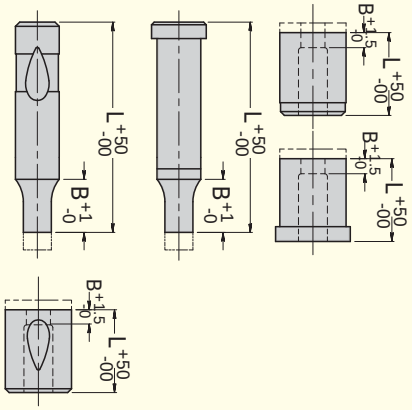
Order: **BPP.** d2 x P x l

Alternative Selection Information: Gaps Except Punch Centre



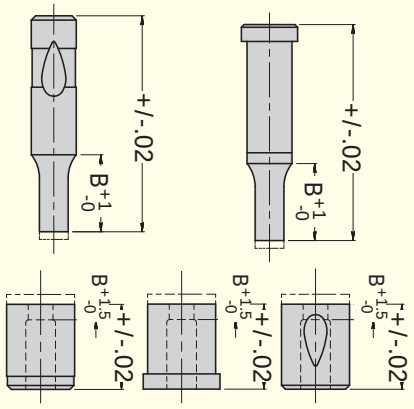
X1 **B:** Main Dimension

Shortening punch or matrix length maintaining "B" point or land length. Not available in counter bore style on headed or ball lock matrixes.



X2 **B:** Shortened Dimension

Shortening punch or matrix length but also decreases "B" dimension or land length.



X3

Provides a precision overall length of **± 02**
Note: 5 maximum stock removal

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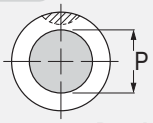
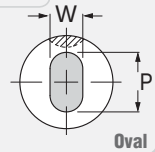
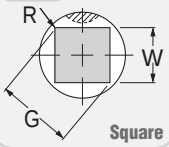
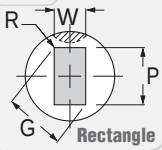
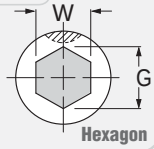
Shapes

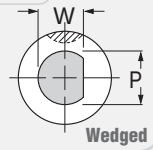
BHY


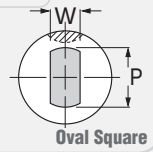
BHO


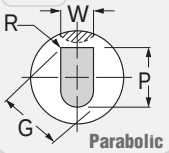
BHK


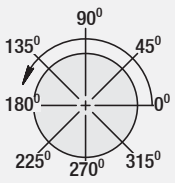
BHD


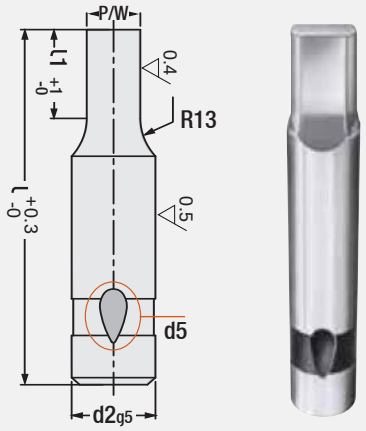
BHA


BHM


BHX


BHP


Standard Position




LIGHT DUTY

Ball Lock Stepped Punch - Light Duty

Code: BH..

Material: 1.3343 (M2) - **Hardness:** 60 - 62 HRC

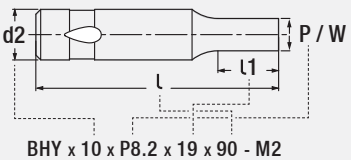
- When **P = d2** shank / body tolerances apply.
- Standard ball socket location is at 90°.

Order d2	Ball Socket d5	Shape (BHY) Round P	Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
BH..06	6	2.2 ~ 5.9	2.2 - 5.9	13	10	-	63
BH..10	8 mm	2.5 ~ 9.9	2.5 - 9.9	19	10	19	71
BH..13		5.0 ~ 12.9	4.5 - 12.9	19	13	25	80
BH..16		8.0 ~ 15.9	6.0 - 15.9	19	13	25	90
BH..20		12 ~ 19.9	8.0 - 19.9	19	13	25	100
BH..25		16 ~ 24.9	10 - 24.9	19	13	25	125
BH..32		24 ~ 31.9	12.5 - 31.9	25	25	30	80
BH..38		30 ~ 37.9	14 - 37.9	25	25	30	90 100 125

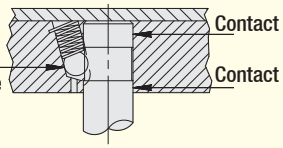
Order Codes: **BHY - BHO - BHK - BHD - BHA - BHM - BHX - BHP**

Please refer to the table on the left side

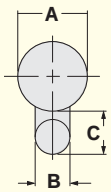
How to order:
Shape
d2
P/W
l1
l
Material



BHY x 10 x P8.2 x 19 x 90 - M2
BHO x 13 x P8.2 x W5.2 x 25 x 100 - M2



Connecting Punch to Retainer with Ball Socket

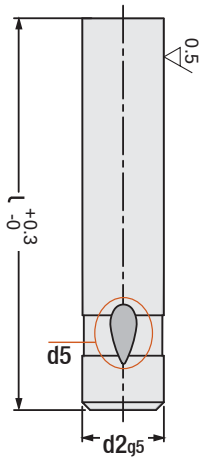


for precise retainers, please add 1.7 to "C" dimension

Requirements of Ball Locking Place

Light Duty Punch / Matrix

Punch Dia. A	Ball Dia. B	Clearance C
6.0	6.0	10
10	8	11
13		
16		
20		
25		
32		
38		



LIGHT DUTY

Ball Lock Punch - Light Duty

Code: BHZ

ISO 10071 (Blank type)

Body and cutting edge are precision ground.
Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.

d2	d5	l
Ø 6 mm	6 mm	63
		71
		80
		90
		100
		125
Ø 10 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 13 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 16 mm	8 mm	63
		71
		80
		90
		100
		125

d2	d5	l
Ø 20 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 25 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 32 mm	8 mm	71
		80
		90
		100
		125
Ø 38 mm	8 mm	80
		90
		100
		125

Order: BHZ. d2 x l

Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Note: Special dimensions on request.

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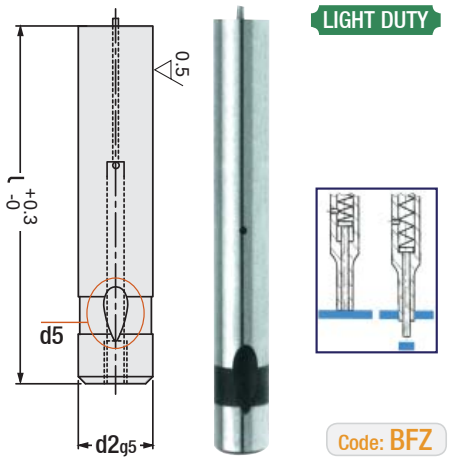
LIGHT DUTY



Code: BFZ

Ball Lock Punch with Ejector - Light Duty

ISO 10071 **(Blank type)**

Body and cutting edge are precision ground.
Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.

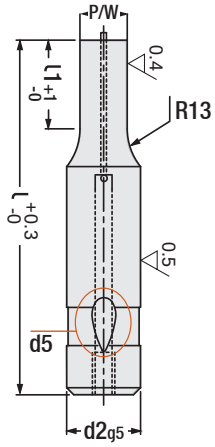
d2	d5	l
Ø 6 mm	6 mm	63
		71
		80
		90
		100
		125
Ø 10 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 13 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 16 mm	8 mm	63
		71
		80
		90
		100
		125

d2	d5	l
Ø 20 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 25 mm	8 mm	63
		71
		80
		90
		100
		125
Ø 32 mm	8 mm	71
		80
		90
		100
		125
Ø 38 mm	8 mm	80
		90
		100
		125

Order: BFZ. d2 x l

Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Note: Special dimensions on request.



LIGHT DUTY

Ball Lock Stepped Punch with Ejector

Code: BF..

Light Duty

Material: 1.3343 (M2) - **Hardness:** 60 - 62 HRC

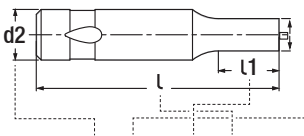
- When **P = d2** shank / body tolerances apply.
- Standard ball socket location is at 90⁰.

Order d2	Ball Socket d5	Shape (BFY) Round P	Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
BF..06	6	2.2 ~5.9	2.2 -5.9	13	10	-	63 71 80 90 100 125
BF..10	8 mm	2.5 ~9.9	2.5 -9.9	19	10	19	
BF..13		5.0 ~12.9	4.5 -12.9	19	13	25	
BF..16		8.0 ~15.9	6.0 -15.9	19	13	25	
BF..20		12 ~19.9	8.0 -19.9	19	13	25	
BF..25		16 ~24.9	10 -24.9	19	13	25	
BF..32		24 ~31.9	12.5 -31.9	25	25	30	80 90 100 125
BF..38		30 ~37.9	14 -37.9	25	25	30	

Order Codes: **BFY - BFO - BFK - BFD - BFA - BFM - BFX - BFP**

Please refer to the table on the right side →

How to order:
Shape
d2
P/W
l1
l
Material



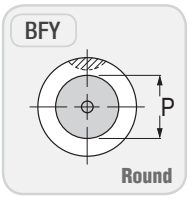
BFY x 10 x P8.2 x 19 x 100 - M2
BFO x 13 x P8.2 x W5.2 x 25 x 100 - M2

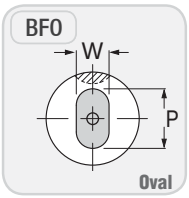
Standard Tolerances		
Round P +0.1 / -.00	◎ 0.1	From P to d2
Shape P,W,G ± 0.1	◎ 0.2	From P to d2

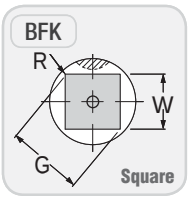
Standard position of ball socket is 90⁰.
It can be preferred as 0⁰ - 180⁰ - 270⁰.

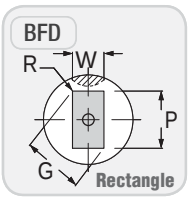
Note: Parts are viewed in die position looking from above the die.
Punches are viewed looking through the body.
Matrixes are viewed through top face.

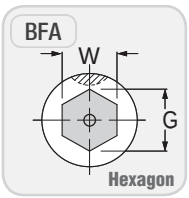
Shapes

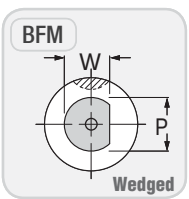


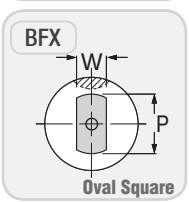


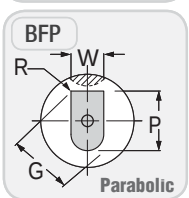


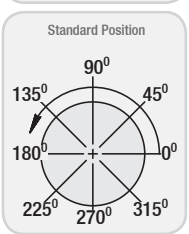












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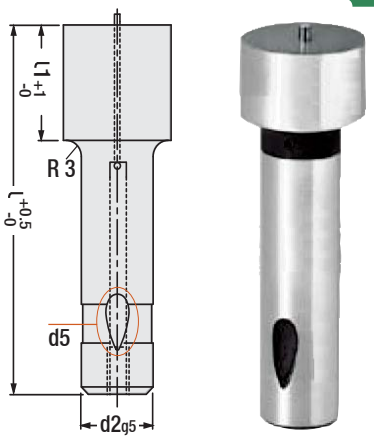
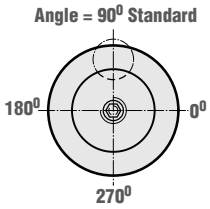
LIGHT DUTY



Larger Ball Lock Ejector Punch

Code: BG..

Body and outer dia. are precision ground.



Round Type Punches

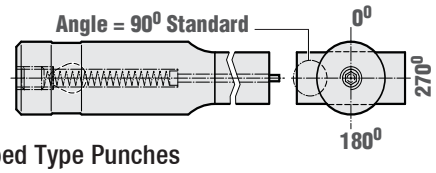
Order d2	Ball Socket d5	P (round) Min. Max.	l1 Min. Max.	l
BGY. 10	8 mm	10.1 ~ 25	16	80 90 100
BGY. 13		13.1 ~ 32	20	
BGY. 16		16.1 ~ 38	25	
BGY. 20		20.1 ~ 40	25	
BGY. 25		25.1 ~ 44	25	
BGY. 32		32.1 ~ 50	32	
BGY. 40		40.1 ~ 63	32	

Round / Shaped

Order: BG.. d2 x P/W/G x l1 x l

Types: **BGY - BGO - BGK - BGD - BGA - BGM - BGX - BGP**

Please refer to the table on the right side

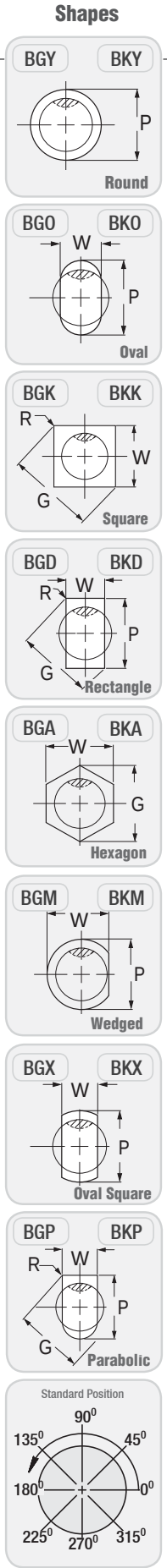


Shaped Type Punches

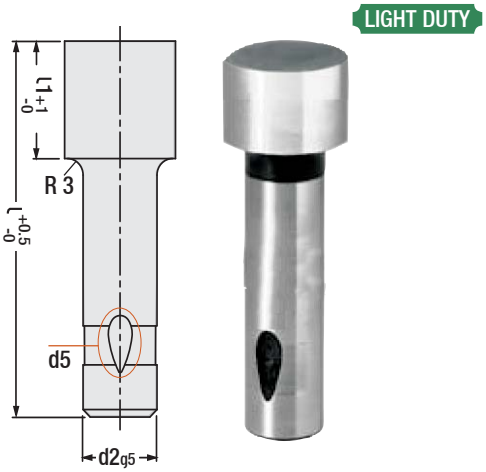
Order d2	Ball Socket d5	P/W/G (Shape) Min. Max.	l1 Min. Max.	l
BG.. 10	8 mm	3.0 ~ 25	16	80 90 100
BG.. 13		5.0 ~ 32	20	
BG.. 16		6.5 ~ 38	25	
BG.. 20		8.0 ~ 40	25	
BG.. 25		10 ~ 44	25	
BG.. 32		11.5 ~ 50	32	
BG.. 40		14 ~ 63	32	

Note: Special dimensions on request.

Shapes



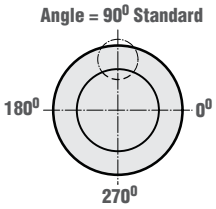
LIGHT DUTY



Larger Ball Lock Punch

Code: BK..

Body and outer dia. are precision ground.



Round Type Punches

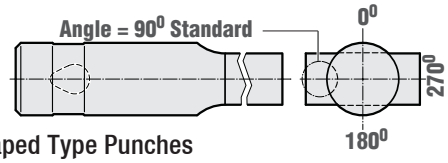
Order d2	Ball Socket d5	P (round) Min. Max.	l1 Min. Max.	l
BKY. 10	8 mm	10.1 ~ 25	16	80 90 100
BKY. 13		13.1 ~ 32	20	
BKY. 16		16.1 ~ 38	25	
BKY. 20		20.1 ~ 40	25	
BKY. 25		25.1 ~ 44	25	
BKY. 32		32.1 ~ 50	32	
BKY. 40		40.1 ~ 63	32	

Round / Shaped

Order: BK.. d2 x P/W/G x l1 x l

Types: **BKY - BKO - BKK - BKD - BKA - BKM - BKX - BKP**

Please refer to the table on the left side



Shaped Type Punches

Order d2	Ball Socket d5	P/W/G (Shape) Min. Max.	l1 Min. Max.	l
BK..10	8 mm	3.0 ~ 25	16	80 90 100
BK..13		5.0 ~ 32	20	
BK..16		6.5 ~ 38	25	
BK..20		8.0 ~ 40	25	
BK..25		10 ~ 44	25	
BK..32		11.5 ~ 50	32	
BK..40		14 ~ 63	32	

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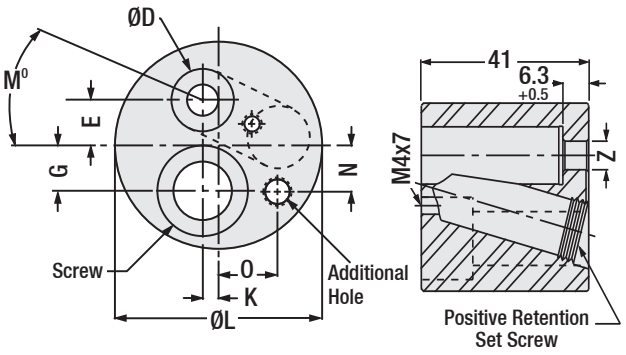
HEAVY DUTY

Ball Lock Punch Retainer - Round

Code: MRR

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Economical: This type retainers are more economical than other ball lock retainers.

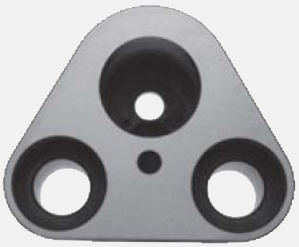


Round Type

Code: MRR

Order	MRR 10	MRR 13	MRR 16	MRR 20	MRR 25	MRR 32	MRR 40
D Punch	10	13	16	20	25	32	40
Ø L	38.1	41.3	44.5	57.2	63.5	76.2	82.6
E	9.86	9.25	9.10	12.20	12.51	15.67	15.39
G	7.10	9.17	11.07	14.30	17.50	20.83	23.55
K	2.65	3.18	1.93	-	-	-	-
M	20.5°	26°	33.5°	30°	30°	30°	30°
N	4.47	9.35	10.21	9.35	14.27	15.46	15.46
O	12.72	11.88	13.16	19.40	20.17	26.12	26.12
Z	6	6	6	6	6	6	6
Add. Hole	M6 x 1.0	M6 x 1.0	M6 x 1.0	M8 x 1.25	M8 x 1.25	M8 x 1.25	M8 x 1.25
Screw	M12	M12	M12	M16	M16	M20	M20

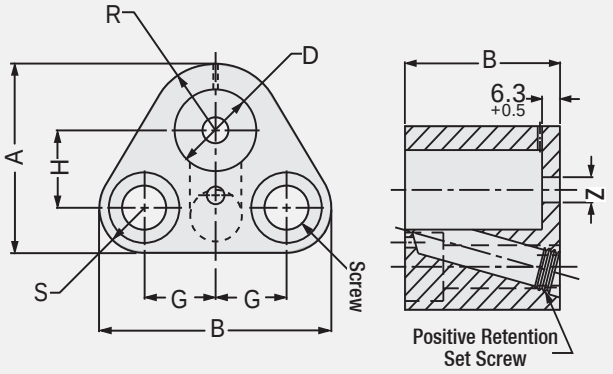
HEAVY DUTY



Ball Lock Punch Retainer - Mini

Code: MRM

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Mini sized: This type of retainers are smaller than other retainers.



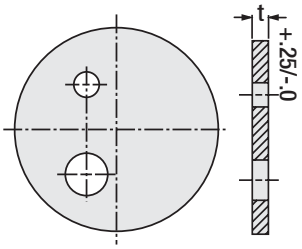
Mini Type

Code: MRM

Order	MRM 10	MRM 13	MRM 16	MRM 20	MRM 25	MRM 32	MRM 40
D Punch	10	13	16	20	25	32	40
A	37.8	40.3	42.1	46.5	56.5	58.2	67.3
B	40.6	47.6	50.8	57.1	65.1	64.0	76.2
G	11.1	14.3	15.9	17.5	19.8	19.8	24.0
H	19.0	19.0	19.0	19.0	23.8	23.8	27.0
R	9.5	11.7	13.5	16.4	20.0	22.2	26.0
S	9.2	9.5	9.5	11.1	12.7	12.2	14.3
Z	6	6	6	6	6	6	6
Screw	M8	M8	M8	M10	M12	M12	M12

Shim Plate for Round Retainers (MRR)

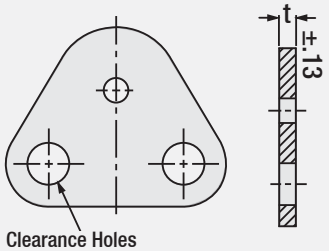
Code: MAY



Order	"MAY" Code	t
Order Example: MRR.. / MAY.018	018	1.80
	030	3.00
	031	3.18
	047	4.75
	060	6.00
	063	6.35
	100	10
	130	13

Shim Plate for Mini Retainers (MRM)

Code: MAM



Order	"MAM" Code	t
Order Example: MRM.. / MAM.030	030	3.00
	060	6.00
	100	10
	130	13

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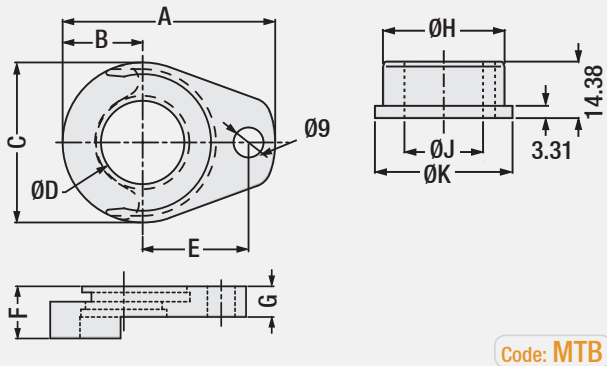
HEAVY DUTY

Larger Ball Lock Stripper Retainer

Code: MTB

It is used with "GBRT" heavy duty ball lock retainers

Innovative and integral designed, patented cost savings. Retaining feature at once. Exchangeable and compatible with NAAMS standards. Precision machined to assure perpendicularity resulting in prolonged urethane life.



Code: MTB

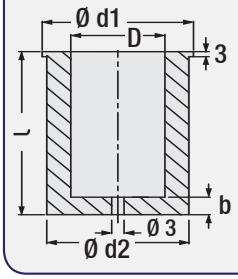
Order	MTB	MTB	MTB	MTB	MTB	MTB
Body P/G	ø 10	ø 13	ø 16	ø 20	ø 25	ø 32
	15.75	19.75	24.75	31.75	39.75	39.75
A	53.18	58.60	63.75	73.86	83.63	83.63
B	18	20.5	24	31	36	36
C	36	41	48	62	72	72
D	16	20	25	32	40	40
E	26.93	29.97	31.75	33.53	40.64	40.64
F	17	17	17	17	17	18
G	10	10	10	10	10	10
H (Spring)	15.75	19.75	24.75	31.70	39.70	39.70
J (Punch)	10	13	16	20	25	32
K	19	23	28	34	44	44
Urethane	MTS **16** Ur.Length	MTS **20** Ur.Length	MTS **25** Ur.Length	MTS **32** Ur.Length	MTS **40** Ur.Length	MTS **40** Ur.Length

Urethane Stripper

Code: MTS

for "MTB" Stripper Retainer

Exchangeable and compatible with NAAM standards.
Material: Polyurethane / 95 Shore-A



Order	Punch Length	Punch	l	D	d1	d2	b
MTS 10	80	**10**	43	15.75	31	28	6
	100		63				
MTS 13	80	**13**	43	19.75	36	33	7
	100		63				
MTS 16	80	**16**	43	24.75	43	40	7
	100		63				
MTS 20	80	**20**	43	31.75	55	50	7
	100		63				
MTS 25	80	**25**	43	39.75	65	60	8
	100		63				
MTB 32	80	**32**	43	39.75	65	60	8
	100		63				

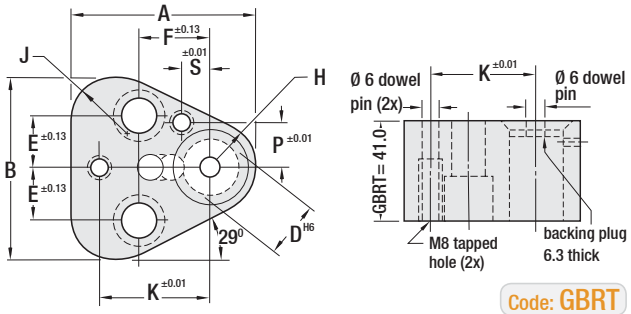
HEAVY DUTY

Ball Lock Punch Retainer - Heavy Duty

Code: GBRT

- Centre of pin holes are reference points for punch hole position.
- Shim and backing plate should be supplied separately.
- Shaped punches use the secondary dowel for precise alignment; round punches need only one.
- The precision-ground ball hole assures perfect alignment of any punch shape – even if you replace the retainer.
- Retainer includes;
  2 dowel pins + 2 screws + 1 ball + 1 spring + 1 ball release screw.

*** GBRT retainer is compatible to "NAAMS" standard for ball lock punch retainer.**

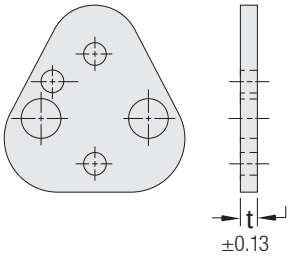


Code: GBRT

Order	GBRT. **10**	GBRT. **13**	GBRT. **16**	GBRT. **20**	GBRT. **25**	GBRT. **32**
D (punch)	10	13	16	20	25	32
A	44.5	50.8	54.0	60.3	69.9	69.9
B	43.7	50.0	53.2	59.5	69.1	69.1
E	11.1	14.3	15.9	17.5	19.8	19.8
F	19.0	19.0	19.0	19.0	23.8	23.8
H	9.5	12.7	14.3	17.5	22.2	22.2
J	12.0	15.2	16.8	20.0	24.7	24.7
K	26.925	29.970	31.750	33.530	40.640	40.640
P	9.0	12.0	13.5	16.5	22.0	22.0
S	7.5	6.5	6.0	5.0	7.0	7.0
Screw	M8	M8	M8	M10	M12	M12

Shim & Backing Plate for Punch Retainer

Please check Code: **PRSP** and **PRBP** for shim and backing plates.



Shim Plate t = 1.8 (soft)

Code: PRSP

Backing Plate t = 4.8 (55 HRC)

Code: PRBP

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LIGHT DUTY HEAVY DUTY

Stripper Retainers

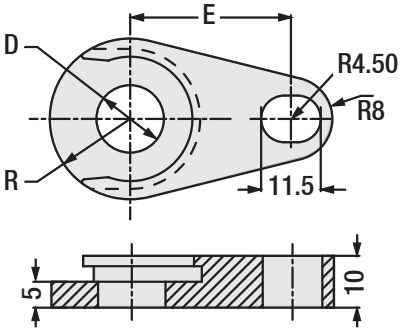
Codes: MTR / MTM / MTP

These stripper retainers are adaptable to special multi-hole retainers.
Precision machined to assure perpendicularity resulting in prolonged urethane life.
Innovative and integral designed, patented cost savings. Retaining feature at once.
Exchangeable and compatible with NAAMS standards.

Stripper Retainer

Code: MTR

It is used with "GBRT" retainers

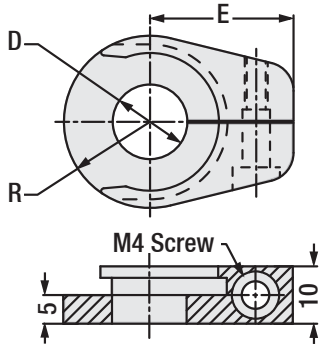


Order	D	R	E
MTR 10	**10**	13	28
MTR 13	**13**	15.5	31
MTR 16	**16**	18	32.9
MTR 20	**20**	20.5	34.8
MTR 25	**25**	24	39.8
MTR 32	**32**	31	41.3
MTR 40	**40**	36	45

Stripper Retainer

Code: MTM

It is used with "MRM" retainers

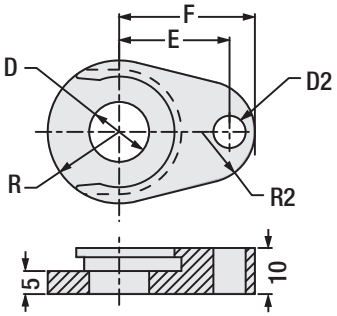


Order	D	R	E
MTM 10	**10**	13	22.5
MTM 13	**13**	15.5	25
MTM 16	**16**	18	27.5
MTM 20	**20**	20.5	30
MTM 25	**25**	24	35.5
MTM 32	**32**	31	37.5
MTM 40	**40**	36	42.3

Stripper Retainer

Code: MTP

It is used with "MRR" retainers

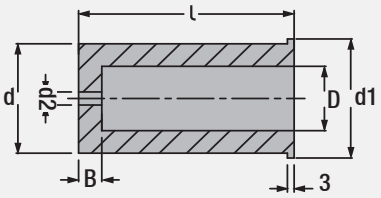


Order	D	R	E	F	D2	R2
MTP 10	**10**	13	21	26.5	7	10
MTP 13	**13**	15.5	23.9	29.4	7	11
MTP 16	**16**	18	24.5	30	7	12.8
MTP 20	**20**	20.5	29	36	9	11.8
MTP 25	**25**	24	33.5	40.5	9	12.9
MTP 32	**32**	31	40.6	49.3	9	8
MTP 40	**40**	36	44	53	9	8

LIGHT DUTY
HEAVY DUTY

Urethane Stripper

Code: MTS



Code: MTS

Punch Body	D	d	l	d1	d2	B
10	Ø 9.75	**Ø 18**	44 54 64 74	Ø 21	1.6	6 mm
13	Ø 12.75	**Ø 23**	44 54 64 74	Ø 26	3	6 mm
16	Ø 15.75	**Ø 28**	44 54 64 74	Ø 31	3	6 mm
20	Ø 19.75	**Ø 33**	44 54 64 74	Ø 36	3	7 mm
25	Ø 24.75	**Ø 40**	44 54 64 74	Ø 43	3	7 mm
32	Ø 31.70	**Ø 50**	44 54 64 74	Ø 55	3	7 mm
40	39.70	**60**	44 64	65	3	8 mm

Order: MTS. d x l

Urethane Length for Strippers:

While ordering, please specify punch length.

Heavy Duty Ball Lock Punch Length	Light Duty Ball Lock Punch Length	Recommended Stripper Length " l"
80	71	43 (44)
90	80	52 (54)
100	90	63 (64)
110	100	72 (74)

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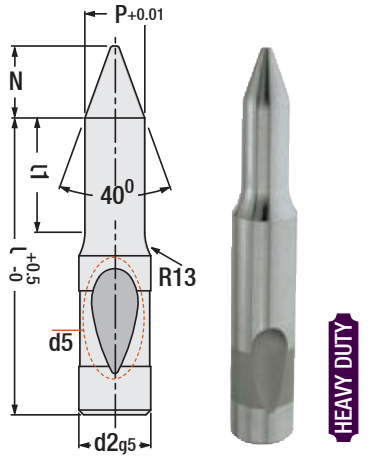


Ball Lock Pilot - Conical Code: BAPK

"N" becomes = 1.2 x "P" minimum when "P" is below (see table).

Standard Tolerances

Round / P +01 -00	,01	From P to d2

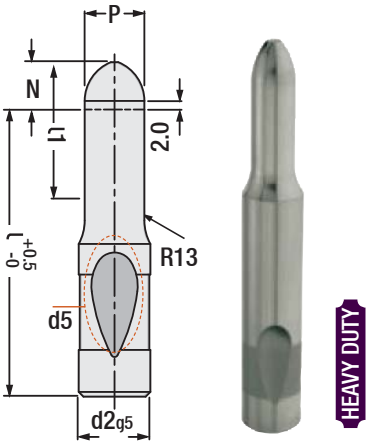
When P = d2, shank / body tolerances apply.

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC

d2	d5	P	l1	N	l
10	10	5.9 ~ 9.9	19	8	80 100
13	12 mm	9.9 ~ 12.9	19	10	125
16		12.9 ~ 15.9	25	15	80
20		15.9 ~ 19.9	25	20	100
25		19.9 ~ 24.9	25	25	125
32		24.9 ~ 31.9	25	30	140
40		31.9 ~ 39.9	30	40	150

Note: P / L selection as per request.
- Special dimensions on request.

Order: BAPK. d2 x P x l



Ball Lock Pilot - Spherical Code: BAPX

- It is length of "L" pilot except end.
- 2 mm length is guided to punch before punch contacting sheet metal.

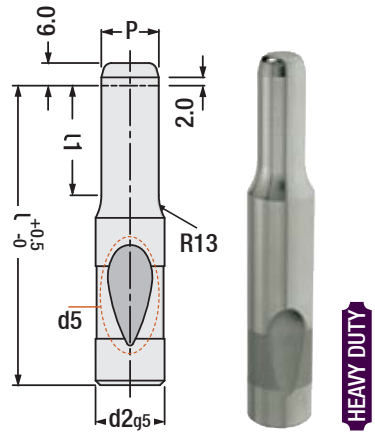
	P	N
10.1 mm	≤ 10 mm	8 mm
	- 15 mm	12 mm
	> 15 mm	15 mm

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC

d2	d5	P	l1	N	l
10	10	2.5 ~ 10	19	10	71 80 100
13	12 mm	5 ~ 13	19	10	
16		8 ~ 16	19	10	71 80 100 125
20		12 ~ 20	19	10	
25		16 ~ 25	19	10	
32		24 ~ 32	19	10	
40		30 ~ 40	25	10	

Note: P / L selection as per request.
- Special dimensions on request.

Order: BAPX. d2 x P x l



Ball Lock Pilot - Parabolic Code: BAPP

"N" becomes = 1.2 x "P" minimum when "P" is below (see table).

Standard Tolerances

Round / P +01 -00	,01	From P to d2

When P = d2, shank / body tolerances apply.

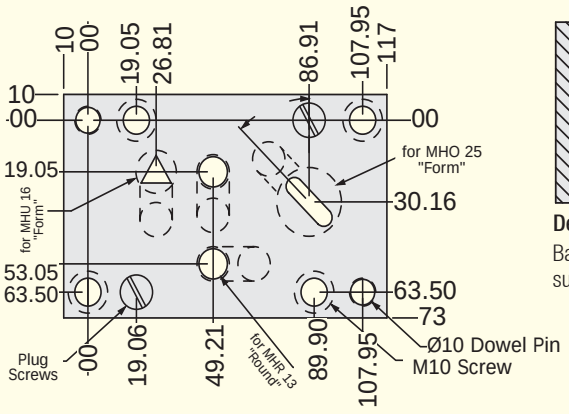
Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC

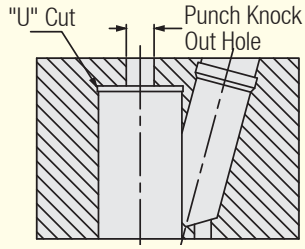
d2	d5	P	l1	l
10	10	2.5 ~ 10	19	71 80 100
13	12 mm	5 ~ 13	19	
16		8 ~ 16	19	71 80 100 125
20		12 ~ 20	19	
25		16 ~ 25	19	
32		24 ~ 32	19	
40		30 ~ 40	25	

Note: P / L selection as per request.
- Special dimensions on request.

Order: BAPP. d2 x P x l

Multi Hole, Special Ball Lock Retainers





Detail View of Punch Hole

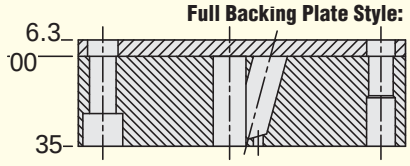
Ball - socket class "R" will be supplied unless otherwise specified.

Ball-holes:

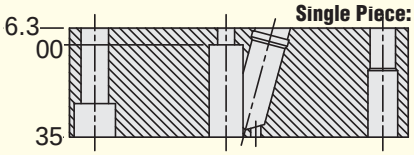
Class	Radial Tolerance
R	+ 5°
F	+ .0°5'

Technical Information !

Full Backing Plate Style:



Single Piece:



Tolerances for All Types

Outside Edges	± .5
Dowel Hole Locations	± .01
Screw Hole Locations	± .1
Component Hole Locations	± .01

In technical drawings, the hardened backing plates of multi hole ball lock retainers are shown as two different examples as traditional and single piece retainer. Here, the retainer has been measured from the left upper corner and the zero point is considered as a punch or dowel pin hole and it is positioned correctly in die. This aids in CNC programming and ensures proper settling of the punch retainer and its matching die section or matrix retainer.

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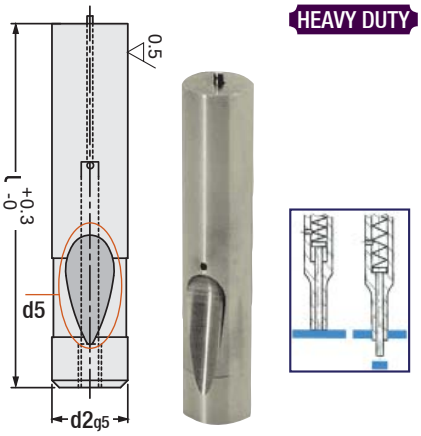
HEAVY DUTY



Ball Lock Punch with Ejector, Heavy Duty (Blank type)

Code: BAFZ

Body and cutting edge are precision ground.
Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.

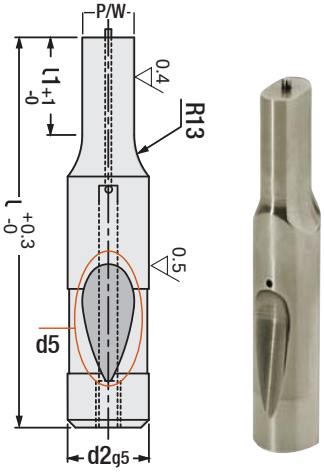
d2	d5	l
ø 10 mm	10 mm	71
		80
		90
		100
ø 13 mm	12 mm	71
		80
		90
		100
		125
ø 16 mm	12 mm	71
		80
		90
		100
		125
ø 20 mm	12 mm	71
		80
		90
		100
		125

d2	d5	l
ø 25 mm	12 mm	80
		90
		100
		110
		125
ø 32 mm	12 mm	80
		90
		100
		110
		125
ø 40 mm	12 mm	80
		90
		100
		110
		125

Order: BAFZ. d2 x l

Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Note: Special dimensions on request.



HEAVY DUTY

Ball Lock Stepped Punch with Ejector, Heavy Duty

Code: BAF..

Material: 1.3343 (M2) - **Hardness:** 60 - 62 HRC

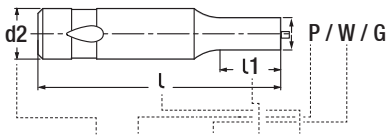
- When **P = d2** shank / body tolerances apply.
- Standard ball socket location is at 90º.
- BAF.. Punches conform to NAAMS standards.

Order d2	Ball Socket d5	Shape (BAFY) Round P	Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
BAF..10	10	2.5 ~ 9.98	2.5 - 10	19	10	19	71
BAF..13	12 mm	5.0 ~ 12.98	4.5 - 13	19	13	25	80
BAF..16		8.0 ~ 15.98	6.0 - 16	19	13	25	90
BAF..20		12 ~ 19.98	8.0 - 20	19	13	25	100
BAF..25		16 ~ 24.98	10 - 25	19	13	25	110
BAF..32		24 ~ 31.98	12 - 32	19	13	25	125
BAF..40		30 ~ 39.98	14 - 40	25	19	30	

Order Codes: **BAFY - BAFO - BAFK - BAFD - BAFA - BAFM - BAFX - BAFP**

Please refer to the table on the right side →

How to order:
Shape
d2
P/W
l1
l
Material



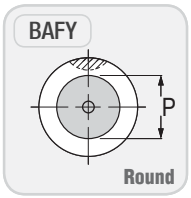
BAFY x 10 x P7.3 x 19 x 100 - M2
BAFO x 13 x P8.2 x W6.1 x 19 x 100 - M2

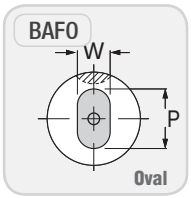
Standard Tolerances		
Round P +0.1 / -.00	◎ 0.1	From P to d2
Shape P,W,G ± 0.1	◎ 0.2	From P to d2

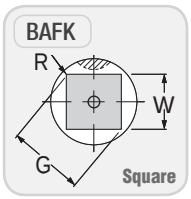
Standard position of ball socket is 90º.
It can be preferred as 0º- 180º- 270º.

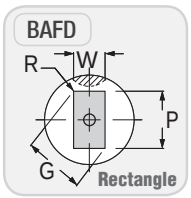
Note: Parts are viewed in die position looking from above the die.
Punches are viewed looking through the body.
Matrixes are viewed through top face.

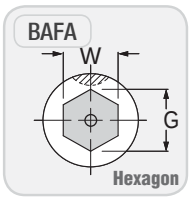
Shapes

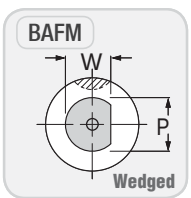


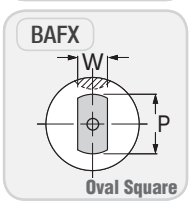


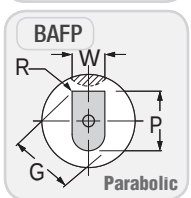


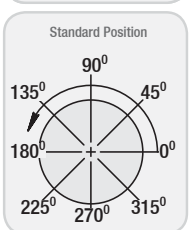












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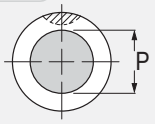
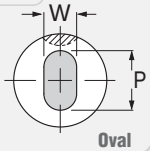
Shapes

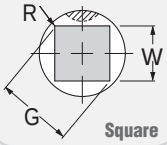
BAY — Round



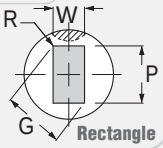
BAO — Oval



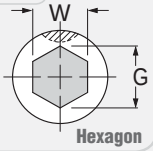
BAK — Square



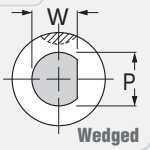
BAD — Rectangle



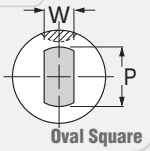
BAA — Hexagon



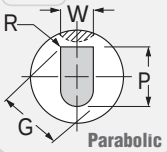
BAM — Wedged



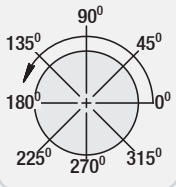
BAX — Oval Square

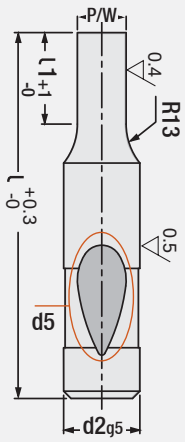


BAP — Parabolic



Standard Position





HEAVY DUTY

Ball Lock Stepped Punch - Heavy Duty Code: BA..

Material: 1.3343 (M2) - **Hardness:** 60 - 62 HRC

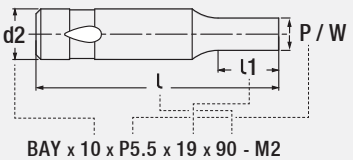
- When **P = d2** shank / body tolerances apply.
- Standard ball socket location is at 90°.
- BA.. Punches conform to NAAMS standards.

Order d2	Ball Socket d5	Shape (BAY) Round P	Shape Other Shapes W G/P	Standard l1	Alternative l1 Min.	Alternative l1 Max.	l mm
BA..10	10	2.5 ~ 9.98	2.5 - 10	19	10	19	71
BA..13	12 mm	5 ~ 12.98	4.5 - 13	19	13	25	80
BA..16		8 ~ 15.98	6 - 16	19	13	25	90
BA..20		12 ~ 19.98	8 - 20	19	13	25	100
BA..25		16 ~ 24.98	10 - 25	19	13	25	110
BA..32		24 ~ 31.98	12 - 32	19	13	25	125
BA..40		30 ~ 39.98	14 - 40	25	19	30	

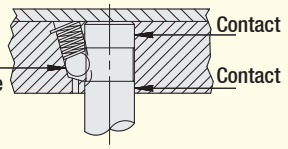
Order Codes: **BAY - BAO - BAK - BAD - BAA - BAM - BAX - BAP**

Please refer to the table on the left side

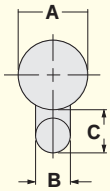
How to order:
Shape
d2
P/W
l1
l
Material



BAY x 10 x P5.5 x 19 x 90 - M2
BAO x 13 x P8.2 x W6.1 x 19 x 100 - M2



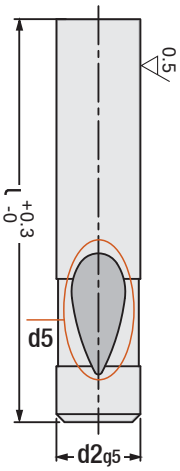
Connecting Punch to Retainer with Ball Socket



for precise retainers, please add 1.7 to "C" dimension

Requirements of Ball Locking Place

	Punch Dia. A	Ball Dia. B	Clearance C
Heavy Duty Punch	10	10	13
	13	12	15
	16		
	20		
	25		
	32		
	40		



HEAVY DUTY

Ball Lock Punch - Heavy Duty Code: BAZ

(Blank type)

Body and cutting edge are precision ground.
Also, full or partial coating can be preferred upon request, by providing resistance against heat and friction on external layer, it solves problems such as winding and cold welding.

d2	d5	l
Ø 10 mm	10 mm	71
		80
		90
		100
Ø 13 mm	12 mm	71
		80
		90
		100
		125
Ø 16 mm	12 mm	71
		80
		90
		100
		125
Ø 20 mm	12 mm	71
		80
		90
		100
		125

d2	d5	l
Ø 25 mm	12 mm	80
		90
		100
		110
		125
Ø 32 mm	12 mm	80
		90
		100
		110
		125
Ø 40 mm	12 mm	80
		90
		100
		110
		125

Order: BAZ. d2 x l

Material: 1.3343 (M2)
Hardness: 60 - 62 HRC

Note: Special dimensions on request.

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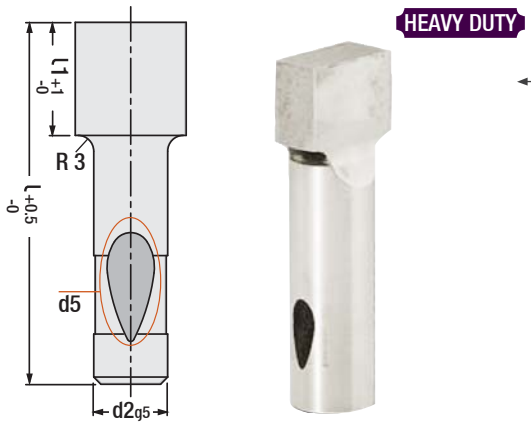
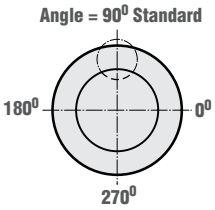
HEAVY DUTY



Larger Ball Lock Punch

Code: BAK..

Body and outer dia. are precision ground.



Round Type Punches

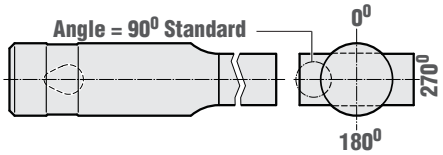
Order d2	Ball Socket d5	P (round) Min. Max.	l1 Min. Max.	l
BAKY.. 10	10	10.1 ~ 25	16	
BAKY.. 13		13.1 ~ 32	20	
BAKY.. 16		16.1 ~ 38	25	80
BAKY.. 20	12 mm	20.1 ~ 40	25	90
BAKY.. 25		25.1 ~ 47	25	100
BAKY.. 32		32.1 ~ 63	32	
BAKY.. 40		40.1 ~ 63	32	

Round / Shaped

Order: BAK.. d2 x P/W/G x l1 x l

Types: **BAKY - BAKO - BAKK - BAKD - BAKA - BAKM - BAKX - BAKP**

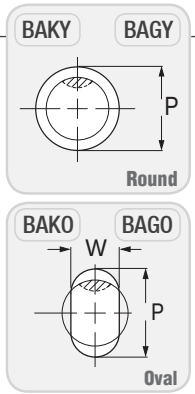
Please refer to the table on the right side



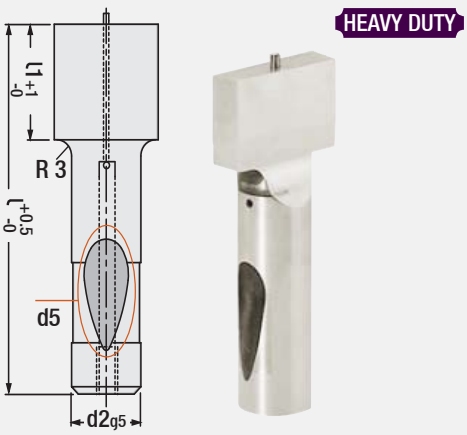
Shaped Type Punches

Order d2	Ball Socket d5	P/W/G (Shape) Min. Max.	l1 Min. Max.	l
BAK..10	10	3.0 ~ 25	16	
BAK..13		5.0 ~ 32	20	
BAK..16		6.0 ~ 38	25	80
BAK..20	12 mm	8.0 ~ 40	25	90
BAK..25		10 ~ 47	25	100
BAK..32		11.5 ~ 63	32	
BAK..40		14 ~ 63	32	

Shapes



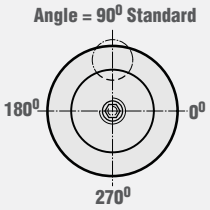
HEAVY DUTY



Larger Ball Lock Ejector Punch

Code: BAG..

Body and outer dia. are precision ground.



Round Type Punches

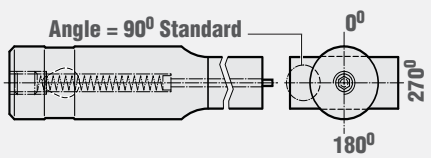
Order d2	Ball Socket d5	P (round) Min. Max.	l1 Min. Max.	l
BAGY.. 10	10	10.1 ~ 25	16	
BAGY.. 13		13.1 ~ 32	20	
BAGY ..16		16.1 ~ 38	25	80
BAGY ..20	12 mm	20.1 ~ 40	25	90
BAGY.. 25		25.1 ~ 47	25	100
BAGY.. 32		32.1 ~ 63	32	
BAGY ..40		40.1 ~ 63	32	

Round / Shaped

Order: BAG.. d2 x P/W/G x l1 x l

Types: **BAGY - BAGO - BAGK - BAGD - BAGA - BAGM - BAGX - BAGP**

Please refer to the table on the left side



Shaped Type Punches

Order d2	Ball Socket d5	P/W/G (Shape) Min. Max.	l1 Min. Max.	l
BAG.. 10	10	3.0 ~ 25	16	
BAG.. 13		5.0 ~ 32	20	
BAG.. 16		6.0 ~ 38	25	80
BAG.. 20	12 mm	8.0 ~ 40	25	90
BAG.. 25		10 ~ 47	25	100
BAG.. 32		11.5 ~ 63	32	
BAG.. 40		14 ~ 63	32	

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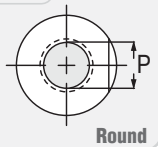
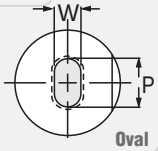
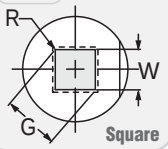
Shapes

MBY


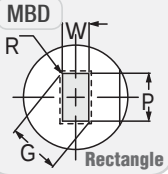
Round

MBO


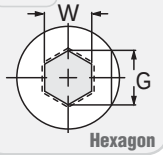
Oval

MBK


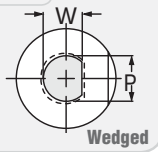
Square

MBD


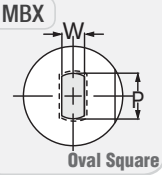
Rectangle

MBA


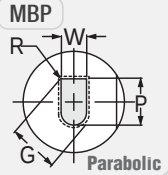
Hexagon

MBM


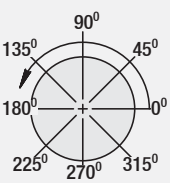
Wedged

MBX


Oval Square

MBP


Parabolic

Standard Position


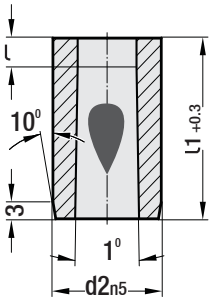
Ball Lock Matrix - Straight

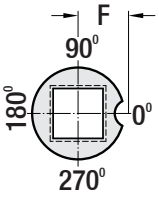
Code: MB..

Automotive Standard / Shaped Types

- Inner hole conical type.
- "d2" and lead-in radius ground.

Material: 1.3343 (M2) **Hardness:** 60 - 62 HRC





Some Shape & Dim. Details

Shape: **Square**
MBK $G = \sqrt{2} \times P$

Shape: **Rectangle**
MBD $G = \sqrt{P^2 \times W^2}$

Shape: **Rectangle with radius R 0.5** $^{\pm 0.01}$
MBD $G = \sqrt{(P-1.0)^2+(W-1.0)^2}+1$

Shape: **Oval**
MBO $G = P$

d2	F	Shape W	Shape G	l	l1 + 0.3 (matrix length) 13	16	20	22	25	28	30	32	35	40
10	7	1.3	6.8	3- 4-5	•	•	•	•	•	•	•	•	•	
13	8.2	1.9	8.8	3- 5-8	•	•	•	•	•	•	•	•	•	
16	9	1.9	10	3- 5-8			•	•	•	•	•	•	•	
20	11	1.9	13	3-6-10			•	•	•	•	•	•	•	
22	12	1.9	15	3-6-10			•	•	•	•	•	•	•	
25	13.5	1.9	17	3-6-10			•	•	•	•	•	•	•	
32	16	1.9	22	3-6-10			•	•	•	•	•	•	•	
38	19	1.9	27	3-8-12			•	•	•	•	•	•	•	
40	20	2.4	27	3-8-12				•	•	•	•	•	•	•
45	22.5	4.0	35	3-8-12				•	•	•	•	•	•	•
50	25	4.0	40	3-8-12				•	•	•	•	•	•	•
56	28	4.0	45	3-8-12				•	•	•	•	•	•	•
63	31.5	4.0	50	3-8-12				•	•	•	•	•	•	•
71	35.5	5.6	56	3-8-12				•	•	•	•	•	•	•
76	38	5.6	60	3-8-12					•	•	•	•	•	•
85	42.5	5.6	66	3-8-12					•	•	•	•	•	•
90	45	5.6	70	3-8-12					•	•	•	•	•	•
100	50	5.6	78	3-8-12					•	•	•	•	•	•

Note: Special dimensions on request.

Order: MB. (type) d2 x F x W/G (R) x l x l1

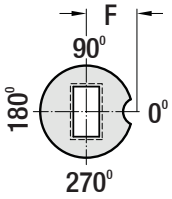
Code: MBE

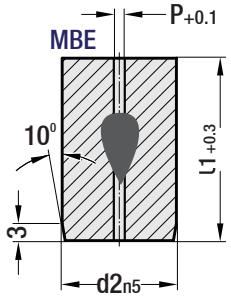
Code: MBC

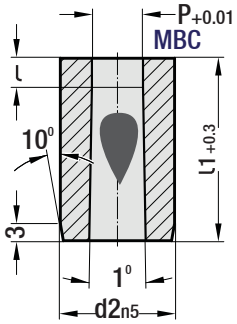
Ball Lock Matrix - Straight

(Blank type)

Specifications:
MBC: Inner hole conical type and lower surfaces ground.
MBE: With starting holes for "wire-edm".
Material: 1.3343 (M2)
Hardness: 60 - 62 HRC







MBE

d2	P	l1 + 0.3 ("MBE" matrix length) 13	16	20	22	25	28	30	32	35	40
10	0.8	•	•	•	•	•	•	•	•	•	
13	0.8	•	•	•	•	•	•	•	•	•	
16	1.5			•	•	•	•	•	•	•	
20	2.4			•	•	•	•	•	•	•	
25	3.0			•	•	•	•	•	•	•	
32	3.0			•	•	•	•	•	•	•	
40	3.0				•	•	•	•	•	•	•
50	3.0				•	•	•	•	•	•	•
63	3.0				•	•	•	•	•	•	•
71	3.0				•	•	•	•	•	•	•

Order: MBE. d2 x P x l1

MBC

d2	P	l	l1 + 0.3 ("MBC" matrix length) 13	16	20	22	25	28	30	32	35	40
10	1.6 - 6.8	3-4-5	•	•	•	•	•	•	•	•	•	
13	3 - 8.8	3-5-8	•	•	•	•	•	•	•	•	•	
16	7.4 - 10.8	3-5-8			•	•	•	•	•	•	•	
20	9.5 - 13.6	3-5-10			•	•	•	•	•	•	•	
25	12 - 17	3-6-10			•	•	•	•	•	•	•	
32	16 - 22	3-6-12			•	•	•	•	•	•	•	
40	18 - 27	3-8-12				•	•	•	•	•	•	•
50	18 - 40	3-8-12				•	•	•	•	•	•	•
63	18 - 50	3-8-12				•	•	•	•	•	•	•
71	18 - 56	3-8-12				•	•	•	•	•	•	•

Order: MBC. d2 x P x l x l1

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NEW

In-Die Tapping Unit / Automatic

Electronically controlled (with air support) screw thread forming unit.

Code: AR M..M..

Direct Drive DTAP

It may be applied in your available dies or can be used in other manual-automatic conveyor systems, tools and machines in addition to designing feature within the die.

New & Compact: Product without protruding parts it can be mounted **vertically / horizontally** with its small dimensions. It operates **32 rpm** automatically and precision by synchronizing with press machines thanks to high speed.
Returning cycle is faster than workpiece optimizing the production time.
It operates in tapping indepedent of die operation stroke distance. Thread forming distance is positioned up to 27 mm with machine and model selection (diameter / height and threading material) with various processes and offered in three different dimensions:

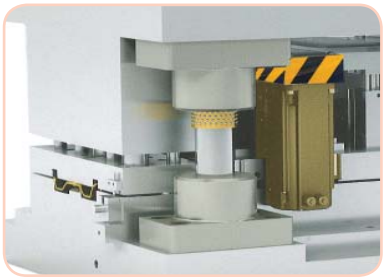
1) M2 - M2.5 - M3 - M3.5 - M4
2) M4.5 - M5 - M6 - M7
3) M8 - M9 - M10

It is possible to form thread and to follow thread forming process with direct drive dtap and a simple sensor signal with a digital LCD panel if it is correctly / successfully processed. It can also form thread in blind holes.

It is serial and economical in multiple thread forming operations.

A new system should be installed for each thread forming process.

Tapping Machine: It can be operated automatically or via manual system.
It approaches to the tapping hole automatically with an electronic sensor signal and process torque settings within the specified time.
Automatic thread forming operations for workpieces are used in all kinds of machines or especially on dies.



In-Die Practices

Horizontal - Vertical / Multiple Practices

High Speed In-Die Practices

New Technology screw thread is formed with cyclic force transmission of head drive motor shaft “direct drive dtap” with servo driver. After process, tapping tool leaves the material automatically. The repetition settings take automatic command position. There is an electronic (optional) resettable counter for following process and daily production numbers. In case of a fault (e.g. sensor fault), it is prevented the machine and die to get damaged with the automatic operating system emergency stop command. The manual system is started again and the process is continued with the time-controlled selection. Active and passive positions of electronic, digital LCD panel and tapping tool can be followed or adjusted for tap change, the clamp screws of the unit are loosen and the machine is pulled. The piston arm is pushed forward over the panel thanks to the system with sliding connection.

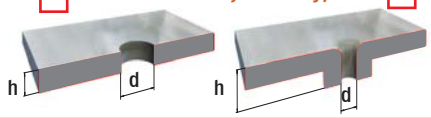
Tap Tool: It is easy and simple to replace a tap with holder / nut (see manual). It is also possible to adjust torque values and time control settings manually with the manager button except automatic system with the new small and compact (no protruding part) design, the settings are made with new electronic LCD panel. The power cord of the unit is 5 meters. The electric cable is connected to a socket near Direct Drive Dtap in order to avoid potential damage positions. All this system is presented in a portable stand and compact structure, as an integrated control unit.

For Mounting: Independent electrical installation and air connection system of the unit. The values declared in the markings on the device or other printed documents given with the products are the values obtained in a workshop environment according to the related standards. The usage type of the product may be different according to the environmental conditions.
After sales service, assembly service and trainings are given by our company.

Order Request Form →

Tap Types	Rolled Tap ☐	Machine Tap ☐
Tapping / Thread Forming:		d :..mm / h :..mm
Tapping / Thread Forming Material:		Stroke / Minute:
Tensile Strength:		Thread Forming Time:

☐ Thread Forming / Hole Types ☐



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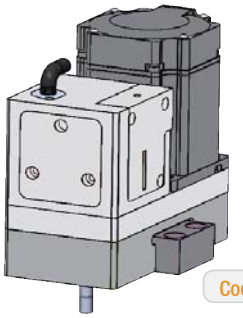
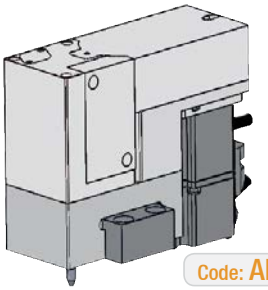
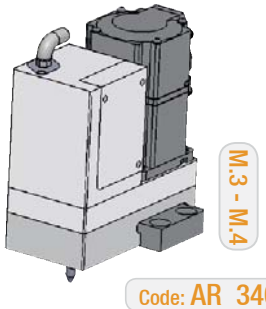
In-Die Tapping Unit / Automatic Direct Drive DTAP



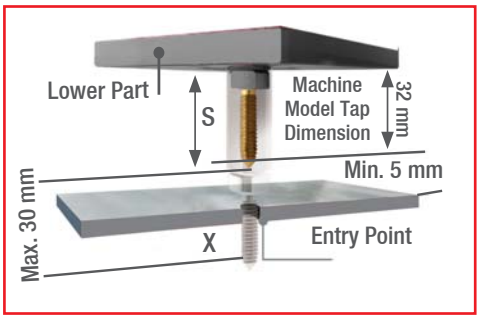
Code: AR 810

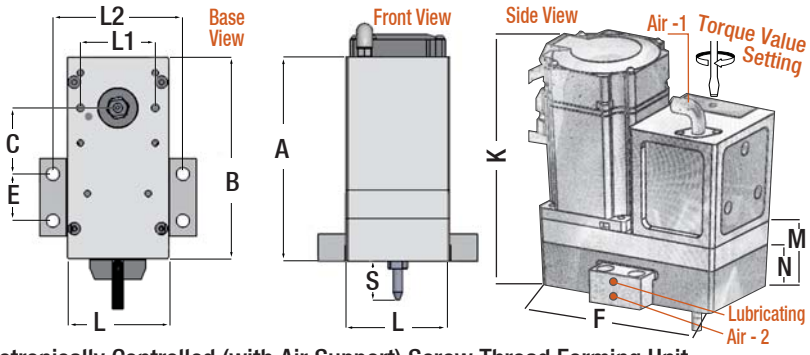


Code: AR 560



Code: AR 340

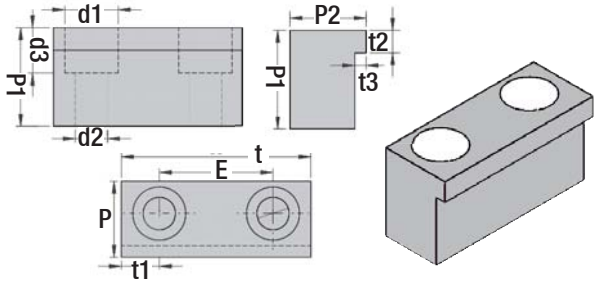




Electronically Controlled (with Air Support) Screw Thread Forming Unit

Order	Unit (Servo Motor) Dimensions mm													Motor Power	Max. Motor speed	Tapping Speed rpm	Tap dia. M.	Drill Dia. mm
	A	B	C	E	F	K	L	L1	L2	M	N	S	X					
AR 340	130	130	42.5	30	130	144	65	48	83.4	51.6	45	25	13	400 W	5.500 rpm	3000	M3	2.80
													17				M4	3.70
AR 560	130	175	12.5	30	175	144	65	48	83	45	45	25	18	400 W		1460	M5	4.65
													20				M6	5.55
AR 810	132	165	27.5	30	165	165	80	65	98	61	53	32	22	750 W		2500	M8	7.40
													25				M10	9.30

Lug Clamping: It is performed by mounting side lugs of the tapping unit to the clamping plate to be determined in the die clamping.
Lower screws of the lugs (spring plunger) are loosen and a slide system is created with the clamping plate. This way, the unit can move forward and backward. The air to cool down the tapping tool is clamped with a separate hose. As per request, a grease clamping point is created for lubricating system. Please contact our company for optional lubricating systems.
Cutting grease is used for tapping.



Direct Drive DTAP / Clamping Lugs (2 pcs)

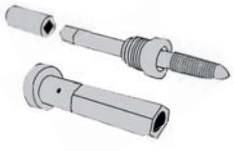
Dimensions are in mm.

Model	t	t1	t2	t3	E	P	P1	P2	d1	d2	d3
AR 340	50	10	7	3	30	20	17	20	14	8.5	12
AR 560	50	10	6	3	30	20	26	20	14	8.5	12
AR 810	50	10	6	3	30	20	26	20	14	8.5	12

Electronic Tapping Unit: It is a unit which can easily perform thread forming / tapping processes in dies or specials settings automatically and independent from die operating distance (stroke). It operates with a direct drive DTAP which follows / controls each thread forming step.It regulates thread forming depth and speed. It is also possible to control it.

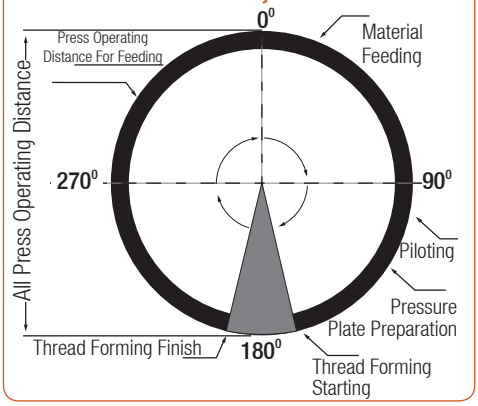
In-Die Tapping: Rolled tap should be used.
This prevents wastes / burrs in dies.

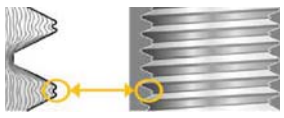
Rolled Tap: It guarantees high performance than traditional tap tools; It prevents wastes / burrs in dies. They can operate faster. Thread forming surfaces are stronger and smoother. Clamping angle is suitable for our machine.



Thread Forming by Adjusting: as the material feeding angle is smaller, the thread forming time is long (more stroke / minute).

Thread Forming Procedure





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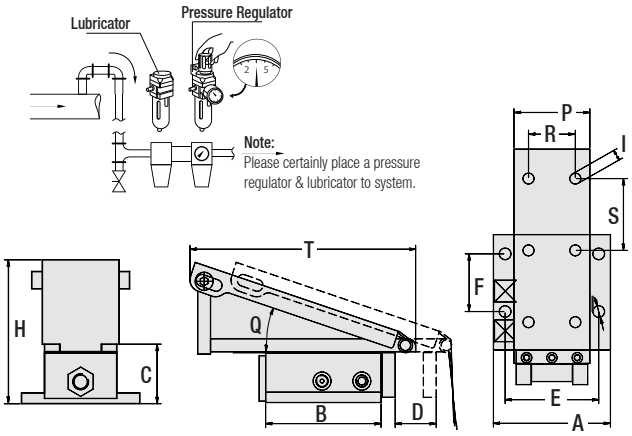
NEW

Code: GTH.ALO

Part & Scrap Carrier / Pneumatic Ejector

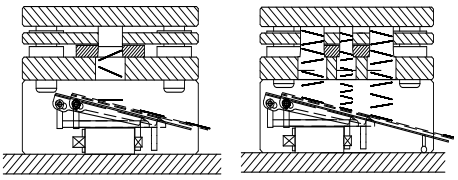
- Carriage with pneumatic vibration system in very small dimensions, allowing scrap or parts to be removed from the die/tool.
- This system is equipped with a regulator with a capacity of 2 - 5 bar pressure.
- Depending on application requirements, by mean of a slide, different sizes of plates can be applied, this slide is equipped with an adjustment sloping system.
- The operating speed can be adjusted from the brass valve directly inserted in the tool.
- Maximum positioning inclination 20^0.

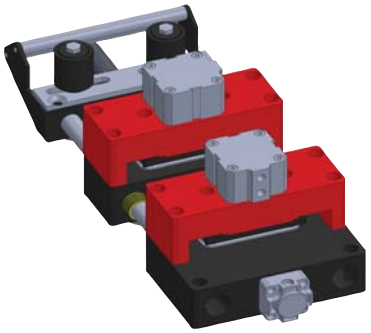


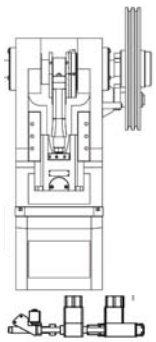
Order Code	Bar	A mm	B mm	C mm	D mm	E mm	F mm	H Max.
GTH.ALO-05	2/5	90	90	29	20	72	45	83
GTH.ALO-10	2/5	90	90	52	35	72	45	105
GTH.ALO-25	2/5	100	106	63	36	82	55	125
GTH.ALO-50	2/5	120	120	72	46	102	96	140

Order Code	I (Ø)	P mm	Q (angle)	R mm	S mm	T mm	Max. Load
GTH.ALO-05	8.5	58	Max.18^0 - Min. 7^0	36	56	180	5 Kg.
GTH.ALO-10	9	60	Max.20^0 - Min. 4^0	36	56	175	10 Kg.
GTH.ALO-25	9	70	Max.20^0 - Min. 4^0	44	62	190	25 Kg.
GTH.ALO-50	9	96	Max.20^0 - Min. 4^0	56	70	220	50 Kg.

Mounting Example:







Pneumatic Feeder

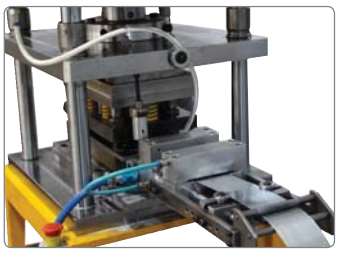
Code: A.. / E.. / F..

Heavy duty & economic types

- Material width capacity from 100 mm up to 500 mm.
- Material feeding capacity at thickness from 0.2 up to 1.0 / 2.0 / 3.0 mm.
- Feed length from 100 mm up to 300 mm.
- The feeder casings are produced from special aluminum alloy material.
- The bearing column are produced from hard chrome coated material (1080).
- Movable parts are produced from bronze material.
- Feed length set screw are produced from 4140 material.

Order Code	Max. Material Thickness Max. Material Width Feed Length
A1	1 x 100 x 100 (mm)
A2	1 x 100 x 200 (mm)
A3	1 x 100 x 300 (mm)
A11	1 x 150 x 100 (mm)
A12	1 x 150 x 200 (mm)
A13	1 x 150 x 300 (mm)
A21	1 x 200 x 100 (mm)
A22	1 x 200 x 200 (mm)
A23	1 x 200 x 300 (mm)
A31	1 x 300 x 100 (mm)
A32	1 x 300 x 200 (mm)
A33	1 x 300 x 300 (mm)
A41	1 x 400 x 100 (mm)
A42	1 x 400 x 200 (mm)
A43	1 x 400 x 300 (mm)
A51	1 x 500 x 100 (mm)
A52	1 x 500 x 200 (mm)
A53	1 x 500 x 300 (mm)
E1	2 x 150 x 100 (mm)
E2	2 x 150 x 200 (mm)
E3	2 x 150 x 300 (mm)

Order Code	Max. Material Thickness Max. Material Width Feed Length
E11	2 x 200 x 100 (mm)
E12	2 x 200 x 200 (mm)
E13	2 x 200 x 300 (mm)
E21	2 x 300 x 100 (mm)
E22	2 x 300 x 200 (mm)
E23	2 x 300 x 300 (mm)
E31	2 x 400 x 100 (mm)
E32	2 x 400 x 200 (mm)
E33	2 x 400 x 300 (mm)
E41	2 x 500 x 100 (mm)
E42	2 x 500 x 200 (mm)
E43	2 x 500 x 300 (mm)
F1	3 x 150 x 100 (mm)
F2	3 x 150 x 200 (mm)
F3	3 x 150 x 300 (mm)
F11	3 x 200 x 100 (mm)
F12	3 x 200 x 200 (mm)
F13	3 x 200 x 300 (mm)
F21	3 x 300 x 100 (mm)
F22	3 x 300 x 200 (mm)
F23	3 x 300 x 300 (mm)



Made in Turkey
+ Guvenal Service
+ Spare Parts
+ Periodic Maintenance Assurance

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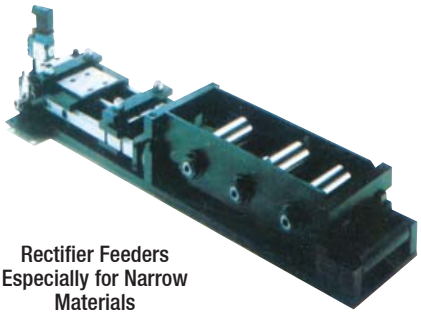
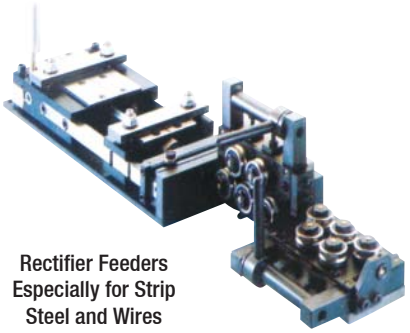
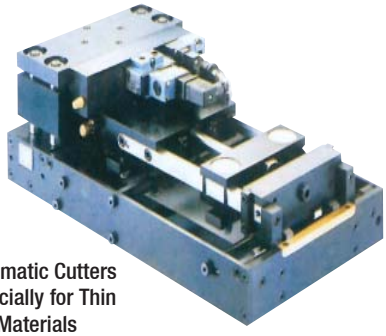
The Most Suitable and High Precision Feeder Types



Rectifier Feeders Especially for Narrow Materials

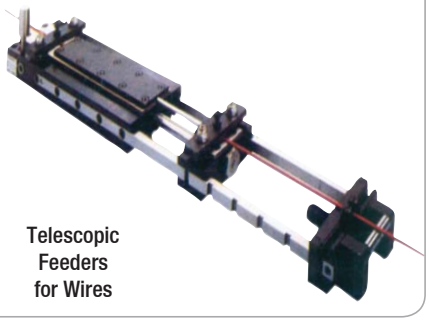


Rectifier Feeders Especially for Strip Steel and Wires

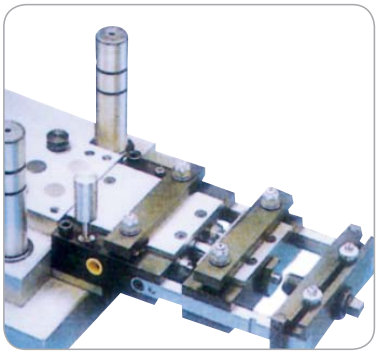


Pneumatic Cutters Especially for Thin Materials

Feeder with Guide Rail Especially for Extra Thin Materials



Telescopic Feeders for Wires



Pneumatic Feeder

High precision, rapid & efficient types

Since they have been made in modular system, it is quite easy to obtain different dimensions.

Normal type feeders are convenient especially for small materials, they can be mounted directly on the die / tool.
Vertical motion of upper die gives command to the feeder; hence their mounting is so easy.

Heavy duty type feeders are very strong, they have tree pulling cylinders.
Major Structural Features; the quality of used material, all surfaces exposed to impacts or friction are hardened and solid chrome coated.
Valves and pistons are stainless steel in order to not to affect airborne water, cylinder liners are made from solid bronze.
Feeding Accuracy; powerful front and rear airbags ensure to work in 0.02mm accuracy. In very powerful feeders, there are 5 airbags at rear and 4 airbags at the front, hardness of airbags can be adjusted.
Wide field sliding – bearing plates; Making bearing privately is possible for feeding of special profiles. Polyamide or especially hardened plates are applied for magnetic or high precision materials.
Input Roller; friction on material can be decreased by inserting roller to feeder input. Slide Bearings; hardened and ground bearings are used at our feeders.
Feed length setting is so easy, you can use slots at side edges in different stages.

Standard Accessories: O-Ring kit

Optional Accessories:

* Remote control with electro valve (instead of standard mechanic valve)
* Spring clamp (for pilot release)
* Transparent top case (to avoid accidents)
* Programmed counter to repeat feed length
* Conditioner unit and hose systems to filter pressured air and to lubricate

Code: "A - B - C" Series

with Valve (normal types)

Series	Order Code	Max. Material Width	Feed Length	Max. Material Thickness
A Series	A50	50 mm	0 ~ 50	0 ~1.90
	A100		0 ~100	0 ~1.80
	A150		0 ~150	0 ~1.50
	A200		0 ~200	0 ~1.30
	A250		0 ~250	0 ~1.10
B Series	B50	75 mm	0 ~ 50	0 ~1.80
	B100		0 ~100	0 ~1.70
	B150		0 ~150	0 ~1.60
	B200		0 ~200	0 ~1.20
	B250		0 ~250	0 ~1.10
C Series	C50	100 mm	0 ~ 50	0 ~1.70
	C100		0 ~100	0 ~1.50
	C150		0 ~150	0 ~1.40
	C200		0 ~200	0 ~1.30
	C250		0 ~250	0 ~1.20

with Valve (heavy duty types)

Order Code	Max. Material Width	Feed Length	Max. Material Thickness
P1	0 ~155	1.00	0 ~ 3.8
P2	0 ~155	2.00	0 ~ 3.5
P3	0 ~155	3.00	0 ~3.0
S1	0 ~205	1.00	0 ~3.0
S2	0 ~205	2.00	0 ~3.0
S3	0 ~205	3.00	0 ~3.0
Z1	0 ~305	1.00	0 ~3.0
Z2	0 ~305	2.00	0 ~3.0
Z3	0 ~305	3.00	0 ~2.5

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Decoilers for Steel Roll (precision series)

Threaded Rod for
Clamping and Discharging

Model: Motorized Type

Code: AGM500M

Model: Brake System Type

Code: AGM750M

1500 Kg Capacity

Code: AGM1500M

2500 Kg Capacity

Code: AGM2500M

Order Code	Max. Material Width (mm)	Steel Roll Inside Diameter (mm)		Max. Steel Roll Outside Dia.(mm)	Steel Roll Weight Kg.	Motor Type	Brake Type	Snubber Bar
		Minimum	Maximum					
AGM500M	20 - 300	300	550	1300	500	★		Optional
AGM500F				1300	500		★	
AGM750M				1300	750	★		
AGM750LM				1600	750	★		
AGM750F				1300	750		★	
AGM1500M	20 - 400	350		1300	1500	★		
AGM1500LM				1600	1500	★		
AGM1500F				1300	1500		★	
AGM2500M	30 - 500	400		1300	2500	★		
AGM2500LM				1600	2500	★		
AGM2500F				1300	2500		★	
AGM3000M	30 - 600	450	600	1300	3000	★		
AGM3000LM				1600	3000	★		
AGM3000F				1300	3000		★	

Our mechanical decoilers has threaded rod clamping and discharging system from center.
Working capacity range is between 750 kg to 4.000 kg. Motorized, pneumatic snubber bar and brake models are available.
Mechanical decoilers take up less space and have minimum operating cost for companies.

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Code: EEM-400

Servo Roll Feeder - 400

Code: EEM-200

Servo Roll Feeder - 200

Code: EEM-100

Servo Roll Feeder - 100

"Servo Roll Feeders providing ideal solutions up to 1.5mm material thickness"

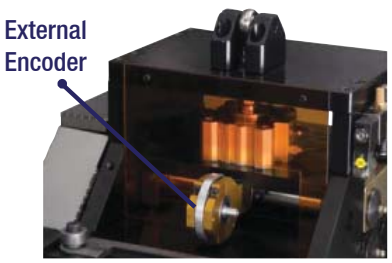
Guvenal Servo Roll Feeders that can be mounted almost to every press.
Advantages; space-saving, easily mounted, provide working opportunities at high stroke press and increase high efficiency thanks to price / performance.

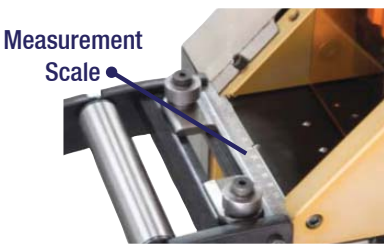
Standard Features:

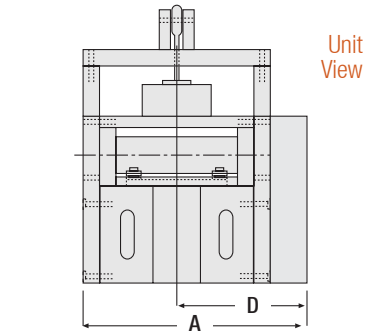
* Steel and "aluminum 7075" casing design.
* HRC 64 cylinders produced from 2379 Sverker material and inertia taken (relieved).
* Roller structure embedded with high speed bearings.
* Antiskating dual drive roller.
* Material setting rollers on the inlet and outlet.
* Unique measurement scale.
* Piston leaving material to pilot during piloting.
* PLC controlled lubricating system.
* Die / tool protection system from 4 or 6 points.
* Easy fitting plates to press (without drilling extra hole to press).
* Precision setting system taken press crank with encoder.
* Mechanical roller lifting system.
* Colorful LCD touch screen - 7.0".
* English menu.
* Automatic - Manual button & Emergency stop button.

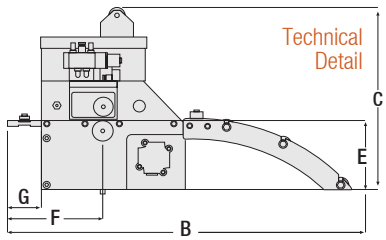
Optional Features:

* Roll unloader / Rectifier and feeder-press synchrony movement external encoder.
* Collapsable front rollers (preferred after 300 cycles).
* Guards between feeder and die.



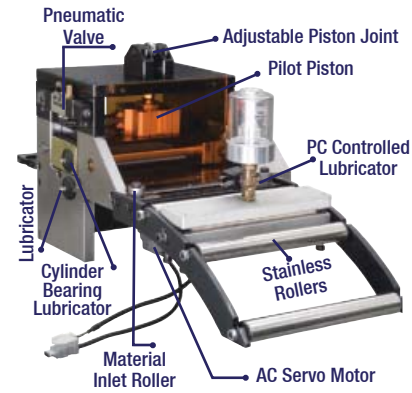


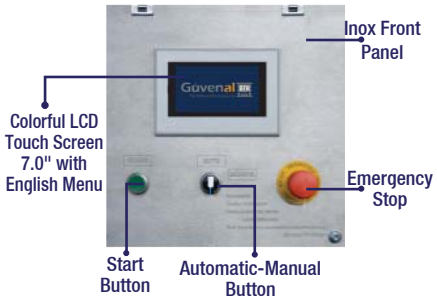


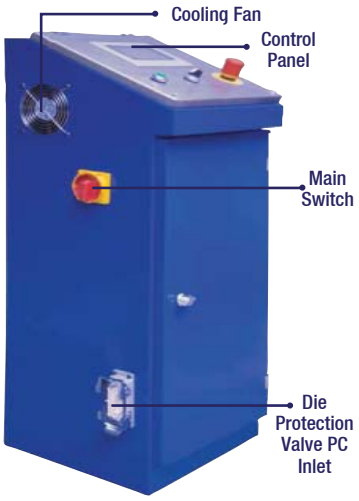


Order Code	Max. Material Width (mm)	Max. Material Thickness (mm)	Roller Diameter Ø	Max. Material Speed m/min.
EEM100	104	1.5	42	140
EEM200	204		42	
EEM400	404		63	

Order Code	A	B	C	D	E	F	G
EEM100	210	555	320	135	130	158	58
EEM200	300	555	320	180	130	158	58
EEM400	515	780	480	410	230	158	58







Automation systems which direct and accelerate steel.

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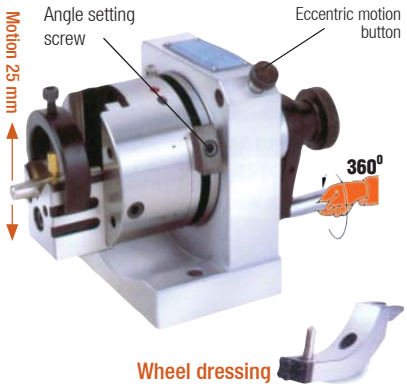


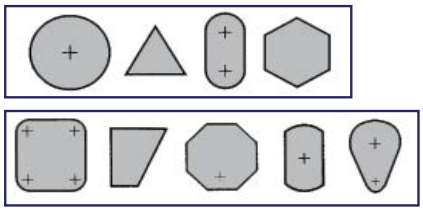
Punch Former Tool

Code: V-PB

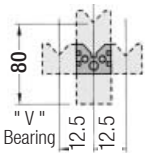
(Pin bearing length: 22 mm)

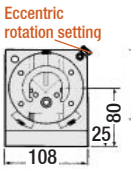
Specifications: It creates the shapes / forms of die punches or mould ejector pins or it enables to create the desired formed shapes as equipment manually in shaped forming processing grinding machine manually. Motion is provided in two ways with equipment, it is provided 360º angular return motion and eccentric (up / down) motions processing practicality.

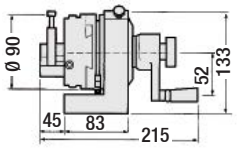
Punch end shape, some forms

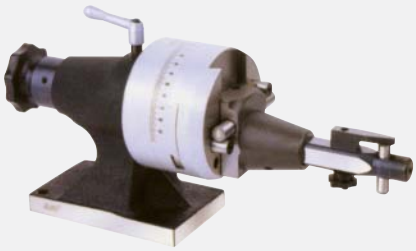


d1: Pin clamping diameter = Ø4 - Ø30 mm
L: Pin clamping length = min. 22 mm
"V" Bearing: Up / down motion = 25 mm
"V" Bearing: One way motion = 12.5 mm
"V" Bearing: Total motion = 25 mm
Equipment surface and angle / scale hardness: 63 HRC
Chuck dividing head angle:
24 Pcs. $15^0 \pm 5^0$
Total weight: 10 Kg.
Wheel diameter: 200 mm
Chuck dividing head angle:
24 Pcs. $15^0 \pm 5^0$



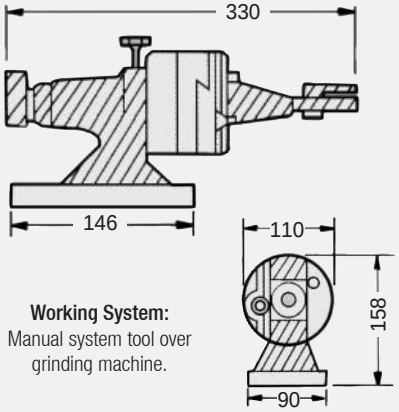






Wheel Dresser Tool

Code: VTDB

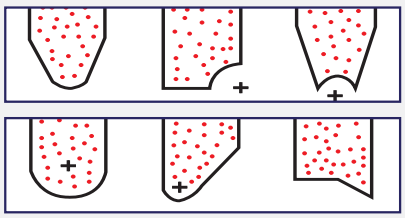


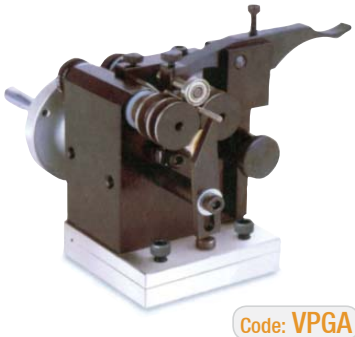
Working System:
Manual system tool over grinding machine.

Convex dressing radius = 0.8 R - 40 R
Concave dressing radius = 0 - 40 R
Max. grinding wheel diameter = Ø 250 mm
Rotation angle = 4 x 90^0 = 360^0
Precision dividing head angle = 6"

* Precision centre height is obtained with positive cutting angle diamond dressers.
* Thanks to precision ground dovetail slides, absolute distance shifts are prevented in the desired distance.
* By providing control from one point, convex and concave dressing forms are provided precisely and quickly.
* All working surfaces and measuring scale is 60 HRC.

Wheel dressing applications



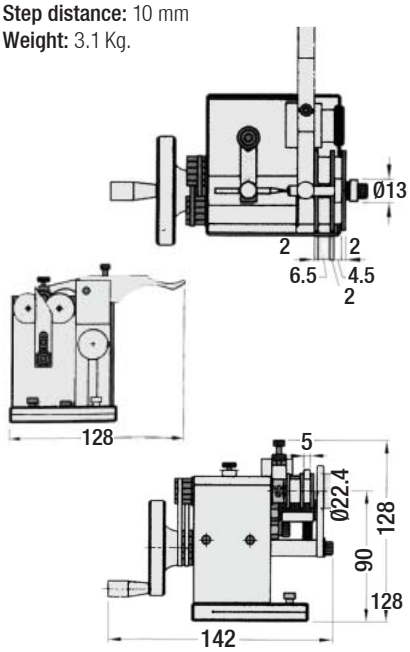


Code: VPGA

Mini Pin & Punch Former Tool

It is suitable to be used at machining and grinding of small diameters and short pins serially.

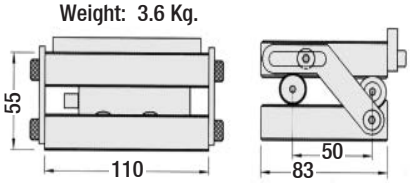
Pin diameter capacity: From 0.5 to 6 mm
Step distance: 10 mm
Weight: 3.1 Kg.



Sine Plate for Punch Former Tools

Code: VPS-S

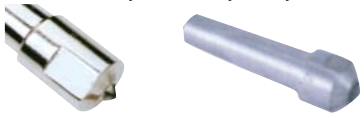
Weight: 3.6 Kg.



Diamond Wheel Dresser

Code: TDE

It is for dressing wheels in grinding machines.



Order	Type / Carat
TDE.030	0.30
TDE.050	0.50
TDE.075	0.75
TDE.100	1.0

Order	Type / Carat
TDE.150	1.5
TDE.200	2.0
TDE.250	2.5
TDE.300	3.0

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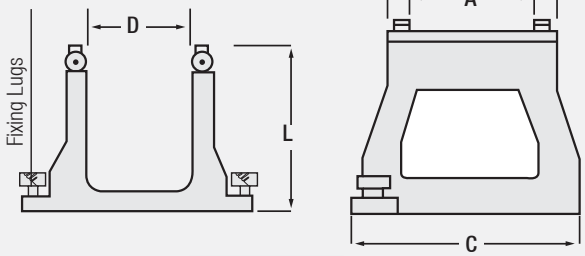
Level Balancing Stand

Code: LBS-100

Code: LBS-350

- Suitable for desktop
- Balancing control for round parts

Balance and flatness of part can be monitored by sliding suitable size round workpieces that are between slides on unit.
LBS 100 Max. Ø 200 mm.
LBS 350 Max. Ø 350 mm.



Code: LBS-100 Code: LBS-350

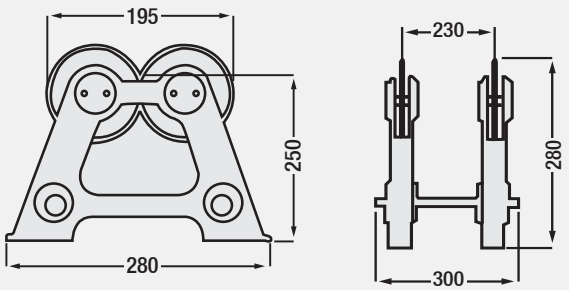
Order Code	A	B	C	D	L	Kg.
LBS-100	137	152	225	110	175	8.8
LBS-350	160	180	260	125	235	15.1

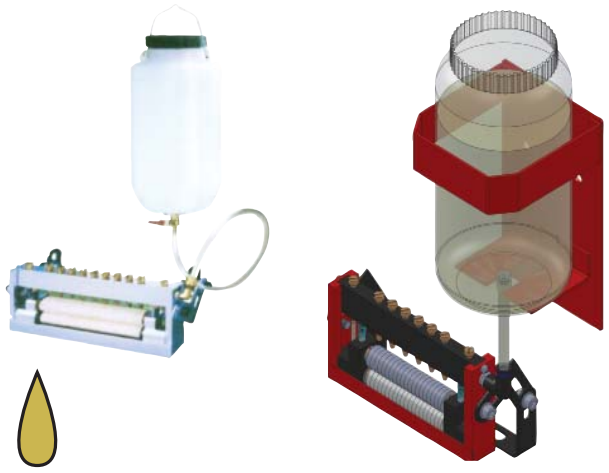
Wheel Balancing Stand

Order Code: WBS-300

It helps to measure and develop grinding precision correctly. All surfaces of high precision balancing stand are 55 HRC, steel cast casing.

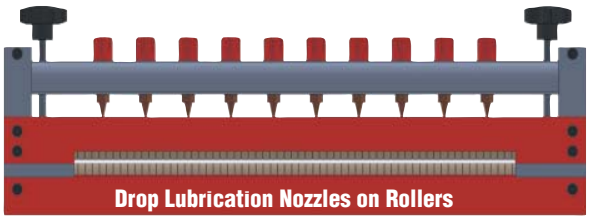
Rotary model round parts are placed on the disc. By turning workpieces, its balance and flatness are monitored.





Roller Lubricator for Steel Roll

Code: RYS



Standard Features:
* Thanks to local valves, partial lubrication on mobile steel roll.
* Industrial felt plates are available in lubricating roller.
* 3 lt. capacity plastic oil tank.

Optional Features:
* Time cycled lubricating relay.
* Hydraulic pump tank.
* Desired oil capacity.

It can be easily mounted to feeder system.

Order Code	Max. Material Width	Min. Material Thickness	Max. Material Thickness	Type
RYS50	50 mm	0.30	2.0	Drop Lubrication
RYS100	100 mm			
RYS150	150 mm			
RYS300	300 mm	0.30	3.0	
RYS500	500 mm			

Easier and faster production is obtained by lubricating steel roll with drops while work piece / steel roll is switched between rollers in roller lubricating system. This system increases die-tool life and quality product which is not scrap is obtained.
Material thicknesses can be adjusted from 0.3 mm to 3.0 mm steel roll thickness.

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Pin Cutting & Face Grinding Machine

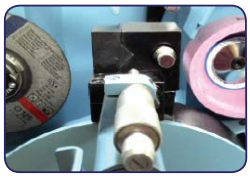
Ø 1 - 24 mm cylindrical part, for length adjusting

CE

Order Code: PKM1

Video

Length Tolerance:	1mm - 24mmØ x 325mm
Shortness Tol.:	1mm - 24mmØ x 60 mm
Cutting Disc:	115 - 185mm x 1,0 x 22mm
Grinding Wheel:	100mm x 50mm x 20mm (60 grit)
Motor:	380V 50Hz 0.75Kw 1500 Rpm
Cycle:	3650 Rpm
Angularity:	Ø1 - 24mm x 90/±0,02
Machine Weight:	80Kg
Dimensions:	500mm x 425mm x 355mm



Quick Clamping Mechanism

Plexiglass Cover Safety

Thrust System

Wheel and Measurement Adjustment System

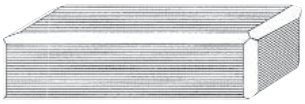
It guarantees precision degree but also it provides significant saving on time with best usage options in longitude cuttings. We recommend you to avoid unqualified and imitation products without "CE Certificate" in the market.

Code: VCF600

Handheld Chamfering Machine

Hand type, mobile, light and usable. The product is used in chamfering operation of die / mould plates and in machine production.

Adjustable Radius Selection



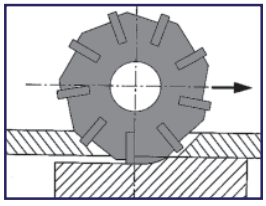
Slide Bearing
Length 100 mm

Order Code	Machine Dim.	Motor Voltage	Speed R.P.M	Corner Radius	Chamfer Capacity	Weight
VCF600	380 x 130 mm	220 V 0.62 KW	12000	45^0	0 - 3 mm	3.7 Kg

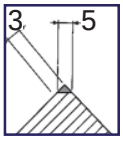
Code: VCF700

Handheld Chamfering Machine

For heavier and wider work pieces. The product is used in chamfering operation of die / mould plates and in machine production.



Slide Bearing
Length 200 mm



Order Code	Machine Dim.	Motor Voltage	Speed R.P.M	Corner Radius	Chamfer Capacity	Weight
VCF700	360 x 200 mm	220 V 0.37 KW	3500	15^0 - 45^0	0 - 7 mm	14 Kg

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Güvenal Group

Güvenal GTH
Die & Mould Components

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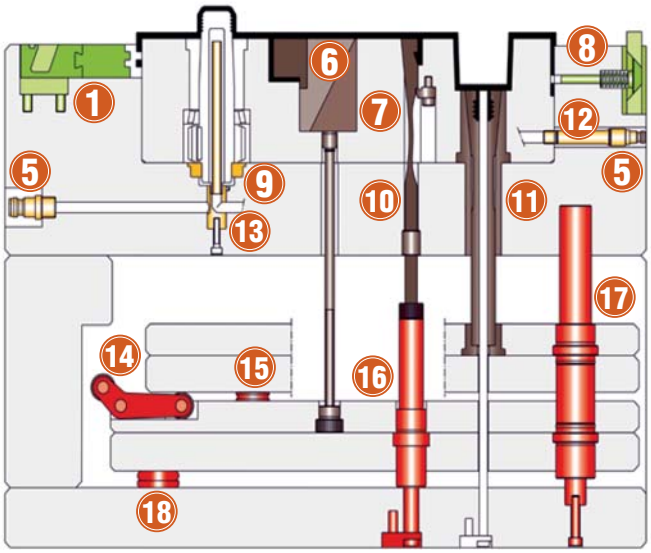
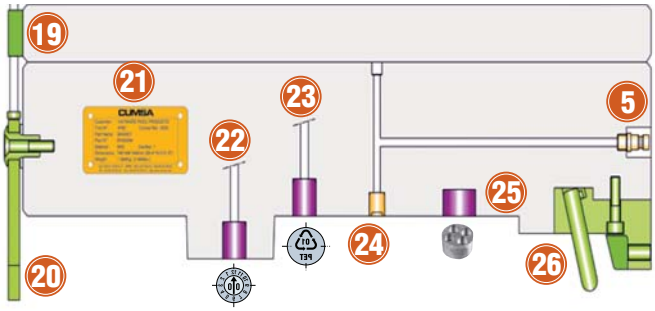
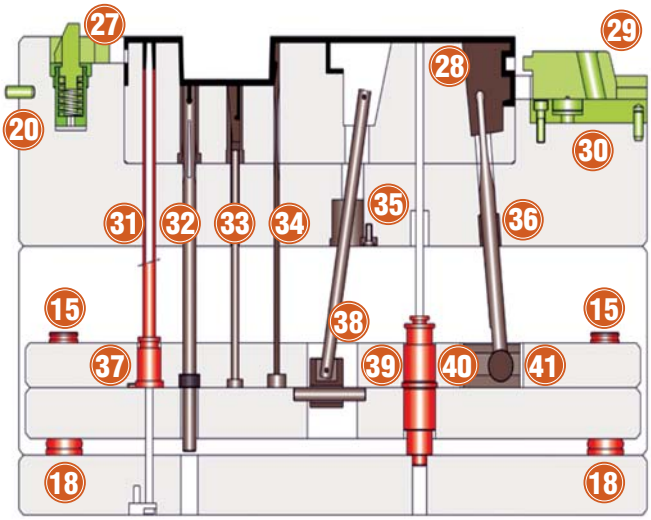
Standard Injection Mould Systems / Innovative Solutions for Your Moulds

CUMSA



For products not available in our catalogue, please request technical information or Cumsa catalogue from our company.





1	Code: SU	Slide Unit	
2	Code: FD	Double Date Stamp	
3	Code: CP	Color Plate	
4	Code: FP	Date Stamp Plus	
5	Code: BR	Hex Key Conector Plug	
6	Code: ID	Optional Insert for Undercuts	
7	Code: DHO	Outer Undercut Lifter	
8	Code: UA	Compact Coring Unit	
9	Code: SB	Seal Bearing	
10	Code: PX	Xtra Sprung Core	
11	Code: PE	Expandible Core	
12	Code: TH	Hex Key Extension Tube	
13	Code: TB	Seal Bearing Tube	
14	Code: EP	Ejector Plate Accelerator	
15	Code: TM	Magnetic Safety Stopper	
16	Code: LR	Threaded Limiter	
17	Code: DX	Superior Double Ejector	
18	Code: TA	Shock Absorber Disc	
19	Code: AB	Strap Extender	
20	Code: BS	Safety Strap	
21	Code: PI	Identification Plate	
22	Code: FP	Date Stamp Plus	
23	Code: IR	Recycle Insert	
24	Code: VA	Air Poppet Valve	
25	Code: BM	Block Base Insert	
26	Code: CG	Adjustable Wedge Assembly	
27	Code: UC	Core Cam	
28	Code: IF	Lifter Head	
29	Code: CA	Adjusted Slide	
30	Code: BC	Slide Base	
31	Code: TE	Headless Ejector Pin	
32	Code: EE	Tulip Ejetor	
33	Code: PS	Standard Lifter	
34	Code: PF	Flexible Sprung Core	
35	Code: CI	Angled Guide Bush	
36	Code: VI	Lifter Shaft	
37	Code: BA	Ejector Pin Base	
38	Code: SD	Undercut Base Unit	
39	Code: BD	Horizontal Base	
39	Code: AE	Accelerated Ejector	
40	Code: DF	Fixed Lifter Base	

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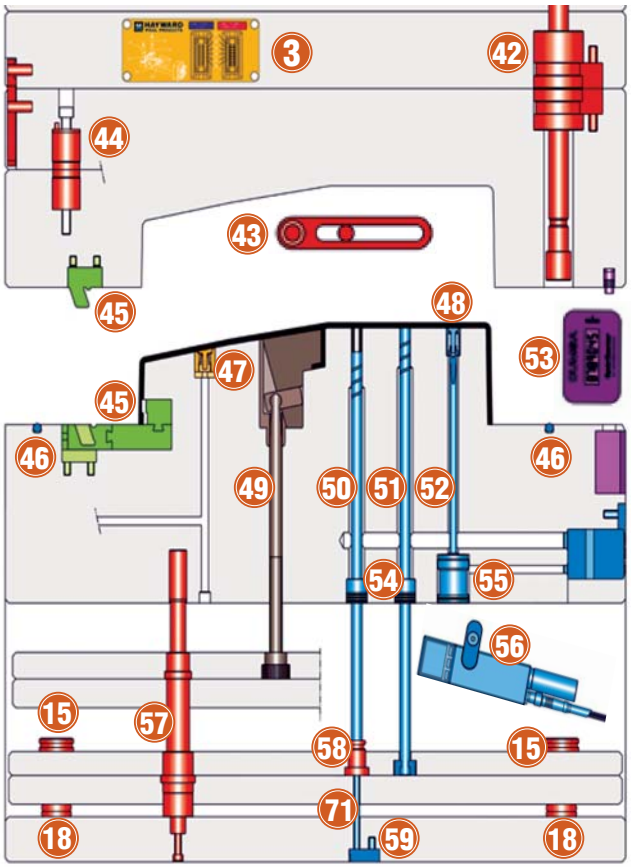
CUMSA

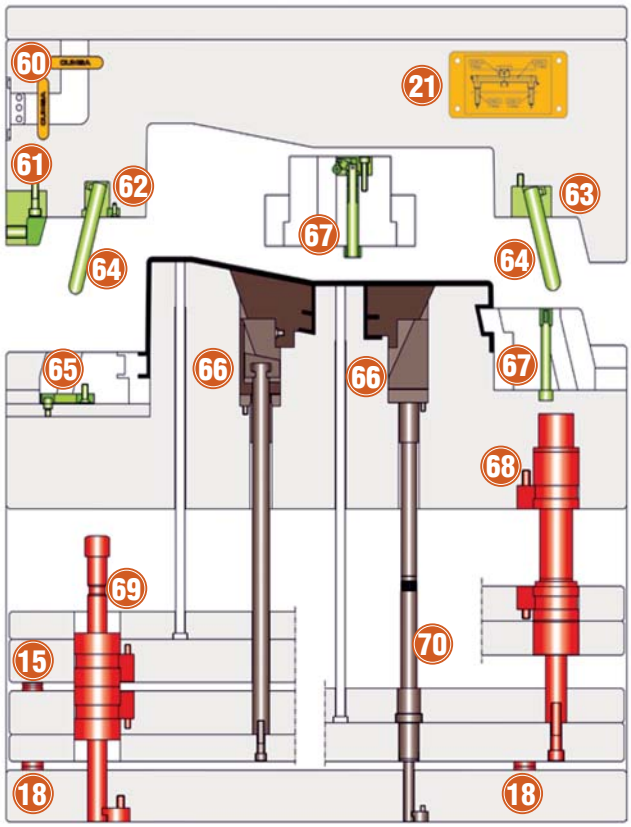
Standard Injection Mould Systems / Innovative Solutions for Your Moulds

18	Code: **TA** Shock Absorber Disc	51	Code: **VP** Spiral Ejector
42	Code: **MX** Internal Latch Lock	52	Code: **VT** Vacuumjet Valve Tube
43	Code: **SL** Stroke Limiter	54	Code: **CV** Vacuumjet Plug
44	Code: **PR** Plate Retainer	55	Code: **PT** Pneumatic Piston
45	Code: **UU** Undercut Unit	56	Code: **VK** Automatic Vacuumjet System
46	Code: **JV** Vacuumjet Seal	57	Code: **DY** Rear Double Ejector
47	Code: **VH** Air Valve for High Pressure	58	Code: **BT** Ejector Pin Base
49	Code: **DH** Special Angular Undercut	59	Code: **NP** No - rotating head for
50	Code: **VS** Spiral Sleeve	71	Code: **PH** Ejector



For products not available in our catalogue, please request technical information or Cumsa catalogue from our company.

48	Code: **VV** Vacuumjet Valve	53	Code: **CC** High Speed Cycle Counter
60	Code: **SC** Cable Retainer	66	Code: **DB** Dog Lifter Limiter
61	Code: **CR** Adjustable Wedge	67	Code: **RA** Automatic Retainer
62	Code: **GR** Angle Pin Housing	68	Code: **SY** Compact Double Ejection
63	Code: **BG** Square Angle Pin Housing	69	Code: **DX** Superior Double Ejector
64	Code: **GI** Angle Pin	70	Code: **LD** Dog Lifter Limiter
65	Code: **RCM** Slide Retainer	15	Code: **TM** Magnetic Safety Stopper



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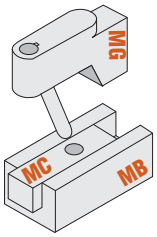


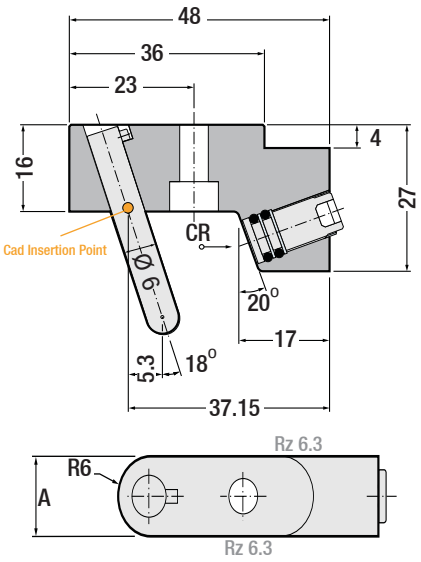
Mini Guide

Code: MG

It is consisted of angular pin and locking thrust wedge. While mould is closed, it can be easily adjusted with allen key. All machining is made 90° to the parting line. Parts can be replaced from the parting line.

Material: 1.2312
≈ 1.080 N/mm².
Patented System

Attention! Standard stroke of 4mm.



Order	A mm	CR (N)
MG.121648	12	50.000
MG.201648	20	90.000

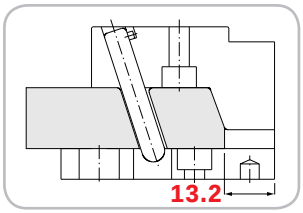
Mini Slide

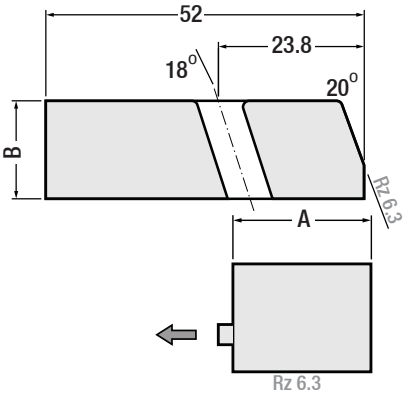
Code: MC

It is ready for machining, it comes with adjustment tolerances. It is only necessary to machine the cavity area.

Material: 1.2344
Hardness: 44 ± 2 HRC
Patented System

Attention! Machining reference is 13.2





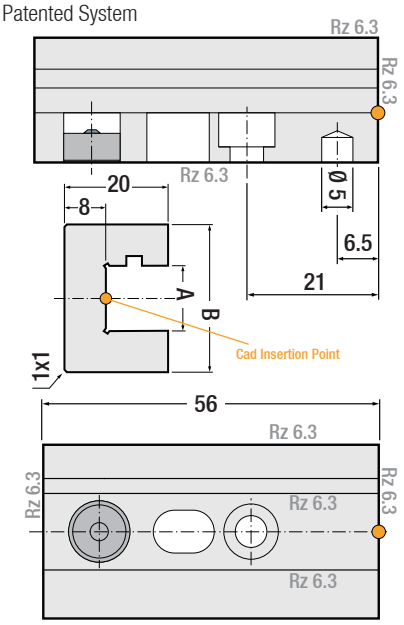
Order	A mm	B mm
MC.121252	12.5	12
MC.121652	12.5	16
MC.201252	20.5	12
MC.201652	20.5	16

Mini Base

Code: MB

An unique unit hardened and ground with the adjustment tolerances. Has various assembly posibilities and it is also easy to change, with magnetic retainer. Minimum space required for installation.

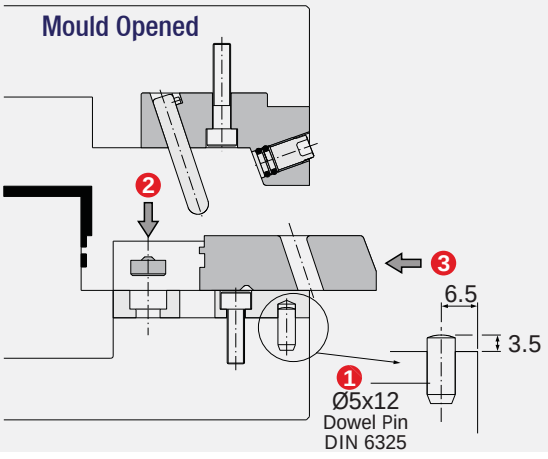
Material: 1.2510
Hardness: 54 ± 2 HRC
Patented System

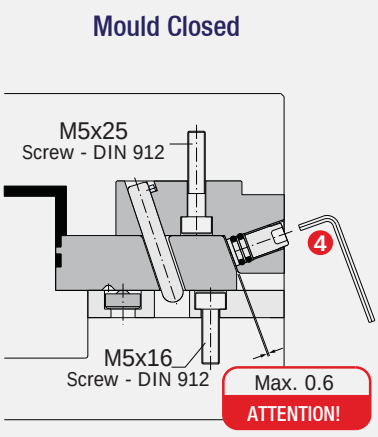


Order	A mm	B mm
MB.122056	12.5	28
MB.202056	20.5	36

Installation & Operation Examples

1- Determine the position of MB (mini base) and mount it.
2- Place the magnetic retainer into hole.
3- Insert MC (mini slide).
4- While mould is closed, please adjust MC (mini slide) up to 0.6mm maximum.





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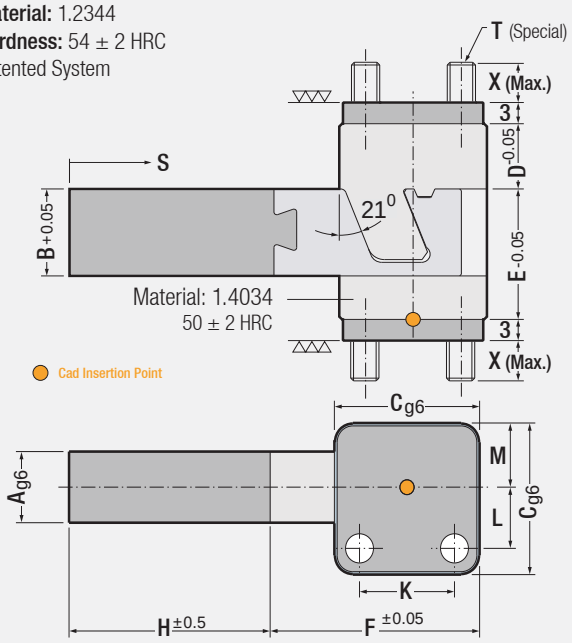
Slide Unit

Code: SU

Ideal to de-mold external details. Compact unit with strokes up to 5mm. Slider is made from two different inserts, allowing flexibility regarding the molding feature. All machining can be made 90° to parting line. Easy to change molding inserts due to fixing method. Incorporates a slide retainer and an angle pin.

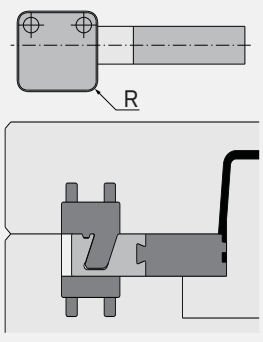
Material: 1.2344
Hardness: 54 ± 2 HRC
Patented System



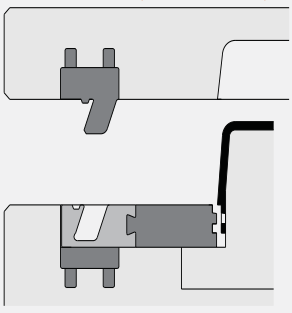
Code: SU

Order	A	B	C	D	E	F	H
SU.081220	8.2	12	20	10	18	28	32
SU.121626	12.2	16	26	12	24	37.5	36
SU.162032	16.2	20	32	16	30	46.5	40

K	L	M	R	S	T	X
12.5	8.25	8	3.75	3	M4	6.2
17	10.5	11	4.5	4	M5	7.2
22	13	14	5	5	M6	9.2



Installation & Operation Example

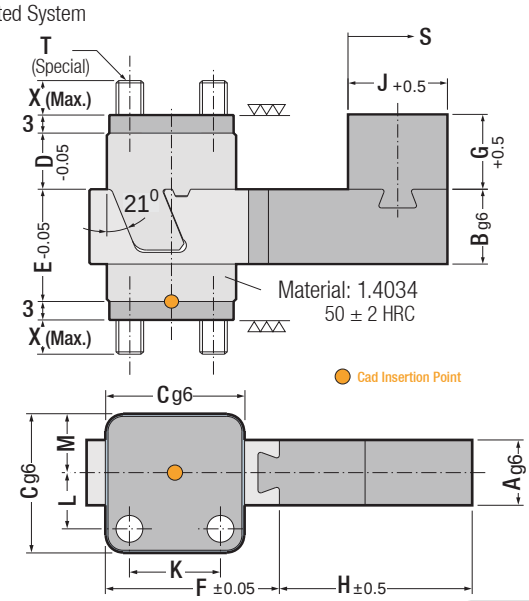


Undercut Unit

Code: UU

Inverse movement regarding normal units, ideal for de-moulding internal detail. Compact unit with strokes up to 5mm. Slider is made from two different inserts, allowing flexibility regarding the molding feature.
All machining can be made 90° to parting line.
Incorporates a slide retainer and an angle pin.

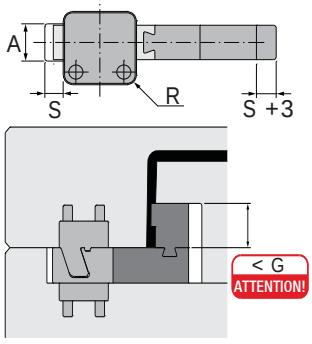
Material: 1.2344
Hardness: 54 ± 2 HRC
Patented System

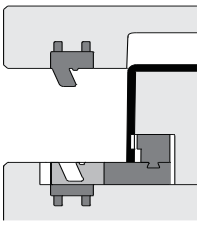


Code: UU

Order	A	B	C	D	E	F	G
UU.081220	8.2	12	20	10	18	24.5	12
UU.121626	12.2	16	26	12	24	32.5	16
UU.162032	16.2	20	32	16	30	41	20

H	J	K	L	M	S	R	T	X
32	16	12.5	8.25	8	3	3.75	M4	6.2
36	20	17	10.5	11	4	4.5	M5	7.2
50	25	22	13	14	5	5	M6	9.2





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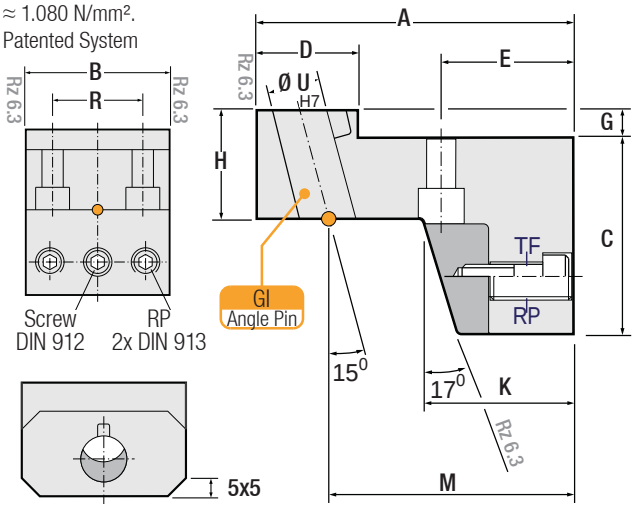
Adjustable Wedge Assembly

Code: CG

(Heel Unit)

It is unit of core / slide system starting motion. Adjustable with the mold closed. All machining is made 90° to the parting line. Parts can be replaced from the Parting Line. Hardened steel pre-adjusted for immediate use. Hardened wear plate. Two outer screws force the heel against the slide forming the shut off, while the central screw locks it into position. Minimum space required for installation

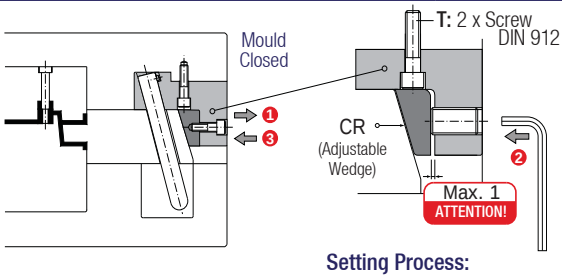
Material: 1.2312
≈ 1.080 N/mm².
Patented System



Code: CG

Order	A	B	C	D	E	G	H
CG.603035	60	30	35	25	23	6	23
CG.604035	60	40	35	25	23	6	23
CG.754049	75	40	49	30	32	7	27
CG.864857	86	48	57	35	36	8	32

K	M	R	TF	U	RP	CR (N)
29	43.7	17	M6x25	10	081015	180.000
29	43.7	22	M6x25	10	101015	320.000
39	58	22	M8x30	12	101020	320.000
44	65	28	M8x35	16	121025	480.000



Setting Process:
1- Unbolt "**TF**" (screw)
2- Tighten "**RP**" (screw)
3- Lock "**TF**"

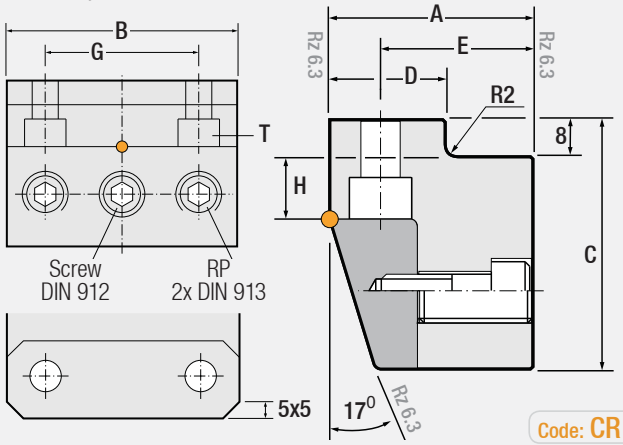
Adjustable Wedge

Code: CR

(Heel Unit)

Adjustable with the mold closed. All machining is made 90° to the parting line. Parts can be replaced from the Parting Line. Hardened steel pre-adjusted for immediate use. Hardened wear plate. Interchangeable parts. Allows the slide to be adjusted with the mold closed. Two outer screws force the heel against the slide forming the shut off, while the central screw locks it into position. Minimum space required for installation

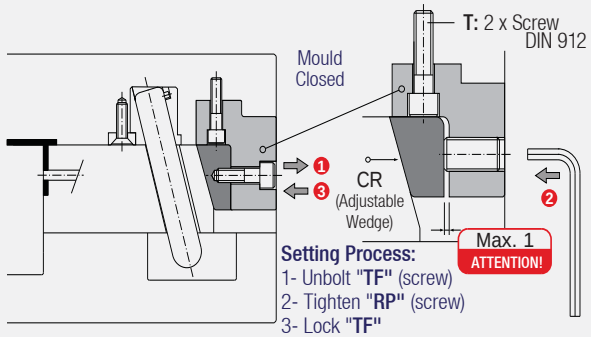
Material: 1.2312
≈ 1.080 N/mm².
Patented System



Code: CR

Order	A	B	C	D
CR.403840	40	38	40	25
CR.454849	45	48	49	28
CR.526052	52	60	52	32
CR. 526852	52	68	52	32
CR.527556	52	75	56	32

E	G	H	T	RP	CR (N)
30	22	12	M8x30	101020	320.000
35	28	16	M10x35	121025	480.000
40	35	16	M10x35	141030	750.000
40	45	16	M10x35	141030	750.000
40	50	16	M10x35	141030	750.000



Setting Process:
1- Unbolt "**TF**" (screw)
2- Tighten "**RP**" (screw)
3- Lock "**TF**"

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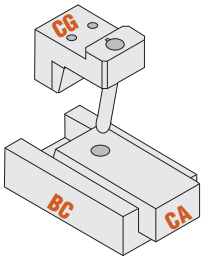


Code: CG

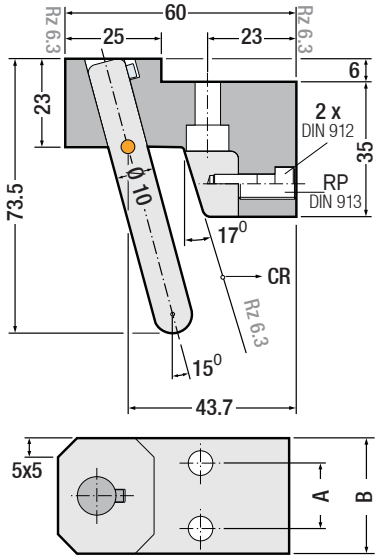
Adjustable Wedge Assembly

(Heel Unit & Including Pin)

It is consisted of angular pin and locking thrust wedge. While mould is closed, it can be easily adjusted with allen key. All machining is made 90° to the parting line. Parts can be replaced from the parting line. Angle pin included in CG - SET. Hardened steel pre-adjusted for immediate use. Hardened wear plate.

Material: 1.2312
≈ 1.080 N/mm².
Patented System

Attention!
Standard stroke
of 12mm.



Order	A	B
CG.603075	17	30
CG.604075	22	40

CR (N)	RP (Screw)	Angle Pin
180.000	081015	GI.010075
320.000	101015	GI.010075

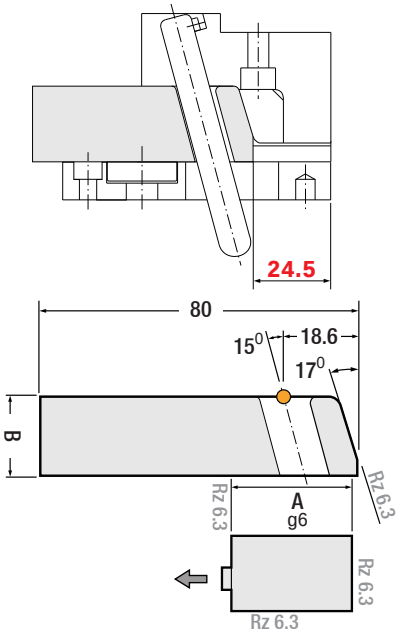
Adjusted Slide

Code: CA

Interchangeable and completly adjusted, only requires the part detail to be machined.
Its rectangular shape simplifies machining.
Angular hole is drilled on slide.

Material: 1.2344
Hardness: 42 ± 2 HRC
Patented System

Attention! Machining reference is 24.5



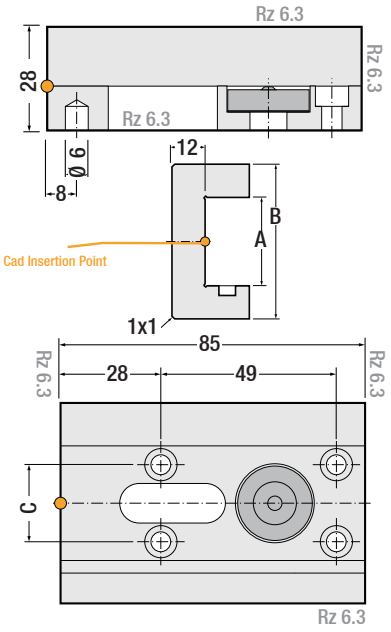
Order	A	B
CA.322080	32	20
CA.322480	32	24
CA.422080	42	20
CA.422480	42	24

Slide Base

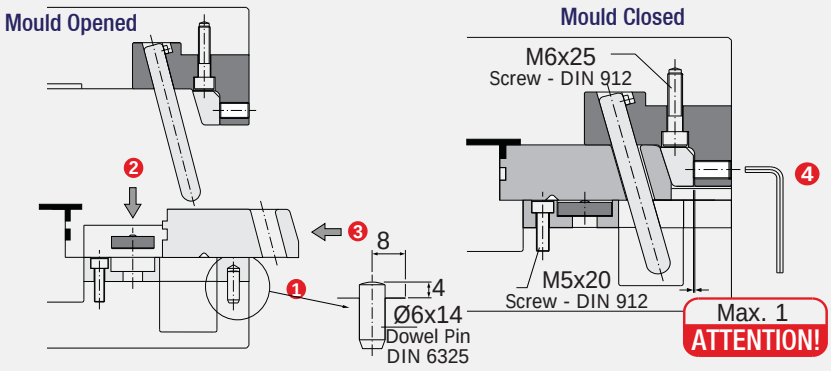
Code: BC

The slide retainer is built into the set.
Different hardness and materials between CA and BC to guarantees smooth movements.
Interchangeable parts. Parts can be replaced from the Parting Line. Hardened and ground, with the correct adjusting tolerances. Incorporates a magnetic Retainer (RM) which must be installed after the slide adjustment and allows fixing the slide movement where needed. Minimum space required for installation.

Material: 1.2510
Hardness: 54 ± 2 HRC
Patented System



Order	A	B	C
BC.322885	32	56	21.5
BC.422885	42	66	26.5



Installation

1- Determine the position of BC (slide base) and mount it.
2- Place the magnetic retainer into hole.
3- Determine the position of CA (adjusted slide).
4- While mould is closed, please adjust CA (adjused slide) up to 1 mm maximum.

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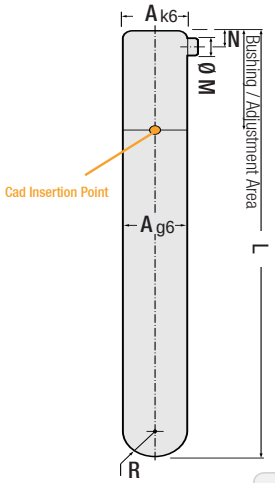
Angle Pin

Code: GI

This item can be fitted to any of the corresponding Cumsa sets (CG, GR & BG). Several diameters and lengths of angle pins.

Attention! When ordering, indicate the desired "L" dimension after the order reference code.

Material: 1.7242
Hardness: 60 ± 2 HRC



Code: GI

Order	A	Bushing / Adjustment Area
GI.010.. L	10	≃ 25
GI.012.. L	12	≃ 30
GI.016.. L	16	≃ 35
GI.020.. L	20	≃ 40
GI.024.. L	24	≃ 45
GI.028.. L	28	≃ 50

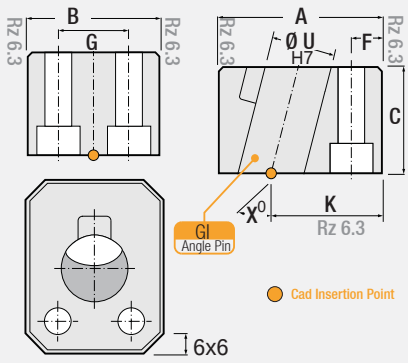
M	N	L (Length)			R
4	4	075	090	105	5
4	4	095	110	130	6
4	4	115	135	160	8
6	6	140	165	190	10
6	6	170	195	220	12
6	6	200	225	250	14

Code: BG

Square Angle Pin Housing

This is similar to the round Angle Pin Housing (GR) but allows the fitting of angle pins from 15°or 20°. This unit is bigger than the GR to allow for the greater angles and it requires a square pocket to be machined in the mould base. All machining is made 90° to the parting line. Parts can be replaced from the Parting Line. Minimum space required for installation.

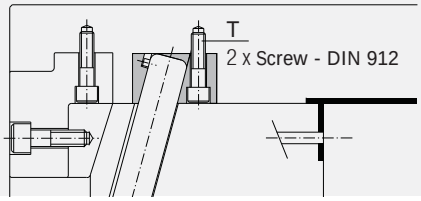
Material: 1.2312
≃ 1.080 N/mm².
Patented System



Code: BG

Order	A	B	C	F
BG.423016-15	42	30	30	7.5
BG.504020-15	50	40	36	9
BG.554024-15	55	40	40	9
BG.655028-15	65	50	45	12
BG.423016-20	42	30	30	7.5
BG.504020-20	50	40	36	9
BG.554024-20	55	40	40	9
BG.655028-20	65	50	45	12

G	K	T	U	X
15	28	M6x35	Ø 16	15⁰
22	34	M8x40	Ø 20	
22	38	M8x45	Ø 24	
26	45	M10x50	Ø 28	
15	28	M6x35	Ø 16	20⁰
22	34	M8x40	Ø 20	
22	38	M8x45	Ø 24	
26	45	M10x50	Ø 28	

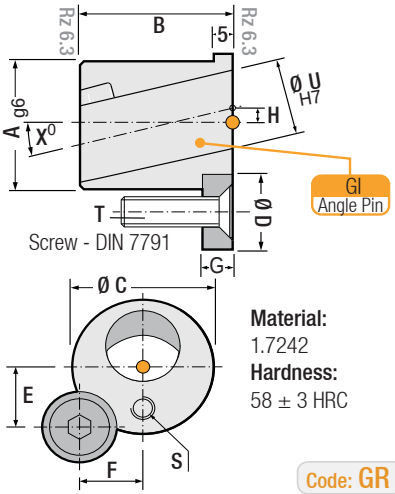


Angle Pin Housing

Code: GR

This unit incorporates a predrilled hole for the angle pin which eliminates the need to angularly drill the mould base.The mould base only needs to be drilled from the front to accept this unit. The unit comes in either 10°or 15°.

All drilling is made 90° to the parting line.
Parts can replaced from the Parting Line.
Minimum space required for installation.
Several diameters and lengths of angle pins.



Material:
1.7242
Hardness:
58 ± 3 HRC

Code: GR

Order	A	B	C	D	E
GR.182622-10	18	26	22	12	10.8
GR.222826-10	22	28	26	16	11
GR.283432-10	28	34	32	16	13
GR.344038-10	34	40	38	20	17
GR.424546-10	42	45	46	20	19.5
GR.465050-10	46	50	50	20	21
GR.182622-15	18	26	22	12	10.8
GR.222826-15	22	28	26	16	11
GR.283432-15	28	34	32	16	13
GR.344038-15	34	40	38	20	17
GR.424546-15	42	45	46	20	19.5
GR.465050-15	46	50	50	20	21

F	G	H	S	T	U	X⁰
7.5	6	3.8	M5x5	M5x16	10	10⁰
11		4	M6x6	M6x16	12	
13		5			16	
17	8	5.5	M8x6	M8x20	20	
19.5		6			24	
21		7			28	
7.5	6	3.8	M5x5	M5x16	10	15⁰
11		4	M6x6	M6x16	12	
13		5			16	
17	8	5.5	M8x6	M8x20	20	
19.5		6			24	
21		7			28	

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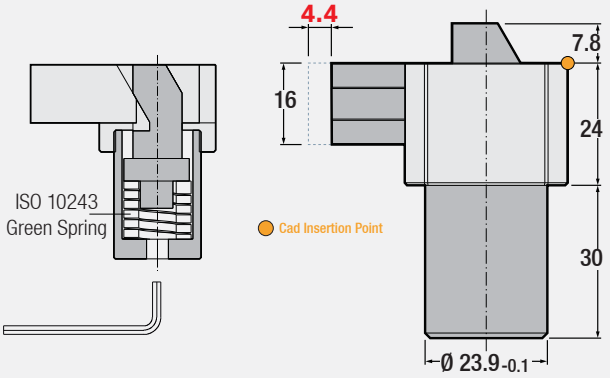
Core Cam (for lateral holes)

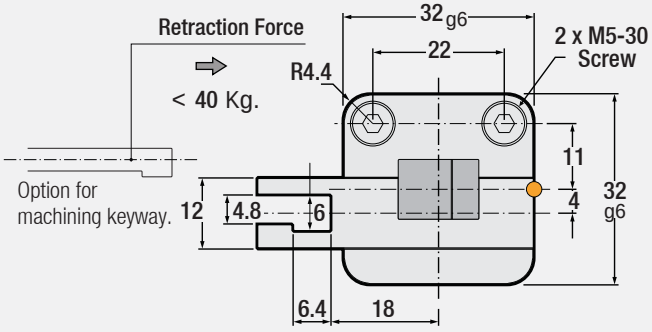
Code: UC

Mechanism to make lateral holes, automatic retention for the core insert. Requires very small area for installation. Reduces costs in machining and fitting. Reduces mould production time. Machining for installation is easier due to always being at 90° to parting line. Offers a standard solution to the mould makers.

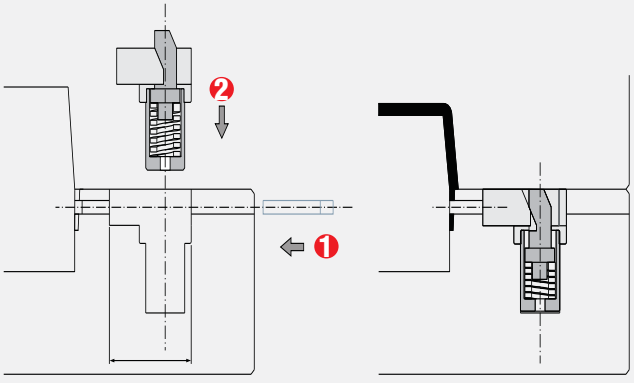
Material: 1.2344
Hardness: 52 - 54 HRC
Max. working temperature: 150°.

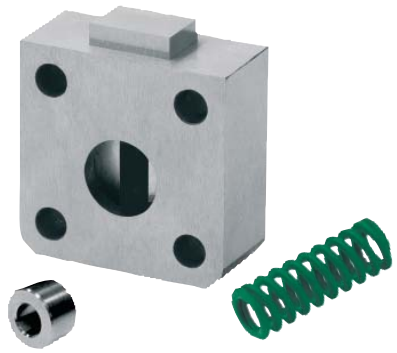
Attention! Standard stroke of 4.4mm.





Order: UC.325445





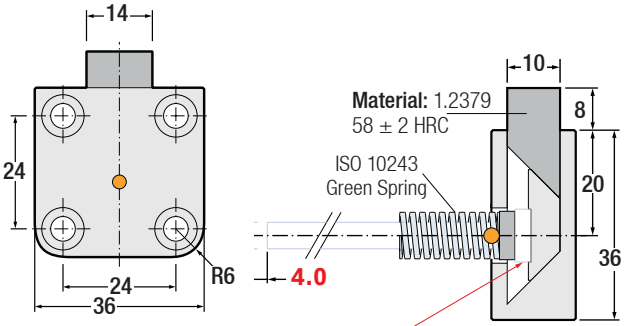
Compact Coring Unit (for lateral holes)

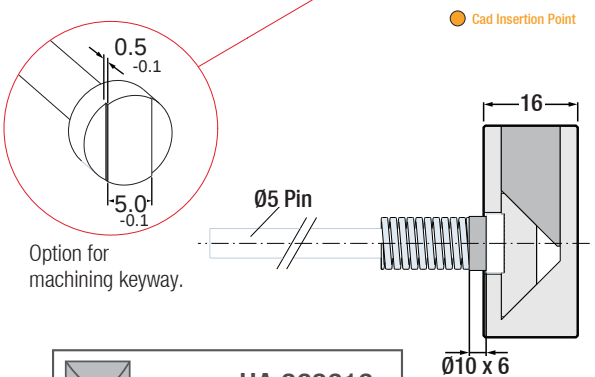
Code: UA

This unit uses the open and close movement of the mould to make lateral holes in wall sections of plastic parts. Easy to assemble and remove from the mould. Reduces costs in machining and fitting. Reduces mould production time. Machining for installation is easier due to always being at 90° to parting line. Offers a standard solution to the mould makers.
Requires very small area for installation.

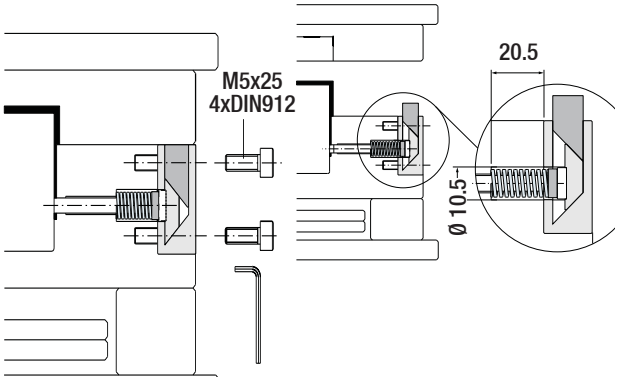
Material: 1.2344
Hardness: 52 - 54 HRC
Max. working temperature: 150°.

Attention! Standard stroke of 4.0mm.





Order: UA.363616



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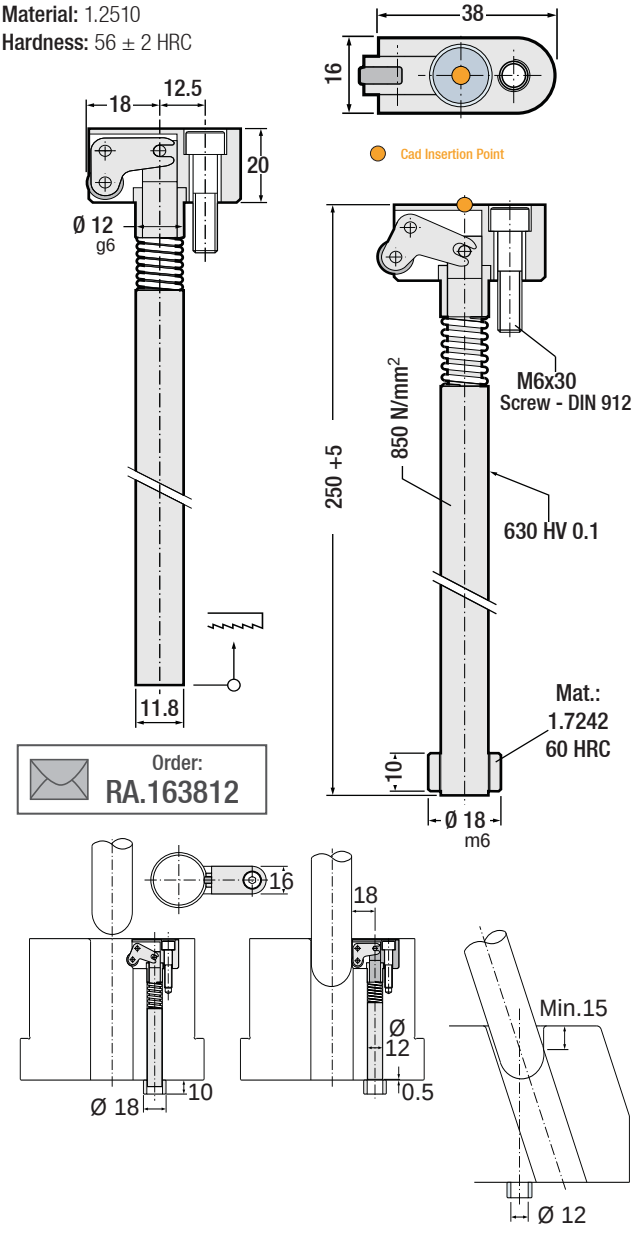
Automatic Retainer

Code: RA

This retainer for large slides is actuated by the angle pin, ensuring smooth and easy movement with no excess force required.
Reduces costs in machining and fitting. No need for complex retaining systems or expensive hydraulic systems. Retention of cam slides up to 2000 Kg. Offers a standard solution to the mould makers.

Attention! Cut the rod 0.5mm shorter than the slide height.

Material: 1.2510
Hardness: 56 ± 2 HRC



Order: RA.163812

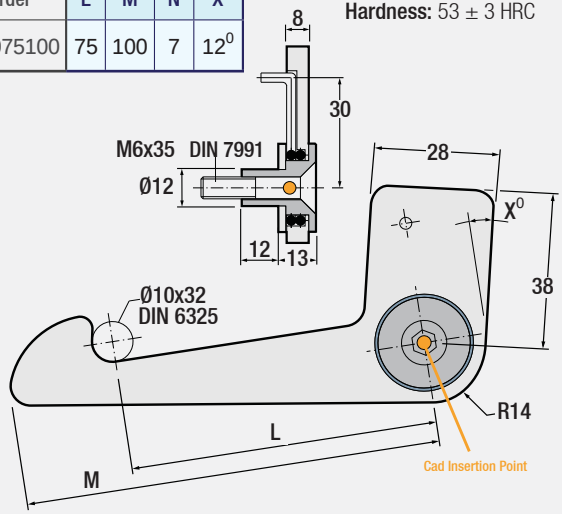
Safety Strap

Code: BS

Keeps the mould closed when it is not in the machine.
The mould is unlocked automatically, when mounted on the machine.
Minimum space required for installation. Guarantees automatic opening and closing of the mould when loaded or unloaded from the machine.

Order	L	M	N	X
BS.075100	75	100	7	12^0

Material: 1.0503
Hardness: 53 ± 3 HRC



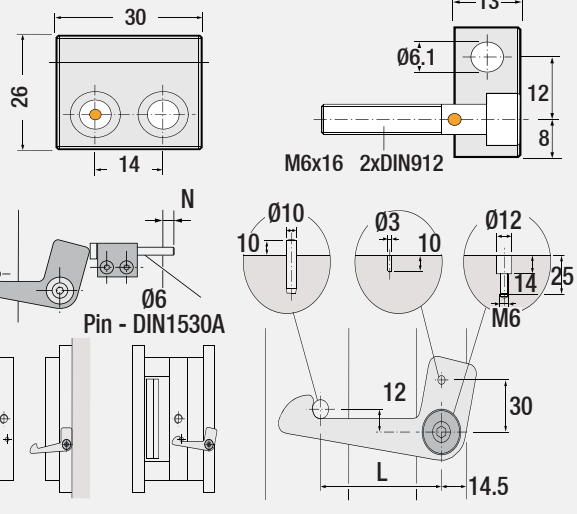
Strap Extender

Code: AB

Used where the cavity plate is thicker than 120 mm.

Order: AB.302613

Material: 1.0503



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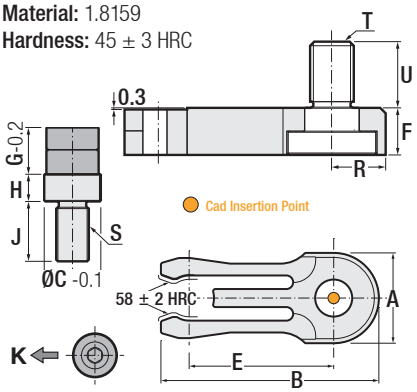
Slide Retainer

Code: RCM

Incorporates a mechanical stopper.
The fixing pin has rollers to avoid wear on friction surfaces. Less machining for installation compared to similar products on the market.
Minimum space required for installation.

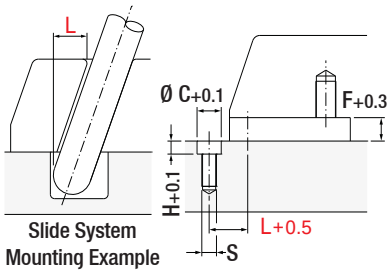
Material: 1.8159
Hardness: 45 ± 3 HRC

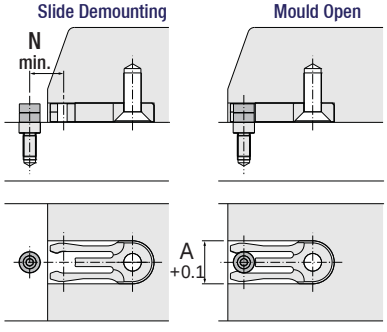


Order	A	B	C	E	F	G
RCM.163808	16	38	8	25	7.6	7.6
RCM.204810	20	48	10	32	8.7	8.6
RCM.245712	24	57	12	37.5	9.6	9.6

H	J	K	N	R	S	T	U
4	10	8 Kg.	7	8	M5	M6	9
5	11	14 Kg.	8	10	M6	M8	12
6	12	18 Kg.	9	12	M8	M10	15

K: Force to release the retainer.



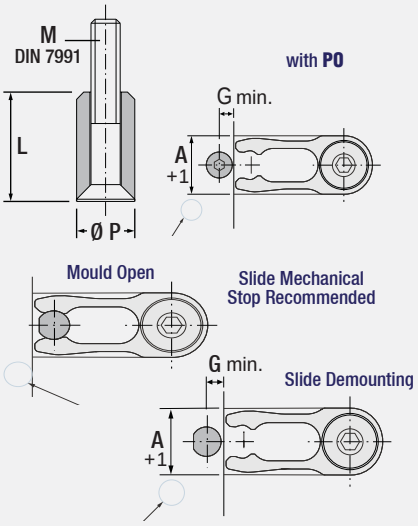


Optional Dowel Pin for Slide Retainer

Code: PO

Optional method for holding the Slide Retainer, that simplifies the disassembling.
This item must be ordered separately.

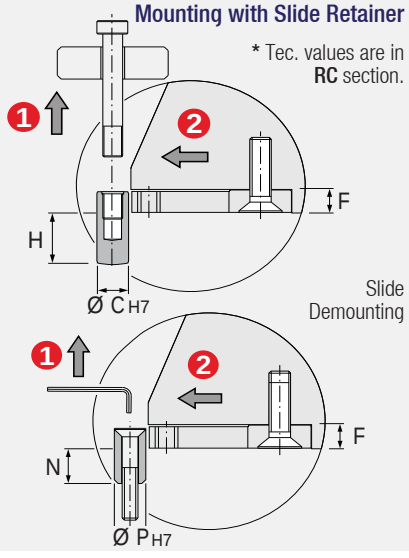
Material: 1.3505
Hardness: 60 ± 2 HRC



Order	L	M	N	P
PO.120320	12	M3x20	7.5	6
PO.150425	15	M4x25	10	8
PO.200530	20	M5x30	13	10
PO.250635	25	M6x35	16	12
PO.340850	34	M8x50	23	16

Mounting with Slide Retainer

* Tec. values are in **RC** section.

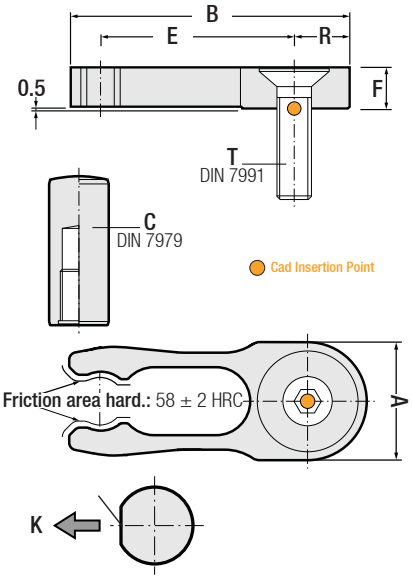


Slide Retainer

Code: RC

Less machining for installation compared to similar products on the market.
Minimum space required for installation.
Reduces costs in tool downtime.
Offers a standard solution to the mould makers.

Material: 1.8159
Hardness: 45 ± 3 HRC



K: Force to release the retainer.
Slot depths should be: F = +0.30mm.

Order	A	B	C	E	F
RC.123006	12	30	6x20	21	4.7
RC.164008	16	40	8x20	28	5.7
RC.205010	20	50	10x24	34	7.7
RC.246012	24	60	12x32	42	9.7
RC.328012	32	80	16x40	56	11.7
RC.328016	32	80	16x40	56	15.7

G	H	K	R	T
4	16	5 Kg.	6	M5x16
5	15	7 Kg.	8	M6x20
6	17	14 Kg.	10	M8x25
7	23	21 Kg.	12	M10x30
9	27	28 Kg.	16	M12x35
9	25	38 Kg.	16	M12x50

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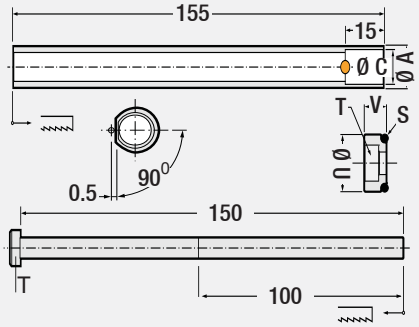
Code: AP

Retractable Core Extension

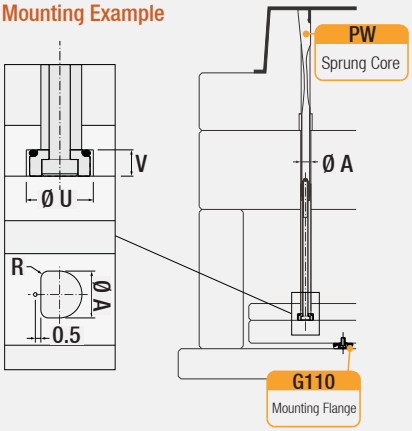
Standard extension. Flat for key position included. Hardened and ground to size. Enables a standard length of the PW up to 315mm. Keyed pocket included.



Order	A	C	R
AP.080615	8	6	1.25
AP.100815	10	8	2.0
AP.121015	12	10	2.5

S	T	U	V
9.5 x 2	M4	14	5
11.5 x 2	M5	16	6
14.5 x 2.5	M6	20	8

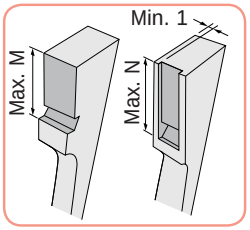
Mounting Example



Güvenal GTH Die & Mould Components
Standard Injection Mould Systems

CUMSA
Innovative Solutions for Your Moulds

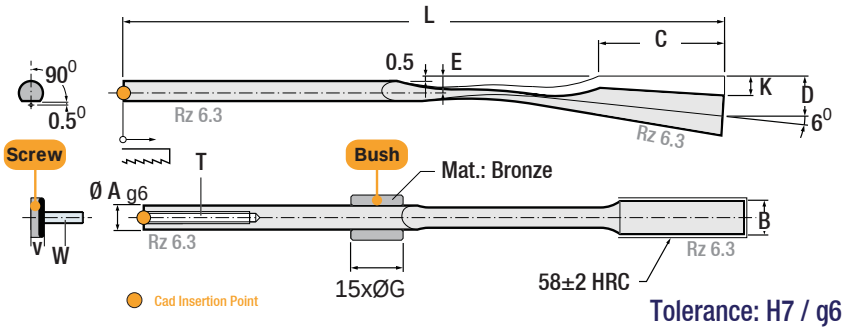
After setting core, please machining 0.1mm from end section to make ejector effortlessly.



Sprung Core

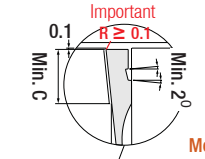
Code: PW

Minimum space required for installation, only needs the space of an ejector. No milling, grinding or hardening other than the machining of detail needed. Machining for installation is easier due to always being at 90° to parting line. No need for complex mechanical systems. The opening of the sprung cores is a radial movement. Due to this, at the edge of the stroke, the opening is 3.5mm (0.138"), 4.5mm (0.177") and 5.5mm (0.217"), depending on the model (K dimension in the catalogue).
Correctly installed sprung cores (following our catalogue installation instructions) can produce more than 1 million parts. (welding is not recommended on any of the sprung core products & we only recommend using Balinit C coating, other coatings are not recommended as they can reduce the sprung core life)
Material: 1.8159 **Hardness:** 45 ± 3 HRC **Max. working temperature:** 150°.

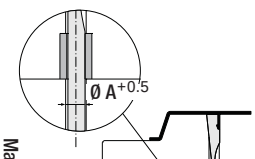


Tolerance: H7 / g6

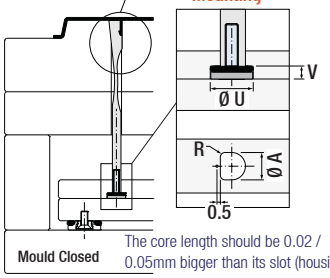
Order	A	B	C	D	E	G	K	L	M	N	R	T	U	V	W
PW.060622	6	6.2	22	9	3.5	-	3.5	125	16	18	1.25	M4 x 36	12	5	M4 x 16
PW.060630			30	10		12	4.5	175	20	26					
PW.060822		8.2	22	9		-	3.5	125	16	18					
PW.060830			30	10		12	4.5	175	20	26					
PW.080825	8	8.2	25	11.5	4.5	-	4.5	140	18	21	2.0	M5 x 36	14	6	M5 x 16
PW.081025		10.2				-									
PW.081030			30	11.2		12		175	20	26					
PW.081225		12.2	25	11.5		-		140	18	21					
PW.081230			30	11.2		12		175	20	26					
PW.101430	10	14.2	30	13.6	5.5	16	5.5	175	20	26	2.5	M6 x 36	18	8	M6 x 16
PW.101630		16.2													
PW.101830		18.2													



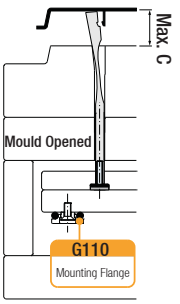
"D" gap (6mm): Up to < 3 mm.
"B" width: Min. 2° can be slepped
6° surface / bushing: Min. 5 mm
Core can be adjusted with mould cavity.
Slot: 6°

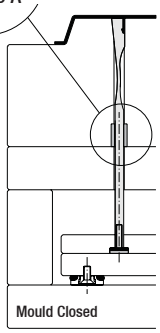


Mounting



The core length should be 0.02 / 0.05mm bigger than its slot (housing).





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"PX" Cutting Jig

Code: CX

Enables accurate fine tuning in the height of the PX. Simplifies the measuring and cutting of the shaft of the PX. Easier to cut larger quantities of PX at a time.

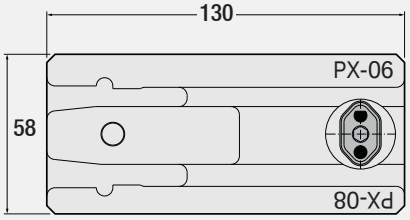
How to use the PX Cutting Jig ?

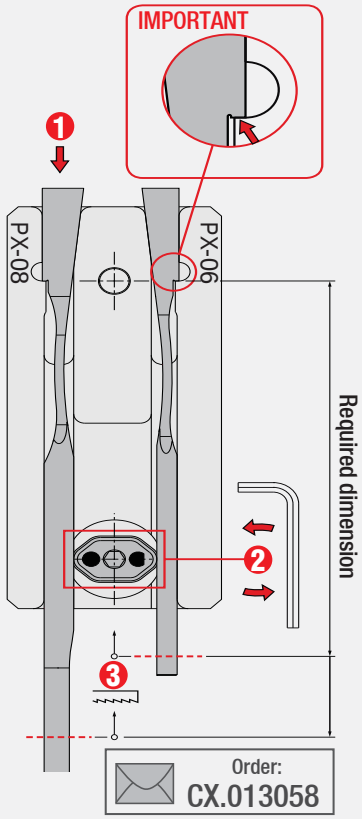
1- Insert the PX into the corresponding slot, for 6 or 8mm. shank. Ensure that the shape of the PX head is adjusted in the housing support.

2- Use an allen key to select the correct option: flat ● or ● round.

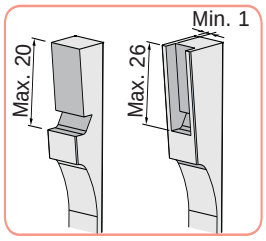
3- Cut the PX to the required dimension.

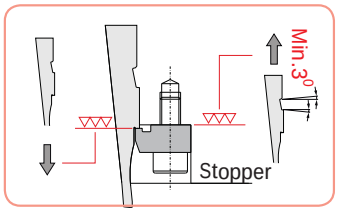
Material: INOX / 1.4034





After setting core, please machining 0.1mm from end section to make ejector effortlessly.





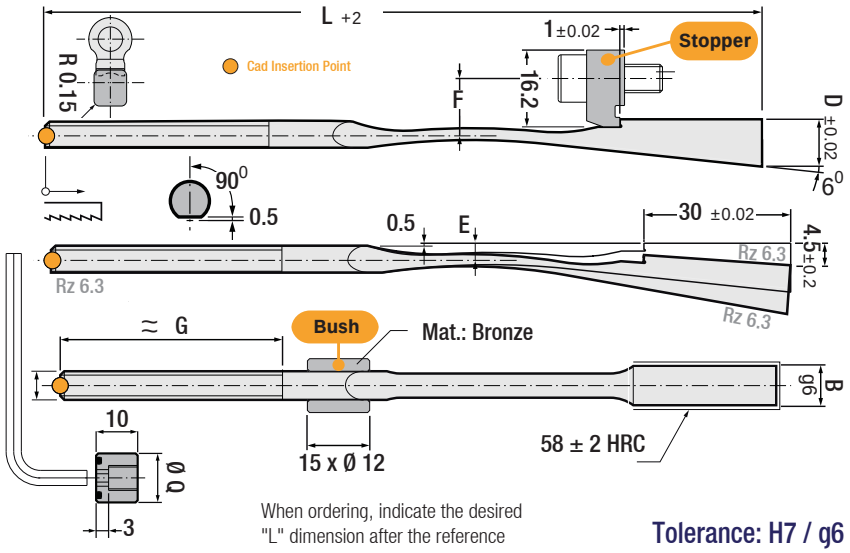
Xtra Sprung Core

Code: PX

The stopper simplifies the adjustment and allows a longer lifetime guarantee. Completely adjusted to fit an H7 housing, radiuses already made on the head of the sprung core. Simple fixing system due to its external thread.

Available in three lengths. Jig to guarantee the part is cut at the exact length (supplied separately).

Material: 1.8159 **Hardness:** 45 ± 3 HRC **Max. working temperature:** 150°.

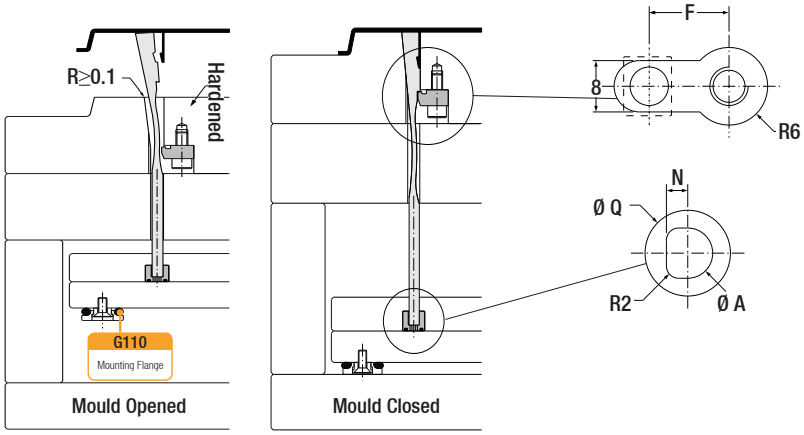


When ordering, indicate the desired "L" dimension after the reference

Tolerance: H7 / g6

Order	A	B	D	E	F	L=175		L=250		L=325		N	Q
						G	Bush	G	Bush	G	Bush		
PX.060630-...	6	6.2	10	3.5	12.5	60	-	80	-	80	-	2.5	12
PX.060830-...	6	8.2	10	3.5	12.5	60	-	80	-	80	-	2.5	12
PX.081030-...	8	10.2	11.2	4.5	13.5	60	-	80	-	80	-	3.5	14
PX.081230-...	8	12.2	11.2	4.5	13.5	60	-	80	-	80	-	3.5	14

As other ejector, it is operated with ejector plates. Especially, it is ideal to remove small lugs.



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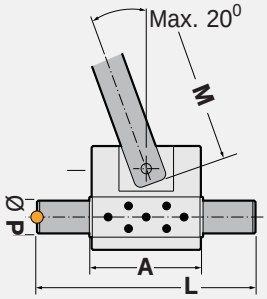


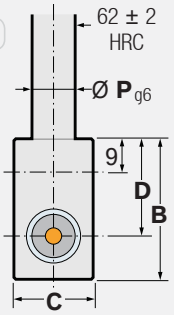
Undercut Base Unit

Code: SD

Used for internal undercut movements which require different angles of ejection. Its bronze guide bushing with graphite inserts, simplifies its movement. No milling, grinding or hardening need, only pocket machining.

Mat.: 1.2312 ≈1.080.N / mm²

Order	A	B	C	D	L	M	P
SD.3220GR	32	37	20	27	80	180	10
SD.3824GR	38	40	24	28	80	210	12
SD.4528GR	45	44	28	30	100	250	16

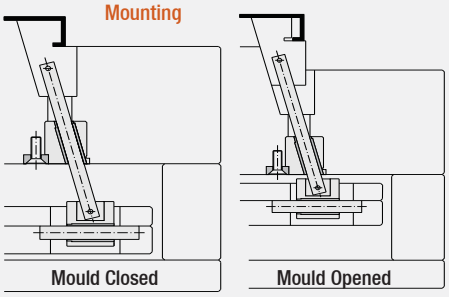


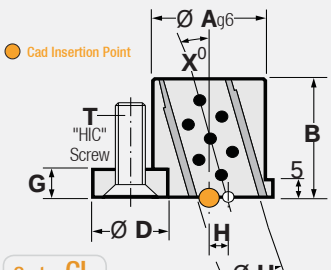
Attention: The unit and the rod are delivered separately.

The maximum weight that the Undercut Base Unit can support:

SD.322010 - 320 kg
SD.382412 - 420 kg
SD.452816 - 680 kg.

Mounting



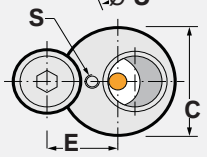


Angled Guide Bush

Code: CI

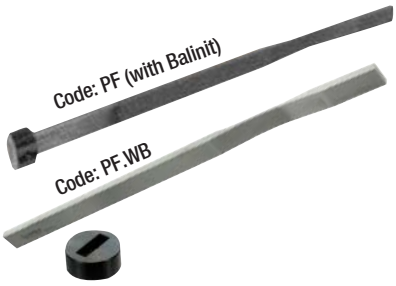
This unit is a guide bush for angled undercut blocks, which only requires a straight drilled hole for fitting. It does not require oil grooves due to the graphite-bronze insert.

Material: 1.7242 **Hardness:** 58 ± 3 HRC

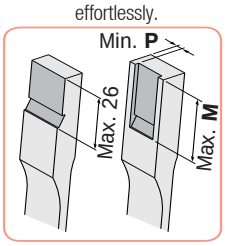


Order	A	B	C	D	E	G	H	T	U	X⁰
CI.3034-5	30	34	34	16	20	6	0	M6x16	10	5⁰
CI.3438-5	34	38	38	20	24	8	0	M8x20	12	
CI.4040-5	40	40	44	20	27	8	0		16	
CI.3034-10	30	34	34	16	20	6	7	M6x16	10	10⁰
CI.3438-10	34	38	38	20	24	8	8.5	M8x20	12	
CI.4040-10	40	40	44	20	27	8	8.5		16	
CI.3034-15	30	34	34	16	20	6	7	M6x16	10	15⁰
CI.3438-15	34	38	38	20	24	8	8.5	M8x20	12	
CI.4040-15	40	40	44	20	27	8	8.5		16	
CI.3034-20	30	34	34	16	20	6	7	M6x16	10	20⁰
CI.3438-20	34	38	38	20	24	8	8.5	M8x20	12	
CI.4040-20	40	40	44	20	27	8	8.5		16	

"S": Demounting screw hole. Please see 3D file for "S" hole position.



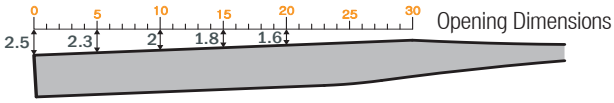
After setting core, please machining from end section to "P" due to make ejector effortlessly.



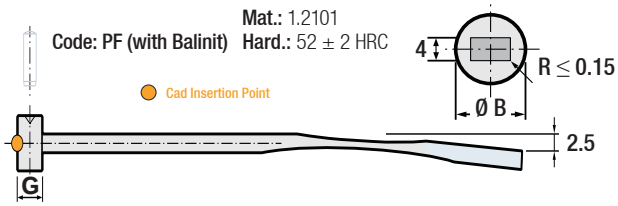
Flexible Sprung Core

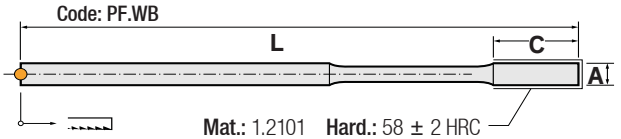
Code: PF

Thanks to its parallel walls, this core allows undercuts to be released in compact areas (only 4mm. thickness). Include a simple system for adjustment. A new feature to this product is that it ejects first then releases the undercut. Minimum space required for installation,only needs the space of an ejector. No milling, grinding or hardening other than the machining of detail needed. All drilling is 90° to the parting line. Available with and without Balinit C® coating.

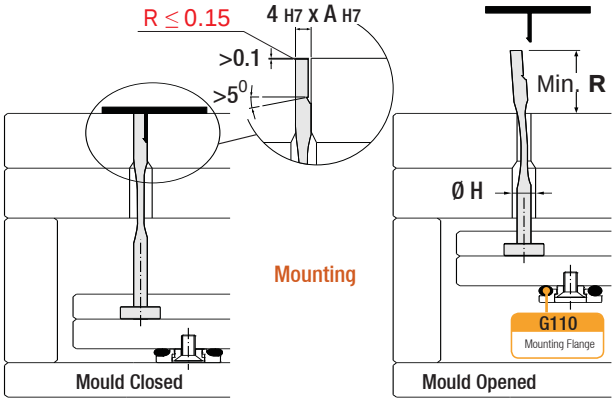


The opening of the sprung cores is a radial movement.
Due to this, at the edge of the stroke, the opening is 2.5mm (0.098").





Order	A	B	C	G	H	L	M	N	P	R	Balinit C
PF.044150	4	8	24	6	6	150	12	14	0.8	30	•
PF.054150	5				6						•
PF.064200	6	12	30	8	7	200	18	20	1.0	36	•
PF.084200	8	14			9						•
PF.104200	10	16			11						•
PF.124200	12	18			13						•
PF.0642-WB	6	12	30	8	7	200	18	20	1.0	36	-
PF.0842-WB	8	14			9						-
PF.01042-WB	10	16			11						-
PF.01242-WB	12	18			13						-



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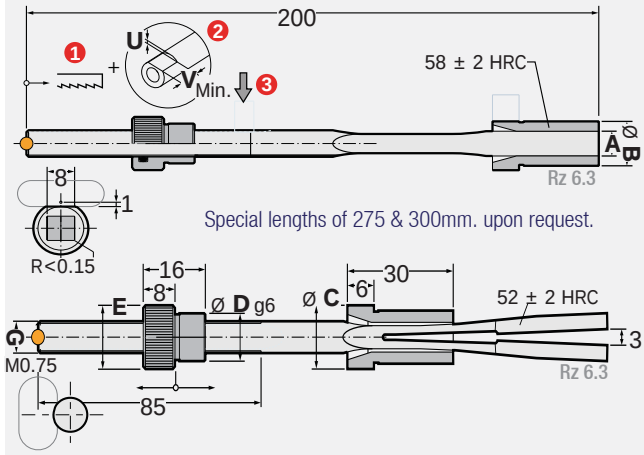
Double Ejector

Code: ED

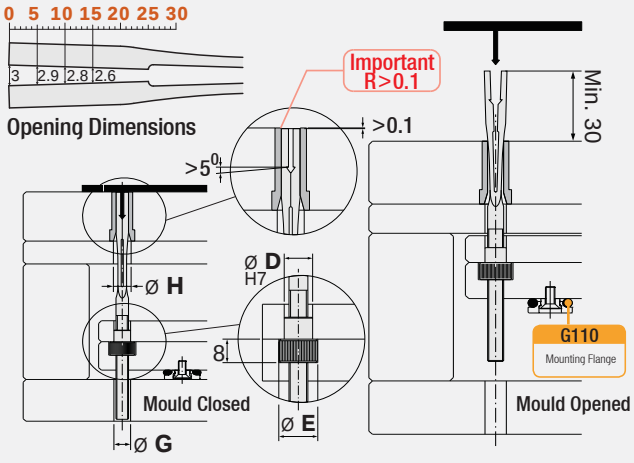
Two separte movements in one component. Minimum space required for installation, only needs the space of an ejector.
No milling, grinding or hardening other than the machining of detail needed. No need for complex mechanical systems. Useful to release small undercuts, this ejector is pre-adjusted and height adjustable. Easy to install, machining is 90° to parting line. The Balinit C® coating offers smooth action.

Material: 1.2101 **Hardness:** 45 ± 3 HRC
Max. working temperature: 150°.

Every Ejector is adjusted individually with its bushing, with a tolerance g6/H7 between them. For this reason, it is important to keep track of both pieces in pairs while handling and installing. The opening of the sprung cores is a radial movement. Due to this, at the edge of the stroke, the opening is 3.0 mm.



Order	A	B	C	D	E	G	H	U	V
ED.068200	6	12	14	10	14	6	10	0.5	10
ED.088200	8	14	16	12	16	8	12		
ED.108200	10	16	18	14	18	8	14		15
ED.128200	12	16	18	16	20	8	15		



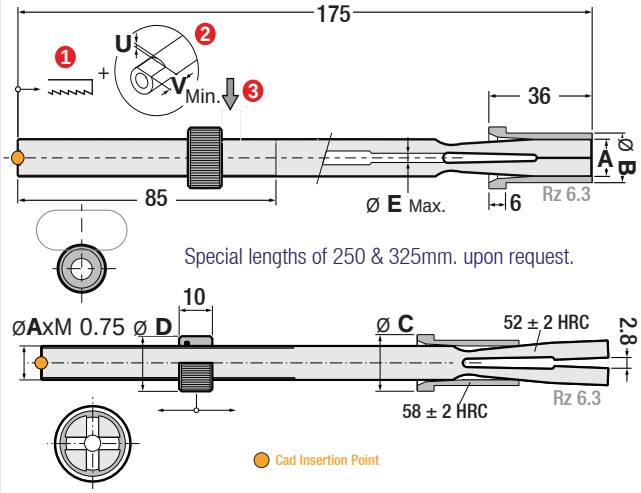
Tulip Ejector

Code: EE

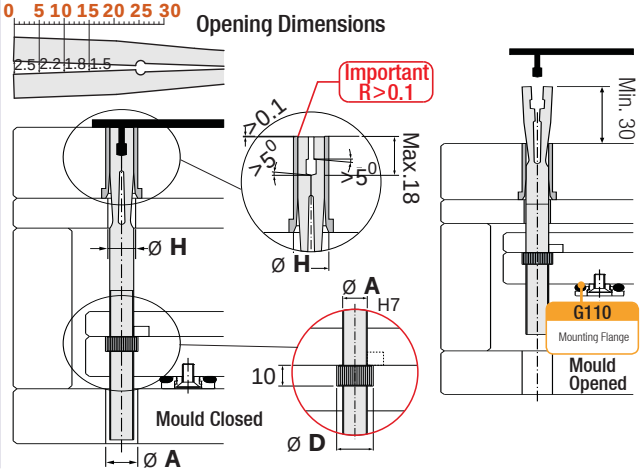
Four separte movements in one component. Useful to release small undercuts, this ejector is pre-adjusted and height adjustable. Cilindrical machining and made 90° regarding the parting line. No milling, grinding or hardening other than the machining of detail needed. The Balinit C® coating offers smooth action. Minimum space required for installation, only needs the space of an ejector.

Material: 1.2101 **Hardness:** 45 ± 3 HRC
Max. working temperature: 150°.

Every Ejector is adjusted individually with its bushing, with a tolerance g6/H7 between them. For this reason, it is important to keep track of both pieces in pairs while handling and installing. The opening of the sprung cores is a radial movement. Due to this, at the edge of the stroke, the opening is 2.8mm (0.110").



Order	A	B	C	D	E	H	U	V
EE.060175	6	10	12	12	-	9	0.5	10
EE.082175	8	12	14	14	2	11		
EE.103175	10	14	16	16	3	13		15
EE.124175	12	16	18	18	4	15		
EE.168175	16	20	22	22	8	19	1.0	20



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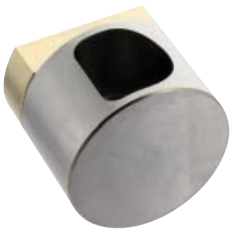
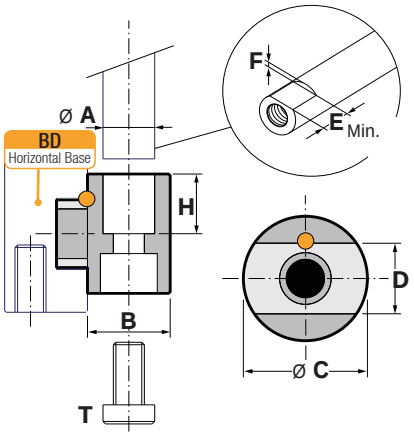


Fixed Lifter Base

Code: DF

Keyed pocket for the lifter shaft. Minimum space required in the ejector plates.
"VI" (Lifter Shaft) may be used as ejector.

Material: INOX 1.4034
Hardness: 48 ± 2 HRC

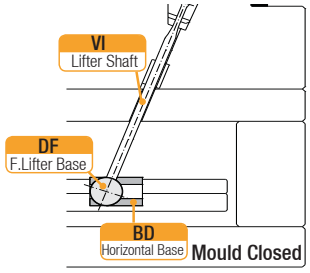


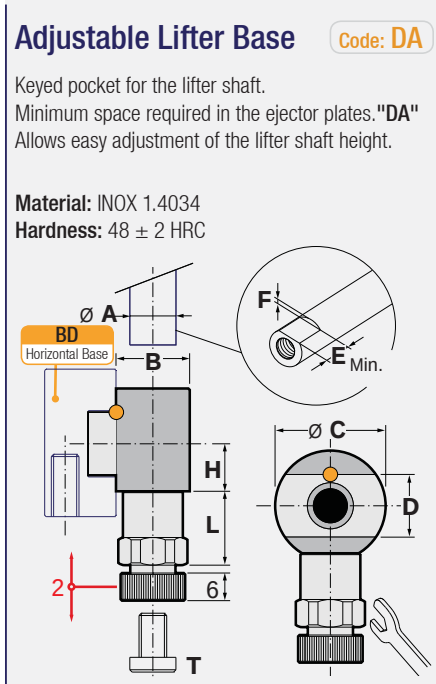
Cad Insertion Point

Code: DF

Order	A	B	C	D
DF.061220	6	12	20	11.5
DF.081220	8	12	20	11.5
DF.101624	10	16	24	13.5
DF.121624	12	16	24	13.5
DF.162032	16	20	32	19
DF.202538	20	25	38	21
DF.253148	25	31	48	28

E	F	H	T
12	0.5	10	M4 x 12
12	0.5	10	M5 x 12
14	0.5	12	M6 x 16
14	1.0	12	M8 x 16
18	1.5	16	M8 x 22
21	1.5	19	M10 x 25
26	2.0	24	M12 x 35





Adjustable Lifter Base

Code: DA

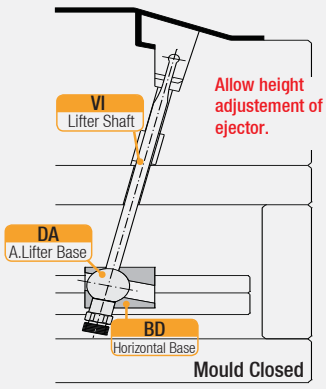
Keyed pocket for the lifter shaft.
Minimum space required in the ejector plates.**"DA"**
Allows easy adjustment of the lifter shaft height.

Material: INOX 1.4034
Hardness: 48 ± 2 HRC

Code: DA

Order	A	B	C	D
DA.061020	6	10	20	11.5
DA.081220	8	12	20	11.5
DA.101624	10	16	24	13.5
DA.121824	12	18	24	13.5

E	F	H	L	T
15	0.5	9.0	14	M4 x 40
15	0.5	8.5	14	M5 x 40
17	0.5	10.2	16	M6 x 40
17	1.0	9.6	16	M8 x 40



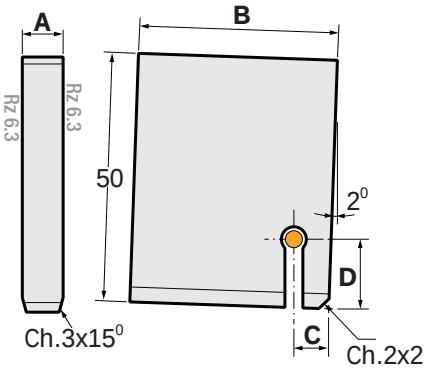
Lifter Head

Code: IF

Lifter Head hardened and ground to size.
No need for threads or dowel pins to attach the Lifter Head to the Lifter Shaft.
Offers a standard solution to the mould makers.

Material: 1.2344
Hardness: 45 ± 2 HRC

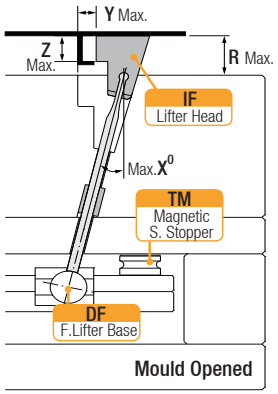
Patented System



Code: IF

Order	A	B	C	D
IF.064050	6.2	40	6	12
IF.084050	8.2	40	7	14
IF.104450	10.2	44	8	16
IF.124450	12.2	44	9	18

R	X	Y	Z
40	5	3.5	36
38	10	6.7	35
38	15	10.2	34
37	20	13.5	32



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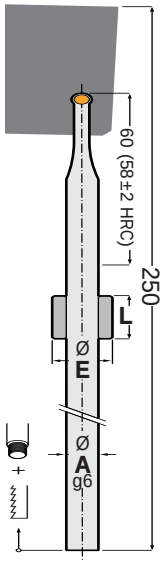
Lifter Shaft

Code: VI

Lifter shaft includes oilless bushing.
No need for threads or dowel pins to attach the Lifter Head to the Lifter Shaft.
Offers a standard solution to the mould makers.

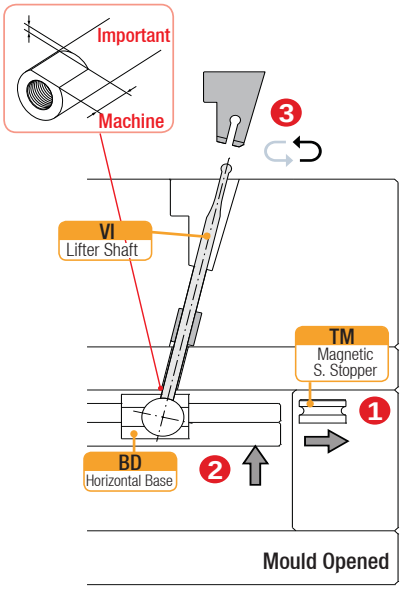
Material: 1.3505
Patented System

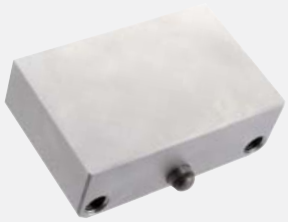


Cad Insertion Point

Code: VI

Order	A	E	L	U	V
VI.064200	6	10	15	0.5	12
VI.085200	8	12	20	0.5	12
VI.106200	10	14	20	0.5	14
VI.127200	12	16	20	1.0	14

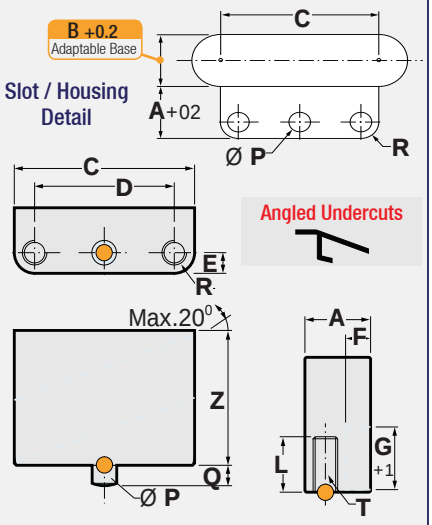




Adaptable Base

Code: BD

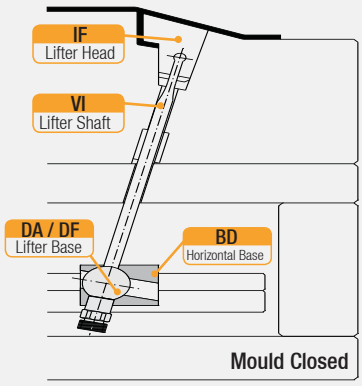
Cam slide for internal lifters.
Different hardness and materials between base and limiter guarantees smooth movements.
Minimum space required for installation.
Material: 1.2311 **Hardness:** 45 ± 2 HRC



Code: BD

Order	A	C	D	E	F
BD.122836	12	36	28	4	4.8
BD.143866	14	66	42	4	6.3
BD.163240	16	40	30	5	6.3
BD.204060	20	60	44	5	8.3
BD.254672	25	72	56	7	10.3
BD.315890	31	90	74	8	13.3

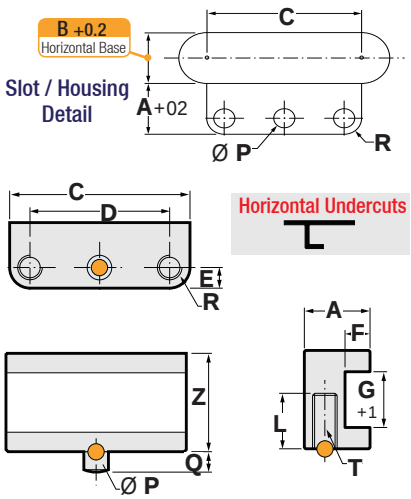
G	L	P	Q	R	T	Z
11.5	10	5	5	4	M5	28
11.5	10	5	5	4	M5	38
13.5	12	6	5	5	M6	32
19	15	6	5	5	M6	40
21	18	8	5	6	M8	46
28	18	10	8	8	M10	58



Horizontal Base

Code: BD

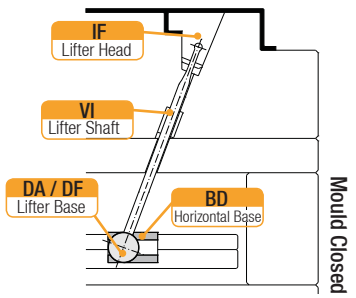
Cam slide for internal lifters.
Different hardness and materials between base and limiter guarantees smooth movements.
Minimum space required for installation.
Material: 1.2311 **Hardness:** 45 ± 2 HRC



Code: BD

Order	A	C	D	E	F
BD.122036	12	36	28	4	4.8
BD.142266	14	66	42	4	6.3
BD.162440	16	40	30	5	6.3
BD.203260	20	60	44	5	8.3
BD.253872	25	72	56	7	10.3
BD.314890	31	90	74	8	13.3

G	L	P	Q	R	T	Z
11.5	10	5	5	4	M5	20
11.5	10	5	5	4	M5	22
13.5	12	6	5	5	M6	24
19	15	6	5	5	M6	32
21	18	8	5	6	M8	38
28	18	10	8	8	M10	48



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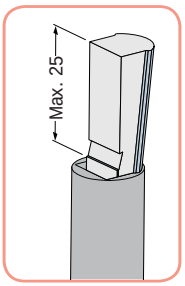


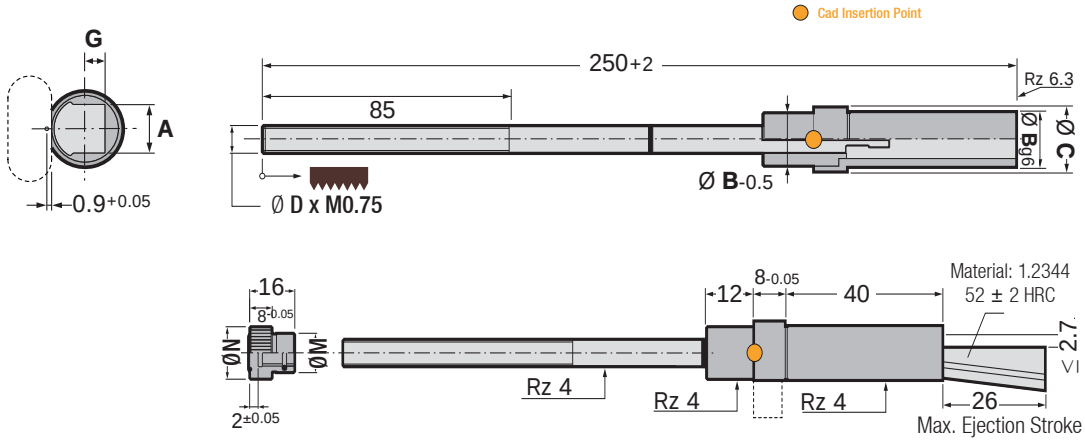
Important
Max. Operation Length

Standard Lifter

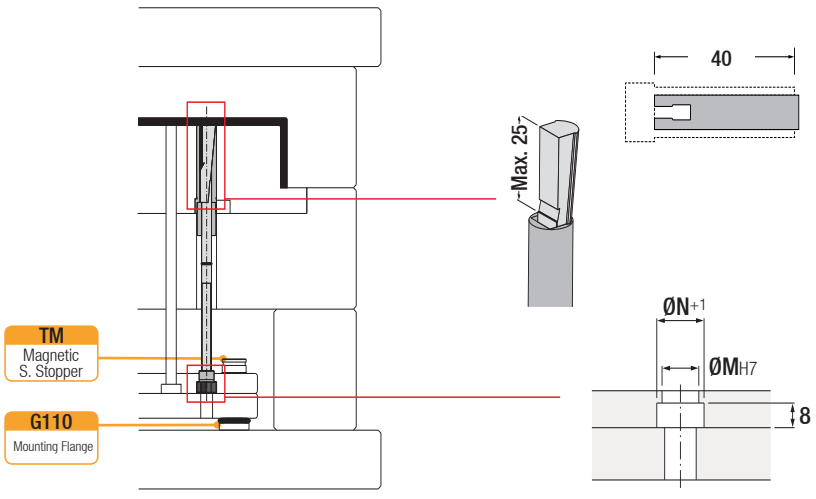
Code: PS

Compact unit for the release of small undercuts. The unit is completely pre adjusted and easy to install.
The space required for installation is reduced due to the vertical movement perpendicular to the ejector plates.
Minimum space required for installation, only needs the space of an ejector.
Mechanical solution. No milling, grinding or hardening
other than the machining of detail needed.

Material: INOX 1.4034 **Hardness:** 48 ± 2 HRC **Patented System**



Order Code	A	B	C	D	G	M	N	R
PS.062250	6.2	10	12	6	3.4	12	16	1.25
PS.082250	8.2	12	14	6	4	12	16	1.25
PS.102250	10.2	14	16	8	4.2	14	18	2
PS.122250	12.2	16	18	8	4.2	14	18	2



* The bushing can be machined to make the molding surface up to 25mm (0.98").

How much can be cut from the top on the bushing and RP in Z axis?

PS.062250: 8 mm (0.315")
PS.082250: 15 mm (0.591")
PS.102250: 15 mm (0.591")
PS.122250: 20 mm (0.787")

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Vertical Lifter Block

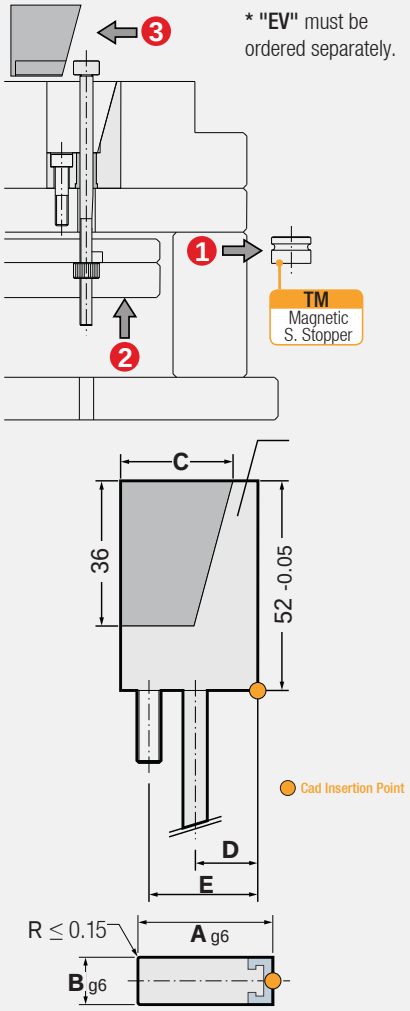
Code: PV

They are used along with mechanic Vertical Lifters, in profile block vertical lifting.

Material: 1.2842 **Hardness:** 56 ± 2 HRC

Usage: Removal process of profile block (according to technical drawing detail).

1- Pull **"TM"** (Magnetic Stopping) safety disc.
2- Push ejector plate forward.
3- Remove lifter housing.



* **"EV"** must be ordered separately.

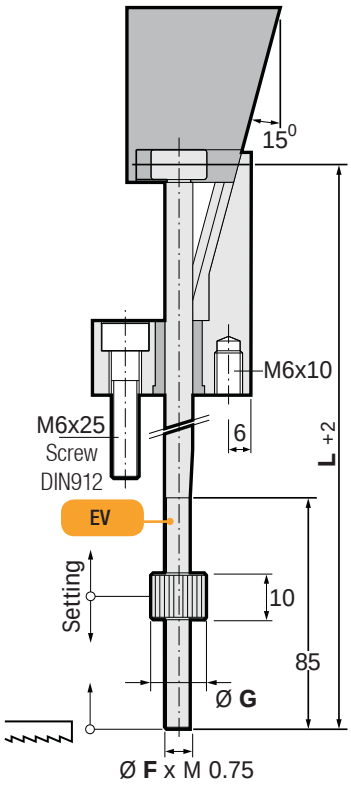
Order	A	B	C	D	E
PV.341252	34	12	28	15.5	27
PV.402452	40	24	34	18.5	33

Vertical Lifter

Code: EV

Reduces costs in machining and fitting. Reduces costs in tool downtime.
All machining are made in a 90° position. Less space required compared to conventional solutions.
Offers a standard solution to the mould makers.

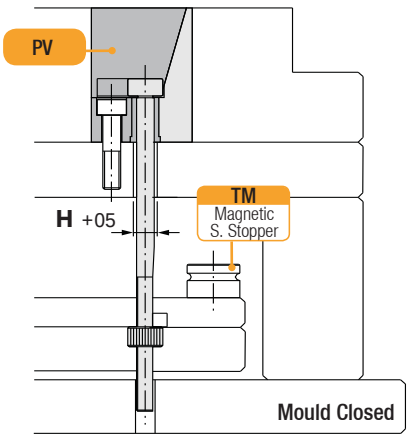
Material: 1.2344 **Hardness:** 50 ± 2 HRC **Patented System**

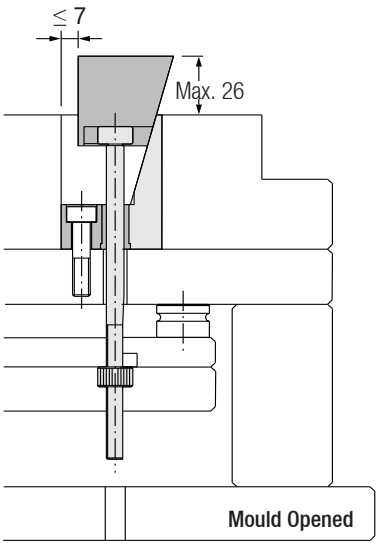


* **"PV"** must be ordered separately.
* When ordering, indicate the desired "L" dimension after the reference.

Code: EV

Order	F	G	H	L	
EV.006. (L)	6	12	6.5	150	225
EV.012. (L)	12	18	12.5	150	225





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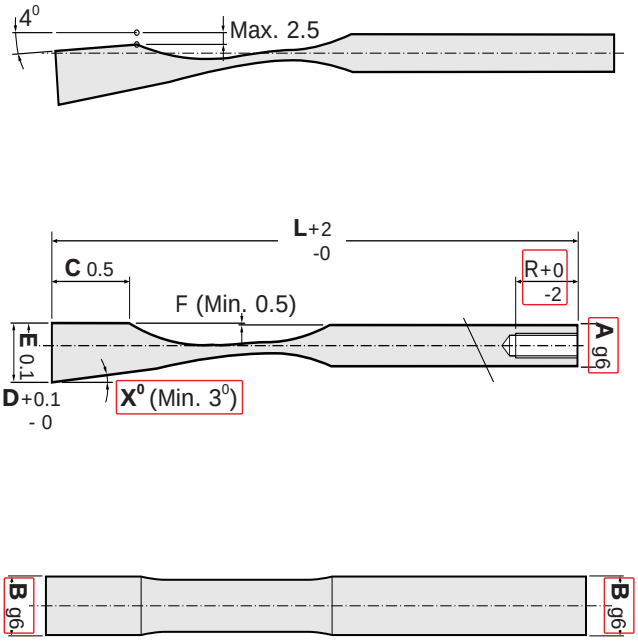
Custom-Made Sprung Cores

Special sprung cores to suit your dividual requirements.
If no other Cumsa undercuts product is compatible, this is your solution.
Delivery time from 6 to 8 weeks.
Different strokes and undercut dimensions are available.

Material: 1.8159 **Hardness:** 45 ± 3 HRC



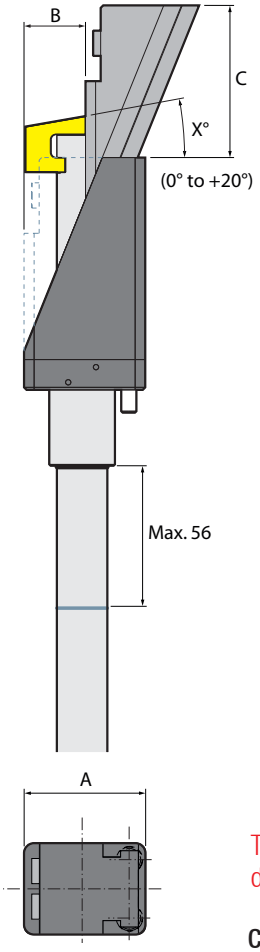
The dimensions **A, R** and **X°** will be determined by Cumsa depending on the head dimensions required by the customer.

Custom-Made Angular Dog Lifters

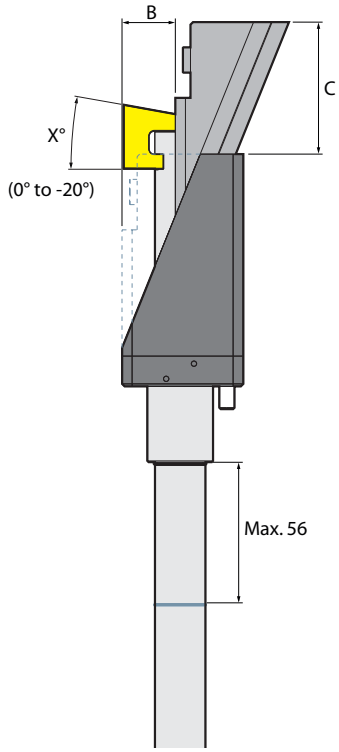
This unit allows to use the advantages of the DB reference in angled parts.
To order this part just fill the Ordering Table provided. Once we receive the required dimensions we will send to you a 3D file for your approval.

Material: 1.2311 Gas Nitrided ≈ 840Hv.

Positive Angle Version



Negative Angle Version



The other dimensions will be determined by Cumsa.

Custom-Made Sprung Cores

Order	B	C	D	E	F	L	Pcs.
Custom-made production							

Custom-Made Angular Dog Lifters

Order	A	B	+X⁰	-X⁰	Pcs.
Custom-made production	44				
	48				
	54				

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Standard Injection Mould Systems

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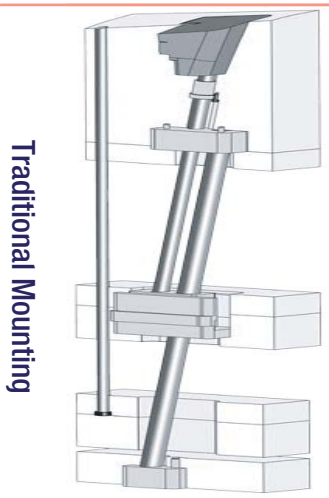


Traditional Mounting

Single Ejector System

Automatic Dog Lifter

Code: DB

Designed to function with just one set of ejector plates, saving machining costs and reducing the size of the mould. Undercuts of up to 26mm with just 56mm stroke. This innovative system gives the capability of designing their own insert.

Material: PKT-117 **Hardness:** 42 ± 2 HRC.
Gas Nitrided ≈ 840Hv.

Dog Lifter Limiter

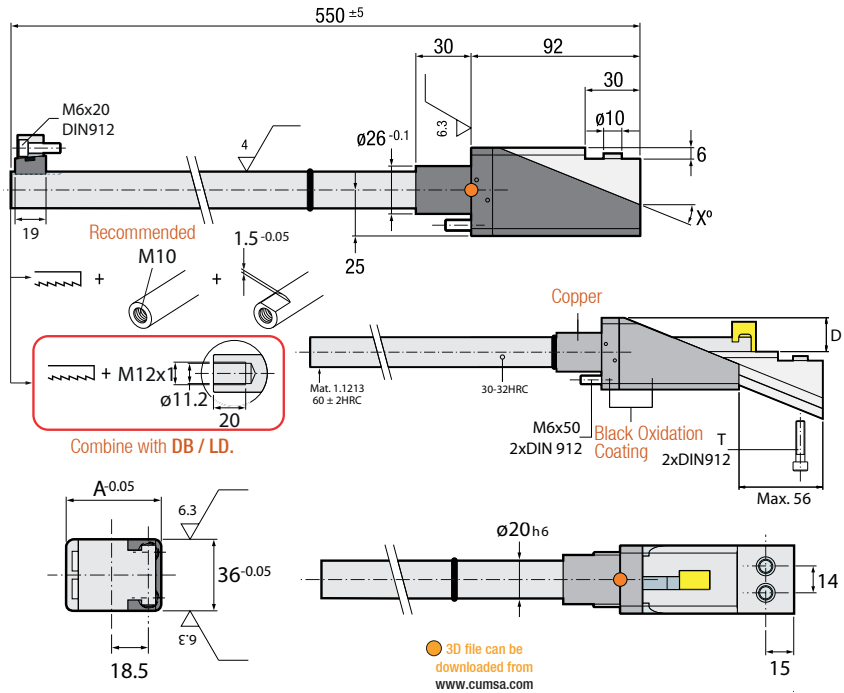
Code: LD

In single ejector plate systems.
Limits the stroke of a lifter with respect to the ejector stroke. Enables two stage ejection with only one ejector plate. All movements are 90° to the parting line.
Minimum space required for installation.

Material: 1.2311 Gas Nitrided ≈ 840Hv.

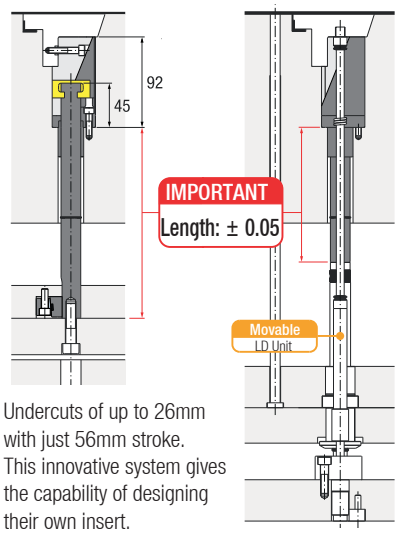
90° Machining and mould area

Dual Ejector System



Completed Mounting

Order	A	D	E	T	X
DB.482292	48	22	35	6x40	22
DB.542792	54	26	41	6x45	26



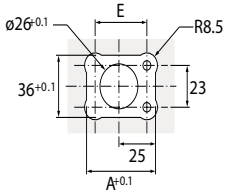
Undercuts of up to 26mm with just 56mm stroke. This innovative system gives the capability of designing their own insert.

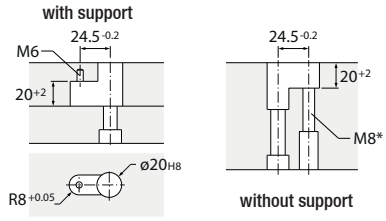
Order
LD.142130

"DB / LD" order should be given separately

Pocket Detail

Pls. machining as indicated.





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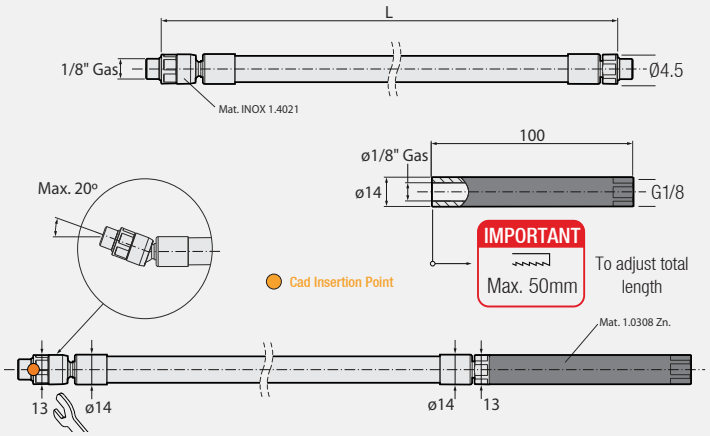
"DR" Cooling Hose

Code: DK

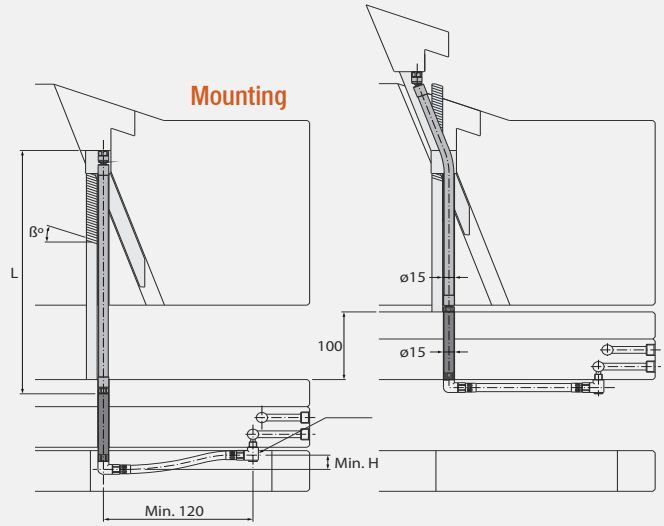
Cooling Hose for 90° "DR" Lifters.
The swivel coupling prevents the hose from bending excessively when demolding the undercut.

Maximum cooling fluid temperature 50°C.



Order	ß⁰	H			
		DR.xx-8	DR.xx12	DR.xx16	DR1.xx20
DK.141818	0⁰	10	10	10	10
	+1⁰ ~ +9⁰	10	10	10	15
	+10⁰ ~ +20⁰	10	15	20	25
	>+20⁰	15	20	25	30

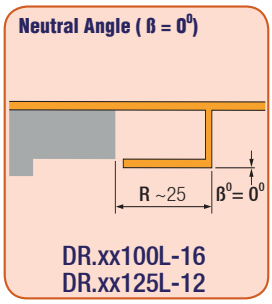
Mounting

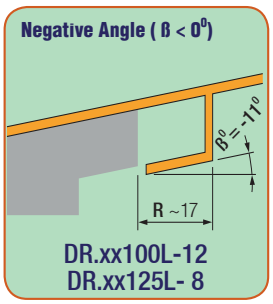


Important

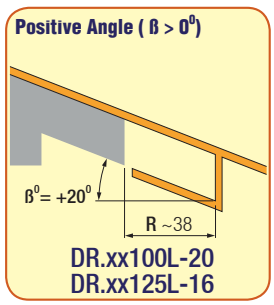
Please indicate the required L dimension when ordering; the length will be rounded up to the next multiple of 25mm.

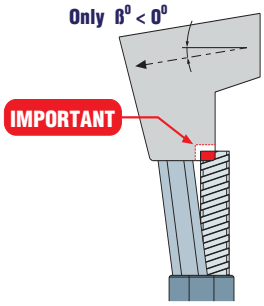
Double Rack Lifter (DR) Selection Table





Designed according to the colour system in the table!





ß⁰	DR.xx-100L - 8		DR.xx-100L-12		DR.xx-100L-16		DR.xx-100L-20	
	S (-ß⁰)	S (+ß⁰)	S (-ß⁰)	S (+ß⁰)	S (-ß⁰)	S (+ß⁰)	S (-ß⁰)	S (+ß⁰)
0	14.0		21.2		28.6		36.4	
1	14	14	21.1	21.3	28.5	28.8	36.1	36.6
2	13.9	14.1	21.1	21.4	28.3	28.9	25.9	36.8
3	13.9	14.1	21	21.5	28.2	29.1	35.7	37.1
4	13.9	14.1	20.9	21.5	28.1	29.2	35.4	37.3
5	13.8	14.2	20.8	21.6	27.9	29.4	35.2	37.5
6	13.8	14.2	20.7	21.7	27.8	29.5	35	37.8
7	13.8	14.3	20.7	21.8	27.7	29.7	34.8	38.1
8	13.7	14.3	20.6	21.9	27.5	29.8	34.6	38.3
9	13.7	14.3	20.5	22	27.4	30	34.4	38.6
10	13.7	14.4	20.4	22	27.2	30.2	34.2	38.8
11	13.6	14.4	20.4	22.1	27.1	30.3	33.9	39.1
12	13.6	14.4	20.3	22.2	27	30.5	33.7	39.4
13	13.6	14.5	20.2	22.3	26.8	30.7	33.5	39.7
14	13.5	14.5	20.1	22.4	26.7	30.8	33.3	40
15	13.5	14.6	20.1	22.5	26.6	31	33.1	40.3
16	13.5	14.6	20	22.6	26.5	31.2	32.9	40.6
17	13.4	14.6	19.9	22.7	26.3	31.4	32.7	40.9
18	13.4	14.7	19.8	22.8	26.2	31.6	32.5	41.2
19	13.4	14.7	19.8	22.9	26.1	31.8	32.3	41.6
20	13.3	14.8	19.7	23	25.9	32	32.1	41.9

Object Position / Mounting & Demounting Measurement Table:

Stroke	F	G	H	J	K	M	N	S	T	W	Y	Z
DR16	10	4.6	4.5	3	2.35	3	2.8	2.5	M5	6	9	M4
DR22	13	5.6	5.6	4.2	3.7	4.2	3.5	2.5	M6	8	12	M4
DR28	16	7.5	7.5	5	5.4	4.8	4.8	2.5	M8	8	13.5	M4
DR34	16	10.5	8	7	7	5	6	4	M8	8	16	M4
DR40	20	11	11	7	8	7	7	4	M10	10	20	M6
DR46	25	13	13	8	8	9	9	5	M12	10	24	M6

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Locating and Rack Combination

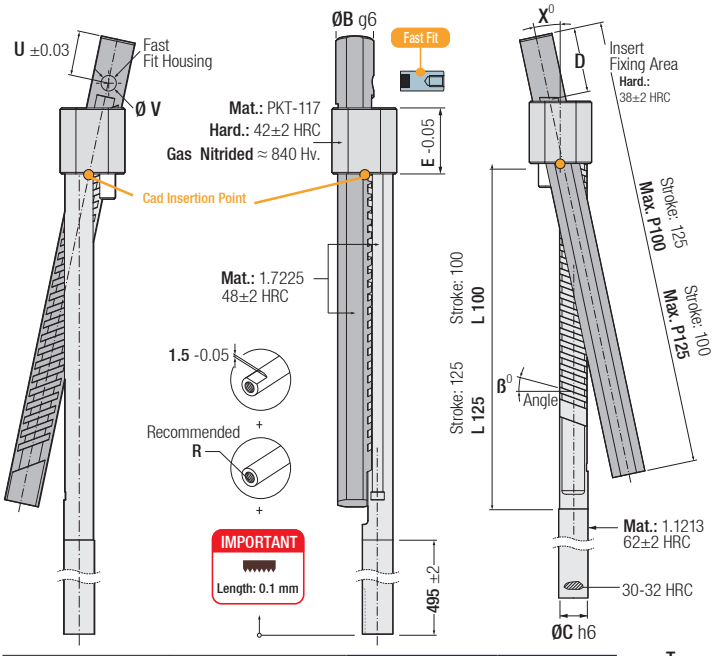
DR16 Stroke: 100
DR22 Stroke: 100 - 125
DR28 Stroke: 100 - 125
DR34 Stroke: 100 - 125
DR40 Stroke: 100 - 125
DR46 Stroke: 100 - 125

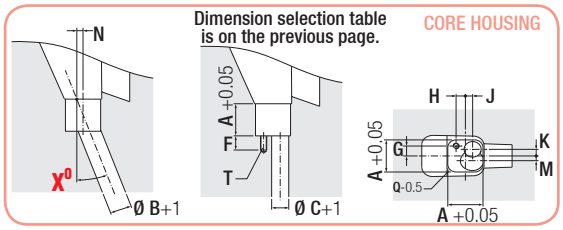
Double Rack Lifter System

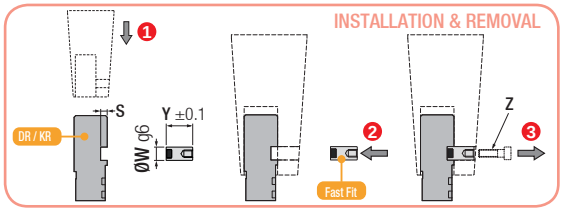
Code: DR

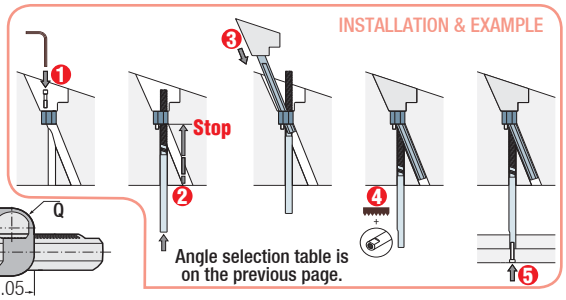
De-moulding strokes from 14mm to 60mm. Significant reduction to the ejection stroke.
"Mirror" parts available for 1+1 cavities moulds.
In Mounting: Fast delivery of the required draft. Vertical function maximizing strength. Complete flexibility for the moulding insert dimension. Eliminates the need for high-precision angled housings in the core plates. Smaller and less expensive injection machine required. Possibility to produce angles bigger than ±20º upon request.
Big savings in time & cost for machining and adjustments.

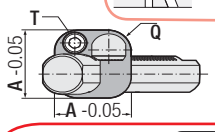
Stroke (Value): 14mm.
Undercut Width (Value): 70mm.
Ejection Stroke: 100mm.
Mechanism Type: Mechanical
Cooling Available: Yes
Max. Undercut Degrees: +35º
Min. Undercut Degrees: -55º



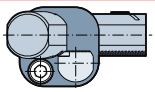








IMPORTANT
Mirror Part



"S" letter is added to the end of order code for Mirror Part.

Order "Stroke 100"	Order "Stroke 125"	X⁰	A	B
DR16100L-X	-	8	16	9
DR22100L-X	DR22125L-X	12	22	12
DR28100L-X	DR28125L-X	16	28	16
DR34100L-X	DR34125L-X	20	34	20
DR40100L-X	DR40125L-X		40	22
DR46100L-X	DR46125L-X		46	24

C	D	E	L100	P100	L125	P125	Q	R	T	U	V	Order: Stroke 100 - S	Order: Stroke 125 - S
8	20	20	142	178	-	-	4	M4	M5	10	6	DR16100L-X-S	-
12	30	22	148	202	202	261	6.5	M6	M6	17	8	DR22100L-X-S	DR22125L-X-S
14	36	28	152.5	214	194.5	266	8.5	M8	M8	23	8	DR28100L-X-S	DR28125L-X-S
16	36	34	160.5	227	188.5	264	10.5	M10	M8	23	8	DR34100L-X-S	DR34125L-X-S
20	36	40	170	244	204	284	10.5	M12	M10	20	10	DR40100L-X-S	DR40125L-X-S
24	42	46	175	258	201	289	10.5	M16	M12	26	10	DR46100L-X-S	DR46125L-X-S

IMPORTANT!
When ordering, replace the x in the reference with the required X⁰ dimension (8º, 12º, 16º or 20º) and indicate the required ß⁰.

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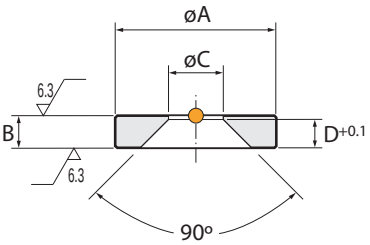
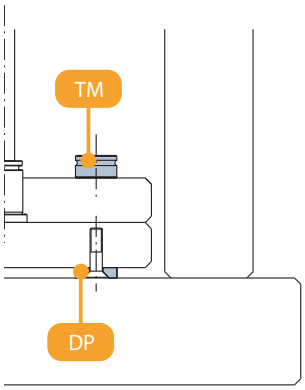
Ejector Foot

Code: DP



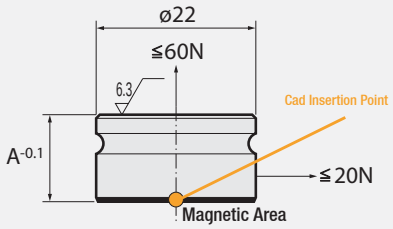


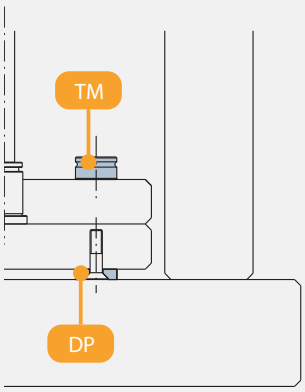
This unit is fixed through both ejector plates in conjunction with the spacer discs to provide support to the plates. These are fixed to the ejector plates so eliminating machining in the back plates.
Easy installation by using just one screw.

Order	A	B	C	D
DP.200506	20	5	6.5	3.5
DP.250508	25	5	8.5	4.4
DP.280610	28	6	12	5.5

Magnetic Safety Stopper

Code: TM



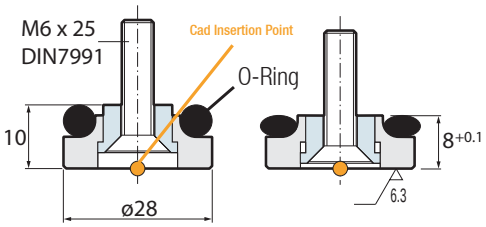


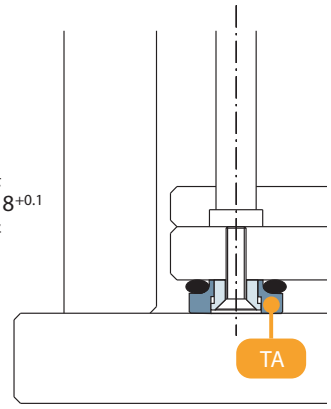
This is a safety stop to prevent the actuation of the ejector bases.
It can be easily removed to release the grip on the pins when required.

Order	A
TM.102214	10
TM.122214	12.5
TM.152214	15
TM.202214	20

Shock Absorber Disc

Code: TA





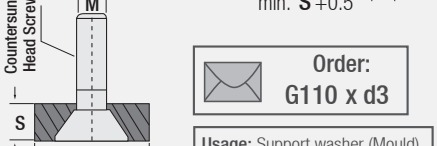
Used to minimize the vibrations caused by the ejector plates returning to position. The main advantage is the increase in the life of parts within the ejector frame through the reduction of damage and wear.

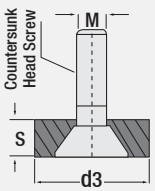
Order: TA.280806

Mounting Flange

Code: G110

Support washer & Guide pillar fixation





Order: G110 x d3

Usage: Support washer (Mould)
Guide pillar fixation (Die)

★ It can also be used to support for ejector plates in injection moulds / etc.

★ Reliable product used for guide pillar with centre collar mountings min. d3 + 1

Ø d3	Pillar Diameter d	Flange S	Screw M
22	Ø 15 / 16	5.5 mm	M8 x 20
25	Ø 19 / 20		
32	Ø 24 / 25		
40	Ø 32 / 30	7.5	
50	Ø 38 / 40	9.5 mm	
60	Ø 48 / 50		
73	Ø 60 / 63		
93	Ø 80	12	M12 x 20

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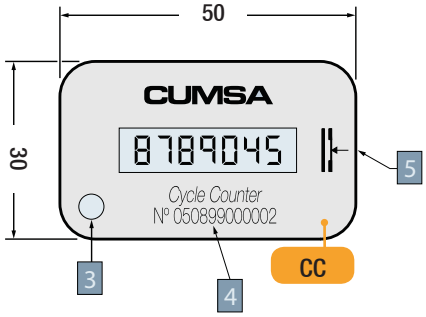
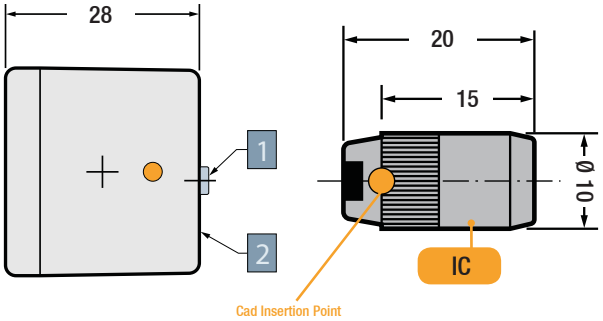




High Speed Cycle Counter

Code: CC

The Counter is expected to last 3 to 5 years, if it worked 24hour 7day / 12 month. The Counter battery starts working when it is installed in the mould. When the Counter is removed from its placement, a capital "E" (error) is shown on the screen, which you cannot delete.
This mechanism only activates after the first 25 consecutive shots.
In case you want to know the injected pieces during mould testing, you can install the Counter and remove it with tape before the 25th shot, then the Counter will go back to 0. As it has 7 numbers, it can count up to 9.999.999 parts.

To check exact total life time of the mould. To ensure that how many shots a determined mould made when our sourced. To predict preventive maintenance. Available with partial reset. The unique part nº for each counter gives a guarantee to the mould makers and a planning aid for maintenance to the mould makers. Any tampering with the unit is shown in the screen.

This unit contains an electronic circuit which counts the number of cycles made by the mould.

Mounting Instructions:

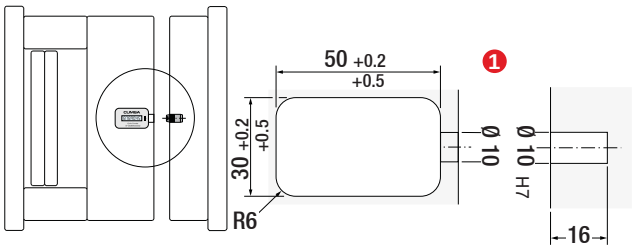
1 - Please machine housing in a way that as determined in technical drawing.
2 - Please hammer Counter Pin **(IC)** of Counter to housing with bronze hammer.
3 - Please insert Counter unit **(CC)** its housing.

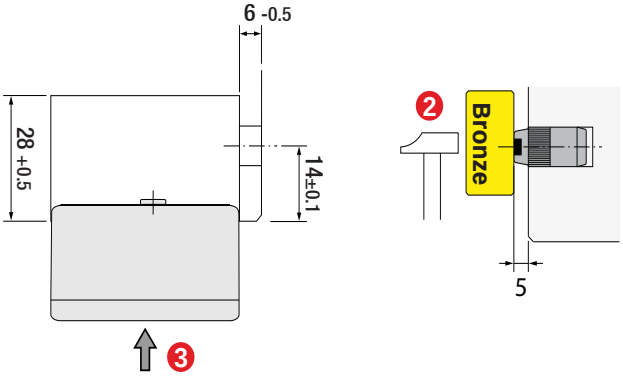
Working Temperature:

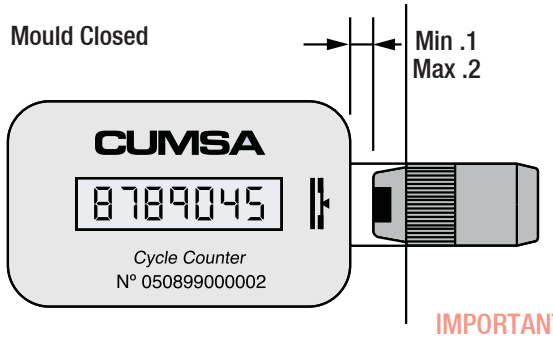
We recommend the Cycle Counter be placed at zones under 60 °C (140°F).

1 Security Switch
2 Magnetic Fixing
3 Total + Partial (Reset & Setting Up)
4 Unique Part Number
5 IC Position Indicator

Order	Reset & Setting Up	Cycles / Min.
CC.HS5328	Suitable	Up to 500







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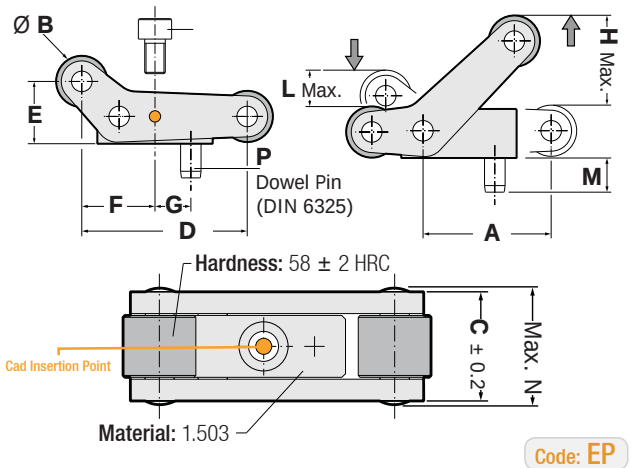
Ejector Plate Accelerator

Code: EP

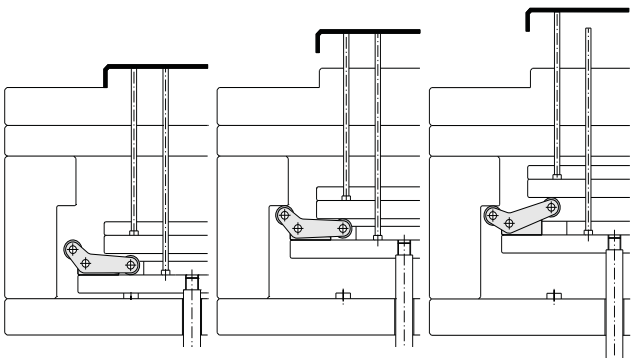
This item allows increased movement of a second ejector plate within a normal ejector stroke. Simple mechanical double ejection system.
Minimum space required for installation.
Avoids complex systems like others currently available in the market.
In small and medium moulds with standard ejectors, 1 piece is sufficient.
In more larger moulds and systematic moulds according to their configurations, dual Ejector Plate Accelerator can be used.
In a symmetric manner, generally 4 pieces.



Code: EP

Order	A	B	C	D	E	F	G
EP.200813	20	8	13.2	25.8	9.4	11.4	6
EP.251016	25	10	16	32.3	11.8	14.3	7
EP.371522	37.5	15	22	48.5	17.7	21.5	10.5
EP.502030	50	20	30	64.6	23.6	28.6	14

H Max.	L Max.	M	N	Ø P	T	Max. Force
11.6	4.4	5	15	2.5 x10	M3 x12	125 Kg.
15	5.7	6	18.5	3 x12	M4 x16	250 Kg.
23.5	9.1	8	25	4 x16	M6 x25	350 Kg.
32	12.5	10	34	5 x20	M8 x30	800 Kg.

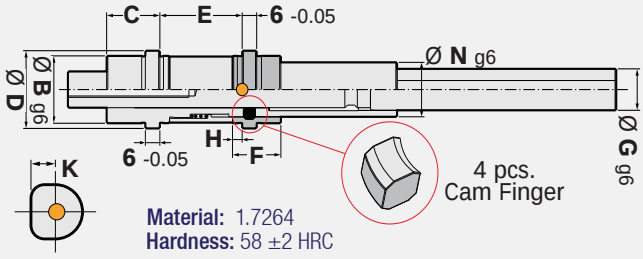


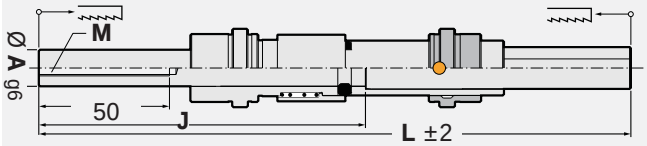
NOTE: It is recommended two piece to be used reciprocatively in ejector system in mould applications.

Superior Double Ejector

Code: DX

The rear plates stop and the upper plates continue for the full ejection stroke. Thanks to the assembly of the units away from the center of mold but within the ejector frame the space required for installation is drastically reduced leaving more space for other mechanisms. Also works as the ejector guide pins and bushes, having the possibility of eliminating the need to install extra items.
Maximum working temperature 150°C.

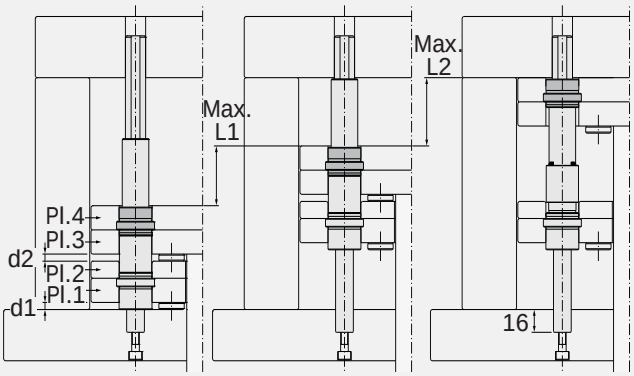




Code: DX

Order	A	B	C	D	E	F	G	H
DX.142622	14	26	22	30	34	20	16	4
DX.163027	16	30	27	34	44	23	18	6

J	K	L	M	N	L1	L2
125	7.2	243	M6	21	42	48
152	8	314	M8	24	54	80



Standard Ejector Plate Combination

Size mm	DX.142622			
	1	2	3	4
d1	5	5	5	5
Pl.1	17	17	17	17
Pl.2	9	12	12	12
d2	13	10	5	5
Pl.3	12	12	17	17
Pl.4	9	9	9	12

Size mm	DX.163027								
	1	2	3	4	5	6	7	8	9
d1	5	5	5	5	0	0	0	0	0
Pl.1	22	22	22	22	27	27	27	27	27
Pl.2	12	12	17	17	17	17	17	22	22
d2	5	5	5	5	5	5	10	0	0
Pl.3	27	27	22	22	22	22	17	22	22
Pl.4	17	22	12	17	12	17	12	12	17

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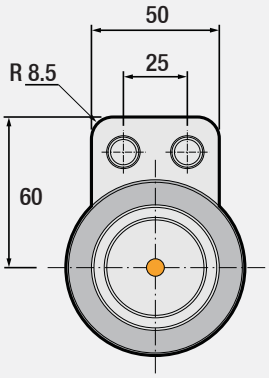
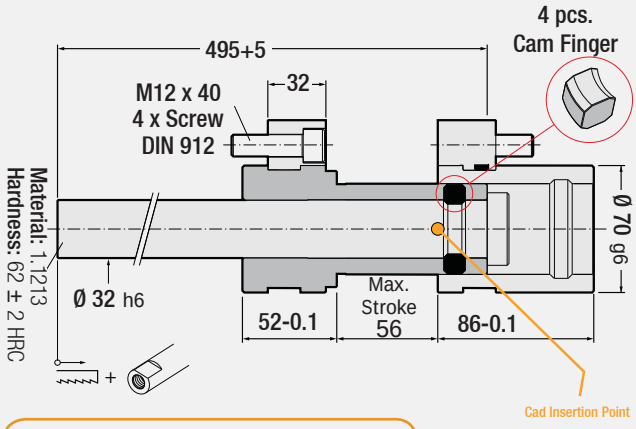
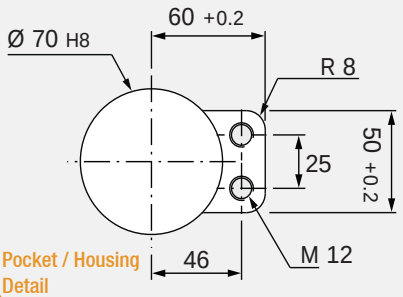
Compact Double Ejection

Code: SY



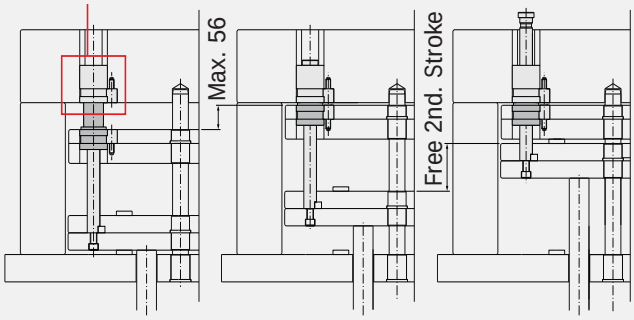
Developed for medium / large moulds.
The upper ejector plate stops when reaching the core plate, and the rear plate continues until it reaches the upper plate. As the assembly of the units is not in the center of the mold, but within the ejector frame, the space required for installation is drastically reduced.
Double ejection up to 56mm.

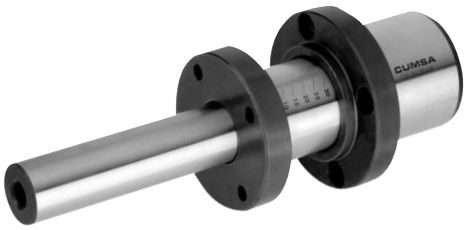




Material: 1.7242
Hardness: 56 ± 2 HRC
Patented System

Order: SY.327054



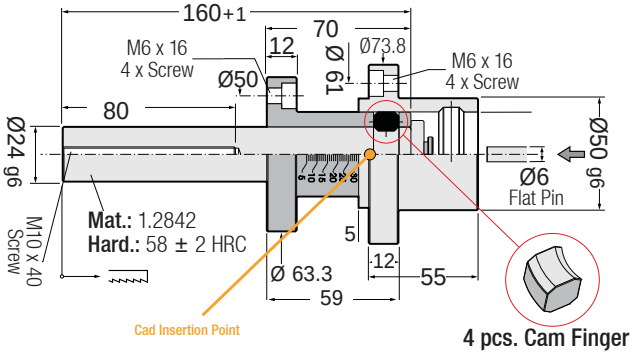


Two-Stage Ejector System

Code: DE

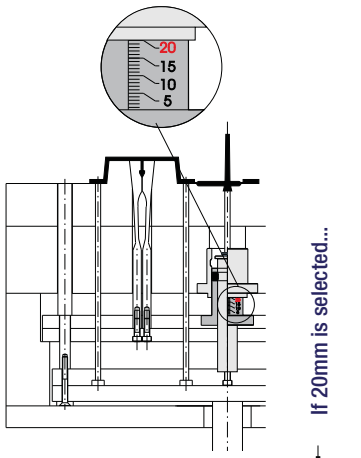
This unit divides the ejection travel in two predefined steps.
Useful to obtain automatic ejector strokes in moulds with sprung cores and collapsible cores units. Only round pockets needed to install the part.
Double ejector stroke up to 30mm.

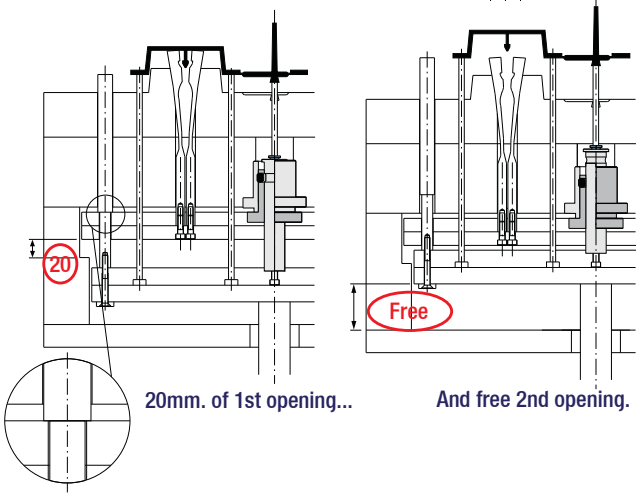
Material: 1.7243 **Hardness:** 58 ± 2 HRC



IMPORTANT!
To determine assembly dimensions, use the scale from 0 to 30mm, to select the first stroke.

Order: DE.243648





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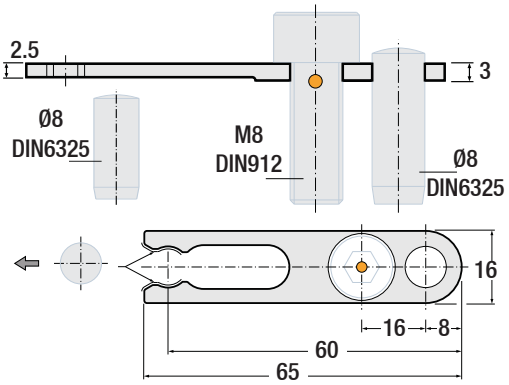
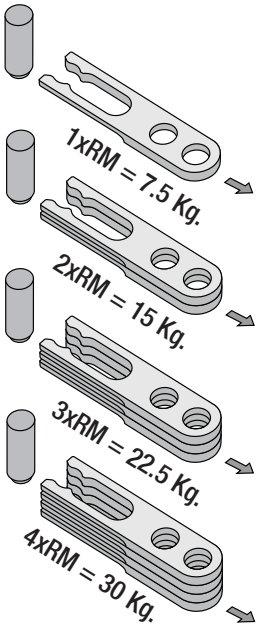
Modular Retainer

Code: RM

Useful for moulds that require delayed opening of parting line. Resistance can be increased by adding clips. No pocket machining required as needed with other similar products on the market. Minimum space required for installation.
Reduces costs compared to conventional mechanisms.
4 pieces can be used on same surface max.
The system should be distributed to different areas if the more use is needed.

Material: 1.8159 **Hardness:** 45±3 HRC
Max. working temperature: 150°.

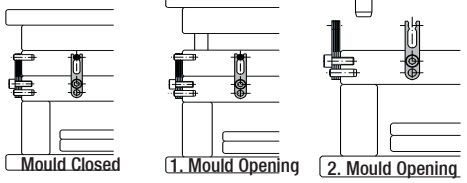




IMPORTANT!
The values displayed on the image are approximate values and they are used with 1-2-3-4 groups. Modular Retainer groups should be created in different regions / directions of the mould for more loadings.

Fasteners:
Screw and pin should be procured separately.

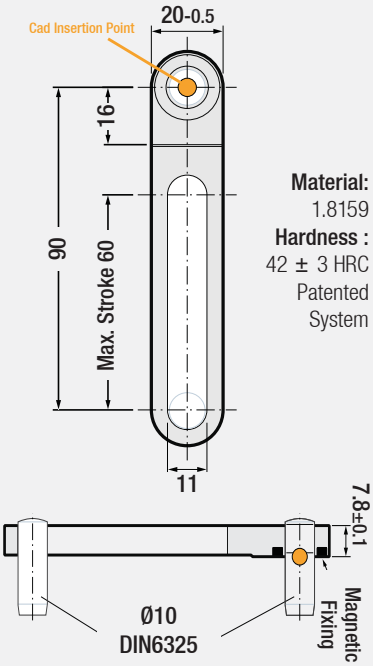
Order:
RM.651608
(1 pcs.)



Stroke Limiter

Code: SL

Stroke mechanical limiter for PR - Plate Retainer. When PR coded product is used dual opening systems with stripper limit stroke of bearing plate which is opened first in 1st group. Possibility to reduce the max. opening - 60mm. Then 2nd group's opening is engaged.



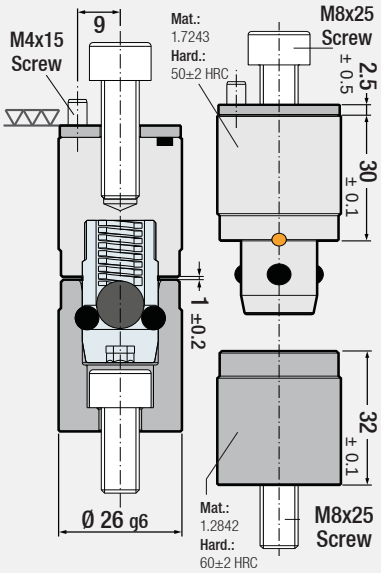
Material:
1.8159
Hardness :
42 ± 3 HRC
Patented
System

Order:
SL.602008

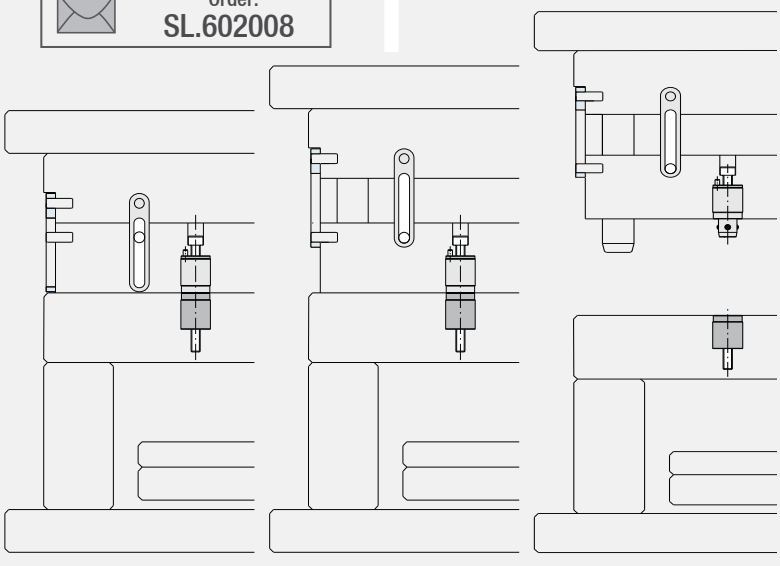
Plate Retainer

Code: PR

PR - Guarantees that the second opening stays closed until the first is completely open. 50 Kg. opening load required per unit (Minimum of 2 parts required).
Possibility to change inner spring from the parting line. Also protects mould affecting from vibrations and impacts by reducing speed tension and absorbing pinking during opening. The most important advantage of it is to extent life time of mould parts.



Order:
PR.263230



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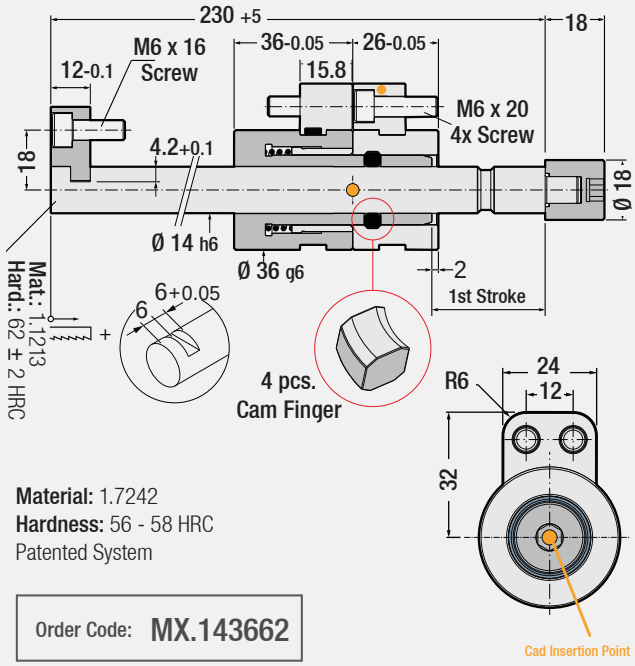
Internal Latch Lock

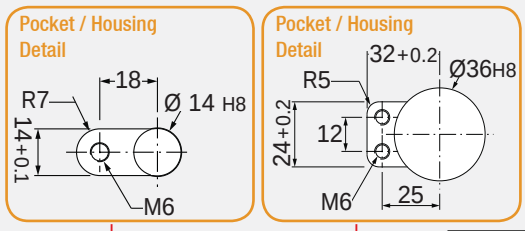
Code: MX

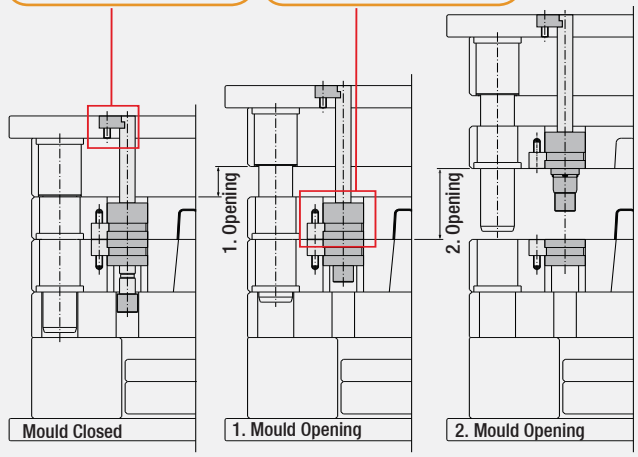
Controls two stage opening of the tool. Internal mechanism. Reduced space required for installation. Developed for small / medium tools.
Can also be used to control two sets of ejection plates for two stage ejection.

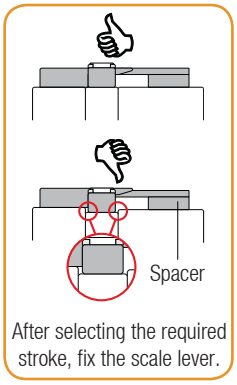


Material: 1.7242
Hardness: 56 - 58 HRC
Patented System

Order Code: **MX.143662**







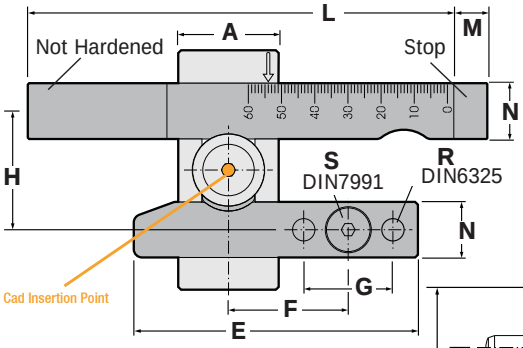
After selecting the required stroke, fix the scale lever.

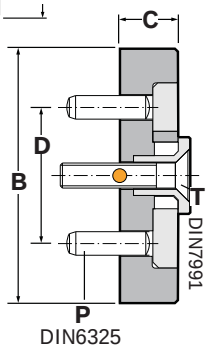
Latch Lock

Code: GS

Designed for two steps opening moulds. The gradual scale allows selection of the first opening. The priority of opening depends on position of assembly. More accurate first plate opening compared to other conventional systems. Scale lever indicates opening of the first plate. Reduces costs compared to conventional mechanisms.

Material: 1.2842 **Hardness:** 55 ± 3 HRC (friction area) Patented System

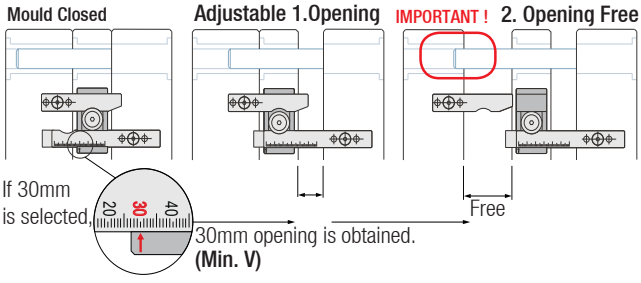




GS.226616 can be used up to 500 x 500mm in moulds with 3-plate,
GS.368619 can be used up to 800 x 800mm in moulds with 3-plate.
GS.421024 can be used up to 1000 x 1000mm in moulds with 3-plate.
Recommends using 4 units in each mould, which are evenly spaced and symmetrical.

Order	A	B	C	D	E	F	G	H	L
GS.226616	22	66	16	38	75	30	25	32	105
GS.368619	36	86	19	46	102	43	32	42.7	153
GS.421024	42	106	24	56	124	51	40	50.2	190

M	N	P (x2)	R (x4)	S (x2)	T	V	Scale
10	15	6x20	6x30	M6x30	M6x35	10	40
12	20	8x24	8x36	M8x35	M8x40	11.5	60
15	24.5	10x30	10x40	M10x40	10x45	14	80



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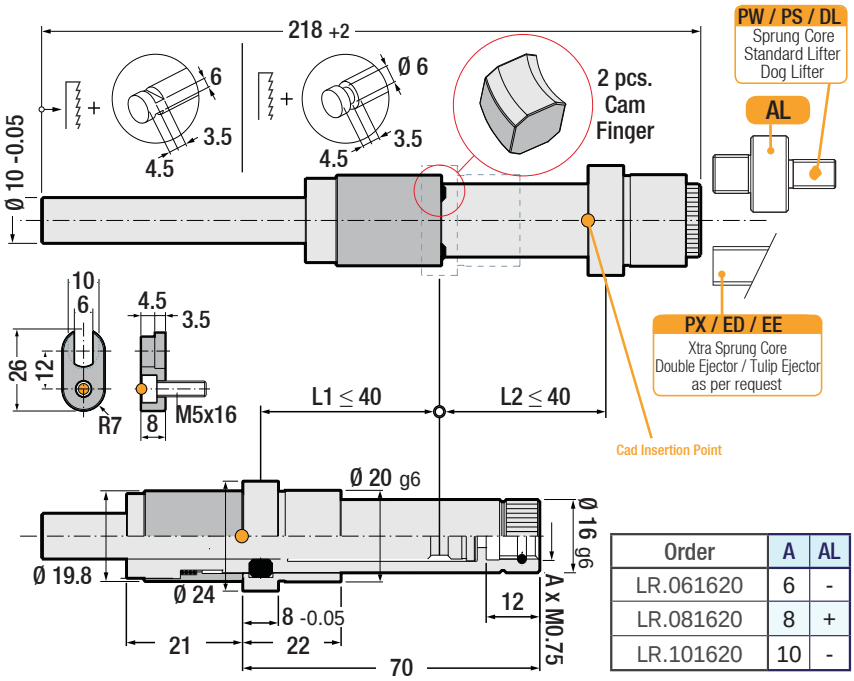
Threaded Limiter

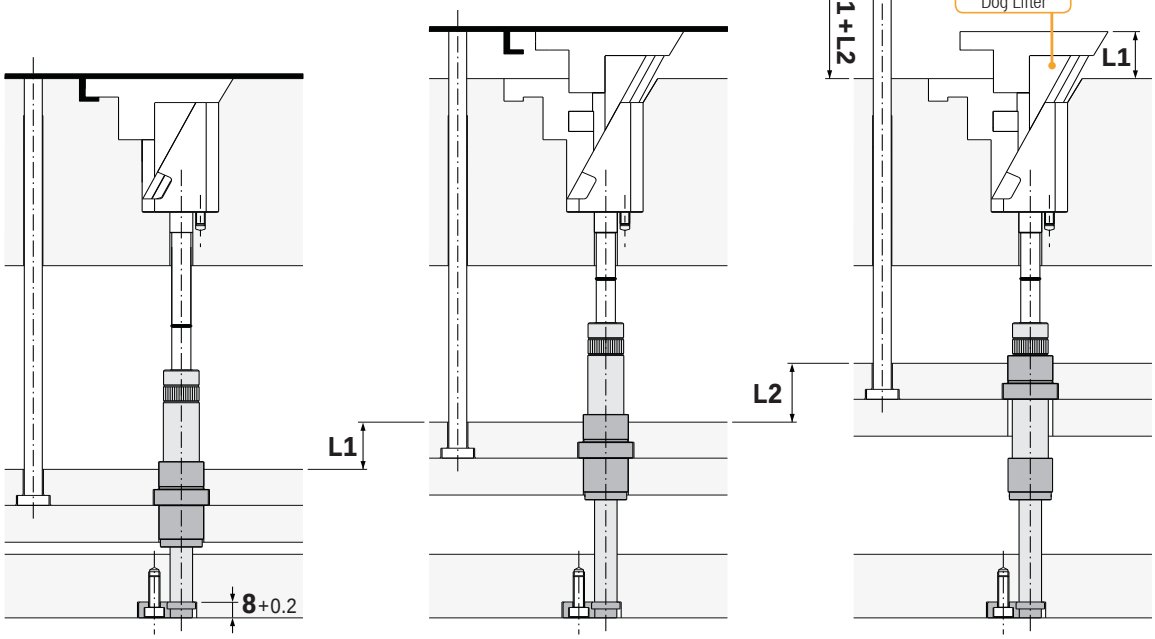
Code: LR

Threaded Limiter **(LR)** is mounted and fixed to mould rear mounting / bearing plate (H5 A).
Movable bush part of the unit is inserted into the ejector plates.
Limits the stroke of a threaded lifter with respect to the ejector stroke.
Enables two stage ejection with only one ejector plate. All movements are 90° to the parting line.

Material: 1.7243 **Hardness:** 58±2 HRC **Max. working temperature:** 150°



Order	A	AL
LR.061620	6	-
LR.081620	8	+
LR.101620	10	-

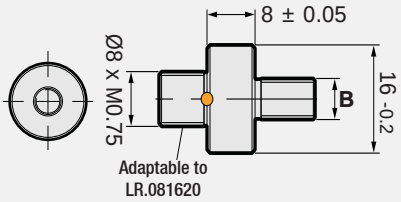


Code: AL

Threaded Limiter Adapter

Allows the use of the **LR** for internal threads.
It is a dual different threaded adapter providing positioning of **LR**.
In Addition:
Fine tread part of **AL** also can be used as joint adapter for **PW** - Sprung Cores & **PS** - Standard Lifters.

Material: 1.5065



Code: AL

Order	B
AL.0800M4	M4 x 10
AL.0800M5	M5 x 10
AL.0800M6	M6 x 10
AL.0800M8	M8 x 10

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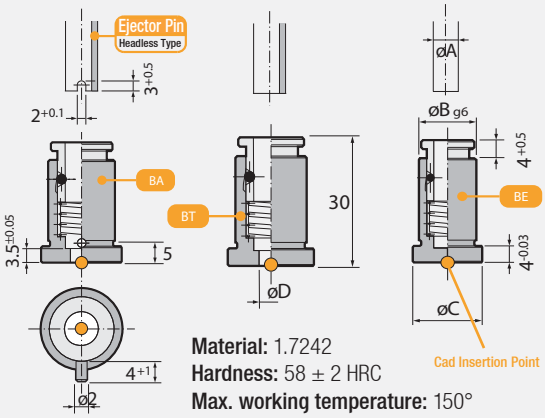
Code: BA Code: BT Code: BE

Ejector Pin Base (for headless ejector pins)

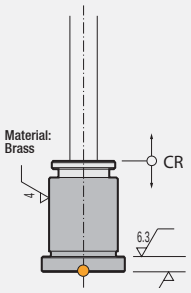
The ejector base unit is an automatic unit which holds the ejector pin in position until the top is actuated. The pins can be taken out from the front of the tool. Enables quick replacement of ejectors, ejector sleeve and moulding inserts without taking the mould from the press. There is no requirement for strip down when repair or maintenance is needed.



Material: 1.7242
Hardness: 58 ± 2 HRC
Max. working temperature: 150°
Ejector Pin Bases: It is only used for headless ejectors.

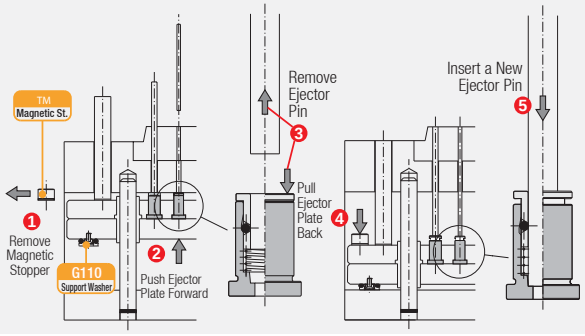
Code: BE

Order	A	B	C	CR(N)
BE.031115	3	11	15	≥ 2550
BE.041216	4	12	16	≥ 2550
BE.051317	5	13	17	≥ 3800



Code: BA Code: BT

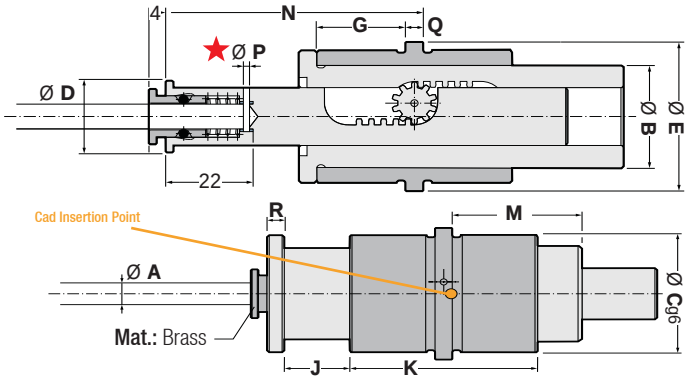
Order		A	B	C	D	
					BA	BT
BA.061418	BT.061418	6	14	18	3.5	4.2
BA.081620	BT.081620	8	16	20	5.5	6.2
BA.101822	BT.101822	10	18	22	7	7
BA.122024	BT.122024	12	20	24	9	9



Accelerated Ejector Code: AE

Allows to increase the stroke of selected ejectors within the tool. It is easy to install due to its cylindrical shape and possible to automate conventional tools Enables 8mm. / 15mm. / 20 mm. additional stroke on one ejector pin. Only round pockets needed to install the part. Possible to key. Enables quick replacement of the ejector pin.

Material: 1.7225
Hardness: 54 ± 2 HRC
Max. working temperature: 150°
Patented System

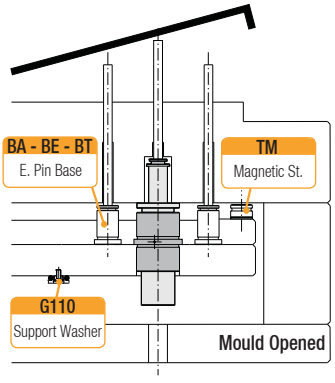


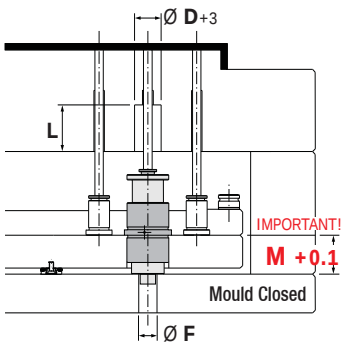
Order	A	B	C	D	E	F	G
AE.031620	3	16	20	12.5	22	13	14
AE.041620	4	16	20	12.5	22	13	14
AE.052430	5	24	30	16	34	16	20
AE.062430	6	24	30	16	34	16	20
AE.082430	8	24	30	17	34	17	20
AE.103036	10	30	36	21.5	40	21	28
AE.123036	12	30	36	21.5	40	21	28

J	K	L	M	N	P	Q	R
8	32	22	17	37	-	4	3
8	32	22	17	37	-	4	3
15	44	36	27	57	2	4	3
15	44	36	27	57	2	4	3
15	44	36	27	57	2	4	3
20	62	46	34	78	2	6	4
20	62	46	34	78	2	6	4

When the internal bushing of this piece gets in contact with the plate, the mechanism starts working. From that point, the ejector of the **AE** goes at double stroke.
The extra strokes of units:
- 8mm (0.315") of extra stroke, with the **AE031620** and **AE041620**.
- 15mm (0.591") of extra stroke, with the **AE052430**, **AE062430** and **AE082430**.
- 20mm (0.787") of extra stroke, with the **AE103036** and **AE123036**.

★ Possibility to key for using a curved ejector pin. (except AE.031620 & AE.041620)





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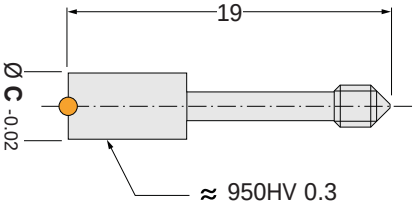
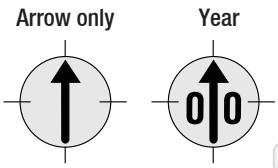
Code: IT

High Temperature Insert for Date Stamp

Due to fact that the insert is adjustable / removable from the front of the mould, there is no need to remove the tool from the machine or disassemble the mould.

Material: 1.2344 Nitrided



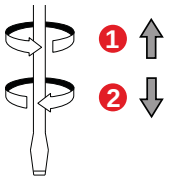


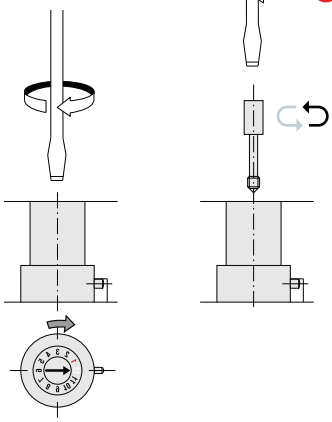
Code: IT

Order Arrow only	Order Year	C
IT.4719SF	IT.4719 ..	4.7
IT.6719SF	IT.6719 ..	6.7

*** Please indicate the desired year after the code.**

IMPORTANT!
When replacing the insert, be sure to tighten until hearing the engagement "click".



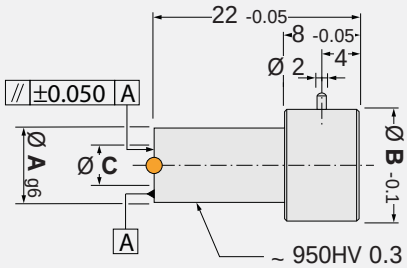


Code: FT

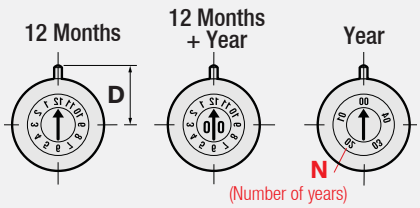
High Temperature Date Stamp

High temperature date stamp. Designed for injection mold tools which operate in high temperature environments,
like: Zamak, Zinc, Polyester, Bakelite, etc..
Possibilty to change annual insert.

Material: 1.2344 Nitrided + Inconel 2.4669
Max. working temperature: 450°



Possibilty to change annual insert.



Code: FT

Order 12 Months	A	B	C	D	N
FT. 0847SF	8	12	4.7	11	5
FT. 1267SF	12	16	6.7	12	8

Order 12 Months + Year	A	B	C	D	N
FT. 084712	8	12	4.7	11	5
FT. 126712	12	16	6.7	12	8

Order Year	A	B	C	D	N
FT. 084705	8	12	4.7	11	5
FT. 126708	12	16	6.7	12	8

*** Please indicate the desired year after the code.**

The depth is the engraving on the "FT" Date Stamp:

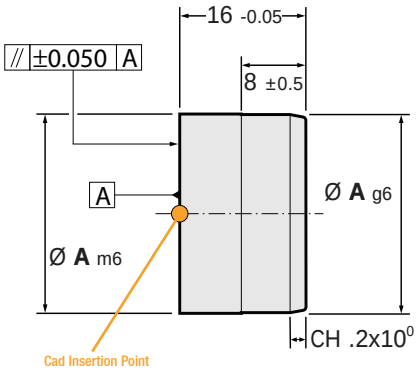
FT.08 (Year) : 0.15-0.25mm
FT.08 (Arrow) : 0.40-0.50mm
FT.12 (Year) : 0.15-0.25mm
FT.12 (Arrow) : 0.50-0.60mm

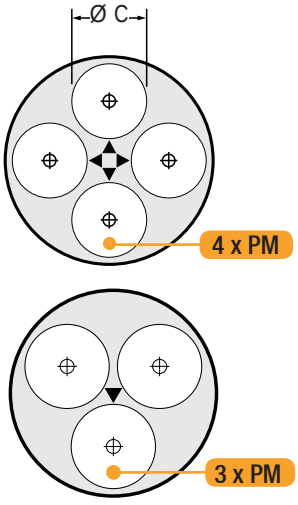
Block Base Insert

Code: BM

Wide range of diameters. Possibility of 3 or 4 information's. Only a H7 pocket required for assembly. No downtime when changing inserts. Guarantee that the insert will be replaced due to internal mechanism.

Material: INOX 1.4034
Hardness: 51 ± 3 HRC
Max. working temperature: 150°





Code: BM

Order	A	C	E	#PM
BM.160603	16	6.5	8	3
BM.180604	18	6.5	8	4
BM.220903	22	8.7	10	3
BM.250904	25	8.7	10	4
BM.281103	28	11.5	12	3
BM.321104	32	11.5	12	4

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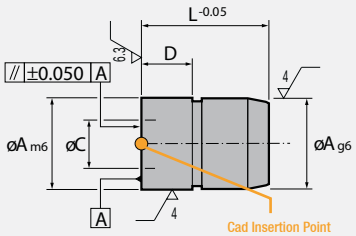


Date Stamp Plus

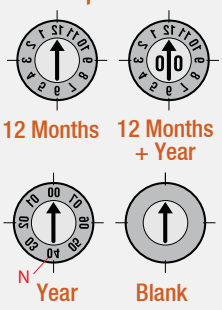
Code: FP..

Possibility for cooling circuits below the date stamp as they are removed from the front (**with the EF**). Inner insert is always at the same level as the body of the date stamp. Exact outer number positioning. Ideal clamping area.

Material: INOX 1.4034 **Hardness:** 51 ± 3 HRC
Max. working temp.: 150°

A	C	D	L	N
4.0	2.2	5.5	12	4
5.0	3.0	5.5	12	4
6.0	3.2	8.0	20	5
8.0	4.7	8.0	20	5
10	5.7	8.0	20	6
12	6.7	8.0	20	8
16	8.7	8.0	20	10
20	10.7	8.0	20	10

Options:



Order:
FP. (options) x A

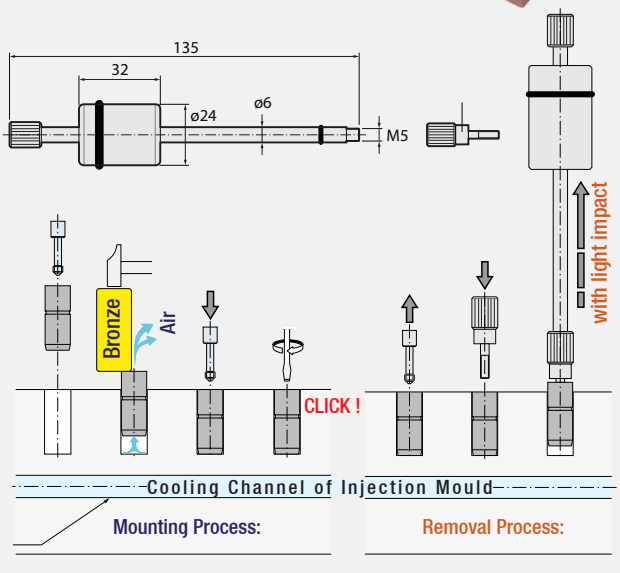
Removal Jig Set

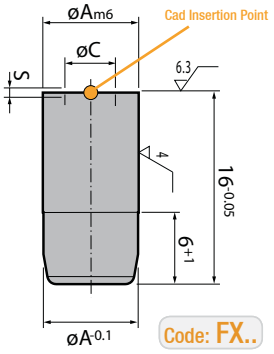
Code: EF

Removal Jig Set for the Date Stamps Plus. The set includes 8 parts, one for each **FP** diameter.

Material: INOX 1.4034
Hardness: 51 ± 3 HRC

Order:
EF. 322405-SET





Xtra Date Stamp

Code: FX..

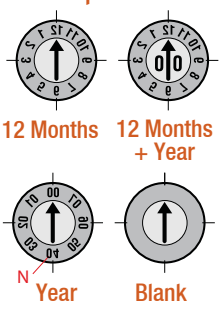
This is a permanent date stamp where only the central year insert is changed. The month is changed by using a screwdriver.
Completely stainless. Only a H7 pocket required for assembly.

Material: INOX 1.4034 **Hardness:** 51 ± 3 HRC
Max. working temp.: 100°

A	C	E	N	S
6.0	3.2	4	5	0.25
8.0	4.7	6	5	0.25
10	5.7	8	6	0.35
12	6.7	10	8	0.35

Order: FX. (options) x A

Options:

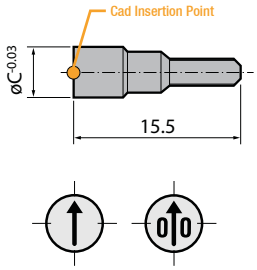


Xtra Insert for Date Stamp

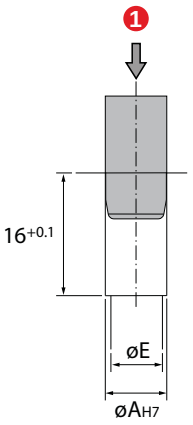
Code: IX..

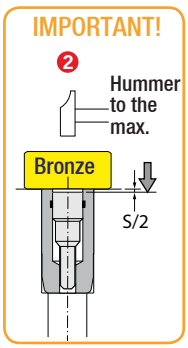
Due to fact that the insert is adjustable / removable from the front of the mold, there is no need to remove the tool from the machine or disassemble the mould.

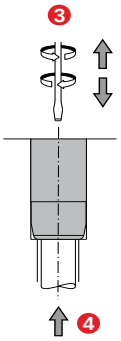
Material: INOX 1.4034
Hardness: 51 ± 3 HRC



Order		C
Arrow Only	Year	
IX.3215SF	IX.3215 ..	3.2
IX.4715SF	IX.4715 ..	4.7
IX.5715SF	IX.5715 ..	5.7
IX.6715SF	IX.6715 ..	6.7







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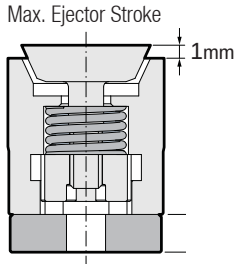
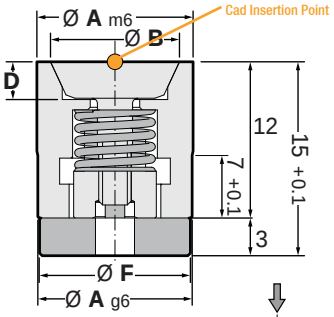


Air Valve for High Pressure

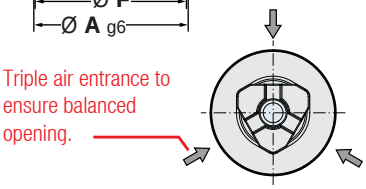
Code: VH

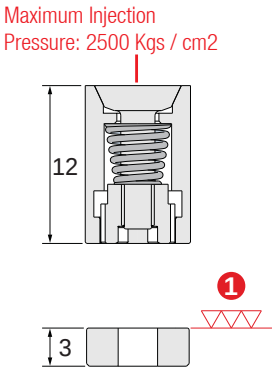
Developed for high injection pressures and high speed cycles. Incorporates an internal stopper to sustain injection loads, preventing the system to block. Keyed unit to allow the installation in angled or shaped surfaces. Easy installation thanks to its adjusting ring, as well as allowing uninstallation if needed.

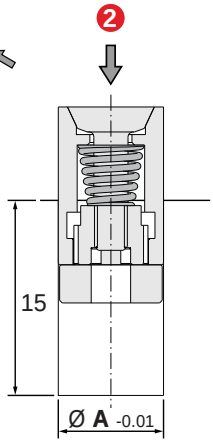
Material: INOX 1.4034
Hardness: 51 ± 3 HRC
Max. working temp.: 150°
Working pressure: 2-10 Bar
1 Bar ≃ 1 Kg. / cm²

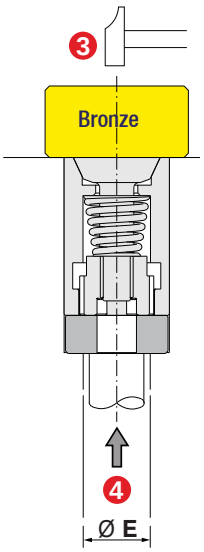


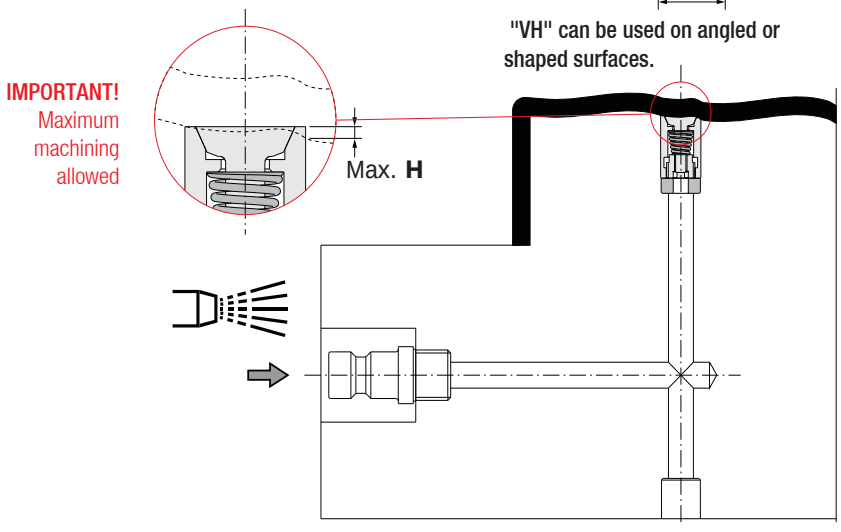
Order	A	B	D	E	F	H
VH.065215	6	5.3	1.9	4	5.8	0.25
VH.086515	8	6.7	2.1	5	7.8	0.75
VH.121015	12	9.8	2.9	5	11.8	1.0











Air Poppet Valve

Code: VA

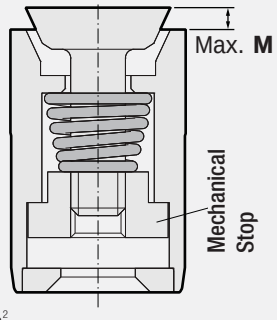
Manufactured completely from stainless steel this unit has the advantage of high airflow.
Helps part ejection with air. Recommended working under 150°C (302°F). Above that temperature, steel starts dilatation, so the resort introduced on the Air Valve would lose efficiency. If so, the plastic material could go in and the Air Valve would be damaged.

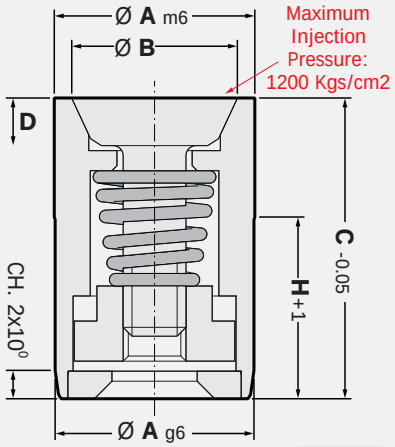
Material:
INOX 1.4034

Hardness:
51 ± 3 HRC

Max. working temp.: 150°

Min. working pressure: 3 Bar
1 Bar ≃ 1 Kg. / cm²





Code: VA

Order	A	B	C	D	E	H	M
VA.050412	5	3	12	1.5	4	7	2.5
VA.065212	6	5.2	12	1.5	4	7	0.95
VA.086512	8	6.5	12	1.5	4	7	0.95
VA.100812	10	8	12	2	8	7	0.95
VA.121012	12	10	12	2.5	10	7	0.95
VA.161320	16	13	20	3	12	12	1.55
VA.201720	20	17	20	3.5	16	12	1.55

* Product **VA.050412** does not contain mechanical stop.

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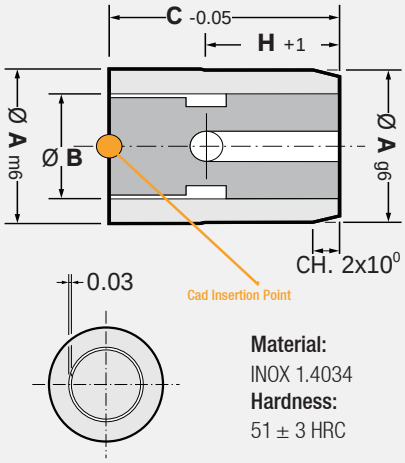
Double Air Valve

Code: VD

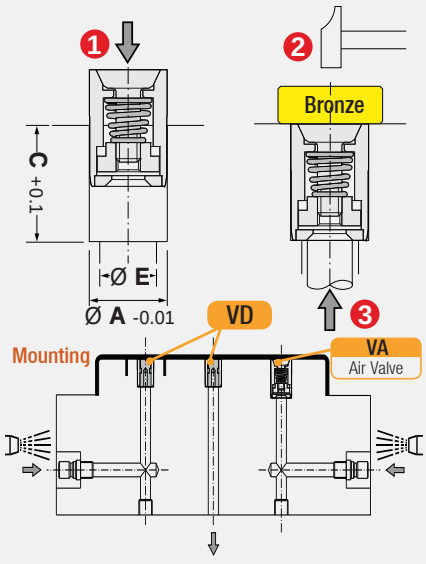
An effective method of semi pneumatic ejection, for moulds with ribs (in thin walled mould) or areas forming gas traps or vacuum conditions. Helps part ejection with air. Allows venting.



Material:
INOX 1.4034
Hardness:
51 ± 3 HRC

Code: VD

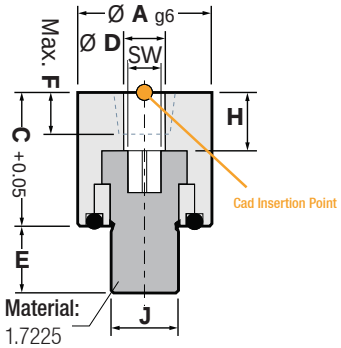
Order	A	B	C	E	H
VD.080512	8	5	12	4	7
VD.100612	10	6	12	5	7
VD.120812	12	8	12	7	7
VD.161020	16	10	20	9	12



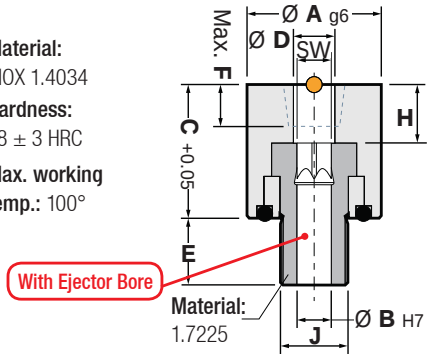
Sprue Adjuster

Code: SA

It is suitable to use on high injection pressure and fast / mass production stamps.
This unit allows runner shut off directly from the parting line.
Two models are available, depending if an ejector pin is required or not.
It can be installed in the cavity or in the core, allowing trapezoidal or full round runners.



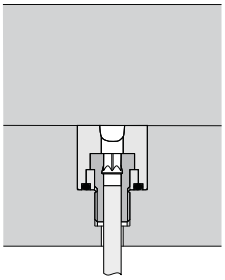
Material:
INOX 1.4034
Hardness:
48 ± 3 HRC
Max. working temp.: 100°



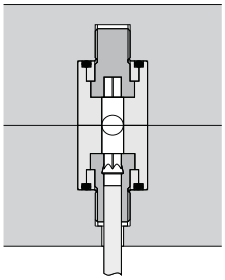
Order	A	C	D	E	F	H	J	SW
SA.120014	12	14	4	6	3	5	M6	3
SA.160016	16	16	5	8	5	7	M8	4
SA.200018	20	18	6	10	6	9	M10	5

Order	A	B	C	D	E	F	H	J	SW
SA.120314	12	3	14	4	6	3	5	M6	3
SA.160416	16	4	16	5	8	5	7	M8	4
SA.200518	20	5	18	6	10	6	9	M10	5

Runner Position Configurations

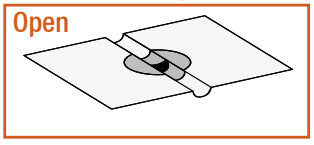


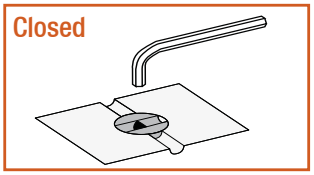
Trapezoidal Runner

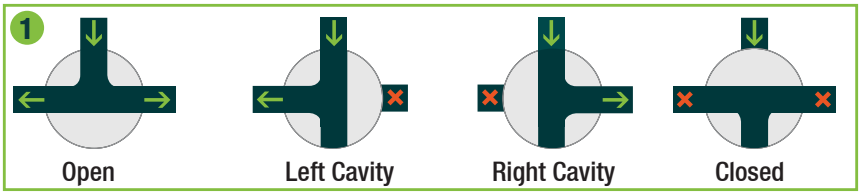


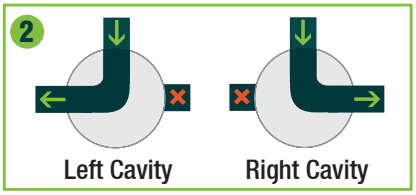
Full Round Runner

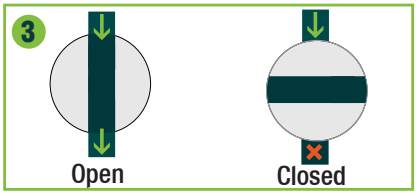
Runner Adjuster











CUMSA
End of Cumsa Products Section...

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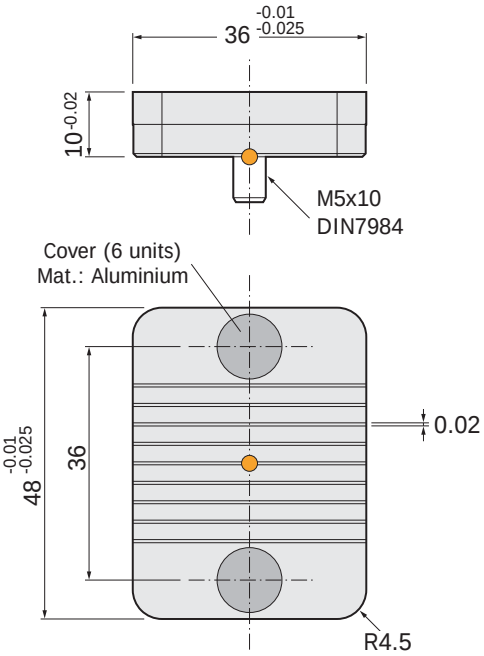
NEW

Laminar Gas Vent

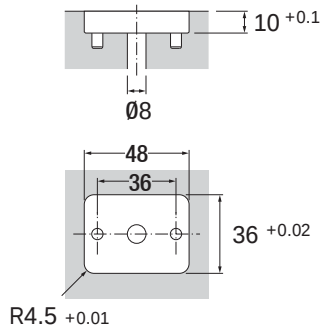
Order Code: LV.483610

Helps venting the mould cavity and the pneumatic ejection of the plastic part (allows air passing in both directions). Maximize performance installing at the end of the plastic flow. Supplied with 6 covers for maintenance purposes. Also designed for use with Cumsa VB and SV systems.

Material: 1.4021



Pocket / Housing Detail:



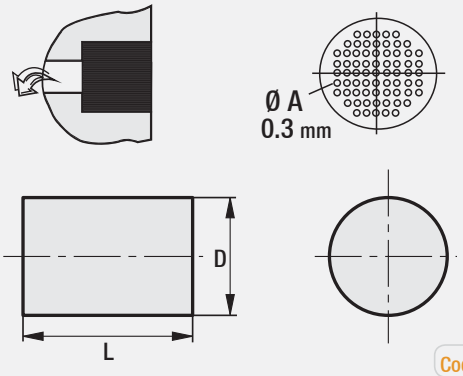
NEW

Gas Venting Filter for Diecasting

Code: AHV

(aluminium & zamak moulds)

It is designed / produced with heat treated and large discharge poles.
It is a specially designed and highly productive product for Diecasting Moulds & Injection Moulds.
The service life of the product is longer than the equivalent products.
You can minimize product replacement times by increasing productivity levels.



Code: AHV

Order	D (Ø)	L (mm)	A (Pore pcs.)
AHV.03	3.0	10	40
AHV.04	4.0	10	40
AHV.05	5.0	10	90
AHV.06	6.0	10	90
AHV.08	8.0	10	200
AHV.10	10	10	340
AHV.12	12	10	340
AHV.16	16	15	340
AHV.20	20	15	550

It is resistant to high temperature and pressure.

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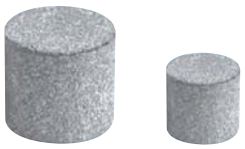
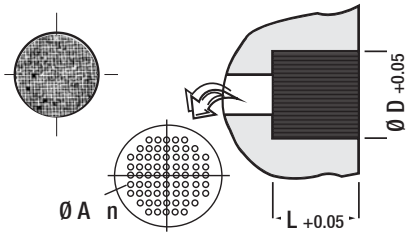


Code: SGA

Sintered Gas Venting Filter

With its sintered & multi-pores structure, it is a special product which discharges compressed gas in injection moulds. Sintered Gas Venting Filters are used for optimum venting of the mould cavity.
It is a high quality, stainless product which does not leave marks on injected objects and can resist high pressures.



D	L	A	n
1.6	5	0.03	250 / 400
2.0			
2.5			
3.6			
4.1	9		880
5.0	10		

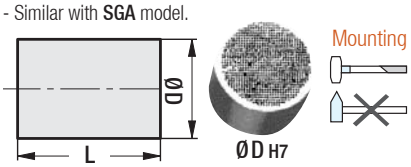
D	L	A	n
6.5	10	0.05	880
9.0			
10			
12.5			
15			1200
20			

Order: **SGA.** D x L

Code: GVSY

Sintered Gas Venting Filter with Steel Casing

- External surface grinded.
- Sintered structure.
- Similar with **SGA** model.



Mounting

Material: Stainless Sintered Steel
Filter Fineness: 10 Microns
Tension: 300 N / mm²
Resistance: Weak bases - Organic acids, Plastic melts - Synthetic resins

Order	D	L
GVSY.04	4	10
GVSY.06	6	
GVSY.08	8	
GVSY.10	10	12

Order	D	L
GVSY.12	12	12
GVSY.16	16	14
GVSY.20	20	15
GVSY.28	28	

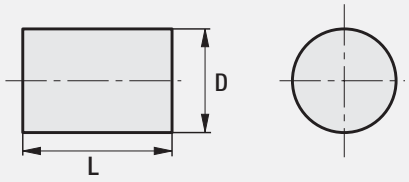
Code: GGA

Gas Venting Filter - Yellow Wired

In injection moulds, it drains unwanted gas created by melted raw material fast via wide channels. Does not resist to very high pressures, can dent and leave a mark on objects in stamp. It is mostly suitable to be used inner parts. It can be used in metal injection moulds which do not require very high temperature. **It is an economical product.**

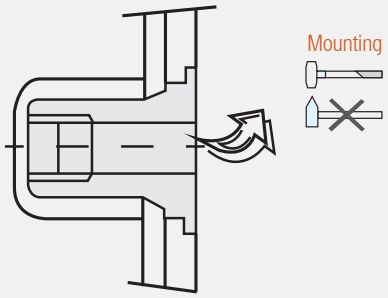
In Mounting: Please use copper / rubber hammer. Do not make any mechanic or polishing / levelling process on filter unit, since this would clog up the pores.

In Production: Never touch Venting Filters on operating moulds by hand.

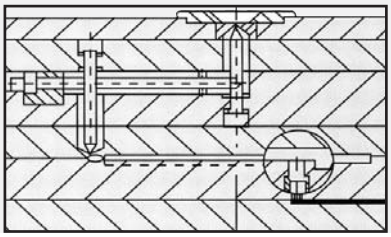


Code: GGA

Order	D	L
GGA.03	**3.0**	8
GGA.04	**4.0**	10
GGA.05	**5.0**	10
GGA.06	**6.0**	10
GGA.08	**8.0**	10
GGA.10	**10**	10
GGA.12	**12**	10
GGA.16	**16**	10



Mounting

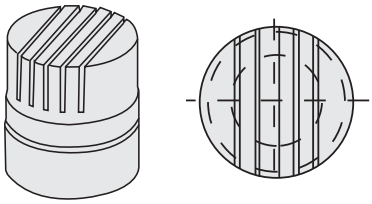


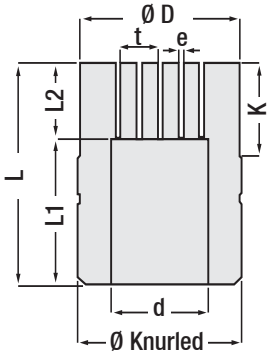
Code: STV

Air Venting Valve for Blow Moulding

It is used in blow mouldings for optimum ventilation to mould cavity. Due to the air channels of valve being parallel and wide, it drains the air in mould rapidly, also air chamber inside of the unit acts as a pool in drainage of the air. If the burrs become on the product that should be cleaned instantly.
Those burrs causes adhesion to pores. For cleaning, the compressed air or cleaning spray can be used. (**Guvenal Cleaning Spray Code:** W170104).

Mounting: It provides tight keep and inside the safe of hole thanks to its knurled outer part.





Code: STV

Order	STV. 0610	STV. 0810	STV. 1010	STV. 1210
D	**6**	**8**	**10**	**12**
L	10	10	10	10
d	4.3	5.7	6.1	8.1
t	2.0	2.0	2.0	2.0
e	0.3	0.3	0.3	0.3
K	4.0	4.5	4.5	4.5
L1	7.0	6.5	7.0	7.0
L2	3.0	3.5	3.0	3.0
Knurled	6.1	8.1	10.1	12.1

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Recycling Date Stamp

Code: GDM

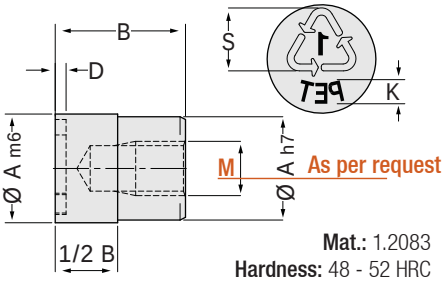
(Plastic raw material data, definition & recycling stamps)

Text and Definition Characters: It is for precise sign / mark and definition of plastic raw material that is inlaid in 0.2 depth (conical graduated) processing on moulds in production according to diameters. In Addition, it facilitates to recognize raw material that is about to break.

Stamp: It is compatible with DIN 6120 single symbol, ISO 1043-1 normal sign / mark and international codes.

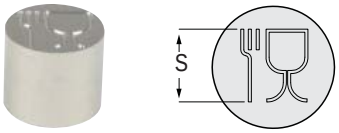
Types

Logo	GDM01
Blank	GDM02
PET	GDM03
HDPE	GDM04
PE-HD	GDM05
PVC	GDM06
LDPE	GDM07
PE-LD	GDM08
PE-BD	GDM09
PP	GDM10
PS	GDM11
Other	GDM12
Other (0)	GDM13
Foodmark	GDM14



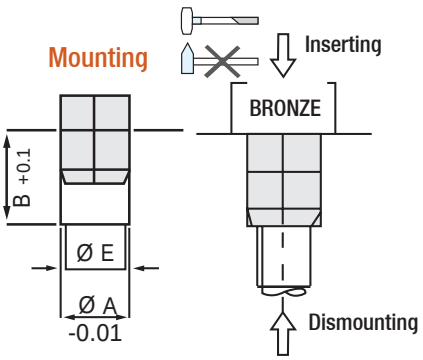
Mat.: 1.2083
Hardness: 48 - 52 HRC

Order	A	B	D	E	K	S	M
GDM... 06	6	10	0.3	6	-	4.0	M4
GDM... 08	8	10		6	-	4.0	M4
GDM... 10	10	12		8	1.6	5.6	M5
GDM... 12	12	12		10	2.0	6.8	M6
GDM... 16	16	14		12	2.6	9.0	M6
GDM... 20	20	16		16	3.2	11.5	M6

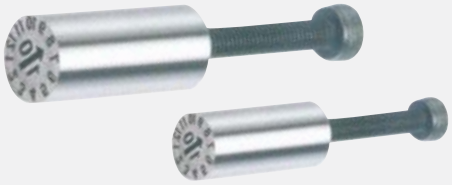


Date Stamp for Food Legislation

Order	A	B	D	E	S	M
GDM14.10	10	12	0.3	10	6.10	M5
GDM14.16	16	14		16	9.08	M6
GDM14.20	20	16		20	12.30	M6



+ Production
+ Economic Price
+ High Quality



Date Stamp - Screwed

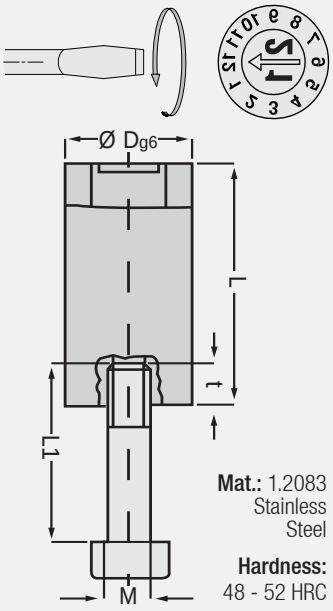
Code: VKT

The Date Stamps which are mostly preferred for medium and small dimensional moulds.

Easy to mount and can be mounted on tools such as Ejector Pins.
Rotary inner hub of Date Stamps can be adjusted as limitless (worm gear). Mounting is completed by pressing on inner hub arrow and pulling with screw from lower part. **We offer wide range of options with our affordable prices.**

Types

Month	VKT01
Month + Year	VKT02
Year	VKT03
Weekly	VKT04
Daily	VKT05
Shift	VKT06
Number (figure)	VKT07
Letter from A to M	VKT08
Letter from N to Z	VKT09
Arrowed (blank)	VKT10
Custom-Made	VKT11

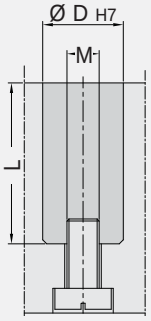


Mat.: 1.2083 Stainless Steel
Hardness: 48 - 52 HRC

D	L	t	L1	M
4	12.5	3	4	M2
5	14	3	4	M2.5
6	16	3	4	M3
8	18	4	4	M3
10	22	4	4	M3
12	25	6	6	M4

Order:
VKT (type). D x L

Mounting



Date Stamp "FT" (Cumsa) product should be selected for metal injection moulds which require high temp.

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Date Stamp

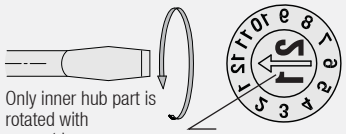
Code: KT

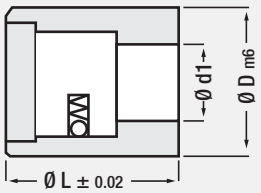
Standard Models

It is suitable to be used in all injection mould systems. Only a hole as product diameter (H7 - Reamed) is sufficient for mounting to mould.
Mounting: Drill a suitable hole in the desired part of mould and place Date Stamp into it (with bronze or rubber hammer). Making a tight hole (not to rotate date stamp) is useful.
A wide range of options are available at affordable prices.

Types

Month	KT01
Month + Year	KT02
Year	KT03
Weekly	KT04
Daily	KT05
Shift	KT06
Number (figure)	KT07
Letter from A to M	KT08
Letter from N to Z	KT09
Arrowed (blank)	KT10
Custom-Made	KT11

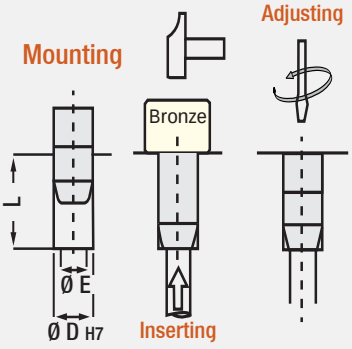




* **KT02 & KT04:** Pls. specify "year" for your KT02 & KT04 orders.

D	L	d1	S	E
4	6	2	0.2	3.5
5	8	2.5	0.2	3.5
6	8	3.5	0.2	4.0
8	10	4.5	0.2	6.0
10	10	4.8	0.2	8.0
12	12	6.0	0.25	10
16	14	7.8	0.35	12
20	14	9.7	0.35	14
25	25	12.7	0.35	16

Order:
KT (type). D x L

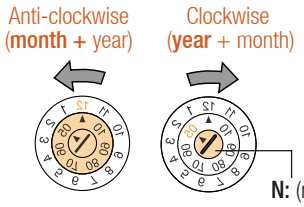


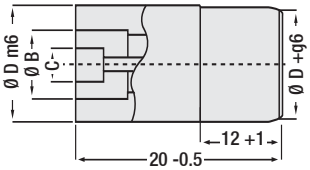
Multi-Date / Double Date Stamp

Code: DKT

Two different Date Stamps, with a unit as months + years.

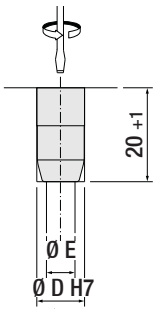
This Guvenal product reducing needs and area required for cost and two different Date Stamp, shows two different criteria on one unit. Its standard model is as 12 month + 6 year, in other words is not required any change along 6 years.
The length of all Date Stamps are same (20 mm).





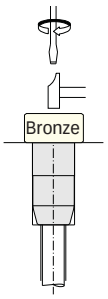
Code: DKT

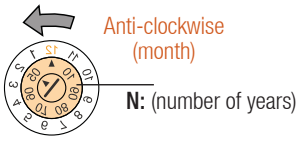
Order	D	B	C	E	N
DKT.08	8	5.5	3	6	5
DKT.10	10	6	3	10	6
DKT.12	12	8	4	10	6
DKT.16	16	10.5	5.3	12	10
DKT.20	20	12	6	16	12

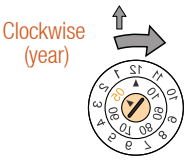


Important:
To change the month; the hub arrow on the unit is turned counter clockwise (anti-clockwise) and the inner two parts are rotated.
To change the year; please turn it clockwise.

Material: 1.2083 / Stainless Steel
Hardness: 48 - 52 HRC







Mini Screwdriver Set

Date Stamp Adjusting Kit

Order Code: CRP

Mini Screwdriver Series:
6 pcs. rotary head set;
+ 4 pcs, 1.5 - 2 - 2.5 - 3 head mini screwdriver.
+ 2 pcs, PH0 - PH1 phillips head mini screwdriver.

* Chrome vanadium steel.
* Blackened stainless ends.
* Ergonomic handles.
* Upper part of handle is rotary head.

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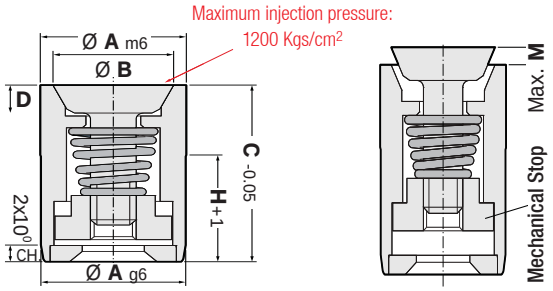
Air Venting Valve

Code: CHV

"CHV" Air Venting Valves produced from stainless steel.
It provides high air discharge. Also, the conical ejector rises and helps the product exit from mould. The operating temperature under 150ºC is recommended.

In higher temperature than 150ºC; steel starts to expand and melt plastic raw material gets into valve and prevents operation.



Material: INOX 1.4034
Operating air pressure: 1.5 - 6 Bar
1 BAR ≃ 1 Kg. / cm²

Order	A	B	C	D	H	M
CHV.05	5	3	12	1.5	7	2.5
CHV.06	6	5.2	12	1.5	7	0.95
CHV.08	8	6.5	12	1.5	7	0.95
CHV.10	10	8	12	2	7	0.95
CHV.12	12	10	12	2.5	7	0.95
CHV.16	16	13	20	3	12	1.55
CHV.20	20	17	20	3.5	12	1.55

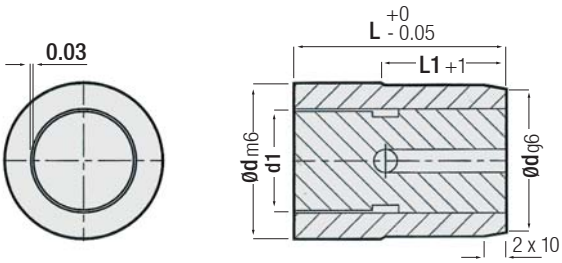
NEW

Double Air Venting Valve

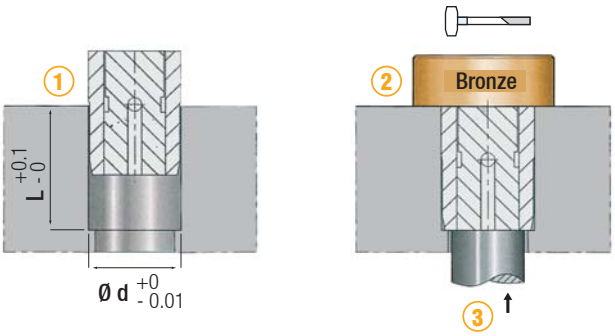
Code: DHV

"DHV" Double Air Venting Valves produced from stainless steel.
The product is effective for the semi-pneumatic ejection method.
It is effective in discharging gas and air trapped in the final filling areas of deep details in the moulds or in other possible areas and it helps the product exit from mould.

In mounting; please use the copper or rubber hammer and bronze wedge.

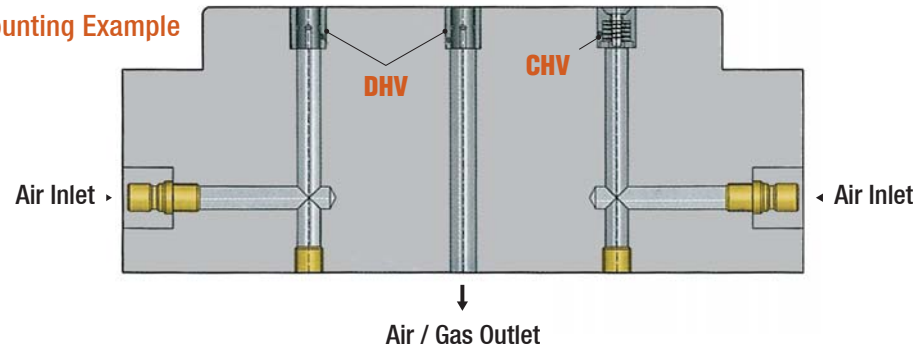


Material: INOX 1.4034



Order	d	d1	L	L1
DHV.08	8	5	12	7
DHV.10	10	6	12	7
DHV.12	12	8	12	7
DHV.16	16	10	20	12

Mounting Example



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Code: VHV

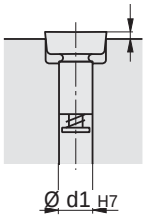
Venting Valve for High Pressure

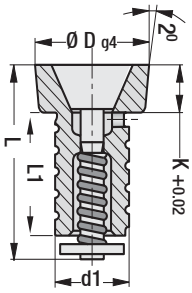
- Metal Injection gas venting & pneumatically activated ejector.
- 2⁰ conical head / mounting with special reamer.

Mounting: It should be provided with special reamer **(VHR)** and should be approx. 0.9mm out / above from mould parting line.
It is compatible with metal injection moulds.

Please use copper hammer!

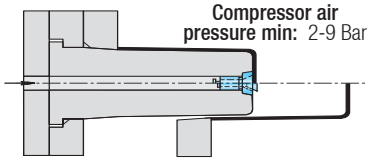
Material: 1.4301 INOX
Max. temp.: 250⁰C



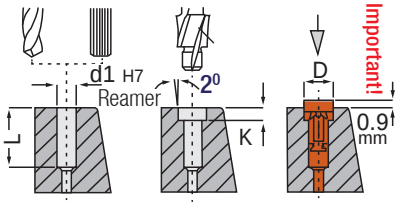


Mounting:
VHV should be approx. 0.9mm out / above from mould parting line.

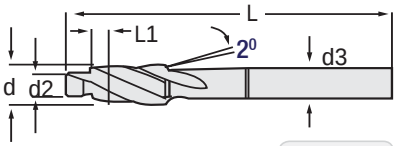
Order	D	d1	K	L1	L
VHV.08	8	6	5	8	16
VHV.12	12	8	5	13	21
VHV.16	16	10	6	14	22



Compressor air pressure min: 2-9 Bar



Special Reamer for "VHV" Valve



Code: VHR

Order	d	d2	d3	L1	L
VHR.08	8	6	10	5	69
VHR.12	12	8	12	5	100
VHR.16	16	10	12	6	122

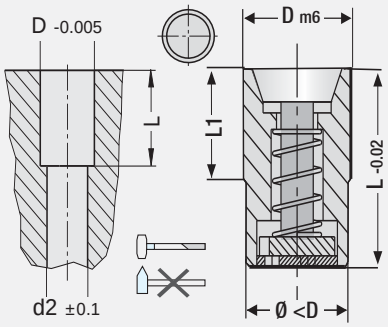
Air Venting Valve

Code: KHV

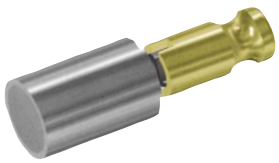
It is the most suitable method for dissolving vacuum during injection. **In wide and narrow walled objects;** it continues to discharge compressed air by vacuum in mould. All casing and machined surfaces have been produced from stainless steel.
In comparison with PHV (pinned type), the shorter length is advantageous.

"in vacuumed objects"

Compressor air pressure min: 3-10 Bar
Material: 1.4034 **Hardness:** 52-55 HRC
Max. temp.: 150⁰



Order	D	L	L1	d2
KHV.06	6	12	7	3.5
KHV.08	8	15	9	5
KHV.10	10	20	13	6
KHV.12	12	25	15	8
KHV.16	16	30	17.5	8
KHV.20	20	30	19	10
KHV.25	25	30	19	12
KHV.30	30	30	27.5	15



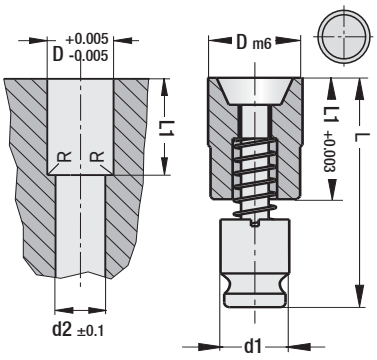
Air Venting Valve with Pin

Code: PHV

It is the most efficient air venting product.
It is especially ideal for deep and large moulds.
In mounting; please use the copper or rubber hammer and bronze wedge.

"in high and deep objects"

Compressor air pressure min: 2-9 Bar
Material: 1.4031 **Hardness:** 52-55 HRC
Max. temp.: 150⁰



Order	D	L	L1	d1	d2	R
PHV.08	8	28	11	6	7	01
PHV.10	10	28	11	7	8	01
PHV.12	12	30	11	8	9	02
PHV.16	16	43	20	10	14	02
PHV.18	18	43	20	10	14	03
PHV.20	20	43	20	10	16	03
PHV.25	25	60	20/28	16	16	04

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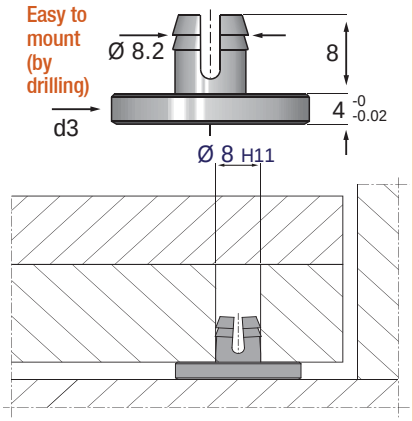
Code: G144

Ejector Plate Thrust - Support

For using inside of the mould, this supports can be put under the plates. By drilling a hole (8mm / H11), flexible claws on product are opened inside of the hole and is retained.
It can be easily removed during an impact.
Thus, symmetry is provided in mounting and repetition of plates.

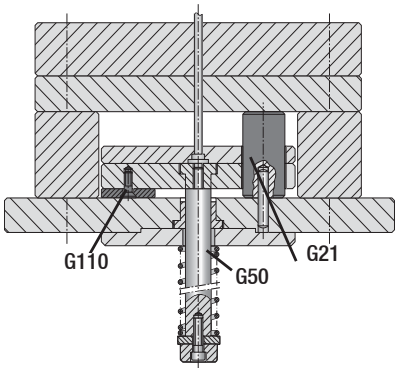


Order	d3
G144.20	20
G144.30	30

Mounting Flange

Code: G110

In-mould mounting kit & Support washer

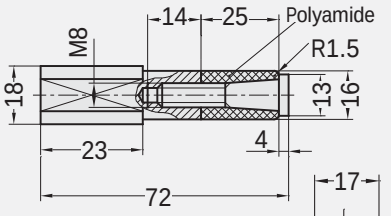


Refer to page-34 for order and technical info.

Code: SCPM8

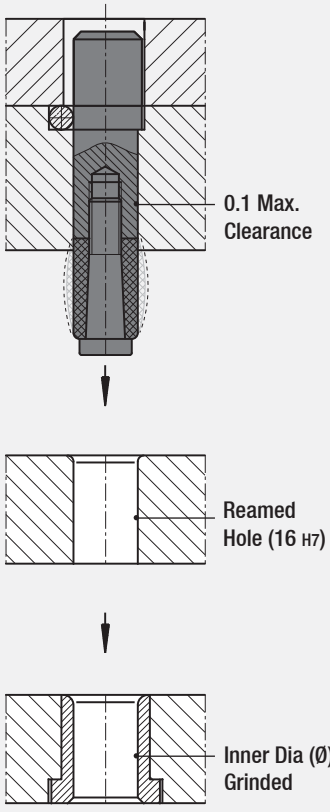
Friction Puller (Parting Locks)

This simple friction puller provides great benefit in "3-plate moulds" that average gravitation force and plate accuracy are sufficient.
Similarly, it can be used as brake with stopping purpose between plates.
For example; if it is desired to wait or postpone opposite / counter parts motions or to avoid collision of hard detrimental plates, it provides suitability for use.
Maximum operating temperature: 120°C
Polyamide extrusion (tightening) holes ends should be left with radius. Please do not lubricate the extrusion surfaces.



Order: SCPM8

Mounting Example

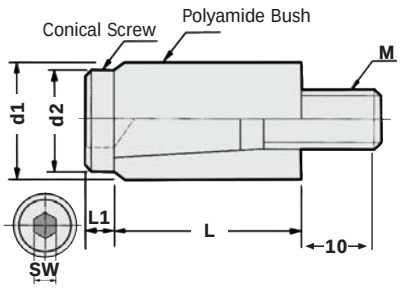


Code: GPLA

Friction Puller (Parting Locks)

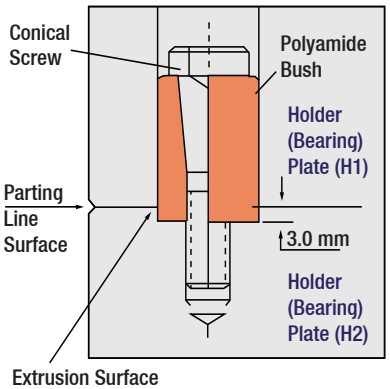
You can provide optimal parting line control to desired plate group in mould with this simple part.
Life time is approx. 50.000 stamps.
It provides mounting and dismantling easiness and being cost effective.
It is also used in small / medium dimensional moulds, beside two stepped moulds or side cores.
According to Mould Weights:
- GPLA.12 - 4pcs / up to 100 kg.
- GPLA.16 - 4pcs / up to 500 kg.
- GPLA.20 - 4pcs / up to 1000 kg.
- Over 1000 kg; GPLA.20 - 6pcs should be used minimum.

Product holes in moulds should be reamed and hole tolerance should be ±0.1mm.
Polyamide extrusion (tightening) holes ends should be left with radius. Please do not lubricate the extrusion surfaces.
Maximum operating temperature: 80°C



Order	d1	d2	M	SW	L1	L
GPLA.10	10	8.5	M5	4	3	18
GPLA.12	12	11	M6	5	3.5	20
GPLA.13	13	11	M6	5	3.5	20
GPLA.16	16	14	M8	6	4	25
GPLA.20	20	16	M10	8	5	30

Mounting Example



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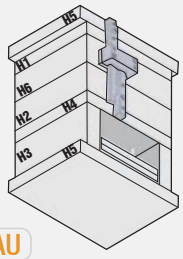
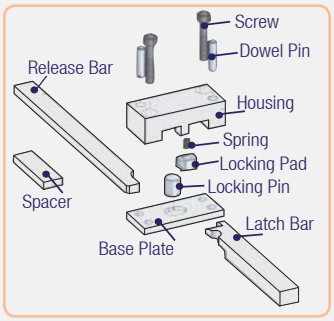
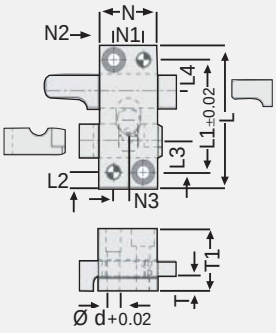


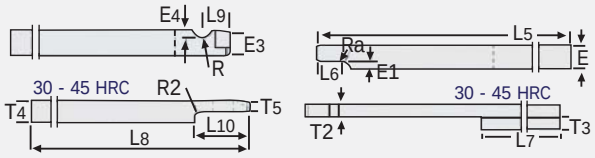
Latch Lock Unit

Code: KAU

The unit is heat-treated. Safe and reliable with its double sided lock system. It is for two-stage (stripper plate) moulds. The unit can easily mounted due to its compact design. Opening priority of plates relates to the mounting direction of unit. During mounting, after selecting desired stroke, the other Latch Bar is secured.







Parallel Mounting of Latch Lock Unit:

- Install the Housing parallel to the parting line face.
- Adjust or cut Latch Bar to required length.
- Open hole positions of screws, tight Latch Bar with screw on their position. Complete adjusting position with compatible parts, form the dowel holes and fix the Latch Bar.
- Cut the Release Bar in required length and install it perpendicular to the mould. Make the overhang length "L" of each release bar the same for equal of release points on each sliding.

* At least 2 Latch Lock Units are required, which are respectively mounted at outer surfaces (center of the mould). Units must be mounted symmetrically in such a way as to prevent tilting of the plate.

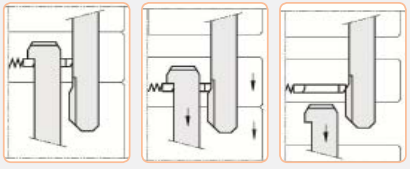
IMPORTANT:

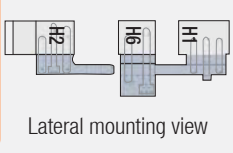
The operation test should be performed for your mould exactly. Please check motion sequence of bars and stripper plate. Fine adjustment is necessary. You should repeat this procedure until both Latch Locks work together exactly. The moving parts can be lubricated.

Order	L	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	N
KAU.55	55	43	6	12	12	150	12	40	100	14	28	24
KAU.67	67	53	7	15	14	200	16	50	150	18	36	32

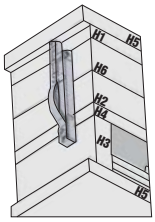
N1	N2	N3	d	E	E1	E3	E4	R	Ra	T	T1	T2	T3	T4	T5
12	6	6	5	13	4	13	4	5	5	5	24	6	5.5	11.5	6
16	8	8	6	16	5	18	5	6	6	6	32.5	10	6.5	16.5	10

Mounting and mould opening positions:





Lateral mounting view

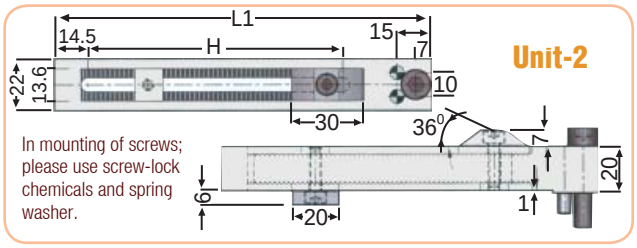


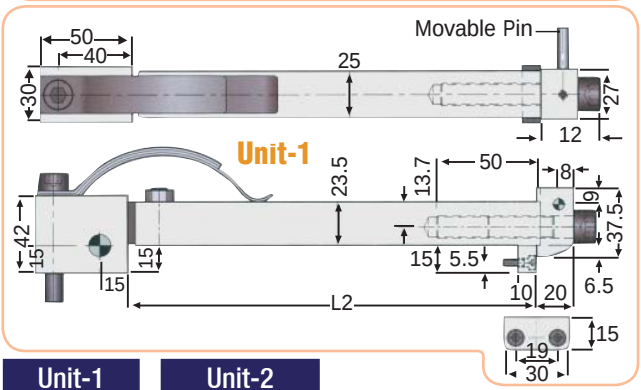
Latch Lock (Mould Plate Parting Combination)

Code: BOX

In this combinaion system; Unit-2 consist of fixed and Unit-1 is consist of movable group. While mould is opened, movable 1.Unit (Unit-1 with leaf spring) is moved on fixed Unit-2 on sliding. While pin of leaf spring group (Unit-1) is passed over elevation on fixed group (Unit-2), hook is released and 2. stripper group of mould starts to open. One of the products always used to move of free plates, such as those for the removing, is the BOX. It is composed by a supporting bar, determining the stroke of the plate to be moved, and a lever which properly positioned, allows the drag and release.

Both units should be parting well-timed. Incorrect mounting causes tapering and bending pf movable plate or breaking of unit lever.
Units should be adjusted before mould is closed, open mould and control movable plate and movements of levers (fine adjustment is required).
Please apply it until released / movable levers are fully operating with each other with leaf spring and locks. Then released lever will become centred / linked with Unit-1. While these operations continue, please lubricate movable parts of units with thin grease oil. In mounting, impacts and strokes of plate should be considered. During and after mounting, screws and other fasteners should be controlled. In part replacement; first, it should be started by dismantling Unit-1.

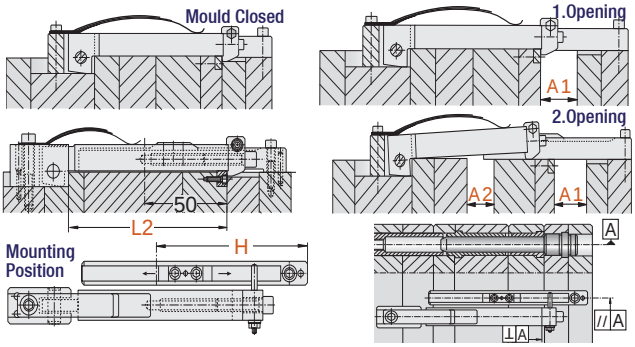




Unit-1
L2
90
170
220

Unit-2	
L1	H
140	83.5
204	152
254	198

Order	L1	H	L2
BOX460.140	140	83.5	90
BOX460.204	204	152	170
BOX460.254	254	198	220



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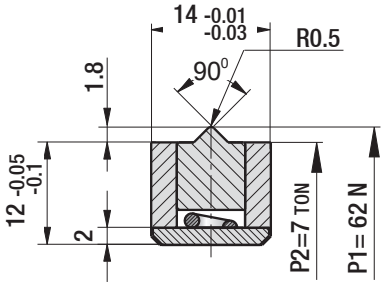
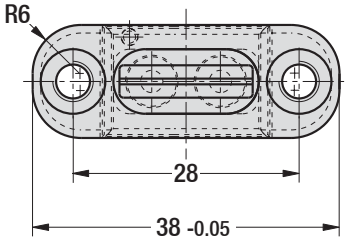
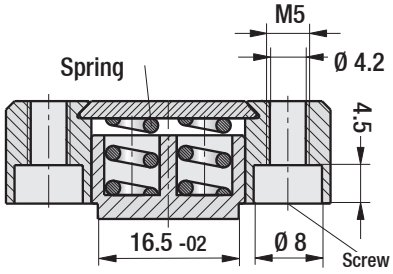
Slide Retainer

Code: MTK.1

Contact linkage line in core / slide systems







Maximum temperature: 100°C

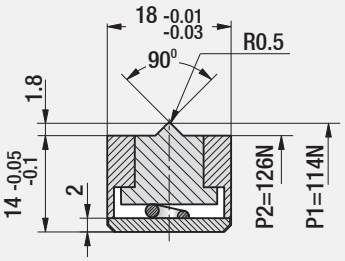
Material: 1.2343 **Hardness:** 54 ± 2 HRC

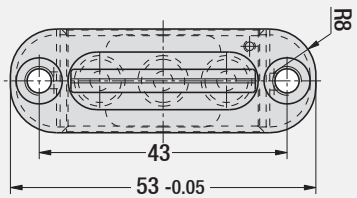
Order: MTK.1

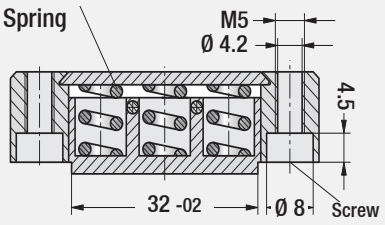
Slide Retainer

Code: MTK.2

It lifts the core / slide without the holder in slide system, self-contained unit



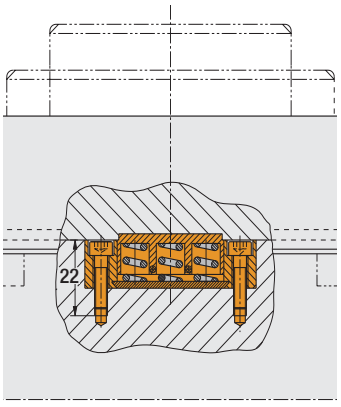


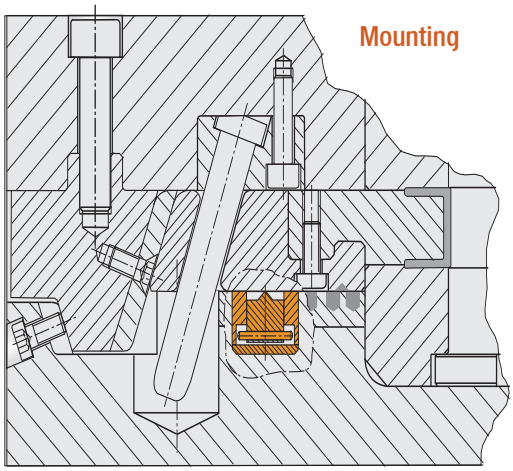


Maximum temperature: 100°C

Material: 1.2343 **Hardness:** 54 ± 2 HRC

Order: MTK.2



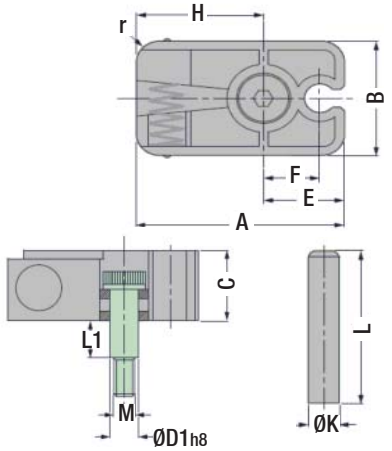


Code: MTS..M

Slide Retainer Pinned & Lock

Precise, with lock, align, pin and spring

The body of MTS..M can not be deadlock with retainer screws, need some hole or cavity to limitless motions. This unit is for limitless motions.



Order	A	B	C	E	F	H
MTS.10M	38	19	16	16	**9.1**	22
MTS.20M	54	32	20	21	**12.7**	33
MTS.40M	86	45	30	33	**20.3**	53

K	D1	L	L1	r	M	Max. Slide Weight (kgf)
6	6	30	6	5	M5	10
8	8	40	8	6	M6	20
10	10	60	10	10	M8	40

"Kgf." value: It is max. load value required to emerge slide / core block from slide retainer.

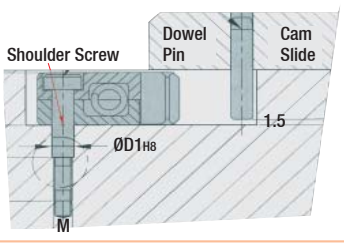
When slide / core is opened, pin gets into the retainer. "MTS..M" designed with over-travel, to avoid the damage by the wrong settle of the travel. Operation continues even though there are mistakes (misalignments).

Mounting Procedure:

1. To remove Slide Retainer body from housing again, a dowel pin (extractor) hole should be opened on mould.

2. The distance between pin centre on the Slide Retainer and screw centre on Slide Retainer during mounting are precise **(F)**, it should be calculated and adjusted well (must be in the same direction).

3. Please prefer a model with more force than the ultimate load requires for **MTS..M / M** that is suitable for your mould, this is important for safety.



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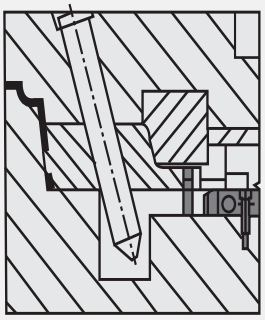


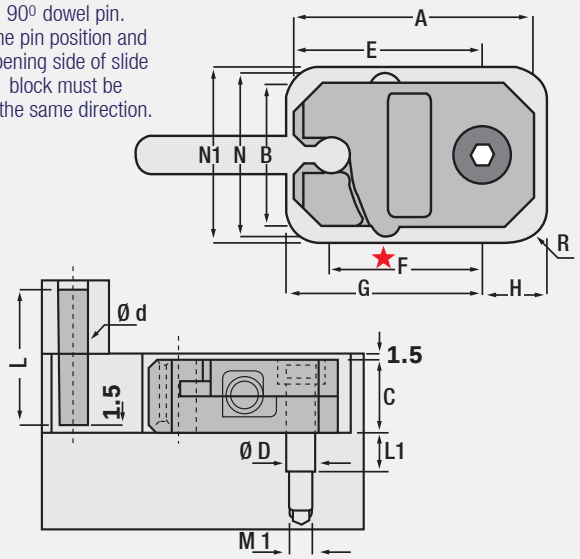
Slide Retainer - Pinned & Lock

Code: MTB

Precise, with lock, align, pin and spring

The body of "MTB" can not be deadlock with retainer screws, need some hole or cavity to limitless motions. This unit is for limitless motions.

It can be mounted with 90⁰ dowel pin. The pin position and opening side of slide block must be in the same direction.



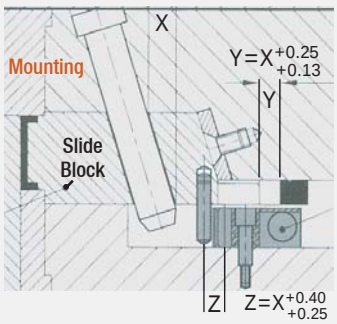
MTB can be used as "Latch Lock" mentality if there is no any special request on the system of the mould closing.

Code: MTB

Order	A	B	C	E	★F	N	G	H
MTB.38	38	19	16	31.5	24.89	24	34.5	10
MTB.54	54	32	20	43	34.93	36.5	46	14.5
MTB.86	86	45	30	67	53.98	49.5	70	22.5

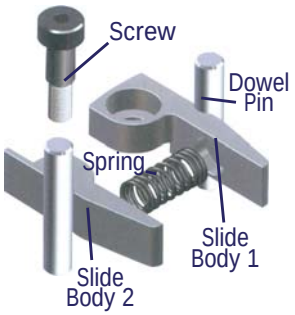
N1	R	D	L1	M1	d / L	Max. Slide Weight (kgf)
25.5	8	6	8.5	M5X11	6x30	10
38	10	8	10.5	M6X14	8x40	20
51	12	10	17	M8X18	10x60	40

Practice: When slide / core is opened, pin gets into the retainer. "MTB" designed with over-travel, to avoid the damage by the wrong settle of the travel. Operation continues even though there are mistakes (misalignments).



★ = Dimension is important.

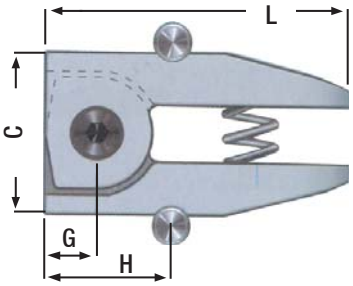
Important: The distance from the center of the dowel pin to the center of the shoulder screw is crucial / critical. The dowel pin installed in the slide positively locks into the retainer until disengaged by the mould closing motion. Designed with a efficient lead-in at the housing opening so the dowel pin will lead-in the housing even if there is a slight misalignment between the retainer and the pin.



Slide Retainer with Latch

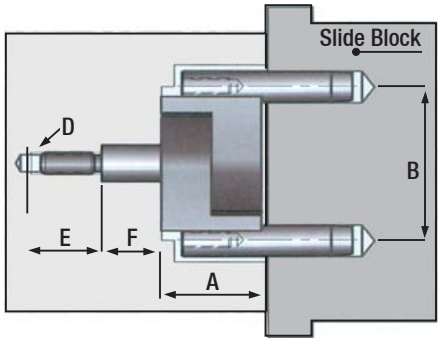
Code: MTM

Screw **(F)** added to hole should not be in too deep. After slide body locks itself, it should be operated smoothly. Therefore, don't tight the screw too much. When dowel pin is on core / slide, the body is fixed on mould, also core sliding distance should be calculated precisely and then should be mounted.



Max. temp.: 100⁰

Especially, it can be preferred in alloy material moulds.

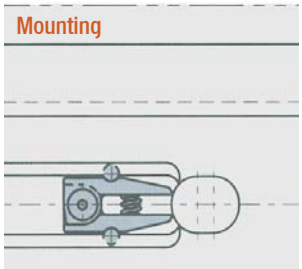


Code: MTM

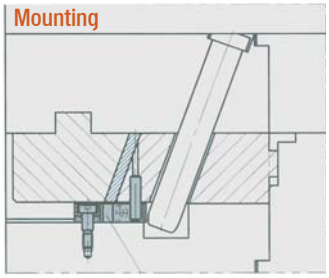
Order	A	B	C	E	F
MTM.1040	10	21.5	18	9.5	5.1
MTM.1243	12	25.5	22	11	6.1
MTM.1650	16	31.5	28	11	8.1

G	H	L	D	Max. Retaining	Dowel Pin
7	17.5	40	M5	Ø 6 - 30	10
7.5	18	43	M6		15
9.5	20.5	50	M6		25

Mounting



Mounting



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Automatic Ejector Coupling

Code: G115 & G116

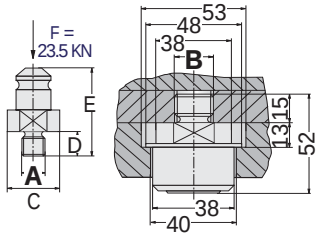
Reliable Return of the Ejector Pins & Reliable Ejection of the Mouldings.

- Rapid and simple mounting (even within existing moulds).
- Engages in any position and disengages only after ejection has taken place.
- Can be used on any injection moulding machine with a hydraulic or mechanical ejector.
- Mounting times are very short, since the mould can be adjusted before it is fitted into the machine.
- For rapid and economic operation, up to 25–30 strokes per minute.

Material: 1.7147 **Hardness:** 60 HRC

Light Duty

Code: G115

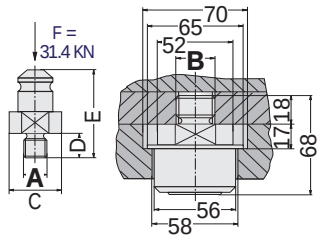


Light Duty / Force = 2400 kg

Order	A	C	D	E	B
G115 A / B	M10 x 1.5	26	20	55	M16 x 1.5 M16 x 2.0
	M12 x 1.75				
	M14 x 2.0				
	M16 x 2.0				

Heavy Duty

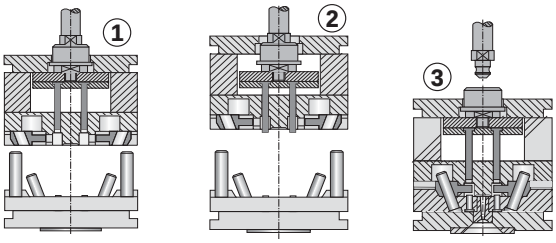
Code: G116



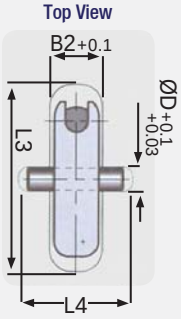
Heavy Duty / Force = 3200 kg

Order	A	C	D	E	B
G116 A / B	M16 x 2.0	35	25	68	M16 x 1.5
	M18 x 2.5				M18 x 1.5
	M20 x 2.5				M20 x 1.5
	M24 x 3.0				M24 x 1.5
	M27 x 3.0				M27 x 1.5
	M30 x 3.5				M30 x 1.5

Ejector Rod



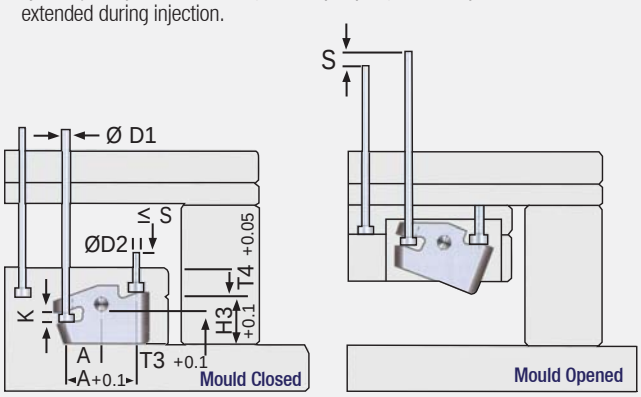
1) The ejector plate is returned to the stop. Return screw and ejector screw disengage. Over theremainder of the closure movement, the jaws move without obstacle.
2) Mould in ejector position. The side splits are extended, the return pin is latched to the return coupling by means of balls.
3) Mould closed. The injection operation begins.



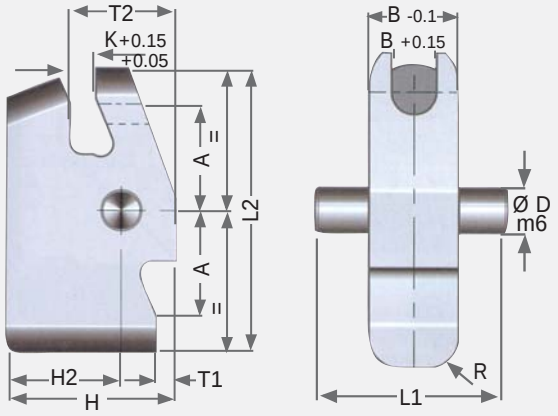
Acceleration Rocker for Ejector

Code: IHS

- It is used in case that Ejector Plate requires stroke more than normal stroke distance.
- By fitting an Ejector Pin to the product **(IHS)**, repulsion / ejection can be extended during injection.



Acceleration Rocker (mechanical swing system) increasing stroke distance of ejector that it is fastened.



Code: IHS

Order	D	D2	B	B1	B2	B3	A	A1	T1	T2
IHS.3	4	4	3	8	8.5	4	10	20	2	10
IHS.6	8	8	6	16	16.5	8	21	42	4	21
IHS.8	8	8	8	16	16.5	8	21	42	4	21

T3	T4	D1	L1	L2	L3	L4	H	H2	H3	K	R	S
4	4	3	16	26	31	23	19	14	16	3	4	2.5
8	8	6	36	56	63	45	34	23	27	5	8	7.6
8	8	8	36	56	63	45	34	23	27	5	8	7.6

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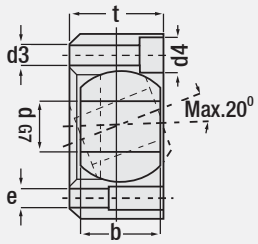
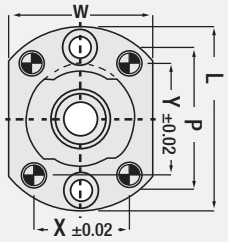
Spherical Guide Bush for Inclined Pin

Code: G133K

Guide Bush unit transmitting angle motion. It offers easy installation for desired Inclined Pin design in large moulds. Angle adjustment can be done between 0^0 and 20^0.

Max. operating temp.: 170^0





Order	d	L	w	t	b	p	e	x	y	d3	d4	M
G133K.08	8	44	28	17	14	32	5	20	28	6	10	M5
G133K.10	10	46	30	20	16	34	5	22	28	6	10	M5
G133K.12	12	50	32	22	18	36	6	22	30	7	11	M6
G133K.16	16	58	45	29	25	45	6	30	35	7	11	M6
G133K.20	20	65	50	33	28	52	6	35	40	7	11	M6
G133K.25	25	78	57	38	33	62	8	40	50	9	15	M8
G133K.30	30	86	65	43	37	70	8	48	55	9	15	M8
G133K.35	35	98	72	49	40	78	8	52	60	11	18	M10
G133K.40	40	106	77	53	44	84	8	55	65	11	18	M10
G133K.45	45	118	85	57	48	96	8	59	72	11	18	M10

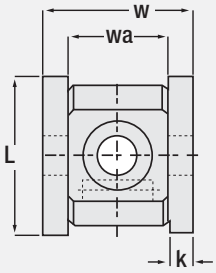
Inclined Pin Holder Unit

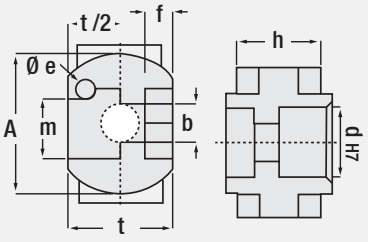
Code: G133E

- Mountable to the ejector plate. It is mounted by machining to ejector plate of mould.
- Self-lub. system is greased up to 300^0 in unit.

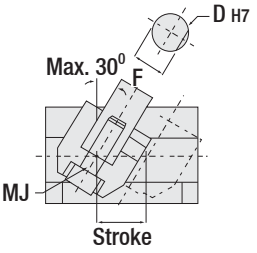
Mat.: C45

Slide parts: Bronze + Graphite





Order	d	w	L	wa	k	h	A	t	f	m	b	e
G133E.08	8	24	25	12	6	13	20	16	5	7.5	5	3
G133E.10	10	28	32	14	7	17	20	16	4	8.5	6	3
G133E.12	12	31	40	17	7	20	25	20	5	10	7	4
G133E.16	16	36	45	21	7.5	24	30	24	6	13	9	6
G133E.20	20	43	45	28	7.5	24	40	30	8	17	11	6
G133E.25	25	48	50	33	7.5	26	45	35	9.5	22	14	6
G133E.30	30	55	60	38	8.5	30	50	38	9	27	14	6
G133E.35	35	64	70	44	10	34	55	40	10	31	14	8
G133E.40	40	72	80	50	11	38	60	43	11.5	36	18	8



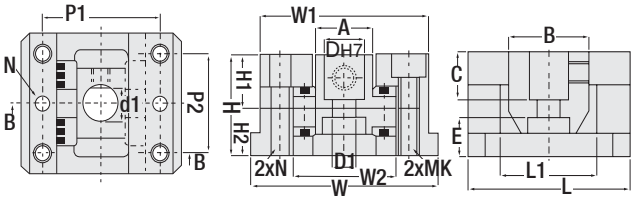
Inclined Ejector Pin Unit

Code: G133

It moves the Inclined / Angle Pin Systems in the desired angle.

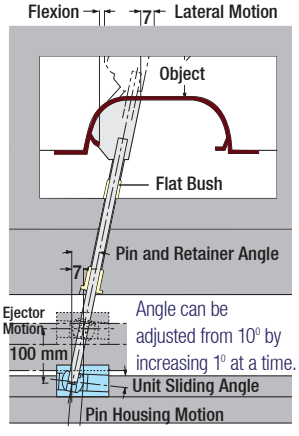
It provides important contribution to production period. The product parting from moulds with this unit is more economical compared with similar systems.

- The heat resistance of unit in mould is 300c (with self lubricating bearing system), unit can lubricate itself.
- Operating angle of ejector pin can be inclined up to 10^0 - 20^0 - 30^0C.
- It can be fastened to ejector plates via dowel pins and screws during mounting. The position of the centre block can be adjusted according to the length of pin specified. Please make this adjustment when centre block and pin are attached and removed easily. **For the precise bottom support of unit, G147 product can be used.**

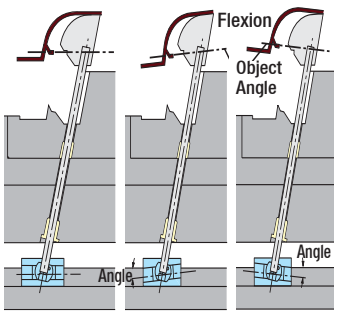


Order	D	d1	D1	A	B	C	E	F	MJ
G133.08	8	7	4.5	11	20	8	10	7	M4
G133.10	10	7	5.5	15	25	10	12.5	9	M5
G133.12	12	10	7	17	25	12	15	11	M6
G133.16	16	12	9	22	30	16	15	14.5	M8
G133.20	20	14	11	26	40	20	16	18	M10
G133.25	25	16	14	32	45	25	17	22.5	M12
G133.30	30	18	14	38	50	30	17	27	M12
G133.35	35	20	14	45	60	35	18	32	M12
G133.40	40	25	18	55	70	40	19	36	M16
G133.45	45	30	18	60	80	45	24	40	M16

H	H1	H2	L	L1	W	W1	W2	P1	P2	MK	N	Stroke
22	12.5	5	32	20	33	30	19	24	20	M3	3	10
27	15.5	5	45	25	45	40	25	32	30	M4	4	18
32	18	7	50	30	57	51	31	39	35	M6	6	20
36	20	8	65	40	65	58	38	46	40	M6	6	25
42	23	11	80	50	80	72	44	56	55	M8	8	30
50	28	15	90	55	93	85	52	66	65	M10	10	35
55	30	15	100	60	101	93	60	74	70	M10	10	40
62	35	15	120	75	120	110	70	85	80	M12	10	45
70	40	15	135	85	130	120	80	95	90	M12	10	50
80	45	15	150	95	140	130	90	105	110	M12	10	55



Angle can be adjusted from 10^0 by increasing 1^0 at a time.



The angle of ejector pin should be determined according to the angle of the product in mould.

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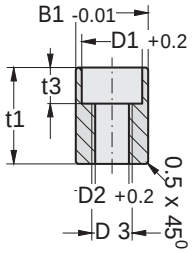
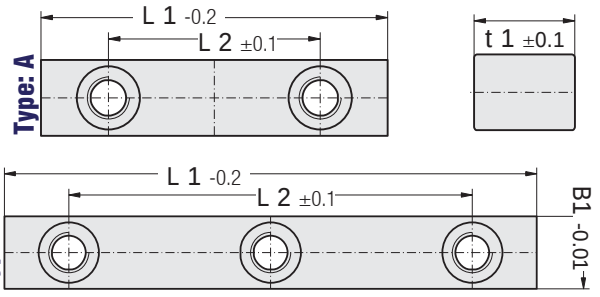


Support Slide for Core Position

Code: G147

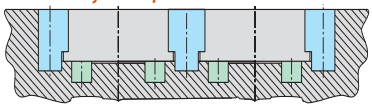
It can be used also as Bottom Support Plate for Core Guide Block or Guide Block for Inclined Ejector Pin Unit (G133).
Milled, precision ground, perpendicularity controlled and opened fitting holes.

Material: 1.2842 **Hardness:** 58 + 2 HRC

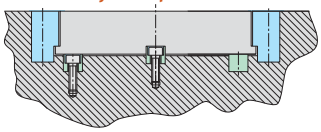


Order	B1	t1	L1	Type	t3	L2	D1	D2	D3
G147.1250	12	11	50	A	5.7	30	10	5.3	M6
G147.1260			60	A		40			
G147.1270			70	B		50			
G147.1275			75	B		60			
G147.1280			80	B		60			
G147.1290			90	B		70			
G147.12100		16	100	B		80			
G147.12120			120	B		100			
G147.12140			140	B		120			
G147.12160			160	B		140			
G147.12180			180	B		160			
G147.18100	18	16	100	A	6.8	76	11	6.4	M8
G147.18120			120	A		96			
G147.18140			140	B		116			
G147.18160			160	B		136			
G147.18180			180	B		156			
G147.24140	24	21	140	B	6.8	116	11	6.4	M8
G147.24160			160	B		136			
G147.24180			180	B		156			
G147.24200			200	B		176			
G147.24220			220	B		196			

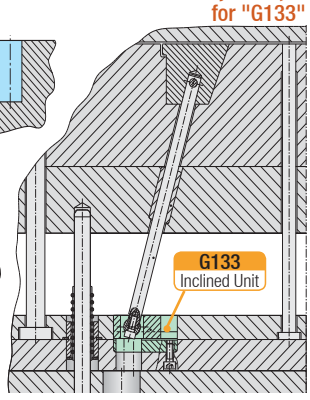
Mounting Example

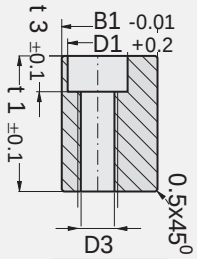


Mounting Example



Mounting Example for "G133"





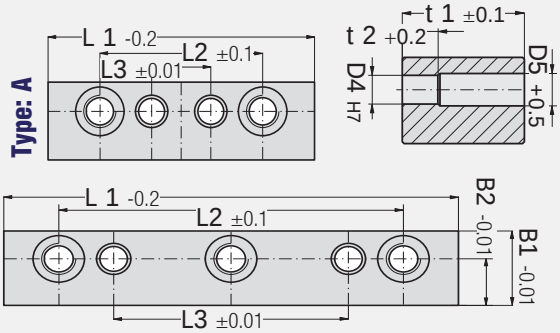
Support Slide for Core Position Side Guide

Code: G148

Milled, precision ground, perpendicularity controlled and opened fitting holes.

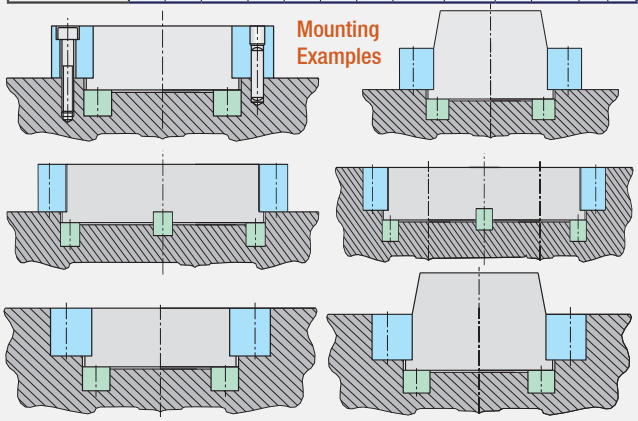
Material: 1.2842 **Hardness:** 58 + 2 HRC

Custom-made production can be done as per request.



Order	B1	t1	L1	Type	B2	t2	t3	L2	L3	D1	D3	D4	D5
G148.1550	15	11	50	A	9	-	5.7	30	10	10	M6	4	-
G148.1560			60	A		-		40	20				
G148.1570			70	B		-		50	30				
G148.1575			75	B		-		60	40				
G148.1580			80	B		-		60	40				
G148.1590			90	B		-		70	50				
G148.1880	18	22	80	A	11	12	6.8	56	32	11	M8	6	7
G148.18100			100	B				76	52				
G148.18120			120	B				96	72				
G148.18140			140	B				116	92				
G148.18160			160	B				136	112				
G148.24100	24	36	100	A	15	12	9.0	68	36	15	M10	8	9
G148.24120			120	A				88	56				
G148.24140			140	B				108	76				
G148.24160			160	B				128	96				
G148.24180			180	B				148	116				
G148.30120	30	50	120	A	18	18	11	80	40	18	M12	10	11
G148.30140			140	A				100	60				
G148.30160			160	B				120	80				
G148.30180			180	B				140	100				
G148.30200			200	B				160	120				

Mounting Examples



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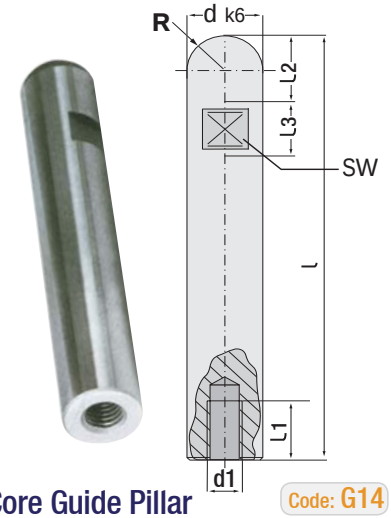


Core Guide Pillar
(Inclined & Threaded)

Code: G14

It is compatible to use at injection moulds, angled guide pillar positioning, core systems as cam pin. **GTH** mould pillars are polished with surface polishing machine at final stage of production (after grinding).

d	l	l1	l2	l3	d1	R	SW
8	40	10	10	8	M.5	4	7
	50						
	63						
	80						
	100						
10	50	12	10	9	M.6	5	8
	63						
	80						
	100						
12	50	12	12	9	M.6	6	10
	63						
	80						
	100						
	125						
16	63	15	15	12	M.8	8	13
	80						
	100						
	125						
	160						
	200						
20	63	20	16	15	M. 10	10	16
	80						
	100						
	125						
	160						
	200						
	250						
25	80	20	20	15	M. 12	12.5	21
	100						
	125						
	160						
	200						
	250						
30	100	25	25	18	M. 16	15	27
	125						
	160						
32	200					16	
	250						

Order: **G14. d x l**

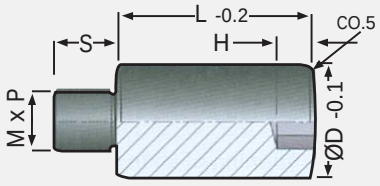
Material: < Ø 20 = 1.7131
> Ø 20 = 1.1213 (Cf53)
Hardness: 58 - 62 HRC

Please use "Hexwrench" for clamping screw.

Code: G150

Stopping Pin for Core Slide

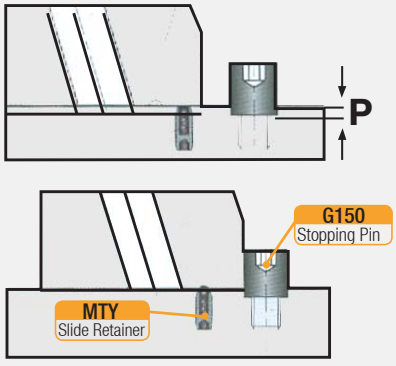
Stopping Pin is a product which is pratical and easy to mount.



Code: G150

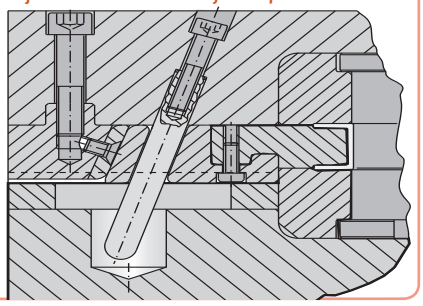
Order	M x P	SW
G150.M6	M6 x 1.0	5
G150.M10	M10 x 1.5	8
G150.M12	M12 x 1.75	10
G150.M16	M16 x 2.0	14

D	L	H	S	P
10	40	4	10	15
16	40	5	15	15
20	40	6	28	15
25	40	9	24	15



It can be used with G61 Angled Guide Bush

Injection Mould Mounting Example

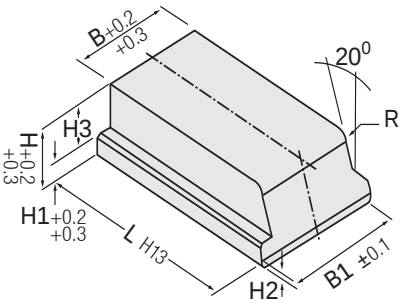


Angular Core Slide

Code: G149

G149 ready for machining. The only thing to be done is to machine cavity surfaces.

Milled, precision ground and 20^0 inclined angular has been given to cavity surface. All edge corner are chamfered. Slide has been machined as T-Slot.



Mat.: 1.2344
Hardn..: 42 - 45 HRC

Code: G149

Order	H	L	B	B1	H1	H2	H3	R
G149.1220	12	40	20	26	4	1.5	8	1.5
G149.1225			25	31				
G149.1240			40	46				
G149.1263			63	69				
G149.1620	16	50	20	26	4	1.5	12	1.5
G149.1625			25	31				
G149.1640			40	46				
G149.1663			63	69				
G149.2040	20	63	40	46	5	2	15	2
G149.2063			63	69				
G149.2080			80	86				
G149.2540	25	71	40	46	5	2	20	2
G149.2563			63	69				
G149.2580			80	86				
G149.3263	32	100	63	71	6	3	26	3
G149.3280			80	88				
G149.32100			100	108				
G149.4063	40	100	63	71	6	3	34	3
G149.4080			80	88				
G149.40100			100	108				
G149.5080	50	112	80	90	8	4	42	4
G149.50100			100	110				
G149.50125			125	135				
G149.6380	63	112	80	90	8	4	55	4
G149.63100			100	110				
G149.63125			125	135				

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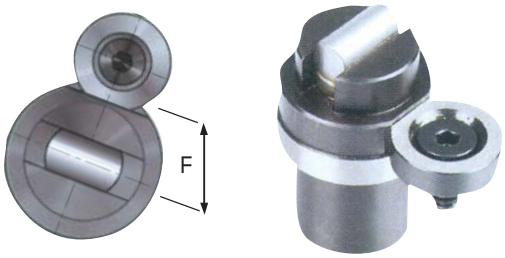


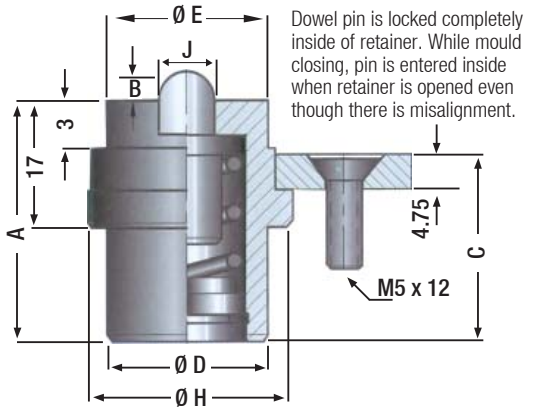
Slide Retainer - Pinned & Round

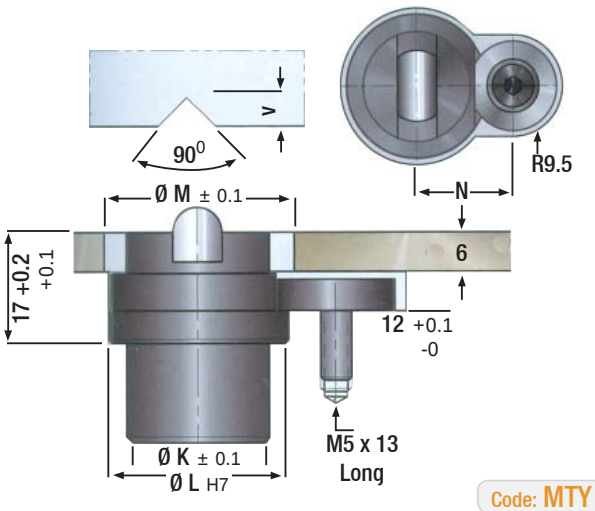
Code: MTY

Small, round, easy to mount, self-contained design and line contact engagement.

- Three different sizes with retaining ratings loadings for 48, 88 and 176 N.

Material: 1.2767 **Hardness:** 52 HRC **Max. Temp.:** 120°C



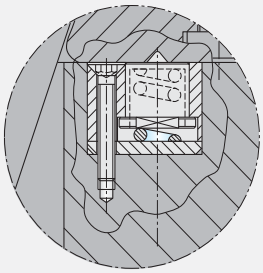


Code: MTY

Order	A	B	C	D	E	F
MTY.100	27.43	1.83	20.2	15.75	16	9.52
MTY.200	33.53	3.07	26.29	18.8	19	10.67
MTY.400	32	3.78	24.76	22.1	22	11.86

H	J	V	K	L	M	N	Kgf.
22	4.8	2.3	15.87	22	24	17	4.5
25	6.35	3.9	19.05	25	27	18.2	9
28	7.92	4.9	22.23	28	30	19.4	18

Note: It provides mounting facility to mould, thanks to its robust, small and round structure.

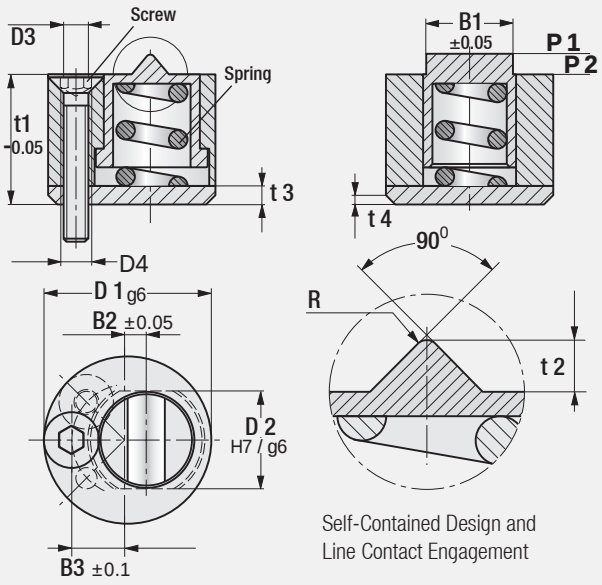


Slide Retainer - Round Type

Code: MTC

MTC Slide Retainers are operated without Dowel Pin and also can lift the core / slide without Slide Retainer. Easy mounting due to round structure.

Material: 1.2767 **Hardness:** 52 HRC **Max. Temp.:** 100°C

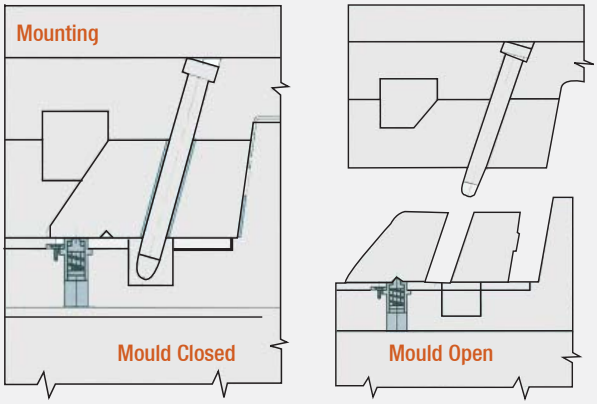


Self-Contained Design and Line Contact Engagement

Code: MTC

Order	D1	B1	B2	B3	t1	t2	t3
MTC.13	13	6.6	1.4	4.3	10	1.0	1.6
MTC.18	18	9.6	2.0	6.0	14	1.8	2.0
MTC.27	27	14.4	3.0	9.0	21	2.8	3.0

t4	D2	D3	D4	R	P1	P2	Screw (DIN7991)
0.35	7	2.2	M3	0.35	28 Nw	34 Nw	M2 x 16
0.50	10	3.2	M4	0.50	38 Nw	42 Nw	M3 x 50
0.50	15	4.3	M5	0.75	38 Nw	92 Nw	M4 x 25



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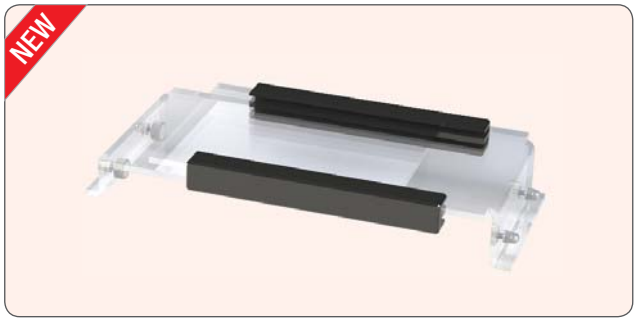
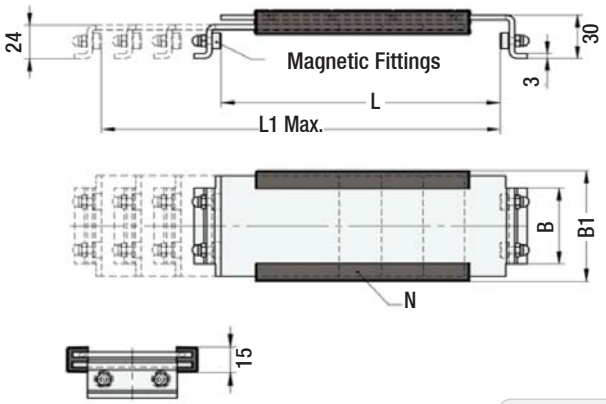
NEW



Adjustable Ejector Plate Cover

Code: G158

Security and Protection Mechanism for Ejector Plate



Code: G158

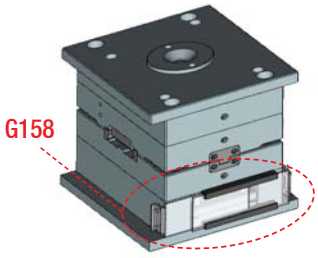
Order Code	L - L1 Max.	N	B1	B
G158.156218.56	156 - 218	2	78	56
G158.156218.76			98	76
G158.156218.96			118	96
G158.246396.66	246 - 396	2	88	66
G158.246396.76			98	76
G158.246396.86			108	86
G158.246396.96			118	96
G158.246396.116			138	116
G158.446596.96	446 - 596	2	118	96
G158.446596.116			138	116
G158.446596.136			158	136
G158.446596.156			178	156

* Adjustable to suit the requirements of your mould widths.
* Efficient and reliable protection againts pollution or falling plastic parts.

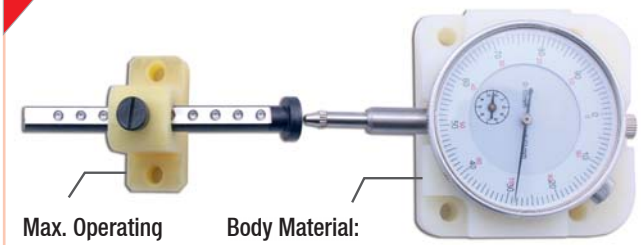
Material:
PC (Polycarbonate)

Operating Temperature:
Max. 110^{0}C

* Consider sizes (L - L1 max.) specified in the table for safety.



NEW



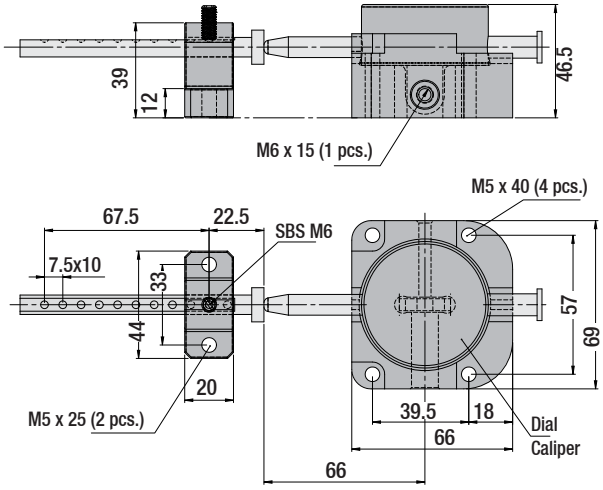
Max. Operating Temp.: 80^{0}C

Body Material:
Delrin

Dial Caliper for Load Control Monitoring with Mounting Body

Code: G73

* It shows the opening distance, caused by the over pressure or other reasons, untill in min. 0.01mm while mould trials or production.

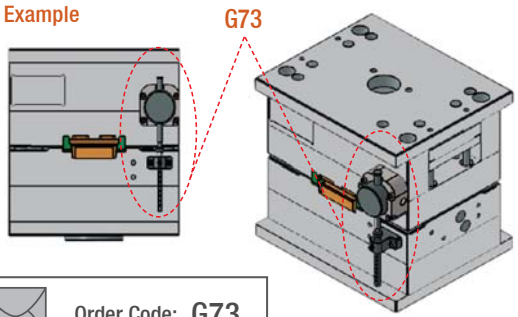


Main reasons of the mould openings (spacing) while running;

* 2nd pressure is too high.
* Machine shut power is not enough.
* Too much resin sent into the mould.
* Problem with the mould adjustment so that the mould can not be closed completely.
* Not returned ejector.
* Broken insert.
* Unwanted resin, left from the previoun shut.

Note: Please make the mounting holes according to the drawing.

Mounting Example



Order Code: G73

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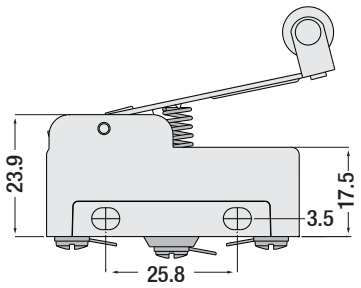
NEW

Micro Limit Switch with Long Roller

Code: MN2MIM2

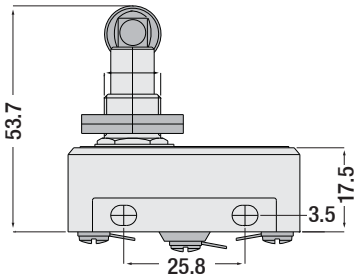
Movement Limit Switches for Ejector Plate, Stripper Plate and Side Lifters



Micro Limit Switch with Dome Roller

Code: MN2MUM3

Movement Limit Switches for Ejector Plate, Stripper Plate and Side Lifters



Technical Specifications / All "MN2" types have similar specifications:

Mechanical Life	:	500.000 Opening-Closing min. (60rpm)
Electrical Life	:	100.000 Opening-Closing min. (30rpm)
Operating Temperature	:	- 15 / +125^{0}C
Protection Class	:	IP20 - IP40
Operating Voltage (Ue)	:	440V AC
Operating Current (Ie)	:	10A
Isolation Voltage (Ui)	:	660V
Impact Resistance Voltage	:	2.5kV
Short Circuit Breaking Capacity	:	1 kA
Operating Frequency (f)	:	50 Hz.
Isolation Resistance	:	10 MΩ min. (500V DC)
Usage Class	:	AC15
Dielectric Resistance	:	1.500V AC (for 1 minute)
Pollution Degree	:	3
Connection Cable Section	:	1.5-2.5 mm^2
Standard	:	TS EN 60947-5-1

All "MN2" types have similar specifications:

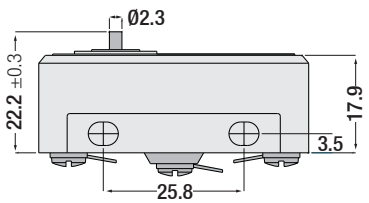
- Product variety for wide application areas.
- Long life and high contact reliability.
- Standard mounting holes.
- It ensures all movable parts such as Ejector Group / Ejector Plate, Stripper Plate, Side Lifters etc. operating with injection machine in a harmony.
- Switch cables will be provided by the user.
- Min. 8 x 8mm cable slots are recommended.
- Please do switch connection according to the contact scheme specified in the catalogue.

*** Please contact with Guvenal for different types of Limit Switch.**

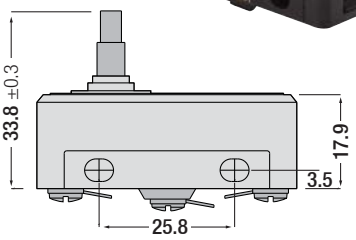
Order	Contact Structure	Contact Scheme	Sensor Type	Sensor Material
MN2MIM2	Changable Contact	COM 1 — 2 NC / 3 NO	Lever Long Roller	Metal
MN2MUM3			Dome Roller	
MN2MUM8			Dome Roller	
MN2PUM1			Dome	
MN2PUM3			Dome	

Code: MN2PUM1

Model:
- Thin & short dome
- Thin pointed
- Needle probe
- For precision work

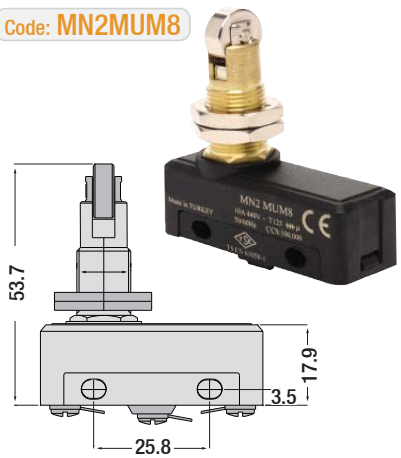


Code: MN2PUM3



Model: Thin & long dome

Code: MN2MUM8



Model: Dome roller

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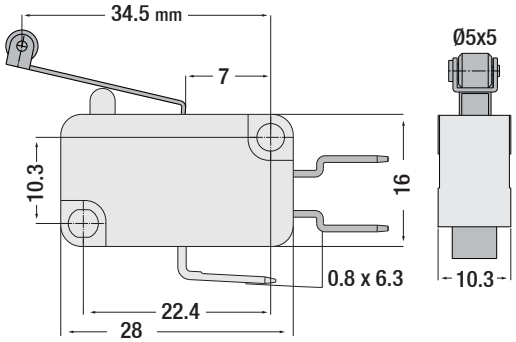
NEW

Code: MK1MIP2

Micro Limit Switch with Long Plastic Roller

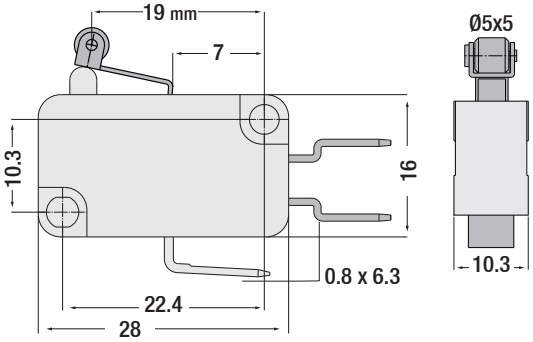
Movement Limit Switches for Ejector Plate, Stripper Plate and Side Lifters



Code: MK1MIP1

Micro Limit Switch with Short Plastic Roller

Movement Limit Switches for Ejector Plate, Stripper Plate and Side Lifters



Technical Specifications / All "MK1MIP" types have similar specifications:

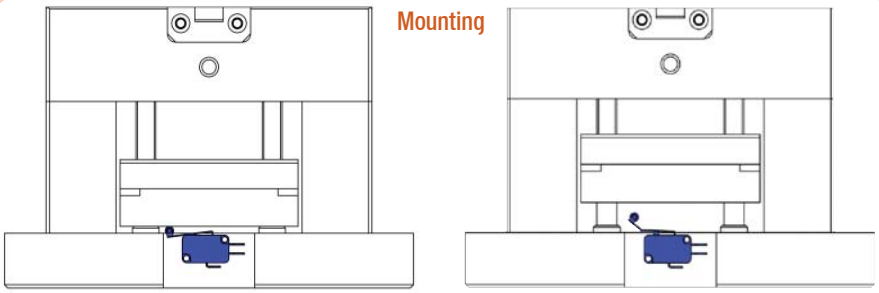
Mechanical Life ..... : 10.000.000 Opening-Closing min.(60rpm)
Electrical Life ..... : 100.000 Opening-Closing min.(30rpm)
Operating Temperature ..... : - 15 / +125^{0}C
Protection Class ..... : IP20
Operating Voltage (Ue) ..... : 250V AC
Operating Current (Ie) ..... : 10 (4) A
Isolation Voltage (Ui) ..... : 660V
Impact Resistance Voltage ..... : 2.5kV
Short Circuit Breaking Capacity . : 1 kA
Operating Frequency (f) ..... : 50 / 60 Hz.
Isolation Resistance .....: 10 MΩ min. (500V DC)
Usage Class ..... : AC15 - AC3
Dielectric Resistance ..... : 1.500V AC (for 1 minute)
Pollution Degree ..... : 3
Standard ..... : TS EN 60947-5-1

All "MK1MIP" types have similar specifications:

- Compact design.
- Product variety for wide application areas.
- Long life switches & high contact reliability.
- Material having "**VO**" feature which increases product reliability.
- It ensures all movable parts such as Ejector Group / Ejector Plate, Stripper Plate, Side Lifters etc. operating with injection machine in a harmony.
- Switch cables will be provided by the user.
- Min. 8 x 8mm cable slots are recommended.
- Please do switch connection according to the contact scheme specified in the catalogue.

Order	Contact Structure	Contact Scheme	Sensor Type	Sensor Material
MK1MIP1	Changable Contact	NO 4 / NC 2 / 1 COM	Lever Roller	Plastic
MK1MIP2				
MK1MIP3				

Mounting



Micro Limit Switch with Plastic Bent Roller

Code: MK1MIP3

*** Please contact with Guvenal sales dept. for different types of Limit Switches**

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NEW

External Side Lifter Unit with Hydraulic Piston

Guvenal - GTH Patented System: TR2016 06729B Code: G136

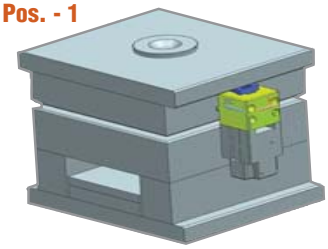
One of the important sections in mould design and production is Lifter / Core Systems. Many practical product range related to these complicated systems is presented in our catalogue. **Guvenal GTH** engineers will develop a new and standard product which is more clear and impress mould makers in Lifter / Core Creations and provide advantages in terms of time and cost.

If we consider **Lifter / Core Systems** as pouches of moulds by imagining their positions in injection moulds, mould producers make this system in moulds traditionally with high costs and efforts. As innovative **Guvenal GTH**, we have planned this system out of the mould. Easy to mount and without other instruments which may cause additional costs. Also, our External Side Lifter Unit with Hydraulic Piston which are offered ready and with economic prices and structure without protruding part (compact design). We convert traditional mechanical system into a new system with hydraulic support by combining movable unit with hydraulic piston (today, hydraulic distributor is available in all injection machines). **Our new product apply linear movement taken from hydraulic piston into mould perpendicularly.** Thus, all details of Lifter / Core formation in moulds which is hard are carried out. Namely, easy Lifter / Core System is completed with minimized position. Now, moulds with Lifter Systems will be produced fastly with low cost by you. In this way, it will provide shorter time in press / stamp durations - production possibility with less machine options by minimizing moulds and longer mould lifetimes.

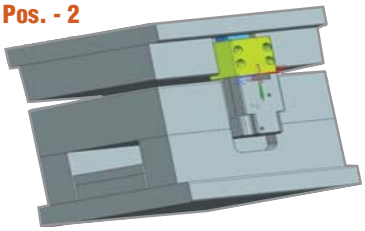
It is a practical system, it will be easily interfered with quick processes and the most important feature will be your economic price offers and fast mould deliveries. It will also provide different applications on mould for users. GTH - G136 "External Side Lifter Unit with Hydraulic Piston: We plan to increase difference with competitors by performing our R & D studies. In a different way, adding mould design & production methods consultancy to our products and job family. We expect important support of mould sector for these developments.

Design Application Examples

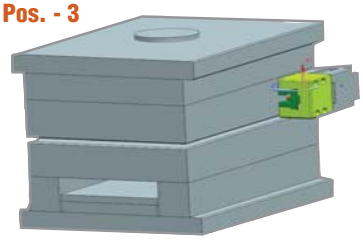
Pos. - 1



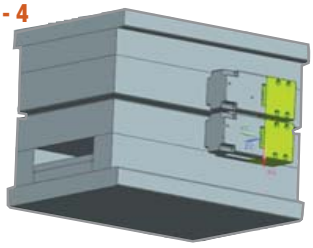
Pos. - 2



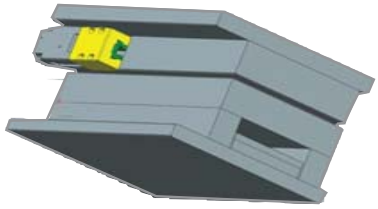
Pos. - 3



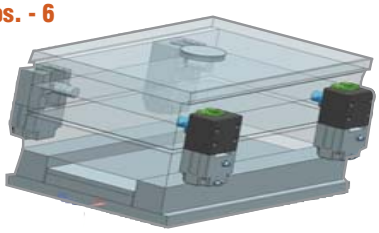
Pos. - 4



Pos. - 5



Pos. - 6



Hydraulic Piston; with special viton (resistant to 180° temperature) felt set.

IMPORTANT: In mounting position 1 / 2 / 6 etc. applications, a clearance of 1.5mm should be left in mould base in order to prevent hydraulic cylinder bumping into mould steel.

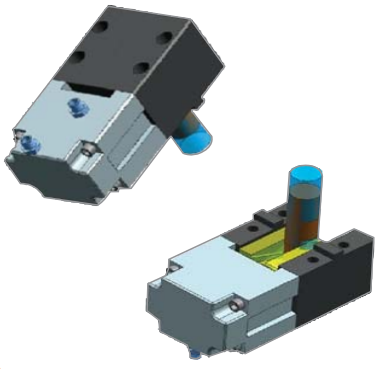
External Side Lifter with Hydraulic Piston

Lifter, Backward / Close Position

Lifter, Forward / Open Position

GTH standard side lifter systems can be used with working distance of stroke settings from 7mm up to 20mm.

Code: G136.HPM



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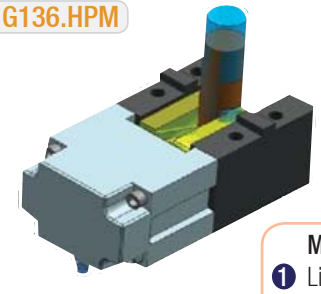
NEW

External Side Lifter Unit with Hydraulic Piston

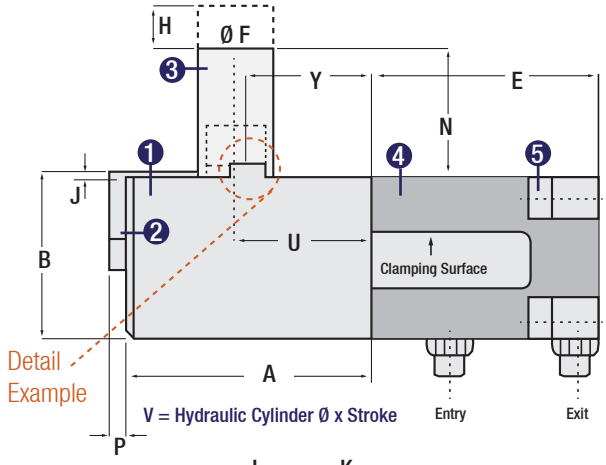
*"Since 1976" *Tradition *Development *Innovation*

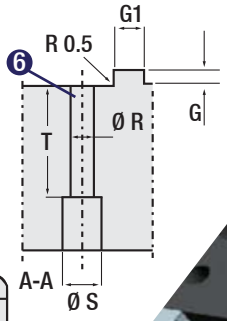
Guvenal - GTH Patented System: **TR2016 06729B** Code: G136.HPM



During application, in order to provide the correct combination, do not hesitate to contact engineers in our company.

Mounting and Technical Support:
t.tarakci@guvenal.net
support@guvenal.net

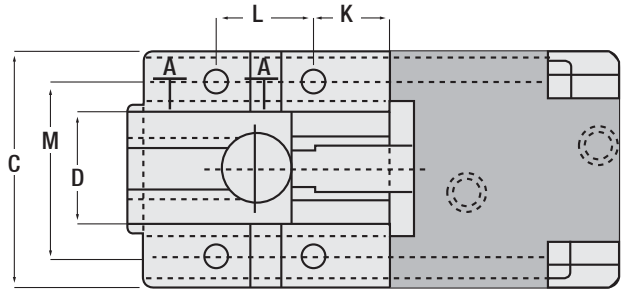


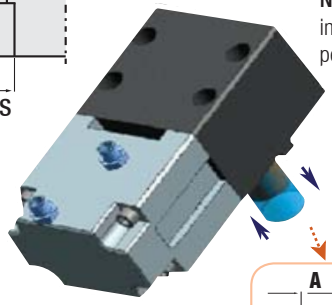


Material List:

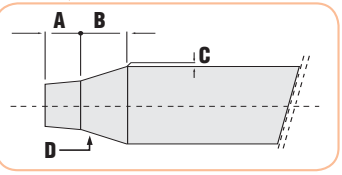
1	Lifter Body	: 1.2312 / HRC 44-46
2	Inner Lifter Body	: 1.2312 / HRC 40-42
3	Sliding Pin	: 1.2344 / Nitrided
4	Hydraulic Cylinder	: Standard Type
5	Screw	: DIN ISO 4762 (4 pcs)
6	Screw	: DIN ISO 4762 (4 pcs)

Note: Sliding pin with number 3 in Lifter System will be formed as per request by user.





"Lifter Slide Pin" Recommended Practice Area



If **J>0**: On mould surface which system will be mounted: A discharge will be performed in dimensions of "**D+2mm x (A+P)+3mm x J+1mm**".

Order: G136.HPM... x Type

Model	HPM.050	HPM.070		HPM.096		HPM.126	
Type → / Dim. ↓	300	100	300	100	300	100	300
A	48 mm	64 mm		86 mm		126 mm	
B	39.8 mm	60 mm		70 mm		86 mm	
C	49.6 mm	70 mm		96 mm		126 mm	
D	23.2 mm	32.6 mm		40.6 mm		60.6 mm	
E	70 mm	106 mm		118 mm		118 mm	
F	16 mm	20 mm		25 mm		38 mm	
G	3 mm	4 mm		6 mm		8 mm	
G1	8.0 mm	7.9 mm		9.9 mm		15.9 mm	
H (max)	10 mm	7.5 mm	12.7 mm	10.7 mm	17.9 mm	13.2 mm	22.6 mm
J	J<0	J<0		J<0		J<0	1.37 mm
K	17 mm	21 mm		33 mm		39 mm	
L	-	24 mm		30 mm		50 mm	
M	37 mm	50 mm		74 mm		94 mm	
N (*)	80 mm	92.5 mm	87.4 mm	90.3 mm	82.1 mm	78 mm	69 mm
P (*)	6 mm	10 mm		1.5 mm	2.0 mm	9 mm	
R	6.5 mm	8.5 mm		10.5 mm		13 mm	
S	11 mm	15 mm		17 mm		20 mm	
T	31 mm	48 mm		48 mm		61 mm	
U	24.5 mm	33.5 mm		43.5 mm		69.5 mm	
V	25 x 25 mm	32 x 30 mm		40 x 40 mm		40 x 50 mm	
Y	26 mm	33 mm		48 mm		64 mm	

H (max): Lever movement of External Lifter with Hydraulic Piston.
(*) : Values given on table are approximate values.

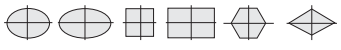
Order Example: If "H" (max.) 7.5mm is suitable for the product, your order code should be **G136. HPM.070 x 100**.

Hydraulic Piston Order: If Hydraulic Pistons in the system are ordered, **Example: G136. HP x "External Lifter dimension"** is enough.

"Lifter Slide Pin" Recommended Practice Dimensions:

Dim.	Descriptions	Minimum	Maximum
A	Form Depth	< 5	> 20
B	Burr Cutting Practice Length	5	12
C	Form Pin Bearing Clearance	0.03	0.1
D	Burr Cutting Practice Angle	5	10

Definition & Purpose: It is an important support component which contribute mould production process in order to obtain details in type of round, square etc. on plastic part with Side Lifter. According to Side Lifter with Cam System and Ejector Group supported (jiggle) Lifter designs:
*It reduces design process. *Material cost decreases because it gives steel size advantage from 50mm minimum up to 250mm in mould sizes according to the product design.*Since detail machining of Side Lifter is reduced to 90%, it provides advantage from Cnc machining duration. *It supports mould assembly / practice process. *Thanks to its automatic locking design, reverse resistance is in maximum level during 2nd press of injection. * Die marking problem is minimum or none with the feature of using as a hidden lifter / core.
Terms of Use: According to the details and sizes of moulds;
1 - It is used to obtain one or more similar profiles which are specified with examples below to be obtained male or female side of the mould as blind or full hole within the range of stroke 7.00 - 22.60 mm.



2 - While lifter / core hydraulic working stroke distance is not interfered, in obligatory cases, it should be made without distributing hydraulic.
3 - Mounting details of system should be process according to the dimensions specified in the catalogue, +0,05 / +0,1 maximum.
4 - When vibration occurs in hydraulic during mould trials, system should be fixed to the mould by using details on hydraulic side surfaces and Guvenal GTH clamps.
5- During trials and production phases, before opening injection machine clamp, form slide pin or steel should be separated from plastic detail by pulling back hydraulic.

Hydraulic piston app. pressure: Max. 160 Bar
Max. temp.: 160°C

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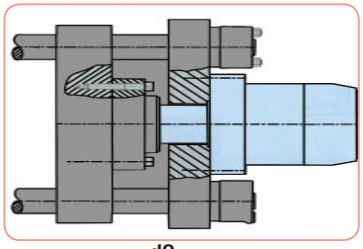
Hydraulic Cylinder - Round Type

Code: THS



Dimension	Formula	Unit
Force (Newton)	F	N
Length	s	m
Speed (Stroke)	v	m / s
Pressure	p	bar
Area (Piston)	A	m2
Volume	V	m3
Flow Rate	Q	m3 / s
Efficiency	η	-
Performance	P	kW

The information is advisory.

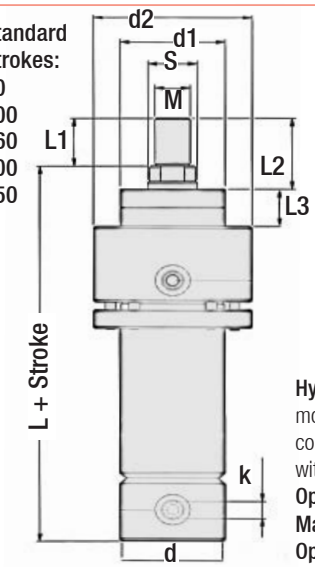
Cylinder Force:
F (N) = p (bar) x A (cm²) x 10
A = Effective piston area

Required Flow Rate:
$Q\ (L/min.) = A\ (cm^2) \times v\left(\frac{m}{s}\right) \times 6$

Repulse and Return Speed:
$v\left(\frac{m}{s}\right) = \frac{Q\ (L/min.)}{A\ (cm^2)} \times \frac{1}{6}$
Q = Flow Rate

Required Pump Capacity:
$P\ (kW) = \frac{Q\ (L/min.) \times p\ (bar)}{\eta} \times \frac{1}{600}$
η = Pump Efficiency

Standard Strokes:
50
100
160
200
250

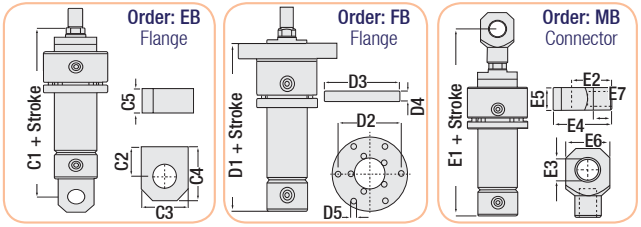


Hydraulic Cylinders: Used in injection moulds for waste water and for other cores / lifters. Piston motion is provided with joints in injection machine.
Operating: Hydraulic Oil
Max. Operating Pressure: 160 Bar
Operating Temp.: -20 / +80°
Stroke Inaccuracy : ± 0.3mm
Shaft: C45 / Hard Chrome Coated
Motion Type: Double Action
Sealing: Polyurethane + NBR

Code: THS

Order	d	d1	d2	S	M	k	L	L1	L2	L3
THS.40	50	50	80	22	M.16 x 1.5	1/4	160	22	35	20
THS.50	60	60	95	28	M.20 x 1.5	1/4	194	31	46	25
THS.63	75	70	125	36	M.27 x 2.0	3/8	208	39	55	25
THS.80	95	85	130	45	M.33 x 2.0	3/8	235	47	65	30
THS.100	115	109	160	56	M.42 x 2.0	1/2	244	60	80	30
THS.125	145	130	195	70	M.48 x 2.0	1/2	276	67	90	37

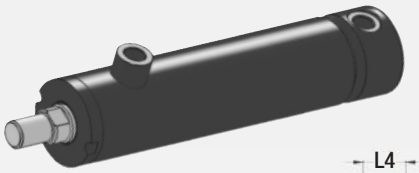
Hydraulic Cylinders Joint Types:



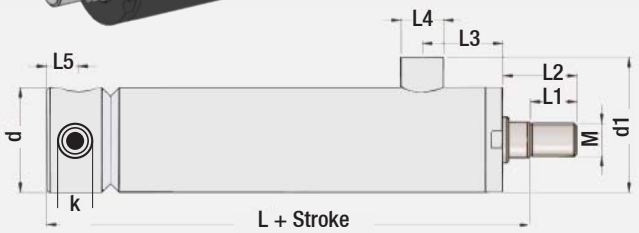
Hoses for Hydraulic Cylinder:
"as per request" **Order: PB..**

Hydraulic Cylinder - Tube Type

Code: TBTHS



Flange joint
as per request
(Code: EB)

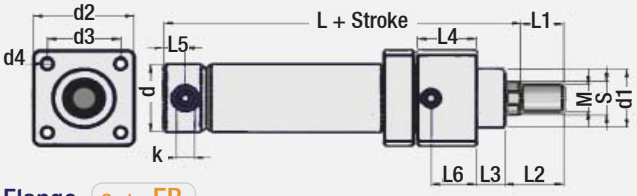


Order	d	d1	M	k	L	L1	L2	L3	L4	L5
TBTHS.40	50	65	M.16 x 1.5	1/4	125	22	35	40	20	15
TBTHS.50	60	75	M.20 x 1.5	1/4	152	31	46	43	20	21
TBTHS.63	75	90	M.27 x 2.0	3/8	163	39	55	50	25	23
TBTHS.80	95	110	M.33 x 2.0	3/8	209	47	65	60	20	29
TBTHS.100	115	135	M.42 x 2.0	1/2	211	60	80	82	30	27
TBTHS.125	145	165	M.48 x 2.0	1/2	229	67	90	82	30	30

Custom-made Production (for all Hydraulic Cylinders):
- For too hot environments, special piston with Viton Felt (180°C).
- Single action (spring converter).
- Shaft material & dimensions can be produced acc.. to your demand.

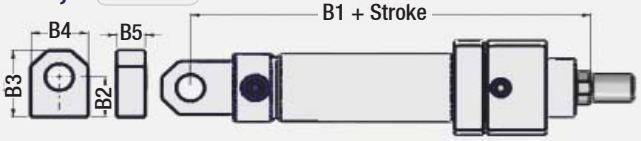
Hydraulic Cylinder Square Type

Code: THKS



Flange

Code: EB



Order	d	d1	d2	d3	d4	S	M	k
THKS.40	50	43	70	51	M.10	25	M.20 x 1.5	1/4
THKS.50	60	62	78	56	M.10	28	M.20 x 1.5	1/4
THKS.63	75	70	95	70	M.10	36	M.27 x 2.0	3/8
THKS.80	95	85	115	90	M.12	45	M.33 x 2.0	3/8

L	L1	L2	L3	L4	L5	L6	B1	B2	B3	B4	B5
170	30	41	20	41	15	31.5	200	30	50	40	20
178	26	39	25	37	21	26	208	30	55	50	25
189	39	51	30	41	22.5	28	229	40	70	60	30
235	47	65	30	68	29	41	280	45	80	70	35

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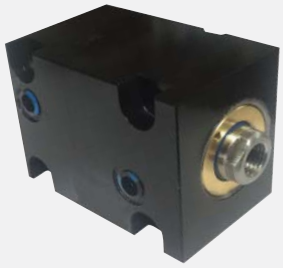
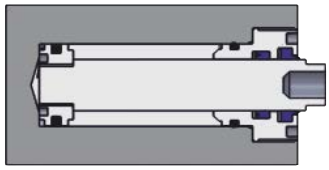
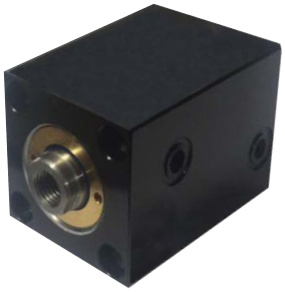




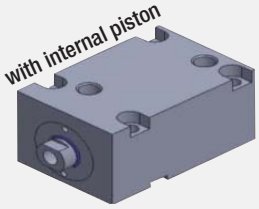


Hydraulic Piston - Square Type

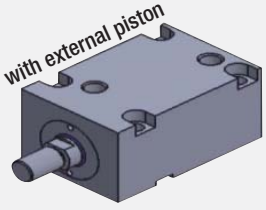
Code: THCS

Bottom Slotted (KW type) & with 4-Fastening Holes from Upper Side

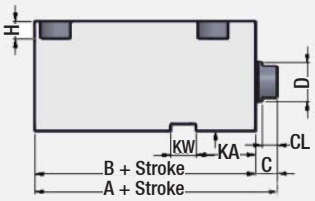
It has a compact design. It is at the forefront with strong bearing system.
As per request: For too hot environments, special piston with Viton Felt (180°C).

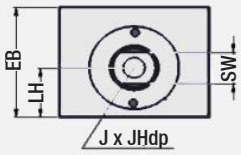


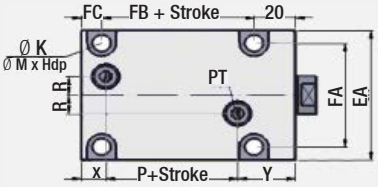
"THCS" Series Ø 32 - Ø 80



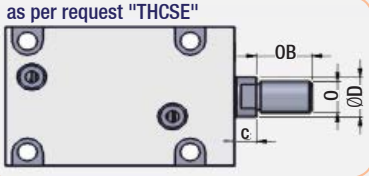
"THCSE" Series Ø 32 - Ø 80







as per request "THCSE"



Operating:
Hydraulic Oil
Max. Operating Temp.:
-20 / +80°
Max. Operating Pressure:
140 Bar
Stroke Inaccuracy:
± 0.3mm
Shaft:
C45 / Hard Chrome Coated
Piston Tube:
Nodular Cast Iron
Sealing:
Polyurethane + NBR

Order	A	B	C	CL	D	EA	EB	FA	FB	FC
THCS.32	64	54	10	7	20	70	56	56	24	10
THCS.40	65	55	10	7	25	80	62	62	23	12
THCS.50	71	60	11	8	28	94	74	74	27	13
THCS.63	80	67	13	10	36	114	89	90	32	15

Order	H	J	JH	K	KA	KW	KT	LH	M	OB
THCS.32	9	M12 x1.75	15	9	28	12	3.5	25	14	25
THCS.40	11	M16 x 2	20	11	28	12	3.5	29	18	30
THCS.50	13	M20 x 2.5	25	14	29	14	4	34	20	35
THCS.63	15	M27 x 3	35	16	31	16	4.5	42	23	40

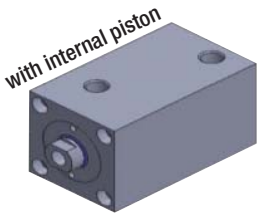
Order	O	P	PT	R	SW	X	Y
THCS.32	M16 x 1.5	14	1/4"	10	17	12	28
THCS.40	M20 x 1.5	15	1/4"	10	22	12	28
THCS.50	M20 x 1.5	18	1/4"	10	22	12.5	29.5
THCS.63	M27 x 2	20	3/8"	10	30	16	31

Hydraulic Piston - Square Type

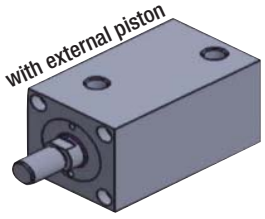
Code: THCF

Compact Design & with 4-Fastening Holes from Front Side

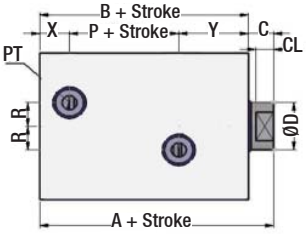
As per request: For too hot environments, special piston with Viton Felt (180°C).

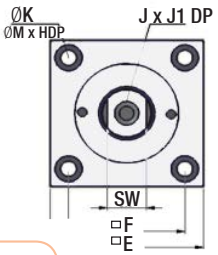


"THCF" Series Ø 32 - Ø 63

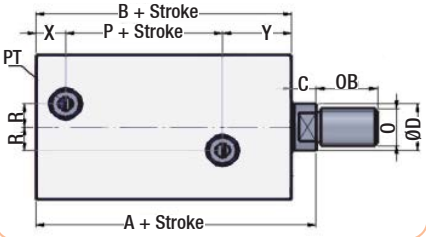


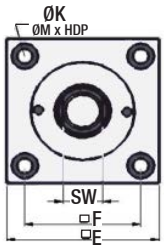
"THCFE" Series Ø 32 - Ø 63





as per request "THCFE"





Order	A	B	C	CL	D	E	F	H	J
THCF.32	64	54	10	7	20	62	47	6.5	M12 x 1.75
THCF.40	65	55	10	7	25	70	52	9	M16 x 2
THCF.50	71	60	11	8	28	80	58	11	M20 x 2.5
THCF.63	80	67	13	10	36	94	69	13	M 27 x 3
THCF.80	95	78	17	14	45	114	86	15	M 30 x 3.5

J1	K	M	O	OB	P	PT	R	SW	X	Y
15	6.5	11	M16 x 1.5	25	14	1/4"	10	17	12	28
20	9	14	M20 x 1.5	30	15	1/4"	10	22	12	28
25	11	18	M20 x 1.5	35	18	1/4"	10	22	12.5	29.5
35	14	20	M27 x 2	40	20	3/8"	10	30	16	31
35	16	23	M33 x 2	45	27	3/8"	15	36	18	33

As per request: Piston fasteners and pressed hose are provided.

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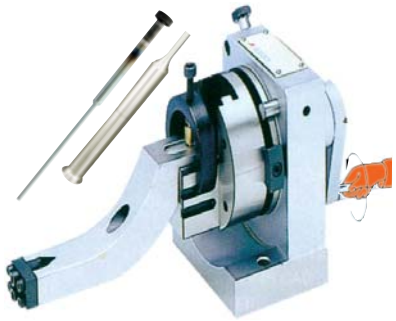
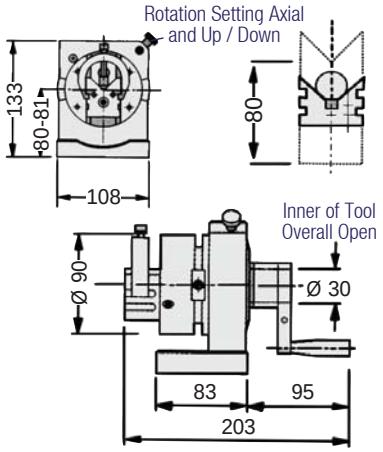


Code: V-PS

Pin & Punch Former Tool

Forming tool / apparatus for mould ejector pins and EDM tools (with mounting on the grinding machine workbench).

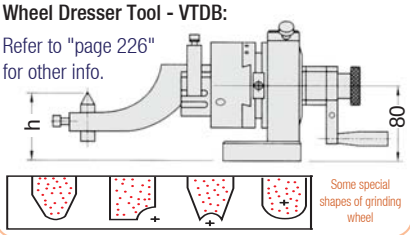
"V" Bearing Length: 30mm
Rotation Centreline Height: 15mm

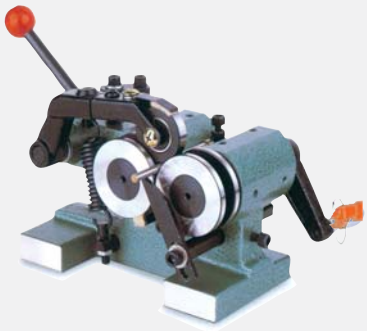


d1: Pin clamping diameter = Ø4 - Ø30 mm
L: Pin clamping length = min. 22 mm
"V" Bearing: Up / down motion = 25 mm
"V" Bearing: One way motion = 12.5 mm
"V" Bearing: Total motion = 25 mm
Equipment surface and angle / scale hardness: 63 HRC
Chuck dividing head angle: 24 Pcs. $15^0 \pm 5^0$
Wheel diameter: 200 mm
Total weight: 9 Kg.

Wheel Dresser Tool - VTDB:

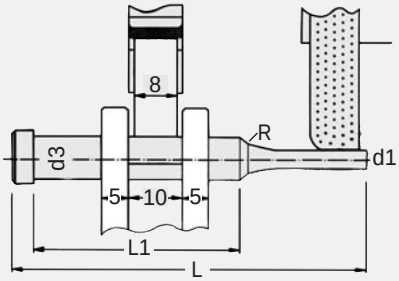
Refer to "page 226" for other info.





Code: VPG

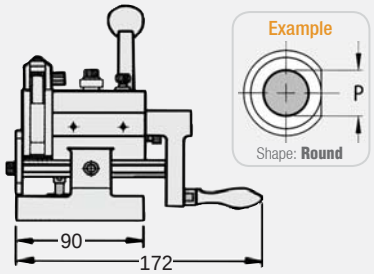
Pin & Punch Former Tool

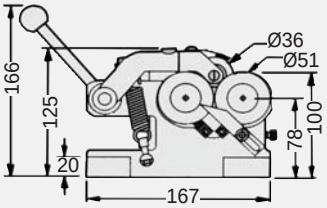


* It can be put on the grinding machine workbench for form grinding pins, punches or EDM tools.
* Pin clamping diameter: Ø1.5mm x Ø25mm
* Pins etc. can be ground by putting among precision rollers of Former Tool without checking the center, the center is determined automatically.
* Thanks to rigid clamping system, extended grinding length is within 5 - 35mm.

Total weight: 6.6 Kg.

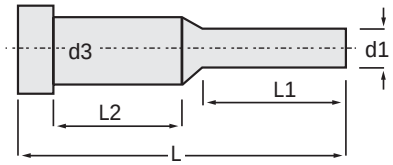
Standard Tolerances			
Round P	+0.1	◎ 0.1	From **P** to **d3**
Shape P,W	± 0.1	◎ 0.2	From **P** to **d3**





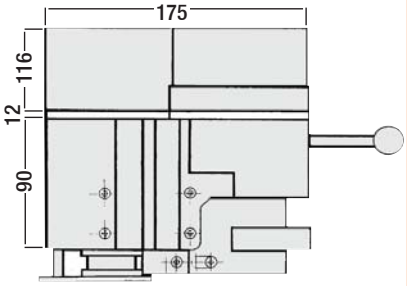
Code: VPGM

Pin & Punch Former Tool Motor Type

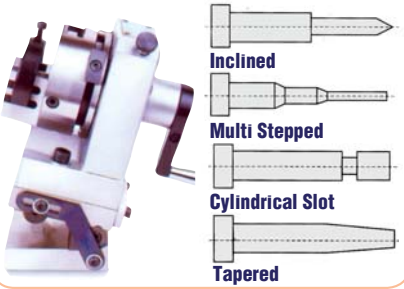


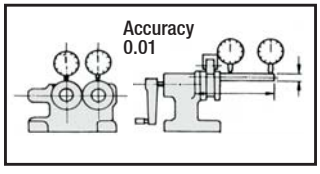
Technical Information:

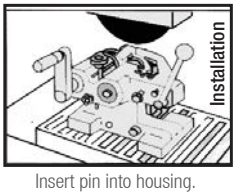
Pin clamping length **(L)**	:	20 - 120 mm
Minimum clamping length **(L2)**	:	22 mm
Pin grinding length **(L1)**	:	5 - 35 mm
Pin clamping dia. **(d3)**	:	Ø 2 ~ 25 mm
Pin grinding dia. **(d1)**	:	Ø 0.5 ~ 25 mm
Grinding accuracy	:	0.01 mm
Motor Speed	:	130 RPM
Motor (1 phase)	:	120 V / 50 Hz / 25 W
Pin bearing roller speed	:	60 Hz
Step ovality accuracy	:	25.4 mm
Tool dimensions	:	175 x 218 x 90 mm
Total weight	:	7.1 Kg.



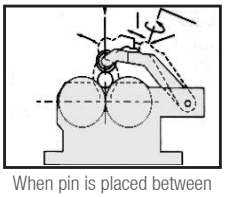
Some Examples Grinding:



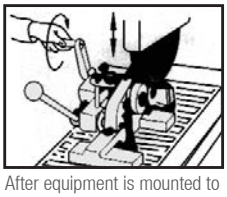




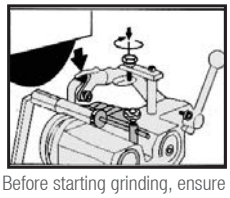
Insert pin into housing. Tighten screw of lever.



When pin is placed between precision rollers, center is found automatically.



After equipment is mounted to grinding machine, start grinding by turning lever.



Before starting grinding, ensure that all fasteners are tightened.

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Order Code: PKM1

Pin Cutting & Face Grinding Machine

"PKM1" provide easiness and rapidness with strong and fast clamping mechanism (vice). Grinding wheel can be easily dressed with diamond dresser on vice.

Between the 60 - 325mm length parts, you can cut precisely with the help of micrometer located on the ruler (600mm Ruler is optional).

Control panel with emergency stop, energy warning light and start-stop button.

Lever Motions:
Up: Cutting
Down: Face Grinding
Right: Vice Opening

It adjusts its own cycle automatically depending on diameter of part and plastic bearing which position transmission drive power on belt.

During operation, it grinds cut parts with angularity precision 90/±0,02 with grinding wheel and without changing dimension.

Plexiglass cover provides safety. When cover is opened, it stops and it cannot be operated without closing cover.

Rapid, Precise and Easy Cutting

"Especially for round work pieces"

"Superfine & Affordable"

€ 1.495,00

Longness Tolerance	Ø1mm - 24mm x 325mm
Shortness Tolerance	Ø1mm - 24mm x 60mm
Cutting Disc	115 - 185mm x 1,0 x 22mm
Grinding Wheel	100mm x 50mm x 20mm (60 grit)
Motor	380V 50Hz 0.75Kw 1500 cycle/min.
RPM	3650 (cycle/min.)
Angularity	Ø1 - 24mm x 90 / ±0,02
Machine Weight	80Kg
Machine Dimensions	500mm x 425mm x 355mm

*** The 600mm ruler is optional and can be adapted on request (longer length cutting option).**

- Not only it guarantees precision degree but also it provides significant saving on time with best usage options in longitude cuttings.
- We recommend you to avoid unqualified and imitation products without CE certificate in the market.

Güvenal GTH Die & Mould Components Since 1976

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Video

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Why Güvenal?

The Distinguishing Features of the Guvenal Ejector Pins from the Similar Products

Stable fitting-operation possibilities (rigid system & tight fitting) with the head top surface grinding processes (Ra 3.2).

During press, it does not adhere to raw material in mould - slippery surface.

Improved radius geometry which prevents head breaking & chamfer forms which are suitable for pin head and body structure.

- Abrasion resistant surface with oxidation coating.
- Increased mould working life and perfect dry operation feature.
- High corrosion protection and unstainable surface.
- More durable than the traditional (common) pins.

Minimum roughness and minimum friction (Ra 0.8) = more durable operation life compared to the similar products.

1.2343 / Plasma-Nitriding with Oxidation Coating offers stable operation, protection against humidity / water, and high temperature resistance.

Type: Plastic Injection

Type: Metal and Plastic Injection

"As Guvenal - GTH, we use our missions in favour of our customers by adding value and try to meet their expectations best. We always aim better for you with our team which works customer oriented, our innovative and efficient business approach." **ATTENTION:** Each black looking pins are not oxidation coating pins (like cheap series from Far East). You can use Guvenal oxidation coating pins with confidence.

Note: Our products are designed more quality and economic by Guvenal - GTH engineers.

info@guvenal.net **www.guvenal.net**

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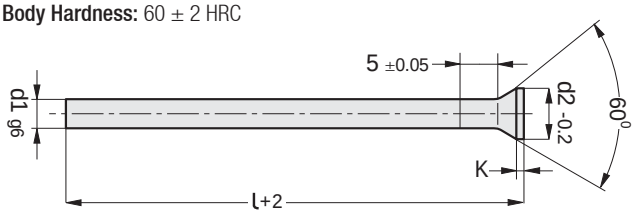
Ejector Pin - Conical Head / DIN 1530-D

Code: HBI

Material: 1.2516 WS
Head Hardness: 45 ± 2 HRC
Body Hardness: 60 ± 2 HRC
Heat Resistance: 220° max.
Tensile Resistance: 1300 N / mm²



d1	l	d2	k
9.0	100	11	1.0
	125		
	160		
	200		
	250		
9.5	100	12	1.0
	125		
	160		
	200		
	250		
10	100	12	1.0
	125		
	160		
	200		
	250		
	315		
10.5	100	13	1.0
	125		
	160		
	200		
11	100	13	1.0
	125		
	160		
	200		
	250		
12	100	14	1.0
	125		
	160		
	200		
	250		
	315		
13	100	15	1.0
	125		
	160		
	200		
	250		
14	100	16	1.5
	125		
	160		
	200		
	250		
	315		
16	100	18	1.5
	125		
	160		
	200		
	250		
	315		

d1	l	d2	k
5.4	100	6.5	0.5
	125		
	160		
5.5	100	7.0	0.5
	125		
	160		
	200		
	250		
	315		
5.6	100	7.0	0.5
	125		
	160		
5.7	100	7.0	0.5
	125		
	160		
5.8	100	7.0	0.5
	125		
	160		
5.9	100	7.0	0.5
	125		
	160		
6.0	100	8.0	0.5
	125		
	160		
	200		
	250		
	315		
6.5	100	9.0	1.0
	125		
	160		
	200		
	250		
7.0	100	9.0	1.0
	125		
	160		
	200		
	250		
	315		
7.5	100	10	1.0
	125		
	160		
	200		
	250		
8.0	100	10	1.0
	125		
	160		
	200		
	250		
	315		
8.5	100	11	1.0
	125		
	160		
	200		
	250		
	315		

d1	l	d2	k
3.9	100	5.0	0.5
	125		
	160		
4.0	100	5.5	0.5
	125		
	160		
	200		
	250		
	315		
4.1	100	5.5	0.5
	125		
	160		
4.2	100	5.5	0.5
	125		
	160		
4.3	100	5.5	0.5
	125		
	160		
4.4	100	5.5	0.5
	125		
	160		
4.5	100	6.0	0.5
	125		
	160		
	200		
	250		
	315		
4.6	100	6.0	0.5
	125		
	160		
4.7	100	6.0	0.5
	125		
	160		
4.8	100	6.0	0.5
	125		
	160		
4.9	100	6.0	0.5
	125		
	160		
5.0	100	6.5	0.5
	125		
	160		
	200		
	250		
	315		
5.1	100	6.5	0.5
	125		
	160		
5.2	100	6.5	0.5
	125		
	160		
5.3	100	6.5	0.5
	125		
	160		

d1	l	d2	k
2.9	100	4.0	0.5
	125		
	160		
3.0	100	4.5	0.5
	125		
	160		
	200		
	250		
	315		
3.1	100	4.5	0.5
	125		
	160		
3.2	100	4.5	0.5
	125		
	160		
	200		
3.3	100	4.5	0.5
	125		
	160		
3.4	100	4.5	0.5
	125		
	160		
3.5	100	5.0	0.5
	125		
	160		
	200		
	250		
	315		
3.6	100	5.0	0.5
	125		
	160		
3.7	100	5.0	0.5
	125		
	160		
3.8	100	5.0	0.5
	125		
	160		

d1	l	d2	k
2.0	100	3.0	0.5
	125		
	160		
	200		
	250		
	315		
2.1	100	3.2	0.5
	125		
	160		
2.2	100	3.2	0.5
	125		
	160		
2.3	100	3.5	0.5
	125		
	160		
2.4	100	3.5	0.5
	125		
	160		
2.5	100	3.5	0.5
	125		
	160		
	200		
	250		
	315		
2.6	100	4.0	0.5
	125		
	160		
2.7	100	4.0	0.5
	125		
	160		
2.8	100	4.0	0.5
	125		
	160		

d1	l	d2	k
1.0	100	1.8	0.5
	125		
	160		
	200		
1.1	100	1.8	0.5
	125		
	160		
1.2	100	2.0	0.5
	125		
	160		
1.3	100	2.0	0.5
	125		
	160		
1.4	100	2.2	0.5
	125		
	160		
1.5	100	2.2	0.5
	125		
	160		
	200		
	250		
1.6	100	2.5	0.5
	125		
	160		
1.7	100	2.5	0.5
	125		
	160		
1.8	100	2.8	0.5
	125		
	160		
1.9	100	2.8	0.5
	125		
	160		

Order: **HBI.** d1 x l

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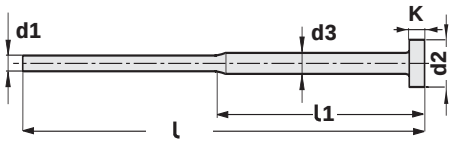
For your order of special dimensions, technical drawing can be used:

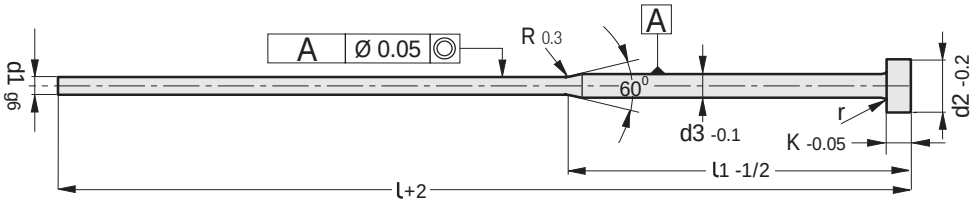


As per request / Custom-made orders.

Cylinder Head Stepped Ejector Pin / DIN ISO 8694

Code: SBKAH

Material: 1.2516 WS
Head Hardness: 45 ± 2 HRC
Body Hardness: 60 ± 2 HRC
Heat Resistance: 220° max.
Tensile Resistance: 1300 N / mm²



Type: AH

Code: SBKAH

d1	l	l1	d3	d2	k
0.8	63	25	2	4	2
	80	35			
	100	50			
	125				
	150				
	160	75			
1.0	63	25	2	4	2
	80	35			
	100	50			
	125				
	150				
	160	75			
	200				
1.1	63	25	2	4	2
	80	35			
	100	50			
	125				
	150				
	160	75			
1.2	63	25	2	4	2
	80	35			
	100	50			
	125				
	150				
	160	75			
1.3	63	25	2	4	2
	80	35			
	100	50			
	125				
	150				
	160	75			
1.4	63	25	2	4	2
	80	35			
	100	50			
	125				
	150				
	160	75			
1.5	63	25	3	6	3
	80	35			
	100	50			
	125				
	150				
	160	75			
	200				
1.6	80	35	3	6	3
	100	50			
	125				
	150				
	160	75			
	200				
1.7	80	35	3	6	3
	100	50			
	125				
	150				
	160	75			
	200				
1.8	80	35	3	6	3
	100	50			
	125				
	150				
	160	75			
	200				
2.0	80	35	3	6	3
	100	50			
	125				
	150				
	160	75			
	200				
2.2	80	35	3	6	3
	100	50			
	125				
	150				
	160	75			
	200				
2.5	100	50	3	6	3
	125				
	150				
	160	75			
	200				
2.6	100	50	3	6	3
	125				
	150				
	160	75			
	200				
2.7	100	50	3	6	3
	125				
	150				
	160	75			
	200				
2.8	100	50	3	6	3
	125				
	150				
	160	75			
	200				

Order:
SBKAH. d1 x d3 x l1 x l

Order Example:
SBKAH. 1.4 x 2 x 50 x 100

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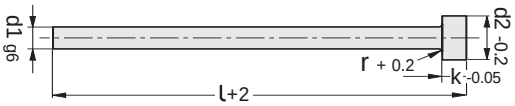
Code: SBIAH

Ejector Pin - Cylinder Head / ISO 6751, DIN 1530 Form: AH

Material: 1.2516 WS
Head Hardness: 45 ± 2 HRC
Body Hardness: 60 ± 2 HRC
Heat Resistance: 220° max.
Tensile Resistance: 1300 N / mm²



d1	l	d2	k
12	100	18	7.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
13	100	20	7.0
	125		
	160		
	200		
	250		
	315		
	400		
14	100	22	7.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
16	100	22	7.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
18	100	24	7.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	1000		
20	100	26	8.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
25	100	32	10
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		

d1	l	d2	k
7.5	100	12	5.0
	125		
	160		
	200		
	250		
	315		
	400		
8.0	100	14	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
8.2	100	14	5.0
	160		
	250		
8.5	100	14	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
9.0	100	14	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
10	100	16	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
10.2	125	16	5.0
	250		
10.5	100	16	5.0
	125		
	160		
	200		
	315		
	400		
11	100	16	5.0
	125		
	160		
	200		
	250		
	315		
	400		

d1	l	d2	k
5.2	100	10	3.0
	200		
	250		
	315		
	400		
5.5	100	10	3.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
6.0	100	12	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
6.2	100	12	5.0
	160		
	250		
6.5	100	12	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
7.0	100	12	5.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	1000		

d1	l	d2	k
3.2	100	6.0	3.0
	160		
	200		
3.5	100	7.0	3.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
3.7	100	6.0	3.0
	160		
4.0	100	8.0	3.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		
4.1	100	8.0	3.0
4.2	100	8.0	3.0
	160		
	200		
4.5	100	8.0	3.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
5.0	100	10	3.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		
	1000		

d1	l	d2	k
1.0	100	2.5	1.2
	125		
	160		
	200		
	315		
	250		
1.1	100	2.5	12
1.2	100	2.5	1.2
	160		
1.3	100	3.0	1.5
	160		
1.4	100	3.0	1.5
	160		
1.5	100	3.0	1.5
	125		
	160		
	200		
	250		
	315		
1.6	100	3.0	1.5
	160		
1.7	100	3.0	1.5
	160		
1.8	100	3.0	1.5
	160		
1.9	100	3.0	1.5
	160		
2.0	100	4.0	2.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
2.2	100	4.0	2.0
	160		
2.3	250	4.0	2.0
2.4	100	5.0	2.0
	160		
2.5	100	5.0	2.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
2.7	100	5.0	2.0
	160		
3.0	100	6.0	3.0
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		

Order: SBIAH. d1 x l

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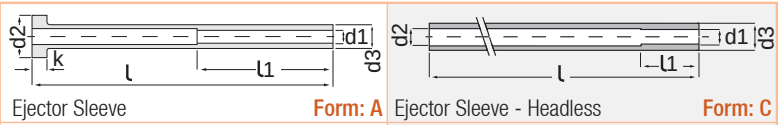
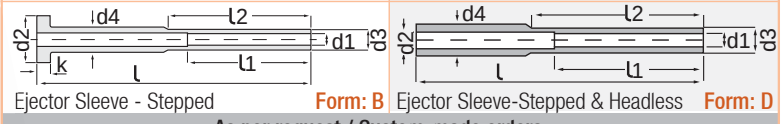
"For your order of special dimensions, technical drawing can be used."





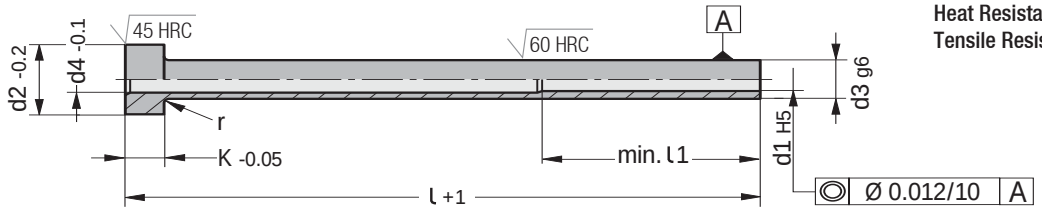
As per request / Custom-made orders.

Ejector Sleeve - Nitrided / DIN ISO 8405

Code: SMB

Rear part of inner hole is ground in 30 - 45 mm Ejector Pin working tolerance.

Material: 1.2343
Head Hardness: 45 ± 2 HRC
Body Hardness: 60 ± 2 HRC
Heat Resistance: 500 - 550⁰ max.
Tensile Resistance: 1450 N / mm²



d3	l	d1	l1	d4	d2	k	r
4	75	2.0	35	2.3	8	3	0.3
	100						
	125						
	150						
	160						
	175						
	200						
	250						
5	75	2.5	35	3.0	10	3	0.3
	100						
	125						
	150						
	160						
	175						
	200						
	250						
5	75	3.0	45	3.3	10	3	0.3
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						

d3	l	d1	l1	d4	d2	k	r
6	75	3.5	45	4.0	12	5	0.5
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						
6	75	4.0	45	4.3	12	5	0.5
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						
	350						
	400						
	450						
	500						

d3	l	d1	l1	d4	d2	k	r
8	75	5.0	45	5.3	14	5	0.5
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						
	350						
	400						
	450						
	500						
10	75	6	45	6.3	16	5	0.5
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						
	350						
	400						
	450						
	500						
12	75	8	45	8.3	20	7	0.8
	100						
	125						
	150						
	160						
	175						

d3	l	d1	l1	d4	d2	k	r
12	200	8	45	8.3	20	7	0.8
	250						
	300						
	350						
	400						
	450						
	500						
14	75	10	50	10.3	22	7	0.8
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						
	350						
	400						
	450						
	500						
16	75	12	50	12.3	22	7	0.8
	100						
	125						
	150						
	160						
	175						
	200						
	250						
	300						
	350						
	400						
	450						
	500						

Order:
SMB. d1 x d3 x l

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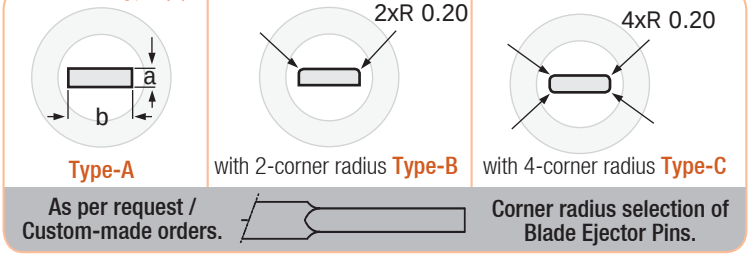
Standard Type (A)



Type-A | with 2-corner radius Type-B | with 4-corner radius Type-C

As per request / Custom-made orders.

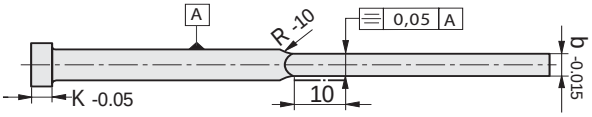
Corner radius selection of Blade Ejector Pins.

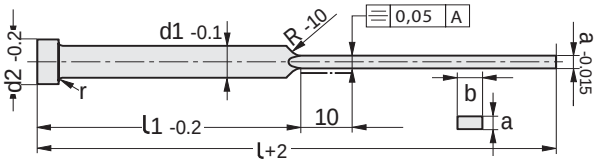
Code: SPLAH

Material: 1.2516 WS (Hardened)
Head Hardness: 45 ± 2 HRC
Body Hardness: 60 ± 2 HRC
Heat Resistance: 220° max.

Blade Ejector Pin - Hardened / ISO 8693 (DIN 1530 F) Form: FAH

Our standard stocks are created from Type-A. Type-B & Type-C are as per request.





a	b	d1	l	l1
1.5	5.5	6.0	100	50
			125	60
			160	80
			200	100
			250	125
			315	160
1.5	7.5	8.0	100	50
			125	60
			160	80
			200	100
			250	125
			315	160
			400	200
1.5	9.5	10	160	80
			200	100
			250	125
			315	160
			400	200
2.0	5.5	6.0	100	50
			125	60
			160	80
			200	100
			250	125
			315	160
2.0	7.5	8.0	125	60
			160	80
			200	100
			250	125
			315	160
			400	200
2.0	9.5	10	160	80
			200	100
			250	125
			315	160
			400	200
2.0	11.5	12	160	80
			200	100
			250	125
			315	160
2.5	11.5	12	200	100
			250	125
			315	160

a	b	d1	l	l1
1.2	3.5	4.0	80	40
			100	50
			125	60
			160	80
			200	100
			250	125
1.2	4.5	5.0	80	40
			100	50
			125	60
			160	80
			200	100
			250	125
			315	160
1.2	5.5	6.0	80	40
			100	50
			125	60
			160	80
			200	100
			250	125
			315	160
1.2	7.5	8.0	80	40
			100	50
			125	60
			160	80
			200	100
			250	125
			315	160
			400	200
1.5	4.5	5.0	100	50
			125	60
			160	80
			200	100
			250	125
			315	160

a	b	d1	l	l1
0.8	3.5	4.0	80	40
			100	50
			125	60
			160	80
0.8	4.5	5.0	100	50
			125	60
			160	80
			200	100
			250	125
0.8	5.5	6.0	100	50
			125	60
			160	80
			200	100
			250	125
1.0	4.5	5.0	80	40
			100	50
			125	60
			160	80
			200	100
			250	125
			315	160
1.0	5.5	6.0	80	40
			100	50
			125	60
			160	80
			200	100
			250	125
			315	160
1.0	7.5	8.0	100	50
			125	60
			160	80
			200	100
			250	125
			315	160

Order: **SPLAH.** a x b x d1 x l
(Standard Type-A)

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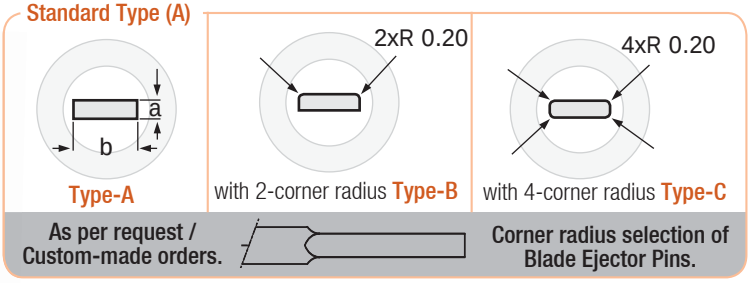
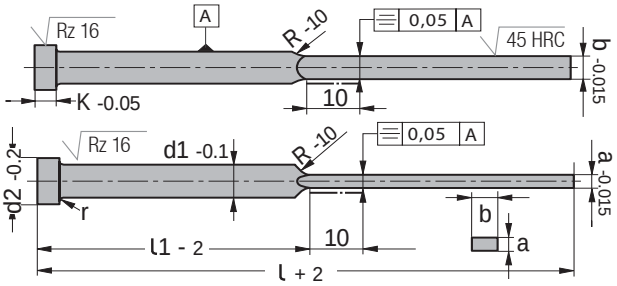


Blade Ejector Pin - Nitrided and Oxidation Coated / ISO 8693 (DIN 1530 F) Form: FA

Code: SPW

Our standard stocks are created from Type-A. Type-B & Type-C are as per request.

Material: 1.2343 Plasma Nitrided + Oxidation Coated
Heat Resistance with Lubricating Grease: 1400º max.
Heat Resistance: 650º max. (without lub. grease)



a	b	d1	l	l1
0.8	3.5	4.0	80	40
			100	50
			125	60
1.0	4.5	5.0	80	40
			100	50
			125	60
			160	80
1.0	5.5	6.0	80	40
			100	50
			125	60
			160	80
1.2	3.5	4.0	80	40
			100	50
			125	60
			160	80
1.2	4.5	5.0	80	40
			100	50
			125	60
			160	80
1.2	5.5	6.0	80	40
			100	50
			125	60
			160	80
1.2	7.5	8.0	80	40
			100	50
			125	60
			160	80
			200	100
1.5	4.5	5.0	100	50
			125	60
			160	80
			200	100

a	b	d1	l	l1
1.5	5.5	6.0	100	50
			125	60
			160	80
			200	100
1.5	7.5	8.0	125	60
			160	80
			200	100
			250	125
1.5	9.5	10	160	80
			200	100
			250	125
			315	160
2.0	5.5	6.0	100	50
			125	60
			160	80
			200	100
2.0	7.5	8.0	160	80
			200	100
			250	125
			315	160
2.0	9.5	10	200	100
			250	125
			315	160
			400	200
2.0	11.5	12	200	100
			250	125
			315	160
			400	200
2.5	11.5	12	200	100
			250	125
			315	160
			400	200

Order:
SPW. a x b x d1 x l
(Standard Type-A)

Order Example:
SPW. 1.2 x 3.5 x 4 x 100

Code: AWF1400

Code: W150200 & W160200

High Temperature Ejector Pin Greases

High temperature lubricating greases for Ejector Pins & Core Systems.

Our special greases are consists well refined mineral oils and EP additives providing lubricity as film strip between other mould parts and mould parts that do not affect from high temperature of ejector systems and core systems in working mould in high temperature such as metal injection. Thanks to solid lubricants and additives, it has comfortable operation (working without load). It has high heat insulation and provides resistance up to 1400ºC. It is in film strip position of surfaces between parts.
Even at very high temperature, it prevents sticking each other.
It is produced from vegetable oils and not harmful to the health.

Advantage of using AWF1400 lubricating greases:

* It is resistant against oxidization and friction.
* It is resistant to corrosion and abrasion.
* It is silicium and white (it does not make any contamination on mould).
* It Is resistant against water and humidity (water proof).
* Due to dust atmosphere as casting moulds, the user's hands are not painted black. It is a very good protector.
* It does not cause any reaction on surfaces.

Order Code	(custom-engineered)
AWF1400.01	**1Kg.** (canister)
AWF1400.03	**40g.** (mini tube with sponge)

Order Code	(standard type)
W150200	**1Kg.** (plastic can)
W160200	**400ml.** (spray)

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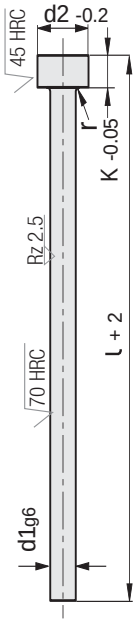
Code: SBMAV03

Cylinder Head Ejector Pin
Plasma Nitrided and Oxidation Coated
DIN 1530-1 Form A

Material: 1.2343 Plasma Nitrided + Oxidation Coated
Heat Resistance with Lubricating Grease: 1400° max.
Heat Resistance: 650° max. (without lub. grease)
Head Hardness: 45 ± 5 HRC
Body Hardness: 44 HRC
Oxidation Clad Body Hardness: 70 HRC
Tensile Resistance: 1450 N / mm²

Our "SBMAV03" ejector pins are produced by high level / special Plasma Nitriding + Oxidation Coating methods.



d1	l	d2	k
14	100	22	7
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		0.8
16	100	22	7
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		0.8
18	100	24	7
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.8
20	125	26	8
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		1.0
25	125	32	10
	160		
	200		
	250		
	315		
	400		
	500		
	630		r
	800		1.0

d1	l	d2	k
10	100	16	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		0.5
10.2	125	16	5
	250		
	500		
10.5	100	16	5
	125		
	160		
	200		
	250		
	315		
	400		r
	500		0.5
11.5	100	16	5
11	100	16	5
	125		
	160		
	200		
	250		
	315		
	400		r
	500		0.5
12	100	18	7
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		0.8
12.5	100	18	7
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.8
13	100	18	7
	125		
	160		
	200		
	250		
	315		
	400		r
	500		0.8

d1	l	d2	k
6.5	100	12	5
	125		
	160		
	200		
	250		
	315		
	400		r
	500		0.5
7.0	100	12	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.5
	800		
7.5	100	12	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	800		0.5
8.0	100	14	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		0.5
8.2	100	14	5
	160		r
	250		0.5
8.5	100	14	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.5
9.0	100	14	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		r
	800		0.5
9.5	100	14	5
	125		
	160		
	200		
	250		
	315		r
	400		0.5

d1	l	d2	k
5.0	100	10	3
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		r
	800		0.3
5.2	100	10	3
	200		
5.5	100	10	3
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.3
6.0	100	12	5
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		
	800		r
	1000		0.5
6.2	100	12	5
	125		
	160		r
	250		0.5

d1	l	d2	k
3.2	100	6	3
	160		
3.5	100	7	3
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.3
3.7	100	7	3
	160		
4.0	100	8	3
	125		
	160		
	200		
	250		
	315		
	400		
	500		
	630		r
	800		0.3
4.2	100	8	3
	200		
4.5	100	8	3
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.3

d1	l	d2	k
1.5	100	3	1.5
	125		
	160		r
	200		0.2
2.0	100	4	2
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.2
2.2	100	5	2
	160		
2.5	100	5	2
	125		
	160		
	200		
	250		
	315		
	400		r
	500		0.3
2.7	100	5	2
	160		
3.0	100	6	3
	125		
	160		
	200		
	250		
	315		
	400		
	500		r
	630		0.3

Order:
SBMAV03. d1 x l

Order Example:
SBMAV03. 14 x 315

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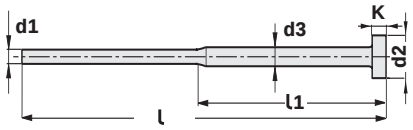
For your order of special dimensions, technical drawing can be used:

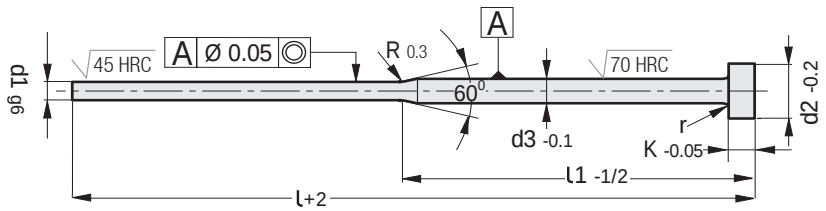


As per request / Custom-made orders.

Stepped Ejector Pin - Nitrided and Oxidation Coated
ISO 8694 (DIN 1530 Form C)

Code: SBW

Material: 1.2343 Plasma Nitrided + Oxidation Coated
Heat Resistance with Lubricating Grease: 1400⁰ max.
Heat Resistance: 650⁰ max. (without lub. grease)



Code: SBW

d1	l	l1	d3	d2	k	r
0.8	100	50	2	4	2	0.2
	125	50				
	160	75				
0.9	100	50	2	4	2	0.2
	125	50				
	160	75				
1.0	100	50	2	4	2	0.2
	125	50				
	160	75				
	200	75				
1.1	100	50	2	4	2	0.2
	125	50				
	160	75				
1.2	100	50	2	4	2	0.2
	125	50				
	160	75				
1.3	100	50	2	4	2	0.2
	125	50				
	160	75				

d1	l	l1	d3	d2	k	r
1.4	100	50	2	4	2	0.2
	125	50				
	160	75				
1.5	100	50	3	6	3	0.3
	125	50				
	160	75				
	200	75				
2.0	100	50	3	6	3	0.3
	125	50				
	160	75				
	200	75				
2.5	100	50	3	6	3	0.3
	125	50				
	160	75				
	200	75				

Order:
SBW. d1 x d3 x l1 x l

Order Example:
SBW. 2 x 3 x 75 x 160

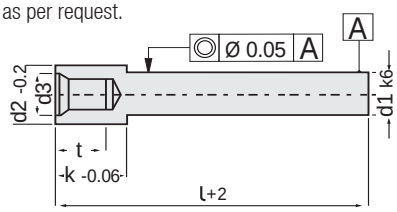
Code: SBD

Ejector Pin - Threaded
DIN 1530 - A / ISO 6751

In-mould (ejector plate & core/lifter) usage.
It has pin mounting feature without dismantling other mould parts.

Material: 1.2343 Ground and Hardened
Tensile Resistance: 1400 N / mm²

Our custom-made production is available as per request.



Code: SBD

d1	l	d3	t	k	d2
3	63	M4	5	10	6
	125				
4	63	M5	7	12	8
	125				
5	80	M6	9	14	9
	160				
6	80	M6	9	14	10
	160				
8	80	M6	10	16	13
	160				
10	100	M10	12	18	15
	200				
12	100	M12	14	22	18
	200				
14	100	M12	14	22	20
	200				

Order:
SBD. d1 x l x d3

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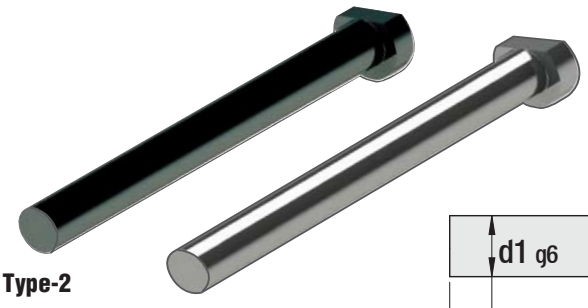
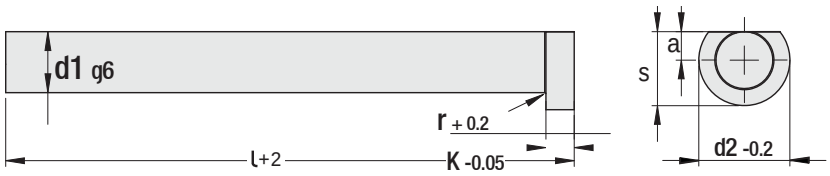
Ejector Pin with Locking Head (Anti-Rotating)

Code: SDI

The new generation of ejector pins with locking head allows the precise centring of individually contoured ejector or core pins in the mould.
The centring ensures a precise mounting position within the mould.





Type-1

Material: 1.2516 WS
Head Hardness: 45 ± 2 HRC
Body Hardness: 60 ± 2 HRC
Heat Resistance: 220⁰ max.
Tensile Resistance: 1300 N / mm²

Type-2

Material: 1.2343 Plasma Nitrided + Oxidation Coated
Heat Resistance with Lubricating Grease: 1400⁰ max.
Heat Resistance: 650⁰ max. (without lub. grease)
Head Hardness: 45 ± 5 HRC
Body Hardness: 44 HRC
Oxidation Clad Body Hardness: 70 HRC
Tensile Resistance: 1450 N / mm²

d1	l	d2	K	a	s
3.0	100	6	3	1.5	4.5
	125				
	160				
	200				
	250				
	315				
	400				
	500				
3.5	100	7	3	1.75	5.25
	125				
	160				
	200				
	250				
4.0	100	8	3	2	6
	125				
	160				
	200				
	250				
	315				
	400				
4.5	100	8	3	2.25	6.25
	125				
	160				
	200				
	250				
5.0	100	10	3	2.5	7.5
	125				
	160				
	200				
	250				
	315				
	400				
	500				

d1	l	d2	K	a	s
5.5	100	10	3	2.75	7.75
	125				
	160				
	200				
	250				
6.0	100	12	5	3	9
	125				
	160				
	200				
	250				
	315				
	400				
7.0	100	12	5	3.5	9.5
	125				
	160				
	200				
	250				
	315				
7.5	100	12	5	3.75	9.75
	125				
	160				
	200				
	250				
	315				
8	100	14	5	4	11
	125				
	160				
	200				
	250				
	315				
	400				
	500				

d1	l	d2	K	a	s
8.5	100	14	5	4.25	11.25
	125				
	160				
	200				
	250				
	315				
9	100	14	5	4.5	11.5
	125				
	160				
	200				
	250				
	315				
10	100	16	5	5	13
	125				
	160				
	200				
	250				
	315				
	400				
	500				
11	100	16	5	5.5	13.5
	125				
	160				
	200				
	250				
	315				
	400				
12	100	18	7	6	15
	125				
	160				
	200				
	250				
	315				
	400				
	500				

d1	l	d2	K	a	s
14	100	22	7	7	18
	125				
	160				
	200				
	250				
	315				
16	100	22	7	8	19
	125				
	160				
	200				
	250				
	315				
	400				
	500				
20	100	26	8	10	23
	125				
	160				
	200				
	250				
	315				
	400				
	500				
25	100	32	10	12.5	28.5
	125				
	160				
	200				
	250				
	315				
	400				
	500				

Note: Our custom-made production is available as per request.

Order: SDI. d1 x l x Type

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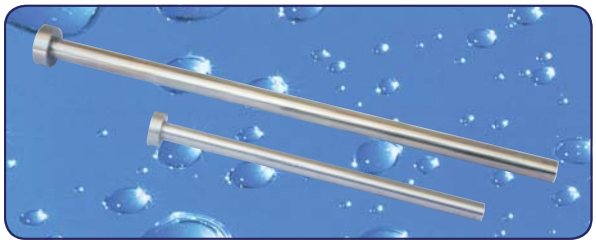


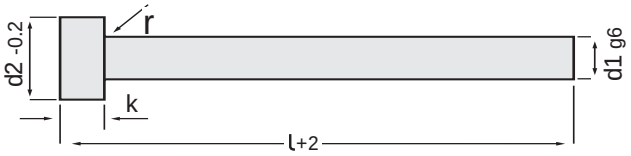
Ejector Pin - Stainless / INOX

Code: SPI

ISO 6751, DIN 1530 Form: AH

"SPI" Ejector Pins are compatible with medicine and food industry standards. The ejector pins has been produced to avoid corrosion problems. They are anti-magnetic products resistant to corrosion and acids for production in severe climate conditions in chemistry / medicine and food industry, also in hygienic places.

Material: 1.4125 INOX
Body Hardness: 56 + 2 HRC
Heat Resistance: 180° max.
Head Hardness: 45 ± 5 HRC



Code: SPI

d1	l	d2	k	r
4.5	100 160 200 250	8	2	0.3
5.0	100 160 200 250	10	2	0.3
5.5	100 160 200 250	10	2	0.3
6.0	100 160 200 250	12	5	0.5
8.0	100 160 200 250	14	5	0.5

d1	l	d2	k	r
2.0	100 160 200 250	4	2	0.2
2.5	100 160 200 250	5	2	0.3
3.0	100 160 200 250	6	2	0.3
3.5	100 160 200 250	7	2	0.3
4.0	100 160 200 250	8	2	0.3

Order:
SPI. d1 x l

Order Example:
SPI. 5 x 200

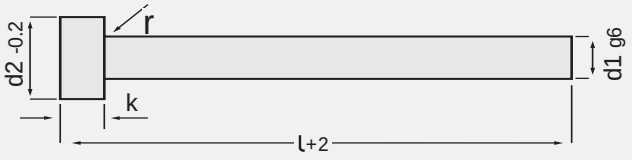
Ejector Pin - Copper Alloy

Code: SPPAV07

ISO 6751, DIN 1530 Form: AH

"SPPAV07" Ejector Pins are produced with added copper / Cbn (nickel bornite) into material during production. Considerably higher heat conductivity. The cooling for the desired area of mould is provided very quickly without deviating the targeted area. Due to thermal optimisation, very high quality product is obtained from moulds under optimum temperature. Also, due to thermal optimisation again, production time per part is shortened as 30%. By changing according to the material, the heat conductivity is x6 times higher than standard ejector pins. There is no need to use pin lubricating oil for Copper Ejector Pins. Even after cooling, it does not lose its conductivity, does not deform, it can be welded, soldered, ground and polished. However, coated products cannot be machining on the lathe or milling machine.

Material: Copper Alloy
Body Hardness: HRC min. 180 HB
Head Hardness: HRC min. 180 HB
Tensile Resistance: ~650 N/mm²
Heat Conductivity: ~200 W/mK
Surface Roughnes: Ra <0.8 Micron



Code: SPPAV07

d1	l	d2	k	r
2.0	100 160	4	2	0.2
2.5	100 160	5	2	0.3
3.0	100 160 250	6	3	0.3
3.5	100 160	7	3	0.3
4.0	100 160 250	8	3	0.3
4.5	100 160	8	3	0.3
5.0	100 160 250	10	3	0.3
6.0	100 160 250 315	12	5	0.5

d1	l	d2	k	r
7.0	100 160 250	12	5	0.5
8.0	100 160 250 315	14	5	0.5
10	100 160 250 315 400	16	5	0.5
12	100 160 250 315 400	18	7	0.8
14	160 250 400	22	7	0.8
16	160 250 400 500	22	7	0.8

Order:
SPPAV07. d1 x l

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Digital Laser Thermometer

Order: IR550

IR550 is used to measure the temperature of the incejtion moulds.

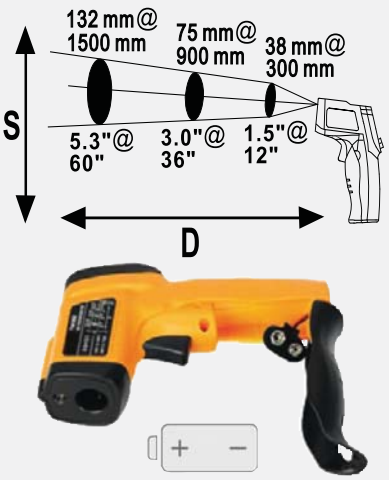
Infrared Thermometer

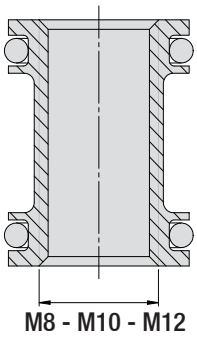
Features:

* More stable performance in high precision with Heimann infrared probe.
* Built-in laser pointer.
* Illuminated LCD screen.
* Data storage.
* Max. / min. / average / DIF data storage.
* High / low heat alarm function.
* Alert function on pre-set temperature.
* Set to zero function.
* Unit symbol indication.
* Low battery warning.
* Automatically shut-off (to save battery).

Technical Specifications:

Measurement range:
-50°C~ 550°C / -58°F~1022°F
Accuracy (deviation):
±1.5°C or ±1.5%
Measurement unit selection: .. °C / °F
Distance / target ratio: ..... D:S=12:1
Auto power off appr.:..... 6 Sec.
Measurement speed: ..... ≤ 0.5 seconds
Adjustable ignition ratio:.... 0.1 ~ 1
LCD screen display:..... 3 digits
Power consumption: ..... ≤ 50mW
Battery: ..... 9V battery

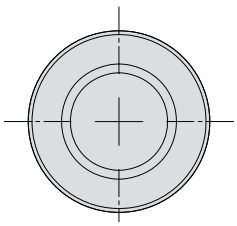




NEW

Cooling Junction

Code: GSK

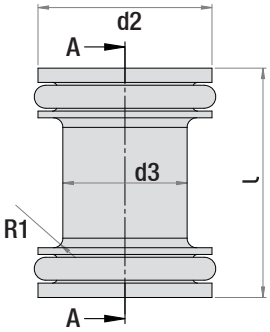


It reduces number of cooling channels and improves your designs.

It is a system which will ensure circulation of water under a certain pressure and speed in water circulation channel arrangements and creating of entries / exits in mould cooling system.

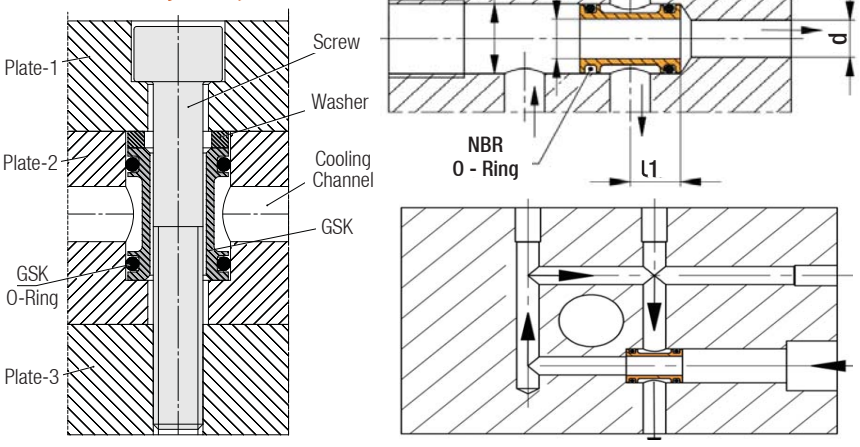
Features:
- It provides homogeneous temperature distribution.
- It provides quick mounting and facilitates demounting.
- It saves time and cost.
- Minimum pressure loss in water flow rate.
- No rust in cooling channels.
- "NBR O-ring" is used (resistant to temperature).

Please check O-rings in mountings and demountings.
Do not use damaged and torn / worn O-Rings.



Order Code	d	d1 +0.1	d2 -0.05	d3 -0.05	l1	l -0.2	M	O-Ring
GSK06	06	11.5	11.1	9	10	20	M8	Ø8 x 1.5
GSK08	08	15	14.6	11			M10	Ø11 x 2
GSK10	10	18.5	18.2	13	12	24	M12	Ø13.9x2.4

Mounting Example



Material: Brass
O-Rings: NBR

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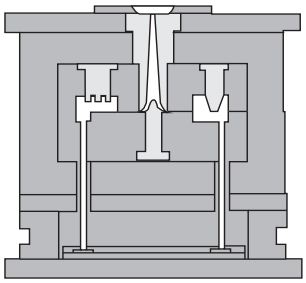
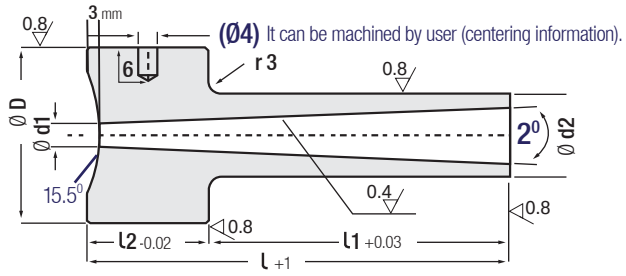


Sprue Bush for Metal Injection

Code: MEY

High heat resistant / Hot-work tool steel / Cold runners.

Material: 1.2344 **Hardness:** 48-50 HRC **Max. Temperature:** 500°C

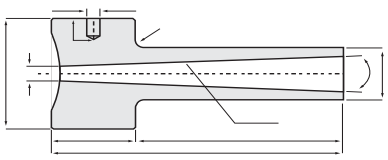


d2	l	d1	D	l1	l2
12	55	6.2	20	35	20
	65			45	
	75			55	
12	55	6.2	28	30	25
	65			40	
	75			50	
	85			60	
	95			70	
	105			80	
	115			90	
14	55	6.5	28	30	25
	65			40	
	75			50	
	85			60	
	95			70	
	105			80	
	115			90	

d2	l	d1	D	l1	2
16	55	6.5	28	30	25
	65			40	
	75			50	
	85			60	
	95			70	
	105			80	
	115			90	
18	55	6.5	28	30	25
	65			40	
	75			50	
	85			60	
	95			70	
	105			80	
	115			90	
20	55	9.0	28	30	25
	65			40	
	75			50	
	85			60	
	95			70	
	105			80	
	115			90	

Order: MEY. d2 x l x D

For your order of special dimensions, technical drawing can be used:



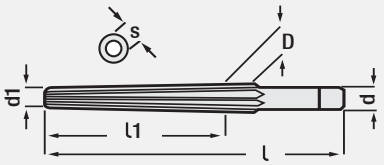
We produce Special Nozzles, Runners & Sprue Bushes as per request.

As per request / Custom-made orders.

Code: KYR

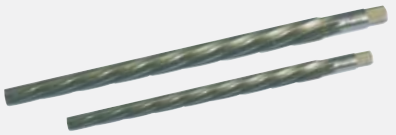
Taper Sprue Bush Reamer

HSS (Hand Reamer) Taper= 1:10



d1	D	d	l	l1	S
4	10	10	100	70	8
9	16	12.5	120	80	10
14	24	20	160	110	16
20	32	25	200	140	20

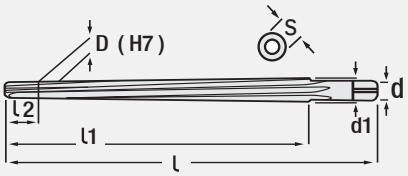
Order: KYR. d1 x D x l



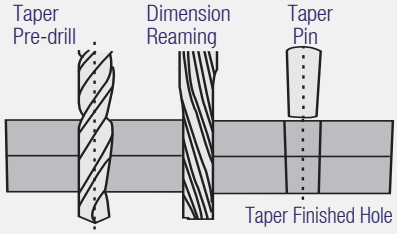
Taper Pin Reamer

Code: KPR

DIN 9, HSS (Hand Reamer) Taper= 1:50



D	d1	d	l	l1	S
3	4.06	4	80	58	3.15
4	5.26	5	93	68	4
5	6.36	6.3	100	73	5
6	8.0	8	135	105	6.3
8	10.8	10	180	145	8
10	13.4	12.5	215	175	10
12	16	14	255	210	11.2
14	18	14	255	210	11.2
16	20.4	18	280	230	14



Order: KPR. D x l

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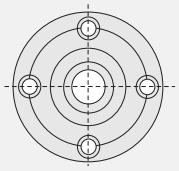
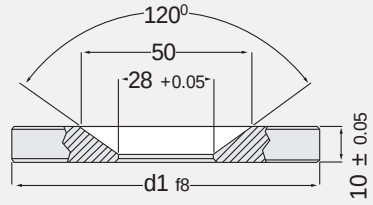


Locating Ring

Code: DYF

Material: CK 45 (Ground)



Order	d1
DYF.60	60
DYF.70	70
DYF.80	80
DYF.90	90
DYF.100	100

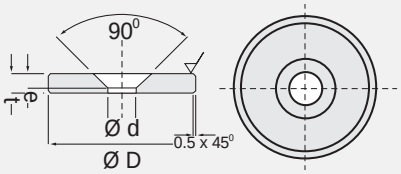
Order	d1
DYF.125	125
DYF.150	150
DYF.175	175
DYF.200	200

Note: Fitting holes are opened as per request.

Locating Ring

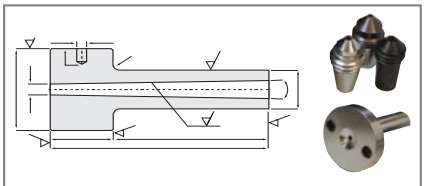
Code: KYF

Material: CK 45 (Ground)

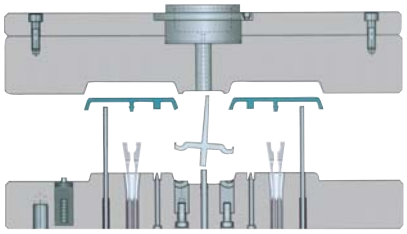


Order	Ø D	Ø d	t	e
KYF.60	60	28	15	8
KYF.80	80	28	15	8
KYF.100	100	28	20	10
KYF.125	125	28	20	10
KYF.150	150	28	20	10
KYF.175	175	28	20	10
KYF.200	200	28	20	10

Note: Fitting holes are opened as per request.



As per request / Custom-made orders.

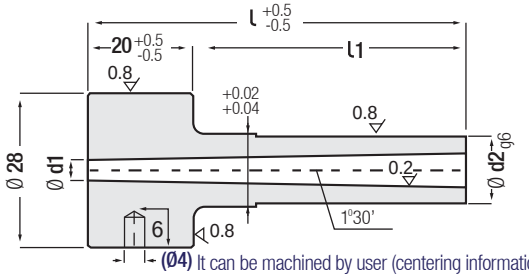


Sprue Bush - DIN 16752

Code: EYM

Material: 1.2826 **Hardness:** 50 - 55 HRC

Two Different Angle Options: Standard Angle; d1 3.3 : angle 1.5° **/ Wide Angle;** d1 4.3 : angle 2°



It can be machined by user (centering information).

Code: EYM

d2	l	d1	l1
12	50	3.3	30
	65		45
	75		55
	85		65
	95		75
	105	4.3	85
	115		95
	125		105
	135		115
	150		130
14	50	3.3	30
	65		45
	75		55
	85		65
	95		75
	105	4.3	85
	115		95
	125		105
	135		115
	150		130
	200		180

d2	l	d1	l1
16	50	3.3	30
	65		45
	75		55
	85		65
	95		75
	105	4.3	85
	115		95
	125		105
	135		115
	150		130
	200		180
18	50	3.3	30
	65		45
	75		55
	85		65
	95		75
	105	4.3	85
	115		95
	125		105
	135		115
	150		130
	200		180

Order:
EYM. d2 x l x d1

For Sprue Adjuster, please refer to
Code: SA product

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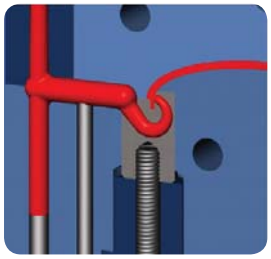
Tunnel Gate Inserts



Benefits of Exaflow Tunnel Gate Inserts:

- Perfect surface quality and concealed gate marks through tunnel gating, even on rear moulding wall thanks to innovative Ringelflow technology.
- Variable gate diameters from 0,5 to 3,5 mm.
- Clearly defined separating edge for precise degating.
- Save time and cost through fast & easy interchangeability.
- High wear resistance.
- Compact dimensions due to single-part design.
- Enhances moulding process reliability.
- Unsurpassed balance in multiple gating applications.

GTR

GTE

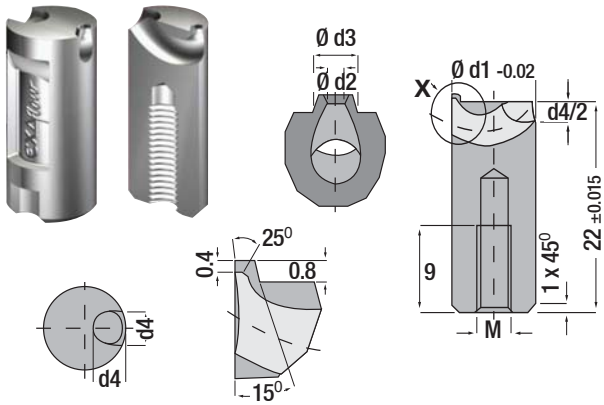
GTM - Blank Gate

GTK

GRF-1

GMK

GXK



Standardflow - Gate Insert

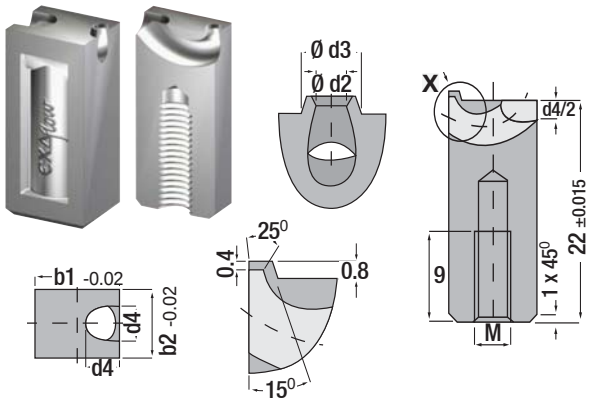
Code: GTR

For tunnel gating of small to medium-sized mouldings along a flat separating plane. The projecting calotte ensures concealed degating.
- Available gate diameters from 0,8 to 2,4 mm.
- Usable for all thermoplastics including fillers up to 50 % glass fibre.

Order Code	d1	d2	d3	d4	M	Viscosity - Grams		
						High	Regular	Low
GTR10-08	10	0.8	2.1	4	4	8	7	5
GTR10-10		1.0	2.3			14	12	9
GTR10-12		1.2	2.5			20	16	10
GTR10-14		1.4	2.7			30	23	15
GTR10-16		1.6	2.9			40	30	20

Order Code	d1	d2	d3	d4	M	Viscosity - Grams		
						High	Regular	Low
GTR12-08	12	0.8	2.1	5	5	8	7	5
GTR12-10		1.0	2.3			14	12	9
GTR12-12		1.2	2.5			20	16	10
GTR12-14		1.4	2.7			30	23	15
GTR12-16		1.6	2.9			40	30	20
GTR12-18		1.8	3.1			54	40	27
GTR12-20		2.0	3.3			68	52	34

Order Code	d1	d2	d3	d4	M	Viscosity - Grams		
						High	Regular	Low
GTR14-12	14	1.2	2.5	6	6	20	16	10
GTR14-14		1.4	2.7			30	23	15
GTR14-16		1.6	2.9			40	30	20
GTR14-18		1.8	3.1			54	40	27
GTR14-20		2.0	3.3			68	52	34
GTR14-22		2.2	3.5			85	65	43
GTR14-24		2.4	3.7			100	80	50



Standardflow - Gate Insert

Code: GTE

For tunnel gating of small to medium-sized mouldings along a flat separating plane. The projecting calotte ensures concealed degating.
- Available gate diameters from 0,8 to 2,4 mm.
- Usable for all thermoplastics including fillers up to 50 % glass fibre.

Order Code	b1	b2	d2	d3	d4	M	Viscosity - Grams		
							High	Regular	Low
GTE10-08	10	8	0.8	2.1	4	4	8	7	5
GTE10-10			1.0	2.3			14	12	9
GTE10-12			1.2	2.5			20	16	10
GTE10-14			1.4	2.7			30	23	15
GTE10-16			1.6	2.9			40	30	20

Order Code	b1	b2	d2	d3	d4	M	Viscosity - Grams		
							High	Regular	Low
GTE12-08	12	10	0.8	2.1	5	5	8	7	5
GTE12-10			1.0	2.3			14	12	9
GTE12-12			1.2	2.5			20	16	10
GTE12-14			1.4	2.7			30	23	15
GTE12-16			1.6	2.9			40	30	20
GTE12-18			1.8	3.1			54	40	27
GTE12-20			2.0	3.3			68	52	34

Order Code	b1	b2	d2	d3	d4	M	Viscosity - Grams		
							High	Regular	Low
GTE14-12	14	12	1.2	2.5	6	6	20	16	10
GTE14-14			1.4	2.7			30	23	15
GTE14-16			1.6	2.9			40	30	20
GTE14-18			1.8	3.1			54	40	27
GTE14-20			2.0	3.3			68	52	34
GTE14-22			2.2	3.5			85	65	43
GTE14-24			2.4	3.7			100	80	50

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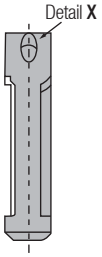
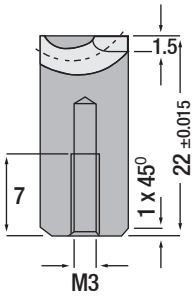
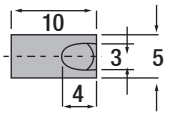






Miniflow - Blank Gate Insert

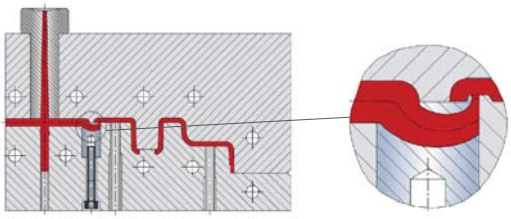
Order Code: GTM

For tunnel gating of small, thin-walled mouldings.
This gate insert has a closed gate diameter and is therefore suitable for the use of low article weight and for very thin-walled mouldings.

- The closed surface enables the creation of individual gate diameter.
- Usable for all thermoplastics including fillers up to 50 % glass fibre.

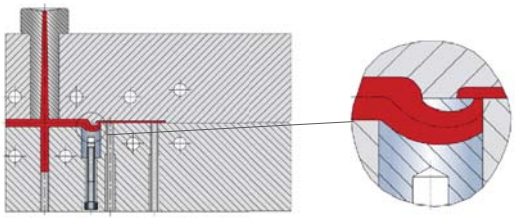
Installation Examples "GTR - GTE - GTM"

Standard



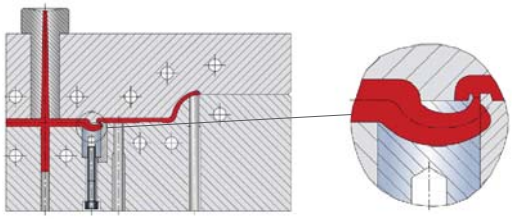
The front of the gate insert is sealed off by the mould cavity.
- to reduce pressure loss. / - to avoid jetting.

Thin-walled Parts Miniflow



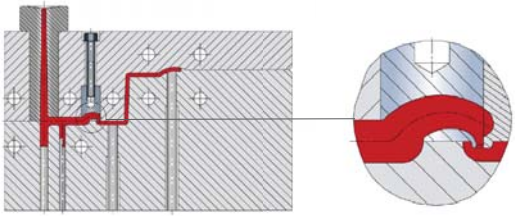
Designed for particularly thin-walled Parts (0,5 to 1,2 mm wall thickness). The tunnel gate insert has no calotte. Gating will occur flush with the moulding. - The gating point will be flush with, or slightly projecting from, the bottom surface depending on plastic used.

Flat Parts



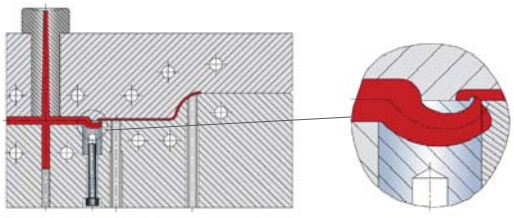
The front of the gate insert is fully sealed off by a companion calotte (baffle) on the cavity or by an auxiliary insert.
- to reduce pressure loss. / - to minimize shear.

Nozzle-side Installation



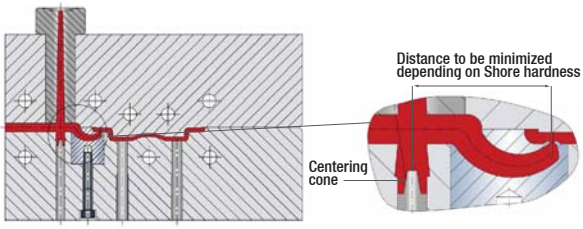
The gate insert is screwed into the nozzle side of the mould. The front of the gate insert is sealed off by the cavity.
- to reduce pressure loss. / - to minimize shear.

Thin-walled Parts Standardflow



The calotte height can be reduced to a minimum of 0,4 mm. This is the height defined by the cutting edge. The front of the gate insert is sealed off by the cavity to the height of the parting line.
- to reduce pressure loss. / - to minimize shear.

Thermoplastic Elastomers



When processing thermoplastic elastomers, please observe the following recommendations to ensure reliable demoulding:
- The distance "L" should decrease with the Shore hardness value.
- A centering cone should be provided. / - This application instruction applies to elastomers in the medium Shore hardness range up to 100 Shore A.

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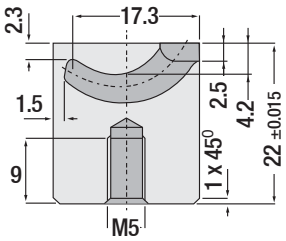
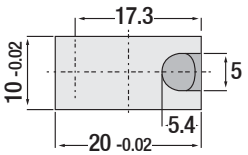
Order Code: GTK

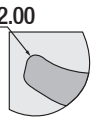
Konturflow - Contourable Gate Insert



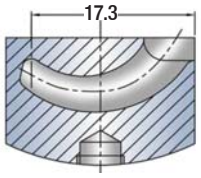


For tunnel gating of small to medium sized mouldings contoured in the gate area.
- Maximum gate diameter (pointed tunnel) up to 1,7 mm.
- Contourable up to 3 mm depth.
- Usable for all thermoplastics including fillers up to 50 % glass fibre.

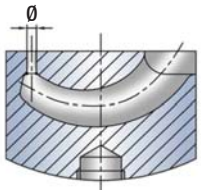
The spherical geometry in the gate area permits gating on inclined or curved surfaces.



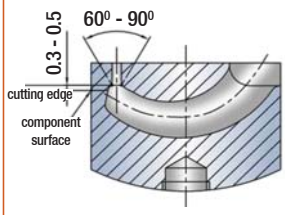
Calotte Design: Standard



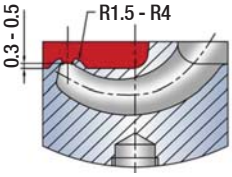
Contourable insert in unfinished position



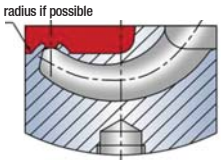
Diameter to be defined in accordance with the table



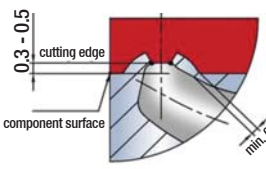
Define 60⁰ to 90⁰ angle at bore / tunnel intersection point



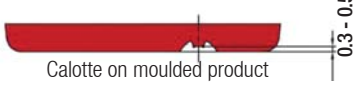
Calotte wall thickness to be between 0.5 and 0.7 mm



Provide radius if possible

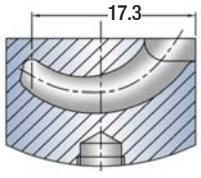


Finished calotte drawing

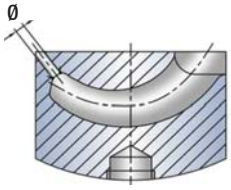


Calotte on moulded product

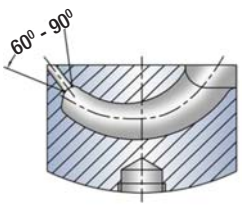
Calotte Design: Inclined Surface



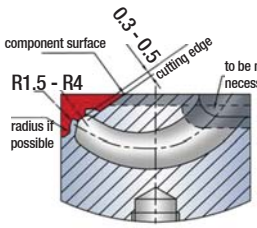
Contourable insert in unfinished position



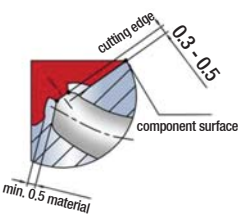
Diameter to be defined in accordance with the table



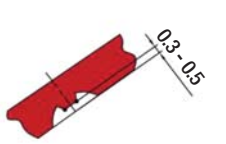
Define 60⁰ to 90⁰ angle at bore / tunnel intersection point



Calotte wall thickness to be between 0.5 and 0.7 mm

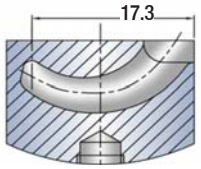


Provide radius if possible

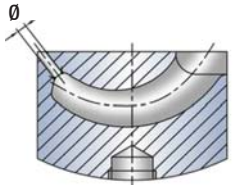


Calotte on moulded product

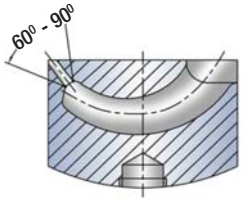
Calotte Design: Curved Surface



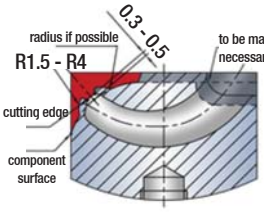
Contourable insert in unfinished position



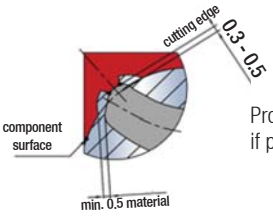
Diameter to be defined in accordance with the table



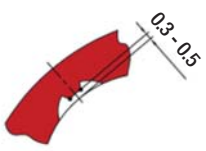
Define 60⁰ to 90⁰ angle at bore / tunnel intersection point



Calotte wall thickness to be between 0.5 and 0.7 mm



Provide radius if possible



Calotte on moulded product

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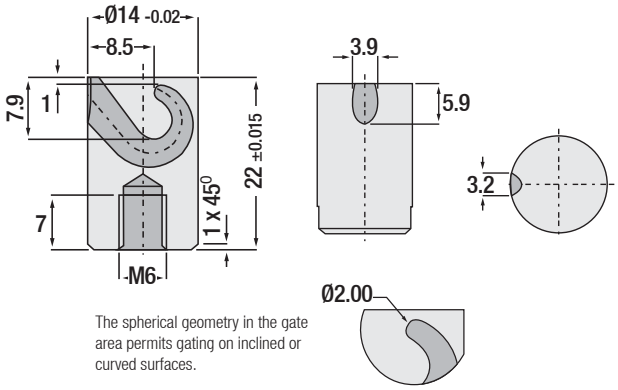
Order Code: GRF-1

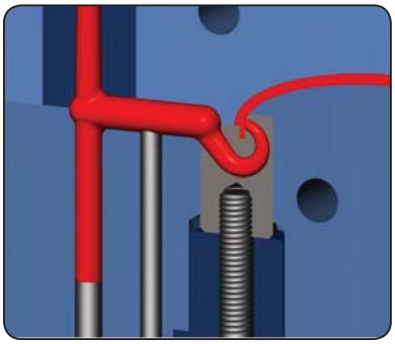
Ringelflow - Contourable Gate Insert

For rear surface gating of small to medium sized mouldings.
Supports gate diameters up to 1,8 mm and shot weights up to 100 g per insert.
Suitable for all common non-reinforced plastic types.



The spherical geometry in the gate area permits gating on inclined or curved surfaces.

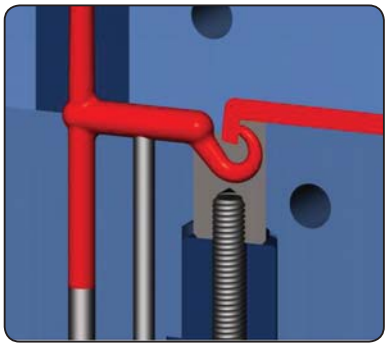
Installation Examples "GRF-1"



For best operating results the Ringelflow insert requires one central ejector and one supporting ejector. Please ensure that all sharp edges in the runner are thoroughly rounded. For reliable demoulding, the diameter of the runner must exceed that of the curved tunnel.

Contouring of a supporting ejector

Optimum gate geometry, with edges rounded



For best operating results the Ringelflow insert requires one central ejector and one supporting ejector. Please ensure that all sharp edges in the runner are thoroughly rounded. For reliable demoulding, the diameter of the runner must exceed that of the curved tunnel.

Contouring of a supporting ejector

Optimum gate geometry, with edges rounded

Ringelflow "GRF-1" Benefits

* Optimum solution to prevent jetting.

* No gate marks on visible external surfaces and bottom wall.

* Ideal for fully rounded edges.
  Example; toys, mouldings with sealing edges and joints.

* Permits internal gating of 2-component mouldings.

Technical Support for Tunnel Gate Inserts

You can request the “Tunnel Gate Inserts Information Form” from us. The form filled by you will be examined by our engineers and the most suitable method will be produced for you.

* * *

We are supporting you with customizable offers about technical and costing issues of your projects and we are producing the best solutions.

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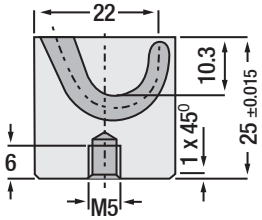
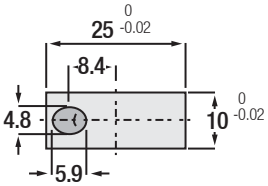
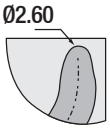
Code: GMK





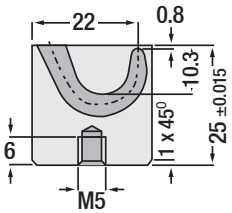
Midiflow - Contourable Gate Insert

For bottom (submarine) gating of medium components. Supports contouring to a depth of 8 mm. Suitable for gate diameters up to 2 mm and shot weights up to 200 g per insert. Suitable for all common plastics, including reinforced types.

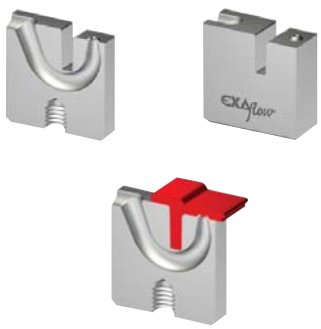


The spherical geometry in the gate area permits gating on inclined or curved surfaces.

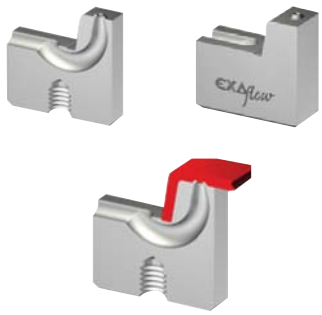
Order Code: GMK-1



Installation Example: Below the parting line



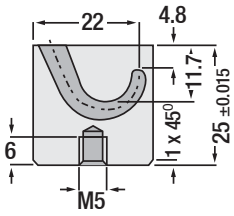
Installation Example: Above the parting line



Midiflow "GMK-1" Benefits

- Gating point may be located up to 8 mm above the parting line.
- Permits gating immediately behind projecting ribs.
- Gate may be remote from moulding wall.
- The spherical geometry in the gate area permits gating on inclined or curved surfaces.

Order Code: GMK-2



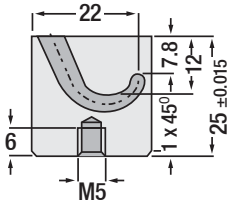
Installation Example: Below the parting line

Installation Example: Above the parting line

Midiflow "GMK-2" Benefits

- Gating point may be located up to 5 mm below or above the parting line.
- Permits gating immediately behind projecting ribs.
- Gate may be remote from moulding wall.
- The spherical geometry in the gate area permits gating on inclined or curved surfaces.

Order Code: GMK-3



Installation Example: Below the parting line

Installation Example: Above the parting line

Midiflow "GMK-3" Benefits

- Gating point may be located up to 8 mm below the parting line.
- Permits gating immediately behind projecting ribs.
- Gate may be remote from moulding wall.
- The spherical geometry in the gate area permits gating on inclined or curved surfaces.

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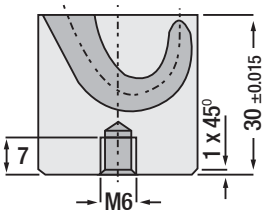
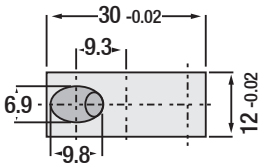
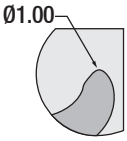
Code: GXK





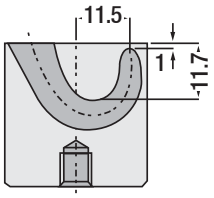


The spherical geometry in the gate area permits gating on inclined or curved surfaces.

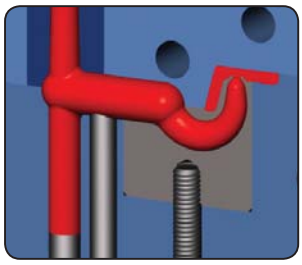
Maxiflow - Contourable Gate Insert

For bottom (submarine) gating of medium to large components. Supports contouring to a depth of 11,5 mm. Suitable for gate diameters up to 3,5 mm and shot weights up to 1,200 g per insert. Suitable for all common plastics, including reinforced types.

Order Code: GXK-1



Installation Example



For best operating results the Maxiflow insert requires one central ejector and one supporting ejector. Please ensure that all sharp edges in the runner are thoroughly rounded. For reliable demoulding, the diameter of the runner must exceed that of the curved tunnel.

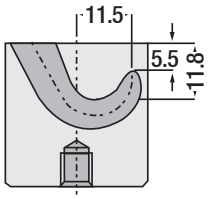
Contouring of a supporting ejector

Optimum gate geometry, with edges rounded

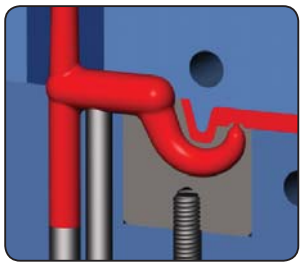
Maxiflow "GXK-1" Benefits

- Gating point may be located up to 10 mm above the parting line.
- Permits gating immediately behind projecting ribs.
- Gate may be remote from moulding wall.
- The spherical geometry in the gate area permits gating on inclined or curved surfaces.

Order Code: GXK-2



Installation Example



For best operating results the Maxiflow insert requires one central ejector and one supporting ejector. Please ensure that all sharp edges in the runner are thoroughly rounded. For reliable demoulding, the diameter of the runner must exceed that of the curved tunnel.

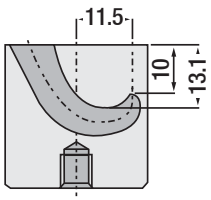
Contouring of a supporting ejector

Optimum gate geometry, with edges rounded

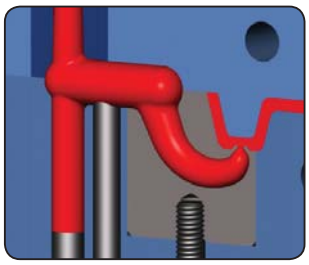
Maxiflow "GXK-2" Benefits

- Gating point may be located up to 5 mm above or below the parting line.
- Gate may be remote from moulding wall.
- The spherical geometry in the gate area permits gating on inclined or curved surfaces.

Order Code: GXK-3



Installation Example



For best operating results the Maxiflow insert requires one central ejector and one supporting ejector. Please ensure that all sharp edges in the runner are thoroughly rounded. For reliable demoulding, the diameter of the runner must exceed that of the curved tunnel.

Contouring of a supporting ejector

Optimum gate geometry, with edges rounded

Maxiflow "GXK-3" Benefits

- Gating point may be located up to 10 mm below the parting line.
- Gate may be remote from moulding wall.
- The spherical geometry in the gate area permits gating on inclined or curved surfaces.

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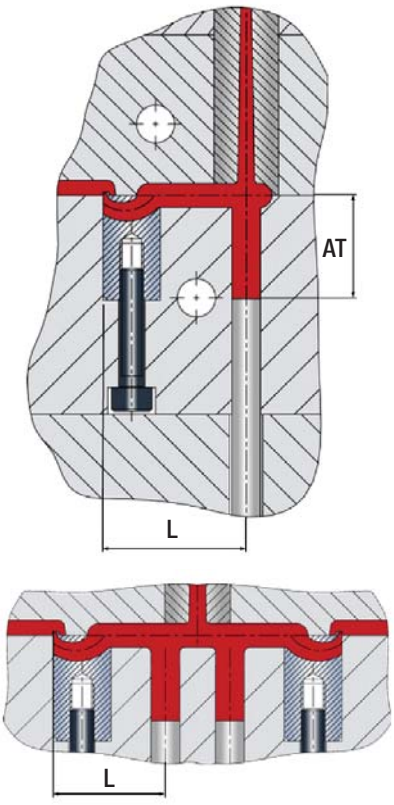
Installation Dimensions

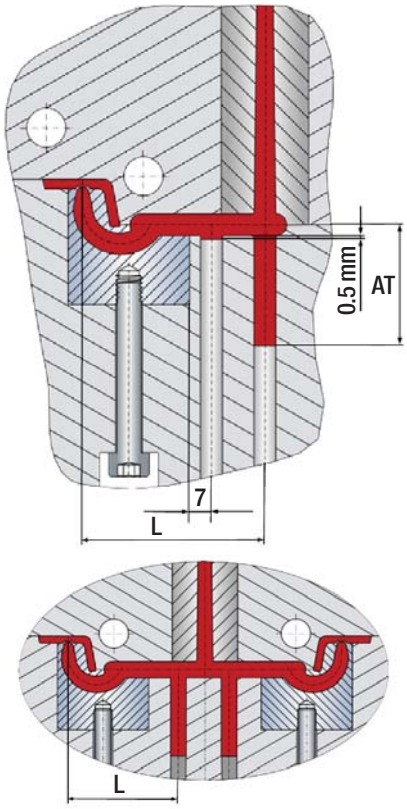
GTM - GTR / GTE - GTK

Plastic Group	GTM	GTR/GTE	GTK
HD-PE, LD-PE PET, PP, PA PC, PVC. (L)	>15	>20	>25
Runner design	round	round	round
Ejector depth (AT)	>11	>16	>20
ABS, M ABS, ASA PS, PC-ABS POM, PBT. (L)	>20	>25	>30
Runner design	round	round	round
Ejector depth (AT)	>14	>20	>24
Elastomere TPE TPU, TPP, TPA. (L)	>15	>15	>20
Runner design	arbitrary	arbitrary	arbitrary
Ejector depth (AT)	>11	>11	>16
Brittle Plastics	>25	>30	>40
Runner design	half-round	half-round	half-round
Ejector depth (AT)	>18	>24	>32



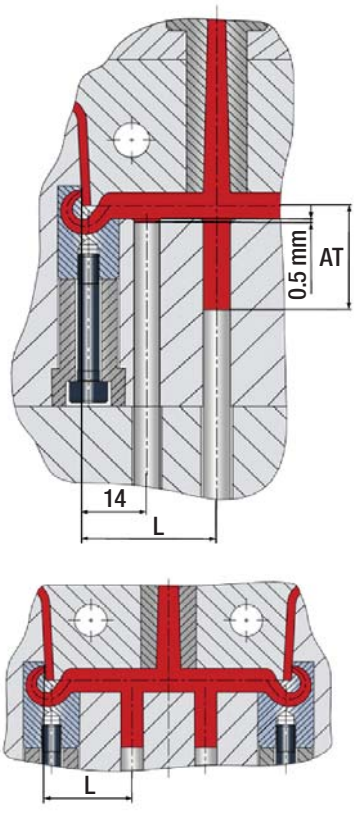
GXK - GMK

Plastic Group	GXK	GMK
HD-PE, LD-PE PET, PP, PA PC, PVC. (L)	>35	>30
Runner design	round	round
Ejector depth (AT)	>35	>30
ABS, M ABS, ASA PS, PC-ABS POM, PBT. (L)	>40	>35
Runner design	round	round
Ejector depth (AT)	>40	>35
Elastomere TPE TPU, TPP, TPA. (L)	>30	>25
Runner design	arbitrary	arbitrary
Ejector depth (AT)	>30	>16
Brittle Plastics	on request	on request
Runner design	half-round	half-round
Ejector depth (AT)	on request	on request



GRF-1

Plastic Group	GRF-1
HD-PE, LD-PE PET, PP, PA PC, PVC. (L)	>30
Runner design	round
Ejector depth (AT)	>30
ABS, M ABS, ASA PS, PC-ABS POM, PBT. (L)	>30
Runner design	round
Ejector depth (AT)	>30
Elastomere TPE TPU, TPP, TPA. (L)	>20
Runner design	arbitrary
Ejector depth (AT)	>20
Brittle Plastics	on request
Runner design	half-round
Ejector depth (AT)	on request



Recommended distances "L" from the injection point to the sprue ejector are given above for the various material groups.
The distance "AT" describes the correlated ejector depth.

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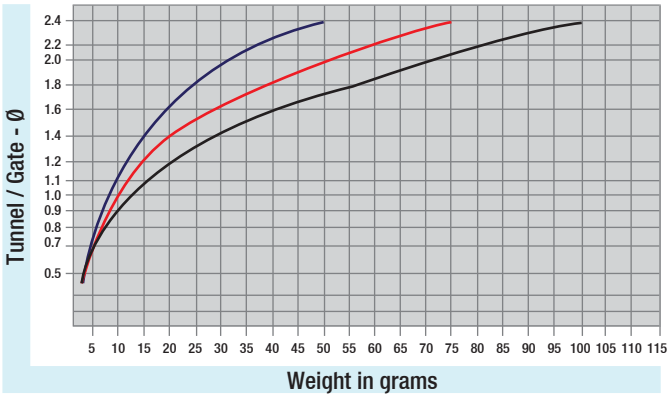
Table of Viscosity "GTR - GTE - GTM"

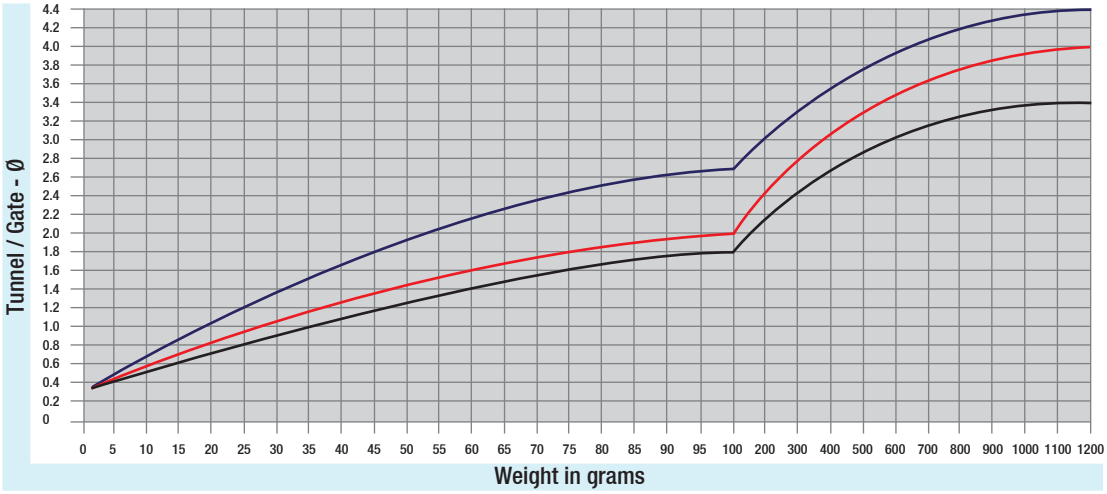


Low Viscosity:
PA, PE, PC, PP, PET, PVC, PS, SB, TPA, TPE, TPU

Medium Viscosity:
ABS, ASA, PS, PC-ABS, PBT, SAN

High Viscosity:
PC, PPS, PSU, POM-H, PES, PPO, PEI, PC-ABS
PC-PBT, PMMA, PVC

Table of Viscosity "GTK - GMK - GXK - GRF"



Frequently asked questions and answers about Tunnel Gate Inserts

+ What's the ideal distance between injection point and ejector ? - For the choice of the distance (L) we provide you with a spreadsheet in the support section. You can read about the distances depending on the type of Exaflow gate inserts and materials there. In special cases please get in touch with our application engineers.

+ How can you prevent open jet formations ? - An open jet formation can be prevent by following parameters: * Use of a higher gate insert diameter * Install dead-end recess * Graduated injection profile (reduce injection speed) * Increase mass temperature * Increase screw back pressure * Increase tool temperature around the area of the injection point.

+ Can Exaflow gate inserts be used for mouldings with a wall thickness below 1,2mm ? - For the production of mouldings with a thin wall thickness we recommend our Miniflow (without head). If a 100 % sunk gate must be warranted it's possible to grind down the head of our standard Exaflow up to 0.4 mm (please attend our application examples).

+ Can terpolymeres be processed (PEI) ? - Terpolymeres can be processed without any problems, however the gate diameter and the distance between gate and ejector should be designed as big as possible.

+ Can Liquid crystal polymers be processed (LCP) ?- LCP's can be processed without any problems, however the cold runner cross section and the gate cross section should be as small as possible since the material "lives by the shearing".

+ How are the gating properties for polyolefins (PE,PP) ? - Polyolefins tend to thread forming (during the demoulding process), thus during the injection moulding of flat components an impact wall around the area of the head should be installed (please attend our application examples).

+ What does the dead-end recess do ? - The dead-end recess has several influences on the injection process: * Decrease of shearing * Reduction of pressure loss (up to 33 % in the injection region) * Improves the laminar flow * Prevents open jet formations due to improved laminar flow and the flow front gets an unsymmetrical velocity profile which results in a spin that makes the flow front attach to the interior wall of the moulding during the ejection process and brakes the following molten mass.

+ What is the right cross-section of the gate ? - The cross-section of the gate depends on the processed materials, shot weight and the proportion of flow path and wall thickness. (please look at the spreadsheet in our support section). The recommended distance between gate and ejection can't be adhered. In general, Exaflow recommends a full-round cold runner cross-section. If the recommended distance can't be adhered we recommend a half-round cold runner cross-section to ensure the necessary deflection.

+ Is a trapezoidal shaped cold runner distributor possible ? - A trapezoidal shaped cold runner distributor is possible in general, but due to the result of it's geometry it's the most constrained variant of a cold runner. For an unproblematic demoulding process a long distance between gate and ejector should be picked.

+ How can you prevent the rough spot around the gate area ? - Problems usually occur with high-viscosity materials (PC, PMMA, ABS). Solution: * Graduated injection profile (fills the gate region slowly) * Increase cylinder temperature, increase back pressure * Increase tool temperature * Increase gate diameter * Inject the moulded part at a different spot.

+ Is it possible to process thermoplastic elastomers? (TPU,TPE,TPA....) - Processing thermoplastic elastomeres is possible without any problems. However you should focus, in coherence with the shore hardness, the design of the cold runner connection. You can find assistance for this in the support section.

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NEW

In-mould Edge Gate Cutting Components (automation systems)

ALMO

- The Cutting Pin provides automation in cutting edge gates.
- The large gate enables a reduction in injection pressure and improves packing and part quality.
- The trouble-free runner is ejected from below.
- Drawings and 3D CAD Datas can be downloaded from our website: www.guvenal.net

Straight Edge Cutting

Semi Circle Edge Cutting

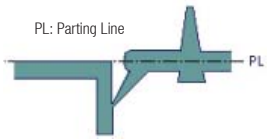
Cutting Pins are particularly effective and reliable in cutting hard engineering materials filled or unfilled as well as commodity plastics.

The Main Benefits:
+ A gentle cutting so effective for hard engineering materials.
+ Large gate improves packing and the quality of the part.
+ Reliable ejection of cold runner system.
+ Simple and interchangeable.

The main reason for this claim is that the cutting action of the pins is spread along the full length of the cutting edge as well as the cutting action is like slicing with a knife. The cut is performed against the plastic part so there is no wear on the mould metal part.

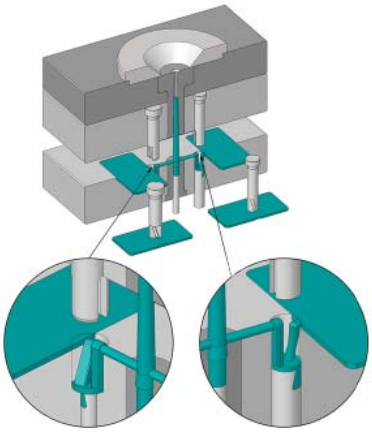
Cutting Pins are designed to feed the edge of the plastic part positioned at the parting line of the mould.

Edge Gate Cutting



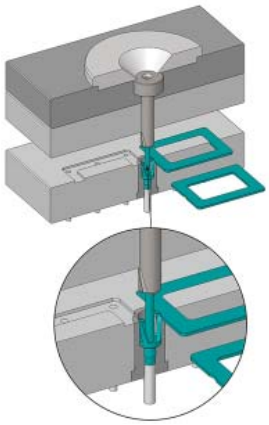
Submarine Gate Cutting

Submarine gates are designed to feed the part further up/down on the side wall of the plastic part. With a submarine gate the cutting action is hard, and the full cutting happens inside the size of the gate and it is cutting against the metal part of the mould.

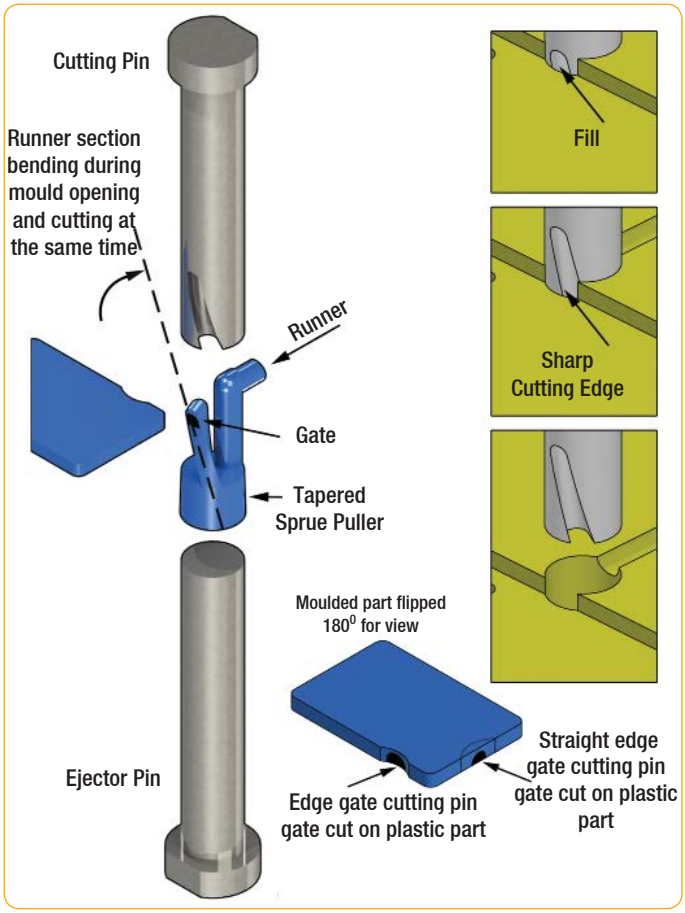


Straight Edge Cutting Pin

Round Cutting Pin



Edge Gate Cutting Sprue Bush



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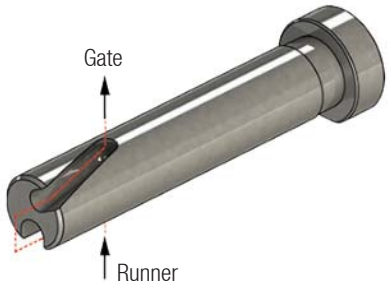
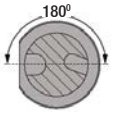


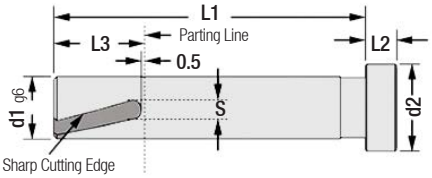
P10.50.1 &
P12.60.1:



P12.60.2.90:

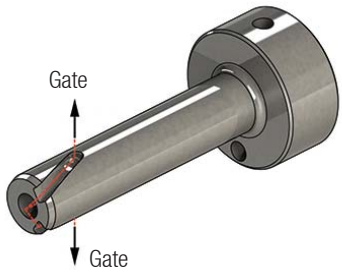
P10.50.2.120 &
P12.60.2.120:

In-mould Edge Gate Cutting Pin

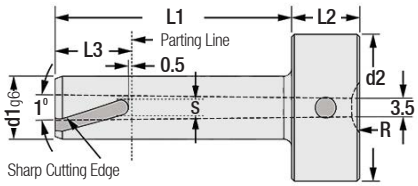


Material: 1.3343 **Hardness:** 62 HRC

Order Code	d1 mm	d2 mm	L1 mm	L2 mm	L3 mm	S mm	Gates
P10.50.1	10	13.7	50	5	14.5	3	1 / 180°
P10.50.2.120	10	13.7	50	5			2 / 120°
P12.60.1	12	16.5	60	7			1 / 180°
P12.60.2.90	12	16.5	60	7			2 / 90°
P12.60.2.120	12	16.5	60	7			2 / 120°
* Optionally, the length **L1** can be custom-made.							



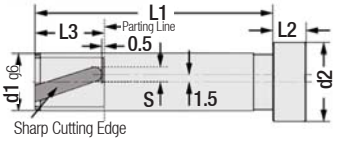
In-mould Edge Gate Cutting Sprue Bush

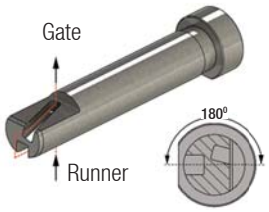


Material: 1.2826 **Hardness:** 54 HRC

Order Code	d1 mm	d2 mm	L1 mm	L2 mm	L3 mm	S mm	R
SB12.56.2.RF	12	28	56	13	14.5	3	Flat
SB12.76.2.RF			76				Flat
SB12.56.2.R155			56				15.5
SB12.76.2.R155			76				15.5
* Optionally, the length **L1** can be custom-made.							

In-mould Edge Gate Straight Cutting Pin

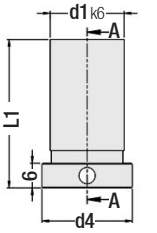


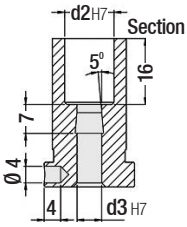


Material: 1.3343 **Hardness:** 62 HRC

Order Code	d1 mm	d2 mm	L1 mm	L2 mm	L3 mm	S mm	Gates
SE-P.12.60.1	12	16.5	60	7	14.5	3	1 / 180°
* Optionally, the length **L1** can be custom-made.							

Sprue Puller

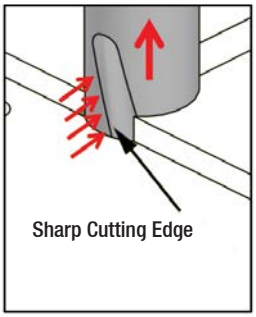


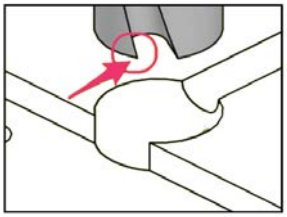


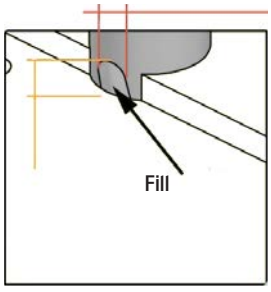
Material: 1.2510
Hardness: 58-60 HRC

Order Code	d1 mm	d2 mm	d3 mm	d4 mm	L1 mm
SP16.36	16	10	6	20	36
SP18.36	18	12		22	
* Optionally, the length **L1** can be custom-made.					

The Cutting Pins cut along the full length of the cutting edge.







The Cutting Pins also enable a large gate opening to improve the mould fill and packing, keeping the gate open for the longest possible time and so improving the quality of the plastic part.

The Cutting Pins ejecting arrangement is reliable and does not leave the possibility of plastic remnants sticking to the mould.
The installation arrangement of the cutting pin in the injection side creates a cold well for plastic material.

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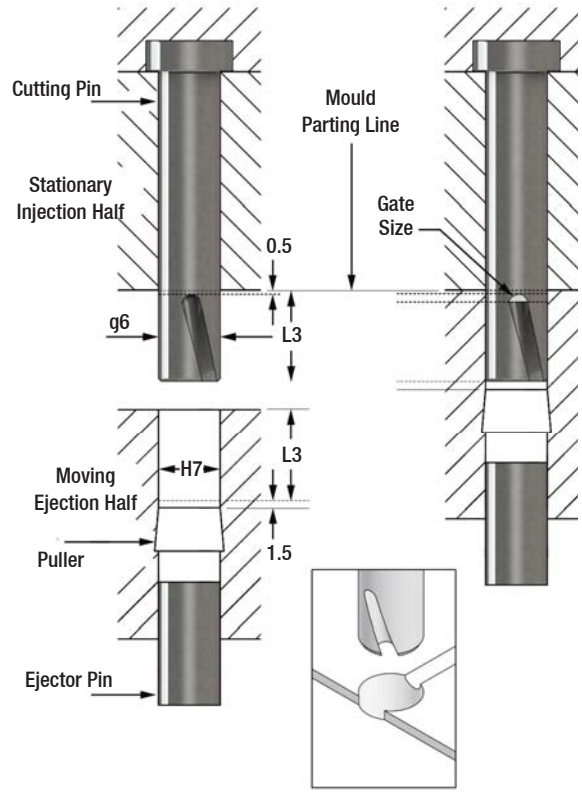
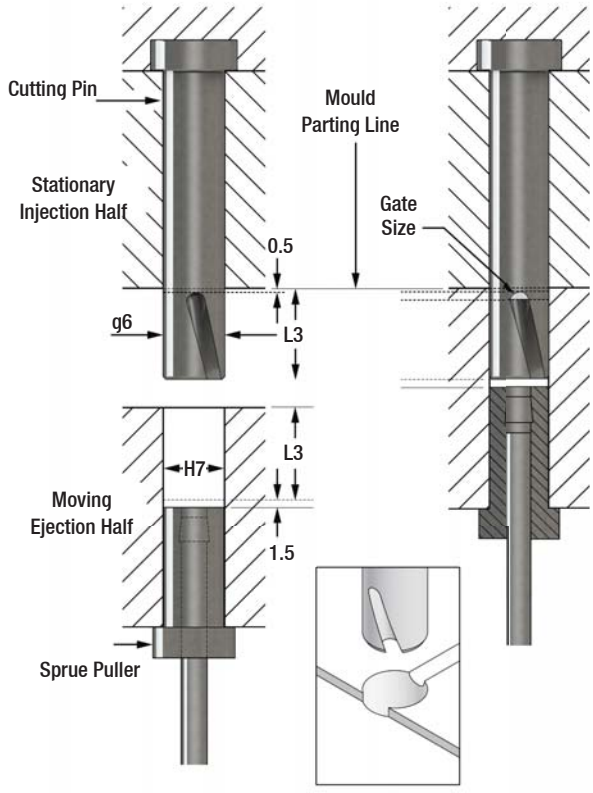
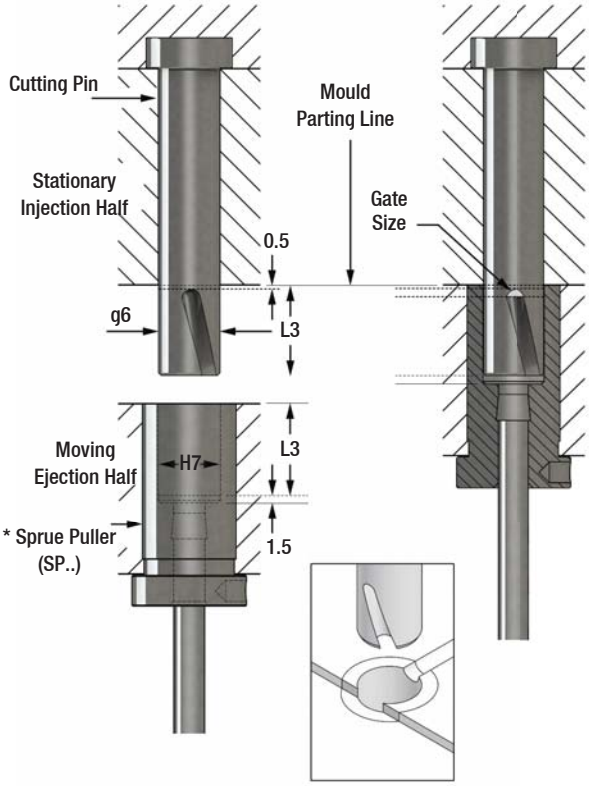
Cutting Pin / Installation Info - **1**:



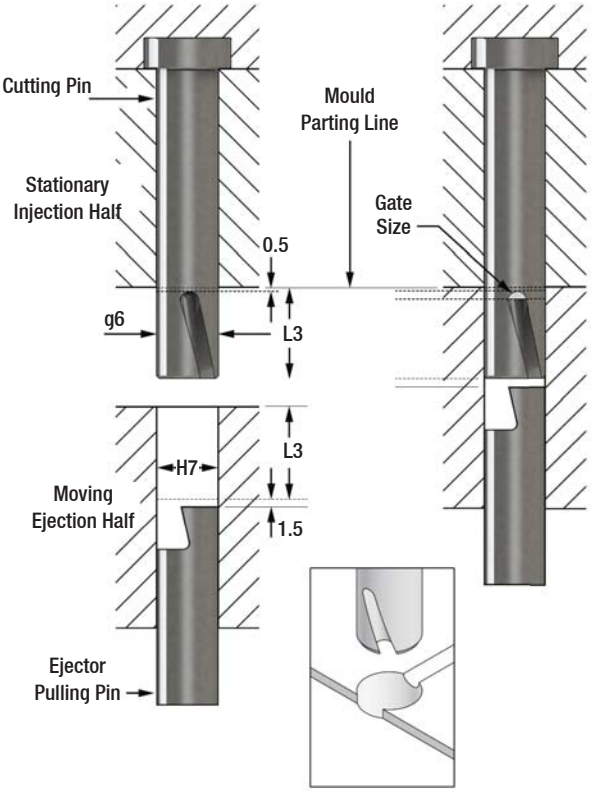
Cutting Pin / Installation Info - **2**:



Cutting Pin / Installation Info - **3**:



Cutting Pin / Installation Info - **4**:



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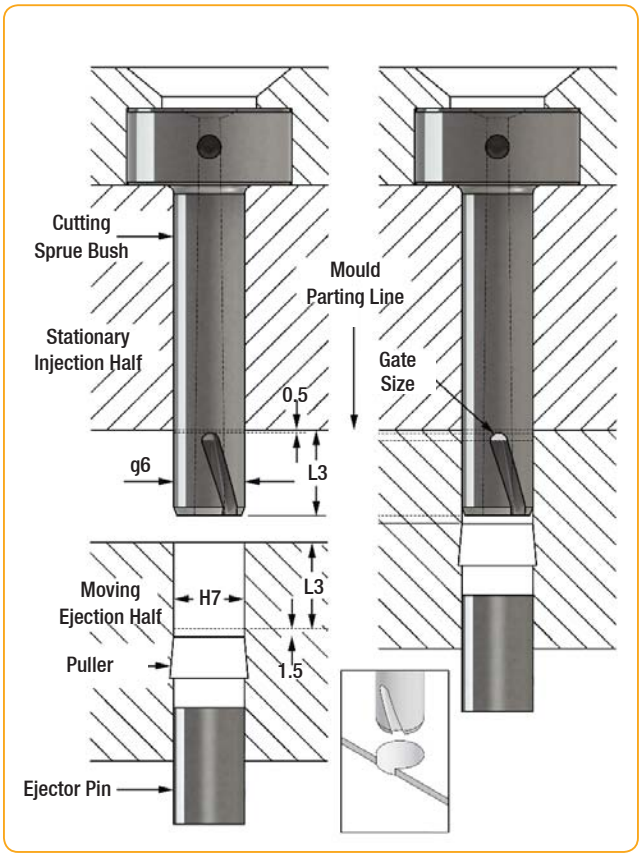
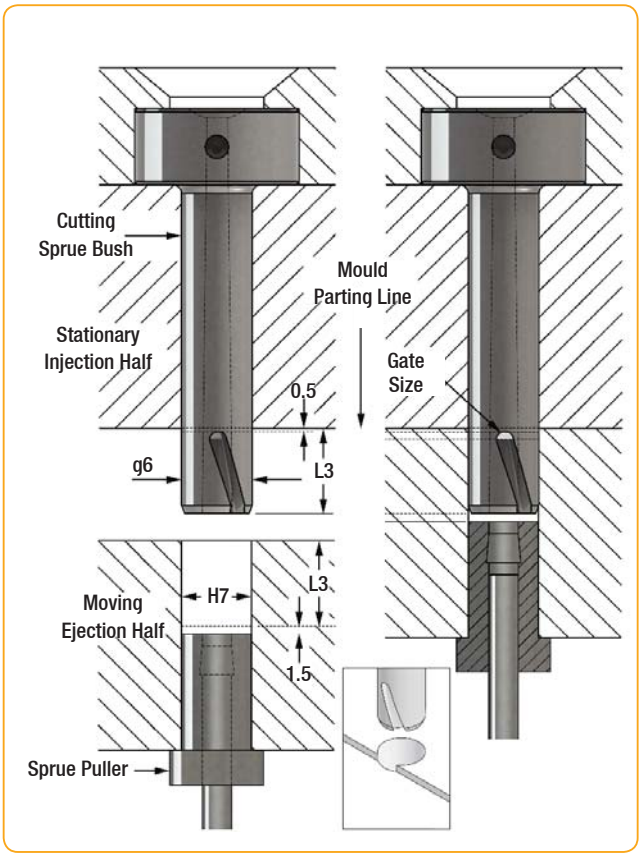
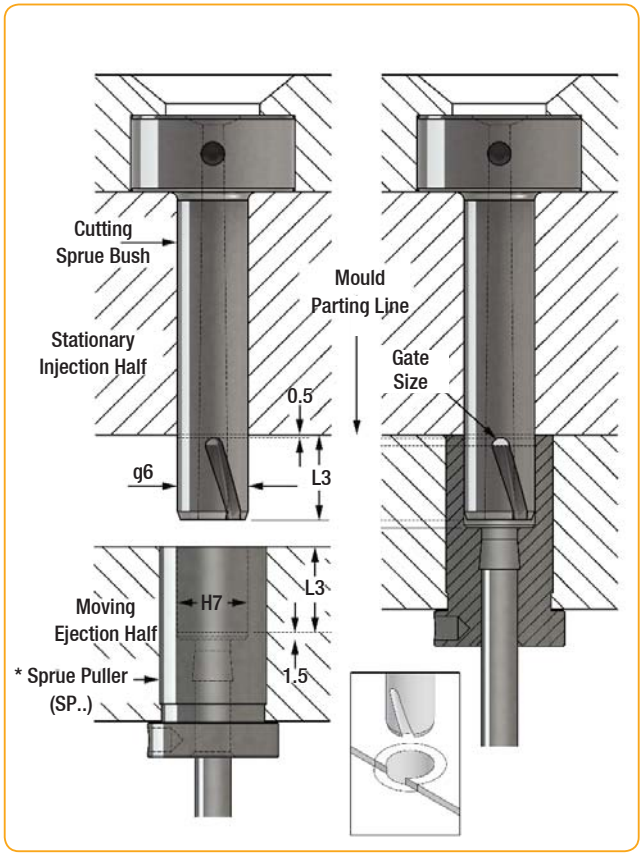
Cutting Sprue Bush / Installation Info - **1**:



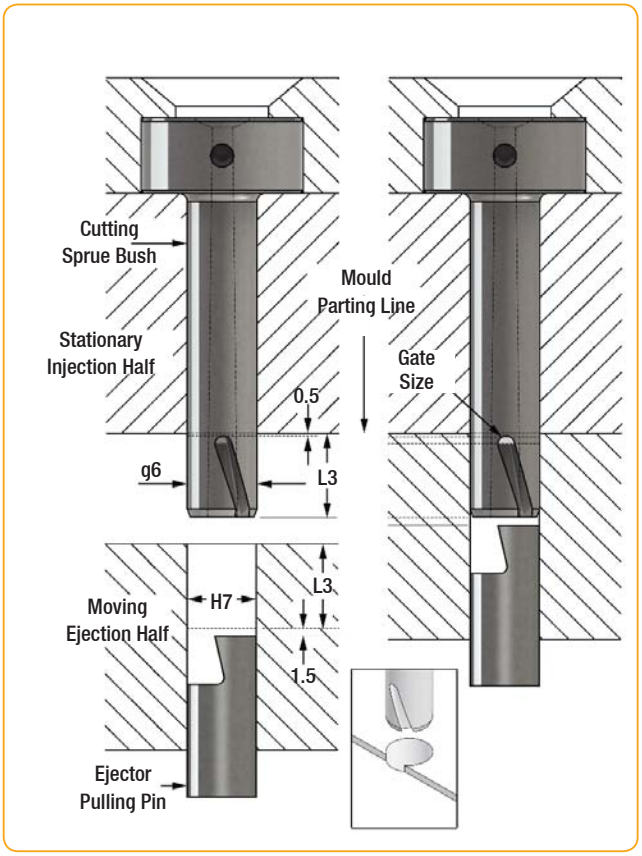
Cutting Sprue Bush / Installation Info - **2**:



Cutting Sprue Bush / Installation Info - **3**:



Cutting Sprue Bush / Installation Info - **4**:



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NEW

Heat Insulation Plates / High-tech

Code: IYPA

"IYPA" is preferred to use in applications in the mould and tool making industry where a excellent insulation effect and a high mechanical strength is required. It has no harm to human health and the environment.
Our products are safety certified.
- High continuous usage temperature.
- Superior mechanical strength.
- Excellent insulation effect.

Material: Glassfibre reinforced thermosetting plastic with filler content.
Recommended Operating Temp.: Max. 200°C
Recommended Operating Temp. - Continuous Exposure: Max. 180°C
Compressive Strength - Room Temp.: 340 N/mm^2
Compressive Strength - at 200°C: 130 N/mm^2
Thermal Conductivity: 0.18 W/mK
Flexural Strength: 115 N/mm^2 / at 200°C = 55 N/mm^2
Density: 1.70 g/cm^3

Heat Insulation Plates / Economic Type

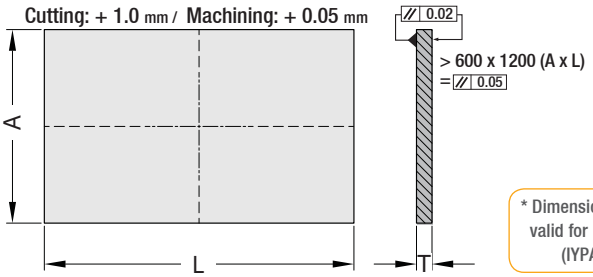
Code: IYPE

Impact and heat insulation processes of injection moulds.
Heat Insulation Plates help reduce heat loss between the mould and the plate. They are preferred in order to avoid heat dissipation / clearance among mould plates or between machine clamping block plate and mould upper plates, especially in moulds produced with thermoplastic and thermosets raw material.

- They are not affected by impacts, water, friction and electricity.
- Heat Insulation Plates also raise the view standards of moulds used.

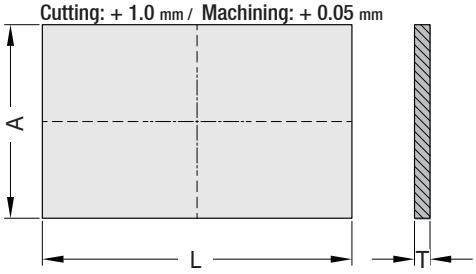
Material: Glassfibre and an impact resistant, thermosetting resinbonded mix.
Recommended Operating Temp.: Max. 120°C (continuous exposure)
Compressive Strength: Temperature at 120°C = 160 N / mm^2
Thermal Conductivity: Temperature at 200°C = 3.0 x 10^{-3} W/mK
Moisture Absorption: 0.06 %

Tolerance = Thickness: ± 0.02 mm
Cutting: + 1.0 mm / Machining: + 0.05 mm



* Dimension tables are valid for both products (IYPA & IYPE).

Tolerance = Thickness: + 0.50 mm
Cutting: + 1.0 mm / Machining: + 0.05 mm



A mm	L mm	T mm
156	156	6 8 10
	196	
	206	
	246	
	296	
	346	
196	196	6 8 10
	206	
	246	
	296	
	346	
	396	
246	246	6 8 10
	266	
	296	
	346	
	396	
	446	
	496	

A mm	L mm	T mm
296	296	6 8 10
	346	
	396	
	446	
	496	
	546	
	596	
346	346	6 8 10
	366	
	396	
	446	
	496	
	546	
	596	
	646	
	696	
	796	

A mm	L mm	T mm
396	396	6 8 10
	446	
	496	
	546	
	596	
	646	
	696	
	796	
446	446	6 8 10
	496	
	546	
	596	
	646	
	696	
	796	
	896	

A mm	L mm	T mm
496	496	6 8 10
	546	
	596	
	646	
	696	
	796	
	896	
	996	
546	546	6 8 10
	596	
	646	
	696	
	796	
	896	
	996	
596	596	6 8 10
	646	
	696	
	796	
	896	
	996	

A mm	L mm	T mm
646	646	6 8 10
	696	
	796	
	896	
	996	
	1096	
	1196	
696	696	6 8 10
	746	
	796	
	896	
	996	
	1096	
	1196	
746	746	6 8 10
	796	
	896	
	996	
	1096	
	1196	

A mm	L mm	T mm
796	796	6 8 10
	846	
	896	
	996	
	1096	
	1196	
846	896	6 8 10
	996	
	1096	
	1196	
896	896	6 8 10
	946	
	996	
	1096	
	1196	
946	996	6 8 10
	1096	
996	996	
	1096	
	1196	
1096	1096	
	1196	

Order: IYPA. A x L x T

Order Example:
IYPA. 196 x 246 x 6 or IYPE 196 x 246 x 6

Order: IYPE. A x L x T

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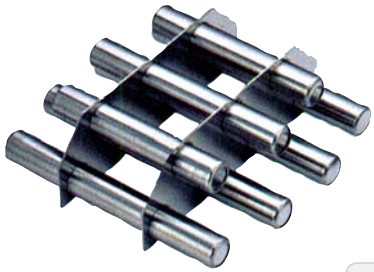
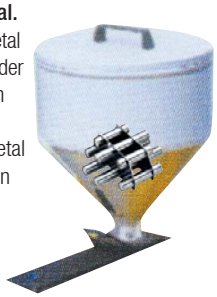
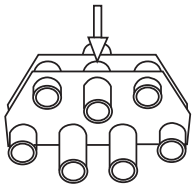


Code: EGM

Magnetic Separator for Injection Machine

It keeps unwanted metal particles in raw material.
Especially in your injection machine, the unwanted metal particles mixed in the raw material damages the extruder of injection machine. This is for screening / elimination process at the bottom of fluid raw material. Stainless magnetic rods are excellently powerful in keeping metal particles and cylindrical magnetic rods can be used in liquids since they are compatible with fluidity compliance of raw material.
Additionally / Example: Its also keeping metal particles in liquid tank of Spark Erosion EDM.



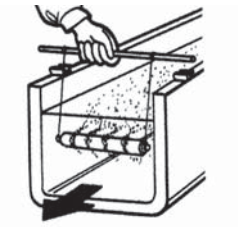


"EGM" Magnetic Separator is the cheapest insurance of your injection machine.

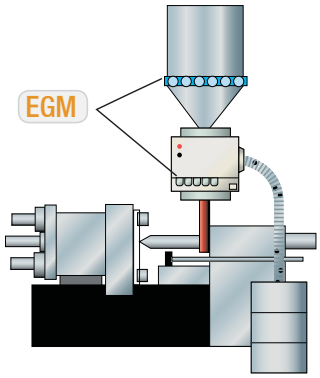
Order	Product Dimensions	Weight
EGM20C	**width:** 170 x **length:** 180 x **height:** 75mm	2.7 kg.
EGM25C	**width:** 220 x **length:** 230 x **height:** 75mm	4.0 kg.

It is for raw material feed hopper of injection machines.
It is quick and practical in all metal screening / eliminating processes, a toolkit which should be used.

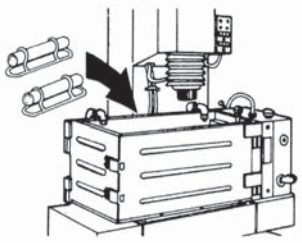
Usage: It is inserted to raw material feed hopper of injection machine. It is equipped with very powerful neodymium (Nd Fe B) magnets and materials are from stainless steel, also can keep very thin metal particles. When "EGM" Magnetic Separator is used, the extruder life of injection machine is prolonged considerably. The main advantage of magnetic magnet is its demagnetization opportunity. The cleaning of metal particles on stainless rods can be done rapidly and comfortably.
Heat Resistance: 60°C



* Injection Machine Applications



* Spark Erosion "EDM" Applications



Order Code: GTH1000

Teknoclean Cleaning Agent (Cleanser & Colour Changing Agent)

Teknoclean Specifications: It provides quick and efficient transition in thermoplastic raw material and colour changing. It also cleans extruder area of injection machine. Less raw material consumption in raw material colour changing process. It easily cleans oxidized, burnt and stubborn dirts in injection machine extruder, thus it provides economical profit.
It is efficient in colour changing processes of raw materials such as P and C, PP, TPU, PPS, PA6, PA66, POM, HDPE, LDPE, EVA, PS, ABS, PMMA, PC, SAN, SBS, SEBS, CA, PBT, PET and in injection machines, all hot and cold runner systems. It can be safely used during machine cleaning and colour changing process in extrusion machines (compounding, metal sheet, profile, cable and pipe) and blowing machines (packaging, film).

Package: 1 kg.

Fields of Usage:

1
* Decrease the injection / screw temperatures 20-30° from the current temperatures. Please check temperature / proportion table.
* Nozzle area temperature should be normal processing temperature (don't decrease 20-30°C).
* Hotrunner and nozzle temperatures should be increased 50°C above normal.

2
* Shake Teknoclean bottle well before use.
* Put %4-5 Teknoclean into natural color PP granules and mix very well. To adjust total amount please check screw diameter/mixture amount table.

3
* Decrease the screw speed up to %50 or lower and let the cleaning mixture go through from feed hopper to machine.
* Increase back pressure slightly.
* Use total injection stroke for cleaning.
* This agent can also be injected into opened mould to clean tooling, cold runner & hot runner system to clean dirty channels.

4
* Use pure PP natural for rinsing machine, the raw material you added is purely sprayed out of the machine.

You can obtain the full user manual from our technical department or your sales representative.

Highly Productive "Guvenal" Product

"Teknoclean" usage according to injection machine screw diameter:

Screw Diameter	20 - 40 mm	40 - 50 mm	50 - 60 mm	60 - 80 mm	80 - 100 mm	100 - 120 mm
Carrier Polymer PP	0.5 - 1.0 kg.	1.0 - 3.0 kg.	3.0 - 5.0 kg.	5.0 - 10.0 kg.	10.0 - 25.0 kg.	25.0 - 35.0 kg.
Teknoclean Amount	25-50 gram	50 - 150 gram	150 - 250 gram	250 - 500 gram	500 - 1250 gram	1250 - 1750 gram

120 - 150 mm	175 - 100 mm	100 - 120 mm
35.0 - 70.0 kg.	70.0 - 90.0 kg.	90.0 - 150.0 kg.
1750-3500 gram	3500-4500 gram	4500-7500 gram

Teknoclean is a "Guvenal" production.

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NEW

Order Code: PCAM

Precision Deburring Blade with Handle

Handle: Zinc compression moulding robust body; handle with non-slip plastic structure and mounting holes with two screws for blade. Non-slip plastic protection cover and one piece of blade.

TiN coated cutting end; it reduces the time which spent for deburring in objects with its sharp blade for low cutting end wearing and long life. It provides easy and precise deburring for curved contours and thin protrusions.
*** It is designed only for deburring.**

Precision Deburring Blade

Order Code: PCBU

Blade Kit (100 blades in safe dispenser):
It provides high operation safety thanks to its angled cutting end, it is strongly positioned with two screws.
It is economical in safe dispenser / 100 pcs.

In-Mould Application Mechanical Pliers

Heavy duty, hot object holding tools for machines & moulds.

Extra Long Needle Nose Pliers

Long & Flat Nose Order Code: RUK1300

It is for object removing processes from moulds such as tongs.
In deep zones of long and thin jaw mould or product holding operation in hot stamped moulds. Also during repair / maintenance, in places that can be difficult to reach.

Length: 300 mm	**Body:** Vanadium Steel	**Handle:** PVC - Isolated

Extra Long Needle Nose Pliers

Long & Curve Nose Order Code: RUK1345

It is used to remove smaller parts from the mould with the help of curve nose. In deep zones of long and thin jaw mould or product holding operation in hot stamped moulds. Also during repair / maintenance, in places that can be difficult to reach.

Length: 300 mm	**Body:** Vanadium Steel	**Handle:** PVC - Isolated

Extra Long Needle Nose Pliers

Long, Round & Grab Nose Order Code: RUK0360

It is used in deep areas, for pipes and round workpieces. In deep zones of long and thin jaw mould or product holding operation in hot stamped moulds. Also during repair / maintenance, in places that can be difficult to reach.

Length: 300 mm	**Body:** Vanadium Steel	**Handle:** PVC - Isolated

Extra Long Needle Nose Pliers

Long & Combination Order Code: RUK2345

In workpieces requiring deep repair, clamping, holding and removing.
In deep zones of long and thin jaw mould or product holding operation in hot stamped moulds. Also during repair / maintenance, in places that can be difficult to reach.

Length: 300 mm	**Body:** Vanadium Steel	**Handle:** PVC - Isolated

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Order Code: 1231

Diagonal Side Cutter for Plastic - 90⁰

In plastic parts, especially in deburring processes. Serial usage thanks to spring mechanism. For zero / sharpest cuts.
Attention: It is not used in metal cutting (wire etc.).

Length: 150 mm	**Handle:** PVC - Dipped

Straight Cutting

Order Code: 1233

Diagonal Side Cutter for Plastic - 35⁰

In plastic parts, especially in deburring processes. Serial usage thanks to spring mechanism. For zero / sharpest cuts.
Attention: It is not used in metal cutting (wire etc.).

Length: 165 mm	**Handle:** PVC - Dipped

Straight Cutting

In plastic parts, especially in deburring processes. Serial usage thanks to spring mechanism. For zero / sharpest cuts.
Attention: It is not used in metal cutting (wire etc.).

Diagonal Side Cutter for Plastic - 30⁰

Order: E0944-0160	**Length:** 160 mm
Order: E0944-0140	**Length:** 140 mm

Diagonal Side Cutter for Wire

Cutting edges for very hard (such as piano wires) wires. Extra hardened special tool steel with indiction technique, high perfomance cutting edges and ergonomical handle.

Order: E0841-0180	**Length:** 180 mm	**Wire Cutting:** Ø2 mm
Order: E0841-0200	**Length:** 200 mm	**Wire Cutting:** Ø2.2 mm

Straight Cutting

Curve Cutting

Multi-Purpose Scissors

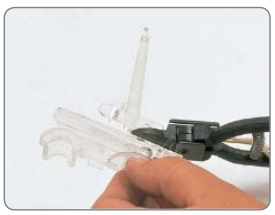
Straight cutting stainless steel blades with spring mechanism for cutting light metal folios, fabrics, cardboards and plastic etc,. Ergonomical handle with fixing mechanism.

Straight Cutting

Order: CETA17-190	**Length:** 190 mm	**Cutting Length:** 40 mm

Curve Cutting

Order: CETA17-1908	**Length:** 190 mm	**Cutting Length:** 40 mm



Nipper with Heat Control Unit for Plastic

Code: HT...

It can be performed applications for cutting plastic and other resin material, hard and thick plastic materials that are hard to cut with special cutting blades by without cracking, breaking and by heating (heat controlled). You can obtain clean cutting surface. **Especially;** in cutting operations of plastic materials of engineering (autolamps etc.) for precise, rapid and quality surfaces.
The cutting blade is heated by a heat control unit for cutting, due to adjustable heat, degree of heat can be selected according to the material.
This nippers are also with aluminium base plate as burning inhibitor base plate.

Heat Nipper

Round Type

Order Code: HT160

For cutting narrow spaces

Length	Body	Cutting	Capacity	Heater
150 mm	with Heating Unit	25°, Length: 16 mm	Ø4.0 mm	W19

Heat Nipper

Flat Type

Order Code: HT170

Angle blade type

Length	Body	Cutting	Capacity	Heater
150 mm	with Heating Unit	25°, Length: 22 mm	Ø4.0 mm	W19

Heat Nipper

Round Type

Order Code: HT180

Standard type

Length	Body	Cutting	Capacity	Heater
190 mm	with Heating Unit	25°, Length: 16 mm	Ø4.0 mm	W19

Heat Nipper

Round Type

Order Code: HT200

Heavy-duty type

Length	Body	Cutting	Capacity	Heater
190 mm	with Heating Unit	25°, Length: 23 mm	Ø7.0 mm	W29

Heat Control Unit

220 V

Order Code: TRF25

* Suitable for HT160, HT170, HT180 and HT200 heat nippers.

Heat control unit must be ordered separately.

Spare Heater

Order Code: W19
Order Code: W29

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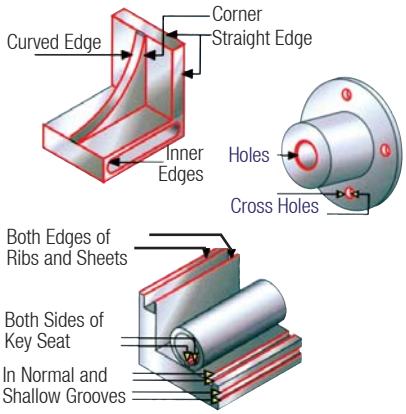
Deburring Tools Usage NOGA



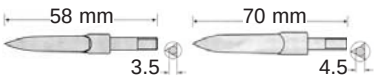
Burrs: They are unwanted metal particles remained at the edge of workpiece after machining process. For safety and quality production, these particles should be cleaned. Deburring process on machine bench is both long term and hard to make balanced process. Hence, it will take more time, also surface roughness is important. All of this may not be economical.
Noga Deburring Sets: With two component, plastic handle and cutting blades (telescopic) and have withdrawal spring for opening and closing handle locks. 3 pieces spare cutting blades are stored in rear covered chamber.

NogaGrip Handle (3 different models)

- **NG-1** Ø 3.2 mm / for all "S" blades
- **NG-2** Ø 2.6 mm / for all "N" blades
- **NG-3** Ø 7.0 mm / for all "T" blades

Handles: It is adapted to part contour automatically. With options for the processing of very different materials, it is used for deburring of contours rationally. With the ergonomic difference from other holders, it is suitable for your hand. For maximum comfort of your hand, hard and soft - light robust structure. Rapid replacement blades and handles. Spare cutting blades are in rear cover assembly.

Scraper Blades:



T50 Triangle Blade:
This HSS blades are used with NG-3 handle.

T70 Triangle Blade:
This HSS blades are used with NG-3 handle.

External Cranked Blade:
External cranked countersink.
Length: 150mm

Internal Blade:
For internal thread operations.
Length: 150mm

Deburring Tool Kits

Promo Set Deburrs: Steel, Aluminum and Plastic

S Promo Set - NG8150
Contains: 1 pcs = NG-1 Handle
10 pcs = S10 Blades.
Order: NG8150

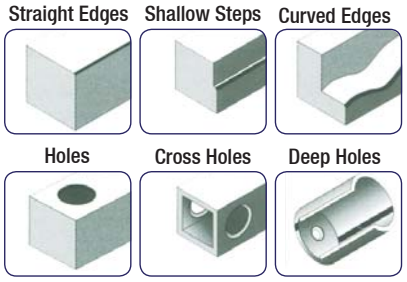
N Promo Set - NG8000
Contains: 1 pcs = NG-2 Handle
10 pcs = N1 Blades.
Order: NG 8000

Tele Set Deburrs: Steel, Aluminum, Plastic, Brass and Cast Iron.

S Tele Set - NG8350
Contains: 1 pcs = NG-3 Handle
1 pcs = S Holder
5 pcs = S10 Blades
5 pcs = S20 Blades.
Order: NG8350

N Tele Set - NG8300
Contains: 1 pcs = NG-3 Handle
1 pcs = N Holder
5 pcs = N1 Blades
5 pcs = N2 Blades.
Order: NG8300

Deburring Tools



Deburring Tools: The tools have replaceable ends at rotary position and are adapted to workpiece contour with handy, cutting edge automatically and they are excellent / quality brand hand tools in deburring different types of materials rationally.

Multipurpose Deburring Tools

Order: **LB1000**
Liza Burr

Double end blade holder to utilize both N and S blades. Telescopes from 20-110 mm with N Blades. Telescopes from 20-94 mm with S Blades.
Contains: Uni-handle, SN-holder, N1 & N2 blades.

Order: **SG1000**
Soft Grip

Two holes accepts both heavy and light duty S & N Blades.
Contains: SG Handle, S100 and N10 Cobalt Blades. Ergonomically held handle.

Order: **TB1000**
Teddy Burr

Designed for hard to reach locations.
8 mm painted hexagonal aluminum handle and N1 blade. Blade is replaceable.
Holder: 2.6 mm blades.

Light Duty Deburring Blades

Order	Blade	Work best on
BN1010 (40°)	N1	steel, aluminium and plastic
BN2010 (80°)	L/R N2	brass and cast iron
BN2012 (80°)	L/R N2 TiN	stainless steel
BN1310 (45°)	Cobalt N10	plastic and hard materials
BN3010 (50°)	N3	both int. and ext. burrs
BN6001 (40°)	N6	cross holes in difficult to reach places

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Deburring Tools

Order: **NG1003**
Noga Burr 3
Contains: NG-1 Handle
BS1010 / BS2010
BS3510

Order: **NG1005**
Noga Burr 5
Same as NG1003 but with 2 extra blades.
S101 Blade - BK1010 / S202 Blade - BK2010
Suitable for extra fine deburring operations.

Order: **NG1000**
NG-1 Handle
NogaGrip-1 holds all S blades(3.2mm).
Spare blades are kept inside back cap.

Order: **EO2000**
Plastic Edge Off
Most competitive tool.
Holds all S blades (3.2mm).

The blade is replaceable. Contains: plastic handle with a handy pocket clip S10 blade.

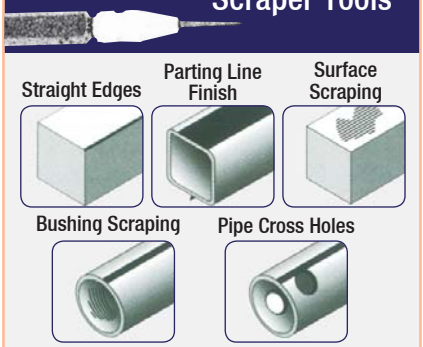
Order: **NG3003**
Super Burr
For heavy duty works.
Contains:
EL02003 / BS2010
BS3010 / BS1018

Order: **SC8000**
Adjustable Scraper
Ideal for scraping, trimming and deburring almost all materials. Contains:
SC Handle - SC1300
T80 - BT8001
SC Handle Heavy Duty - SC1400

Heavy Duty Deburring Blades

Order	Blade	Work best on
BS1010 (40°-S10)		steel, aluminium and plastic
BS2010 (60°-S20)	L/R	brass and cast iron
BS2012 (60°-S20)	TiN L/R	stainless steel
BS3010 (40°-S30)		both int. and ext. burrs
BS3510 (55°-S35)	L/R	straight edges on most materials
BS1018 (45°-S100)	Cobalt	plastic and hard materials
BK1010 (40°-S101)		All precise edges(finish)
BK3010 (45°-S150)		holes as small as 1.5 mm dia.
BS7001 (45°-70)		straight edges and flat surfaces
BS6001 (40°-S60)		cross holes in difficult to reach places

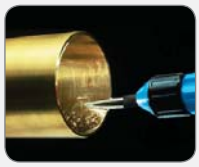
Scraper Tools



Order: **NG3700**
Mini Scraper
Ideal for mould and die makers. An M3 setscrew is holding the blade. Contains:
NG-3 Handle - NG3000
D Holder - EL05003
D50 - BD5010

Order: **NG3600**
Triangular Scraper
Used for standard scraping. Contains:
NG-3 Handle
T Holder
T50 / T70 Scraper Blades

Order: **SC1000**
Heavy Duty Scraper
Heavy Duty Double end scraper for longer tool life.
Can be locked in required position.
Contains:
Uni-Handle UH1000
Double Ended T120 - BT1200 Triangular Scraper.



Scraper Blades

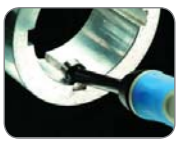
Order	Blade	Dimension
BD5010 (60°-D50)		3.2 x 50 mm
BD5501 (60°-D55)	Carbide	3.2 x 50 mm
BD6610 (50°-D66)		3.2 x 48 mm
BD7510 (60°-D75)		3.2 x 75 mm
BD7710 (50°-D77)		3.2 x 73 mm
BT5000 (60°-T50)		3.2 x 51 mm
BT7000 (60°-T70)		4.2 x 57 mm
BT8001 (60°-T80)		2.5 x 80 mm
BT1200 (60°-T120)	Double Side	

Double Deburring Tools

Order: **DB1000**
Double Burr
Simultaneously removes burrs from both sides of sheet metal. DB Handle with safety guard to protect your hand. Unique round cutting blades can be rotated and reversed for long life. For corners, use one blade only.
Range: 0 - 12 mm / Contains: N80 - BN8010

Order: **NG3200**
Noga V Cut
For deburring sheet metal 1 - 8 mm.
Contains:
NG-3 Handle - NG3000
L Holder - EL07013
L3 - BL3001

Order: **NG3300**
Keyway Burr
Effectively removes burrs from internal and external keyways.
Range: 2.4 - 11 mm
Contains: NG-3 Handle - NG3000
K Holder - EL04003 / N80K - BN8110



Order: **NG3710**
Inner Hole Scraper
Ideal for cross-holes deburring.
Contains:
NG-3 Handle - NG3000
D Holder - EL05003
D66 - BD6610

Deburring Blades

Order	Blade	Range
BN8010 (55°-N80)		0 - 12 mm
BN7001 (55°-N70K)		1.2 - 8 mm
BN8110 (55°-N80K)		2.4- 11 mm
BN9009 (55°-N90K)		3 - 15 mm
BL3001 (50°-L3)		1 - 8 mm
BL4004 (50°-L4)		0 - 2.5 mm
BC3201 (90°-RD3.2)		0 - 3 mm
BC1001 (90°-TC)		Max. 3 mm pitch

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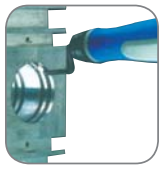
Deburring & Countersink Tools

Holes | Pipe Cross Holes | Extarnal Shaft

Order: **NG1100**

Noga O-Ring Burr

Removes burrs from internal O-ring grooves.
Range 0-3(groove width).
Contains:
NG-1 Handle - NG1000
O-Ring - BO1001



Order: **NG1200**

Internal Rotodrive

The quickest way to chamfer by hand.
Single flute countersink provides a smoother cut.
Range: 1 - 10.4 mm
Contains:
NG-1 Handle - NG1000
RD10.4 - BC1041

Order: **NG1700**

External Rotodrive

Chamfer the O.D. of bars and tubes. Quickest way to chamfer O.D. on almost all materials.
Range: 4 - 18 mm
Contains: NG-1 Handle / EX18 - EX2001

Deburring & Countersink Blades

Order	Blade	Range
BO1001 (40⁰)	O-Ring	1 - 3 mm
BC8301 (90⁰-RD8.3)		1 - 8.3 mm
BC1041 (90⁰-RD10.4)		1 - 10.4 mm
BC1651 (90⁰-RD16.5)		1 - 16.5 mm
EX2001 (90⁰-EX18)		4 - 18 mm
EX3011 (90⁰-EX28)		8 - 28 mm

Order: **NG3100**

Contersink

The standard tool for countersinking. Useful for chamfering deep holes.
Contains:
NG-3 Handle - NG3000
C20 - BC2011
C Holder - CH3000

Order: **NG3400**

Heavy Duty Rotodrive

40mm displacement allows for heavy duty burrs to be removed.
Contains:
NG-3 Handle - NG3000
C20 - BC2011
H.D. Ext. RotoDrive Holder - EL0902

Reversible Countersinks

Order: **RC1000** — **Mini Reversible**

Very fine tool for deburring both back and front side of holes. Range: 3 - 5.5 mm
Contains: R1 - BR1001

Order: **RC2000** — **Medium Reversible**

For deburring both back and front side of holes.
Range: 5 - 10 mm / Contains: R2 - BR2001

Order: **RC3000** — **Large Reversible**

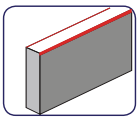
For deburring both back and front side of holes.
Range: 10 - 22 mm / Contains: R3 - BR3001

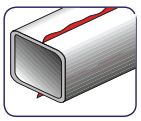
Countersink Blades

Order	Blade	Range
BC1211 (90⁰ - C12)		1 - 12 mm
BC2011 (90⁰ - C20)		3 - 20 mm
BC3011 (90⁰ - C30)		3 - 30 mm
BR1001 (90⁰ - R1)		3 - 5.5 mm
BR2001 (90⁰ - R2)		5 - 10 mm
BR3001 (90⁰ - R3)		10 - 22 mm

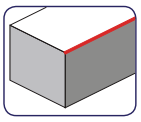
Ceramic Tools

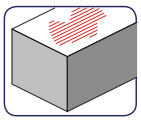
Thin Sheet Metal | Parting Line Flash





Straight Edges | Surface Scraping





Order: **CR2000**

Convexed Cera-Cut

Ideal for surface scraping and parting line deflashing. Ideal for all plastic materials and soft metals.
Blade can be replaced.
Contains: CERA-CUT Handle - CR2100
CONVEXED BLADE - CR2200

Order: **CR2300**

Concaved Cera-Cut

Ideal for curved edges and small ridges.
Ideal for all plastic materials and soft metals. Blade can be replaced.
Contains: CERA-CUT Handle - CR2100
CONCAVED BLADE - CR2500

Order: **CR1100**

Cera-Cut

Ideal for deburring plastics and other soft materials.
Extremely long life.
Disposable tool.
Contains: Convexed radius ceramic blade, mounted in ergonomically held handle with soft grip.

Order: **DB5000**

Ceramic Double Burr

Ideal for simultaneously double edge deburring.
Range 1 - 11 mm.
Contains: DB handle, hand guard and V-shaped ceramic blade.

Spare Ceramic Blades

Convexed	Concaved	V Shaped
Order: CR2200	Order: CR2500	Order: CR5100

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Deburring Tool Kits - Economic

Promo-1 Set

Contains:
* 1 pcs. = Handle
* 1 pcs. = Telescopic Holder
* 10 pcs = C20 Blades

Order Code: RCP84059

Promo-2 Set

Contains:
* 1 pcs. = Handle
* 10 pcs = C20 Blades

Order Code: RCP84069

Universal Deburring Kit

Contains:
* 5 pcs. = D-SD, T-SD, R-SD Plastic Handles
* 21 pcs. = Deburring Blades - 3.2 mm
* C-30, C-121, C-100, C-15 & C60
* 5 pcs. = Scraper Blades - 6 mm
* 2 pcs. = R10 (S) / 3 pcs. = R15 (S10)
* 2 pcs. = Scraper Blades SCR-3 (75 mm) CR- 612
* 1 pcs. = V-2 & V-4 Blades and VT Telescopic Holder
* 1 pcs. = Deburring Blade with KW Telescopic Holder
* 1 pcs. = DTO Holder for C Type Blades
* 1 pcs. = CS-20 Countersink Blade Set
* 1 pcs. = C-1 Ceramic Tool Set

Order Code: RCP86909

NEW

Mould Endoscope Camera

Contains of Product Box:

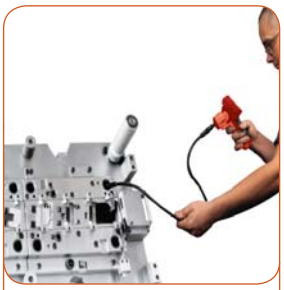
* Software CD
* USB Cable
* Carrier Bag
* Video Output Line
* DC Power Adapter
* Endoscope Camera
* User Manual
* 3.7 Lithium Battery
* Mirror, Magnet & Hook

Order Code: CEMBS150

Specification:

+ With the help of a waterproof gooseneck camera, it can easily take photos and videos.
+ On-site inspection by photos and videos.
+ Image rotation by pressing up and down buttons under video mode.
  And images display with current time / date.

Gooseneck Length :	1 Metre
Display Screen - LCD :	3.2" Colour TFT
Display Resolution :	320 x 240
Photosensitive Devices :	1/4 Inch CMOS
Sensor Pixel :	300.000
Max. Number of Frames(FPS):	30 FPS / S (max.)
Memory:	Internal / SD Card up to 32GB
Viewing Angle :	0 to 180^0
Power Supply :	Li Battery 3.7V / 2000mA
LED Lighting:	10^0 Adjustable
TV Out:	PAL / NTSC System
On-Screen Supported Languages:	English, German, Spanish, French & Turkish


In-Mould Monitoring

Machine Repair

Car Repair & Maintenance

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for products video & advantages.
www.guvenal.net "

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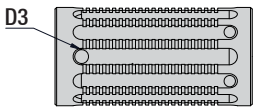
NEW

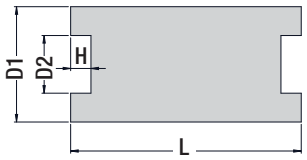
Nozzle Filter

Code: MTMF

Recommended for use whenever a high quality filtered melt is desired, for example; whenever processing with a hot-runner system. Also, the use of this filter is especially for smaller gate diameters and when processing regrind materials.

"MTMF" Nozzle Filters offer a simple, effective, and economic way of preventing metal particles and other contaminants from clogging gates or entering the mould. The channel and groove forms of the filter cartridge have been optimized for maximum flow at minimum pressure loss.





Order Code	D1	L	D2	H	D3	Max. Ton
MTMF1	Ø14	44.3	6	5	Ø3	150
MTMF2	Ø20	45	12	3	Ø3.5	300
MTMF3	Ø30	60	20	9	Ø4	450
MTMF5	Ø50	80	40	9	Ø5	2000

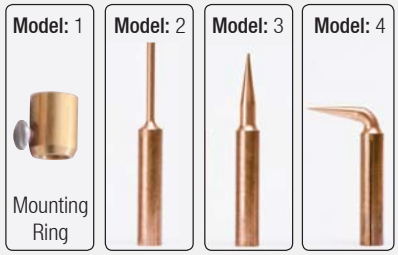
Order Code: SYT

Hot Tip Mould Sprue Cleaner

The Hot Tip Mould Sprue Cleaner is a quick heating flexible tool for melting raw material (plastic) from plugged nozzles and sprues.

While beginning operation, the selected compatible copper tip is connected to the heat gun end with mounting ring in appropriate manner. It is used ergonomically thanks to flexible hose of heat gun.

Copper Tips related to unit with compatible selection:



Technical Specifications:

Voltage: ..... 220V / 230V
Power: ..... 100W min. - 200W max.
Weight: ..... 250 g.
Cable Length: ..... 2.5 Metre
Copper Nozzle Tip Temp.: .... max. 350°

* 12 seconds heating duration / waiting is 48 seconds.
* It is suitable for all plastic raw materials.

Application:
During the process, 12 seconds after pressing the trigger of the heat gun, the copper tip reaches to the required temperature - 350ºC to open the plugged area. While gun is working, please do not pull the trigger continuously. After pulling the trigger for 12 seconds (on), wait for 48 seconds (off) by removing your hand from the trigger. This process cycle can be repeated in accordance with specified time values. It can be extended according to the hard plastic materials. Damage to mould or nozzle is impossible due to use of copper tips.

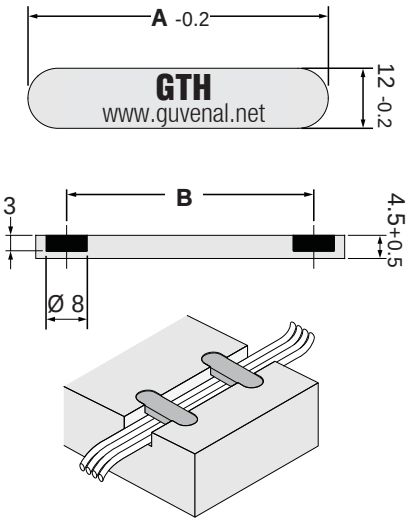
NEW

Code: GTH

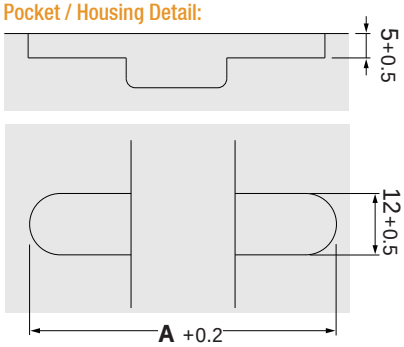
Cable Retainer Cap - Magnetic

(Magnetic & does not require extra hole)

Especially in hot runner moulds, it keeps the diffused cables clean and smooth in channel. The product is a magnetic material, it is self adhesive, and there is no need to drill and tap extra holes. We recommend keeping maximum mould temperature under 80ºC. Because, plastic and even magnets can be affected and broke down due to high temperature.



Pocket / Housing Detail:



Order	A	B	Material	Max.Temp.
GTH40	40	28	ABS + NfFeB	80ºC
GTH60	60	48	ABS + NfFeB	80ºC

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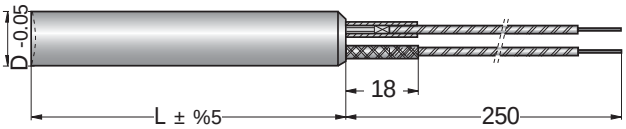
Cartridge Heater with Thermocouple

Code: FR

The Cartridge Heaters produced with advanced technology, provide a good performance in difficult use conditions, in short distances and small areas due to its high watt. By insulating resistance wire wrapping on ceramic piece in equal and common pitch ranges with high resistant magnesium oxide powder, is created at a very close point to the stainless tube. The thickness of insulation between resistance wire and stainless tube provides excellent heat transmission.



Standard Type with Thermocouple

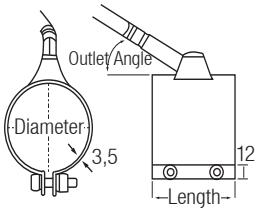
The hot junction of the thermocouple is grounded to the lower washer and guarantees a rapid response of the temperature.

Optional Type-2

The hot junction of the thermocouple is located in the center of the lenght in non-heating zone and ground to the casing.

L	40	50	60	80	100	130	160	200	250	300	400
D	WATT (230V)										
6.5 -0.02 -0.04	80 100 125 160 200	125 160 200 250 315	125 160 200 250 315	160 200 250 315	200 250 315 400	250 315 400 500	250 315 400 500	-	-	-	-
8.0 -0.03 -0.05	125 160 200	125 160 200 250	160 200 250 315	200 250 315 400	200 250 315 400	250 315 400 500	250 315 400 500	-	-	-	-
10 -0.03 -0.06	125 160 200 250 315	160 200 250 315 400 500	160 200 250 315 400 500	200 250 315 400 500 630	250 315 400 500 630 800	315 400 500 630 800 1000	400 500 630 800 1000	-	-	-	-
12.5 -0.04 -0.07	160 200 250 315	160 200 250 315 400	200 250 315 400 500	200 250 315 400 500 630	315 400 500 630 800 1000	315 400 500 630 800 1000	400 500 630 800 1000 1250	500 630 800 1000 1250 1600	630 800 1000 1250 1600 2000	630 800 1000 1250 1600 2000	-
16 -0.05 -0.08	-	200 250 315 400	200 250 315 400 500	250 315 400 500 630 800	315 400 500 630 800 1000	400 500 630 800 1000 1250	500 630 800 1000 1250 1600	630 800 1000 1250 1600 2000	630 800 1000 1250 1600 2000	800 1000 1250 1600 2000 2500	800 1000 1250 1600 2000 2500
20 -0.06 -0.10	-	-	-	400 500 630	400 500 630	500 630 800 1000	630 800 1000 1250	800 1000 1250 1600	1000 1250 1600 2000	1000 1250 1600 2000	1250 1600 2000 2500

* The slot / housing that Cartridge Heater will be inserted should be even and smooth.
* The suitable / main temperature control should be done to prolong heater life.
* Custom-made orders as per request.



Band Heater

Code: KR

With its economical prices, excellent insulation, outlets reinforced for long use, inner sleeve rolling it is excellent.

It can be produced as thermocouple as per request.

Standard 300mm wire is used, it can be extended as per request.

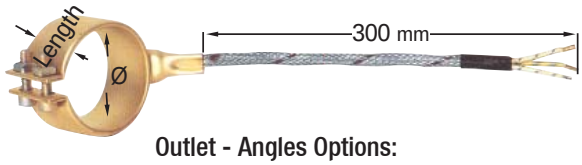
Also, as per request special production can be made.

Power: 5 W/cm^2 - 230V

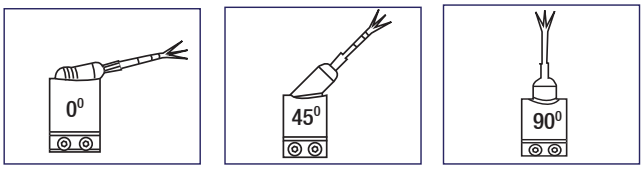
Sleeve / Band Material: Copper, tin alloy / Cr - Ni wire in brass.

Energy Wire: Pure nickel 300mm length, glassfiber fireproof wire outside, external armour 304 stainless steel mesh wire.

Fasteners: Stainless, cylinder head cap screw - M5 x 30.



Outlet - Angles Options:



Code: KR

Ø	Length	Watt
25	30	120
30	25	120
	30	140
	35	165
	40	185
35	25	135
	30	165
	35	190
	40	220
	45	235
40	25	155
	30	190
	35	220
	40	250
	45	280
42	25	165
	30	200
	35	230
	40	265
45	25	175
	30	210
	35	250

Ø	Length	Watt
45	40	280
	45	320
	50	350
50	25	195
	30	235
	35	275
	40	315
	50	390
55	25	215
	30	260
	35	300
	40	345
	50	430
60	25	235
	30	280
	35	330
	40	375
	50	470
	60	565
65	25	255
	35	355
	50	510

Ø	Length	Watt
70	25	270
	30	330
	35	385
	40	440
	50	550
	60	660
75	30	355
	40	470
	50	590
	60	705
80	25	310
	30	375
	35	440
	40	500
	50	630
	60	750
100	25	390
	30	470
	35	550
	40	630
	50	785
	60	940

Order: FR. D x L x watt

Order: KR. Ø x Length x Angle

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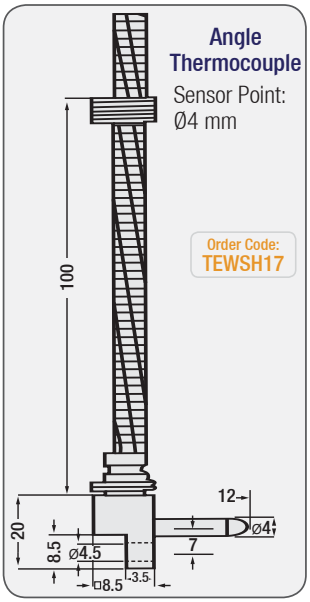
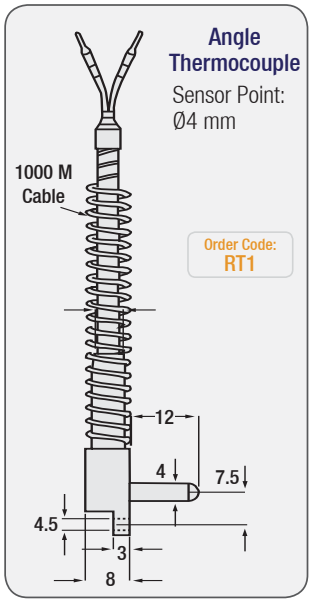
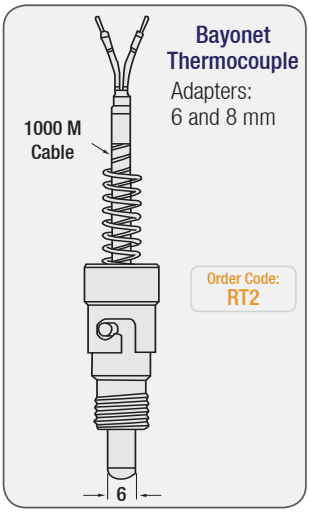
Thermocouples - Type J

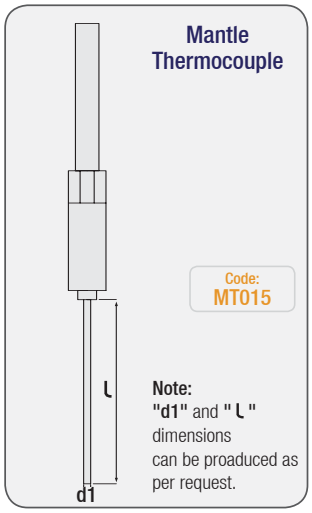
Code: RT

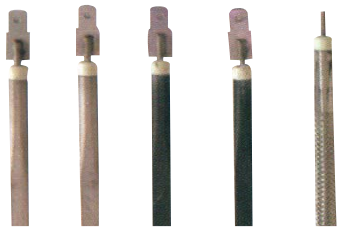
The thermocouples (type J) makes measurement as mini volt from contact surface, sends values to the screen. Thus, it maintains heat measurement. Cables are isolated with glassfiber coating. Thermocouples are the first component sensors of heat measurement from -200°C up to +800°C. Thermocouples are produced in various types as “Type J”, “Type K” and “PT100”. “Type J” standard type thermocouples that we produce are shown below. Except these, we produce thermocouple according to the different special type samples.











Round Cross-section	Square Cross-section
Ø 5 - 8.0 - 8.5	⊠ 6 x 6 - 8 x 8 - 10 x 10 mm

Flexible Rod Heater

Code: CR

Flexible Rod Heaters can be produced up to 4.400 mm length. They can be delivered straight, bentable annealed or to bent according to customer drawing. In heating of liquid and air flow, especially is used as resistance to manifold channels (by closing with resin), it can be mounted to hexagon flange.

It is presented in two different types;

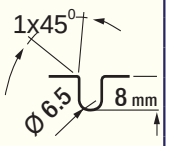
1 - in round cross-section **2-** in square cross-section.

Energy cables are from pure nickel and covered by fire proof glass fibre cable.

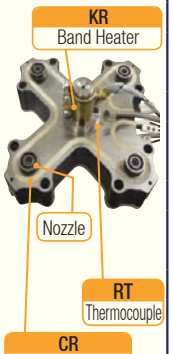
Cross Section	6 x 6 mm ⊠ 5.0 mm ⌀	8 x 8 mm ⊠ 8.0 mm ⌀	10 x 10 mm ⊠ 8.5 mm ⌀
Flex Type	Base-flex	Base-flex	Base-flex
Min. Bending Radius	12 mm	15 mm	20 mm
Unheated Length	25 mm	30 mm	40 mm
Total Length	Power (W) 230 V		
250 mm	200 W	-	-
300 mm	250 W	-	-
350 mm	300 W	550 W	-
400 mm	350 W	650 W	-
450 mm	400 W	750 W	-
500 mm	450 W	800 W	-
550 mm	500 W	900 W	-
600 mm	550 W	1000 W	-
650 mm	600 W	1100 W	-
700 mm	650 W	1200 W	-
750 mm	700 W	1300 W	-
800 mm	750 W	1350 W	-
850 mm	800 W	1450 W	-
900 mm	850 W	1550 W	2100 W
950 mm	900 W	1650 W	-
1000 mm	950 W	1750 W	2300 W
1050 mm	1000 W	1850 W	-
1100 mm	-	1950 W	2500 W
1150 mm	-	2000 W	-
1200 mm	-	2100 W	2700 W
1250 mm	-	2200 W	-
1300 mm	-	2300 W	2900 W
1350 mm	-	2400 W	-
1400 mm	-	2500 W	3100 W
1450 mm	-	2600 W	-
1500 mm	-	2700 W	3300 W
1550 mm	-	2800 W	-
1600 mm	-	-	3500 W
1700 mm	-	-	3700 W
1800 mm	-	-	3900 W
1900 mm	-	-	4100 W
2000 mm	-	-	4300 W

Bendable Type according to Manifold Shape:

Manifold Housing Detail:



Mounting Example:



Order: **CR.** Cross Section x Total Length

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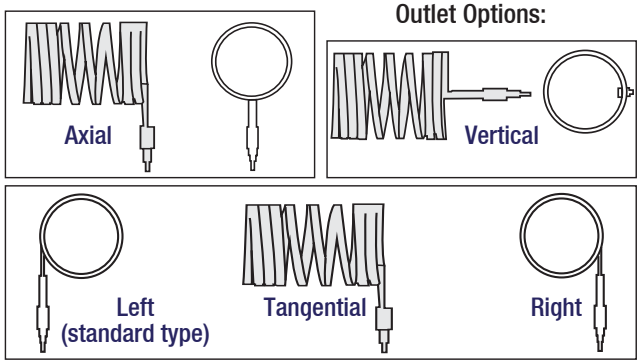
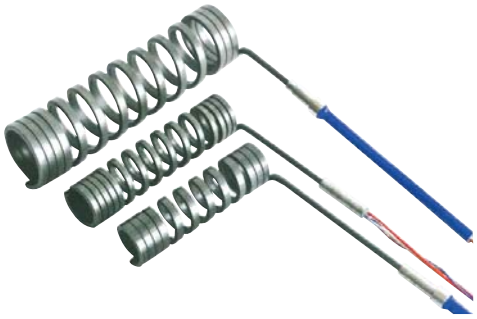
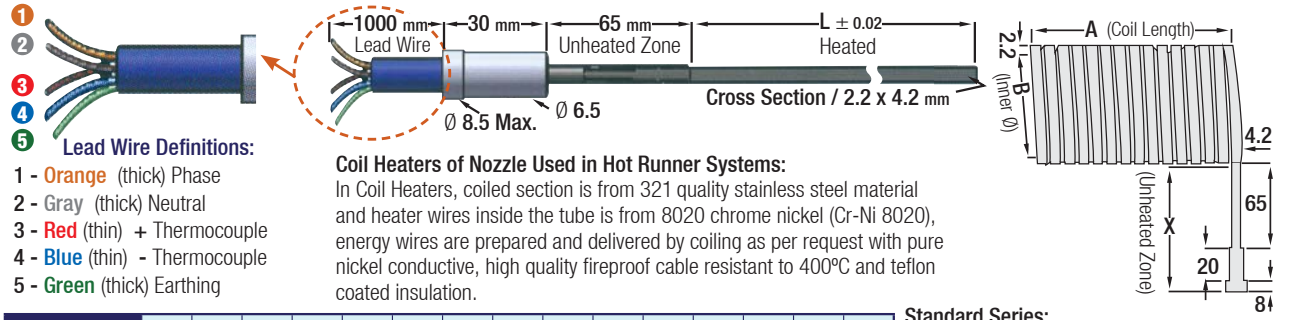




Coil Heater

Code: SR



Lead Wire Definitions:

1 - Orange (thick) Phase
2 - Gray (thick) Neutral
3 - Red (thin) + Thermocouple
4 - Blue (thin) - Thermocouple
5 - Green (thick) Earthing

Coil Heaters of Nozzle Used in Hot Runner Systems:
In Coil Heaters, coiled section is from 321 quality stainless steel material and heater wires inside the tube is from 8020 chrome nickel (Cr-Ni 8020), energy wires are prepared and delivered by coiling as per request with pure nickel conductive, high quality fireproof cable resistant to 400ºC and teflon coated insulation.

Wattage (W)	200	225	250	290	350	400	470	620	690	850	950	1100	1200	1400	1600
Heated Length L (mm)	250	280	335	385	460	520	600	760	900	1100	1200	1400	1550	1750	1950

Standard Series:
It is produced up to 1200 wattage and has 1000 mm lead wire. Standard "J" Type Thermocouple is used in our products.
As per request; N Type & K Type Thermocouple options can be produced for precision works.
Custom-made close fit heaters / coiling formula;
Inner Ø x "P" number (3.14) x Coil number = ...

Heated (coiled) Zone / "A" Length and Wattage Values:

A (coil)	20	40	60	80	100	120	140	160	180	200	220	240	260
B (inner Ø)	Heated Zone Wattage Values												
10 mm	-	200	250	350	350	350	400	470	470	620	-	-	-
12 mm	-	225	290	400	400	400	470	620	620	620	-	-	-
12.5 mm (1/2")	-	225	290	400	400	400	470	620	620	690	-	-	-
14 mm	-	250	350	400	400	470	620	620	690	690	-	-	-
15 mm	-	250	400	470	470	620	620	620	690	-	-	-	-
16 mm (5/8")	-	250	400	470	470	620	620	690	690	-	-	-	-
18 mm	-	290	400	620	620	620	690	690	-	-	-	-	-
19 mm (3/4")	-	290	470	620	620	620	690	850	950	950	1100	1200	1200
20 mm	-	290	470	620	620	690	690	850	950	1100	1100	1200	1200
22 mm (7/8")	200	350	620	690	690	690	850	950	1100	1100	1200	1200	-
24 mm	200	400	620	690	690	850	950	950	1100	1200	1200	1200	-
25 mm (1")	225	400	620	690	690	850	950	1100	1100	1200	1200	-	-
28 mm	225	470	690	850	850	950	1100	1200	1200	1200	-	-	-
30 mm	250	470	690	950	950	1100	1200	1200	1200	-	-	-	-
32 mm (1 1/4")	250	470	690	950	950	1100	1200	-	-	-	-	-	-
35 mm	290	620	690	950	950	1100	1200	-	-	-	-	-	-
38 mm (1 1/2")	290	620	850	1100	1100	1200	-	-	-	-	-	-	-
40 mm	290	620	850	1100	1100	1200	-	-	-	-	-	-	-
42 mm	350	620	950	1200	1200	1200	-	-	-	-	-	-	-
45 mm	350	690	950	1200	1200	1200	-	-	-	-	-	-	-
48 mm	400	690	1100	1200	-	-	-	-	-	-	-	-	-
50 mm (2")	400	690	1100	1200	-	-	-	-	-	-	-	-	-

Total Length Straight
Include Unheated Zone (65 mm):

P at 230 V	2.2 x 4.2 mm 2.5 x 4.5 mm with and without TC J
200 Watt	315 mm
225 Watt	345 mm
250 Watt	400 mm
290 Watt	450 mm
330 Watt	-
350 Watt	525 mm
400 Watt	585 mm
470 Watt	665 mm
550 Watt	-
620 Watt	825 mm
690 Watt	965 mm
700 Watt	-
800 Watt	-
850 Watt	1165 mm
950 Watt	1265 mm
1000 Watt	-
1100 Watt	1465 mm
1200 Watt	1615 mm
1400 Watt	1750 mm
1600 Watt	1950 mm
1800 Watt	-
2000 Watt	-
2200 Watt	-

Order: SR. B x A x Outlet
(pls. specify used raw mat.)

For correct heaters selection:
Pls. complete system by requesting information from our Hot Runner Department - support@guvenal.net (with used plastic raw material information).

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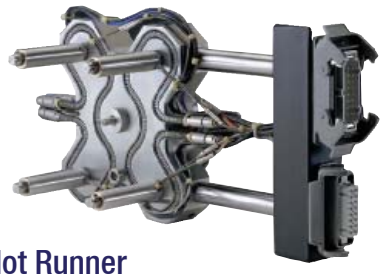

Hot Runner Socket & Plug Inserts

Code: EBM..

Definitions

EB	M	32	FD	4	4
Product	Body Material	Poles Qty	Type	Entry	Locking
	M Metal	05	CF Plug Insert	1 Side Entry	4 Four Latch Roller
	0 Insert	10	CP Socket Insert	2 Double Side Entry	
		16	FD Wall Housing with Plug Insert	4 Bottom Entry	
		24	FU Hood with Plug Insert		
		32	PM Housing with Socket Insert		
		48	PU Hood with Socket Insert		

5 Poles - 10 Amperage

- Socket Insert
- 5 Poles
Order: **EBO** 05CP

- Plug Insert
- 5 Poles
Order: **EBM** 05CF

- Hood with Socket Insert
- 5 Poles
Order: **EBM** 05PU

- Hood with Plug Insert
- 5 Poles
Order: **EBM** 05FU

- Socket Insert with Latch
- 5 Poles
Order: **EBM** 05PM

16 Poles - 16 Amperage

- Socket Insert
- 16 Poles
Order: **EBO** 16CP

- Plug Insert
- 16 Poles
Order: **EBO** 16CF

- Hood with Socket Insert
- 16 Poles
Order: **EBM** 16PU

- Hood with Plug Insert
- 16 Poles
Order: **EBM** 16FU

- Wall Housing with Plug Insert
- 16 Poles
Order: **EBM** 16FD14
EBM 16FD24

32 Poles - 16 Amperage

- Socket Insert
- 32 Poles
(1-16 & 17-32)
Order: **EBO** 32CP

- Plug Insert
- 32 Poles
(1-16 & 17-32)
Order: **EBO** 32CF

- Hood with Socket Insert
- 32 Poles
Order: **EBM** 32PU

- Hood with Plug Insert
- 32 Poles
Order: **EBM** 32FU

- Wall Housing with Plug Insert
- 32 Poles
Order: **EBM** 32FD44

10 Poles - 16 Amperage

- Socket Insert
- 10 Poles
Order: **EBO** 10CP

- Plug Insert
- 10 Poles
Order: **EBO** 10CF

- Hood with Socket Insert
- 10 Poles
Order: **EBM** 10PU

- Hood with Plug Insert
- 10 Poles
Order: **EBM** 10FU

- Wall Housing with Plug Insert
- 10 Poles
Order: **EBM** 10FD14
EBM 10FD24

24 Poles - 16 Amperage

- Socket Insert
- 24 Poles
Order: **EBO** 24CP

- Plug Insert
- 24 Poles
Order: **EBO** 24CF

- Hood with Socket Insert
- 24 Poles
Order: **EBM** 24PU

- Hood with Plug Insert
- 24 Poles
Order: **EBM** 24FU

- Wall Housing with Plug Insert
- 24 Poles
Order: **EBM** 24FD14
EBM 24FD24

48 Poles - 16 Amperage

- Socket Insert
- 48 Poles
(1-24 & 25-48)
Order: **EBO** 48CP

- Plug Insert
- 48 Poles
(1-24 & 25-48)
Order: **EBO** 48CF

- Hood with Socket Insert
- 48 Poles
Order: **EBM** 48PU

- Hood with Plug Insert
- 48 Poles
Order: **EBM** 48FU

- Wall Housing with Plug Insert
- 48 Poles
Order: **EBM** 48FD44

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Order:
HCC. (zone qty)

Hot Runner Temperature Controller

Code: HCC

"HCC" Hot Runner Temperature Controllers have been produced from microprocessor-based devices and specially designed for Hot Runners.

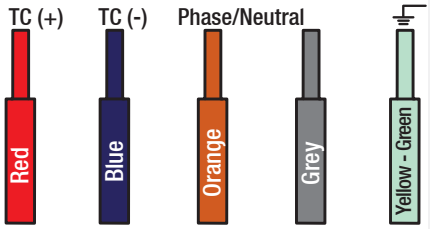
Specifications:

* 1.0⁰ controlling accuracy.
* PID Control System.
* Soft Start Mode (working system increases resistance mode up to 8 times with soft start mode).
* Standby Mode; provides electricity saving.
* Proportional working mode (without thermocouple).
* Compatible with "J Type Thermocouple".
* 0-600 degree operation scale.
* Structure not requiring calibration / ability to restore factory calibration settings.
* Automatic parameter settings with Auto Tuning.
* Warning alarm output for over and under values.
* 25A Solid State Relay (ssr) output for each channel.
* Siemens 10A rapid fuse for each channel.
* With standard 3-meter connecting cable.
* 4-meter power cable with 5-unit feeder plug.
* Stranded and specially alloyed thermocouple cable in cable line (Fe-Const).
* It provides easy installation and use thanks to its "plug and go" structure.

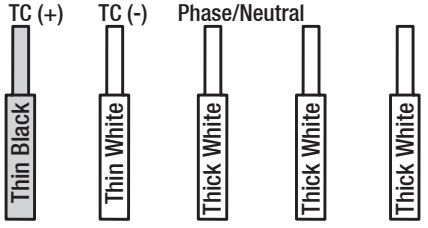
Cable Selection and its Importance:

The device / controller and cables used here are very important in terms of mould, the colors that are used are also important. It should be inserted to the device / controller by considering these colours.

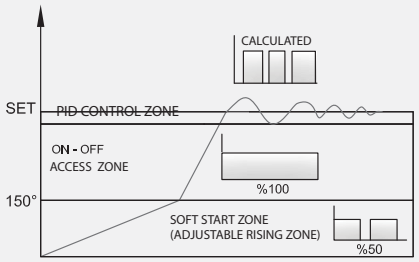
Heaters Cable Connection of Nozzles:

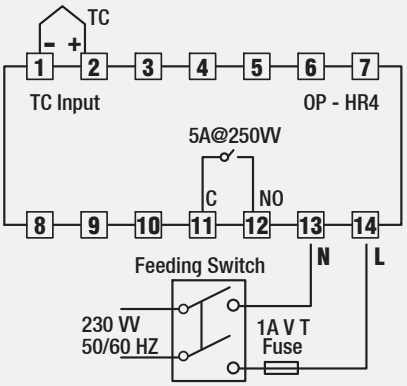


Heaters Cable Connection of Manifold:



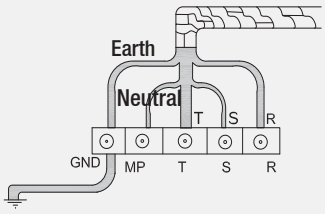
Temperature Control Technique:





Warnings (things to do before operation):

Before fastening "HCC" Controller to the mould, ensure that the network is grounded and your mould is connected to the earth connection. Electrical leakages which may occur in heaters in mould due to that there is no earth connection may pose risk for human health. Also, this leakage will damage the heater and thermocouple. The occurring leakages can be misread of temperature value or damage the device by transferring via thermocouple cable.



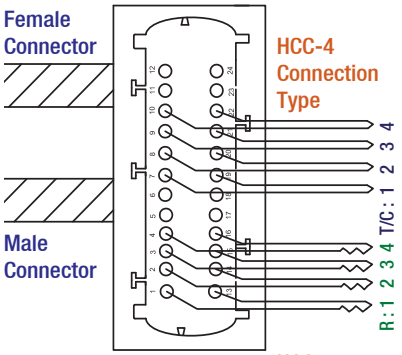
Attention!!

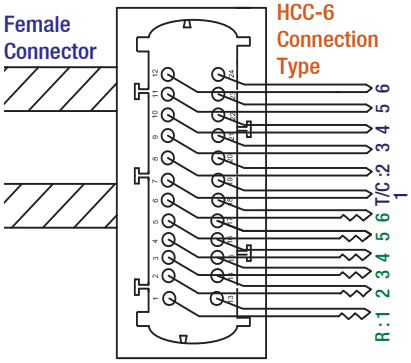
Neutral (N) and Earth (GND) are different than each other. Due to current switching from neutral line, please do not use this line for earthing. In order not to pose risk for human health and to operate your device normally, the earth terminal at power cable absolutely should be connected to actual earth line in your mains.

"HCC" Operation Procedure:

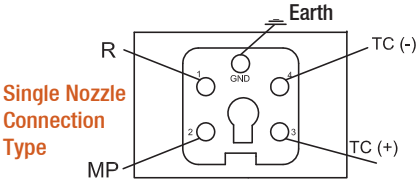
Before operating, make connection of heater and thermocouple in accordance with socket connection diagram given to you.
After ensuring that socket connection is applied in accordance with the diagram, insert connecting cable into sockets on mould.
Before giving energy to controller, switch rear fuses to off position, set pacco switch to zero position, plug power plug into appropriate socket and set pacco switch to position-1, then open the fuses in order, make sure that the temperature in zones opened its fuses is increased.
By entering program menu, you can adjust the desired temperature values.

Example: Cable / Plug Connection Series





* For other connection types, pls. request info from our company (8 - 12 - 16 - 32).



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Multiple of Clamping Force Viscosity

Table - A

Raw Material	Factor for Clamping Force ton / cm²	Viscosity
GPPS	0.155-0.31	1
GPPS (x)	0.465-0.62	1
HIPS (+)	0.155-0.31	1
HIPS (+) (x)	0.388-0.543	1
ABS	0.388-0.62	1.3 - 1.5
SAN (AS)	0.388-0.465	1.3 - 1.5
SAN (AS) (*)	0.465-0.62	1.3 - 1.5
LDPE	0.155-0.31	1.0 - 1.3
HDPE	0.233-0.388	1.0 - 1.3
HDPE (*)	0.388-0.543	1.0 - 1.3
PP	0.233-0.388	1.0 - 1.2
PP (*)	0.388-0.543	1.0 - 1.2
PPVC	0.233-0.388	2
UPVC	0.31-0.465	2
PA6,PA66	0.62-0.775	1.2 - 1.4
PMMA	0.31-0.62	1.5 - 1.7
PC	0.465-0.775	1.7 - 2.0
POM	0.465-0.775	1.2 - 1.4
PET	0.31-0.388	1.7 - 2.0
PET	0.62-0.93	1.7 - 2.0
PBT	0.465-0.62	1.7 - 2.0
CA	0.155-0.31	1.3 - 1.5

Table - A:
(*): Bang Flow / **(x):** Wall Thickness < 1mm / **(+):** Anti Shock

Right clamping forces block the overflow on products.
For sure, it depends on various parameters but we try to help you by a smart method to calculate the forces approximately.

Practical Method:

Min. Clamping Force = Cavity Projection Area x Multiple of Raw Material (Table - A)

Cavity Projection Area: It is the largest vertical projection area seen when looked cavity from injection side.

Multiple (coefficient): It is given on Table - A general using raw materials .

Example: A GPPS glass having 40 mm radius will be produced.
The thinnest wall thickness of glass is 0.6 mm. Please find clamping force required for this production.
Projection Area: pi (3.1416) x r^2 = 50 cm^2
Multiple of GPPS = 0.62 (from Table - A)
Clamping Force is = 50 x 0.62 = 31 Ton

In order to avoid surface quality problems on injected parts, drying the raw material before injection is priority according to test form. Drought injection is required.

Solution Methods for Injection Problems

Problems	Following of Solution Methods							
Very Fragile Parts	M 1 E 6	E 6 4/ 6	E 8	M 2	M 3 M 1	M 3		
Short Shot	E 9	E11	E 1	E 3	E 6	K 1	4/ 5	K 7
Entrapped Air	E 9 E 2	E11	E 5 3/ 5	E 3 E 6	E 6 K 1	K 5 E10	K 7	K 5
Burn Marks	E 6 E 7	E 2	E 4 M 3	K 7	M 3 K 5	E 8	K 5 K 6	K 8
Warpage	K 3	M 3 E11	E11 3/ 4	3/ 4 E 5	E 5 E 2	4/ 5 K 2	K 6 E 6	K 8 5/ 6
Weld Lines	M 1 K 7 E 1	E 1 E 3	E 3 E11	E11 K 1	K 1 E 6	E 6 M 1 K 7	K 6 4/ 6	K 8
Sink Marks	E 9	E 5 E 3	E11	K 2 E 6	K 5	K 6	M 6	K 8
Plate Out (parts are sticking to mould)	K 3	K 9 4/ 5	E11	E 4 M 6	E 5 K 9	M 6 K 8	K 8	
Surface Appearance Damaged	M 1 K 1	E11	E 6	E 3 E 4	K 7	K 4 K 5	K 6	
Plastic Deformation	E 6	E10	E 8	E12				
Burr or Overflow	E 2	E13	E 4 E 5	K 8	E 6	M 4 M 6		
Flash / Jetting	E 2	E 7	K 1	E 6	K 5	K 6	K 8	
Wrinkles on Surface	E 1	E 6	K 1	M 5	4/ 5			

Solutions > Injection Machine

- **E 1** Increase injection velocity / pressure.
- **E 2** Decrease injection velocity / pressure.
- **E 3** Increase velocity / pressure of pack-hold.
- **E 4** Decrease velocity / pressure of pack-hold.
- **E 5** Optimize the pack-hold time.
- **E 6** Optimize the melt / area temperature.
- **E 7** Control the nozzle heater and its temperature.
- **E 8** Control the suitability of part weight to machine capacity.
- **E 9** Control the packing / injection weight ratio.
- **E10** Control the back pressure / pack-hold ratio.
- **E11** Control the pass point of injection to pack-hold.
- **E12** Control the range of getting material time.
- **E13** Increase the clamping force.

Solutions > Raw Material

- **M 1** Optimize the drying of raw material.
- **M 2** Check the ratio of recycle raw material.
- **M 3** Check the ratio of master batches.
- **M 4** Decrease the viscosity of raw material.
- **M 5** Increase the viscosity of raw material.
- **M 6** Check the type of raw material.

Solutions > Mould

- **K 1** Increase mould temperature.
- **K 2** Decrease mould temperature.
- **K 3** Control the cooling channels & cooling balancing.
- **K 4** Control the runner length.
- **K 5** Control the runner diameters.
- **K 6** Control the runner injection.
- **K 7** Check the air - gas vents / outs.
- **K 8** Review your mould design and change it if necessary.
- **K 9** Control your part extractor design.

Thermoplastics Raw Materials Melting & Drawing Ratios:

	Material Type	Melting Temp. Range °C	Draw Ratio in Mould %
Amorphous Thermoplastics	ABS	170 - 200	0.4 - 0.7
	PS	130 - 160	0.3 - 0.6
	SB	130 - 160	0.3 - 0.6
	SAN	140 - 170	0.4 - 0.6
	CA	130 - 170	0.3 - 0.7
	CAB	130 - 170	0.3 - 0.7
	CP	130 - 170	0.3 - 0.7
	PC	220 - 260	0.5 - 0.8
	PMMA	150 - 180	0.4 - 0.8
	PPO	240 - 270	0.5 - 0.8
	PVC	130 - 160	0.4 - 0.8
Crystalline Thermoplastics	PE	~ 110	1 - 3
	PE	~ 130	1.5 - 4
	PP	~ 165	1 - 2.5
	PA66	~ 255	1.2 - 2.5
	PA6	~ 220	0.8 - 2
	PA610	~ 220	0.8 - 2
	POM	~ 175	1.5 - 3.5
	POM	~ 165	1.5 - 3.5
	PBTP	~ 225	1.2 - 2.8
	PETP	~ 255	1.2 - 2
	FEP	~ 270	3.5 - 5
	ETFE	~ 270	3.5 - 5

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Hot Runner Nozzles Selection Table according to Plastic Raw Material:

Nozzle Type		"A" Series Nozzles					"B" Series Nozzles					Runner		Multi	Valve Gate Nozzles			
		A 01	A 02	A 03	A 04	A 05	B 01	B 02	B 03	B 04	B 05	R 01	R 04	SMM	E 04	Y 01	Y 02	Y 03
Plastic Raw Materials	ABS	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	PC	⊙	◑	⊙	⊙	◑	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○
	PMMA	⊙	◑	⊙	⊙	◑	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○
	PS	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	PUR	⊙	⊙	○	○	⊙	⊙	⊙	○	○	⊙	⊙	○	⊙	○	○	○	○
	PVC	◑	●	○	●	●	⊙	◑	○	◑	◑	◑	◑	●	◑	◑	⊙	⊙
	SAN	⊙	◑	⊙	⊙	◑	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○
	PA	○	◑	○	◑	◑	○	○	○	⊙	○	○	⊙	⊙	⊙	○	○	○
	PBT	⊙	◑	○	◑	◑	⊙	◑	○	◑	◑	⊙	◑	●	◑	◑	○	○
	PE	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	PET	◑	●	○	◑	●	◑	●	⊙	◑	●	⊙	◑	●	⊙	⊙	○	○
	POM	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	PP	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

* Please contact with our Hot Runner Dept. in case of using special raw material.

○ Very Good ⊙ Suitable ◑ Consult Us ● Not Suitable

Additives & Special Cases	Glass Fibre	◑	●	○	●	●	⊙	◑	○	●	◑	◑	●	●	⊙	⊙	⊙	⊙
	Flame Proof	⊙	⊙	○	⊙	⊙	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○
	Colour Change	◑	○	○	◑	○	○	○	○	○	○	⊙	⊙	◑	○	○	○	○
	Regrind Mat.	◑	○	○	○	○	◑	◑	○	◑	◑	◑	○	◑	○	○	○	○
	Cosmetic Surface	○	⊙	◑	⊙	⊙	○	⊙	◑	⊙	⊙	○	⊙	○	○	⊙	⊙	◑
	Low Pressure Loss	◑	○	○	○	○	◑	◑	○	○	◑	◑	○	⊙	○	○	○	○

Selection Table of Nozzle Tip Diameters:

Nozzle Tip		"A" Series Nozzle					"B" Series Nozzle					Runner Nozzle			"D" Series Multi Nozzle			
	Ø	18	22	25	32	40	18	22	25	32	40	15	17	19	16	22	28	34
Plastic Raw Materials	PE PP PS SB	25	60	200	800	2000	20	45	150	600	1500	45	150	600	30	60	140	200
	ABS ASA PA POM SAN	15	40	100	500	1200	12	32	80	400	950	32	80	400	25	50	120	170
	PBTP PC PES PMMA PPO PPS PSU TPU	12	25	60	300	800	◑	◑	55	270	750	◑	55	270	◑	◑	◑	◑

* Values in the table are in gram (g).

* Please contact us for grammages which are not available in the table and marked with ◑ points.

Note:
The following table is prepared for our partners for information purposes. Real working conditions; it can differ depending on part volume, average wall thickness, viscosity, machine capacity and gate diameter.

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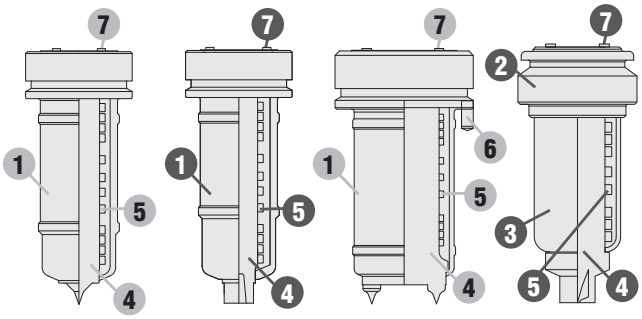
Hot Runner Nozzles

Hot Runner Nozzles are consisted from the following equipments, all of them have a separate task in system. **Bushings** provide bearing of nozzle and avoiding of its motion. **Heaters** are made heating task to provide injecting of fluid material without problem. **Sealing plug** is to avoid flowing of plastic raw material out that is passed between manifold and nozzle with high pressure. Nozzle types should be selected by determining according to the raw material and grammage and considering mould conditions.

1- Bushing
2- Nozzle Head
3- Nozzle Outer Case
4- Nozzle
5- Heater
6- Nozzle Centring Pin
7- Sealing Plug



Nozzle Selection:

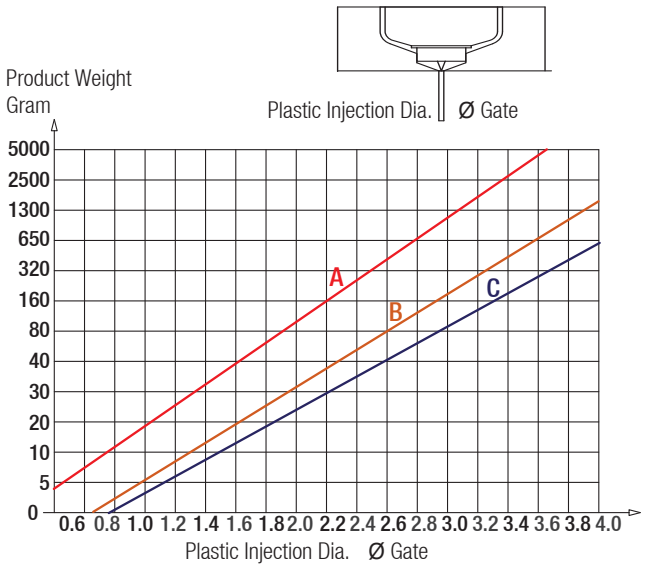
The success of hot runner application depends on many factors.
Using suitable raw material, making good part / mould design and selecting the right injection machine are critic factors. Besides these, the location of runner inlet on part and selection of inlet type are essential in the same manner. During part design, while deciding runner inlet location, filling the part in balance and pressure resistance created by runner inlet should be considered. When deciding the runner inlet location, right selection among various hot runner types should be done.
While deciding runner inlet type, then runner inlet dimension, first the compatibility of plastic material to this inlet type should be considered.

Nozzle tips are the elements having direct contact with the product and affecting the result in the hot runner systems.
Thus, the selection of **nozzle tip** should be selected according to the aforementioned criteria;
* Technical data of the part & weight.
* Raw material type to be used & colour change.
* Distances between cavities (in X & Y axis).
* Is injection point on the cavity? Is it on the runner?
* Number of mould cavities.
* Location of cooling system.
* With information such as melting temperature of material etc.

In the event that this data is provided, performance expected from nozzle tips will be achieved.

Refer to page "329" for nozzle selection based on grammage.

Nozzle Gate Selection Guide



A	Low Density Plastics	PE	PP	PS	TPU	i20	HDPE
B	Medium Density Plastics	SAN	ABS	POM	PA	TPE	
C	High Density Plastics	PES	PC	PMMA	PPS	PPRC	

Selection of Nozzle Diameter according to the Part Weight:

The following table is prepared for our customers for information purposes. Real working conditions; it can differ depending on part volume, average wall thickness, viscosity, machine capacity and gate diameter.

Nozzle Dia.	Density of Raw Material			Product Wall Thick.	
	A	B	C	≤2 mm	≥2 mm
Ø 18	~25 g.	~15 g.	~12 g.	~12 g.	~25 g.
Ø 22	~60 g.	~40 g.	~25 g.	~25 g.	~60 g.
Ø 25	~200 g.	~100 g.	~60 g.	~60 g.	~200 g.
Ø 32	~800 g.	~500 g.	~300 g.	~300 g.	~800 g.
Ø 40	~2000g.	~1200g.	~800 g.	~800 g.	~2000g.

Feature in Usage of Hot Runner Mould:

Even though cost of hot runner mould is higher than cold runner mould, in the long term hot runner moulds provide economy in part costs as well as it idealizes part quality.

Advantages of Hot Runner Systems:

* Provides saving from created labour.
  Any of process (such as runner cleaning / separating / storage / crushing etc.) are not done.
* Short injection cycle period.
* Mould is worked full automatically - mould efficiency is high.
* Provides savings from material (in hot runner system, there are no missing material in runner).
* Provides saving at machine capacity (hot runner systems can be used in all injection moulds / there is no machine limitation).
* Excellence in part quality, due to making moulding with low pressures, internal stresses of moulded parts is very lower than cold runner moulds, however heater elements should be under control of hot runner system.

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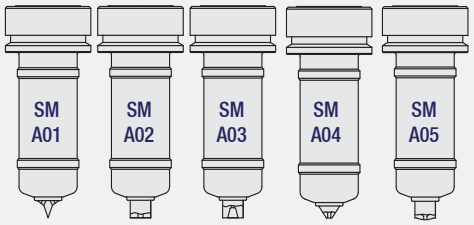
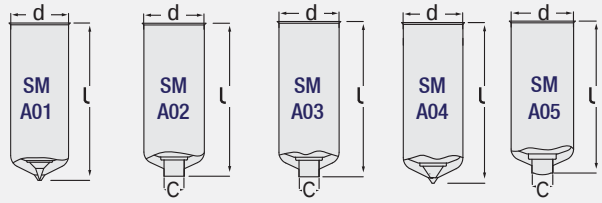
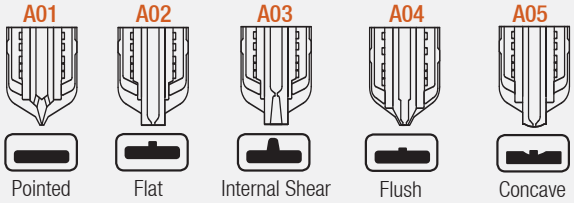
"A" Series Nozzle - Standard



Pocket / Machining Details of "A" Series;



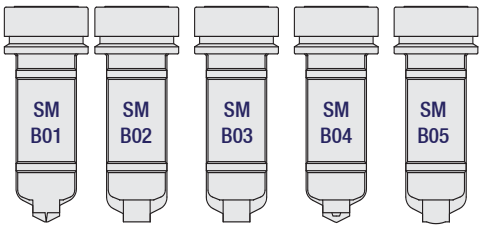
Nozzle Tip Types (AOX) & Gate Marks of Nozzle on the Product Surface;



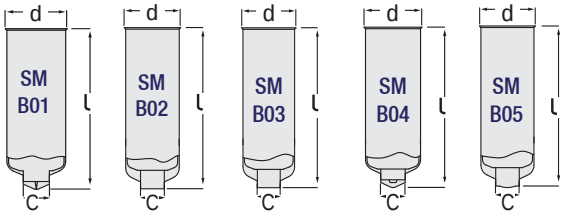
How to order:
SMA (code) x **d** (nozzle Ø) x **l** (nozzle length) x **AOX** (nozzle tip type)

Order Code	d	l	C	AOX	Heaters Wattage
SMA...	18	46	6	Nozzle Tip Types: A01 A02 A03 A04 A05	200 - 225
		56			225 - 250
	22	46	7		200 - 225
		56			225 - 250
		66			250 - 290 - 350
		76			290 - 350 - 400
	25	46	8		225 - 250
		56			250 - 290 - 350
		66			290 - 350 - 400
		76			350 - 400 - 470
		86			400 - 470
		96			400 - 470 - 620
	32	46	10		250 - 290
		56			290 - 350
		66			350 - 400
		76			400 - 470
		86			400 - 470 - 620
		96			400- 470- 620- 690
	40	46	14	A Fixed	290 - 350
		56			350 - 400 - 470
		66			400 - 470
		76			470 - 620
		86			620 - 690
		96			620 - 690 - 850

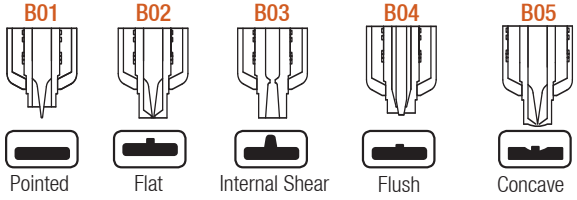
"B" Series Nozzle - Standard



Pocket / Machining Details of "B" Series;



Nozzle Tip Types (BOX) & Gate Marks of Nozzle on the Product Surface;



How to order:
SMB (code) x **d** (nozzle Ø) x **l** (nozzle length) x **BOX** (nozzle tip type)

Order Code	d	l	C	BOX	Heaters Wattage
SMB...	22	46	8	Nozzle Tip Types: B01 B02 B03 B04 B05	200 - 225
		56			225 - 250
		66			200 - 225
		76			225 - 250
	25	46	10		250 - 290 - 350
		56			290 - 350 - 400
		66			225 - 250
		76			250 - 290 - 350
		86			290 - 350 - 400
		96			350 - 400 - 470
	32	46	12		400 - 470
		56			400 - 470 - 620
		66			250 - 290
		76			290 - 350
		86			350 - 400
		96			400 - 470
	40	46	14	B Insert	400 - 470 - 620
		56			400- 470- 620- 690
		66			290 - 350
		76			350 - 400 - 470
		86			400 - 470
		96			470 - 620

- When ordering, pocket / machining detail will be presented with technical data.
- Wattage of heater depends on the flow characteristics of the material.
- Gate diameters will be determined in accordance with the order information.

Please create your orders with form on page - 336

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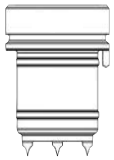


Multi-Tip Hot Runner Nozzle

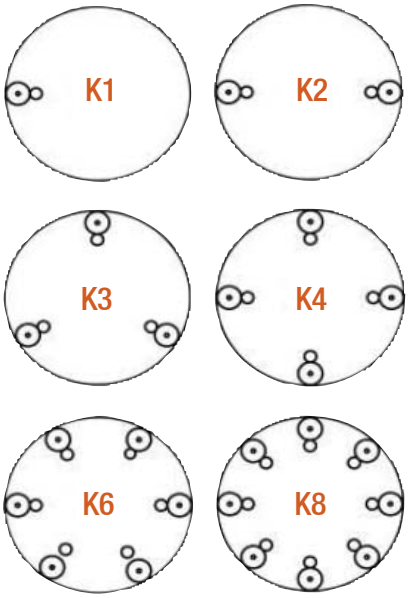
Economic Model

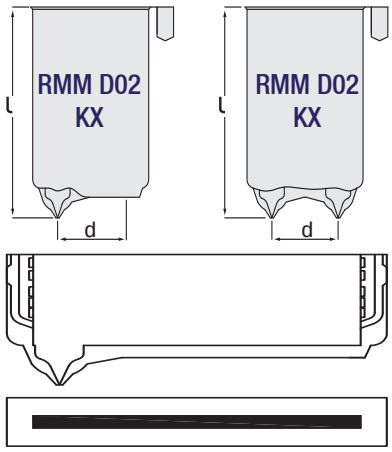
Nozzle with insert tip which is the last / new R & D work.
Heaters and insert tips of Multi-Tip Hot Runner Nozzle are easily replaced. An external thermocouple is available in nozzle body for precise temperature measurement.

How to order:
RMM (code) x **d** (nozzle Ø) x **l** (nozzle length) x **KX** (insert tip qty)

Important:

Multi-Tip Hot Runner Nozzles are not suitable for all types of materials and grammage. When selecting, please ask technical help from Guvenal - Hot Runner Department. Precise adjustments are necessary for mounting and operation. Wattage of heater depends on the flow characteristics of the material.





Order Code	d	l	D02 - KX	Heaters Wattage
RMM..	16	46	K1 - K2 - K3 - K4	290 - 350 - 400
		56	K1 - K2 - K3 - K4	290 - 350 - 400
		66	K1 - K2 - K3 - K4	470 - 620 - 690
		76	K1 - K2 - K3 - K4	620 - 690 - 850
		86	K1 - K2 - K3 - K4	690 - 850 - 950
		96	K1 - K2 - K3 - K4	690 - 850 - 950
	22	46	K1 - K2 - K3 - K4	350 - 400 - 470
		56	K1 - K2 - K3 - K4	470 - 620 - 690
		66	K1 - K2 - K3 - K4	620 - 690 - 850
		76	K1 - K2 - K3 - K4	690 - 850 - 950
		86	K1 - K2 - K3 - K4	690 - 850 - 950 - 1100
		96	K1 - K2 - K3 - K4	850 - 950 -1100
	28	46	K1 - K2 - K3 - K4 - K6	350 - 400 - 470
		56	K1 - K2 - K3 - K4 - K6	470 - 620 - 690
		66	K1 - K2 - K3 - K4 - K6	620 - 690 - 850
		76	K1 - K2 - K3 - K4 - K6	690 - 850 - 950
		86	K1 - K2 - K3 - K4 - K6	850 - 950 - 1100
		96	K1 - K2 - K3 - K4 - K6	950 - 1100
	34	46	K1 -K2 -K3 -K4 -K6 -K8	400 - 470 - 620
		56	K1 -K2 -K3 -K4 -K6 -K8	620 - 690 - 850
		66	K1 -K2 -K3 -K4 -K6 -K8	690 - 850 - 950
		76	K1 -K2 -K3 -K4 -K6 -K8	690 - 850 - 950 - 1100
		86	K1 -K2 -K3 -K4 -K6 -K8	850 - 950 -1100
		96	K1 -K2 -K3 -K4 -K6 -K8	950 - 1100

Please create your orders with form on page - 336

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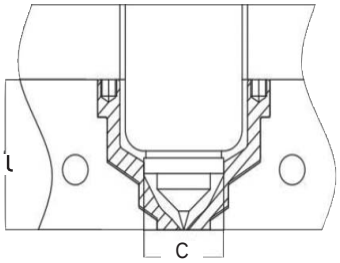
NEW

Runner Bushing Types

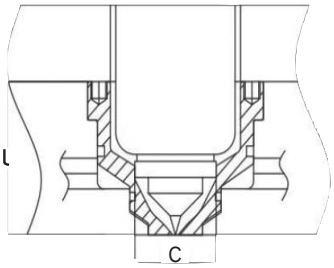
How to order:
BY02 (bushing tip) x **C** (nozzle Ø)

Code	C	l
BY02	15	24
BY02	17	24
BY02	19	24



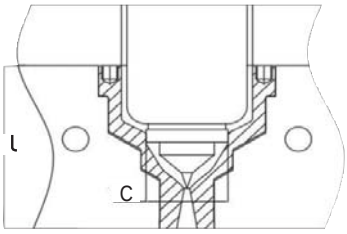
How to order:
CBY02 (bushing tip) x **C** (nozzle Ø)

Code	C	l
CBY02	15	24
CBY02	17	24
CBY02	19	24



How to order:
BY03 (bushing tip) x **C** (nozzle Ø)

Code	C	l
BY03	15	32
BY03	17	32
BY03	19	32



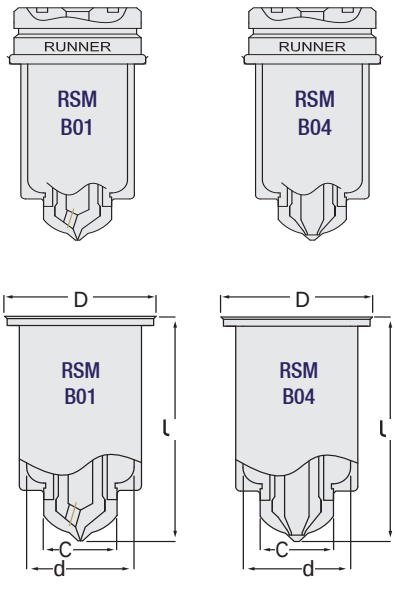
Selection Table of Runner Series Nozzle Tip Diameters:

* Values in the table are in gram (g).
* Refer to page "329" for nozzle selection based on grammage.
* The following table is prepared for our customers for information purposes. Real working conditions; it can differ depending on part volume, average wall thickness, viscosity, machine capacity and gate diameter.

Nozzle Dia.	Density of Raw Material		
	A	B	C
RSM15	60	40	25
RSM17	200	100	60
RSM19	800	500	300

Raw Material Group		
A	B	C
PP PE SS	ABS SAN POM PMMA PA PBT PET	PC PPS TPE PUR PC - ABS

Runner Series Nozzle



How to order:
RSM (code) x **d** (nozzle Ø) x **l** (nozzle length) x **BOX** (nozzle tip type)

Order Code	D	l	C	d	BOX	Heaters Wattage
RSM15	30	49	15	25	Nozzle Tip Types: B01 B04	250
		59				290
		69				350
		79				400
		89				400
		99				470
RSM17	32	49	17	25		250
		59				290
		69				350
		79				400
		89				470
		99				470
RSM19	34	49	19	27	M Spinning	290
		59				350
		69				400
		79				470
		89				470
		99				620

- When ordering, pocket / machining detail will be presented with technical data.
- Wattage of heater depends on the flow characteristics of the material.

Please create your orders with form on page - 336

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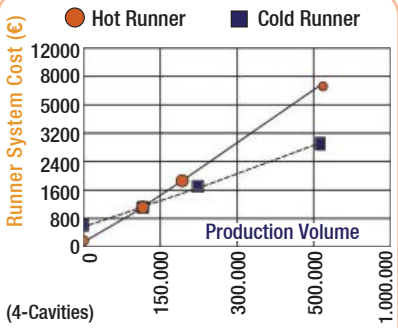
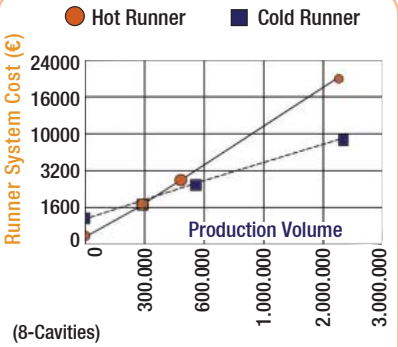
Investment Cost Comparison of Cold Runner & Hot Runner Systems:



(4-Cavities)

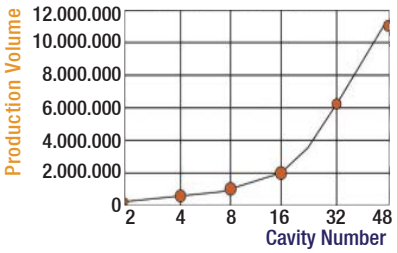
For 4-cavities system, even though Hot Runner investment cost is more expensive than Cold Runner, after 20.000 cycles system pays for itself and increases your profit.



(8-Cavities)

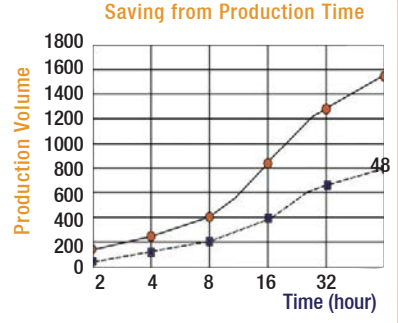
In case of using 8-cavities system, redeem time will be shorter than using 4-cavities system.

Selection of Cavity Number due to Production Volume



Cavity number must be chosen carefully according to the production volume. The diagram above is our suggestion.

Saving from Production Time



Hot Runner Systems can save half of your production time.

Operating Conditions of the Plastic Raw Material

Raw Material	Degree C°	Time (hour)	Melting Temp.	Operating Temp.	Mould Temp.	Density		
						Good	Moderate	Poor
Amorphous Materials:								
POP (Polycehenylene Oxide)	80 -120	2	120	300	80			
PEI (Polyetherimide)	150	4	215	370	100			
PMMA (Polymethyl Methacrylate)	70 -100	2 - 4	100	245	70			
ABS (Acrylonitrile Butadiene Styrene)	70 - 80	2	110	250	75			
ASA (Acrylic Styrene Acrylonitrile)	80 - 90	2	105	245	75			
SAN (Styrene Acrylonitrile)	85	2 - 4	115	255	80			
PS (Polystyrene)	-	-	100	225	45			
SB (Styrene Butadiene)	-	-	100	225	70			
PES (Polyethersulfone)	135-150	3 - 4	230	350	150			
PSU (Polysulfone)	135-150	3 - 4	200	315	150			
PVC (Polyvinyl Chloride)	-	-	100	195	35			
PC (Polycarbonate)	120	46	220	300	90			
CAB (Cenlulose Acetate Butyrate)	50	3	140	215	55			
TPU (Thermoplastic Urethanes)	100-110	2	150	210	35			
Crystalline Materials:								
PE (Polyethylene)	-	-	140	250	25			
PP (Polypropylene)	-	-	165	255	35			
LCP (Liquit - Crystal Polymer)	150-160	4	330	400	175			
PA 11 (Polyamide 11)	70 -80	8 -15	175	230	60			
PA 12 (Polyamide 12)	70 -80	8 -15	175	230	60			
PET (Polyethylene Terephthalate)	75 -90	3 -4	245	285	140			
PBT (Polybutadiene Terephthalate)	120	4	225	265	60			
PPS (Polyphenylene Sulfide)	150-170	4	290	330	110			
PEEK (Polyetheretherketone)	150	3	335	370	160			
PA610 (Polyamide 610)	70 -80	8 -12	215	250	90			
PA 6 (Polyamide 6)	80	8 -15	220	250	90			
PA 66 (Polyamide 6.6)	80	8 -15	255	285	90			
POM (Polyacetal)	110	2	180	200	100			

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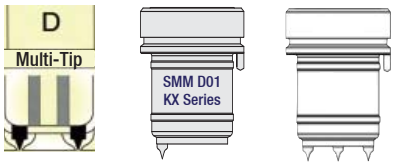
Multi-Tip Hot Runner Nozzle - Standard

Standard type Multi-Tip Hot Runner Nozzles. An external thermocouple is available in nozzle body for precise temperature measurement.

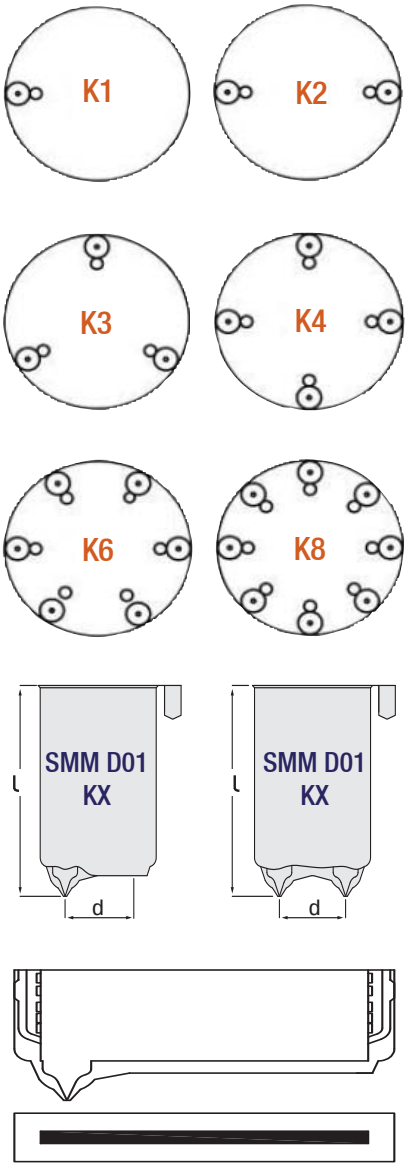


How to order:
SMM (code) x **d** (nozzle Ø) x **l** (nozzle length) x **KX** (tip qty)

Please create your orders with form on page - 336

Order Code	d	l	D01 - KX	Heaters Wattage
SMM..	16	46	K1 - K2 - K3 - K4	225 - 250 - 290
		56	K1 - K2 - K3 - K4	290 - 350 - 400
		66	K1 - K2 - K3 - K4	350 - 400 - 470
		76	K1 - K2 - K3 - K4	400 - 470 - 620
		86	K1 - K2 - K3 - K4	470 - 620 - 690
		96	K1 - K2 - K3 - K4	470 - 620 - 690
	22	46	K1 - K2 - K3 - K4	250 - 290 - 350 - 400
		56	K1 - K2 - K3 - K4	290 - 350 - 470
		66	K1 - K2 - K3 - K4	400 - 470 - 620
		76	K1 - K2 - K3 - K4	470 - 620 - 690
		86	K1 - K2 - K3 - K4	470 - 620 - 690 - 850
		96	K1 - K2 - K3 - K4	620 - 690 - 850 - 950
	28	46	K1 - K2 - K3 - K4 - K6	250 - 290 - 350 - 400
		56	K1 - K2 - K3 - K4 - K6	350 - 400 - 470
		66	K1 - K2 - K3 - K4 - K6	400 - 470 - 620
		76	K1 - K2 - K3 - K4 - K6	470 - 620 - 690
		86	K1 - K2 - K3 - K4 - K6	620 - 690 - 850 - 950
		96	K1 - K2 - K3 - K4 - K6	690 - 850 - 950
	34	46	K1 -K2 -K3 -K4 -K6 -K8	290 - 350 - 400
		56	K1 -K2 -K3 -K4 -K6 -K8	400 - 470 - 620
		66	K1 -K2 -K3 -K4 -K6 -K8	470 - 620 - 690
		76	K1 -K2 -K3 -K4 -K6 -K8	470 - 620 - 690 - 850
		86	K1 -K2 -K3 -K4 -K6 -K8	620 - 690 - 850 - 950
		96	K1 -K2 -K3 -K4 -K6 -K8	690 - 850 - 950 - 1100

Important:
Multi-Tip Hot Runner Nozzles are not suitable for all types of materials and grammage. When selecting, please ask technical help from Guvenal - Hot Runner Department. Precise adjustments are necessary for mounting and operation. Wattage of heater depends on the flow characteristics of the material.



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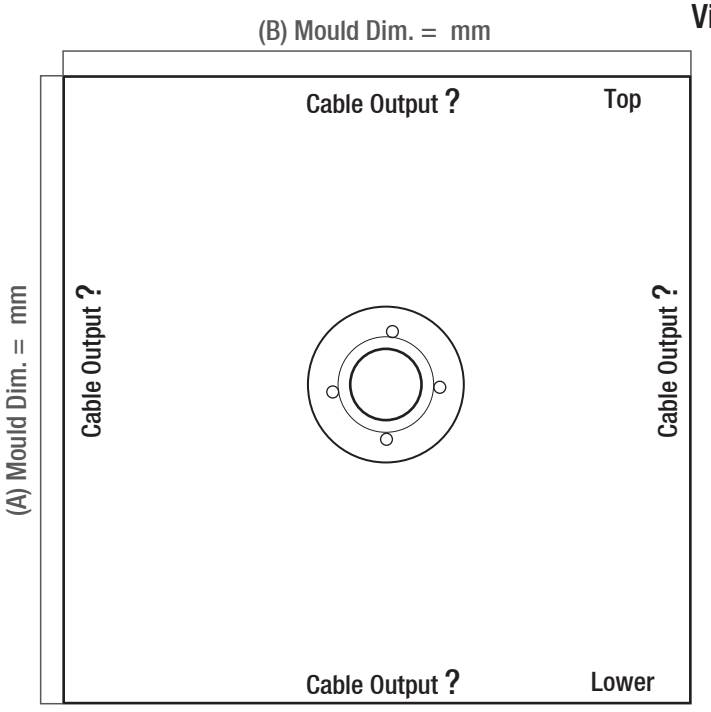
Information - Inquiry & Order Form

Company:			Date:
Contact Person:			Tel.:
E-Mail:			
Address:			
Subject:			
- Raw Material Type: - Additive:			
Cavity Qty:	Product Grammage:		Wall Thickness:
Nozzle Ø:	Nozzle Type:		Colour Change: ☐ Yes ☐ No
Nozzle Length:	Heat Ins. Plate: ☐ Yes ☐ No	Mould Dimensions: A..... x B.....	Group Radius: R = ...

Cavity Zones

View from Injection Surface



Other Required Products:

Notes:	Approved By:	Sign & Stamp:
☐ INFO ☐ INQUIRY ☐ ORDER		

For your Hot Runner component orders; if you fill order form above and contact with our Hot Runner Department, details complying with your mould and production / usage of a correct product will be followed by Guvenal.

For information: support@guvenal.net

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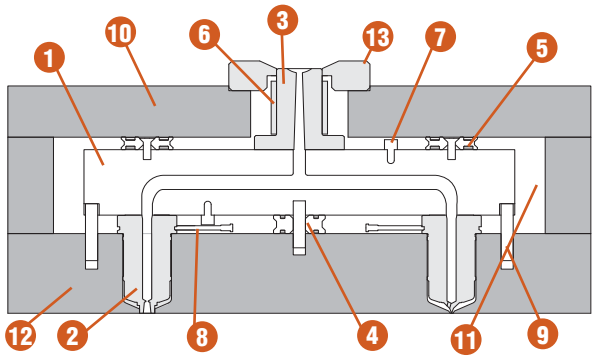
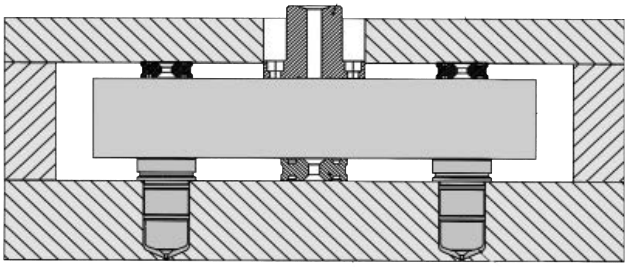
Hot Runner Manifold Equipments

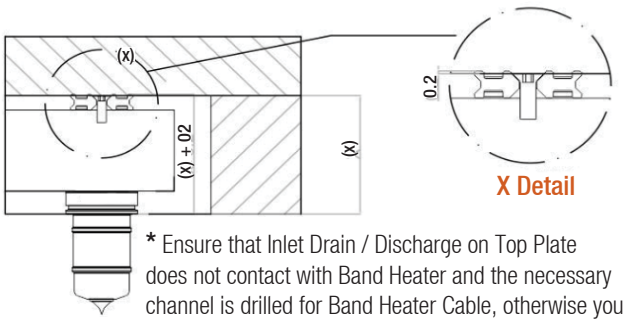


1. Manifold
2. Nozzle
3. Inlet
4. Hub Disc
5. Distance Disc
6. Band Heater for Inlet
7. Thermocouple
8. Heater for Nozzle
9. Centering Pin
10. Top Plate
11. Manifold Cavity
12. Nozzle / Cavity Plate
13. Centering Flange

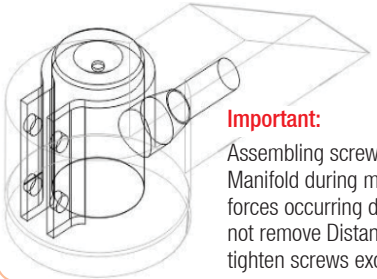
Recommended Assembly Process of Hot Runner Manifold



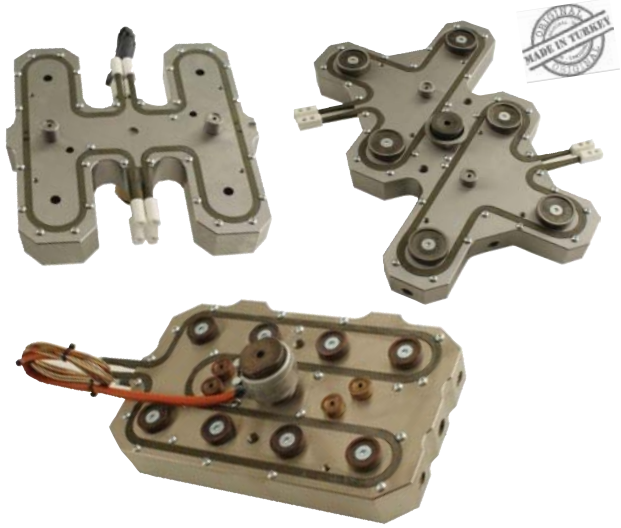
* Ensure that manifold is clean and dry.
* Place the Hub Disc and fasten Centering Pins to mould.
* Use Centering Pins between Top Plate and Nozzle / Cavity Plate. All plates on the fixed side should be centered by pins.
* Ensure that Distance Discs are 0.2 mm above from Manifold Cavity. This measurement is important for sealing, as specified in X detail.



* Ensure that Inlet Drain / Discharge on Top Plate does not contact with Band Heater and the necessary channel is drilled for Band Heater Cable, otherwise you may damage Heater.



Important:
Assembling screws (fasteners) are used to fix Manifold during mounting, they do not meet forces occurring during injection, therefore do not remove Distance Discs on manifold, do not tighten screws excessively.



Hot Runner Manifold Systems

Hot Runner System is the continuation of injection group. It is an independent system in mould, its design and engineering requires special knowledge and experience. The system equipments are relevant to each other from tip to toe. Hot Runner Systems are Manifold, Hot Runner Nozzle, Heater and Thermocouple in base. The equipment contacting with products directly and affecting the result is Hot Runner Nozzle. To give desired performance by hot runner nozzle, the production of all equipment should be correct. Manifold works as a casing / body in system. Also, it is an important element that collects and distributes material. The system is heated via Heaters placed on it. The equipments that keep the heaters temperature in specified range and measure the temperature are Thermocouples. The Thermocouples that detect the temperature decrease, allow Heaters to work by triggering electric energy.

Inlet is the first element that provides the start of distribution of melt raw material into Manifold. To reach melt raw material into Manifold with the same pressure and temperature, Band Heaters (Guvenal product code: "KR") is inserted around Inlet.

Other Equipments with Important Roles in System:
Hub Disc, Distance Disc and Fasteners. They are used to mount system to Mould in the most correct way. Another section that is effective in working of Hot Runner Systems continuously and smoothly are Mould Plates and Manifold Cavity. As well as system and labour, also precision machining of the Mould should be in the desired values.

All of our Hot Runner Systems & Components are produced in Turkey. We present spare parts, services and maintenance guarantee.
In selection and installation of all these systems, we will help together with our technical team. In addition, we will continue to follow it.

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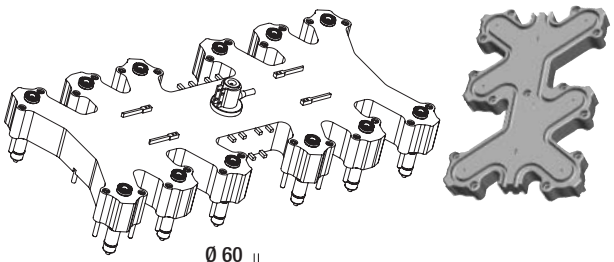
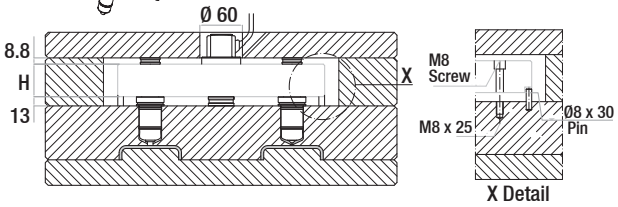
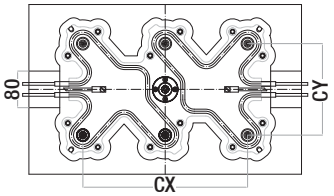
"MYY" Type Manifold for Hot Runner

Code: MYY





* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.



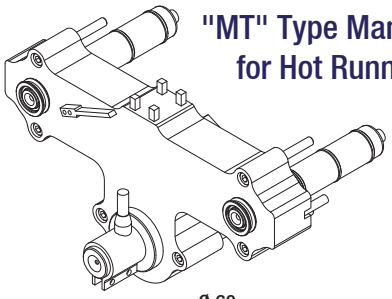
Order Example:

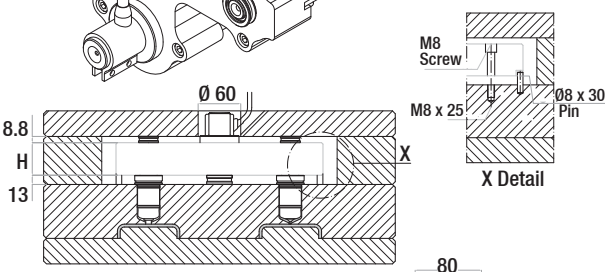
MYY.XX.KA.CX.CY
- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MYY	18	08	16	32	CX CY
	22				
	25				
	32				
	40				

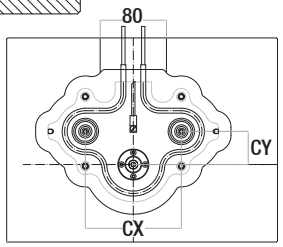
"MT" Type Manifold for Hot Runner

Code: MT





* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.



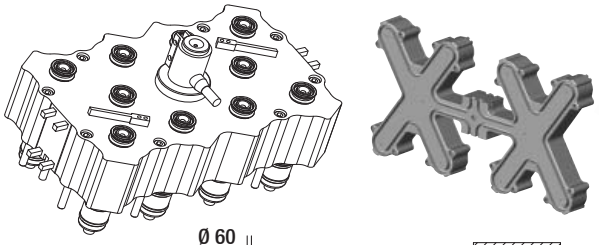
Order Example:

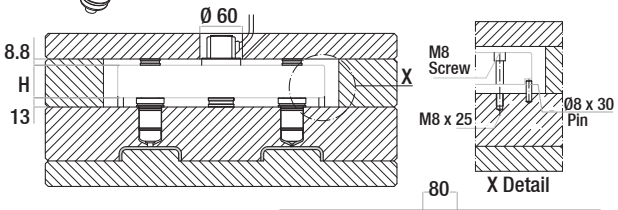
MT.XX.KA.CX.CY
- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MT	18	02	04	08	CX CY
	22				
	25				
	32				
	40				

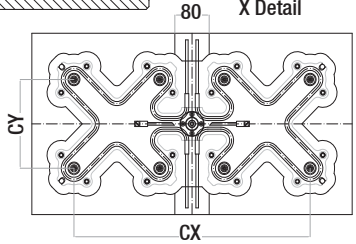
"MXX" Type Manifold for Hot Runner

Code: MXX





* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.



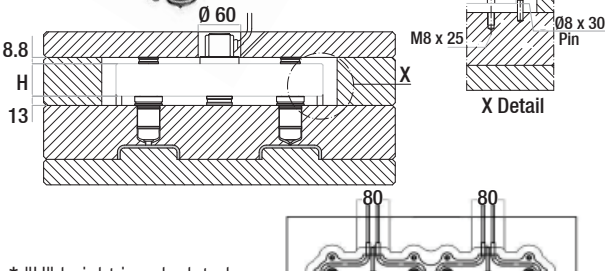
Order Example:

MXX.XX.KA.CX.CY
- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

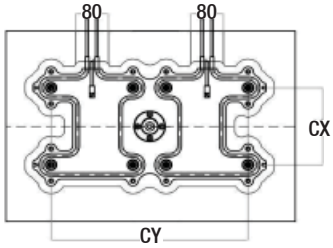
Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MXX	18	08	16	32	CX CY
	22				
	25				
	32				
	40				

"MHH" Type Manifold for Hot Runner

Code: MHH



* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.



Order Example:

MHH.XX.KA.CX.CY
- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MHH	18	08	16	32	CX CY
	22				
	25				
	32				
	40				

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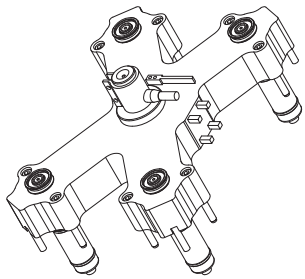
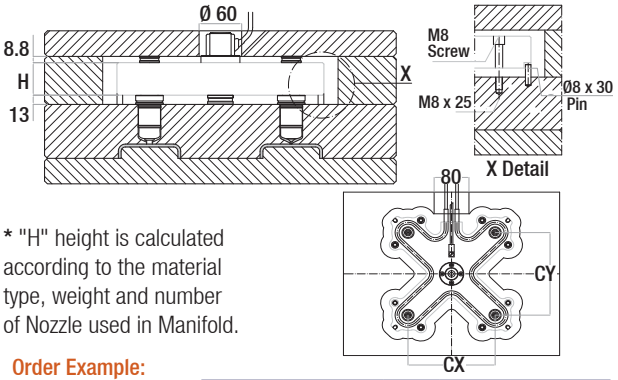
"MX" Type Manifold for Hot Runner

Code: MX





* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.

Order Example:

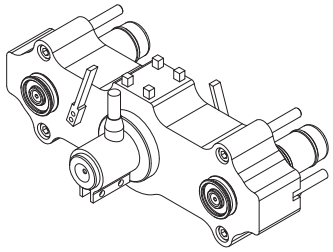
MX.XX.KA.CX.CY

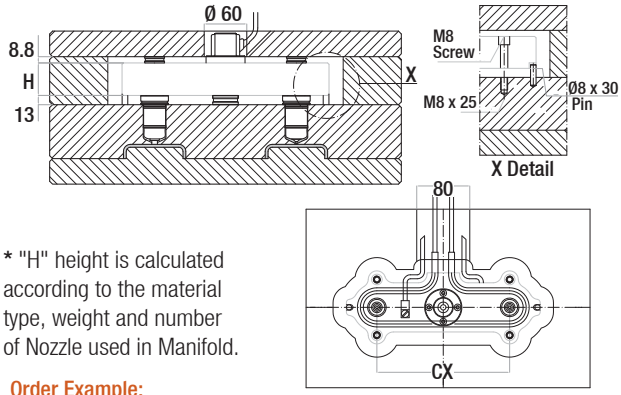
- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MX	18	04	08	16	CX CY
	22				
	25				
	32				
	40				

"MI" Type Manifold for Hot Runner

Code: MI





* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.

Order Example:

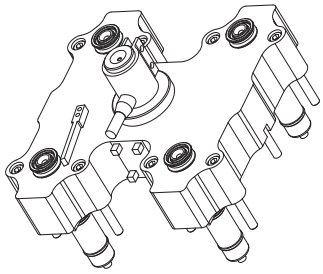
MI.XX.KA. CX

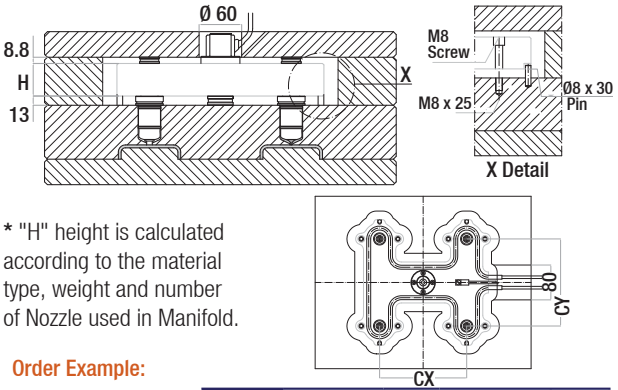
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

Manifold Type	Nozzle Diameter	Number of Nozzle				Axis Range
MI	18	02	04	08	16	CX
	22					
	25					
	32					
	40					

"MH" Type Manifold for Hot Runner

Code: MH





* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.

Order Example:

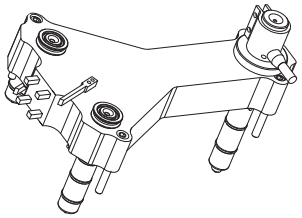
MH.XX.KA.CX.CY

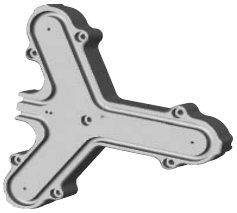
- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

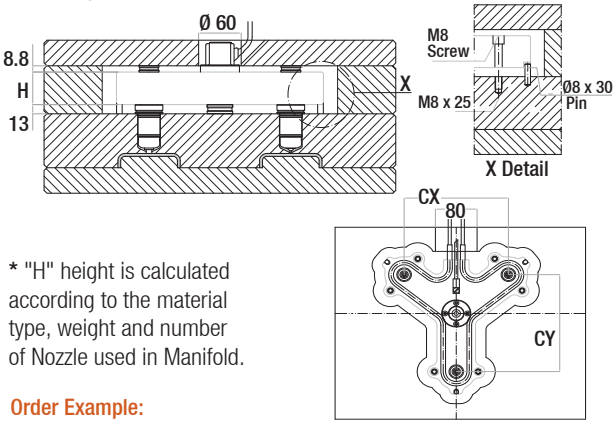
Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MH	18	08	16	32	CX CY
	22				
	25				
	32				
	40				

"MY" Type Manifold for Hot Runner

Code: MY







* "H" height is calculated according to the material type, weight and number of Nozzle used in Manifold.

Order Example:

MY.XX.KA.CX.CY

- "Y" Axis Range
- "X" Axis Range
- Nozzle Number
- Nozzle Diameter
- Manifold Type

Manifold Type	Nozzle Diameter	Number of Nozzle			Axis Range
MY	18	02	04	08	CX CY
	22				
	25				
	32				
	40				

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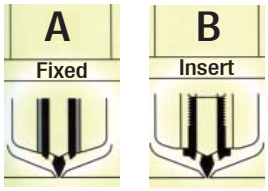
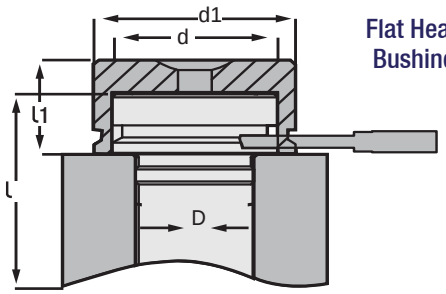
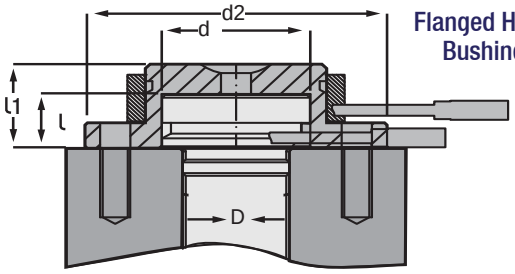
Flanged & Flat Head Bushings for Hot Runner Nozzles





Flat Head Bushing



Flanged Head Bushing

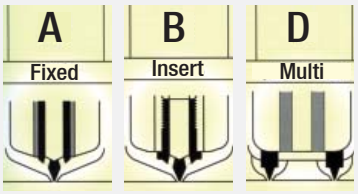
Standard Hot Runner Nozzles with Head Bushings are produced / designed for using the Nozzles as Main / Single Nozzles in the operation of molding raw plastic materials with high melting temperature to protect it against colding. Head Bushings are produced for the SMA & SMB Series Nozzles.

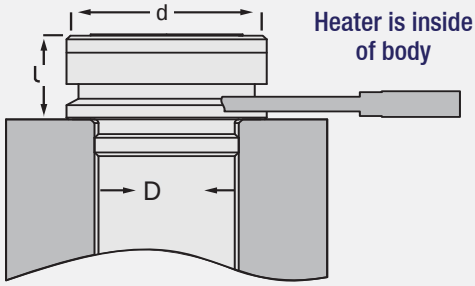
Order Code	Type	D	l	d
SS22Z00	Flat	Ø 22	13mm	Ø 29
SS22Z01	Flanged			
SS25Z00	Flat	Ø 25	13mm	Ø 32
SS25Z01	Flanged			
SS32Z00	Flat	Ø 32	13mm	Ø 39
SS32Z01	Flanged			
SS40Z00	Flat	Ø 40	20mm	Ø 49
SS40Z01	Flanged			

Order Code	d1	d2	l1	Wattage
SS22Z00	Ø 39	Ø 65	19.8	-
SS22Z01				150 Watt
SS25Z00	Ø 39	Ø 65	19.8	-
SS25Z01				175 Watt
SS32Z00	Ø 46	Ø 72	19.8	-
SS32Z01				225 Watt
SS40Z00	Ø 56	Ø 72	26.8	-
SS40Z01				290 Watt

Custom-made orders as per request.

Hot Runner Main / Single Nozzle



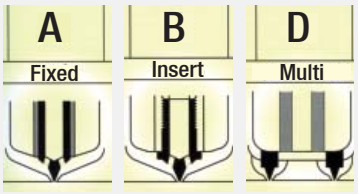


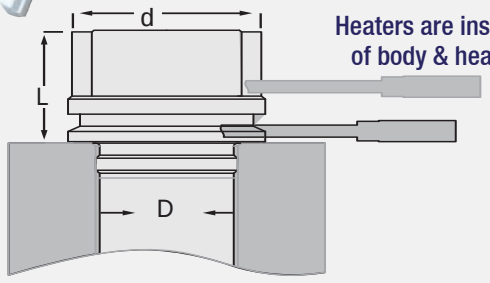
Heater is inside of body

The Sealing Plug of the Hot Runner Nozzles are cancelled and the thickness of the Nozzle Head are decreased in the operations of general plastic injection (PP, POM, ABS, PE, HDPE, PS etc.). The "ASM" type Main / Single Nozzles are produced for the SMA, SMB & SMM Series Nozzles.

Order Code	D	l	d
ASM18	**Ø 18**	15 mm	Ø 25
ASM22	**Ø 22**		Ø 29
ASM25	**Ø 25**		Ø 32
ASM32	**Ø 32**		Ø 39
ASSM22	**Ø 22**		Ø 27
ASSM25	**Ø 25**		Ø 30
ASSM32	**Ø 32**		Ø 27

Hot Runner Main / Single Nozzle with Head Heater





Heaters are inside of body & head

The heat controller of the Hot Runner Nozzle is supplied with 2 pieces of Thermocouples. Hot Runner Nozzles with Head Heater are produced for the SMA, SMB & SMM Series Nozzles. This type should be use with following plastic raw materials; PC, PA, PBT, PET, PVC and PBBT.

Order Code	D	l	d	Wattage
ASMR25	25	25	31	150
ASMR32	32	25	38	175
ASMR40	40	30	48	200
ASMMR16	28	30	39	175
ASMMR22	35	30	46	200
ASMMR28	41	30	52	225
ASMMR34	47	30	58	225

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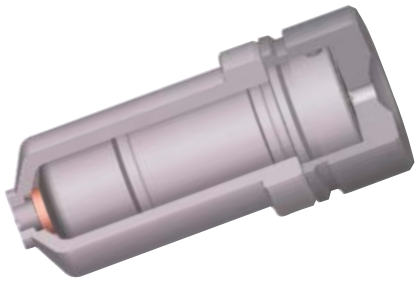
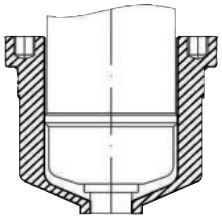
Standard Nozzle Outer Bushing



Outer Bushings are used as aid components for additional cooling of Hot Runner Nozzle or for installing our standard products to the incorrectly produced Nozzle slots.

Flat Bushings

It supports Nozzle in bearing and provides sealing on mould edge and nozzle edge.



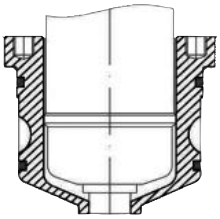
Order Example:

SB - Y02 . ØD1

- Commonly Used Nozzle Dia.
- Tip Type
- Flat Bushing

Bushings with Cooling Channel

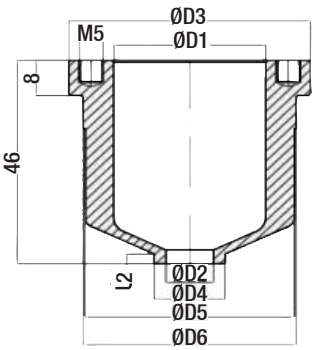
With o-ring and cooling channels. They provide perfect solutions for cosmetic surfaces.



Order Example:

SCB - Y02 . ØD1

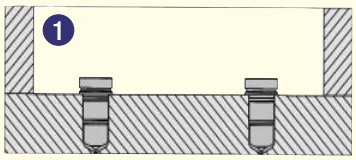
- Commonly Used Nozzle Dia.
- Tip Type
- Cooling Bushing



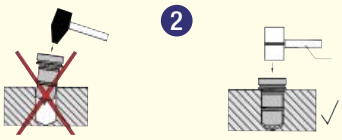
Material: 1.2344
Hardness: 52 HRC

Order Code	D1	D3	D4	L2	Cooling
SB-Y02.25	25	44	13	2	None
SCB-Y02.25					Available
SB-Y02.32	32	51	15	2.2	None
SCB-Y02.32					Available
SB-Y02.40	40	59	19	2.5	None
SCB-Y02.40					Available

Hot Runner System - Assembly Operations of the Nozzles

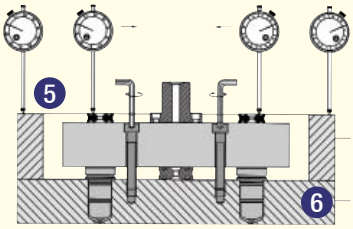


1- Check the nozzle cavities if they are in specified tolerances or not.



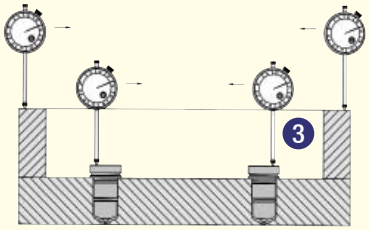
2- Place the nozzle using rubber hammer without sealing plug in balance.

* Do not use iron or steel tools to place the nozzle into cavity. Do not place nozzle crooked and prevent winding.

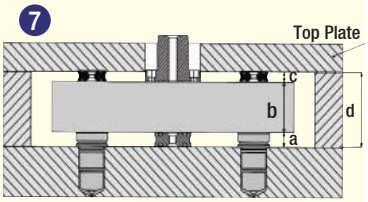


5- Place the manifold and bridge / wedge plates.

6- Tighten manifold fixing screws, slowly and simultaneously by controlling manifold corners.

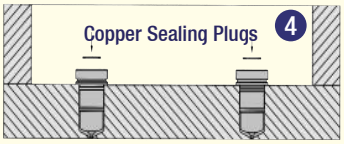


3- Measure nozzle head height with dial gauge and zeroing.



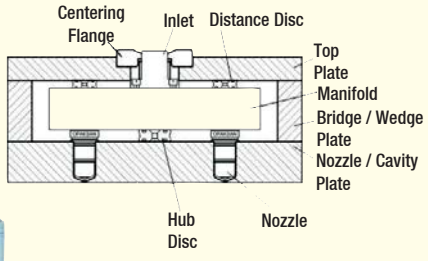
7- Place the top plate.

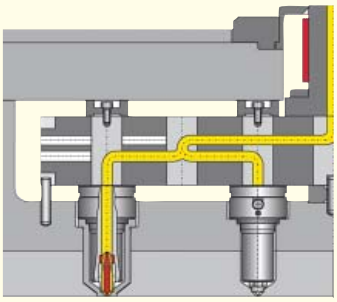
* For sealing; a + b + c > d sealing can be performed in necessary places.



4- Place the copper sealing plugs in the channel top of the nozzles.

Assembly Drawing





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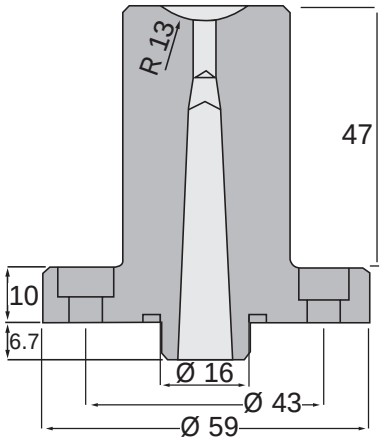
Equipment used in Hot Runner Systems:

Manifold Inlet

Code: SA

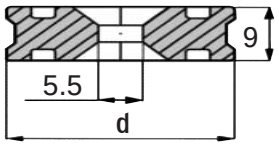
Inlet is the first element that provides the start of distribution of melt raw material into Manifold.



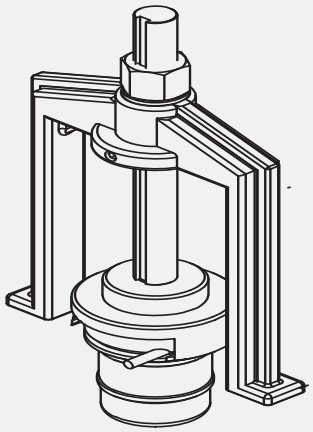
Order: SA0100V02

Stopping Disc

Code: SD03



Order Code	d
SD03.00V02.28	28 mm
SD03.00V02.34	34 mm

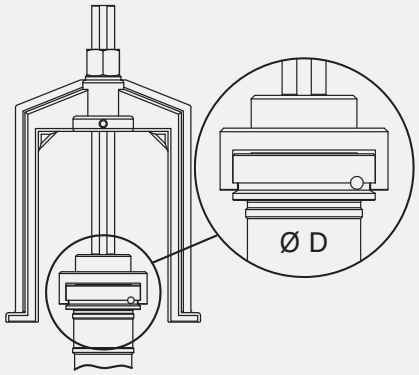


Extractor Tool for Hot Runner Nozzle

Code: MCA

In extractor process of Hot Runner Nozzles from mould plate, it is used in extractor / dismantle processes not to damage Hot Runner Nozzles.

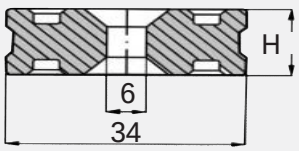
D: 18 - 22 - 25 - 32 - 40 mm



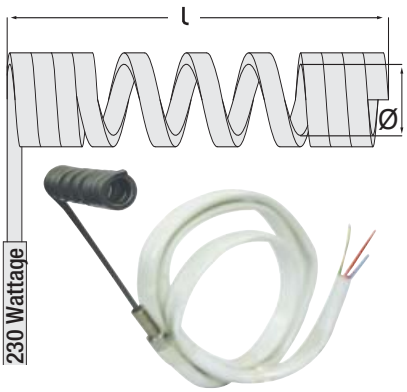
Order: MCA

Hub Disc

Code: SD02



Order Code	H
SD02.00V01.13	13 mm
SD02.00V01.20	20 mm



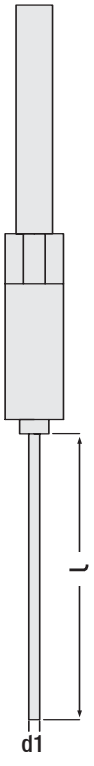
Coil Heater

Code: SR

For necessary information; please refer to **page-325.**

Heaters (wattage)
200
225
250
290
350
400
470
620

Heaters (wattage)
690
850
950
1100
1200
1400
1600



Mantle Thermocouple

Code: MT015

"In Valve Gate System Hot Runner Nozzles"

It is a Thermocouple providing to make precision temperature from body.

Note: **"d1"** and **"l"** dimensions can be produced as per request.

Order Code	d1	l
MT01580	Ø 1.5 mm	80
MT015100		100
MT015120		120

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Valve Gate Hot Runners

High Quantities, Short Cycle Times & High-Class Gate Quality

Medical / Pharmaceutical

Thin-Wall Packaging

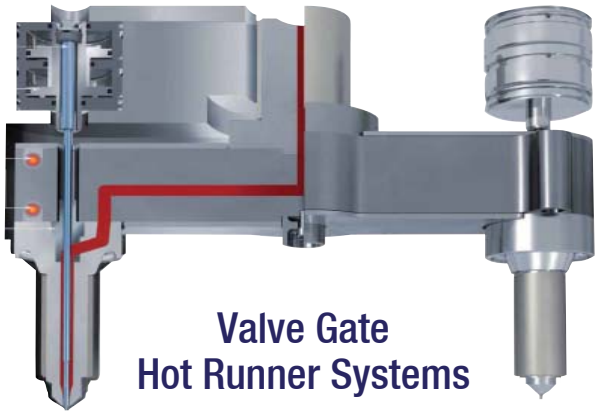
Caps & Closures

Small Parts

Engineered Parts

Cosmetics / Personal Care

* High-class gate appearance.
* Minimum pressure drop.
* Large gate diameter.
* Minimum abrasion in long operating hours.
* Short cycle times.
* Optimal temperature control.



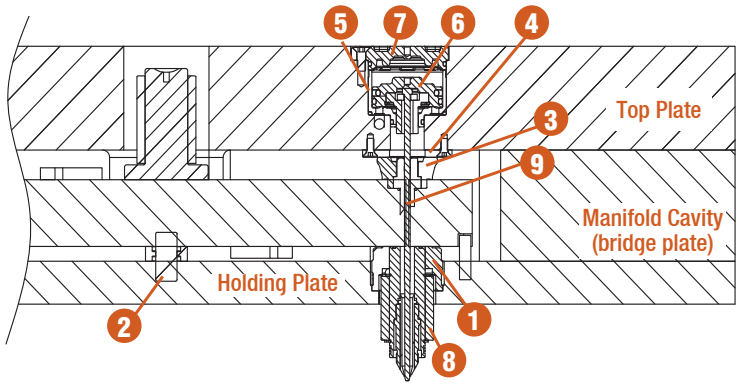
Valve Gate Hot Runner Systems

Manifold:
* Sealing not affected from temperature.
* Leakproof.
* Naturally balanced material flow.
* No stagnation areas.
* Suitable for colour changes.
* Hardened manifold block.

Valve Gate Hot Runner Systems are new generation hot runner systems which are used when classic hot runner systems cannot meet parameters such as quality, continuity and production volume.
Its provide production to be done lower pressure without wearing injection machine.
Mould-makers also prefer Valve Gate Systems to get better surface / gating on moulded parts and preferred for products to be used with engineering plastics. Valve Gate assembled moulds able to reduce cycle times with better product quality and productivity.

If you need even one of the parameters mentioned above for any product and classic hot runner system cannot meet expectations, the injection mould should be designed with Valve Gate Hot Runner System.

Sectional View of Valve Gate Nozzle:



1- Valve Gate Nozzle
2- Centering Pin
3- Pin Housing Part
4- Distance Bearing / Hub Disc
5- Piston Housing
6- Piston & Pin Group
7- Piston Cover
8- Heater & Thermocouple
9- Valve Gate Pin

Key Features of Valve Gate System at the Start of Production:

* The gate is opened and closed by applying air pressure to the valve piston using a solenoid valve which is controlled by signals from the injection machine.
* Gate Open - before the start of the injection operation the valve piston is operated to the open position, and is held open until the injection operation has been completed.
* Gate Close - after the completion of the injection operation the valve piston position is reversed to close the gate by applying air pressure to the close side of the piston.
* The air pressure must be maintained in this reversed direction on the valve piston to ensure that the gate is properly closed, and held in this position until the next gate open signal is given by the injection machine.
* Required minimum air pressure in order to operate Valve Gate Nozzle Piston is 6.0 bar.
You should control air pressure in your system and use Air Booster if it is not sufficient.
* Additional lubrication is required for the Valve Gate Nozzle Piston if the air supply is generated "oil-free". You can do this lubrication from couplings or air hoses additionally.
* If you mount air hoses which will provide motion for the piston so as to contact with mould top plate, you should prefer a hose which may operate with high heat.
* Before operating your nozzle, ensure that temperatures in Hot Runner Temperature Controller device reach to values set in regime and wait for 15-20 minutes before starting injection in these conditions.
* If you move piston before plastic raw material in hot runner nozzle melts completely, you may tense and force piston or cause breaking of pin. Make temperature adjustments delicately and consider waiting duration.

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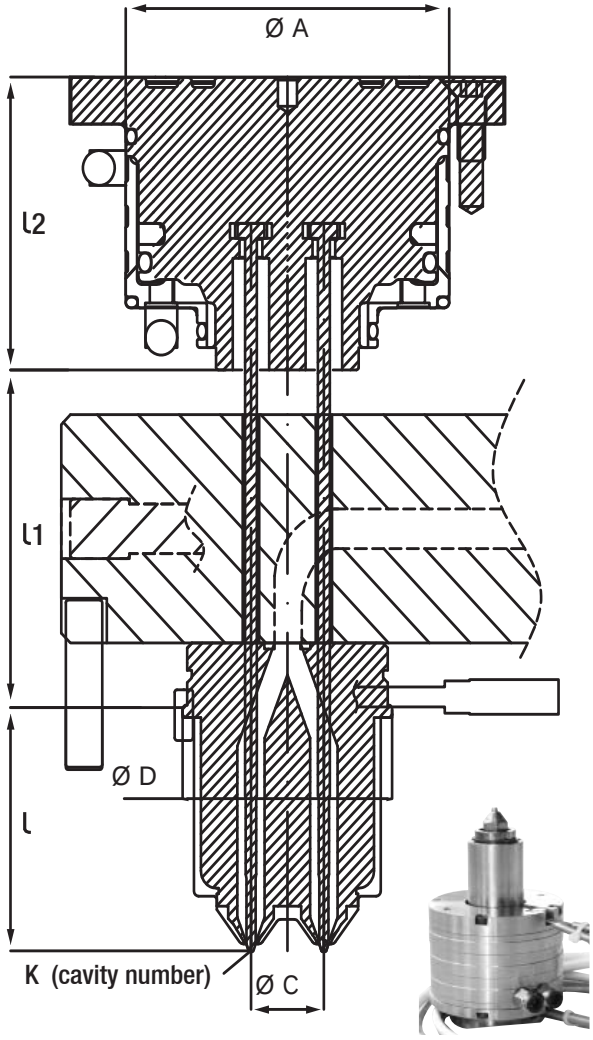
"MVG-M1"
Manifold Valve Gate - Multi Hot Runner System



"MVG-M1" Manifold Valve Gate - Multi Hot Runner System:

If mould planned to injection with multi hot runner nozzles, also if mould parameters are get over of our open gate multi hot runner nozzles (cavity dimensions, colour change, engineering raw materials and cavity quantity for each hot runner nozzle etc.), you can use Multi Valve Gate Hot Runner Systems on your moulds.

Code	Ø D	l	Ø C	K	l1	l2	Ø A
MVG-M1	46-70	49-109	16-40	2-8	67.8	50-55	72-96

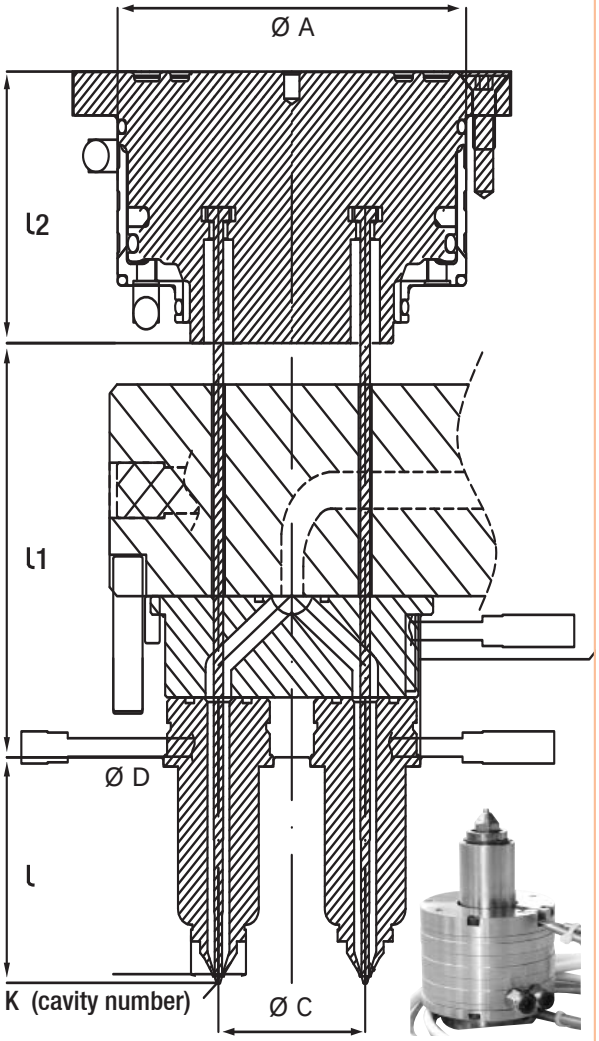
* "L1" length depends on the manifold thickness.
* Bigger axis diameters (C) increase cavity number (K).
* Please check the next page for Nozzle Tip selection.

Order Example:

MVG-M1 . D . l . E04

- Multi Nozzle
- Nozzle Dia.
- Nozzle Length
- Tip Type

"MVG-M2"
Manifold Valve Gate - Multi Hot Runner System



"MVG-M2" Manifold Valve Gate - Multi Hot Runner System:

If mould planned to injection with multi hot runner nozzles, also if mould parameters are get over of our open gate multi hot runner nozzles (cavity dimensions, colour change, engineering raw materials and cavity quantity for each hot runner nozzle etc.), you can use Multi Valve Gate Hot Runner Systems on your moulds.

Code	Ø D	l	Ø C	K	l1	l2	Ø A
MVG-M2	15 - 32	49-109	40 - 80	2-8	89.8	55-65	95-135

* "L1" length depends on the manifold thickness.
* Bigger axis diameters (C) increase cavity number (K).
* Please check the next page for Nozzle Tip selection.

Order Example:

MVG-M2 . D . l . E04

- Multi Nozzle
- Nozzle Dia.
- Nozzle Length
- Tip Type

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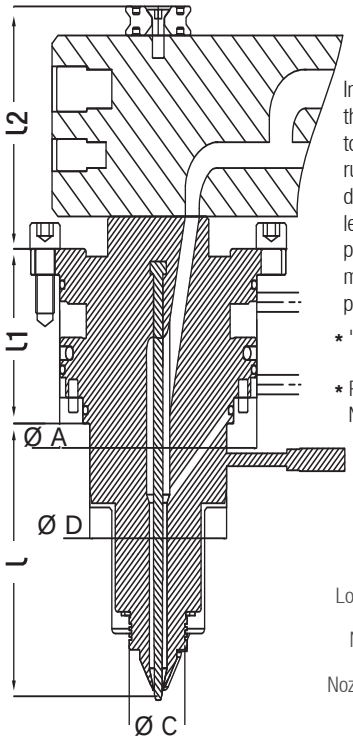
"MVG-B" Manifold Valve Gate Lower Piston Hot Runner System



In the case of multi cavity moulds, this type of valve gate system able to simplifying of producing hot runner manifolds. Valve pin doesn't across the manifold so it's length will be shorter. Valve gate piston states between hot runner manifold and hot runner nozzle plate.

* "L1" length depends on the manifold thickness.
* Please check the below for Nozzle Tip selection.

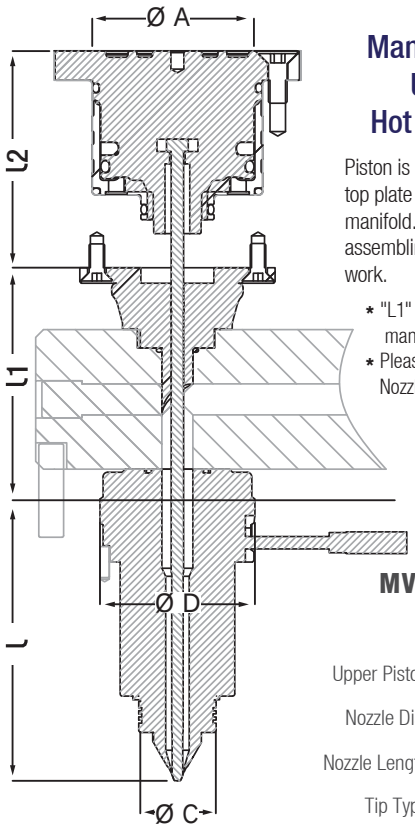
Order Example:

MVG-B . D . L . E04

- Lower Piston
- Nozzle Dia.
- Nozzle Length
- Tip Type

Code	D	L mm	C	L1	L2	A	Injection g.
MVG-B	Ø 56	66 ~ 166	Ø 18	50	64.8 mm	Ø 80	~150
	Ø 62	80 ~ 280	Ø 22	50		Ø 85	~300
	Ø 72	100 ~	Ø 32	55		Ø 95	~1000
	Ø 80	120 ~	Ø 42	55		Ø 105	1000~

"MVG-A" Manifold Valve Gate Upper Piston Hot Runner System



Piston is assembled into mould top plate above the hot runner manifold. This version has easiest assembling and maintenance work.

* "L1" length depends on the manifold thickness.
* Please check the below for Nozzle Tip selection.

Order Example:

MVG-A . D . L . E04

- Upper Piston
- Nozzle Dia.
- Nozzle Length
- Tip Type

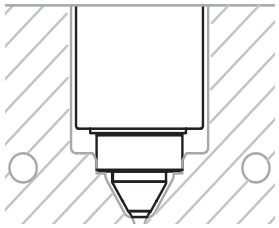
Code	D	L mm	C	L1	L2	A	Injection g.
MVG-A	Ø 38	66 ~166	Ø 18	74.8 mm	60 mm	Ø 55	~150
	Ø 50	80 ~280	Ø 25		60 mm	Ø 55	~300
	Ø 60	100 ~	Ø 35		70 mm	Ø 80	~1000
	Ø 70	120 ~	Ø 45		75 mm	Ø 100	1000~

Tip / Bushing Types for "MVG" Valve Gate Nozzles:

*** Bushings are changing the nozzle tip type on valve gate applications. All bushings are suitable for the nozzles with same diameter.**

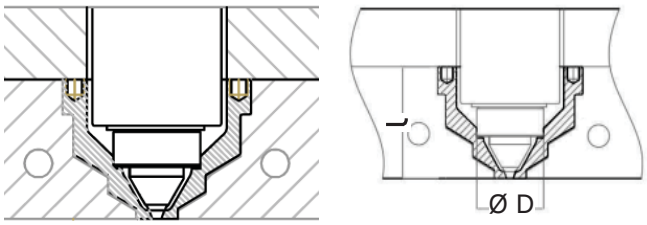
Standard Tip Type / E04

Standard Tip Type / E04



Valve pin seals the material on mould surface.

Valve Gate Flat Bushing / VG-BY02



Valve pin seals the material on bushing surface. Machining of housing detail in mould easier.

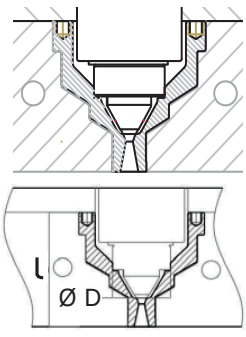
For MVG-A:

Code	Ø D	L
VG-BY02	18	40 mm
	25	
	35	
	45	

For MVG-B:

Code	Ø D	L
VG-BY02	18	40 mm
	22	
	32	
	42	

Valve Gate Internal Shear Bushing / VG-BY03



If hot runner nozzle feeds the cold runner channel or due to the part geometry if nozzle can't be reach to part surface then Internal Shear Bushing must be used for succeeding the application. This type bushing leaves conical runner / gate mark on the surface.

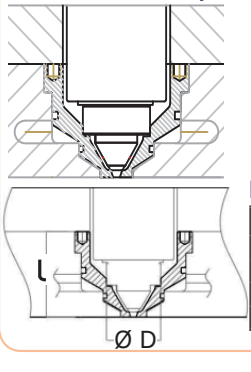
For MVG-A:

Code	Ø D	L
VG-BY03	18	50 mm
	25	
	35	
	45	

For MVG-B:

Code	Ø D	L
VG-BY03	18	50 mm
	22	
	32	
	42	

Valve Gate Cooling Bushing / VGC-BY03



If additional cooling is necessary around the hot runner nozzle, Cooling Bushings are the solution and should be used for cosmetic, transparent and optical parts.

For MVG-A:

Code	Ø D	L
VGC-BY03	18	40 mm
	25	
	35	
	45	

For MVG-B:

Code	Ø D	L
VGC-BY03	18	40 mm
	22	
	32	
	42	

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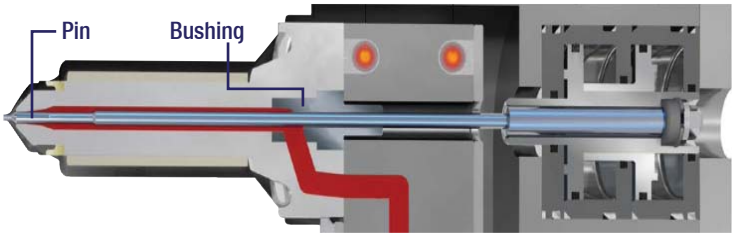
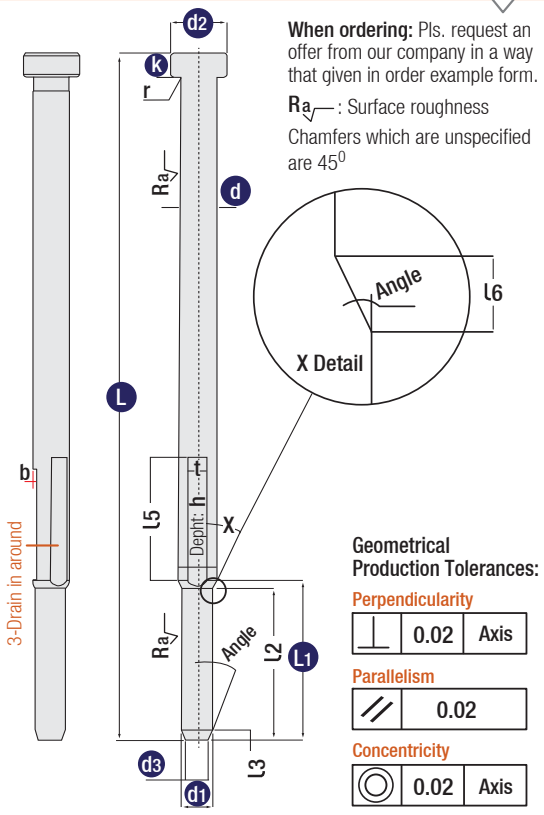


Valve Gate Pin & Bushing (custom-made production) Code: VGP

Valve Gate Pin: Mounting and demounting of Valve Gate Pin are such as the sectional view, they will be produced in desired material and dimensions.
Valve Gate Pin Bushing: The seconds Bushing in nozzle is to avoid expansion and bending of movable pin under load and heat. It can be change by demounting. As per request in order, technical drawing or sample is required.
The products will be produced in precision and faithfully.

Valve Gate Pin - Order Example:



When ordering: Pls. request an offer from our company in a way that given in order example form.
Ra: Surface roughness
Chamfers which are unspecified are 45^0

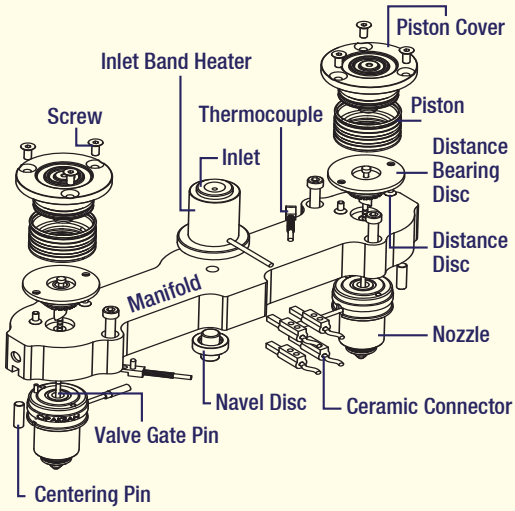
Geometrical Production Tolerances:

Perpendicularity	0.02	Axis
Parallelism	0.02	
Concentricity	0.02	Axis

Tolerance before TiN coating can be; -0.008 / After coating it can be; +0.01
Step chamfer dimensions:
Groove slotted machining dimensions:
TiN coating area & its length:
Full length & tolerance:
Material / Hardness: 1.2344 or HSS
Quantity:
General tolerance values ±:

Important: For precision production of Valve Gate Pin, sending the previous existing pin or bushing sample offers good production.

Assembly Process of Valve Gate Systems



Assembly Steps

Holding Plate:

* Insert the hot runner nozzles to the cavities / housings same axis with centering pin. Put the copper sealing plugs.
* Put the manifold with centering pins secondly, tight manifold screws well-balancedly.
* Insert the pin housing and distance disc into the manifold from upper side.

Top / Mould Cover Plate:

* Tighten the distance bearing disc.
* Put the manifold bridge plate (cavity plate) with taking care of hot runner systems heater and thermocouple wires.
* Center the cover plate with pins, put on to bridge plate and tighten the screws.
* Insert piston housing parts.
* Insert piston-pin group into housing.
* Close the piston with cover part, tighten the screws.
* Check the movement of valve pins by air pressure before starting production.
* Lay the mould in a way that nozzle tips can be seen, insert thermocouples and heaters in to their place and secure with retaining ring that given.
* While making plug connection, external thermocouple wires in hot runner nozzles will be used, their own thermocouple wires of heater will be left idle.

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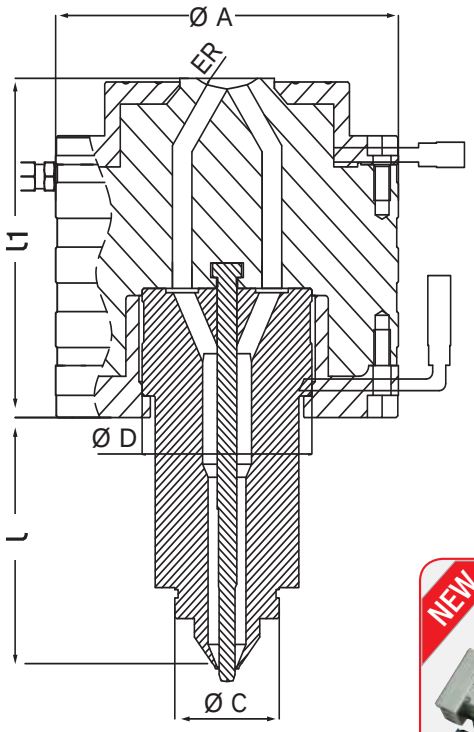


"SVG" Single Valve Gate Hot Runner System

This range of Valve Gate Systems are able to inject single cavity large mould parts with a clean surface. Single Valve Gate Nozzles cut out the leakage and reduce the injection pressures. Our Single Valve Gate Nozzle's Pin can active both pneumatic and hydraulics power.

*** Please check the below for Nozzle Tip selection.**

Order Example:

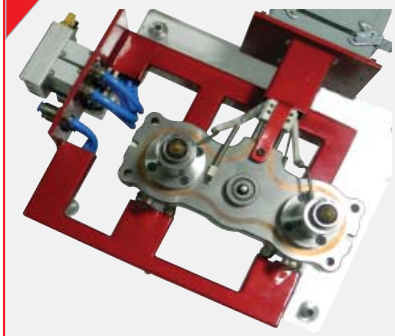
SVG . D . L . E04

- SVG — Single Valve Gate
- D — Nozzle Dia.
- L — Nozzle Length
- E04 — Tip Type

Code	D	L mm	C	L1	ER	A	Injection g.
SVG	Ø 42	60 ~180	Ø 22	84 mm	15 mm	Ø 90	~300
	Ø 52	70 ~	Ø 32	94 mm	15 mm	Ø 105	~1000
	Ø 62	90 ~	Ø 42	104 mm	15 mm	Ø 120	1000~

NEW

Prewired Valve Gate Systems



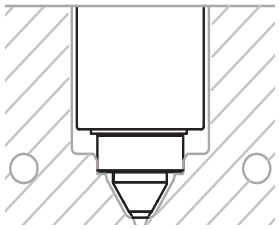
It provides all advantages of common valve gate hot runner systems and Prewired Systems which are delivered pre-mounted provide saving on time by shortening mould assembly time. Since system is delivered as mounted, all kinds of hot runner problems are under warranty of our company. System can be operated sequentially thanks to external valve of each nozzle mounted on the system. In case that it is stated during ordering stage, Valve Gate Hot Runner Systems are produced as hydraulic or pneumatic according to working fields. Please contact Guvenal for details.

Tip / Bushing Types for "SVG" Valve Gate Nozzles:

*** Bushings are changing the nozzle tip type on valve gate applications. All bushings are suitable for the nozzles with same diameter.**

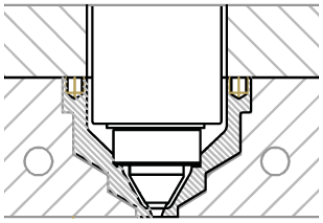
Standard Tip Type / E04

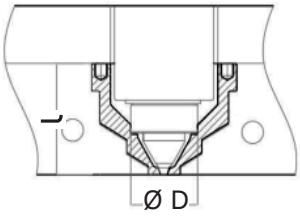
Standard Tip Type / E04



Valve pin seals the material on mould surface.

Valve Gate Flat Bushing / VG-BY02



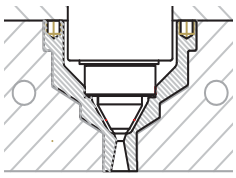


Valve pin seals the material on bushing surface. Machining of housing detail in mould easier.

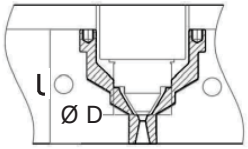
For SVG:

Code	Ø D	L
VG-BY02	18	40 mm
	22	
	32	
	42	

Valve Gate Internal Shear Bushing / VG-BY03



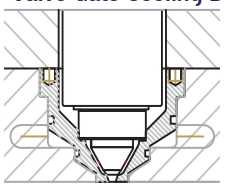
If hot runner nozzle feeds the cold runner channel or due to the part geometry if nozzle can't be reach to part surface then Internal Shear Bushing must be used for succeeding the application. This type bushing leaves conical runner / gate mark on the surface.



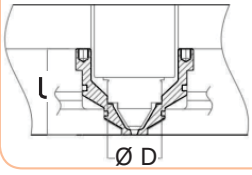
For SVG:

Code	Ø D	L
VG-BY03	18	50 mm
	22	
	32	
	42	

Valve Gate Cooling Bushing / VGC-BY03



If additional cooling is necessary around the hot runner nozzle, Cooling Bushings are the solution and should be used for cosmetic, transparent and optical parts.



For SVG:

Code	Ø D	L
VGC-BY03	18	40 mm
	22	
	32	
	42	

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Injection Mould Cooling Components

Injection Mould Cooling Components / Systems:
Cooling of Moulds; for providing suitable cooling, features of moulded material, material shape, mould structure and quantity of heat to be transfered should be known. In cooling with water, cooling channels should not be very close to mould surface. Otherwise, temperature changes can cause thermal shocks on mould surface. Cooling channels should not be so far from mould surface, because in this case, heat transfer should not be provided sufficiently.
Cooling channels may be created 2/3 times far of mould plate channel diameters. Water flowing should be provided to keep mould in certain temperature.

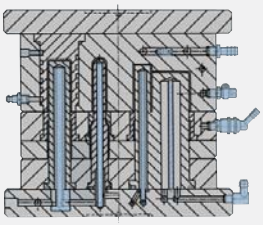
Effect of Cooling Time on Mould:

Injection Errors:	Solution Methods:
- Tensile - Distortion - Sinking - Fragility - Cracking - Shrinkage - Visible ejector traces - Tension whitening	Cooling period should be increased and cooling system / channels should be controlled.

Quick-release Couplings:

Quick-release Couplings and fittings compatible with mould cooling systems and injection machines are commonly used in plastic - metal injection moulds. To use in water - air and oil flowing, different types are available and when desired mounting / demounting facilities on mould, Quick-release Couplings should be used.

For accurate and efficient cooling in mould cooling system, to choose Coupling / Fitting System to be most suitable to the temperature of your mould and mounting area in the correct way is important. Wide options related to this systems are presented at following pages. We have custom-made production service in all our Cooling Components.

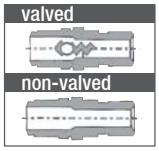


Quick-release Couplings

Series: 590

Fields of Usage: It is used in cooling systems of plastic, zinc - aluminium diecasting moulds and steam lines - hot oil circuits, water, washing & cooling systems of machines.

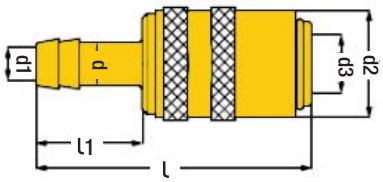
Material Info:
Body & Cover Valve = Brass **/ O-Ring** = Viton
Spring - Ring & Ball = Stainless **/ Coupling Fitting** = Brass
Operating Pressure = 0 - 15 bar **/ Flow Capacity** = 9 mm
Operating Temperature = -5 / +180°



Valved: Controlled water flow is provided. When fitting is removed, water flow is closed in coupling.
Non-valved: When fitting is removed, open circuit.

Quick-release Coupling

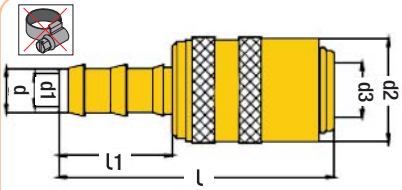
Code: 590HG (non-valved)
Code: 590HGB (valved)



Order Example	d	d1	d2	d3	l	l1
Code x 10	**10**	7.5	23	13	59	23
Code x 13	**13**	10				

Quick-release Coupling

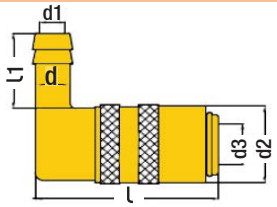
Code: 590FG (non-valved)
Code: 590FGB (valved)



Order Example	d	d1	d2	d3	l	l1
Code x 10	**10**	7.5	23	13	64	28
Code x 13	**13**	10				

Quick-release Coupling / 90°

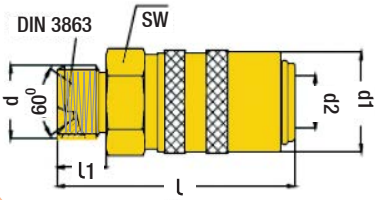
Code: 590LG (non-valved)
Code: 590LGB (valved)



Order Example	d	d1	d2	d3	l	l1
Code x 10	**10**	7.5	23	13	52	29
Code x 13	**13**	10				

Quick-release Coupling / Male

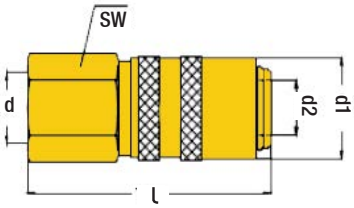
Code: 590EG (non-valved)
Code: 590EGB (valved)



Order Example	d	d1	d2	l	l1	SW
Code x 13	BSP 1/4"	23	13	52	9	21
Code x 17	BSP 3/8"					
Code x 21	BSP 1/2"					
Code x 16M	M16x1.5				10	

Quick-release Coupling / Female

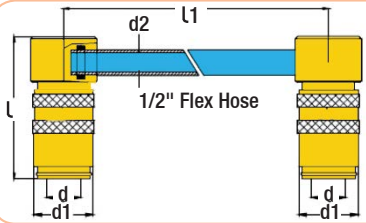
Code: 590DG (non-valved)
Code: 590DGB (valved)



Order Example	d	d1	d2	l	SW
Code x 13	BSP 1/4"	23	13	52	21
Code x 17	BSP 3/8"				21
Code x 21	BSP 1/2"				24
Code x 16M	M16x1.5				21

Diverting Coupling Bridge

Code: 590KG (non-valved)
Code: 590KGB (valved)



Order Example	d	d1	d2	l	l1
Code x 125	13	23	10x1	52	125
Code x 250					250
Code x 500					500

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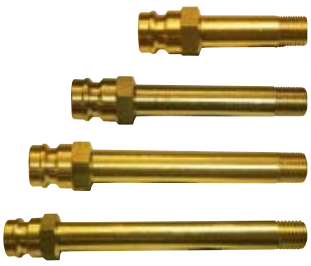


Fittings

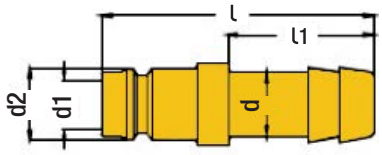
Series: 590

Compatible with Series-590
Quick-release Couplings

Material = Brass
Operating Pressure = 0 - 15 bar
Flow Capacity = 9 mm
Operating Temperature = -5 / +180⁰

Hose-tail Fitting

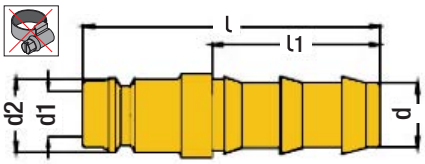
Code: 590HR



Order Code	d	d1	d2	l	l1
590HR.10	**10**	9	13	40	23
590HR.13	**13**			42	25

Push-lock Hose Fitting

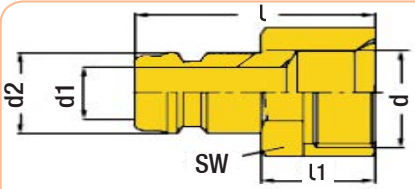
Code: 590FHR



Order Code	d	d1	d2	l	l1
590FHR.10	**10**	9	13	43	28
590FHR.13	**13**			47	

Female Fitting

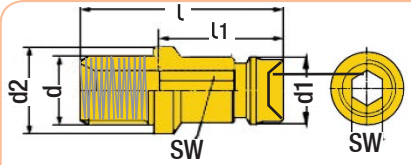
Code: 590DR



Order Code	d	d1	d2	SW	l	l1
590DR.13	G 1/4"	9	13	16	28	9
590DR.17	G 3/8"			19		

Male Fitting with Inner Hex.

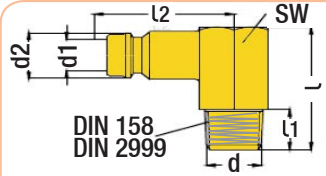
Code: 590AER



Order Code	d	d1	d2	SW	l	l1
590AER.13	G 1/4"	13	13.5	8	26	17
590AER.17	G 3/8"		17			
590AER.M14	M14 x 1.5		14.5			

Fitting 90⁰ Male Threaded

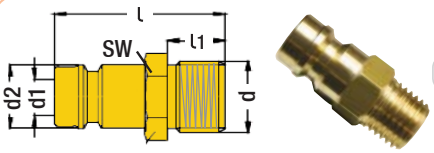
Code: 590ER



Order Code	d	d1	d2	SW	l	l1	l2
590ER.13x90	G 1/4"	9	13	15	34	10	25
590ER.17x90	G 3/8"			17			
590ER.M14x90	M14 x 1.5			15			

Male Fitting

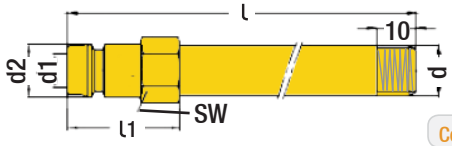
Code: 590-ORE



Order Code	d	d1	d2	SW	l	l1
590-ORE.10	G 1/8"	9	13	14	29	10
590-ORE.13	G 1/4"					
590-ORE.17	G 3/8"			17		
590-ORE.21	G 1/2"			21		
590-ORE.M8	M8 x 1.25			14		
590-ORE.10.1	M10 x 1.5					
590-ORE.M10	M10 x 1.0					
590-ORE.M12	M12 x 1.75					
590-ORE.M14	M14 x 1.5			21		
590-ORE.M16	M16 x 1.5					

Male Fitting Long Type

Code: 590-ORE



Note: Our custom-made production is available as per request.

Order Code	d	d1	d2	SW	l	l1
590-ORE.M8.60	M8 x 1.25	9	13	14	60	20
590-ORE.M8.80					80	
590-ORE.M8.100					100	
590-ORE.M8.120					120	
590-ORE.M8.150					150	
590-ORE.M8.200					200	
590-ORE.M10.60	M10 x 1.5	9	13	14	60	20
590-ORE.M10.80					80	
590-ORE.M10.100					100	
590-ORE.M10.120					120	
590-ORE.M10.150					150	
590-ORE.M10.200					200	
590-ORE.M12.60	M12 x 1.75	9	13	14	60	20
590-ORE.M12.80					80	
590-ORE.M12.100					100	
590-ORE.M12.120					120	
590-ORE.M12.150					150	
590-ORE.M12.200					200	
590-ORE.10.60	G 1/8"	9	13	14	60	20
590-ORE.10.80					80	
590-ORE.10.100					100	
590-ORE.10.120					120	
590-ORE.10.150					150	
590-ORE.10.200					200	
590-ORE.13.60	G 1/4"	9	13	14	60	20
590-ORE.13.80					80	
590-ORE.13.100					100	
590-ORE.13.120					120	
590-ORE.13.150					150	
590-ORE.13.200					200	

Extension Fitting with Thread

Code: ARU

Order Code	d	l	SW
ARU.18.60	G 1/8"	60	14
ARU.18.80		80	
ARU.18.100		100	
ARU.18.150		150	

Order Code	d	l	SW
ARU.14.60	G 1/4"	60	16
ARU.14.80		80	
ARU.14.100		100	
ARU.14.150		150	

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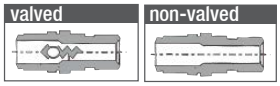
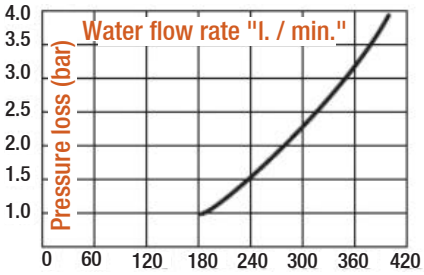
Quick-release Couplings & Fittings for Large Moulds

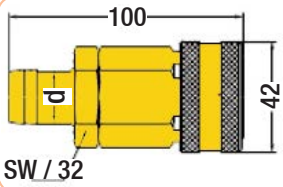
Material Info:
Body & Cover Valve = Brass
O-Ring = NBR
Spring - Ring & Ball = Stainless
Coupling Fitting = Brass
Operating Pressure = 0 - 35 bar **/ Flow Capacity** = NW19
Operating Temperature = -20 / +100°

Series: 571



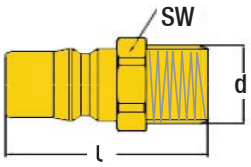


Quick-release Coupling — Code: 571HG / 571HGB (valved)



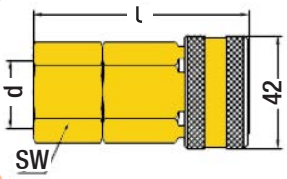
Order Example	d
Code x 16	16 mm - 5/8"
Code x 19	19 mm - 3/4"
Code x 25	25 mm - 1"

Male Fitting — Code: 571ER



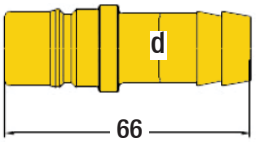
Order Code	d (BSP)	l	SW
571ER.26	3/4"	54	30
571ER.33	1"	57	36
571ER.42	1 1/4"	60	45

Quick-release Coupling / Female — 571EG



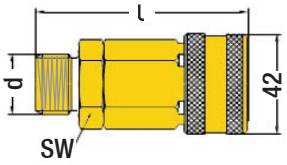
Order Code	d (BSP)	l	SW
571EG.21	1/2"	79	32
571EG.26	3/4"	81	32
571EG.33	1"	83	36
571EG.42	1 1/4"	85	46

Hose-tail Fitting — Code: 571HR



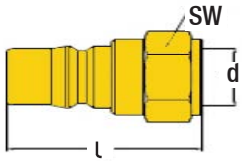
Order Code	d
571HR.16	16 mm - 5/8"
571HR.19	19 mm - 3/4"
571HR.25	25 mm - 1"

Quick-release Coupling / Male — 571DG



Order Code	d (BSP)	l	SW
571DG.21	1/2"	80	32
571DG.26	3/4"	81	32
571DG.33	1"	81	40
571DG.42	1 1/4"	83	50

Female Fitting — Code: 571DR

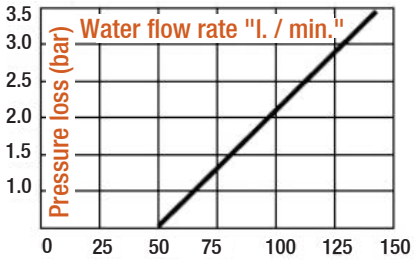


Order Code	d (BSP)	l	SW
571DR.26	3/4"	51	32
571DR.33	1"	54	40
571DR.42	1 1/4"	54	50

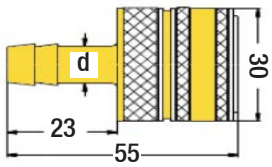
Quick-release Couplings & Fittings for Large Moulds

Material Info:
Body & Cover Valve = Brass
O-Ring = NBR
Spring - Ring & Ball = Stainless
Coupling Fitting = Brass
Operating Pressure = 0 - 15 bar **/ Flow Capacity** = NW13
Operating Temperature = -20 / +100°

Series: 620

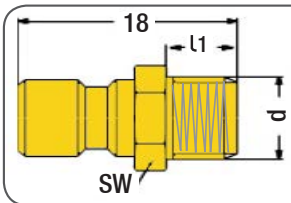


Quick-release Coupling — Code: 620HG



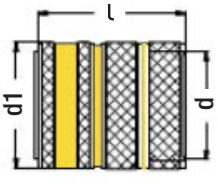
Order Code	d
620HG.09	9 mm
620HG.13	13 mm
620HG.16	16 mm
620HG.19	19 mm

Male Fitting — Code: 620ER



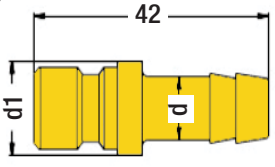
Order Code	d (BSP)	l1	SW
620ER.13	1/4"	9	19
620ER.17	3/8"	9	19
620ER.21	1/2"	12	22
620ER.26	3/4"	14	30
620ER.33	1"	15	34

Quick-release Coupling / Female, Valved — Code: 620DGB



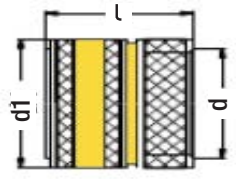
Order Code	d (BSP)	l	d1
620DGB.26	3/4"	45	30

Hose-tail Fitting — Code: 620HR



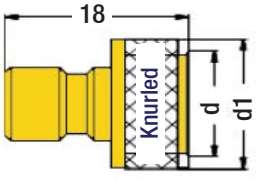
Order Code	d	d1
620HR.09	9 mm	19
620HR.13	13 mm	19
620HR.16	16 mm	19
620HR.19	19 mm	23

Quick-release Coupling / Female, Non-valved — Code: 620DG



Order Code	d (BSP)	l	d1
620DG.26	3/4"	30	30

Knurled Female Fitting — 620DR



Order Code	d (BSP)	d1
620DR.13	1/4"	19
620DR.17	3/8"	19
620DR.21	1/2"	24
620DR.M22	M22x1	25
620DR.26	3/4"	30

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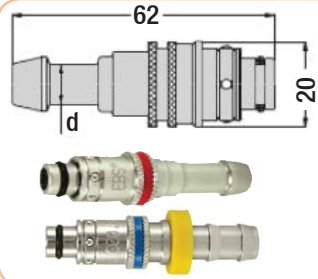
Quick-release Couplings & Fittings with Colour Ring

Series: 600

Colour Rings: In order to prevent confusion of lines (hot / cold) during usage.
Fields of Usage: It is used in cooling systems of plastic, zinc - aluminium diecasting moulds and water, washing - cooling systems of machines.

Pls. add the colour code to the end of the order code if you request colour ring.
Cold→Blue = **B** Hot→Red = **R**
Order Example:
"600HG.10.**B**" or "600HG.10.**R**"

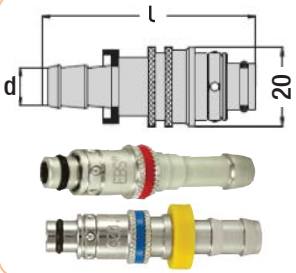
Material Info:
Body & Cover = Nickel Plated Brass / **O-Ring** = NBR
Spring - Ring & Ball = Stainless / **Coupling Fitting** = Nickel Plated Brass
Operating Pressure = 0 - 10 bar / **Flow Capacity** = 8 mm
Operating Temperature = -20 / +90⁰



Quick-release Coupling

Code: 600HG

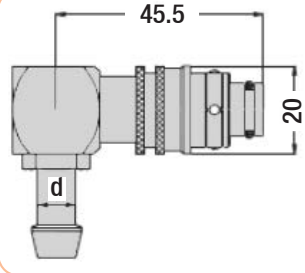
Order Code	d
600HG.06	1/4" - 6 mm
600HG.08	5/16" - 8 mm
600HG.10	3/8" - 10 mm
600HG.12	15/32" - 12 mm
600HG.13	1/2" - 13 mm



Quick-release Coupling

Code: 600FG

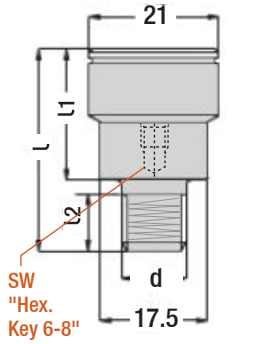
Order Code	d	l
600FG.10	3/8" - 10 mm	37
600FG.13	1/2" - 13 mm	40



Quick-release Coupling / 90⁰

Code: 600HA

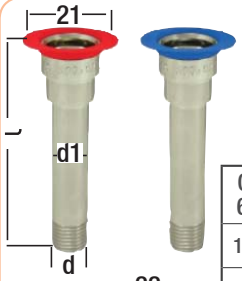
Order Code	d
600HA.06	1/4" - 6 mm
600HA.08	5/16" - 8 mm
600HA.10	3/8" - 10 mm
600HA.12	5/32" - 12 mm
600HA.13	1/2" - 13 mm



Fittings with Colour Ring

Code: 600ER

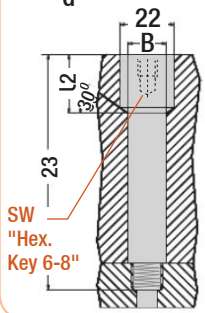
Order Code	d	l1	l2	l
600ER.10	BSPT 1/8"	21	8	31
600ER.13	BSPT 1/4"	21	10	33
600ER.17	BSPT 3/8"	11	11	24
600NR.10	NPT 1/8"	21	7	31
600NR.13	NPT 1/4"	21	10	33
600NR.17	NPT 3/8"	11	11	24
600ER.M10.1	M10 x 1"	21	10	31
600ER.M10	M10x1.5"	21	10	31
600ER.M12	M12x1.75"	21	11	31
600ER.M14	M14x1.5"	21	11	31



Fittings with Colour Ring Long Type

Code: 600ER

Order Example: 600ER. 10x100



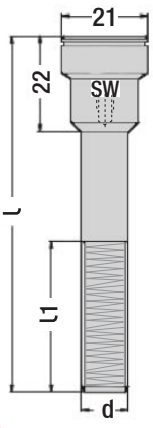
Order: 600ER	d	l Min. Max	L2	d1	B
10 x 100	BSP 1/8"	33 ~ 100	L - 5.5	10.2	11
10 x 150		100 ~ 150			
10 x 200		150 ~ 200			
10 x 250		200 ~ 250			
13 x 100	BSP 1/4"	33 ~ 100	L - 7.5	13.5	14
13 x 150		100 ~ 150			
13 x 200		150 ~ 200			
13 x 250		200 ~ 250			

Extension Fitting with Colour Ring

non-threaded

Code: 600BU

Order Code	d	l	B	SW
600BU.10.50	10.2	50	11	6
600BU.10.100		100		
600BU.10.150		150		
600BU.10.200		200		
600BU.13.50	13.5	50	14	8
600BU.13.100		100		
600BU.13.150		150		
600BU.13.200		200		
600BU.13.250		250		



Extension Fitting with Colour Ring

threaded

Code: 600UR

Order Code	d	l	l1	SW
600UR.10.50	BSPT 1/8"	50	26	6
600UR.10.100		100	60	
600UR.10.150		150	60	
600UR.13.50	BSPT 1/4"	50	27	8
600UR.13.100		100	60	
600UR.13.150		150	60	
600UR.13.200		200	60	

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Quick-release Couplings & Fittings (Precise & Tight Coupler)

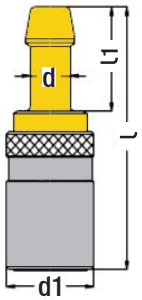
Series: 601

Fields of Usage: It is used in cooling systems of plastic, zinc - aluminium diecasting moulds and steam lines - hot oil circuits, water, washing & cooling systems of machines.

Material Info:

Body = Brass / **Cover Valve** = 420 Stainless
O-Ring = Viton / **Coupling Fitting** = Brass
Spring - Ring & Ball = Stainless
Operating Pressure = 16 bar / **Flow Capacity** = 6 -9-10-12-16 mm
Operating Temperature = -10 / +180°

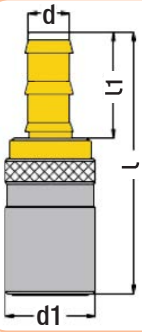
Note: Our custom-made production is available as per request.



Quick-release Coupling

Code: 601HG (non-valved)
Code: 601HGB (valved)

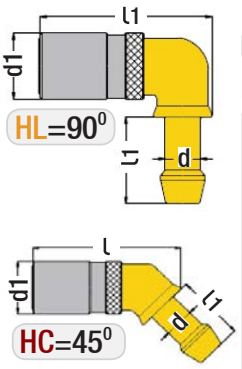
Order Example	d	d1	l	l1
Code x 08	08	19	60	23
Code x 12	12	25	69.5	28
Code x 13	13	31	82	28
Code x 14	16	31	82	28
Code x 16	16	32	109	28
Code x 19	19	38	114	33



Quick-release Coupling

Code: 601FG (non-valved)
Code: 601FGB (valved)

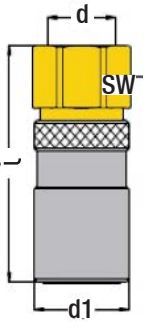
Order Example	d	d1	l	l1
Code x 10	10	19	60	24
Code x 12	10	25	69.5	24
Code x 13	13	25	69.5	28
Code x 14	13	31	92	38
Code x 16	16	38	109	38
Code x 19	19	38	109	38



Quick-release Coupling / 90° & 45°

Code: 601HL or 601HC (non-valved)
Code: 601HLB or 601HCB (valved)

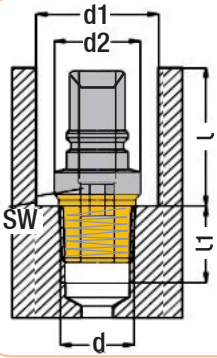
Order Example	d	d1	l	l1
HL or **HLB** x 08	08	19	59	23
HL or **HLB** x 10	10	25	60	28
HL or **HLB** x 12	12	25	65	28
HL or **HLB** x 16	16	31	82	28
HL or **HLB** x 19	19	38	132	60
HC or **HCB** x 08	08	19	59	23



Quick-release Coupling / Female

Code: 601DG or 601NG (non-valved)
Code: 601DGB or 601NGB (valved)

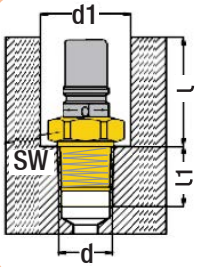
Order Example	d	d1	l	SW
DG or **DGB** x 13	BSP 1/4"	19	46	17
DG or **DGB** x 17	BSP 3/8"	25	53	22
DG or **DGB** x 21	BSP 1/2"	31	67	27
NG or **NGB** x 21	NPT 1/2"	31	67	27
DG or **DGB** x 26	BSP 3/4"	38	90	35
NG or **NGB** x 26	NPT 3/4"	38	90	35



Male Fitting with Inner Hex.

Code: 601RR

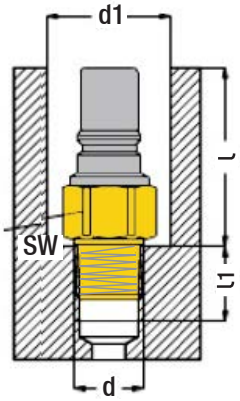
Order Code	d	d1	d2	l	l1
601RR.10	BSPT 1/8"	20	10	26	9
601RR.13	BSPT 1/4"	20	14	27	12
601RR.14	BSPT 1/4"	26	14	26	12
601RR.17	BSPT 3/8"	26	17	28	13
601RR.18	BSPT 3/8"	33	18	31	13



Male Fitting

Code: 601TR 601RR

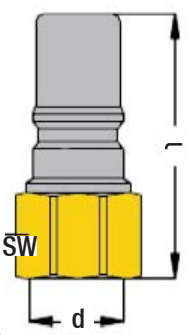
Order Code	d	d1	l	l1	SW
601TR.17	NPT 3/8"	36	29	11	24
601RR.21	BSPT 1/2"	33	29	15	22
601TR.22	NPT 1/2"	33	29	15	22
601RR.26	BSPT 3/4"	40	47	19	27



Male Fitting

Code: 601RRB

Order Code	d	d1	l	l1	SW
601RRB.10	BSPT 1/8"	26	33	9	17
601RRB.13	BSPT 1/4"	26	33	12	17
601RRB.14	BSPT 1/4"	29	38.5	12	19
601RRB.17	BSPT 3/8"	29	38.5	13	20
601RRB.18	BSPT 3/8"	36	46.5	13	24
601RRB.21	BSPT 1/2"	36	46.5	15	24
601RRB.26	BSPT 3/4"	46	67	16	32



Female Fitting

Code: 601DR

Order Code	d	l	SW
601DR.13	BSP 1/4"	34	17
601DR.17	BSP 3/8"	37	22
601DR.21	BSP 1/2"	45	27
601DR.26	BSP 3/4"	58	32

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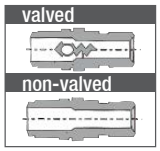
Quick-release Couplings USA System

Series: 509

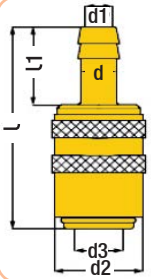
Fields of Usage: It is used in cooling systems of plastic, zinc - aluminium diecasting moulds and steam lines - hot oil circuits, water, washing & cooling systems of machines.

Material Info:
Body & Cover Valve = Brass **/ O-Ring =** Viton
Spring - Ring & Ball = Stainless **/ Coupling Fitting =** Brass
Operating Pressure = 0 - 15 bar **/ Flow Capacity =** 9 mm
Operating Temperature = -5 / +180°



Valved: Controlled water flow is provided. When fitting is removed, water flow is closed in coupling.
Non-valved: When fitting is removed, open circuit.

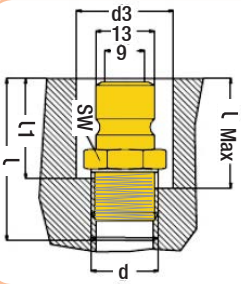
Quick-release Coupling USA



Code: 509HG (non-valved)
Code: 509HGB (valved)

Order Example	d	d1	d2	d3	l	l1
Code x 10	10	8	23	13	68	29
Code x 11	11	9				
Code x 13	13	10				

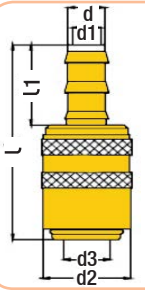
Male Fitting USA



Code: 509ER

Order Code	d	d3	l1	l Max	l
509ER.10	1/8"	26	25	26	30
509ER.13	1/4"	30	25	22	33
509ER.17	3/8"	30	26	22	33
509ER.21	1/2"	32	26	26	37
509ER.M14	M.14x1.5	28	25	26	33

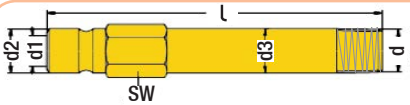
Quick-release Coupling USA



Code: 509FG (non-valved)
Code: 509FGB (valved)

Order Example	d	d1	d2	d3	l	l1
Code x 10	10	8	23	13	68	29
Code x 13	13	10				

Male Fitting USA Long Type

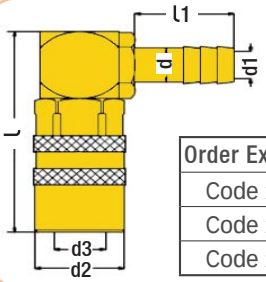


Code: 509ER

Order Code	d	d1	d2	d3	l	SW
509ER.100	M14 x1.5	14	13	9	100	15
509ER.150					150	
509ER.200					200	
509ER.250					250	
509ER.300					300	

Note: Our custom-made production is available as per request.

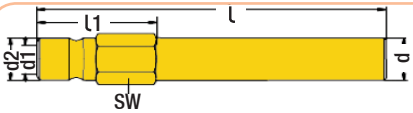
Quick-release Coupling 90° / USA



Code: 509LG (non-valved)
Code: 509LGB (valved)

Order Example	d	d1	d2	d3	l	l1
Code x 10	10	8	23	13	39	29
Code x 11	11	9				
Code x 13	13	10				

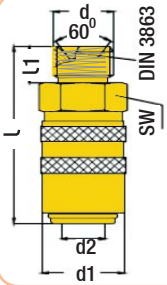
Extension Fitting USA (non-threaded)



Code: 509BN

Order Code	d	d1	d2	l	l1	SW
509BN.100	Ø 14	9	13	100	23	15
509BN.150				150		
509BN.200				200		
509BN.250				250		
509BN.300				300		

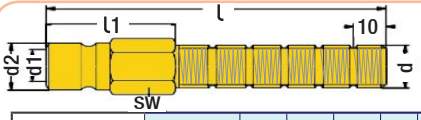
Quick-release Coupling - Male / USA



Code: 509EG (non-valved)
Code: 509EGB (valved)

Order Example	d	d1	d2	l	l1	SW
Code x 13	BSP 1/4"	23	13	59	9	17
Code x 16	M16x1.5					17
Code x 17	BSP 3/8"					19
Code x 18	M18x1.5					19
Code x 21	BSP 1/2"					24

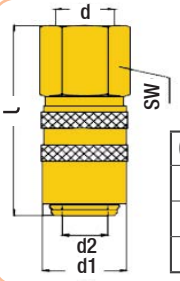
Extension Adjustable Fitting USA



Code: 509BL

Order Code	d	d1	d2	l	l	1	SW
509BL.13	BSPT 1/4"	9	13	100	40		14
509BL.17	BSPT 3/8"						17
509BL.M10	M10 x 1						14
509BL.M14	M14 x1.5						14
509BL.M16	M16 x1.5						17

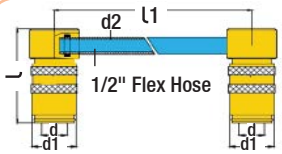
Quick-release Coupling - Female / USA



Code: 509DG (non-valved)
Code: 509DGB (valved)

Order Example	d	d1	d2	l	SW
Code x 13	BSP 1/4"	23	13	52	17
Code x 17	BSP 3/8"				21
Code x 21	BSP 1/2"				24

Diverting Coupling Bridge USA



Code: 509KG (non-valved)
Code: 509KGB (valved)

Order Example	d	d1	d2	l	l1
Code x 125	13	23	8x1	41	125
Code x 250					250
Code x 500					500

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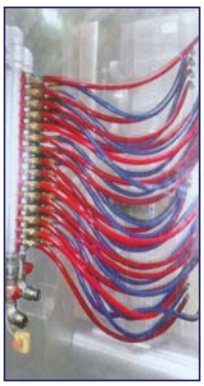
Multi Coupling Plate Systems for Injection Moulds

Code: 1009

Please contact our company for technical details and information of product "1009".

They are used in Injection Mould Cooling Systems. These complicated sets prevent faulty and incorrect fastening and arrange complicated fastening system. It reduces mould changing time minimum and enables simple / easy fastening.
Our systems provide from 3 inlets - 3 outlets up to 16 inlets - 16 outlets according to the requirement of users. Your Guvenal support assistant will assist you in order formation.

High quality Viton O-rings are used in our products. They can be operated at 10 Bar & 180°C.



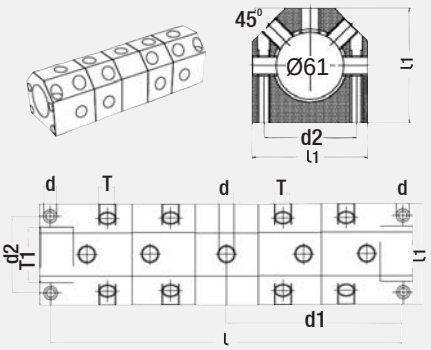
With Multi Coupling Plates & Manifold Blocks, undesired miscibility on machine and mould can be avoided.

Manifold Blocks for Injection Mould Cooling Systems

Code: AK1017

Distribution of injection mould cooling water, inlet and outlet regulation system.

Material: Aluminium + Eloxal Coating



Manifold (distribution) Blocks:
with 1/4" - 3/8" quick-release coupling.

Order Code	l	l1	d	d1	d2
AK1017.3310	172	55	7	86	43.4
AK1017.3320	236			118	
AK1017.3330	300			150	
AK1017.3340	364			182	

T	T1	Inlet qty.	Outlet qty.
1/4" or 3/8"	1"	5	5
		10	10
		15	15
		20	20

Please specify the **"T"** dimension when ordering, specify the selection **"T"** at the end of order code.

Order Example: AK1017.3320. 1/4

Manifold (distribution) Blocks:
with 1/2" quick-release coupling.

Order Code	l	l1	d	d1	d2
AK1017.4210	191	80	9	95.5	62.5
AK1017.4220	267			133.5	
AK1017.4230	343			171	

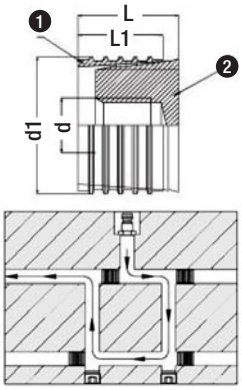
T	T1	Inlet qty.	Outlet qty.
1/2"	1" 1/4	5	5
		10	10
		15	15

NEW

Detent Plug

Code: GKT

Material:
1. 2.0401 / Brass
2. 1.4105 / Stainless Steel



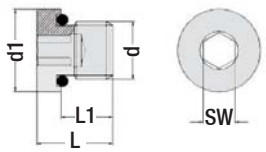
Order Code	d mm	d1 mm	L1 mm	L mm
GKT06	M3	6	8	12
GKT08	M4	8	8	12
GKT10	M6	10	10	14
GKT12	M6	12	10	14
GKT14	M8	14	12	17
GKT15	M8	15	12	17
GKT16	M8	16	12	17
GKT20	M8	20	12	17

Material:
Nickel Plated Brass
NBR O-ring

Max. Temperature:
200°

Detent Plug, Headed

Code: OKS



Order Code	d mm	d1 mm	L mm	L1 mm	SW
OKS10	G 1/8"	14	10	7	5
OKS13	G 1/4"	18	11	8	7
OKS17	G 3/8"	22	12	9	8
OKS21	G 1/2"	24	13	9.5	10
OKS26	G 3/4"	32	15	11.5	12
OKSM10	M10x1	14	10	7	5
OKSM12	M12x1.5	17	11	8	6
OKSM14	M14x1.5	19	12	9	8
OKSM16	M16x1.5	21	12	9.5	10

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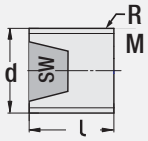


Code: SDT

Detent Plug - Straight

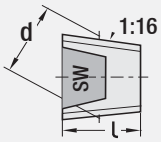
It is to plug / close unwanted cooling holes in injection moulds.
Mounting: It is inserted acc. to the product diameter by threading.
Material: MS58 Brass

Order Code	R / Thread	d	l	SW
SDT.18	G 1/8"	9.4	11.2	5
SDT.14	G 1/4"	12.8	12.5	7
SDT.38	G 3/8"	15.9	14.1	8
SDT.12	G 1/2"	20.5	17.8	10

Order Code	M / Thread	l	SW
SDT.M06	M6 x 0.75	7	3
SDT.M08	M8 x 0.75	8	4
SDT.M10	M10 x 1.0	10	5
SDT.M12	M12 x 1.5	10	6
SDT.M14	M14 x 1.5	10	7

Code: SKT

Material: MS58 Brass
Max. Temp.: 135^0



Code: CKT

Material: Steel + Black Coating
Max. Temp.: 160^0

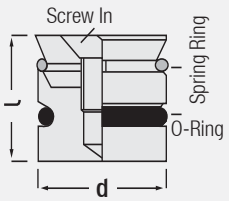
Detent Plug - Conical

Order Code	R / Thread	d	l	SW
SKT.18	NPT 1/8"	9.4	11.2	5
SKT.14	NPT 1/4"	12.8	12.5	7
SKT.38	NPT 3/8"	15.9	14.1	8
SKT.12	NPT 1/2"	20.5	17.8	10

Order Code	M / Thread	l	SW
SKT.M06	M6 x 0.75	7	3
SKT.M08	M8 x 0.75	8	4
SKT.M10	M10 x 1.0	8	5
SKT.M12	M12 x 1.5	10	6
SKT.M14	M14 x 1.5	10	7

CKT / Steel Type:

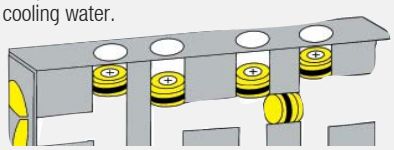
Order Code	R / Thread	d	l	SW
CKT.18	NPT 1/8"	9.4	11.2	5
CKT.14	NPT 1/4"	12.8	12.5	7
CKT.38	NPT 3/8"	15.9	14.1	8
CKT.12	NPT 1/2"	20.5	17.8	10



Code: GCP

Detent Plug with O-Ring

It is adjusted fixing plug in order to use canceling (inactive) of unwanted holes in cooling channel of injection moulds or to direct flow motions of cooling water.



Mounting:
The diameter of cooling channel should be at least 0.1 mm larger than **"GCP product"**.
Any machining (threading etc.) on channel mounting and any mechanical process on product should not be done.
"GCP" is never rusting. The wall thickness of diameter on unit can be adjusted via O-ring.

Operating Temperature Range: 10 - 200^0
Compressive Strength:
Ø 6 - 8 mm = 16 Kg. / cm^2
Ø 10 - 12 mm = 18 Kg. / cm^2
Ø 14 - 16 mm = 25 Kg. / cm^2

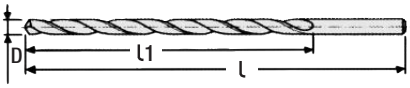
Order Code	d	l	Mounting Dia.
GCP.06	Ø 6	10	6.1 mm
GCP.08	Ø 8	10	8.1 mm
GCP.10	Ø 10	11	10.1 mm
GCP.12	Ø 12	12	12.1 mm
GCP.14	Ø 14	14	14.1 mm
GCP.16	Ø 16	14	16.1 mm
GCP.20	Ø 20	14	20.1 mm

Extra Long Drill

Code: MG

GT 100 type & for cooling channels

It is a long chip channel drill bit having great helix angle than normal.
Especially, "10XD" perforation machining is provided on the deep surfaces. Due to its helix structure, it works comfortably and does not sticking into the middle hardened steel and aluminium materials by evacuating chip outside during drilling.



Order Code	Ø D	l	l1
MG35.165	3.5 mm	165 mm	115 mm
MG35.210		210 mm	145 mm
MG35.265		265 mm	180 mm
MG04.175	4 mm	175 mm	120 mm
MG04.220		220 mm	150 mm
MG04.280		280 mm	190 mm
MG05.198	5 mm	198 mm	135 mm
MG05.245		245 mm	170 mm
MG05.315		315 mm	210 mm
MG55.205	5.5 mm	205 mm	140 mm
MG55.260		260 mm	180 mm
MG55.330		330 mm	225 mm
MG06.205	6 mm	205 mm	140 mm
MG06.260		260 mm	180 mm
MG06.330		330 mm	225 mm
MG65.215	6.5 mm	215 mm	150 mm
MG65.275		275 mm	190 mm
MG65.350		350 mm	235 mm
MG07.225	7 mm	225 mm	155 mm
MG07.290		290 mm	200 mm
MG07.370		370 mm	250 mm
MG75.225	7.5 mm	225 mm	155 mm
MG75.290		290 mm	200 mm
MG75.370		370 mm	250 mm
MG08.240	8 mm	240 mm	165 mm
MG08.305		305 mm	210 mm
MG08.390		390 mm	265 mm
MG85.240	8.5 mm	240 mm	165 mm
MG85.305		305 mm	210 mm
MG85.390		390 mm	265 mm
MG09.250	9 mm	250 mm	175 mm
MG09.320		320 mm	220 mm
MG09.410		410 mm	280 mm
MG95.250	9.5 mm	250 mm	175 mm
MG95.320		320 mm	220 mm
MG95.410		410 mm	280 mm
MG10.265	10 mm	265 mm	185 mm
MG10.340		340 mm	235 mm
MG10.430		430 mm	295 mm
MG105.265	10.5 mm	265 mm	185 mm
MG105.340		340 mm	235 mm
MG105.430		430 mm	295 mm
MG11.280	11 mm	280 mm	195 mm
MG11.365		365 mm	250 mm
MG11.455		455 mm	310 mm
MG115.280	11.5 mm	280 mm	195 mm
MG115.365		365 mm	250 mm
MG115.455		455 mm	310 mm
MG12.295	12 mm	295 mm	205 mm
MG12.375		375 mm	260 mm
MG12.480		480 mm	330 mm
MG125.295	12.5 mm	295 mm	205 mm
MG125.375		375 mm	260 mm
MG125.480		480 mm	330 mm
MG13.295	13 mm	295 mm	205 mm
MG13.375		375 mm	260 mm
MG13.480		480 mm	330 mm

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Flexible Cooling Hose Code: PSE

Even at high pressures, it guarantees the directional stability. Resistant to all chemicals. Combine system with modular passing feature.

1/4" Operating Pressure:
6 Bar / Flow Rate 15 l. / min.

3/8" Operating Pressure:
6 Bar / Flow Rate 25 l. / min.

Order Code	Thread	Length
PSE.14	1/4"	280 mm
PSE.38	3/8"	320 mm

It can be supported with "Ball Valve" as per request.

Rubber Hose (gas & air) Code: HSG

* Double layer hoses with rope.
* When ordering, specify desired meter.

Order	Inner	Outer
HSG.08	5	8.5
HSG.10	8	10.5
HSG.13	10	13.5
HSG.16	9.5	15.4
HSG.19	12.5	18.5

Mini Ball Valve Code: KKV

* Manual controlled.
* Button type ball valves.
* 1/4 male threaded regulator.

Order Code	Female	Male
KKV.13	G 1/4"	G 1/4"
KKV.17	G 3/8"	G 3/8"
KKV.21	G 1/2"	G 1/2"
KKV.26	G 3/4"	G 3/4"
KKV.33	G 1"	G 1"

Hose Clamp (stainless) Code: HKI

Order Code	Capacity
HKI.1016	10 x 16
HKI.1220	12 x 20
HKI.1319	13 x 19
HKI.1623	16 x 23
HKI.2032	20 x 32

O-Ring Set

* 368 pcs.
* 30 different sizes.
* NBR Rubber resistant to oils and acids.
* 60-90 shore hardness.

Content:
From Ø 3 to Ø 30 mm.
Thickness:
2 - 2.5 - 3 - 4 mm.

Order Code: **ORING.SET**

Teflon Sealing Tape

Order Code: TEFLON

12 metre x 12 mm

Liquid Gasket Sealant

* 300⁰ heat resistance sealing.

Order Code: SK404 **Red**

Order Code: SM404 **Blue**

Package: 45 g.

Repair Paste Order Code: SUNFIX

It is especially for water leakage.
Easy to use and versatile problem solver paste for repair, maintenance and construction.
Cold-curing two-component paste suitable for sealing, bonding, moulding, repairing and filling.

Liquid Sealant with Teflon (PTFE) Order Code: W610511

It is recommended when teflon tape or other thread sealants have been applied. It provides high quality sealing.

Usage Area:
- Mould cooling parts (fittings etc.)
- Fastener and pipes
- In all cases requiring sealing

- Handling strength: 20 - 40 min.
- Functional strength: 1 - 3 hours
- Heat resistance: -55 / +150⁰ C
- Gap filling capacity: 0,30 mm

Package: 50 ml.

Cooling Adapter Code: DSN

Order	Thread	Length	Hexagon
DSN.02	1/8"	22	14
DSN.03	1/4"	26	17
DSN.04	3/8"	26	22
DSN.05	1/2"	30	27

Cooling Adapter Code: ONE

Order	Thread	Length
ONE.01	1/8"-1/8"	21
ONE.02	1/8"-1/4"	23
ONE.03	1/4"-1/4"	23
ONE.04	1/4"-3/8"	23
ONE.05	1/4"-1/2"	29
ONE.06	3/8"-3/8"	23
ONE.07	3/8"-1/2"	29

Reduction Fitting Code: DEN

Order	Female	Male
DEN.01	G 1/8"	G 1/4"
DEN.02	G 3/8"	G 1/4"
DEN.03	G 1/8"	G 3/8"
DEN.04	G 1/8"	G 1/2"
DEN.05	G 1/4"	G 3/8"
DEN.06	G 1/4"	G 1/2"
DEN.07	G 3/8"	G 1/2"

Cooling Fitting - Elbow Code: KDR

Order	Male
KDR.10	G 1/8"
KDR.13	G 1/4"
KDR.17	G 3/8"
KDR.21	G 1/2"
KDR.26	G 3/4"
KDR.33	G 1"

Hose Fitting Code: HBE & HBF

HBE HBF

Order	Order	Male
HBE.6	HBF.6	6.0 mm
HBE.9	HBF.9	9.5 mm
HBE.13	HBF.13	12.5 mm
HBE.16	HBF.16	13.5 mm
HBE.19	HBF.19	18.5 mm

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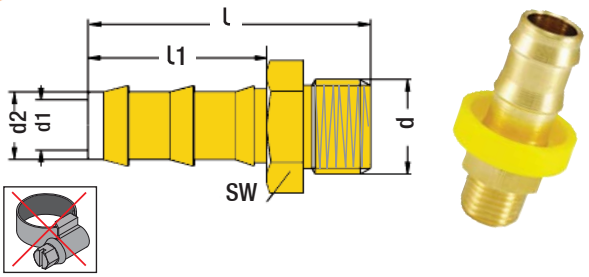


Hose Fitting

Code: FHR

Material = Brass
Operating Pressure = 0 - 15 bar
Flow Capacity = 8 mm
Operating Temperature = -5 / +180⁰

Order Code	d	d1	d2	l	l1	SW
FHR.1310	G 1/4"	5.5	9.5	43	28	17
FHR.1313	G 1/4"	8	12.5	43	28	17
FHR.1710	G 3/8"	5.5	9.5	46	33	19
FHR.1713	G 3/8"	8	12.5	46	33	19
FHR.2113	G 1/2"	8	12.5	46	33	23

Rubber Hose

Code: FLEX

It is resistant to bending with its flexible structure reinforced with polyester for hot and cold water.
It is suitable to be used according to fitting feature / with our without clamp.

Order Code	Inner Ø	Outer Ø	Operating Pressure	Blast Pressure	Roll Length	Colour
FLEX.10B	9.5	15.4	28 Bar	60 Bar	20 Metre	Blue
FLEX.10R	9.5	15.4				Red
FLEX.13B	12.5	18.5				Blue
FLEX.13R	12.5	18.5				Red

Operating Temp. = -20 / +90⁰ **Flow Capacity** = 9.5 / 12.5 mm

Cut hose end straightly in desired length.

Insert hose into fitting.

Insert hose into plastic yellow slot by pushing hose settled on fitting.

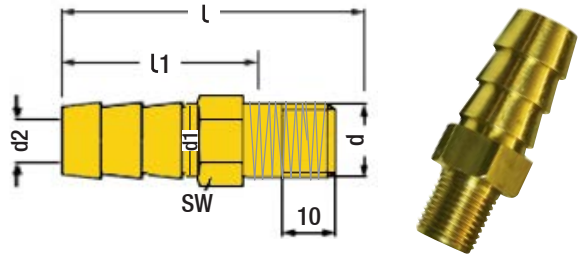
There is no need to insert clamp in this way.
You need to cut hose end in order to remove hose from fitting.

Extension Fitting with Thread

Code: ARU

Order Code	d	l	SW
ARU.18.60	G 1/8"	60	14
ARU.18.80		80	
ARU.18.100		100	
ARU.18.150		150	

Order Code	d	l	SW
ARU.14.60	G 1/4"	60	16
ARU.14.80		80	
ARU.14.100		100	
ARU.14.150		150	

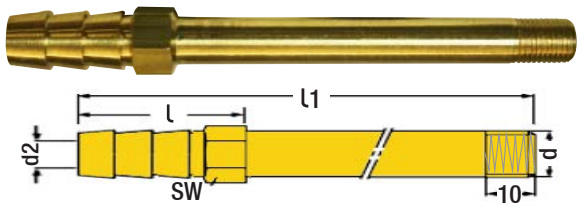


Hose Fitting

Code: HRE

Material = Brass
Operating Pressure = 0 - 15 bar
Flow Capacity = 8 mm
Operating Temperature = -5 / +180⁰

Order Code	d	d1	d2	l	l1	SW
HRE.M8	M8 x 1.25	12	7	36	28	13
HRE.M10	M10 x 1.50			36		13
HRE.M12	M12 x 1.75			40		13
HRE.M14	M14 x 2.0			40		14
HRE.M16	M16 x 2.0			40		16
HRE.1/8"	G 1/8"	12	7	36	28	13
HRE.1/4"	G 1/4"			40		14
HRE.3/8"	G 3/8"			40		17



Hose Fitting Long Type

Code: HRU

Order Code	d	d1	d2	l	l1	SW
HRU.M08060	M8 x 1.25	12	7	60	28	13
HRU.M08080				80		
HRU.M08100				100		
HRU.M08120				120		
HRU.M08150				150		
HRU.M10060	M10 x 1.5	12	7	60	28	13
HRU.M10080				80		
HRU.M10100				100		
HRU.M10120				120		
HRU.M10150				150		
HRU.M12060	M12 x 1.75	12	7	60	28	13
HRU.M12080				80		
HRU.M12100				100		
HRU.M12120				120		
HRU.M12150				150		
HRU.10.060	G 1/8"	12	7	60	28	13
HRU.10.080				80		
HRU.10.100				100		
HRU.10.120				120		
HRU.10.150				150		
HRU.13.060	G 1/4"	12	7	60	28	14
HRU.13.080				80		
HRU.13.100				100		
HRU.13.120				120		
HRU.13.150				150		

Material = Brass
Flow Capacity = 8 mm
Operating Pressure = 0 - 15 bar
Operating Temp. = -5 / +180⁰

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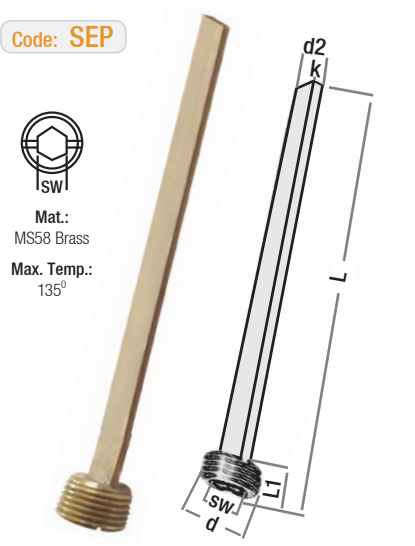
Cooling Baffles & Water Flow Pipes

Baffles are used to direct the flow of water or cooling liquid within the mould. They are allows machined water-lines to be separated into multiple channels.

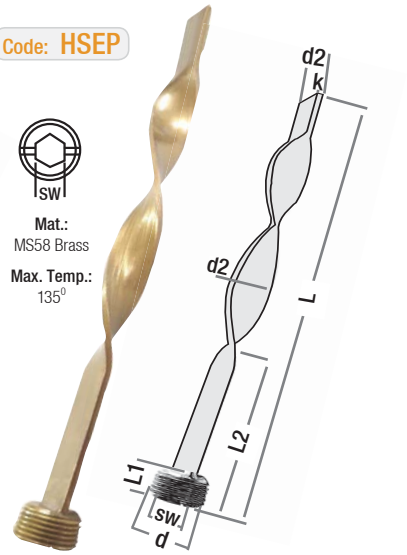
Code: SEP



Mat.: MS58 Brass

Max. Temp.: 135°

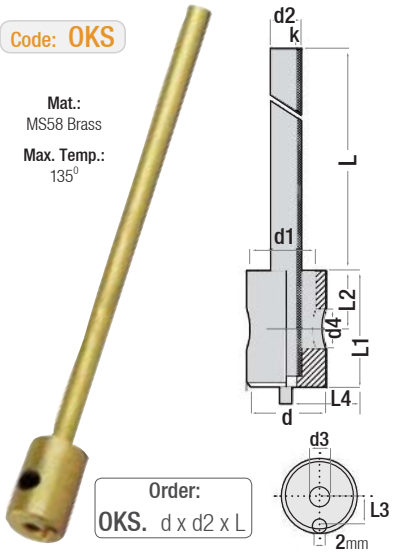
Code: HSEP



Mat.: MS58 Brass

Max. Temp.: 135°

Code: OKS



Mat.: MS58 Brass

Max. Temp.: 135°

Order: OKS. d x d2 x L

Threaded Flat Baffle

Order	SW	d	d1	d2	L	L1	k
SEP.08100	4	M8 x 0.75	6	5.8	100	8	1.6
SEP.08200					200		
SEP.10100	5	M10 x 1.0	8 (mounting)	7.8	100	8	1.6
SEP.10125		M10 x 1.5			125		
SEP.10200		M10 x 1.0			200		
SEP.10300		M10 x 1.0			300		
SEP.12125	6	M12 x 1.5	10	9.8	125	8	2.0
SEP.12250					250		
SEP.16150	8	M16 x 1.5	14	13.8	150	10	2.4
SEP.16300					300		
SEP.20150	10	M20 x 1.5	18 (mounting)	17.8	150	10	2.4
SEP.20200					200		
SEP.20300					300		
SEP.20400					400		
SEP.24150	10	M24 x 2.0	20	19.8	150	12	2.4
SEP.24300					300		

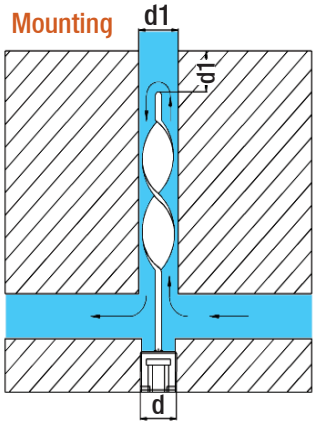
Threaded Spiral Baffle

Order	SW	d	d1	d2	L	L1	L2	k
HSEP.10100	5	1/8"	8.5 (mounting)	8.2	100	8	51	1.6
HSEP.10120					120		102	
HSEP.10150					150			
HSEP.10200					200			
HSEP.13100	7	1/4"	11.5 (mounting)	11.2	100	10	51	2.4
HSEP.13120					120		102	
HSEP.13150					150			
HSEP.13200					200			
HSEP.13250					250			
HSEP.17150	10	3/8"	15 (mounting)	14.7	150	10	51	2.4
HSEP.17175					175		102	
HSEP.17200					200			
HSEP.17250					250			
HSEP.17300					300			
HSEP.21200	12	1/2"	18.5	18.2	200	12	76	2.4
HSEP.21400					400		127	
HSEP.26500	12	3/4"	23.5	23.3	500	12	153	3.2

Water Flow Cooling Pipe

d	d1	d2	d3	d4	L	L1	L2	L3	L4	k
10	4	2.6	2	4	100	16	9	3.5	4	0.3
					200					
10	5	3	2.4	4	100	16	9	3.5	4	0.3
					200					
10	6	4	3	4	100	16	9	3.5	4	0.5
					200					
12	8	5	4	6	160	18	9	4	6	0.5
					315			4.5		
16	12	6	5	6	160	18	9	6	6	0.5
					315					
18	14	8	6	6	160	18	9	7	6	1
					315					
20	16	10	8	8	160	20	10	8	8	1
					315					
25	20	12	10	10	160	25	13	9.5	10	1
					315					

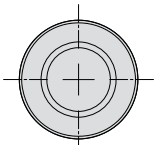
Mounting

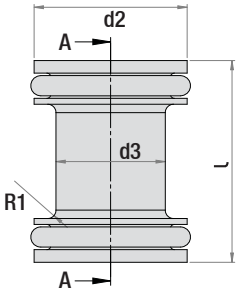


NEW

Cooling Junction

Code: GSK





Please refer to "page-299" for details of GSK product.

Order Code	d	d1 +0.1	d2 -0.05	d3 -0.05	L1	L-0.2	M	O-Ring
GSK06	06	11.5	11.1	9	10	20	M8	Ø8 x 1.5
GSK08	08	15	14.6	11			M10	Ø11 x 2
GSK10	10	18.5	18.2	13	12	24	M12	Ø13.9 x 2.4

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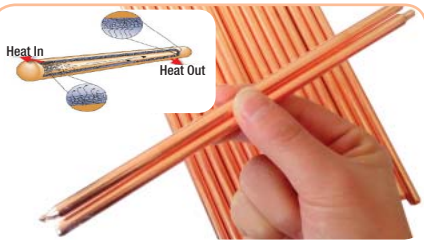
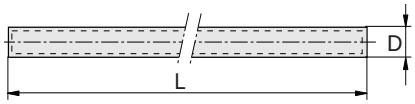


Heat Transfer Pipe

Code: GH

In Cores, Core Slides, Cavities & Other Areas of Injection Mould:
The cooling process is formed by rising heat to the upper sides via compressed gas in pipe quickly. In mounting, at least 70% of Heat Transfer Pipe remains inside the core, 30% of Heat Transfer Pipe should remain in cooling channel.

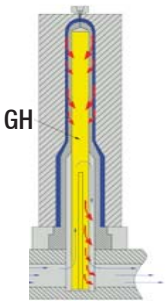
Advantages of this System:
It minimizes the number of defective final products during production resulting from shrinkage or cold deformation. Because it provides fast control of temperature, very high product precision is obtained. Thus, pore formation inside the produced product is avoided. During the injection, it ensures obtaining products in right colours. By ensuring mould life longer, it lowers main costs.



D	L
Ø 3	40
	60
	80
	100
	120
	150
Ø 4	40
	60
	80
	100
	120
	150
	185
	200

D	L
Ø 5	60
	80
	100
	120
	150
	200
Ø 6	60
	80
	100
	120
	150
	185
	200
	250

D	L
Ø 8	80
	100
	120
	150
	185
	200
	250
Ø 10	100
	120
	150
	185
	200
	220
	250
	300



Order: GH. D x L

Mounting:
Cooling channel should be 1 mm larger than diameter of Heat Transfer Pipe - GH.
After mounting, open holes should be filled with Repair Paste.

Repair Paste

Order Code: 200017

It is a product used againts water. Especially, it can be applied for pipe and metal cracks.
Packing: 56g.

Code: STA | Code: STB | Code: ST

Material: Fibreglass Reinforced Plastic

Max. Temp. : 120^0

"Fast Cooling System Flow Method"

Plastic Baffles for Injection Mould Cooling

It provides effective flow opportunity by creating balanced turbulent in fluid flow hole. The cooling water flows by following Baffles helixes (such as cascade). Since Plastic Baffle material is Fibreglass reinforced, it always remains cold, it never causes clogging and corrosion in cooling channels.

Useful Information:

1- At technical drawing in Figure 1 and Figure 3 if cooling water flow enters by striking at the entrance of Baffle or to the close area, Based or Base Reinforced model should be selected (**STA** or **ST** models).

2- If cooling water flow enters by striking at the medium or top side of Baffle, don't use Based model. Because; water flow continues its turbulent flow by exiting from the level it entered, in such cases in Figure 2, **STB** model is selected.

Spiral Plastic Baffle

d	L	D	H
8	100	15	4
	200		
	300		
10	100	18	4
	200		
	300		
12	100	22	4
	200		
	300		
16	100	25	4
	200		
	300		
20	100	30	4
	200		
	300		
	400		
25	100	35	4
	200		
	300		
	400		

Order: STA. d x L

Spiral Plastic Baffle Without Base

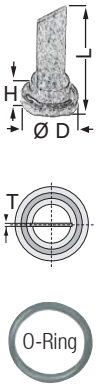
d	L	S	D
8	96	20	8
	196		
	296		
10	96	20	10
	196		
	296		
12	96	25	12
	196		
	296		
16	96	25	16
	196		
	296		
20	96	25	20
	196		
	296		
	396		
25	96	25	25
	196		
	296		
	396		

As per request
Code: GCP

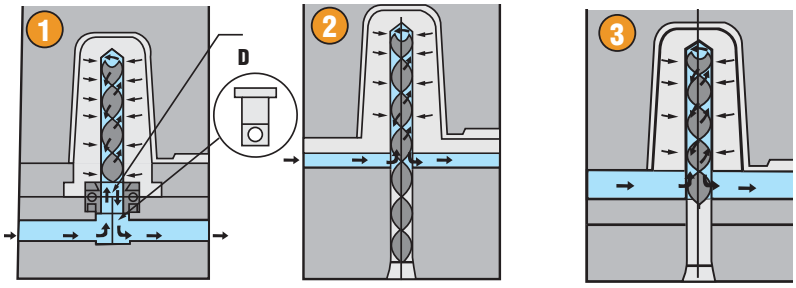
Order: STB. d x L

Flat Plastic Baffle - Base

D	L	H	T
8	25 30 35 40	2	1.5
10	25 30 35 40	2.5	1.8
12	25 30 35 40	3	2.0
16	25 30 35 40	4	3.0
20	25 30 35 40	5	3.0
25	30 35 40	6	4.0



Order: ST. d x L



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Quick Connect Pneumatic Fittings - Plastic Models

Plastic structure, quick connect and for pneumatic / air distribution mounting systems. Max. Temperature: 40^{0}C.
Quick Connect Pneumatic Fittings also can be used in cooling system of Injection Moulds, it is recommended to keep the environment temperature and water temperature circulating - max. 40^{0}C. Thermometers may be used for temperature measurement (**code: IR550** or **code: DT610C**).
Attention: Possible temperature increases (over 40^{0}C. max.) may cause water leakages in time !
"PH" Air Hose is recommended for installation of cooling system.

Fitting - Internal Thread

Order: DPCF. d x d1 — DPCF

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	4 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm

Fitting - External Thread

Order: DPCG. d x d1 — DPCG

d x d1	(metric) d x d1
1/8"x4	12-1.5x 6
1/8"x6	10-1.5x 8
1/8"x8	12-1.5x 8
1/8"x10	10-1.5x10
1/4"x6	12-1.5x10
1/4"x8	16-1.5x10
1/4"x10	10-1.5x12
3/8"x10	16-1.5x12
3/8"x12	

Elbow Fitting with Valve

Order: ISCG. d x d1 — ISCG

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	4 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
3/8"	10 mm
3/8"	12 mm

Hose Fitting with Valve

Order: DFSG. d1 — DFSG

d1
4 mm
6 mm
8 mm
10 mm
12 mm

Elbow Fitting - 90^0

Order: DPLG. d x d1 — DPLG

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	4 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
3/8"	10 mm
3/8"	12 mm

Manifold Fitting

Order: IPHT. d x d1 — IPHT

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	4 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
3/8"	10 mm
3/8"	12 mm

"T" Fitting

Order: DPT. d x d1 — DPT

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	4 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
3/8"	10 mm
3/8"	12 mm

"Y" Fitting

Order: DPWT. d x d1 — DPWT

d	d1
1/8"	6 mm
1/8"	8 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm

Straight Fitting

Order: DPUC. d1 — DPUC

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Hose Reduction Fitting

Order: IPU. d1 x d2 — IPU

d1 - d2
6 - 4 mm
8 - 4 mm
8 - 6 mm
10 - 6 mm
10 - 8 mm
12 - 8 mm
12 - 10mm

Hose Stop Nipple with Valve

Order: ISPLG. d x d1 — ISPLG

d x d1
1/8" x 4
1/8" x 6
1/4" x 6
1/4" x 8

Hose Stop Nipple

Order: ISPPU. d1 — ISPPU

d1 - Stop
4 mm
6 mm
8 mm
10 mm

Fitting with Valve

Order: HVES. d x d1 — HVES

d	d1
1/8"	6 mm
1/8"	8 mm
1/4"	6 mm
1/4"	8 mm
3/8"	8 mm

"T" Hose Fitting

Order: DPUT. d1 — DPUT

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

"Y" Hose Fitting

Order: DPY. d1 — DPY

d1
4 mm
6 mm
8 mm
10 mm
12 mm

"Y" Hose Reduction Fitting

Order: DPW. d1 x d2 — DPW

d1 - d2
6 - 4 mm
8 - 6 mm
10 - 8 mm
12-10 mm

Elbow Hose Fitting

Order: DPUL. d1 — DPUL

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Pipe Cross Hose Fitting

Order: DPZA. d1 — DPZA

d1
4 mm
6 mm
8 mm
10 mm
12 mm

Manifold Fitting (4-Distributor)

Order: PXG. d1 x d2 — PXG

d1 - d2
6 - 4 mm
8 - 6 mm
10 - 8 mm
12-10 mm

Plastic Muffler

Order: PSL. d1 — PSL

d1
1/8"
1/4"
3/8"
1/2"

Valve for Hose (Spherical)

Order: HVFF. d1 — HVFF

d1
4 mm
6 mm
8 mm
10 mm
12 mm

Sintered Muffler

Order: BSL. d1 — BSL

d1
1/8"
1/4"
3/8"
1/2"
3/4"
1"

Rotary Joint Fitting

Order Code: UCBAS

Thread: 1/4"
Shaft: 8 x 5mm

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Quick Connect Pneumatic Fittings - Metal Models

"AIR HOSES"
When ordering, pls. specify the desired metre.

Metal structure, quick connect and for pneumatic / air distribution mounting systems. Max. Temperature: 60^{0}C.
Quick Connect Pneumatic Fittings also can be used in cooling system of Injection Moulds, it is recommended to keep the environment temperature and water temperature circulating - max. 60^{0}C. Thermometers may be used for temperature measurement (**code: IR550** or **code: DT610C**).
Attention: Possible temperature increases (over 60^{0}C. max.) may cause water leakages in time !
"POLB" or "TEF" Air Hoses are recommended for installation of cooling system.

Metal, Fitting - External Thread — IPCT

Order: IPCT. d x d1

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
1/4"	12 mm
3/8"	10 mm
3/8"	12 mm

Metal, Elbow Fitting - 90^0 — IPLT

Order: IPLT. d x d1

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
1/4"	12 mm
3/8"	10 mm
3/8"	12 mm

Metal, "T" Fitting — IPBT

Order: IPBT. d x d1

d	d1
1/8"	4 mm
1/8"	6 mm
1/8"	8 mm
1/4"	6 mm
1/4"	8 mm
1/4"	10 mm
1/4"	12 mm
3/8"	10 mm
3/8"	12 mm

Metal, Hose Nipple — IPUT

Order: IPUT. d1

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Metal, "T" Hose Fitting — IPET

Order: IPET. d1

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Metal, Hose Reduction Fitting — IPOT

Order: IPOT. d1 x d2

d1	d2
8	6 mm
10	8 mm

Metal, Hose Fitting with Valve — IPCV

Order: IPCV. d x d1

d	d1
1/8"	6
1/4"	8
1/4"	10
3/8"	12

Metal, Elbow Hose Fitting — IPVT

Order: IPVT. d1

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Metal, Pipe Cross Hose Fitting — IPZT

Order: IPZT. d1

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Metal, "Y" Hose Fitting — MPY

Order: MPY. d1

d1
4 mm
6 mm
8 mm
10 mm
12 mm
14 mm
16 mm

Metal, Reduction Fitting — IBDG

Order: IBDG. d x d3

d	d3
1/8"	1/4"
1/8"	3/8"
1/8"	1/2"
1/4"	3/8"
1/4"	1/2"
3/8"	1/2"

Metal Nipple — IBBG

Order: IBBG. d x d3

d	d3
1/8"	1/4"
1/8"	3/8"
1/4"	3/8"
1/4"	1/2"
3/8"	1/2"

Detent Plug — IBP

Order: IBP. d

d	L
1/8"	8
1/4"	10
3/8"	10
1/2"	10

Detent Plug with O-Ring — IBPG

Order: IBPG. d

d	L
1/8"	10
1/4"	11
3/8"	12
1/2"	13

Air Hose - Polyamide (Max. 100^0) — POLB

Air Hose - Teflon (Max. 180^0) — TEF

Order Example	Ø In / Out
Code x 04	2 x 4
Code x 06	4 x 6
Code x 08	6 x 8
Code x 10	8 x 10
Code x 12	10 x 12

Air Hose - Polyurethane (Max. 60^0) — PH

Order	Ø In / Out
PH4	2 x 4
PH6	4 x 6
PH8	6 x 8
PH10	7 x 10
PH12	9 x 12

Spiral Air Hose — T186

Order	Ø In / Out	Mt. Length
T18604	4 - 6	4
T18605	5 - 8	5
T18607	5 - 8	7.5
T18615	5 - 8	15
T18610	12 - 8	10

with fitting

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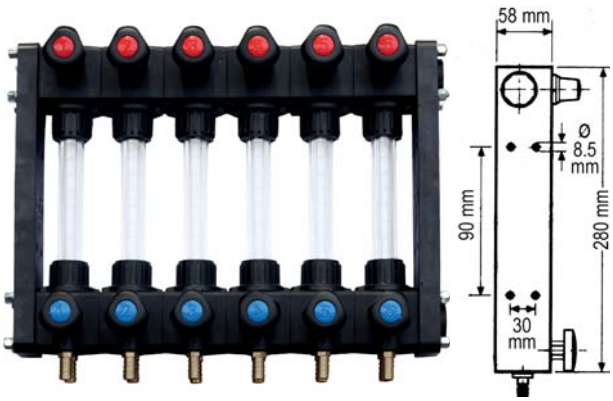
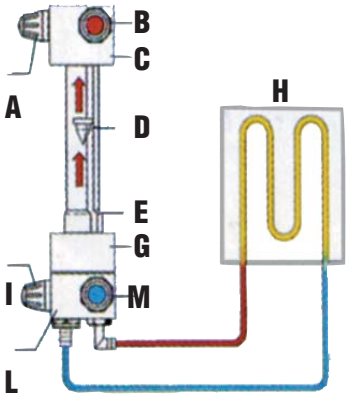


Water Flow Regulator

Code: ESR



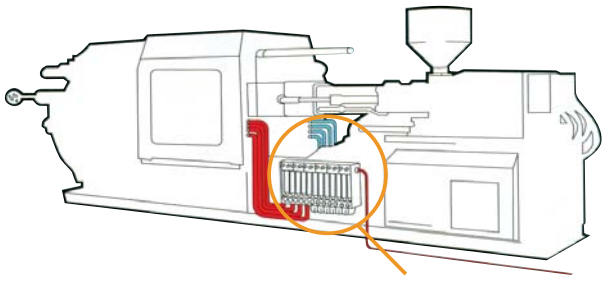
A: Adjusting Valve
B: Water Outlet
C: Flow Manifold
D: Float
E: Flow Tube
G: Receiver Section
H: Mould
I: Cut-Off Valve
L: Supply Manifold
M: Water Inlet

Flow Rate: 0-18 L / min.
Inlet - Outlet: R 3/8
Max. Temperature: 95^{0}C

It is used as Water Flow Regulator / Indicator of cooling water in injection systems. It is designed to control circulation flow and to repeat settings regularly. Measurement scale of tubes is monitored at desired level, accurate / safe flow is supplied with monitoring the deviation status and on-off valves.

Code: ESR

Order Code	Number of Tubes	Connections	Width x Length (mm)
ESR.04	4	R:1/4" Hose= 10 mm	280 x 280
ESR.05	5		340 x 280
ESR.06	6		400 x 280
ESR.08	8		520 x 280
ESR.10	10		640 x 280
ESR.12	12		760 x 280



It is also used in other liquids or lubricating systems.

Manual Pressure Test Pump

Order Code: SSY6

Testing of System with Manual Pressure Test Pump:

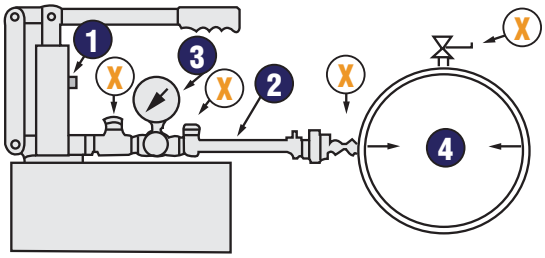
Complete the mounting of Tie Bar (handle) with screw and screwdriver involved in product that you purchased.

Fill Test Hose **(2)** with water (air inside the hose should be discharged). Close Valve **(1)** on the tie bar (handle), connect testing hose to the mould (ensure that system is closed completely).

Fill the tank with water and run pump by pushing keep Valve **(1)** open, continue to pumping.

When Manometer **(3)** pressures is reached to desired level, close the Valve **(1)**.
If the pressure does not fall, the result is positive.
If the pressures fall, there is a leak.

Operating Pressure	Flow Rate
6.3 Mpa	25 ml / s.



1- ON - OFF Valve
2- Testing Hose
3- Manometer / Pressure Indicator
4- Water Circuit of Mould
X- As per request, Mini Ball Valve can be added.

Descaling Liquid

Order Code: 800598

In order to avoid clogging due to intense lime in machines and moulds running with water at places that urban water and well water are quite limy, 1 lt. Descaling Liquid is used in 10 lt. of water (according to the lime status). It does not harm the system in moulds and machines. It is a concentrated product.

Package: 30 lt.

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CONSUMABLES / DIE & MOULD LUBRICANTS

Protective & Maintenance Lubricants

Mould Protective Spray

It creates optimal, long term protection layer on the surfaces. It dries quickly. It provides protection against corrosion and rust. It creates long term dry non-aqueous protection layer. It protects as white powder.

Usage Area:
It is a sealant product used as long term protector on steel, ceramic, glass and injection moulds, machines and pipe lines.

Order Code: **W150170** Package: **400 ml.**

Multi-purpose Signum Spray

This spray maintains 5 functions together, it protects the steel against corrosion, it removes rust, greases, cleans the product and prevents the dirt. It is resistant to -30°C / 100°C temperature. It is vanilla scented. WD-40 equal, economical product.

Usage Area:
It is used to protect and to lubricate the steels in mould industry for short term. It is water repellent. It can be used in the inner parts of CNC system machines easily.

Order Code: **W160110** Package: **400 ml.**

Corrosion Protection Spray - 36

This spray prevents rust and corrosion on all ferrous and non-ferrous metals during production, storage and transport. Removes and eliminates moisture. Protects againts corrosion. Loosens rusted and frozen parts. Used for machined surfaces of dies & moulds, matrixes, pipe systems, casting parts, shafts, gears, ball bearings, shanks, locks, wires etc.

Order Code: **W160117** Package: **500 ml.**

Mould Release Agent Spray

In injection machines, it helps to release products from mould. KA2000 & KA1000 contains a light duty silicone that is ideal for moulds.
Does not contain any chlorofluorocarbons (cfc's) or hydrocholorofluorocarbons (hcfc's).
Heat resistant: 250°C.
KA2000: Silicone based
KA1000: Silicone based, oil-free and non-flammable.

Order Code: **KA2000** Package: **400 ml.**
Order Code: **KA1000** Package: **400 ml.**

Multi-purpose Grease

High-performance grease for multi-purpose application in moulds & dies. Ideal for lubricating moving and sliding components (guide pillar, bushes, wear plates etc.) and for servicing machines. It is a specially formulated product with **lithium** additivies. It is resistant againts pressure and water.
Long-term lubrication. High corrosion and wear protection.

Order Code: **W150206** Package: **1 kg.**

Powerful Rust Remover Spray

It is a rust remover with superior features and advanced technology. It has very good processing surface to the surface. It loosens the tightened bolts and nuts immediately. It removes rust by entering even the thinnest spaces. Eco-friendly product.

Usage Area:
It is used at all kinds of maintenance and repair, cleaning of die & mould equipment, loosening the rusted bolts and surfaces. Also, it is anti corrosive.

Order Code: **W160170** Package: **400 ml.**

Protective Wax Spray

It protects all steels, machines and equipment against corrosion. It creates a thin wax layer on the surface and the contact of the product with air is cut off. It is resistant to water and salty water vapours. It is an ideal protector at blowing moulds.

Usage Area:
It provides protection against corrosion during long term transports of moulds, especially in ship transports. It is also appropriate for long term machine and tool storage.

Order Code: **W160106** Package: **400 ml.**

Food Grade Lubricant Spray

It is used at machine and equipment making food production or contacting the food. It is tasteless and odourless. It is Food Grade LFGB approved. It is white coloured liquid grease. It is used at moulds related to the food.

Usage Area:
It is used at food and bottling machines, milk, mineral water, beer factories and lubricating of various parts of meat, vegetable, fruit and fish.

Order Code: **W160105** Package: **400 ml.**

Silicon-free Mould Release Agent Spray

In injection machines, it helps to release products from mould. Very good releasing action. Does not contain silicon or acid. Ensures easy releasing by lubricating steel and plastic. Shake well and spray a thin layer of 25-30 cm distance from the mould before use.
Heat resistant: 200°C

Order Code: **W150154** Package: **400 ml.**

WD-40 Multi-use Spray

Proven product in the world. It is used effectively as rust remover, stops squeaks, drives out moisture, cleans, protects, loosens rusted parts and frees sticky mechanisms.

Usage Area:
At cleaning and lubricating of ejector pins, guiding components etc. in moulds, long-term precision tool protections and all other operations.

Order Code: **HRD-200ML** Package: **200 ml.**
Order Code: **HRD-400ML** Package: **400 ml.**
Order Code: **HRD-5000ML** Package: **5 litre**

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Lubricating Greases and Sprays

Liquid Grease Spray

It is lubricating material resistant against high pressure. It is resistant to water, 180°C temperature and corrosion, its adhesive feature is very high. It does not flow and drop, it has transparent colour and makes permanent lubricating.

Usage Area:
It is long term protective lubricant at moulds, ejector pins, cores and guide pillars. Also, it is used at parts such as chain, apparatus etc. It also can be applied at dies.

Order Code: **W160114** Package: **500 ml.**

Anti-seize Ceramic Grease

It is a mounting paste that does not consist metal and graphite. It is ceramic structured with advanced technology and lubricant providing high efficient on parts resistant to high temperature. It is resistant to -20°C / 1500°C temperature and also 220 N / mm² pressure.

Usage Area:
It is used at all mould components working under high temperature, metal injection moulds and dies.

Order Code: **W160200** Package: **400 ml.**
Order Code: **W150200** Package: **1 kg.**

MOS2 Dry Lubrication System Spray

It is used at places that lubricating with grease is not possible. It decreases friction between metals. It prevents corrosion between different metals. It has very good thermal conductivity. It is resistant against high pressure. It makes dry graphite lubricating.

Usage Area:
It prevents the adhesion of product to the mould and vibration during injection at aluminium extrusion and metal injection moulds.

Order Code: **W160109** Package: **400 ml.**

White Lithium Grease Spray

It is waterproof and prevents friction, provides permanent lubricating by penetrating steel quickly. It is resistant to -40°C / 140°C temperature. It provides protection against corrosion. It is white colour and for moulds & dies.

Usage Area:
It is used for mould & die maintenance, repair and lubricating purposes in the environment contacting with water. It decreases friction. It is applied at sintered / bronze + graphite wear plates.

Order Code: **W160108** Package: **400 ml.**

Sealing Compounds

Threadlocker - Medium Strength (removable)

Lock fasteners against vibration and thermal expansion. Seal against corrosion and leakage. Suitable for all shapes of fasteners. High chemical resistance.

- Suitable for all screws up to M36
- Handling strength: 10 - 20 min.
- Functional strength: 1 - 3 hours
- Heat resistance: -55 / +150° C
- Gap filling capacity: 0,25 mm / Viscosity: 2000-4000 mPa.s

Order Code: **W223243** Package: **50 ml.**

Threadlocker - High Strength (unremovable)

It cannot be removed with any tools. It can be removed by heating if desired. Lock fasteners against vibration and thermal expansion. Seal against corrosion and leakage. Suitable for all shapes of fasteners. High chemical resistance.

- Suitable for all screws up to M20
- Handling strength: 10 - 20 min.
- Functional strength: 1 - 3 hours
- Heat resistance: -55 / +150° C
- Gap filling capacity: 0,15 mm / Viscosity: 400-600 mPa.s

Order Code: **W230270** Package: **50 ml.**

Pipe Sealant - Medium Strength (removable)

Used in pipe connections and threads of all hydraulic and pneumatic systems. High viscosity and medium strength. The connection can be disassembled using normal tools.

- Suitable for all screws up to M20
- Handling strength: 10 - 20 min.
- Functional strength: 1 - 3 hours
- Heat resistance: -55 / +150° C
- Gap filling capacity: 0,15 mm

Order Code: **W670542** Package: **50 ml.**

Liquid Sealant with Teflon (PTFE)

It is recommended when teflon tape or other thread sealants have been applied. It provides high quality sealing. Additional protection against corrosion.

Usage Area:
- Mould cooling parts (fittings etc.)
- Fastener and pipes
- In all cases requiring sealing

Order Code: **W610511** Package: **50 ml.**

Industrial Cleaning Sprays

General Cleaning Spray

It removes dirt, oil and resin from all metals quickly and without leaving a trace. It especially cleans excellently all dirts and chemicals on the surfaces from surface to downward / outwards with volatile feature at mould polishing / cleaning works.

Usage Area:
- Mould polishing
- Mould cleaning
- Metal parts of machines

Order Code: **W170104** Package: **500 ml.**

Universal Bio Cleaning Spray

Usage Area:
- In machine cleaning
- Tool and mould parts cleaning in the workshop
- Plastic and upholstery cleaning
- Ideal for external cleaning and maintenance of the machine
- It does not cause staining and dullness
- Food industry-approved, concentrated product
- It provides freshness with lemon essence

Order Code: **W1701201** Package: **1 lt.**

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Order Code: W200001

Resistant to
-50 / +120° temperature.
Package: 25 g.

Two-component Adhesive WINPOX

It is the product with the highest performance in product group.
Winpox is used in cases where conventional adhesives are insufficient.
It is used for bonding metal, wood, ceramic and all hard plastics. It is fast and reliable in bonding with various materials. After the material is completely dry, it can be processed and painted.
Usage: The surfaces to adhere must be clean and oil-free. The mixture adjustment ratio is realized by the mixer capsule. The material is mixed until the proportional color is created, it smears on parts, it reaches durability within 5-10 minutes, the last hardening is realized in 12 hours.
Please do not work under 5°C.

Order Code: W200014

Resistant to
-50 / +80° temperature.
Package: 25 g.

Two-component Epoxy Adhesive WINPOX 5-minute

Two-component epoxy adhesive provides extraordinary power after mixing. Epoxy is durable and remains flexible so that it shows higher resistance against strikes and vibrations. It can adhere to metal, ceramic, glass, stone, wooden and many hard plastics. It is especially preferred due to hardening in 5 - 30 minutes, it provides extremely high power, it is for general purpose usage and resistant against water, it is used as injection substance.
Usage: The surfaces to adhere should be clean and oil-free. After 5 - 10 minutes, it reaches durability by hand. The latest hardening is created in 24 hours. Please do not work under 5°C.

Order Code: W200725

Resistant to
-50 / +120° temperature.
Package: 25 g.

Two-component Epoxy Resin (liquid metal)

It is a two-component liquid epoxy resin with excellent resistance to impact and vibration. The parts to be repaired and filled should be clean and purified from oil. Mechanical operations can be done 30 minutes after the application. The latest hardness position is obtained after 24 hours.
After 5 - 10 minutes, it reaches durability by hand.
Usage Area: It is used to fill cracks, wrong drilled other different holes, at cast - steel - iron - aluminium and ceramic.
Please do not work under 5°C.

Hand Cleaner

Order Code: W140602 **Package:** 3 lt.

Order Code: W140601 **Package:** 500 ml.

It does not contain any petroleum additives. It is an alkali and solvent-free hand cleaner with dermatologically safe ingredients. The processed fine grainy abrasives in the product, provide cleaning and protection on hand pores thoroughly. It is extremely effective on all dirty, rusty, painted and sticky dirt.

Adhesives

BS100: It is appropriate for steel, metal and plastic-rubbers. It adheres in 1-3 seconds. Medium viscosity.

Order Code: BS100 **Package:** 20 g.

Loctite 648: For adhesion of bearings, bushes, screws and other machine components. Very fast adhesion to handling strength.
- Heat resistance: -55^0 / +175^0 C

Order Code: GL.64832 **Package:** 55 g.

Repair Sticks

Easy solution for all repairs and maintenance processes.

Heat Resistance: -50 / +120° **Package:** 57 g.

- **Aqua Type:** On humid and wet surfaces. In underwater applications.
  Order: 10531057-39
- **Steel Type:** Repair and bonding.
  Order: 10533057-39
- **Aluminium Type:** Repair and bonding.
  Order: 10534057-39
- **Stainless Type:** Repair and bonding.
  Order: 10538057-39

TEKNOCLEAN

NEW Only at Guvenal sales points.

Order Code: GTH1000

Teknoclean Cleaning Agent (Cleanser & Colour Changing Agent)

Teknoclean Specifications: It provides quick and efficient transition in thermoplastic raw material and colour changing. It also cleans extruder area of injection machine. Less raw material consumption in raw material colour changing process. It easily cleans oxidized, burnt and stubborn dirts in injection machine extruder, thus it provides economical profit.
It is efficient in colour changing processes of raw materials such as P and C, PP, TPU, PPS, PA6, PA66, POM, HDPE, LDPE, EVA, PS, ABS, PMMA, PC, SAN, SBS, SEBS, CA, PBT, PET and in injection machines, all hot and cold runner systems. It can be safely used during machine cleaning and colour changing process in extrusion machines (compounding, metal sheet, profile, cable and pipe) and blowing machines (packaging, film).

Package: 1 kg.

Please refer to "page-315" for details of TEKNOCLEAN product.

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Engineer's Marking Blue Paste

Order Code: **TUSCP**

Blue colour limiting paint in remarkable density and fast drying is used for test surface quality.

Blue oily mix liquid leaves a clear sign on any kind of metal. Tuschierpaste is indicated blue, bright sign on all metal parts that can be seen easily, this is coupled to show transfers and defects from another surface, it is ideal for marking surface. Due to its high cohesion feature, It can be easily transferred from one surface to another one. It can be used by mixing water. It can be cleaned from surfaces easily. Before using, should be shake well and protect from cold.

Application: It is applied with a lint-free brush. It is fast-drying and protects the surface against rust. A small amount of product, wide surfaces are applied. It has high coating feature and it is easily wiped and solvent based.

Package: 225 g.

Casting Resin

Order Code: **POLIN**

Our Casting Resin is two component, not-solvent, polyurethane based, electrical insulation and casting resin.

Specifications: Electrical imperviousness and dielectric constant number is high in different terms and various temperatures. It is resistant to abrasion, acid alkaline and other chemical or corrosive materials. It is hardened in low temperatures without any significant volume change. Thanks to catalysts, drying time can be shortened.

Usage Fields: It is suitable to complete filling in casting works in die/mould and machine sectors. It can be machining with turning leveling easily. It is used in electric cable industry, casting of head and additional joints, insulating of end fasteners, plunger pump, insulator, transformers and various electrical component productions. In addition, it is used in all kinds of high voltage devices, transformers, television broadcast lines, telephone cord fasteners and rollers, to prevent flowing and leading in all kinds of condensers as well as to prevent noise that can be occurred through resonance and vibration in devices such as ballast, regulator.

Usage: 2nd component in upper section of box is emptied into main material in large box. Then, it is mixed until obtaining homogeneous mixture. The surface to be applied is decontaminated from oil, dirt, rust and burrs, prepared mixture should be used in 30 - 40 minutes. If all of material is not used, sufficient mixture should be done.

Package: 1 kg.

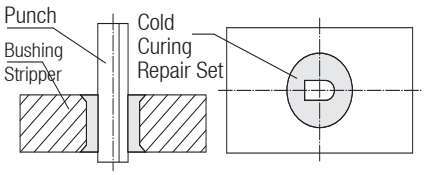
Powder Liquid

Cold - Curing Tool Repair Set

Code: **TKLN**

It is self hardening repair acrylic that is used in stripper and bearing plates of the dies, spinning / forming gaps, cancelling of undesired holes as well as used for punch bushing in simple cutting and punching dies. Providing suitability at drilling and levelling processes done on filled surfaces.

Mixing Ratio: 5 unit powder - 3.5 unit liquid. Dosing without measuring tank (as per request).
Mixing: 30 - 35 seconds (yoghurt consistency).
Working Time: At the end of 2 - 2.5 minutes.
Hardening Time: In 15 minutes.
Application: It should be castable consistency. Specified data are in 23°C room temperature and from the beginning of mixing.



Any oil on the stripper plate should be removed. Use solvent (release agent silicon) to avoid sticking. Place the stripper and the matrix correctly and connect to each other. The correct alignment is important for the operation. Using magnetic 'V' block for this operation guarantees perpendicularity. Or setting shims can be used to ensure the alignment for punch bushing / matrix. Later, the surface finish works are done. The mixture solidifies and spoils if it is kept for too long.

Order Code: TKLN.100
(small model) 100 g. Powder & 50 ml. Liquid

Order Code: TKLN.500
(large model) 500 g. Powder & 250 ml. Liquid

Mould Marking Paint

Order Code: **KMB** Order Code: **MMB**

Mould marking and exercise paints are sold in 110 ml package. It is quick dried in applied surfaces. After dried, it is not affected from oil, and drawing or exercise processes are continued on applied surfaces. The metal is also resistant to corrosion (it prevents external contact of surface).
Attention: Flammable!!

KMB (110 ml marking paint - red)
MMB (110 ml exercise paint - blue)

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Mould Polishing & Finishing

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Rotary Air Grinder Tool

Order Code: SRD3-85 (150 001 060)

For fine grinding, milling and engraving works.
- Light and practical, like a pen.

Rpm: 85.000
Power: 80 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Hose Unit: Not inclusive (**€ 120,00**) • **Weight:** 130 g.

Price: € 700,00

Made in Germany

Rotary Air Grinder Tool / Oil-free

Order Code: TVD3-100 (150 149 906)

Oil-free grinders - for finest deburring operations.
- Light and practical.

Rpm: 100.000
Power: 80 watt
Valve: Rotary Valve
Exhaust Air Direciton: Forwards
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Hose Unit: Inclusive • **Weight:** 250 g.

Price: € 750,00

Made in Germany

Rotary Air Grinder & Deburring Tool

Order Code: SRD3-55 (150 000 965)

For fine grinding, milling and engraving works.
- Light and practical, like a pen.

Rpm: 55.000
Power: 60 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Hose Unit: Inclusive • **Weight:** 95 g.

Price: € 900,00

Made in Germany

Rotary Air Grinder Tool / Oil-free

Order Code: T3-65S (150 149 810)

Thanks to the double support, clean surfaces can be achieved quickly and easily.
- Oil-free, stable and silent.

Rpm: 65.000
Power: 80 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Hose Unit: Inclusive • **Weight:** 390 g.

Price: € 930,00

Made in Germany

Rotary Air Grinder Tool

Order Code: SRD6-45 (150 010 750)

For fine - rough grinding, milling and engraving works.
- Light and practical.

Rpm: 45.000
Power: 260 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG4 / 6 mm
Hose Unit: Not inclusive (**€ 120,00**) • **Weight:** 310 g.

Price: € 760,00

Made in Germany

Rotary Air Grinder Tool / Oil-free

Order Code: T6-50S (150 149 820)

Oil-free and silent pneumatic actuator.
Developed specifically for use with shaft diameters up to 6 mm.
- Oil-free, versatile and silent.

Rpm: 50.000
Power: 150 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG4 / 6 mm
Hose Unit: Inclusive • **Weight:** 400 g.

Price: € 960,00

Made in Germany

Rotary Angled Air Grinder Tool

Order Code: WRD6-20 (150 123 475)

These small-powerful angle grinders have a flat head, robust gears and, with their double bearing sets, are superbly suited to transferring high torque.

Rpm: 20.000
Power: 300 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG4 / 6 mm
Hose Unit: Not inclusive (**€ 120,00**) • **Weight:** 730 g.

Price: € 1.150,00

Made in Germany

Rotary Angled Air Grinder Tool

Order Code: WRD3-85 (150 100 315)

Angle head of this machine is very small. Carrying out good work in very inaccessible places is now much easier.

Rpm: 85.000
Power: 100 watt
Valve: Rotary Valve
Exhaust Air Direciton: Backwards
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Hose Unit: Inclusive • **Weight:** 260 g.

Price: € 920,00

Made in Germany

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Air File Tool / Vibration Damper

Order Code: FLV4-9 (150 322 785)

Extremely low-vibration machine.
Convenient deburring file for small components that have to be held by hand while being deburred.

Stroke Length: 4 mm
Strokes per Minute: 9.000
Power: 80 watt • **Max. Tool Shank Ø:** 3 mm
Exhaust Air Direciton: Backwards
Air Consumption: 80 l/min. • **Weight:** 260 g.

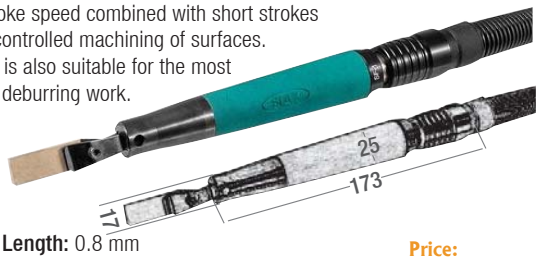
Price: € 820,00

Made in Germany

Air File Tool / Vibration Damper

Order Code: FLV1-20 (150 322 780)

Designed for fine polishing of moulds.
High stroke speed combined with short strokes enable controlled machining of surfaces.
The tool is also suitable for the most delicate deburring work.



Stroke Length: 0.8 mm
Strokes per Minute: 17.000
Power: 80 watt • **Max. Tool Shank Ø:** 3 mm
Exhaust Air Direciton: Backwards
Air Consumption: 80 l/min. • **Weight:** 260 g.

Price: € 820,00

Made in Germany

"RSC" Modular System

For various Cnc machining processes.

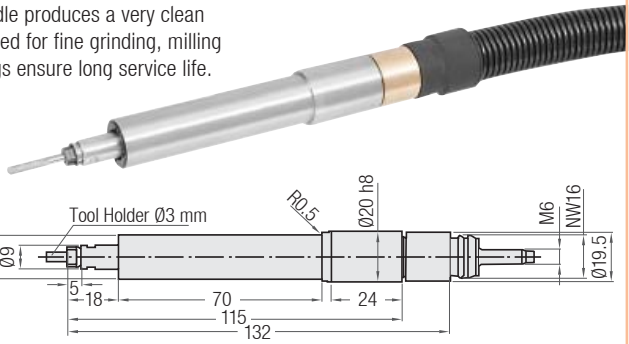
Please ask for information from our company.

High-speed Grinding Spindle

Order Code: RO-1785 (150 401 202)

The high speed and concentricity of this spindle produces a very clean grinding pattern and it is therefore ideally suited for fine grinding, milling and engraving. The paired heavy duty bearings ensure long service life.

Rpm: 85.000 • **Power:** 100 watt
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Engine Type: Vane
Front Bearing Set: Paired
Exhaust Air Direciton: Backwards
Air Consumption: 180 l/min.
Hose Unit: Inclusive
Hose Connection: M6
Noise Level: 70 db.
Max. Carbide Tool Ø: 4 mm
Max. Profile Grinding Wheel Ø: 6 mm
Weight: 200 g.



Price: € 950,00

Made in Germany

"RWA" Pneumatic Spindles

Pneumatically controlled, operation with lubricated compressed air 6 bar.

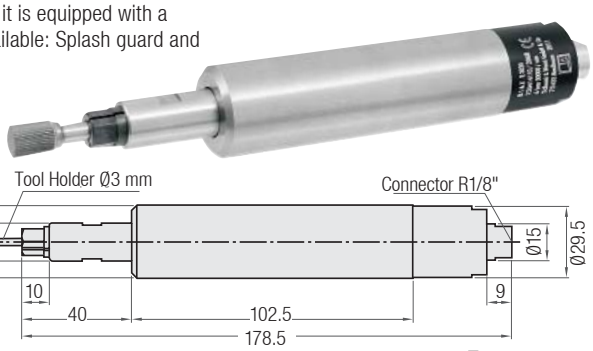
Please ask for information from our company.

Universal Grinding Spindle

Order Code: R-3030 (150 414 110)

This spindle is designed to be very compact, yet it is equipped with a powerful motor for grinding and milling. Also available: Splash guard and spindle with counterclockwise rotation.

Rpm: 30.000 • **Power:** 240 watt
Collet / Max. Tool Shank Ø: ZG7-6 mm / 8 mm
Engine Type: Vane
Front Bearing Set: Paired
Exhaust Air Direciton: Backwards
Air Consumption: 400 l/min.
Hose Unit: Not inclusive
Hose Connection: R 1/8"
Noise Level: 75 db.
Max. Carbide Tool Ø: 10 mm
Max. Profile Grinding Wheel Ø: 16 mm
Weight: 420 g.



Price: € 1.200,00

Made in Germany

"BWS 2-22" Quick-change System

This change system enables fast replacement of spindles in robot cells.

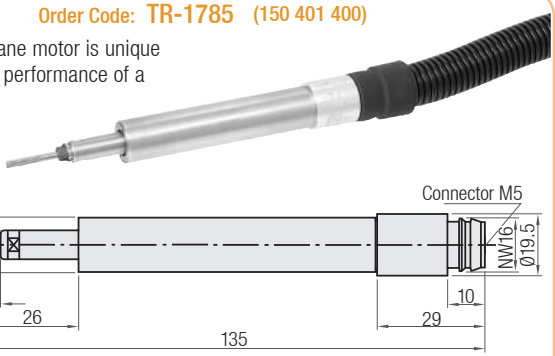
Please ask for information from our company.

High-speed Oil-free Spindle

Order Code: TR-1785 (150 401 400)

The oil-free drive of this grinding spindle based on a vane motor is unique and patented. Its great advantage: It provides the high performance of a vane motor and can still work completely oil-free.

Rpm: 85.000 • **Power:** 100 watt
Collet / Max. Tool Shank Ø: ZG5 / 3 mm
Engine Type: Vane
Front Bearing Set: Paired
Exhaust Air Direciton: Backwards
Air Consumption: 170 l/min.
Hose Unit: Inclusive
Hose Connection: M5
Noise Level: 70 db.
Max. Carbide Tool Ø: 4 mm
Max. Profile Grinding Wheel Ø: 6 mm
Weight: 130 g.



Price: € 1.050,00

Made in Germany

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Rotary Air Grinder Tool Order Code: AG-260

For applications such as grinding, milling, brushing and polishing with felts.

Standard Accessories

Rpm: 60.000
Collet Ø: 3.0 mm
Dimensions: Ø 20 x Length: 160 mm
Hose Unit: Inclusive
Weight: 140 g.

During Operation: Please operate with 2–3 drops of oil per minute.

During Operation: Please use protective goggles, masks and ear plugs.

Rotary Air Grinder Tool Order Code: AG-360

High torque, silent and well balance. Ideal for precision grinding and finishing works. For applications such as grinding, milling, brushing and polishing with felts.

Standard Accessories

Rpm: 60.000
Collet Ø: 2.35 mm - 3.0 mm
Dimensions: Ø 17 x Length: 159 mm
Hose Unit: Inclusive
Weight: 130 g.

During Operation: Please operate with 2–3 drops of oil per minute.

During Operation: Please use protective goggles, masks and ear plugs.

Rotary Air Grinder Tool Order Code: AG-460

High torque, heavy-duty, general purpose applicable on deburring, chamfering, milling, pre-polishing and finishing. Compact design and comfortable usage.

Standard Accessories

Rpm: 35.000
Collet Ø: 3.0 mm - 6.0 mm
Dimensions: Ø 22 x Length: 180 mm
Hose Unit: Inclusive
Weight: 170 g.

During Operation: Please operate with 2–3 drops of oil per minute.

During Operation: Please use protective goggles, masks and ear plugs.

Micro Rotary Air Grinder Tools

ET-1

DG

During Operation: Please operate with 2–3 drops of oil per minute.

Micro Types: Composite coated Air Tools, aluminium body, non-skid coating, strong engine, high-speed and adjustable speed. In mould workshops and general grinding processes.

Order	Technical Information / 6.3 Bar	Price
DG-M5	**Rpm:** 54.000 • **Collet Ø:** 3 mm • **Length:** 134 mm **Air Hose Ø:** 8 mm • **Weight:** 200 g.	€ 70,00
DG-M	**Rpm:** 70.000 • **Collet Ø:** 3 mm • **Length:** 134 mm **Air Hose Ø:** 8 mm • **Weight:** 200 g.	€ 190,00
DG-M8	**Rpm:** 82.000 • **Collet Ø:** 3 mm • **Length:** 134 mm **Air Hose Ø:** 8 mm • **Weight:** 200 g.	€ 220,00
ET-1	**Rpm:** 3.800 • **Collet Ø:** 6 mm • **Length:** 171 mm **Air Hose Ø:** 8 mm • **Weight:** 200 g.	€ 140,00

Rotary Air Grinder Tools (for mounted points)

Order: NAK-A90 Angled Grinder 90°

Order: NAK-A45 Angled Grinder 45°

During Operation: Please operate with 2–3 drops of oil per minute.

Rpm: 35.000
Collet Ø: 3.0 mm
Dimensions: (NAK-A90) Ø 19 x Length: 158 mm • **Weight:** 220 g.
Dimensions: (NAK-A45) Ø 19 x Length: 162 mm • **Weight:** 250 g
Hose Unit: Inclusive

Accessories for Rotary Air Grinder Tool

Ø 2.35 Ø 3.0 Ø 6.0
Spare Collets

Collet Type	Order Code
Ø 2.35	AG-672
Ø 3.0	AG-673
Ø 6.0	AG-676

Ø 30 Wheel | Ø 30 Rubber | Ø 30 Abrasive

Suitable Tools	Spare Part	Order Code
AG-90 AG-45	Ø 30 Grinding Wheel	AGC01
	Ø 30 Rubber Band	AGS01
	Ø 30 Abrasive Disc	AGP01

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Air File Tool

Order Code: AR-030

Extra High-speed

Suitable for details / narrow area's and deep grooves polishing.
Extra high-speed, adjustable power, low noise & vibration and robust tool life.

Standard Accessories

Stroke Length: 0.3 mm
Rpm: 40.000
Dimensions: Ø 28 x Length: 200 mm
Hose Unit: Inclusive
Weight: 200 g.

During Operation: Please operate with 2–3 drops of oil per minute.

Air File Tool

Order Code: SAR-070

Up & Down Motion

Side to side stroke. Suitable for deburring, chamfering, narrow area's and deep grooves polishing.

Standard Accessories

Stroke Length: 0.7 mm
Rpm: 15.000
Dimensions: Ø 18 x Length: 180 mm
Hose Unit: Inclusive
Weight: 250 g.

During Operation: Please operate with 2–3 drops of oil per minute.

Air File Tool

Order Code: AR-070

Long Stroke

Suitable for general polishing and finishing.
Long stroke, adjustable power, low noise & vibration and robust tool life.

Standard Accessories

Stroke Length: 0.7 mm
Rpm: 35.000
Dimensions: Ø 28 x Length: 200 mm
Hose Unit: Inclusive
Weight: 200 g.

During Operation: Please operate with 2–3 drops of oil per minute.

Air File Tool

Order Code: AR-991

Heavy Duty

Low speed, high torque and 0.6 mm stroke. It provides high grinding with rigid and stable power. Suitable for details / narrow area's and deep grooves polishing.

Standard Accessories

Stroke Length: 0.6 mm
Rpm: 4.500
Dimensions: Ø 30 x 140 mm x 206 mm
Hose Unit: Inclusive
Weight: 660 g.

During Operation: Please operate with 2–3 drops of oil per minute.

Rotary Air Grinder Tools

Order: AG-90 Angled Grinder 90°

Order: AG-45 Angled Grinder 45°

Standard Accessories

Rpm: 23.500
Grinding / Abrasive Disc Ø: 30 mm
Dimensions: (AG-90) Ø 17 x Length: 140 mm • **Weight:** 170 g.
Dimensions: (AG-45) Ø 17 x Length: 153 mm • **Weight:** 180 g
Hose Unit: Inclusive

Accessories for Air File Tool

	Ø 3 mm 1 mm Split	Flat 1 mm Split	Flat 3.2 x 13	Flat 3.2 mm Split	Flat 6.3 x 13	Adjustable Holder (wide)
Order →	AR - 664	AR - 665	AR - 661	AR - 662	AR - 667	AR - 666
AR-030	●	●	○	●	○	●
AR-070	●	●	○	●	○	●
SAR-070	●	◑	●	◑	○	●
AR-991	●	●	◑	◑	◑	●

● **Standard Holder** (available in box) ◑ **Optional Holder** ○ **Incompatible**

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Ultrasonic Polishing Machine

Order Code: U-LAP106

"U-LAP 106" can assist in reducing finishing time by up to 50% on hardened tools steel working on very small mould cavity & core details, extrusion dies and more. It is an advanced technological product realizing all diffucult works.

Power Source: AC 220
Ultrasonic Power: 45W, level 2
Stroke Length: 10 - 35 mm
Vibration: 15 - 25 khz
Dimensions: 152 x 100 x 72 mm

Corded Rotary Tool

Order Code: STRONG

With electronic cycle adjusted control unit, it starts with micro motor rotary tool at desired speed. It can work faster and serially with foot switch, desktop precision operations can be done with practical and powerful electronic machine. It is economical.
Rpm: 35.000 • **Collet Ø:** 3mm
50 hz / 220 V

190-Piece Economic Set

NEW

Polishing Kit - Multiple

Order Code: 6128001001

*** Contents:**
- Electrical Rotary Tool
- Cutting Discs
- Drills
- Diamond Endmills
- Polishing Stones
- Abrasive Rolls
- Diamond Compound
- Grinding Wheels
- Brushes
- Wire Brushes
- Mounted Points
- Mounted Felts
- Collets

*** Tool Specifications:**
- **Power:** 135 Watt
- **Voltage:** 230 V
- **Frequency:** 50 Hz.
- **Speed Control:** 10.000 - 32.000 Rpm
- **Collets:** Ø 1.6 mm / 2.4 mm / 3.2 mm

Order Code	Specifications
BM21A	**Rpm:** 15.000 **Power:** 125 Watt
BM23A	**Rpm:** 25.000 **Power:** 200 Watt
BM26A	**Rpm:** 25.000 **Power:** 300 Watt
BM24A	**Rpm:** 22.500 **Power:** 500 Watt

Electrical Spiral Motor

Code: BM..A

Economical and modular for levelling and polishing.
Powerful motors provide facilities for users in levelling and polishing processes.
Rotary spiral spring in Spiral Rod is only for tool to be used with 2.35 - 3 & 4 mm collets.
However, in some cases, 6 mm collet also can be used softly / without pressing.
To avoid rising heat at long uses, waiting at short intervals can be required. To provide continuance of work in uses, a spare Spiral Rod can be kept.

Note: Spiral Rod should be ordered separately.

Motor Accessories

Order Code	Specifications
M19KK	Spiral Rod / 1040 mm
M19FTK	Spiral Rod with Latch / 1000 mm
YP...Ø	Spare Collets / 2.35 - 3 - 4 - 6 mm
BM...W	Foot Switch for Spiral Motor **(when ordering: specify current motor watt)**

Motor Hanger

Order Code: M18A

Foot Switch and cable connections of Electrical Spiral Motors are presented in packing.
To use motor stably, we recommended you to use Hanger. With the help of the hanger spring, it absorbs the vibrations caused by the motor and prevents the vibrations from passing to the workbench.

145-Piece Economic Set

NEW

Polishing Kit - Mini

Order Code: 6128002001

*** Contents:**
- Abrasive Rolls
- Cutting Discs
- Drills
- Diamond Endmills
- Polishing Stones
- Diamond Compound
- Grinding Wheels
- Brushes
- Wire Brushes
- Mounted Points
- Mounted Felts
- Collets

Service and Spare Parts of all equipments are provided by our company.

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EDM Polishing Stones

Code: EG..

EDM Polishing Stones are produced to make excellent levelling / polishing on rough surfaces. It takes the shape of the surface it works with by making fast cutting. It works precisely on figured surfaces. EDM Polishing Stones are suitable for manual and Air File Tool use. Hard and complex, especially in deep areas, long polishing stones can be selected. At flat and wide areas, short polishing stones can be less fragile by avoiding skidding.

When using by hand, use a holder. Different type holders at our Air File Tools present extensive usage opportunity.

For softer and clean polishing stone usage, you can use your polishing stone by steeping in low oil liquid etc. To use right graduation from coarse polishing stone to fine one on surface is important. Cleaning of operation area is also important.

EDM Polishing Stone Types

EGK	EGD	EGY	EGU
width x length (mm)	width x length (mm)	diameter x length (mm)	width x length (mm)
4 x 4 x 100	6 x 3 x 150	Ø 6 x 150	8 x 8 x 150
6 x 6 x 150	13 x 3 x 150	Ø 8 x 150	10 x 10 x 150
8 x 8 x 150	13 x 6 x 150	Ø 10 x 150	-
10 x 10 x 150	-	Ø 12 x 150	-

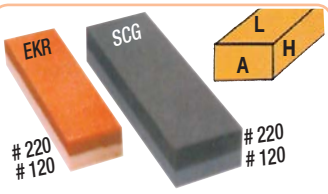
Grit	Operation
# 120	Levelling
# 150	
# 180	
# 220	Pre-polishing
# 280	
# 320	
# 400	
# 600	Finishing
# 800	
# 1000	

Order: Type. Dimension. Grit

Order Example: EGK. 4 x 4 x 100. 320

EDM Polishing Stone Holders

Product	Manually Operated				Air File Tool Operated				
Capacity	6 x 3	13 x 3	4 - 6	8 - 10	13 x 3	13 x 6	AR-661	AR-667	AR-666	AR-662
Order Code	GT-613		GT-468		GT-133					

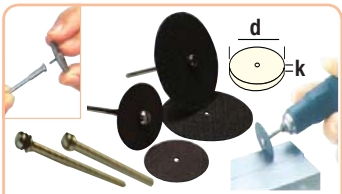


Polishing Block Stone

Code: BG...

For wide surface levelling and chamfering / deburring.
EKR: General Steel • **SCG:** Hard Steel

Order Example	A	H	L
BG100. EKR or SCG	16	25	100
BG125. EKR or SCG	20	40	125
BG150. EKR or SCG	25	50	150
BG200. EKR or SCG	25	50	200



Mini Cutting Disc

Code: KS..

It is used in cutting operation of all metals including hard steels at Rotary Tools.

Order Code	d	k	Mandrel
KS25	25	0.65	Ø 2.35 mm Ø 3.0 mm
KS40	40	1.0	
KS60	60	1.5	

Fiber Ceramic Polishing Stones

Code: SG...

"SG" Fiber Ceramic Polishing Stones are the excellent stones for detail polishing. They preparead by pressing with resin binder spraying screened, gauged micron diamond particles on powerful fiber textured ceramic, "SG" Ceramic Stones have the feature of resistance with flexible structure againts breakage.

Optimal for premium polishing of flat surfaces, hard to reach slots, ribs and corners. High polishing productivity can be obtain without clogging. "SG" Ceramic Stones can be used in our Air File Tools or by hand (please see below for manual holders).

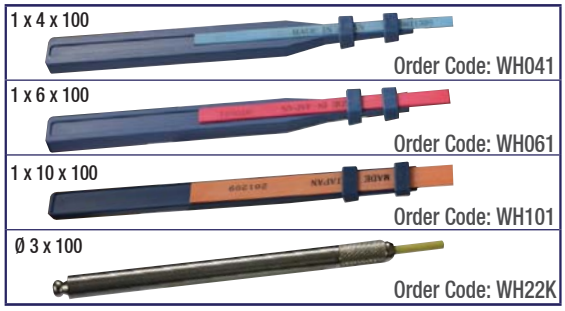
Fiber Ceramic Polishing Stones Types

Grit Code		Thickness: 1 mm	Diameter: 3 mm
SGCSC	# 180		
SGCSO	# 250		
SGCSD	# 280		
SGCSN	# 360	Width x Length	Diameter
SGCSB	# 400	1 x 4 x 100	Ø 3 x 100
SGCSY	# 700	1 x 6 x 100	
SGCSR	# 1200	1 x 10 x 100	

Order: Grit Code. Dimension

Order Example: SGCSO. 1 x 6 x 100

Fiber Ceramic Polishing Stone, Manual Holders



"Strong Fiber Texture & Durable Structure"

"SG" Ceramic Stones suitable to be used in Air File Tools. Refer to "page-371" for Air File Tools.

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Pink Mounted Points

Code: SPT

"SPT" Mounted Points are suitable to soft and hard surfaces.
With formation of aluminium oxide & ceramic grain textured in fast material removal feature, the mounted points provide the desired performance on all kinds of surfaces. After process, it can be ready for polishing by cleaning off point traces on surface with Rubber Mounted Polishing Points.
There should be at least 10 mm fastening length at collet.
Operation should be soft without pressing.

Cutting speed max.: 25 m / s. Calculation: $\frac{n = V\ (m/s) \times 60.000}{D = (mm) \times 3.14}$

Order: SPT. Type

Order Example: SPT. 410A

Mounted Points - Shank Diameter: 3 mm

Form A / R Shank 3 mm	D L Ø 3 mm							
Type:	256A	308A	410A	510A	612A	816A	1016A	813R
D x L	2.5 x 6	3 x 8	4 x 10	5 x 10	6 x 12	8 x 16	10 x 16	8 x 13

Form B / R Shank 3 mm								
Type:	30B	40B	50B	60B	80B	100B	120B	1224R
D x L	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	12 x 24

308T	310T	412T	710T	412J	616J	816J	1016J	609S
3 x 8	3 x 10	4 x 12	7 x 10	4 x 12	6 x 16	8 x 16	10 x 16	6 x 9

612P	815P	1018P	412K	515K	816K	132E	133E	162E
6 x 12	8 x 15	10 x 18	4 x 12	5 x 15	8 x 16	13 x 2	13 x 3	16 x 2

Mounted Points - Shank Diameter: 6 mm

Form A Shank 6 mm	D L Ø 6 mm							
Type:	1608A	2008A	2016A	2510A	2520A	3220A	4025A	5030A
D x L	16 x 8	20 x 8	20 x 16	25 x 10	25 x 20	32 x 20	40 x 25	50 x 30

Form B Shank 6 mm	D L Ø 6 mm							
Type:	1015B	1620B	2020B	2030B	2040B	2525B	2532B	3240B
D x L	10 x 15	16 x 20	20 x 20	20 x 30	20 x 40	25 x 25	25 x 32	32 x 40

Form C / F Shank 6 mm								
Type:	2508C	3208C	4010C	1220D	2035D	0816F	1320F	2032F
D x L	25 x 8	32 x 8	40 x 10	12 x 20	20 x 35	8 x 16	13 x 20	20 x 32

Form E Shank 6 mm								
Type:	0816E	1230E	1640E	2030E	2040E	2525E	2540E	3240E
D x L	8 x 16	12 x 30	16 x 40	20 x 30	20 x 40	25 x 25	25 x 40	32 x 40

Form G/H/J Shank 6 mm								
Type:	2016G	2520G	10H	15H	20H	1225J	1632J	2040J
D x L	20 x 16	25 x 20	Ø 10	Ø 15	Ø 20	12 x 25	16 x 32	20 x 40

Grinder Disc

Because it is circular, it is mostly used at thread ranges, cutting tool edges and mould - machine production.

Order Code	Specification
DP25	Ø 25 x Thickness: 3.2 mm x 80 Grit
VM03	Mandrel / 2.35 & 3.00 mm

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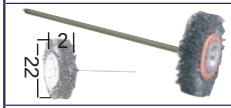
Mounted Wire Brushes

These brushes are very successful in cleaning EDM and deep burrs traces (especially with "Diamond Compound 14/7" Order Code: SDP14).

	Conical & Brass Wired **Shank:** 3 mm **Order:** STF158
	Conical & Inox Wired **Shank:** 3 mm **Order:** SMF158
	Disc & Brass Wired **Shank:** 3 mm **Order:** STF222
	Disc & Inox Wired **Shank:** 3 mm **Order:** SMF222
	Flat & Brass Wired **Shank:** 3 mm **Order:** STF148
	Flat & Inox Wired **Shank:** 3 mm **Order:** SMF148

As per request: Shank 2.35 mm is available.

Code: DZ

Code: DZL

Self-adhesive Abrasive Disc

For Abrasive:

Order: DZ.. x Grit

Order Example: DZ18 x 320

For Holder:

Order: DZL.. x Shank

Order Example: DZL80 x 3

Code	Abrasive	Grit	Holder	Shank
DZ10	Ø 10		Ø 10	
DZ18	Ø 18	# 80	Ø 18	
DZ30	Ø 30	# 120	Ø 30	**3 mm**
DZ45	Ø 45	# 220	Ø 45	
DZ70	Ø 70	# 320	Ø 70	**6 mm**
DZ80	Ø 80	# 400	Ø 80	
DZ100	Ø 100		Ø 100	

Mini Abrasive Roll Set Code: ML

Mini Abrasive Rolls & Holder Set.
It is sold in package: 5 + 5 coarse - fine grit and holder (10 pcs abrasive + 1 pcs holder).

Order Code	Abrasive	Grit
ML04	Ø 4 x 15 mm	# 120 (5 pcs.)
ML05	Ø 5 x 15 mm	
ML06	Ø 6 x 15 mm	# 320 (5 pcs.)
ML08	Ø 8 x 20 mm	
ML10	Ø 10 x 20 mm	

As per request: Custom-made orders.

Mini Abrasive Rolls

Order: Code. Grit

Order Example: SPZ12. 80

Code	Abrasive	Grit
SPZ12	Ø 12 x 25	# 80
SPZ15	Ø 15 x 25	
SPZ20	Ø 20 x 30	# 100
SPZ25	Ø 25 x 30	
SPZ30	Ø 30 x 30	# 120
SPZ40	Ø 40 x 30	
SPZ50	Ø 50 x 30	# 220
SPZ60	Ø 60 x 35	

Holder for Abrasive Rolls

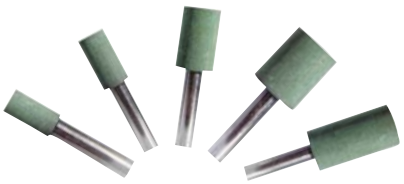
Order Code	Holder	Shank - Length
SPL12	Ø 12	Ø 6 - 60
SPL15	Ø 15	Ø 6 - 60
SPL20	Ø 20	Ø 6 - 60
SPL25	Ø 25	Ø 6 - 60
SPL30	Ø 30	Ø 6 - 60
SPL40	Ø 40	Ø 6 - 65
SPL50	Ø 50	Ø 6 - 65
SPL60	Ø 60	Ø 6 - 65

Rubber Mounted Polishing Point

Rubber, Soft Type & Finishing

Form RK Shank 3 mm					
Order:	RK04	RK05	RK06	RK08	RK10
D x L	4 x 13	5 x 15	6 x 17	8 x 20	10 x 20

Form RB Shank 6 mm					
Order:	RB15	RB20	RB25	RB30	RB35
D x L	15 x 25	20 x 25	25 x 25	30 x 30	35 x 35



Rubber Mounted Polishing Point

Ceramic, Hard Type & Pre-polishing

Form CK Shank 3 mm					
Order:	CK04	CK05	CK06	CK08	CK10
D x L	4 x 13	5 x 15	6 x 17	8 x 20	10 x 20

Form CB Shank 6 mm					
Order:	CB15	CB20	CB25	CB30	CB35
D x L	15 x 25	20 x 25	25 x 25	30 x 30	35 x 35

Polishing Rubbers

Cylinder (Ø6x22)	Order:	Disc (Ø20x3)	Order:
Red (medium)	: KK06	Red (medium)	: DK06
Black (hard)	: KS06	Black (hard)	: DS06
Mandrel	: DM03	Mandrel	: VM03

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Order: SPK. Type

Order Example:
SPK. 1014A

Mounted Felts - Shank Diameter: 3 mm

Form A / Shank 3 mm	D / L / Ø 3 mm							
Type:	0408A	0509A	0610A	0810A	1014A	1220A	1520A	2020A
D x L	4 x 8	5 x 9	6 x 10	8 x 10	10 x 14	12 x 20	15 x 20	20 x 20

Form C / H / Shank 3 mm								
Type:	0408C	0509C	0610C	0810C	1013C	1214C	1520C	1218H
D x L	4 x8	5 x 9	6 x 10	8 x 10	10 x 14	12 x 20	15 x 20	20 x 20

0410J	0512J	0616J	0817J	1014J	1020J	1220J	1225J	1218T
4 x 10	5 x 12	6 x 16	8 x 17	10 x 14	10 x 20	12 x 20	12 x 25	12 x 18

08B	10B	12B	18B	1014R	1225R	2505L	2207L	2210L
Ø 8	Ø 10	Ø 12	Ø 18	10 x 14	12 x 25	25 x 5	22 x 7	22 x 10

Adhesive Felt Discs

Code: Y..D

Order	Dimension	Hole
Y18D	Ø 18 x 4 mm	7 mm
Y30D	Ø 30 x 4 mm	12 mm
Y45D	Ø 45 x 4 mm	18 mm

"Y..D" Adhesive Felt Discs suitable to be used with **"DZL"** Holders. Refer to "page-375" for **"DZL"** Holders.

Mounted Polishing Felts

Code: SPK

It is used at finishing with Diamond Compounds. Also, it can be applied with other polishers. Even it is used at very high cycles, it does not burn.
Our felts are produced as double layer fired.
In operation, avoid extreme high pressing.

Mounted Felts - Shank Diameter: 6 mm

Form A / B / Shank 6 mm	D / L / Ø 6 mm						
Type:	1520A	2020A	2025A	2530A	3040A	14B	20B
D x L	15 x 20	20 x 20	20 x 25	25 x 30	30 x 40	Ø 14	Ø 20

Form E / C / Shank 6 mm							
Type:	2110E	3015E	4020E	5030E	1520C	2025C	2530C
D x L	25 x 10	30 x 15	40 x 20	50 x 30	15 x 20	20 x 25	25 x 30

Form K / H / G / Shank 6 mm							
Type:	1018K	1220K	1525K	2025K	2530K	1530H	1030G
D x L	10 x 18	12 x 20	15 x 25	20 x 25	25 x 30	15 x 30	10 x 30

Mounted Felt Sticks

Code: S..D

Usage with Electrical or Air Tools.

Order Code	Dimension	Shank
S06D	6 x 6 x 25 mm	Ø 3 mm
S10D	10 x 10 x 35 mm	
S12D	12 x 12 x 45 mm	

Felt Polishing Sticks

Code: E..K

Suitable for manual usage.

GT-133

Order Code	Dimension
E06K	6 x 6 x 150 mm
E10K	10 x 10 x 150 mm
E12K	12 x 12 x 150 mm
GT-133	Holder (suitable for tool usage)

Polishing Felt Sheets

Code: P...

It can be adhered to your tool by cutting.

Order Code	Dimension
P325	6 x 250 x 250 mm
P625	10 x 250 x 250 mm
P1025	12 x 250 x 250 mm

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Mounted Hair Brushes

Code: SKF

Mounted Hair Brushes facilitating polishing process and not requiring extra tool. These brushes form the perfect surface with fine micron Diamond Compounds at final polishing.

Shank: 3 mm Ø 22 x 2 mm	Shank: 3 mm Ø 16 x 8 mm	Shank: 3 mm Ø 16 x 8 mm	Shank: 3 mm Ø 6 x 8 mm
Order: SKF022	Order: SKF168	Order: SKF016	Order: SKF068

GT-133

Plexiglass Polishing Sticks

Code: PC..

It becomes a precision Diamond File when used with Diamond Compounds. GT-133 is a suitable holder for tool usage.

Order Code	Dimension	Type
PC.08	8 x 8 x 150 mm	Square
PC.10	10 x 6 x 150 mm	Rectangular
PC.13	13 x 6 x 150 mm	Rectangular
PC.06	Ø 6 x 150 mm	Round
GT-133	Holder (suitable for tool usage)	

Wooden Tools

Code: ASK Code: AC..

It is suitable to polish with Wooden Felts at narrow and radius areas of moulds, areas unsuitable to use polishing stones.

Mounted Wooden Points

Order Code	Dimension
ASK.06	Ø 6 x 15
ASK.10	Ø 10 x 20
ASK.15	Ø 15 x 25
ASK.20	Ø 20 x 30
ASK.010S	Ø 10 (spherical)

Wooden Lapping Sticks

Order Code	Dimension	Type
AC.06	6 x 6 x 150	Square
AC.10	10 x 10 x 150	Square
AC.12	12 x 12 x 150	Square
AC.03	6 x 3 x 150	Rectangular
AC.13	13 x 6 x 150	Rectangular
AC.20	20 x 8 x 150	Rectangular
ACS.6	Ø 6 x 150	Round
ACS.8	Ø 8 x 150	Round

Diamond Compounds

Code: SDP

Our Diamond Compounds have been formulated using a blend of high quality diamond grit, polisher chemical mixture and herbal oil. It is highly concentrated. Reasonable price and in box packaged as 20 g. syringe.
From rapid stock removal process to final polishing process, it cleans EDM traces in hard areas by removing burrs (stock removal).
Our Diamond Compounds are soluble in both oil and water.
During operation, the compound may get lumpy / dry, in this case, it can be moisturised with 1-2 drops of Diamond Compound Moisturiser (order code: SDS200).

Order Code	Micron (µm)	Approx. Mesh	Package	Application
SDP.01	0 / 1	#60.000	20 g.	Final Polishing
SDP.02	2 / 1	#14.000	20 g.	
SDP.03	3 / 2	#8.000	20 g.	
SDP.05	5 / 3	#4.000	20 g.	
SDP.07	7 / 5	#3.000	20 g.	Pre-polishing
SDP.10	10 / 7	#1.700	20 g.	
SDP.14	14 / 7	#1.500	20 g.	
SDP.20	20 / 14	#1.100	20 g.	
SDP.28	28 / 20	#800	20 g.	Rapid Stock Removal
SDP.40	40 / 28	#550	20 g.	
SDP.60	60 / 40	#500	20 g.	

Application: Application is usually done with circular movements. During operation, cleaning is very important and it absolutely should be done at every stage. The sequence should be followed from coarse to fine micron. Polishing tools for each micron compound should be specified and should be used only at that micron, absolutely don't mix with other micron compounds. For cleaning of mould surface, our "Cleaning Spray" (**order code:** W170104) is an effective, economic and provide easiness. As a surface protector, you can choose our "Protective Wax Spray" (**order code:** W160106).

Diamond Compound Moisturiser

Order Code: SDS200

During operation, the compound may get lumpy / dry, in this case, it can be moisturised with 1-2 drops of Diamond Compound Moisturiser.
Package: 200 g.

Metal Polisher Paste

Order Code: MARPOL

Metal work pieces lose their gloss in time and can be oxidized. In this case, Metal Polisher Paste cleans surfaces and purifies from rust and dirt's. It is a very good dirt remover, it does not remove burrs and only cleans and polishes. **Package:** 200 g.

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Code: RZ

Tapered Abrasive Cartridge Rolls

It is ideal for grinding in limited and narrow areas. When the outermost abrasive is worn down, non-worn abrasive found is lower layers appears.

Application: Please always grind by using tip instead of surface. During operation, wear protective goggles. Cutting speed: 11 m / s max.

Code	Abrasive	Grit
RZ06	6 x 38	# 80
RZ10	10 x 38	
RZ13	13 x 38	# 120
RZ16	16 x 38	# 220
RZ20	20 x 38	

Code	Mandrel
TM03	3 x 30
TM06	6 x 60

Order: Code. Grit

Order Example: RZ16. 220

Abrasive Cloth Rolls

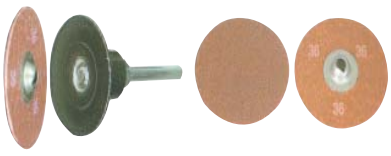
Code: BZ

Order Code	Grit	Operation	Width	Package
BZ40	#40	Coarse	150 mm	1 Metre
BZ60	#60			
BZ80	#80			
BZ100	#100			
BZ120	#120			
BZ150	#150	Medium		
BZ180	#180			
BZ220	#220			
BZ280	#280			
BZ320	#320			
BZ400	#400	Fine		
BZ600	#600			
BZ800	#800			

Code: SZ

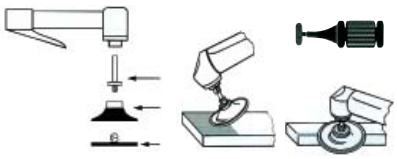
Waterproof Abrasive Paper

Order Code	Grit	Operation	Dim.	Package
SZ40	#40	Coarse	230 x 280 mm	1 pcs.
SZ60	#60			
SZ80	#80			
SZ100	#100			
SZ120	#120			
SZ150	#150	Medium		
SZ180	#180			
SZ220	#220			
SZ280	#280			
SZ320	#320			
SZ400	#400	Fine		
SZ600	#600			
SZ800	#800			
SZ1000	#1000			
SZ1200	#1200			



Clip-on Abrasive Disc

Code: KZD



Abrasive Disc

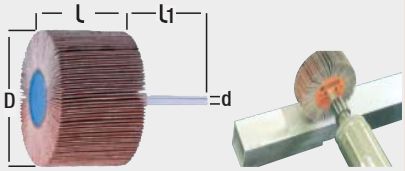
Code	Disc	Grit
KZD38	Ø 38	# 36
KZD51	Ø 51	# 80
KZD76	Ø 76	#120

Mandrel

Order Code	Shank	Rubber Ø
KLT63	6 mm	38 mm
KLT65	6 mm	51 mm
KLT67	6 mm	76 mm

Order: Code. Grit

Order Example: KZD51. 80



Abrasive Mop Whells

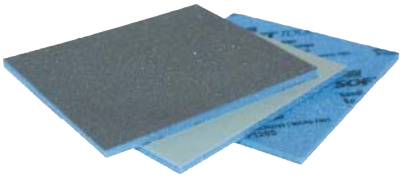
Code: MZ

During operation, wear protective goggles.
Cutting speed: 15 - 20 m / s max.

Code	D	L	d	L1	Grit
MZ3.1515	15	15	3.0	40	#40
MZ3.2020	20	20			
MZ6.2015	20	15	6.0	40	#60
MZ6.2020		20			
MZ6.2515	25	15		40	#80
MZ6.2525		25			
MZ6.3015	30	15		40	#100
MZ6.3025		25			#120
MZ6.4020	40	20		40	#180
MZ6.4030		30			
MZ6.5020	50	20		40	#220
MZ6.5030		30			#320
MZ6.6020	60	20		40	#400
MZ6.6040		40			
MZ6.8040	80	40		40	

Order: Code x Grit

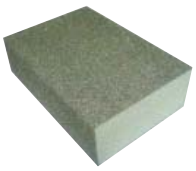
Order Example: MZ6.2515 x 80



Waterproof Abrasive Paper with Sponge

Code: SM

Order Code	Grit	Width	Package
SM150	#150	115 mm	1 Metre
SM220	#220		
SM280	#280		
SM320	#320		
SM400	#400		



All sides of the pad can be used.
Easy to clean and you can use repeatedly.

Foam - Abrasive Pads

Code: EZ

Order Code	Grit	Dimension	Package
EZ60	#60	100 x 68 x 27 mm	1 pcs.
EZ100	#100		
EZ150	#150		
EZ220	#220		
EZ320	#320		

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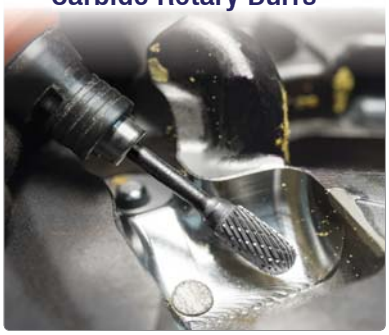
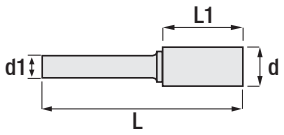
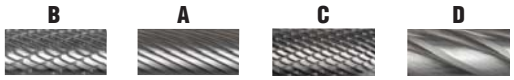
Carbide Rotary Burrs





Order:
Code. Shape

Order Example:
SA14. B



Shape B: Double cut for general purpose use. Improves control and reduces chips. The cross toothing provides a higher cutting capacity compared with the simple toothing.
Shape A: Standard cut for general operations.
Shape C: Diamond cut for hardest materials and finest finishes.
Shape D: Aluminium toothing. Usage area; non-ferrous metals, aluminium, brass, copper, diecasts, zinc and plastics. To debur, break edges, trim and surface machining.

During Operation: Please use protective goggles, masks and ear plugs.

Cylinder Type DIN 8033

Code: SA

Code	d	d1	L1	L	Shape
SA42	2.5	3	11	38	B
SA43	3.0		14	38	
SA14	5.0	6	16	50	A
SA1	6.0		16	50	C
SA3	9.5		19	63	D
SA5	12.7		25	69	

Cylinder Type with Endcut

Code: SB

Code	d	d1	L1	L	Shape
SB42	2.5	3	11	38	B
SB43	3.0		14	38	
SB14	5.0	6	16	50	A
SB1	6.0		16	50	C
SB3	9.5		19	63	D
SB5	12.7		25	69	

Radius Cylindrical Type

Code: SC

Code	d	d1	L1	L	Shape
SC42	3.0	3	14	38	B
SC42ML2	3.0		14	50	
SC14	5.0	6	16	50	A
SC1	6.0		16	50	C
SC3	9.5		19	63	D
SC5	12.7		25	69	

Ball Type

Code: SD

Code	d	d1	L1	L	Shape
SD41	2.5	3	2.3	38	B
SD42	3.0		2.5	38	
SD14	5.0	6	4.0	50	A
SD1	6.0		5.0	50	C
SD2	8.0		6.4	50	D
SD3	9.5		8.0	52	

Pointed Tree Type

Code: SG

Code	d	d1	L1	L	Shape
SG41	3.0	3	6.0	38	B
SG43	3.0		9.5	38	
SG1	6.0	6	16	50	A
SG2	8.0		19	63	C
SG5	12.7		25	69	D
SG6	16		25	69	

Flame Type

Code: SH

Code	d	d1	L1	L	Shape
SH41	3.0	3	6.3	38	B
SH41ML	3.0		6.3	50	
SH1	6.0	6	9.5	50	A
SH2	8.0		19	63	C
SH5	12.7		32	76	D
SH6	16		36	80	

Radius Cone Type

Code: SL

Code	d	d1	L1	L	Shape
SL41	3.0	3	9.5	38	B
SL42	3.0		12.7	38	
SL1	6.0	6	16	50	A
SL2	8.0		22	69	C
SL4	12.7		28	76	D
SL6	16		33	80	

90° Cone Type

Code: SK

Code	d	d1	L1	L	Shape
SK42	3.0	3	1.5	38	B
SK1	6.0	6	3.0	50	A
SK3	9.5		4.7	52	C
SK6	16		8	57	D

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CBN Grinding Points

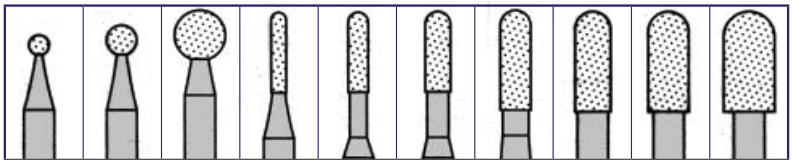
Code: PEF

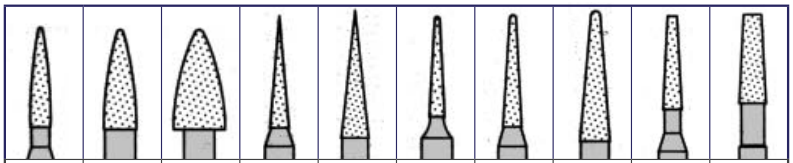
These grinding points produced with electroplated method. They are designed for shaping and finishing hard materials including Tungsten Carbide and Ceramics. It is used at mould processing, mostly polishing runners or lapping other channels / holes areas making burrs and finishing. **Shank:** Ø3 mm • **Full Length of Products:** 45 mm

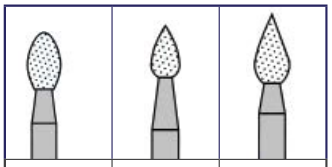
Order: PEF. Type

Order Example: PEF. 50B

Shank: 3 mm Full Length: 45 mm									
Type:	10A	15A	20A	25A	30A	35A	40A	50A	30V
D x L	1x8	1.5x8	2x8	2.5x8	3x10	3.5x10	4x10	5x10	3x10

									
20B	30B	50B	15C	20C	25C	30C	35C	40C	50C
Ø 2	Ø 3	Ø 5	1.5x8	2 x 8	2.5x8	3x10	3.5x10	4x10	5x10

									
20F	30F	50F	20P	30P	15R	20R	30R	20T	30T
2x10	3x10	5x10	2x12	3x15	1.5x10	2x12	3x14	2x10	3x10

		
40Q	30S	40S
4 x 7	3 x 6	4 x 8

SPR16	SPR20	SPR22	SPR25	SPR (mandrel)
16 x 0.5	20 x 0.5	22 x 0.5	25 x 0.6	Ø3 mm

Diamond CBN Set - 30 pcs.

Order Code: BMS-30

Contains one each of below:
PEF.10A, 15A, 20A, 25A, 30A, 35A, 40A, 50A, 20B, 30B, 50B, 15C, 20C, 25C, 30C, 35C, 40C, 50C, 20P, 30P, 15R, 20R, 30R, 30S, 20F, 30F, 50F, 20T, 30T and 30V.

Diamond CBN Set - 20 pcs.

Order Code: BMS-20

Contains one each of below:
PEF.10A, 15A, 20A, 25A, 30A, 35A, 15C, 20C, 25C ,30C, 20P, 30P, 15R, 20R, 30R, 20B, 30B, 20F, 30F and 20T.

Diamond CBN Set - Economic

Order Code: T20 20 pcs.

Order Code: T30 30 pcs.

* Contents are the same as the BMS Set.

Diamond CBN Set 50 pcs. - Economic

Order Code: C280300

Needle File Set -12 pcs.

Order Code: BSE12 **Bahco**

Contains one file each of:
Hand, flat, triangular, square, half round, crossing, round, knife, barrette, slitting, round-edge joint and marking. **Type of cut:** Fine, medium & coarse. *** 3 x 160 mm**

Needle File Set - 6 pcs.

Order Code: BSE06 **Bahco**

Contains one file each of:
Hand, flat, half round, round, triangular and square.
Type of cut: Medium
*** 3 x 160 mm**

Needle File Set - 6 pcs.

Order Code: 1720 **Beta**

Contains one file each of:
Hand, flat, half round, round, triangular and square.
Type of cut: Medium
*** 3 x 160 mm**

Needle File Set - 10 pcs. Economic

Order Code: SE10

Type of cut: Medium
*** 3 x 140 mm**

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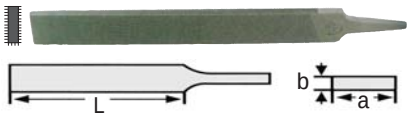
Engineers File - Hand Code: LHE



Coarse: For material removing and deburring.
Medium: For general purpose and levelling.
Fine: Precision filling and smoothing.

Order: Code. Cut

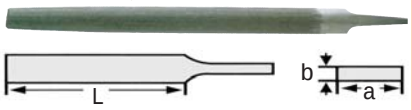
Order Example: LHE150. COARSE

Code	Inch	Cut	a	b	L
LHE100	4"	Coarse Medium Fine	10	2.5	100
LHE150	6"		16	4.0	150
LHE200	8"		20	5.0	200
LHE250	10"		25	6.5	250
LHE300	12"		30	7.0	300

Engineers File - Half Round

Code: YYE

Order Example: YYE100. MEDIUM



Code	Inch	Cut	a	b	L
YYE100	4"	Coarse Medium Fine	10	3.3	100
YYE150	6"		16	5.0	150
YYE200	8"		20	6.0	200
YYE250	10"		25	7.0	250
YYE300	12"		30	9.0	300

Engineers File - Round

Code: YTE

Order Example: YTE250. FINE

Code	Inch	Cut	Ø	L
YTE100	4"	Coarse Medium Fine	Ø 4	100
YTE150	6"		Ø 6	150
YTE200	8"		Ø 8	200
YTE250	10"		Ø10	250
YTE300	12"		Ø12	300

Engineers File - Triangular

Code: UTE

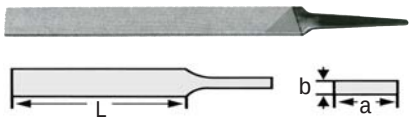
Order Example: UTE300. MEDIUM

Code	Inch	Cut	a	L
UTE100	4"	Coarse Medium Fine	7	100
UTE150	6"		9	150
UTE200	8"		11	200
UTE250	10"		14	250
UTE300	12"		17	300

Engineers File - Mill Saw

Code: MTE

Order Example: MTE200. MEDIUM

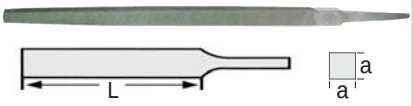


Code	Inch	Cut	a	b	L
MTE100	4"	Coarse Medium Fine	10	2.5	100
MTE150	6"		16	3.0	150
MTE200	8"		20	4.0	200
MTE250	10"		25	5.0	250
MTE300	12"		30	6.5	300

Engineers File - Square

Code: KTE

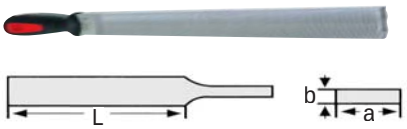
Order Example: KTE150. MEDIUM



Code	Inch	Cut	a	L
KTE100	4"	Coarse Medium Fine	4	100
KTE150	6"		5	150
KTE200	8"		6	200
KTE250	10"		8	250
KTE300	12"		10	300

Engineers File - Aluminium

Code: ALE



Order Code	Inch	Cut	a	b	L
ALE250	10"	Coarse	25	6.0	250
ALE300	12"		30	6.5	300

Plastic Handle for Files

"ESSE"

Order Code	Type	File	Inch
ESY04			4"
ESY06			6"
ESY08			8"
ESY10			10"
ESY12			12"
ESD04			4"
ESD06			6"
ESD08			8"
ESD10			10"
ESD12			12"

Order Code	Product
ESSE	Handle for Needle Files

Steel Needle Files

It is ideal to work in the smallest surfaces, profiles and angles. It can be used with our without handles.

Steel Needle File - Hand Code: SLE

Order Code	Shank	a x b	L	Operation
SLE140	Ø	5.5 x 1.35	140	4-cut
SLE160	3	6.2 x 1.45	160	

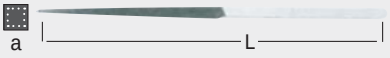
Steel Needle File - Half Round Code: SYY

Order Code	Shank	a x b	L	Operation
SYY140	Ø	5.0 x 1.75	140	3-cut
SYY160	3	5.5 x 2.0	160	

Steel Needle File - Round Code: SYE

Order Code	Shank	a (tapered)	L	Operation
SYE140	Ø	1.1 - 2.8	140	all sides
SYE160	3	1.2 - 3.0	160	

Steel Needle File - Square Code: SKE



Order Code	Shank	a (tapered)	L	Operation
SKE140	Ø	1.3 - 2.5	140	4-cut
SKE160	3	1.4 - 2.7	160	

Steel Needle File - Triangular Code: SUE

Order Code	Shank	a (tapered)	L	Operation
SUE140	Ø	1.0 - 3.2	140	3-cut
SUE160	3	1.3 - 3.4	160	

File Cleaning Brushes

Code: 1737BA

Code: 1737

Code: 1737NX

Order Code	Product
1737BA	294 mm / Soft Brass Wire
1737NX	270 mm / Steel Wire
1737	145 mm / Brass Wire

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Diamond File Set - 10 pcs.

Economic

Order Code: TPF10E * 3 x 140 mm

Contains one file each of:
Hand, flat, triangular, square, half round, crossing, round, knife, barrette and slitting.

Grit:
#150
#200
#400

Diamond File Set - 5 pcs.

Economic

Order Code: RKE1005

Contains one file each of:
Flat, triangular, square, half round and crossing.

Diamond File Set - 10 pcs.

Economic

Order Code: 13710 * 4 x 160 mm

Diamond File Set - 5 pcs.

Economic

Order Code: 13711 * 4 x 160 mm

Die Sinkers Diamond Riffler File Set - 5 pcs.

Economic

Order Code: 13726 * 3 x 140 mm

Diamond Files

Economic Series

Diamond File - Hand

Code: ELE

Order Code	Shank	d x L1 x L
ELE140	Ø4	5 x 70 x 140
ELE160	Ø5	8 x 50 x 160
ELE200	Ø5.5	8 x 70 x 200

Diamond File - Half Round

Code: EYY

Order Code	Shank	d x L1 x L
EYY140	Ø4	5 x 70 x 140
EYY160	Ø5	8 x 50 x 160
EYY200	Ø5.5	8 x 70 x 200

Diamond File - Round

Code: EYE

Order Code	Shank	d x L1 x L
EYE140	Ø4	Ø 3 x 70 x 140
EYE160	Ø5	Ø 4 x 50 x 160
EYE200	Ø5.5	Ø 4 x 70 x 200

Diamond File - Square

Code: DEE

Order Code	Shank	d x L1 x L
DEE140	Ø4	3.0 x 70 x 140
DEE160	Ø5	3.6 x 50 x 160
DEE200	Ø5.5	3.6 x 70 x 200

Diamond File - Triangular

Code: UEE

Order Code	Shank	d x L1 x L
UEE140	Ø4	3.7 x 70 x 140
UEE160	Ø5	5.0 x 50 x 160
UEE200	Ø5.5	5.0 x 70 x 200

Diamond Tapered Files - Hand

Code: CF..

Order Code	Cross Section	Diamond Length	Total Length
CF503	6.1 / 2.4 / 0.6	60 mm	180 mm
CF502	8.2 / 2.4 / 0.6	60 mm	
CF501	10.2 / 2.6 / 0.7	70 mm	

Diamond File - Round

Order Code: IF503

Shank	Cross Section	Length
5 x 5	5.2	**Diamond:** 80 mm **Total:** 215 mm

Diamond File - Half Round

Order Code: IF502

Shank	Cross Section	Length
11 x 4	9.0 / 4.0	**Diamond:** 80 mm **Total:** 215 mm

Diamond File - Flat

Order Code: IF501

Shank	Cross Section	Length
11 x 4	11.0 / 4.0	**Diamond:** 80 mm **Total:** 215 mm

Diamond File - Triangular

Order Code: IF505

Shank	Cross Section	Length
11 x 4	8.0	**Diamond:** 80 mm **Total:** 215 mm

Diamond File - Square

Order Code: IF504

Shank	Cross Section	Length
6 x 6	6.0	**Diamond:** 80 mm **Total:** 215 mm

Diamond File with Handle - Flat

Order Code: HX4

Cross Section	Total Length
12.2 / 3.5	100 mm (4")

Diamond File with Handle - Flat

Order Code: HX10

Cross Section	Total Length
18.5 / 4.5	250 mm (10")

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Diamond Tapered File Set - 5 pcs.

Order Code: CF500

Set Content: Grit: #150 - #200

Length: 180 • Diamond Length: 70 • Width: 2.8 mm

Length: 180 • Diamond Length: 60 • Width: 2.5 mm

Length: 180 • Diamond Length: 60 • Width: 2.5 mm

Length: 180 • Diamond Length: 50 • Width: 2.0 mm

Length: 180 • Diamond Length: 50 • Width: 2.2 mm

Diamond Tapered File Set - 10 pcs.

Order Code: PTF10T

4 different model, 10 pcs. & with extension bar.

Hand: #200 #400 #600 Grit Length: 130 mm 2 1.4 0.3

Hand: #200 #400 #600 Grit Length: 130 mm 4 1.4 0.3

Hand: #200 #400 #600 Grit Length: 130 mm 6 1.1 0.3

Round: #600 Grit Length: 140 mm Ø 3.0 mm

Diamond Tapered File Set - 10 pcs.

Order Code: PTF100

4 different model & 10 pcs.

Hand: #200 #400 #600 Grit Length: 130 mm 2 1.4 0.3

Hand: #200 #400 #600 Grit Length: 130 mm 4 1.4 0.3

Hand: #200 #400 #600 Grit Length: 130 mm 6 1.1 0.3

Round: #600 Grit Length: 140 mm Ø 3.0 mm

Diamond Needle File Set - 10 pcs.

Order Code: PFL100

Shank: Ø3 • Length: 180 mm

Set Content:

Flat: #200 Grit 5.5 x 1.5 mm

Half Round: #200 Grit 5.5 x 2.0 mm

Round: #200 Grit Ø 3.0 mm

Square: #200 Grit 2.5 mm

Triangular: #200 Grit 3.5 mm

Crossing: #200 Grit 5.5 x 1.0 mm

Flat: #400 Grit 5.5 x 0.5 mm

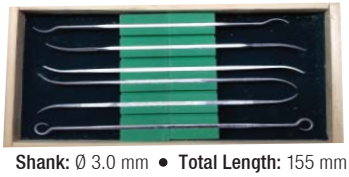
Flat: #600 Grit 5.5 x 0.8 mm

Round: #400 Grit Ø 2.0 mm

Riffler: #200 Grit 5.5 x 1.5 mm

Diamond Riffler File Set - 6 pcs.

Order Code: BF800



Shank: Ø 3.0 mm • Total Length: 155 mm

Contains one riffler file each of:
Crossing, hand, round, riffler, square and triangular.

Diamond File Set - 5 pcs.

Order Code: IF500

Diamond Length: 80 • Total Length: 215 mm

Set Content: Grit: #100

Round Ø 5.2 mm

Half Round 9.0 x 4.0 mm

Flat 11 x 4.0 mm

Triangular 8.0 mm

Square 6.0 mm

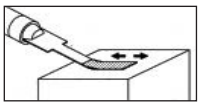
Diamond Tip File Set - 10 pcs.

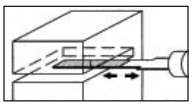
Order Code: FAS100T

5 different model, 10 pcs. & with extension bar.
Suitable for hand-held and Air File Tools.

Set Content: 1.0 0.5

* Length: 60 • Width: 4 ~ 2 • Grit: #150 #200
* Length: 60 • Width: 4 • Grit: #150 #200
* Length: 70 • Width: 6 • Grit: #150 #200
* Length: 90 • Width: 8 • Grit: #150 #200
* Length: 90 • Width: 10 • Grit: #150 #200

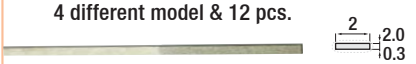




Diamond Tapered File Set - 12 pcs.

Order Code: CF400

4 different model & 12 pcs.



Hand: #150 #200 #400 Grit Length: 180 mm 2 2.0 0.3

Hand: #150 #200 #400 Grit Length: 180 mm 4 2.0 0.3

Hand: #150 #200 #400 Grit Length: 180 mm 6 2.0 0.3

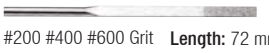
Hand: #150 #200 #400 Grit Length: 180 mm 8 2.0 0.3

Diamond Tapered File Set - 12 pcs.

Order Code: MTF100

4 different model, 12 pcs. & for Air File Tools.

Shank: Ø3 • Diamond Length: 15 mm



#200 #400 #600 Grit Length: 72 mm 3 1.4 0.3

#200 #400 #600 Grit Length: 72 mm 6 1.1 0.3

#200 #400 #600 Grit Length: 56 mm 3 1.4 0.3

#200 #400 #600 Grit Length: 56 mm 6 1.1 0.3

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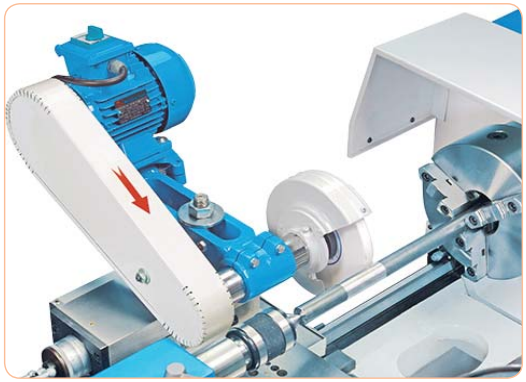


Tool Post Grinders

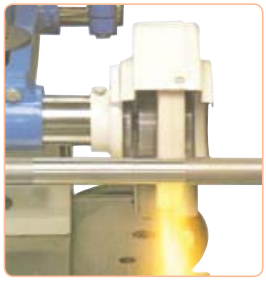
Code: ST..

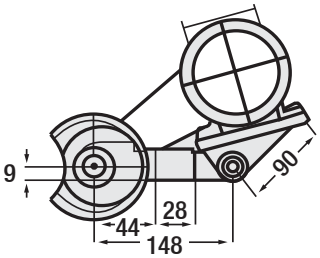
On Lathe / for Internal & External Grinding

It is an excellent machine for internal / hole grinding with easy to mount to the lathe. During the internal works, it maintains many diffucult operation, in addition to external grinding operation together.

- 15 / 20% material removal.
- Internal grinding up to 150 mm (up to 600 mm with additional apparatus).
- Surface / flat grinding operation with Cup Grinding Wheel.

The installation is made by placing a flange on the part of the lathe where the tool holder is located. As all lathes have different axis, the lathe axis is referenced. You can request assistance from our company for installation and training.





Specification	Order Code: ST175
Motor Power	0.5 HP / 380 V ~ 50 Hz
Rpm	2800
Grinding Wheel	175 x 20 x 20 (25 / 32)
Suitable Lathe	1000 and 1500 mm

Specification	Order Code: ST201
Motor Power	1 HP / 380 V ~ 50 Hz
Rpm	2800
Grinding Wheel	200 x 20 x 20 (25 / 32)
Suitable Lathe	2000 mm

Specification	Order Code: ST202
Motor Power	2 HP / 380 V ~ 50 Hz
Rpm	3000
Grinding Wheel	200 x 20 x 20 (25 / 32)
Suitable Lathe	2000 mm and over

Polishing & Cleaner Block

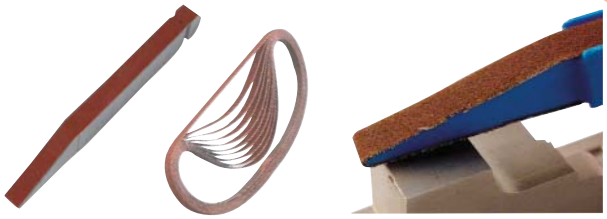
Code: KS..

It is for lapping, polishing and cleaning. Polishing & Cleaner Block is a multi-purpose abrasive cleaner, impregnated throughout with sharp abrasive grit. Removes light rust or tarnish restoring a bright metal finish.
Suitable for dry or wet use.
Block Dimension: 80 x 50 x 20 mm.

Extra Coarse - 36 grit (wine)
Coarse - 60 grit (blue)
Medium - 120 grit (grey)
Fine - 240 grit (brown)

Order: KS. Grit

Order Example:
KS. 60



Mini Abrasive Pen

Code: KZ310

It provides opportunity to use each sides of abrasive by pressing tension spring and turning abrasive band. It is suitable to use at areas that are hard to reach. Multi-purpose usage area at hard operations, it is most suitable equipment to use instead of file. Total length: 158 mm.
Spare Abrasive Bands (ZK155):
It can be purchased in packages containing 10 pieces (#180 / #320 grit, 5+5 pcs).

Mini Abrasive Rod:
Order: KZ310

Spare Abrasive Bands:
Order: ZK155

Work Safety Products for Mould Polishing Operation

Order Code	Product
KBK	Ear Protection
KLK	Earplug
STM	Dust Mask
VTM	Dust Mask with Valve
KG01	Safety Goggles

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Table Lamps with Magnifier & Hand Magnifier with Lamp

Order Code	Specifications
ZLA	**Diopter:** 5 / **Glass Lens Dimension:** 190 x 157 mm **Light Source:** 2x 9W fluorescent lamp / **Voltage:** 220V - 240V
MBL	**Diopter:** 5 / **Glass Lens Dimension:** Ø 88 mm **Light Source:** LED / **Voltage:** 220V
TROY	**Hand-held** / **Zoom:** 6x / **Light Source:** LED / **Battery:** AA

Clear Loupe Magnifier

Order Code: 183303

Magnification Power: 15x
This pocket magnifier is ideal for a variety of measuring tasks. Transparent draw tube enables clear imaging of the workpiece.

Headband Magnifier

Order Code: HL-09

Magnification Power: 2.5x
Light and impact resistant plastic frame.
Comfortable padded headed and fully adjustable.

Mini Vacuum Base Vice

Order Code: RMM0201

Jaw Width:
70 mm
Jaw Opening Max.:
70 mm
Weight:
1.25 kg

Vacuum base mounts on any smooth surface for workholding where you need it. Vice can be rotated 360-degree. Supplied with removable soft rubber protective jaw covers.

Inspection Mirror

Order Code: 1714

It is used to get images from areas that are hard to see. Light and impact resistant plastic frame.

Diameter: 25 mm
Length: 155 mm
Weight: 6 g.

Tool Cabinet with Drawers

Code: HOBI...

The products used in polishing operation absolutely should be stored separatelly.
In order not to mix products and to protect regularly, we are recommended our cabinets.
With sheet metal case and plastic drawers.

Order Code: HOBI-114

Dimensions	Number of Drawers
400 x 220 x 660 mm	22

Order Code: HOBI-113

Dimensions	Number of Drawers
400 x 220 x 500 mm	19

Industrial Cleaning Cloth Roll

It is produced completely from cellulose and absorber. It is excellent for cleaning of precision tools without leaving a trace. It does not leave feathers, not easily torn and practically used.

Stand Dimension: 450(l) x 330(w) x 940(h) mm
Stand Weight: 2.5 kg • **Cloth Weight:** 11 kg
Cloth Length: 350 metre
Cloth Width: 25 cm
Quantity Control: 15 cm

Order Code	Product
P350	Cleaning Cloth Roll (350 metre)
P1000	Cloth Stand + Cloth Roll Set

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Operating Elements

- Hard Chrome Plated Bars
- Cold-drawn H8 Honed Tubes
- Fitting Keys
- Indexing Plungers
- Spring Plungers
- Handwheels
- Clamping Levers
- Handles
- Clamping Knobs

The range of operating elements included in our standard components selection includes product lines such as fitting key, hard chrome plated bar, cold-drawn seamless H8 honed tube, clamping levers, handles, clamping knobs, indexing plungers, spring plungers, handwheels and hinges.
You can obtain these standard elements from our stocks with Guvenal Quality Assurance Label.

Cold-drawn, Seamless H8 Honed Tube

Code: H8B

All Cold Drawn Tubes are made of seamless and "St52" main material and stress relieving treatment is made. We offer 2 kinds of standard products. Standard lengths are 6 and 9 metres and custom production up to 14 metres can be made.

Code: H8B **Cold-drawn, Seamless H8 Honed Tube:** The outer surface is cold drawn, the inner surface is smooth honed and manufactured in H8 tolerance. Internal surface roughness is produced at Ra 04-08 micron values. You can obtain Honed Pipes from our stocks for the specified standard diameters.

Code: H9B **Ready to use Tube-H9:** Its inner surface is produced in H9 tolerance. The tubes are roller-burnished.

Cold-drawn Seamless Tubes custom-made on request:

Code: HYB

Hydraulic Line Tube (HYB): The tubes are made of seamless and "St37.4" material. Custom production is made according to your requests.

Code: TTB

Single Acting Telescopic Tube (TTB):
ID x OD (diameters - mm); 36 x 57 / 60 x 77 / 80 x 97 / 100 x 117 / 120 x 137 / 140 x 162 / 165 x 188 / 190 x 215.
Custom production is made according to your requests.

* Dimension tables are valid for both products (H8B & H9B).

Inner Diameter	Outer Diameter	Kg / 1 Metre
40 mm	50 mm	5.55
50 mm	60 mm	6.80
	65 mm	10.63
60 mm	70 mm	8.10
	75 mm	12.50
	80 mm	18.00
63 mm	75 mm	10.21
	78 mm	13.10
65 mm	80 mm	13.41
70 mm	80 mm	9.30
	85 mm	14.40
	90 mm	19.93
75 mm	90 mm	15.26
80 mm	90 mm	10.49
	95 mm	16.19
	100 mm	22.20
85 mm	100 mm	17.11
90 mm	105 mm	18.04
	110 mm	24.70
100 mm	115 mm	12.95
	120 mm	22.13
	125 mm	36.68
110 mm	125 mm	21.74
	130 mm	29.60
115 mm	130 mm	22.66
	135 mm	30.83

Inner Diameter	Outer Diameter	Kg / 1 Metre
120 mm	135 mm	23.59
	140 mm	32.06
	145 mm	40.85
	150 mm	49.94
125 mm	140 mm	24.51
	145 mm	33.30
	150 mm	42.39
130 mm	150 mm	34.53
	160 mm	53.64
135 mm	160 mm	45.47
140 mm	160 mm	37.00
	165 mm	47.10
	170 mm	57.34
145 mm	175 mm	59.25
150 mm	170 mm	39.47
	180 mm	61.04
160 mm	180 mm	41.93
	185 mm	53.18
	190 mm	64.74
170 mm	200 mm	68.44
180 mm	210 mm	72.14
	220 mm	98.65
190 mm	230 mm	103.58
200 mm	220 mm	51.79
	230 mm	79.53
	245 mm	123.46
220 mm	270 mm	151.20
250 mm	300 mm	169.54
320 mm	377 mm	244.93
350 mm	400 mm	231.30

* We can cut the tubes to the desired length.
* The specified kilogram information is approximate.

Order:
Code. ID x OD x Metre

Order Example:
H8B. 80 x 90 x 2

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Induction-hardened Chrome Plated Bar

Code: IKM

These chrome plated bars have a bright surface and induction-hardened (58-60 HRC). They are also used as hydraulic shafts/bars or as pillar for linear bearing systems. You can buy from our stocks with special packages of 1 metre in standard lengths and you can also buy in one-piece from 2 metres to 17 metres.
Please specify the desired length type when ordering (if not standard).

Material: CK45
Induction Hardness Depth: > 2 mm
Hardness: 58-60 HRC
Chrome Layer Thickness: Min. 20 Micron
Chrome Layer Hardness: 850 - 1150 Vickers
Tolerance: ISO f7
Straightness: 0,05 / 1000 mm
Surface Roughness: Ra 0,20 / 0,25 Micron

Hard Chrome Plated Bar

Code: SKM

These chrome plated bars have a bright surface. They are also used as hydraulic shafts/bars or as pillar for linear bearing systems. You can buy from our stocks with special packages of 1 metre in standard lengths and you can also buy in one-piece from 2 metres to 17 metres.
Please specify the desired length type when ordering (if not standard).

Material: CK45
Chrome Layer Thickness: Min. 20 Micron
Chrome Layer Hardness: 850 - 1150 Vickers
Tolerance: ISO f7
Straightness: 0,05 / 1000 mm
Surface Roughness: Ra 0,20 / 0,25 Micron

* Dimension tables are valid for both products (IKM & SKM).

Reference	Diameter	Length	Weight / 1 Metre
008	8 mm	1 Metre	0.390 kg
010	10 mm		0.620 kg
012	12 mm		0.890 kg
013	13 mm		1.040 kg
014	14 mm		1.210 kg
015	15 mm		1.390 kg
016	16 mm		1.580 kg
017	17 mm		1.780 kg
018	18 mm		2.000 kg
019	19 mm		2.220 kg
020	20 mm		2.460 kg
022	22 mm		2.980 kg
024	24 mm		3.550 kg
025	25 mm		3.927 kg
028	28 mm		4.927 kg
030	30 mm		5.650 kg
032	32 mm		6.440 kg
035	35 mm		7.700 kg
036	36 mm		8.140 kg
038	38 mm		9.080 kg
040	40 mm		10.06 kg
042	42 mm		11.09 kg
045	45 mm		12.72 kg
047	47 mm		13.89 kg
048	48 mm		14.48 kg

Reference	Diameter	Length	Weight / 1 Metre
050	50 mm	1 Metre	15.71 kg
055	55 mm		19.00 kg
056	56 mm		19.71 kg
060	60 mm		22.63 kg
063	63 mm		24.94 kg
065	65 mm		26.55 kg
070	70 mm		30.78 kg
075	75 mm		35.34 kg
080	80 mm		40.21 kg
085	85 mm		45.40 kg
090	90 mm		50.90 kg
095	95 mm		56.71 kg
100	100 mm		62.83 kg
105	105 mm		69.27 kg
110	110 mm		76.04 kg
115	115 mm		83.10 kg
120	120 mm		90.48 kg
125	125 mm		96.25 kg
130	130 mm		104.10 kg
140	140 mm		120.74 kg
150	150 mm		138.60 kg
160	160 mm		157.70 kg
180	180 mm		199.59 kg
200	200 mm		246.40 kg

Reference	Diameter	Length	Weight / 1 Metre
C01	½ inch (12.700 mm)	1 Metre	0.99 kg
C02	⅝ inch (15.875 mm)		1.55 kg
C03	¾ inch (19.050 mm)		2.24 kg
C04	1' inch (25.400 mm)		4.05 kg
C05	1' ¼ inch (31.750 mm)		6.34 kg
C06	1' ⅜ inch (37.975 mm)		7.69 kg
C07	1' ½ inch (38.100 mm)		9.12 kg
C08	1' ¾ inch (44.450 mm)		12.42 kg
C09	2' inch (50.800 mm)		16.22 kg
C10	2' ¼ inch (57.150 mm)		20.52 kg
C11	2' ½ inch (63.500 mm)		25.34 kg
C12	2' ¾ inch (69.850 mm)		30.65 kg
C13	3' inch (76.200 mm)		36.49 kg
C14	3' ¼ inch (82.550 mm)		42.82 kg
C15	3' ½ inch (88.900 mm)		49.65 kg
C16	4' inch (101.600 mm)		64.86 kg
C17	4' ½ inch (107.950 mm)		73.22 kg
C18	4' ¾ inch (114.300 mm)		82.09 kg
C19	5' inch (127.000 mm)		99.35 kg

* As standard, lengths in our stocks are 1 metre. However, you can order the products in one-piece or cut lengths.
* The specified kilogram information is approximate.
* All "Hard Chrome Plated Bars" & "Cold-drawn Seamless Tubes" are packaged by us in their special packaging.

Type of Packaging: The bars are covered with 1 mm thick plastic protection.
It is recommended that plastic protection be done without stripping off the bar during cutting.
With plastic protection, there is no problem in cutting with dry or wet.

Order:
Code. Reference

Order Example:
IKM. 025

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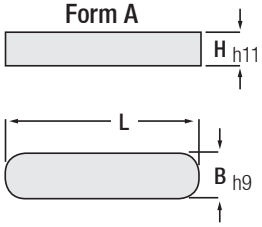

Parallel Key DIN 6885 - A

Code: GDKA

Parallel Keys Form A are available from our stocks at economic prices as standard.
Form B and Form AB are available on request.
All of our Parallel Keys are produced in accordance with DIN 6885 norm.

Material: CK45
Surface Roughness: Ra 0.36 - Rt. 2.6
Tensile Strength (N / mm²): 850
Yield Strength (N / mm²): 750

Our "Parallel Keys" available on request:

DIN 6885 - B

Code: GDKB

Form B

The dimension tables of the "GDKA" coded product (form A) are valid or you can make a custom-made order.

Order: Code. B x H x L Order Example: GDKB. 5 x 5 x 30

DIN 6885 - AB

Code: GDKAB

Form AB

The dimension tables of the "GDKA" coded product (form A) are valid or you can make a custom-made order.

Order: Code. B x H x L Order Example: GDKAB. 6 x 6 x 40

Order Code	B (mm)	H (mm)	L (mm)
GDKA.0202006	2	2	6
GDKA.0202008			8
GDKA.0202010			10
GDKA.0202012			12
GDKA.0202014			14
GDKA.0202015			15
GDKA.0202016			16
GDKA.0202018			18
GDKA.0202020			20
GDKA.0202022			22
GDKA.0202025			25
GDKA.0303006	3	3	6
GDKA.0303008			8
GDKA.0303010			10
GDKA.0303012			12
GDKA.0303014			14
GDKA.0303015			15
GDKA.0303016			16
GDKA.0303018			18
GDKA.0303020			20
GDKA.0303022			22
GDKA.0303024			24
GDKA.0303025			25
GDKA.0303026			26
GDKA.0303030			30
GDKA.0404010	4	4	10
GDKA.0404012			12
GDKA.0404014			14
GDKA.0404015			15
GDKA.0404016			16
GDKA.0404020			20
GDKA.0404024			24
GDKA.0404025			25
GDKA.0404030			30
GDKA.0404033			33
GDKA.0404035			35
GDKA.0404040			40
GDKA.0505010	5	5	10
GDKA.0505012			12
GDKA.0505014			14
GDKA.0505015			15
GDKA.0505016			16
GDKA.0505018			18
GDKA.0505020			20
GDKA.0505022			22
GDKA.0505024			24
GDKA.0505025			25
GDKA.0505028			28
GDKA.0505030			30
GDKA.0505032			32
GDKA.0505035			35
GDKA.0505040			40
GDKA.0505045			45
GDKA.0505050			50
GDKA.0505060			60

Order Code	B (mm)	H (mm)	L (mm)
GDKA.0606010	6	6	10
GDKA.0606012			12
GDKA.0606014			14
GDKA.0606015			15
GDKA.0606016			16
GDKA.0606020			20
GDKA.0606022			22
GDKA.0606025			25
GDKA.0606028			28
GDKA.0606030			30
GDKA.0606032			32
GDKA.0606035			35
GDKA.0606036			36
GDKA.0606040			40
GDKA.0606045			45
GDKA.0606050			50
GDKA.0606055			55
GDKA.0606060			60
GDKA.0807015	8	7	15
GDKA.0807016			16
GDKA.0807018			18
GDKA.0807020			20
GDKA.0807022			22
GDKA.0807025			25
GDKA.0807028			28
GDKA.0807030			30
GDKA.0807032			32
GDKA.0807033			33
GDKA.0807035			35
GDKA.0807036			36
GDKA.0807040			40
GDKA.0807045			45
GDKA.0807050			50
GDKA.0807055			55
GDKA.0807060			60
GDKA.0807065			65
GDKA.0807070			70
GDKA.0807075			75
GDKA.0807080			80
GDKA.0807085			85
GDKA.0807090			90
GDKA.0807100			100
GDKA.0807110			110
GDKA.0807120			120
GDKA.1008020	10	8	20
GDKA.1008022			22
GDKA.1008025			25
GDKA.1008030			30
GDKA.1008035			35
GDKA.1008040			40
GDKA.1008045			45
GDKA.1008050			50
GDKA.1008055			55
GDKA.1008060			60
GDKA.1008065			65

Order Code	B (mm)	H (mm)	L (mm)
GDKA.1008070	10	8	70
GDKA.1008075			75
GDKA.1008080			80
GDKA.1008085			85
GDKA.1008090			90
GDKA.1008100			100
GDKA.1008120			120
GDKA.1208020	12	8	20
GDKA.1208025			25
GDKA.1208030			30
GDKA.1208032			32
GDKA.1208035			35
GDKA.1208036			36
GDKA.1208040			40
GDKA.1208045			45
GDKA.1208050			50
GDKA.1208055			55
GDKA.1208060			60
GDKA.1208065			65
GDKA.1208070			70
GDKA.1208075			75
GDKA.1208080			80
GDKA.1208090			90
GDKA.1208100			100
GDKA.1208110			110
GDKA.1208120			120
GDKA.1409030	14	9	30
GDKA.1409035			35
GDKA.1409040			40
GDKA.1409045			45
GDKA.1409050			50
GDKA.1409060			60
GDKA.1409065			65
GDKA.1409070			70
GDKA.1409075			75
GDKA.1409080			80
GDKA.1409090			90
GDKA.1409100			100
GDKA.1409110			110
GDKA.1409120			120

Parallel Key DIN 6885 - B

GDKB.0404250	4	4	250
GDKB.0404500			500
GDKB.0505250	5	5	250
GDKB.0505500			500
GDKB.0606250	6	6	250
GDKB.0606500			500
GDKB.0807250	8	7	250
GDKB.0807500			500
GDKB.1008250	10	8	250
GDKB.1008500			500
GDKB.1208250	12	8	250
GDKB.1208500			500
GDKB.1409250	14	9	250
GDKB.1409500			500

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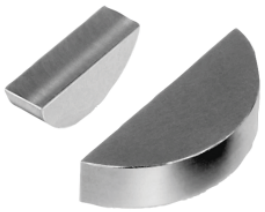
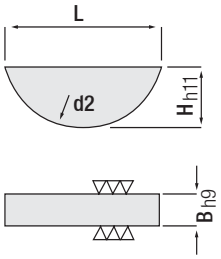
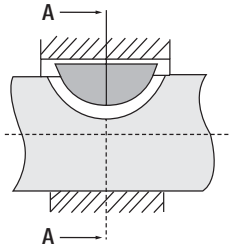
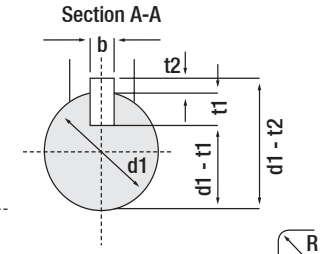
Woodruff Key DIN 6888

Code: GAK





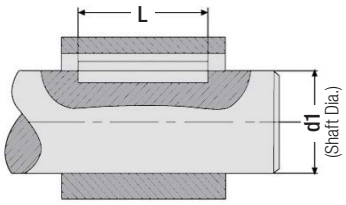


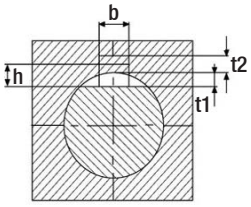


Material: CK45
Surface Roughness: Ra 0.36 - Rt. 2.6
Tensile Strength (N / mm²): 850
Yield Strength (N / mm²): 750

Order Code	B (mm)	H (mm)	L (mm)	d2 (mm)	d1		R	
					min.	max.	min.	max.
GAK.03050	3	5	12.65	13	8	10	0.16	0.25
GAK.04050	4	5			10	12		
GAK.03065	3	6.5	15.72	16	8	10		
GAK.04065	4	6.5			10	12		
GAK.05065	5	6.5			12	17		
GAK.04075	4	7.5	18.57	19	10	12	0.25	0.40
GAK.05075	5	7.5			12	17		
GAK.06075	6	7.5			17	22		
GAK.05090	5	9	21.63	22	12	17		
GAK.06090	6	9			17	22		
GAK.08090	8	9			22	30		
GAK.06110	6	11	27.35	28	17	22		
GAK.08110	8	11			22	30		
GAK.10110	10	11			30	38		

Key Slot Dimensions





DIN 6885

Shaft Dia. / min. max. (> - ≤)	b x h	t1	t2	Tolerance		Key Length (L)
				t1	t2	min. - max.
8 - 10	3 x 3	1.8	1.4	+0.1 0	+0.1 0	6 - 36
10 - 12	4 x 4	2.5	1.8			8 - 45
12 - 17	5 x 5	3	2.3			10 - 56
17 - 22	6 x 6	3.5	2.8			14 - 70
22 - 30	8 x 7	4	3.3	+0.2 0	+0.2 0	18 - 90
30 - 38	10 x 8	5				22 - 110
38 - 44	12 x 8					28 - 140
44 - 50	14 x 9	5.5	3.8			36 - 160

- The data are specified for informational purposes only.
- All dimensions are in mm.
- Length steps: 6, 8, 10, 12, 14, 15, 16, 18, 20, 22, 24, 25, 26, 28, 30, 32, 35, 36, 40, 45, 50, 55, 56, 60, 63, 65, 70, 75, 80, 85, 90, 100, 110, 120, 125, 140, 160, 180 and 200.

- Tolerances:
Shaft slot; interference fit P9 / clearance fit N9
Hole slot; interference fit P9 / clearance fit N9

DIN 6888

b		t1		t2		R2		d1	
b	Tolerance	t1	Tolerance	t2	Tolerance	min.	max.	Series 1 (> - ≤)	Series 2 (> - ≤)
1	+0.012 -0.012	1	+0.01 0	0.6	+0.01 0	0.16	0.08	3 - 4	3 - 4
1.5		2		0.8				4 - 5	4 - 6
2		1.8		1				5 - 6	6 - 8
		2.9		1				6 - 7	8 - 10
2.5		2.7		1.2				7 - 8	10 - 12
3		3.8	+0.2 0	1.4				8 - 10	12 - 15
		5.3		1.5				10 - 12	15 - 18
4	+0.015 -0.015	5		1.8		0.25	0.16	12 - 14	18 - 20
		6						14 - 16	20 - 22
5		4.5		2.3				16 - 18	22 - 25
		5.5						18 - 20	25 - 28
		7	+0.3 0					20 - 22	28 - 32
6		6.5		2.8				22 - 25	32 - 36
		7		3.3	+0.02 0			25 - 28	36 - 40
8	+0.018 -0.018	8						28 - 32	> 40
10		10				0.40	0.25	32 - 36	-

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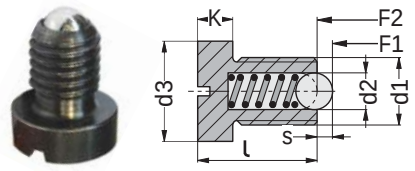


Mounting: Fixing with screwdriver.

Heat Resistance Max.: 250^{0}C.

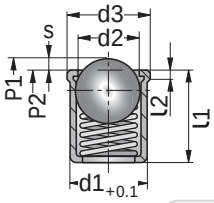
Spring Plunger with Slotted Head

Code: SBS

d1	l	s	d2	d3	K	F1(N)	F2(N)
M6	14	1	3.5	10	5	11	18
M8	16.5	1.5	4.5	13	5	18	31
M10	20	2	6	16	6	24	45
M12	22	2.5	8	18	7	24	49

Order: SBS. d1

Material: Steel quality 5.8



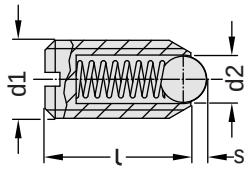
Spring Plunger with Bushing

Code: KBS

d1	l1	d2	d3	l2	s	P1(N)	P2(N)
4	5	3.0	4.6	1	0.90	2	5
5	6	4.0	5.6		1.00	4	7
6	7	5.0	6.5		1.50	6	12
8	9	6.5	8.5		1.80	6	12

Order: KBS. d1

Material: Steel quality 5.8



Spring Plunger

Code: BSM

It is used as core / slide lock etc. in injection mould. As stamp extractor in die and also can be used for bushing of threaded shafts, limiting the torque tools and positioning of level adjuster.
Material structure; machinable steel bushing - hardened bearing steel ball - winding steel spring.

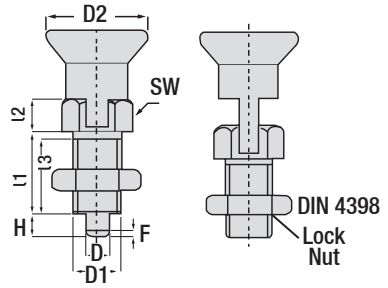
Heat Resistance Maximum: 250^{0}C.
Mounting: Fixing with screwdriver.

Usage Area:
- Locating - Pulling, pushing - Extractor - Clamping

d1 (thread)	l mm	S mm	d2 mm	Initial Force	Final Force
M4	9	0.8	2.5	6 Nw	12 Nw
M5	12	0.9	3.0	7 Nw	13 Nw
M6	14	1.0	3.5	9 Nw	15 Nw
M8	16	1.5	5.0	20 Nw	35 Nw
M10	19	2.0	6.0	25 Nw	45 Nw
M12	22	2.5	8.0	35 Nw	60 Nw
M16	24	3.5	10	65 Nw	110 Nw

Order: BSM. d1

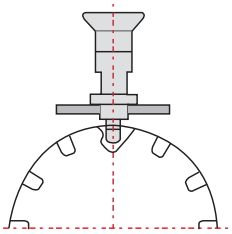
Material: Steel quality 5.8



Indexing Plunger with Lock Nut

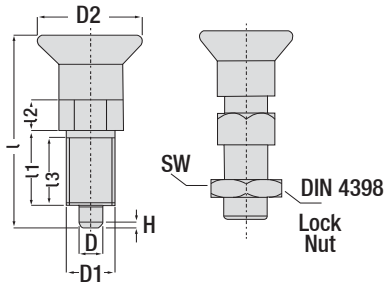
Code: MM102ST

Movable Support Pin



Material Structure:
Coated steel material
(or stainless steel - 304)
Locking Pin:
Hardened steel
(or stainless steel - 304)
Handle:
Plastic (PA6) black
non-demountable head

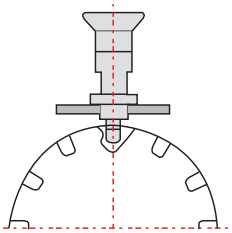
Order Code	D -0.02 /-0.04	D1	D2	L	L1	L2	L3	H	SW
MM102ST05	5	M10x1.0	21	43.7	17	7	15	5	12
MM102ST06	6	M12x1.5	25	51.7	20	7	17	6	14
MM102ST08	8	M16x1.5	33	68.7	26	10	23	8	19
MM102ST10	10	M20x1.5	33	74	28	12	25	10	22
MM102ST12	12	M20x1.5	33	78	28	14	25	12	22



Indexing Plunger

Code: MM101ST

Fixed Support Pin



Material Structure:
Coated steel material
(or stainless steel - 304)
Locking Pin:
Hardened steel
(or stainless steel - 304)
Handle:
Plastic (PA6) black
non-demountable head

Order Code	D -0.02 /-0.04	D1	D2	L	L1	L2	L3	H	SW
MM101ST05	5	M10x1.0	21	43.7	17	7	15	5	12
MM101ST06	6	M12x1.5	25	51.7	20	7	17	6	14
MM101ST08	8	M16x1.5	33	68.7	26	10	23	8	19
MM101ST10	10	M20x1.5	33	74	28	12	25	10	22
MM101ST12	12	M20x1.5	33	78	28	14	25	12	22

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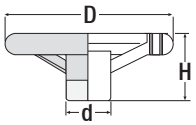
Spoked Handwheel - Plastic

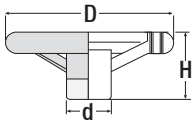
Code: GV



Order Code	D (mm)	H (mm)	d (mm)	Handle Hole
GV100	100	40	30	M8
GV125	125	45	30	M8
GV150	150	50	50	M10
GV200	200	55	50	M10

Spoked Handwheel - Aluminium

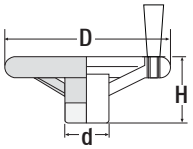
Code: GEAV



Order Code	D (mm)	H (mm)	d (mm)
GEAV80	80	28	24
GEAV100	100	35	25
GEAV125	125	38	28
GEAV150	150	40	33
GEAV200	200	45	40
GEAV250	250	65	50

Spoked Handwheel with Handle -Plastic

Code: GV2

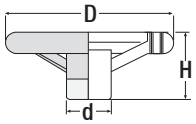


Order Code	D (mm)	H (mm)	d (mm)	Handle Hole	Revolving Handle
GV2100	100	40	30	M8	GPDS12
GV2125	125	45	30	M8	GPDS12
GV2150	150	50	50	M10	GPDS13
GV2200	200	55	50	M10	GPDS13

Spoked Handwheel - Aluminium

Code: GEAV2

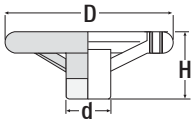
* Black painted



Order Code	D (mm)	H (mm)	d (mm)
GEAV280	80	28	24
GEAV2100	100	35	25
GEAV2125	125	38	28
GEAV2150	150	40	33
GEAV2200	200	45	40
GEAV2250	250	65	50

Spoked Handwheel - Plastic

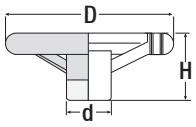
Code: GEPV



Order Code	D (mm)	H (mm)	d (mm)	Handle Hole
GEPV100	100	40	30	M6
GEPV125	125	50	40	M6
GEPV150	150	60	50	M8
GEPV175	175	65	50	M10
GEPV200	200	70	50	M10

Spoked Handwheel - Cast Iron

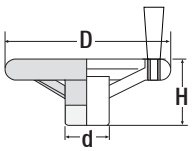
Code: GEDV



Order Code	D (mm)	H (mm)	d (mm)
GEDV100	100	35	30
GEDV125	125	40	40
GEDV150	150	45	45
GEDV200	200	50	50

Spoked Handwheel with Handle -Plastic

Code: GEPV2

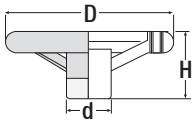


Order Code	D (mm)	H (mm)	d (mm)	Handle Hole	Revolving Handle
GEPV2100	100	40	30	M6	GPDS11
GEPV2125	125	50	40	M6	GPDS11
GEPV2150	150	60	50	M8	GPDS12
GEPV2175	175	65	50	M10	GPDS13
GEPV2200	200	70	50	M10	GPDS13

Spoked Handwheel - Cast Iron

Code: GEDV2

* Black painted



Order Code	D (mm)	H (mm)	d (mm)
GEDV2100	100	35	30
GEDV2125	125	40	40
GEDV2150	150	45	45
GEDV2200	200	50	50

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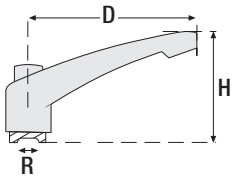
Adjustable Clamping Lever, Female -Steel

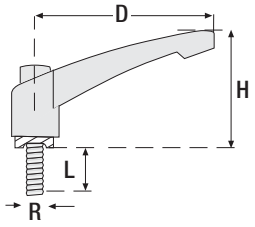
Code: GSMK



Order Code	D (mm)	R (mm)	Hole Length	H (mm)
GSMK4505	45	M5	10	36
GSMK4506	45	M6		
GSMK6006	60	M6	12	40
GSMK6008	60	M8		
GSMK6010	60	M10		
GSMK6012	60	M12		
GSMK8006	80	M6	12	45
GSMK8008	80	M8		
GSMK8010	80	M10		
GSMK8012	80	M12		
GSMK10012	100	M12	20	55
GSMK10014	100	M14		
GSMK10016	100	M16		

Adjustable Clamping Lever, Male -Stainless Steel

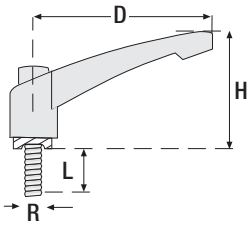
Code: GSPX



Order Code	D (mm)	R (mm)	L (mm)	H (mm)
GSPX600630	60	M6	30	45
GSPX600830	60	M8		
GSPX601030	60	M10		
GSPX601230	60	M12		
GSPX800630	80	M6	30	45
GSPX800830	80	M8		
GSPX801030	80	M10		
GSPX801230	80	M12		

Adjustable Clamping Lever, Male -Steel

Code: GSMK



Order Code	D (mm)	R (mm)	L (mm)	H (mm)
GSMK450515	45	M5	15	36
GSMK450530	45	M5	30	
GSMK450615	45	M6	15	
GSMK450630	45	M6	30	
GSMK600630	60	M6	30	40
GSMK600650	60	M6	50	
GSMK600830	60	M8	30	
GSMK600850	60	M8	50	
GSMK601030	60	M10	30	
GSMK601050	60	M10	50	
GSMK601230	60	M12	30	
GSMK601250	60	M12	50	
GSMK800630	80	M6	30	45
GSMK800650	80	M6	50	
GSMK800830	80	M8	30	
GSMK800850	80	M8	50	
GSMK801030	80	M10	30	
GSMK801050	80	M10	50	
GSMK801230	80	M12	30	
GSMK801250	80	M12	50	
GSMK1001230	100	M12	30	55
GSMK1001250	100	M12	50	
GSMK1001440	100	M14	40	
GSMK1001460	100	M14	60	
GSMK1001640	100	M16	40	
GSMK1001660	100	M16	60	

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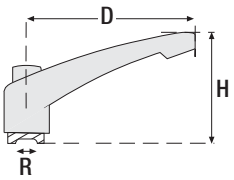
Adjustable Clamping Lever, Female -Steel / Black Painted

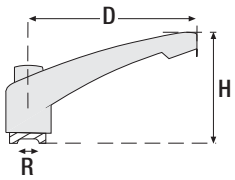
Code: GSM



Order Code	D (mm)	R (mm)	Hole Length	H (mm)
GSM4505	45	M5	10	36
GSM4506	45	M6		
GSM6006	60	M6	12	40
GSM6008	60	M8		
GSM6010	60	M10		
GSM6012	60	M12		
GSM8006	80	M6	12	45
GSM8008	80	M8		
GSM8010	80	M10		
GSM8012	80	M12		
GSM10012	100	M12	20	55
GSM10014	100	M14		
GSM10016	100	M16		

Adjustable Clamping Lever, Female -Steel / Orange Painted

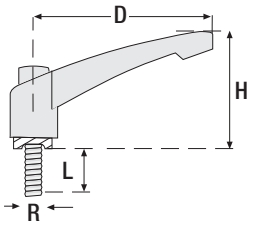
Code: GSMT



Order Code	D (mm)	R (mm)	Hole Length	H (mm)
GSMT4505	45	M5	10	36
GSMT4506	45	M6		
GSMT6006	60	M6	12	40
GSMT6008	60	M8		
GSMT6010	60	M10		
GSMT6012	60	M12		
GSMT8006	80	M6	12	45
GSMT8008	80	M8		
GSMT8010	80	M10		
GSMT8012	80	M12		
GSMT10012	100	M12	20	55
GSMT10014	100	M14		
GSMT10016	100	M16		

Adjustable Clamping Lever, Male -Steel / Black Painted

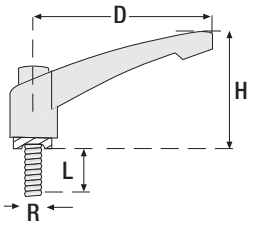
Code: GSM



Order Code	D (mm)	R (mm)	L (mm)	H (mm)
GSM450515	45	M5	15	36
GSM450530	45	M5	30	
GSM450615	45	M6	15	
GSM450630	45	M6	30	
GSM600630	60	M6	30	40
GSM600650	60	M6	50	
GSM600830	60	M8	30	
GSM600850	60	M8	50	
GSM601030	60	M10	30	
GSM601050	60	M10	50	
GSM601230	60	M12	30	
GSM601250	60	M12	50	
GSM800630	80	M6	30	45
GSM800650	80	M6	50	
GSM800830	80	M8	30	
GSM800850	80	M8	50	
GSM801030	80	M10	30	
GSM801050	80	M10	50	
GSM801230	80	M12	30	
GSM801250	80	M12	50	
GSM1001230	100	M12	30	55
GSM1001250	100	M12	50	
GSM1001440	100	M14	40	
GSM1001460	100	M14	60	
GSM1001640	100	M16	40	
GSM1001660	100	M16	60	

Adjustable Clamping Lever, Male -Steel / Orange Painted

Code: GSMT



Order Code	D (mm)	R (mm)	L (mm)	H (mm)
GSMT450515	45	M5	15	36
GSMT450530	45	M5	30	
GSMT450615	45	M6	15	
GSMT450630	45	M6	30	
GSMT600630	60	M6	30	40
GSMT600650	60	M6	50	
GSMT600830	60	M8	30	
GSMT600850	60	M8	50	
GSMT601030	60	M10	30	
GSMT601050	60	M10	50	
GSMT601230	60	M12	30	
GSMT601250	60	M12	50	
GSMT800630	80	M6	30	45
GSMT800650	80	M6	50	
GSMT800830	80	M8	30	
GSMT800850	80	M8	50	
GSMT801030	80	M10	30	
GSMT801050	80	M10	50	
GSMT801230	80	M12	30	
GSMT801250	80	M12	50	
GSMT1001230	100	M12	30	55
GSMT1001250	100	M12	50	
GSMT1001440	100	M14	40	
GSMT1001460	100	M14	60	
GSMT1001640	100	M16	40	
GSMT1001660	100	M16	60	

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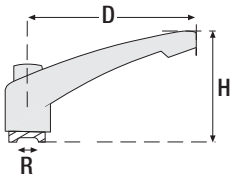
Adjustable Clamping Lever, Female -Plastic / Black Painted

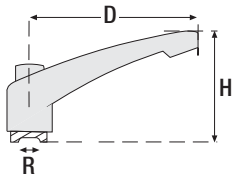
Code: GSP



Order Code	D (mm)	R (mm)	Hole Length	H (mm)
GSP6006	60	M6	12	45
GSP6008	60	M8		
GSP6010	60	M10		
GSP6012	60	M12		
GSP8006	80	M6	12	45
GSP8008	80	M8		
GSP8010	80	M10		
GSP8012	80	M12		

Adjustable Clamping Lever, Female -Plastic / Orange Painted

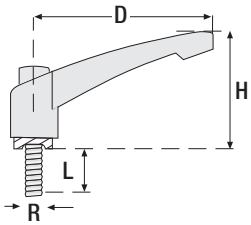
Code: GSPT



Order Code	D (mm)	R (mm)	Hole Length	H (mm)
GSPT6006	60	M6	12	45
GSPT6008	60	M8		
GSPT6010	60	M10		
GSPT6012	60	M12		
GSPT8006	80	M6	12	45
GSPT8008	80	M8		
GSPT8010	80	M10		
GSPT8012	80	M12		

Adjustable Clamping Lever, Male -Plastic / Black Painted

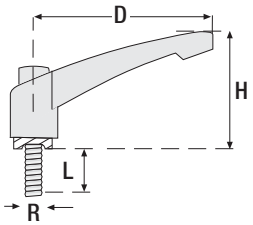
Code: GSP



Order Code	D (mm)	R (mm)	L (mm)	H (mm)
GSP600630	60	M6	30	45
GSP600640	60	M6	40	
GSP600830	60	M8	30	45
GSP600840	60	M8	40	
GSP600850	60	M8	50	
GSP601030	60	M10	30	45
GSP601040	60	M10	40	
GSP601050	60	M10	50	
GSP601060	60	M10	60	
GSP601230	60	M12	30	45
GSP601240	60	M12	40	
GSP601250	60	M12	50	
GSP601260	60	M12	60	
GSP800630	80	M6	30	45
GSP800640	80	M6	40	
GSP800830	80	M8	30	45
GSP800840	80	M8	40	
GSP800850	80	M8	50	
GSP801030	80	M10	30	45
GSP801040	80	M10	40	
GSP801050	80	M10	50	
GSP801060	80	M10	60	
GSP801230	80	M12	30	45
GSP801240	80	M12	40	
GSP801250	80	M12	50	
GSP801260	80	M12	60	

Adjustable Clamping Lever, Male -Plastic / Orange Painted

Code: GSPT



Order Code	D (mm)	R (mm)	L (mm)	H (mm)
GSPT600630	60	M6	30	45
GSPT600640	60	M6	40	
GSPT600830	60	M8	30	45
GSPT600840	60	M8	40	
GSPT600850	60	M8	50	
GSPT601030	60	M10	30	45
GSPT601040	60	M10	40	
GSPT601050	60	M10	50	
GSPT601060	60	M10	60	
GSPT601230	60	M12	30	45
GSPT601240	60	M12	40	
GSPT601250	60	M12	50	
GSPT601260	60	M12	60	
GSPT800630	80	M6	30	45
GSPT800640	80	M6	40	
GSPT800830	80	M8	30	45
GSPT800840	80	M8	40	
GSPT800850	80	M8	50	
GSPT801030	80	M10	30	45
GSPT801040	80	M10	40	
GSPT801050	80	M10	50	
GSPT801060	80	M10	60	
GSPT801230	80	M12	30	45
GSPT801240	80	M12	40	
GSPT801250	80	M12	50	
GSPT801260	80	M12	60	

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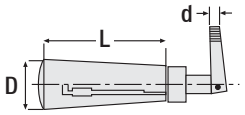
Fold-away Handle -Steel / Black Painted

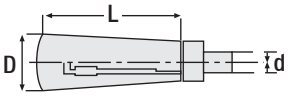
Code: GEVS



Order Code	d (mm)	L (mm)	D (mm)
GEVS11	M6	50	20
GEVS12	M8	65	22
GEVS13	M10	70	24

Revolving Handle -Steel / Chrome Coated

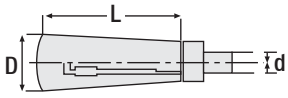
Code: GEDM



Order Code	d (mm)	L (mm)	D (mm)
GEDM11	M6	55	20
GEDM12	M8	70	22
GEDM13	M10	70	24

Revolving Handle -Plastic / Black Painted

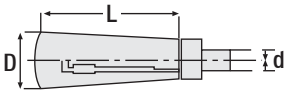
Code: GPDS



Order Code	D (mm)	L (mm)	d (mm)
GPDS11	M6	50	21
GPDS12	M8	60	22
GPDS13	M10	70	23
GPDS14	M12	70	23

Revolving Handle -Steel / Black Painted

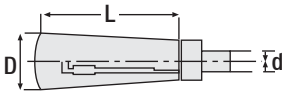
Code: GADS



Order Code	D (mm)	L (mm)	d (mm)
GADS11	M6	45	19
GADS12	M8	55	19
GADS13	M10	75	24
GADS14	M12	85	24

Revolving Handle -Aluminium / Chrome Coated

Code: GADK



Order Code	D (mm)	L (mm)	d (mm)
GADK11	M6	45	19
GADK12	M8	55	19
GADK13	M10	75	24
GADK14	M12	85	24

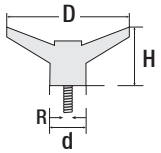
Latches

Code: GK

Order Code	GK1	GK2	GK3	GK2A	GK3A
Type	Ratchet	With Socket Key	With Key	Socket Key	Key

Three-arm Knob, Male -Plastic / Black Painted

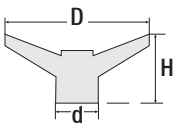
Code: GET



Order Code	D (mm)	d (mm)	R	H (mm)
GET80M1030	80	30	M10 x 30	36
GET80M1050	80		M10 x 50	
GET80M1080	80		M10 x 80	
GET100M1230	100	36	M12 x 30	45
GET100M1250	100		M12 x 50	
GET100M1280	100		M12 x 80	

Three-arm Knob, Female -Plastic / Black Painted

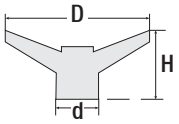
Code: GET



Order Code	D (mm)	d (mm)	Hole	H (mm)
GET80M10	80	30	M10	36
GET100M12	100	36	M12	45

Three-arm Knob -Plastic / Black Painted

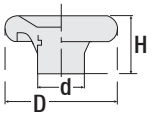
Code: GET



Order Code	D (mm)	d (mm)	H (mm)
GET80	80	30	50
GET100	100	36	60

Lobe Knob -Duroplast / Black Painted

Code: GEBT



Order Code	D (mm)	H (mm)	d (mm)
GEBT65	65	46	25
GEBT80	80	50	30
GEBT100	100	60	35

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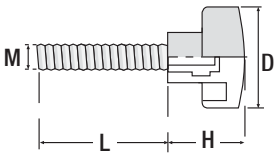
Lobe Knob, Male
-Plastic / Black Painted

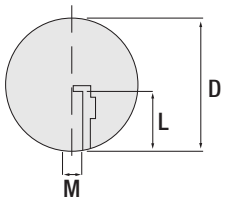
Code: GKP



Order Code	D (mm)	M	H (mm)	L (mm)
GKP631050	63	M10	35	50
GKP631060		M10		60
GKP631070		M10		70
GKP631250	63	M12	35	50
GKP631260		M12		60
GKP631270		M12		70

Ball Knob
-Duroplast / Black Painted

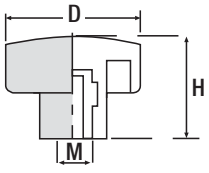
Code: GTP



Order Code	D (mm)	M	L (mm)
GTP2506	25	M6	10
GTP2508		M8	14
GTP3006	30	M6	10
GTP3008		M8	14
GTP3010		M10	16
GTP3506	35	M6	10
GTP3508		M8	14
GTP3510		M10	16
GTP4008	40	M8	14
GTP4010		M10	16
GTP4012		M12	20

Lobe Knob, Female
-Duroplast / Black Painted

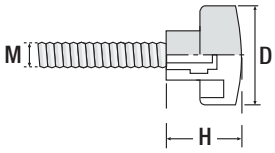
Code: GKE



Order Code	D (mm)	M	H (mm)
GKE3006	30	M6	26
GKE3008		M8	
GKE4006	40	M6	29
GKE4008		M8	
GKE4010		M10	
GKE5008	50	M8	32
GKE5010		M10	
GKE5012		M12	
GKE6308	63	M8	38
GKE6310		M10	
GKE6312		M12	

Lobe Knob, Male
-Duroplast / Black Painted

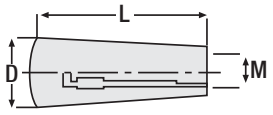
Code: GKE



Order Code	D (mm)	M	H (mm)
GKE300615	30	M6 x 15	26
GKE300820		M8 x 20	
GKE400620	40	M6 x 20	29
GKE400820		M8 x 20	
GKE401025		M10 x 25	
GKE500825	50	M8 x 25	32
GKE501030		M10 x 30	
GKE501235		M12 x 35	
GKE630830	63	M8 x 30	38
GKE631030		M10 x 30	
GKE631235		M12 x 35	

Tapered Handle, Female
-Duroplast / Black Painted

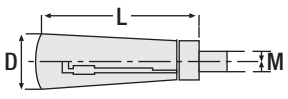
Code: GKOL



Order Code	M	L (mm)	D (mm)
GKOL1806	M6	40	18
GKOL2108	M8	50	21
GKOL2310	M10	60	23
GKOL2610	M10	75	26
GKOL2812	M12	90	28

Tapered Handle, Male
-Duroplast / Black Painted

Code: GKOL



Order Code	M	L (mm)	D (mm)
GKOL1806E	M6 x 15	40	18
GKOL2108E	M8 x 15	50	21
GKOL2310E	M10 x 20	60	23
GKOL2610E	M10 x 20	75	26
GKOL2812E	M12 x 20	90	28

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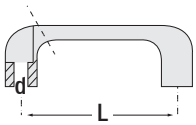
Aluminium Handle

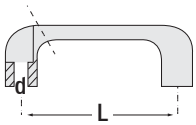
Code: GEPT



Order Code	L (mm)	Ø Tube	d
GEPT200	200	20	M10
GEPT300	300		
GEPT400	400		
GEPT500	500		

Polyamide Handle

Code: GEPT



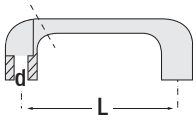
Order Code	L (mm)	d	Colour
GEPT01	116	M8	Black
GEPT02	138		Black
GEPT01. Colour	116		Optional
GEPT02. Colour	138		Optional

T orange K red S yellow M blue G grey

Order Example: GEPT01.T

Duroplast Handle

Code: GEPT



Order Code	L (mm)	Ø Tube	d
GEPT130	130	16	M5
GEPT240	240		

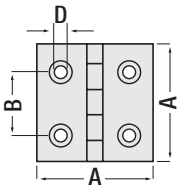
Polyamide Hinge

Code: GEPM

Order Code	A (mm)	B (mm)	D
GEPM11	48	30	6.5 mm
GEPM12	48	30	M6
GEPM13	48	30	M6 x 15
GEPM14	48	30	M6 x 15

Zinc Die Casting Hinge

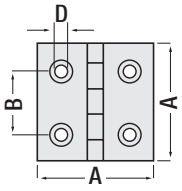
Code: GEPM



Order Code	Colour	A (mm)	B (mm)	D (mm)
GEPM4040	Chrome	40	25	5
GEPM5050		50	30	6
GEPM6060		60	36	8
GEPM4040S	Black	40	25	5
GEPM5050S		50	30	6
GEPM6060S		60	36	8

Steel Hinge

Code: GEKO



Order Code	Colour	A (mm)	B (mm)	D (mm)
GEKO4040	Chrome	40	25	5
GEKO5050		50	30	6
GEKO6060		60	36	8
GEKO4040S	Black	40	25	5
GEKO5050S		50	30	6
GEKO6060S		60	36	8

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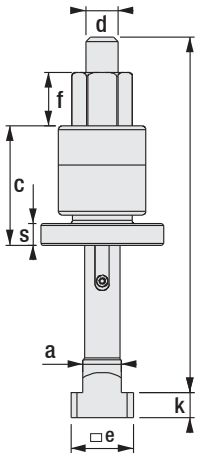


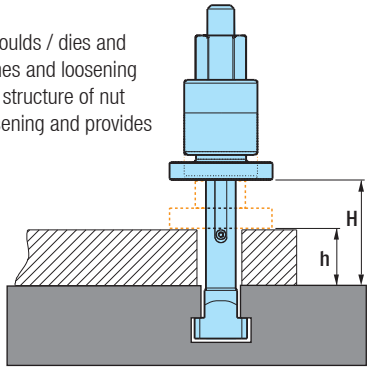
Combined Bolt for T-Slot

Heavy Duty Type

Code: 1630

It is used to clamp the heavy workpieces.
By minimizing the vibration occuring at larger moulds / dies and workpieces on large presses or injection machines and loosening resulting from vibration due to contra tightening structure of nut system on the product, it prevents potential loosening and provides precision working.

Class: 12.9 / black coated

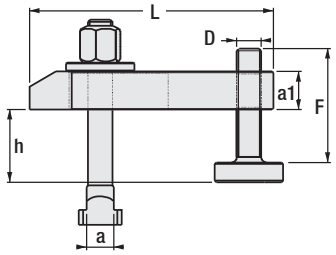


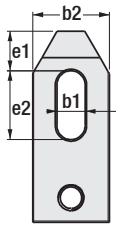
Environments on the 150^0 when clamping on the thread Loctite 8150 is used.

Order Code	a dx xL	a mm	e mm	k mm	h - H mm	e1 mm	e2 mm	c mm	s mm	f mm	SW	Clamping Forces Nm	Clamping Forces kN	Weight (g)
1630-20.22.200	M20 x 22 x 200	21.7	35	14	25 - 75	49	69	92	12	30	30	679	215	1635
1630-20.22.250	M20 x 22 x 250	21.7	35	14	70 - 120	49	69	92	12	30	30	679	215	1720
1630-24.24.200	M24 x 24 x 200	23.7	40	16	25 - 75	53	74	92	12	30	36	1163	310	2075
1630-24.24.250	M24 x 24 x 250	23.7	40	16	70 - 120	53	74	92	12	30	36	1163	310	2250
1630-24.28.200	M24 x 28 x 200	27.7	44	18	25 - 75	53	74	92	12	30	36	1163	310	2180
1630-24.28.250	M24 x 28 x 250	27.7	44	18	70 - 120	53	74	92	12	30	36	1163	310	2340
1630-30.36.200	M30 x 36 x 200	35.6	54	22	25 - 75	68	88	94	14	30	46	2258	493	3660
1630-30.36.250	M30 x 36 x 250	35.6	54	22	70 - 120	68	88	94	14	30	46	2258	493	3910

Combined Clamp with Adjusting Support Screw

Code: 1170





*As per request, lifting washer is provided separately.

Heights can be adjusted with support screw.
Product is suitable to DIN 650 T-Slot.

Order Code	a	L mm	Code: 1330 a1 mm	Code: 1330 b2 mm	e1 mm	e2 mm	b1 mm	Code: 1610	h mm	Code: 1490 D x F	Weight (g)
1170-1010080	10	80	15	30	15	30	11	M10 x 10 x 80	10 - 35	M10 x 42	370
1170-1212100	12	100	20	40	21	40	14.5	M12 x 12 x 100	12 - 40	M12 x 50	740
1170-1212125	12	125	20	40	21	50	14.5	M12 x 12 x 125	12 - 85	M12 x 95	940
1170-1214100	14	100	20	40	21	40	14.5	M12 x 14 x 100	12 - 40	M12 x 50	705
1170-1214125	14	125	20	40	21	50	14.5	M12 x 14 x 125	12 - 85	M12 x 95	965
1170-1616125	16	125	25	50	26	45	18.5	M16 x 16 x 125	15 - 50	M16 x 62	1115
1170-1616160	16	160	25	50	26	65	18.5	M16 x 16 x 160	15 - 85	M16 x 97	1870
1170-1618125	18	125	25	50	26	45	18.5	M16 x 18 x 125	15 - 50	M16 x 62	1540
1170-1618160	18	160	25	50	26	65	18.5	M16 x 18 x 160	15 - 85	M16 x 97	1900
1170-2020160	20	160	30	60	30	60	22.5	M20 x 20 x 160	15 - 45	M20 x 62	1675
1170-2020200	20	200	30	60	30	80	22.5	M20 x 20 x 200	15 - 80	M20 x 97	3295
1170-2022160	22	160	30	60	30	60	22.5	M20 x 22 x 160	15 - 45	M20 x 62	2730
1170-2022200	22	200	30	60	30	80	22.5	M20 x 22 x 200	15 - 80	M20 x 97	3340
1170-2424160	24	160	30	70	35	60	26.5	M24 x 24 x 160	16 - 60	M24 x 81	3465
1170-2424200	24	200	30	70	35	80	26.5	M24 x 24 x 200	16 - 95	M24 x 116	4660
1170-2428160	28	160	30	70	35	60	26.5	M24 x 28 x 160	16 - 60	M24 x 81	5560
1170-2428200	28	200	30	70	35	80	26.5	M24 x 28 x 200	16 - 95	M24 x 116	4755

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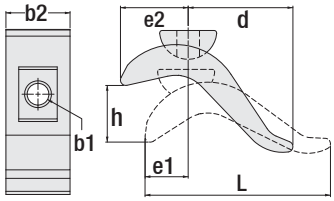
Stepless Height Adjustable Clamp

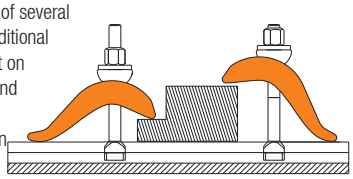
Code: 1200

Please check our "Volume-2" catalogue for all other Clamping Tools.



Stepless clamp for fast adjusting of several ranges of work height without additional supports. Low space requirement on machine table. Heavy duty type and especially suitable for clamping dies & moulds to press & injection and milling machines.

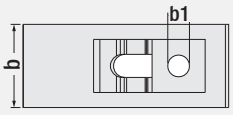
Material: Forged and hardened steel / zinc coated



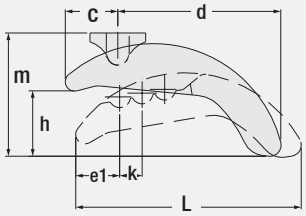
Order Code	a	DIN 787	b1 mm	b2 x L	d mm	e1 mm	e2 mm	h	Weight (g)
1200-50.140	-	-	17	50 x 140	60	30	55	75	900
1200-60.175	-	-	21	60 x 175	80	40	70	85	1600
1200-12.125	12	M12 x 12 x 125	17	50 x 140	60	30	55	0 - 50	1070
1200-14.125	14	M12 x 14 x 125						0 - 55	1080
1200-16.160	16	M16 x 16 x 160						0 - 75	1270
1200-18.160	18	M16 x 18 x 160						0 - 75	1280
1200-20.200	20	M20 x 20 x 200	21	60 x 175	80	40	70	0 - 85	2300
1200-22.200	22	M20 x 22 x 200						0 - 85	2370

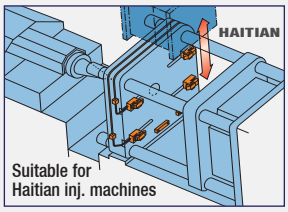
Stepped Height Adjustable Clamp

Code: 1205



Material: Forged and hardened steel / zinc coated



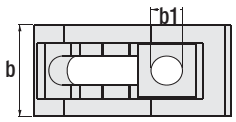


It provides using between 15-85 mm without supporting.

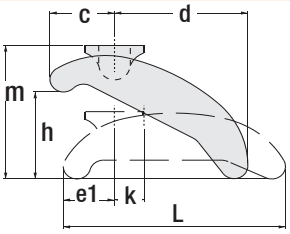
Order Code	b1 mm	a	DIN 787	m mm	h	b x L	c mm	d mm	k x3	Weight (g)
1205-017	17	16 - 18	-	93	15 - 50	65 x 165	39	128	17	2100
1205-021	21	20 - 22	-	111	20 - 65	75 x 189	43	146	19	3200
1205-025	25	24 - 28	-	126	20 - 75	85 x 213	49	164	21	4500
1205-031	31	36	-	143.5	20 - 85	95 x 238	56	182	23	6300
1205-016	17	16	M16 x 16 x 125	93	15 - 50	65 x 165	39	128	17	2500
1205-018	17	18	M16 x 18 x 125	93	15 - 50	65 x 165	39	128	17	2500
1205-020	21	20	M20 x 20 x 160	111	20 - 65	75 x 189	43	146	19	3900
1205-022	21	22	M20 x 22 x 160	111	20 - 65	75 x 189	43	146	19	3900
1205-024	25	24	M24 x 24 x 200	126	20 - 75	85 x 213	49	164	21	5700
1205-028	25	28	M24 x 28 x 200	126	20 - 75	85 x 213	49	164	21	5700
1205-036	31	36	M30 x 36 x 250	143.5	20 - 85	95 x 238	56	182	23	8800

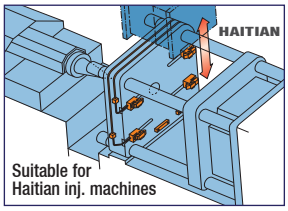
Stepped Height Adjustable Clamp

Code: 1210



Material: Forged and hardened steel / zinc coated





It provides using between 0-75 mm without supporting.

Order Code	b1 mm	a	DIN 787	m mm	h	b x L	c mm	d mm	e1 mm	k x4	Weight (g)
1210-013	13	12 - 14	-	52	0 - 40	40 x 90	28	48	23	17	340
1210-017	18	16 - 18	-	80	0 - 60	58 x 130	38	74	29	19	990
1210-021	22	20 - 22	-	98	0 - 75	68 x 140	46	80	32	21	1450
1210-025	26	24 - 28	-	110	0 - 90	78 x 175	52	100	39	23	2360
1210-012	13	12	M12 x 12 x 100	52	0 - 40	40 x 90	28	48	23	17	400
1210-014	13	14	M12 x 14 x 100	52	0 - 40	40 x 90	28	48	23	17	420
1210-016	18	16	M16 x 16 x 160	80	0 - 60	58 x 130	38	74	29	19	1140
1210-018	18	18	M16 x 18 x 160	80	0 - 60	58 x 130	38	74	29	19	1145
1210-020	22	20	M20 x 20 x 200	98	0 - 75	68 x 140	46	80	32	23	1560

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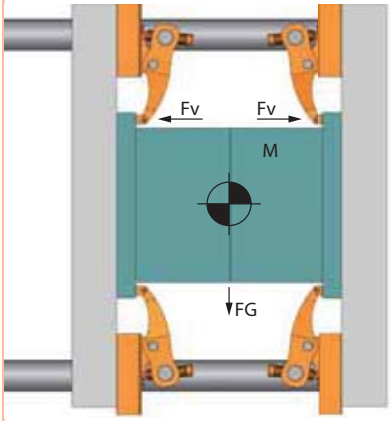
Clamping Templates



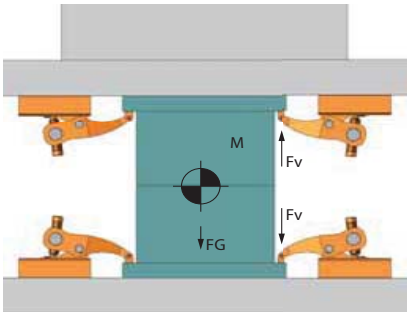
For Injection Moulds:

Formula Calculator

$\frac{M \times FG}{1000} = kN$ $\qquad \frac{2500 \times 9.81\ kg}{1000} = 24.52\ kN$

$\frac{kN}{\mu} = Result$ $\qquad \frac{24.52}{0.14} = 175.14\ kN$

$\frac{Result}{Fv} = Number\ of\ Clamp$ $\qquad \frac{175.14\ kN}{25\ kN} = 7\ Clamp$ Use 8 pcs.



For Press Dies:

Formula Calculator

$\frac{M \times FG}{1000} = kN$ $\qquad \frac{5000 \times 9.81\ kg}{1000} = 49.050\ kN$

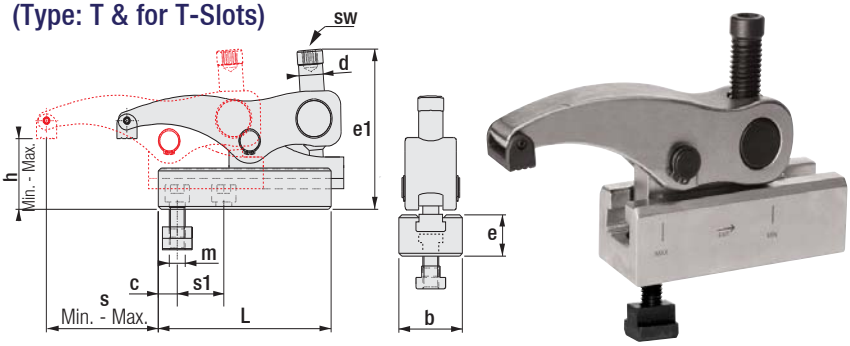
$\frac{kN}{\mu} = Result$ (Upper Die 60 %) (Lower Die 40 %) $\qquad \frac{49.05}{0.14} = 350.35\ kN$ (60 % Upper Die = 210.21) (40 % Lower Die = 140.14)

$\frac{Result_{(Upper\ Die)}}{Fv} = Number\ of\ Clamp$ $\qquad \frac{210.21\ kN_{(Upper\ Die)}}{25\ kN} = 8\ Number\ of\ Clamp$

$\frac{Result_{(Lower\ Die)}}{Fv} = Number\ of\ Clamp$ $\qquad \frac{140.14\ kN_{(Lower\ Die)}}{25\ kN} = 5.6\ Clamp$ Use 6 pcs.

Combined Power Sliding Clamp (Type: T & for T-Slots)

Code: 1120 / 1130 / 1150 / 1160 - T



Area of Usage:
Injection machines, presses, milling machines, drilling machines and various industrial machines.

Code: 1120 - T / Standard Type (t-slot: 14-16-18)
* M12 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 0 - 50 mm
* **Back and Forth Movement Distance:** 54 mm
* **Clamping Force:** 1600 Kgf

Code: 1130 - T / Standard Type (t-slot: 14-16-18-20-22)
* M12 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 0 - 60 mm
* **Back and Forth Movement Distance:** 68 mm
* **Clamping Force:** 2000 Kgf

Code: 1150 - T / Heavy Duty Type (t-slot: 18-20-22-24-28)
* M16 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 0 - 65 mm
* **Back and Forth Movement Distance:** 78 mm
* **Clamping Force:** 2500 Kgf

Code: 1160 - T / Heavy Duty Type (t-slot: 22-24-28-36)
* M20-24 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 20 - 80 mm
* **Back and Forth Movement Distance:** 75 mm
* **Clamping Force:** 5500 Kgf

Order Code	T-Slot a	m	h	s	s1	e1	d	sw	L	e	b	c	Weight (g)
1120-014-T	14	M12	Min. - Max. 0 - 50	12 - 66	25	100	M14	8	104	35.5	38	13	1740
1120-016-T	16												1755
1120-018-T	18												1785
1130-014-T	14	M12	Min. - Max. 0 - 60	15 - 83	30	113	M18	10	130	39	48	17.5	3040
1130-016-T	16												3055
1130-018-T	18												3085
1130-020-T	20												3135
1130-022-T	22												3150

Heavy Duty Types

1150-118-T	18	M16	Min. - Max. 0 - 65	18 - 96	35	125	M20	12	140	43	55	19.5	4410
1150-120-T	20												4460
1150-122-T	22												4515
1150-124-T	24												4620
1150-128-T	28												4725
1160-222-T	22	M20	Min. - Max. 20 - 80	17 - 92	41.5	175	M24	12	178	55	74	24	9030
1160-224-T	24												9120
1160-228-T	28	M24											9180
1160-236-T	36												9600

Position and fasten carrier component on the tool table.

Push the base component into the desired position on the carrier component.

Adjust the height of the bar with the adjusting screw and clamp the workpiece.

The powerful design enables rapid and easy clamping.

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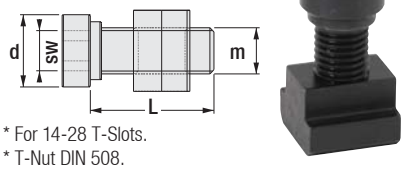
Accessories for Power Clamps

Fixing Screw and T-Nut



* For 14-28 T-Slots.
* T-Nut DIN 508.

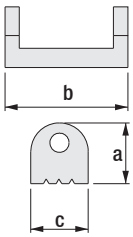
Order Code	a	m	L	d	sw
1120-512	12	M10	29	16.5	8
1120-514	14	M12			
1130-614	14	M12	30	20.5	10
1130-616	16				
1130-618	18				
1130-620	20		36		
1130-622	22				
1150-718	18	M16	34	24.5	12
1150-720	20				
1150-722	22		42		
1150-724	24				
1150-728	28				
1160-822	22	M20	45	34	12
1160-824	24				
1160-826	28	M24			
1160-828	28		55		
1160-832	32		61		
1160-836	36		66	38.5	

Pressure Pad

DP: Straight part clamping.

BSP: Lengthwise cylinder clamping.

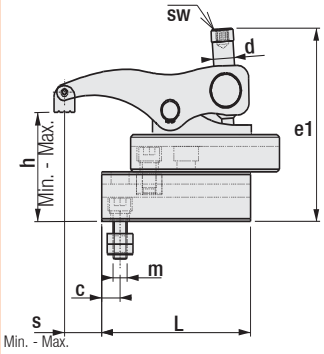
ESP: Transverse cylinder clamping.

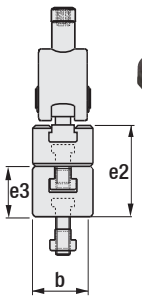


Order Code	a mm	b mm	c mm	Weight (g)
1120-DP	13.5	26.5	12	15
1120-BSP	15.5			18
1120-ESP	18			21
1130-DP	17	32	15	20
1130-BSP	19			30
1130-ESP	22			
1150-DP	19	38	18	40
1150-BSP	21			
1150-ESP	25			50
1160-DP	22	44	22	55
1160-BSP	25			70
1160-ESP	28			80

Combined Power Sliding Clamp Code: 1120 / 1130 / 1150 / 1160 - DT

(Type: DT / with Base Support & for T-Slots)





Area of Usage:
Injection machines, presses, milling machines, drilling machines and various industrial machines.

Code: 1120 - DT / Standard Type
(t-slot: 14 - 16 - 18)
* M12 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 36 - 86 mm
* **Back and Forth Movement Distance:** 54 mm
* **Clamping Force:** 1600 Kgf

Code: 1130 - DT / Standard Type
(t-slot: 14 - 16 - 18 - 20 - 22)
* M12 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 45 - 105 mm
* **Back and Forth Movement Distance:** 68 mm
* **Clamping Force:** 2000 Kgf

Code: 1150 - DT / Heavy Duty Type
(t-slot: 18 - 20 - 22 - 24 - 28)
* M16 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 48 - 113 mm
* **Back and Forth Movement Distance:** 78 mm
* **Clamping Force:** 2500 Kgf

Code: 1160 - DT / Heavy Duty Type
(t-slot: 22 - 24 - 28 - 36)
* M20-24 hex-socket screw is used with DIN 508 T-Nut.
* **Height Clamping Gap of Part:** 79 - 139 mm
* **Back and Forth Movement Distance:** 75 mm
* **Clamping Force:** 5500 Kgf

Order Code	T-Slot a	m	h	s	e1	e2	d	sw	L	b	e3	c	Weight (g)
1120-014-DT	14	M12	Min. - Max. 36 - 86	12 - 66	136	71.5	M14	8	104	38	38	13	2540
1120-016-DT	16												
1120-018-DT	18												
1130-014-DT	14	M12	Min. - Max. 45 - 105	15 - 83	158	83	M18	10	130	48	45	17.5	4750
1130-016-DT	16												4775
1130-018-DT	18												4805
1130-020-DT	20												4855
1130-022-DT	22												4905

Heavy Duty Types

1150-118-DT	18	M16	Min. - Max. 48 - 113	18 - 96	173	90	M20	12	140	55	48	19.5	6625
1150-120-DT	20												6690
1150-122-DT	22												6750
1150-124-DT	24												6840
1150-128-DT	28												6960
1160-222-DT	22	M20	Min. - Max. 79 - 139	17 - 92	235	114	M24	12	178	74	59	24	13330
1160-224-DT	24												13465
1160-228-DT	28	M24											13580
1160-236-DT	36												13890

Position and secure the base support on the tool table.

Desired distance is reached by increasing base supports.

Base support is applied in T-Slot with hex-socket screw against T-Nut.

Workpiece is fixed with the hex-socket screw of the clamp.

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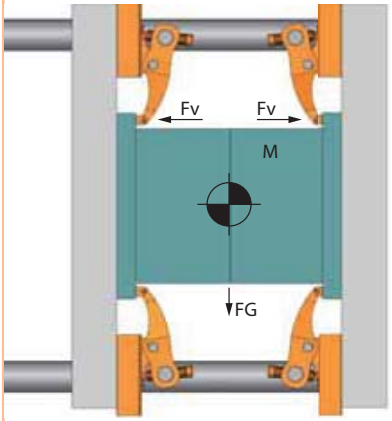
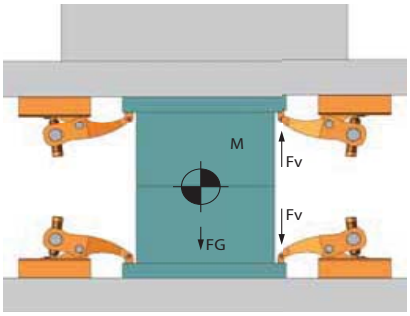
Clamping Templates



For Injection Moulds:

Formula Calculator

$\frac{M \times FG}{1000}$	= kN	$\frac{2500 \times 9.81}{1000}$ (kg)	= 24.52 kN
$\frac{kN}{\mu}$	= Result	$\frac{24.52}{0.14}$	= 175.14 kN
$\frac{Result}{Fv}$	= Number of Clamp	$\frac{175.14\ kN}{25\ kN}$	= 7 Clamp Use 8 pcs.



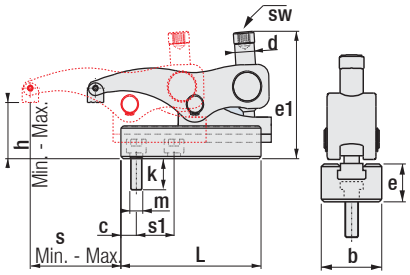
For Press Dies:

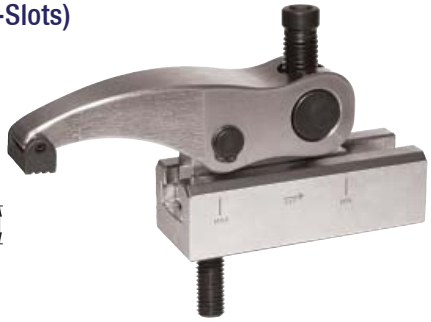
Formula Calculator

$\frac{M \times FG}{1000}$	= kN	$\frac{5000 \times 9.81}{1000}$ (kg)	= 49.050 kN
$\frac{kN}{\mu}$	= Result (Upper Die 60 %) (Lower Die 40 %)	$\frac{49.05}{0.14}$	= 350.35 kN (60 % Upper Die = 210.21) (40 % Lower Die = 140.14)
$\frac{Result\ (Upper\ Die)}{Fv}$	= Number of Clamp	$\frac{210.21\ kN\ (Upper\ Die)}{25\ kN}$	= 8 Number of Clamp
$\frac{Result\ (Lower\ Die)}{Fv}$	= Number of Clamp	$\frac{140.14\ kN\ (Lower\ Die)}{25\ kN}$	= 5.6 Clamp Use 6 pcs.

Combined Power Sliding Clamp Code: 1120 / 1130 / 1150 / 1160 - M

(Type: M / for Threaded Holes & T-Slots)





Area of Usage:
Injection machines, presses, milling machines, drilling machines and various industrial machines.

Advantages:
"11..-M" offers a clamping force between 1600 - 5500 Kgf. Using in hole and T-Slot. Ability to be fixed in various positions by sliding on the tool table. It clamps high and low distances without support with hex-socket screw. It provides rapid and easy clamping due to it's practical structure.

Code: 1120 - M / Standard Type (hole: M10-M12)
* In the threaded holes M10 / M12 are used with the "order codes: 1120-310 / 1120-312" screws.
* **Height Clamping Gap of Part:** 0 - 50 mm
* **Clamping Force:** 1600 Kgf

Code: 1130 - M / Standard Type (hole: M12-M16)
* In the threaded holes M12 / M16 are used with the "order codes: 1130-412 / 1130-416" screws.
* **Height Clamping Gap of Part:** 0 - 60 mm
* **Clamping Force:** 2000 Kgf

Code: 1150 - M / Heavy Duty Type (hole: M16-M18-M20)
* In the threaded holes M16 / M18 / M20 are used with the "order codes: 1150-516 / 1150-518 / 1160-520" screws.
* **Height Clamping Gap of Part:** 0 - 65 mm
* **Clamping Force:** 2500 Kgf

Code: 1160 - M (hole: M20-M22-M24-M30)
* In the threaded holes M20 / M22 / M24 / M30 are used with the "order codes: 1160-620 / 1160-622 / 1160-624 / 1160-724 / 1160-730 " screws.
* **Height Clamping Gap of Part:** 20 - 80 mm
* **Clamping Force:** 5500 Kgf

Order Code	m	h	s	s1	e1	d	sw	L	e	b	c	k	Weight (g)
1120-010-M	M10	Min. - Max. 0 - 50	12 - 66	25	100	M14	8	104	35.5	38	13	20	1700
1120-012-M	M12												
1130-012-M	M12	Min. - Max. 0 - 60	15 - 83	30	113	M18	10	130	39	48	17.5	22	3000
1130-016-M	M16											26	3030

Heavy Duty Types

1150-116-M	M16	Min. - Max. 0 - 65	18 - 96	35	125	M20	12	140	43	55	19.5	26	4340
1150-118-M	M18											30	4360
1150-120-M	M20												4370
1160-220-M	M20	Min. - Max. 20 - 80	17 - 92	41.5	175	M24	12	178	55	74	24	34	8880
1160-222-M	M22											38	8900
1160-224-M	M24											44	8920
1160-230-M	M30											51	9110

Position and fasten carrier component on the tool table.

Push the base component into the desired position on the carrier component.

Adjust the height of the bar with the adjusting screw and clamp the workpiece.

The powerful design enables rapid and easy clamping.

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Accessories for Combined Power Sliding Clamps

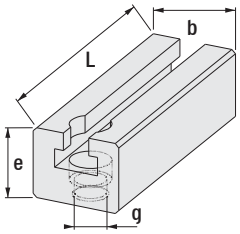
Upper Slide Part

- Forged Steel / Hardened

Order Code	T-Slot a	h Min. - Max.	sw	sw	Weight (g)
1120-0050	14 - 18	0 - 50	8	-	860
1130-0060	14 - 22	0 - 60	10	-	1680
1150-0062	18 - 28	0 - 65	12	-	2565
1160-2080	22 - 36	20 - 80	12	24	5050

Body with T-Slide

- Forged Steel / Hardened



Order Code	g (metric)	T-Slot a	L	b	e	Weight (g)
1120-045	M10 / M12	14 - 18	104	38	35.5	750
1130-047	M12 / M16	18 - 28	130	48	39	1275
1150-053	M16 / M18 / M20	18 - 28	140	55	42	1700
1160-074	M20 / M22 / M24	22 - 28	178	74	55	3650
1160-075	M30	36	178	74	55	3650

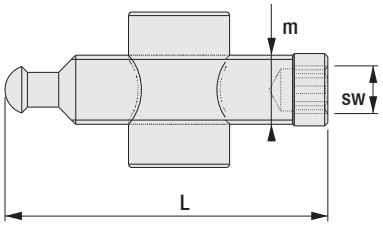
Base Support

- Forged Steel / Hardened

Order Code	g (metric)	T-Slot a	L	b	e	Weight (g)
1120-040	M10 / M12	14	104	38	38	820
1130-045	M12 / M16	14	130	48	45	1630
1150-048	M16 / M18 / M20	18	140	55	48	2070
1160-059	M20 / M22 / M24	28	178	74	55	3980

Clamping Screw Set

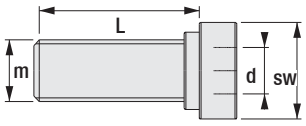
- Class: 10.9 / Black Coated



Order Code	m	L	sw	sw	Weight (g)
1120-0714	M14	72	8	-	138
1130-0818	M18	83	10	-	235
1150-0920	M20	96	12	-	360
1160-1024	M24	134	12	24	795

Hex-socket Screw for Fixing

- For M12 - M16 - M18 - M20 thread holes.
- Class: 10.9 / Black Coated



Order Code	m	L	d	sw	Weight (g)
1120-310	M10	29	16.5	8	28
1120-312	M12	29			34
1130-412	M12	30	20.5	10	45
1130-416	M16	34			75
1150-516	M16	34	24.5	12	75
1150-518	M18	38			90
1150-520	M20	38			105
1160-620	M20	45	34	12	170
1160-622	M22	49			295
1160-624	M24	45			390
1160-724	M24	55			405
1160-730	M30	66	38.5		450

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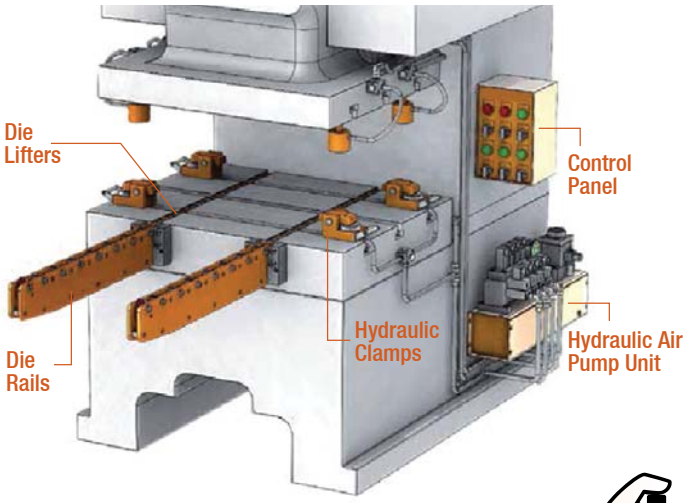
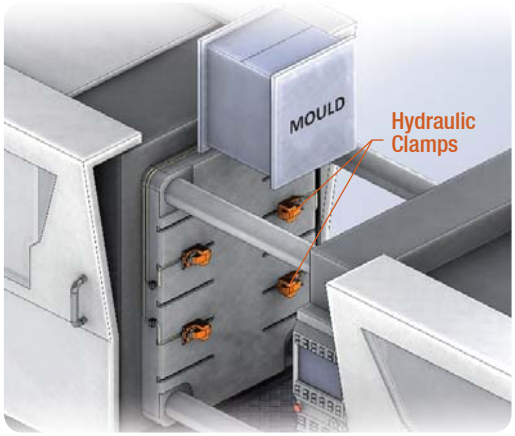
Quick Die & Mould Change Systems



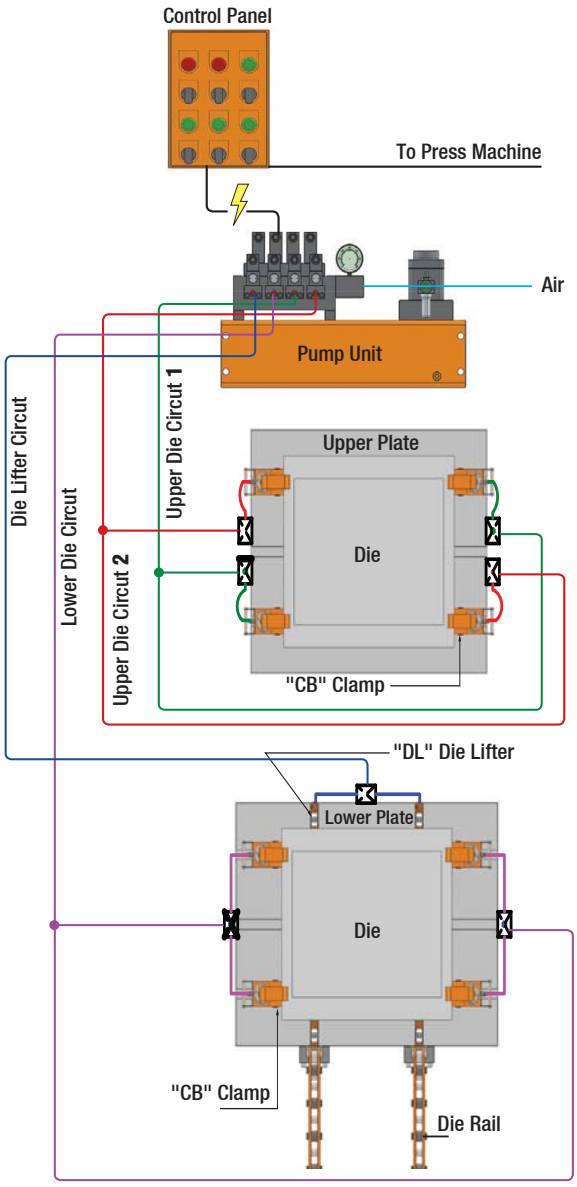


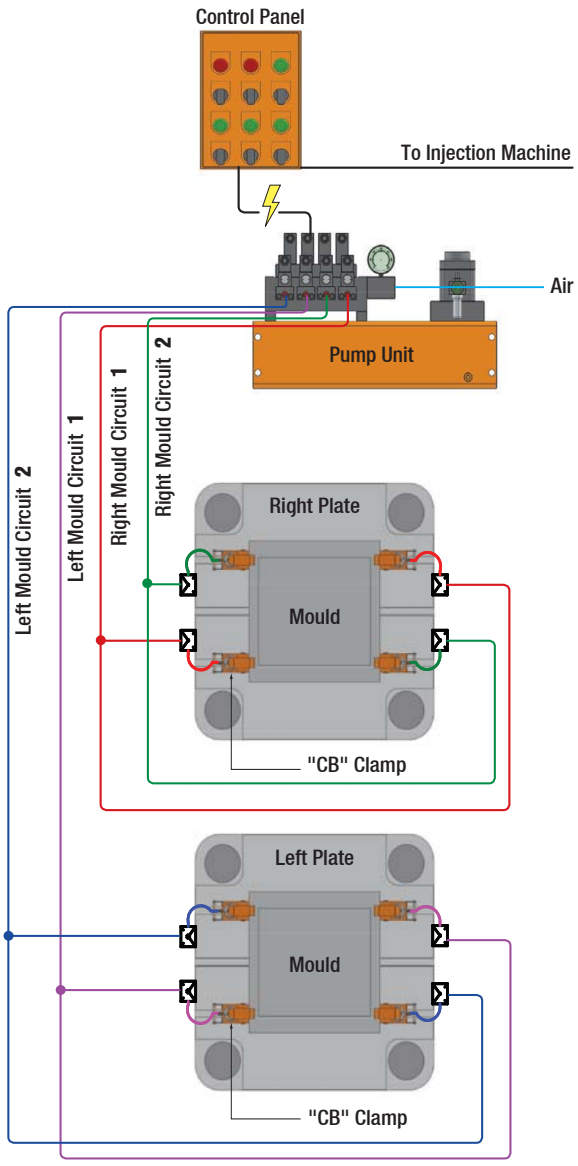
Quick Die Change System

Diagram for Press Machine

Quick Mould Change System

Diagram for Injection Machine





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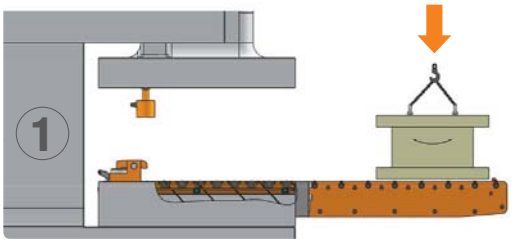
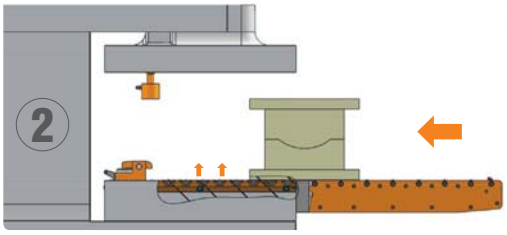
Quick Die Change System

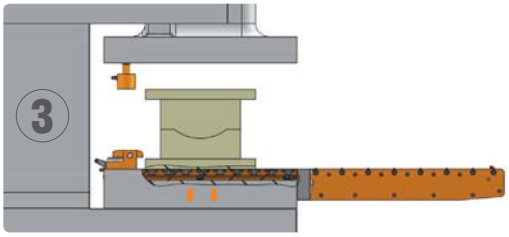
"Load the Die"
Load the die using a chain hoist or forklift.
The Die Rails enable easy loading.



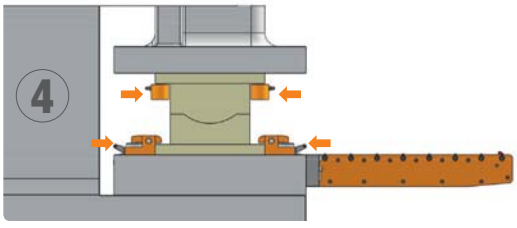
"Transfer the Die to Lower Plate (bolster)"
With the Die Rails and Die Lifters, minimal force is required to move the die. Die Lifters are set in the T - / U - slots.
Die Lifter: Hydraulic Pressure ON



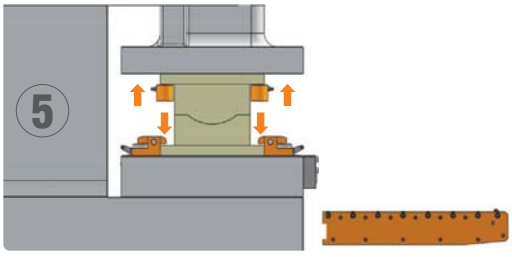
"Set the Die on the Lower Plate (bolster)"
With push-button operation (from the control unit), the Die Lifter releases and the die makes contact with the lower plate. Die Lifter: Hydraulic Pressure OFF



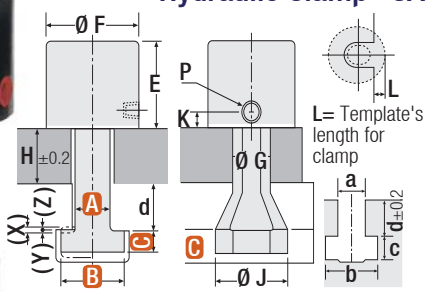
"Set the Hydraulic Clamps"
Set to clamps according to the die.
Slide clamps on the T-Slot and bring them near the die.
Hydraulic Clamp: Hydraulic Pressure OFF

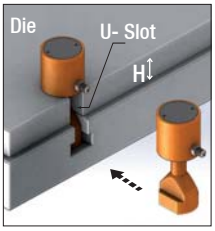


"Fasten the Die"
With push-button operation (from the control unit), Hydraulic Clamps fastening / clamping the die. After safety confirmation, the Die Rails can be removed. Hydraulic Clamp: Hydraulic Pressure ON



Hydraulic Clamp "CA" Code: 1010-CA





Hydraulic Pressure:
250 Kgf / cm²

* Please indicate the dimensions of T-Slot (a-b-c-d) and the thickness of the base for the die (H) when ordering.

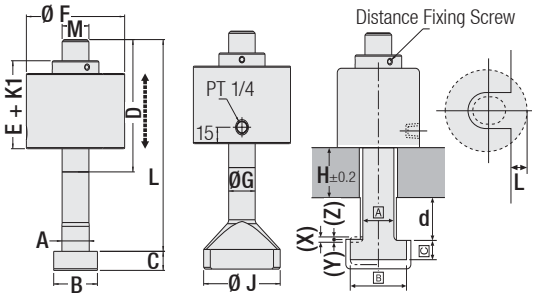
Type ⟶		CA01	CA02	CA04	CA06	CA10	CA16	CA25
Capacity of Clamp	Ton	1	2	4	6	10	16	25
Total Stroke (X)	mm	6	8	8	8	8	8	8
Stroke of Clamp (Y)	mm	3	4	4	4	4	4	4
Preserved Stroke (Z)	mm	3	4	4	4	4	4	4
Total Volume of Cylinder	cc	3	7	13	21	32	54	76

- The dimensions of clamps A, B and C are made based on the dimension of T-Slot.
- If the thickness of clamp "H+d" is more than the max. value listed on the table, it will be regarded as special design.

Standard Temp.: 60⁰
Optional Temp.: 160⁰

Order Code	ø F	E	ø G	ø J	H+d Max.	L Max.	a Min.	K	P
1010-CA01	44	48	12	30	60	12	8	9.5	PT 1/8
1010-CA02	53	52	16	48	80	17	12	12	PT 1/8
1010-CA04	65	58	23	58	90	20	16	15	PT 1/4
1010-CA06	82	65	30	64	100	25	18	15	PT 1/4
1010-CA10	99	71	38	78	110	30	22	15	PT 1/4
1010-CA16	126	82	45	88	120	38	28	17	PT 1/4
1010-CA25	150	100	55	98	140	45	36	23	PT 1/4

Hydraulic Clamp "CV" Code: 1010-CV



Type ⟶		CV04	CV06	CV10
Capacity of Clamp	Ton	4	6	10
Total Stroke (X)	mm	8	8	8
Stroke of Clamp (Y)	mm	4	4	4
Preserved Stroke (Z)	mm	4	4	4
Total Volume of Cylinder	cc	13	21	32

- Distance adjustment with fixing screw.
- Preserved Stroke (Z) must be checked when changing the settings.

Hydraulic Pressure: 250 Kgf / cm²
Standard Temp.: 60⁰
Optional Temp.: 160⁰

Order Code	T-Slot a	A	B	C	D	E + K1	Adjusting Distance	F	L Max.	M	ø G	ø J
1010-CV04.20125	20	19.6	32	12	85	70	15	65	125	M20	20	58
1010-CV04.22160	20	19.6	32	12	110	70	40	65	160	M20	20	58
1010-CV04.20160	22	21.6	35	14	85	70	15	65	125	M20	20	58
1010-CV04.22125	22	21.6	35	14	110	70	40	65	160	M20	20	58
1010-CV06.24125	24	23.6	40	16	85	77	8	82	125	M24	24	64
1010-CV06.24160	24	23.6	40	16	110	77	33	82	160	M24	24	64
1010-CV06.28125	28	27.6	44	18	85	77	8	82	125	M24	24	64
1010-CV06.28160	28	27.6	44	18	110	77	33	82	160	M24	24	64
1010-CV10.27160	27	26.6	46	18	110	83	27	99	160	M27	27	78
1010-CV10.27200	27	26.6	46	18	125	83	42	99	200	M27	27	78
1010-CV10.32160	32	31.6	50	20	110	83	27	99	160	M27	27	78
1010-CV10.32200	32	31.6	50	20	125	83	42	99	200	M27	27	78

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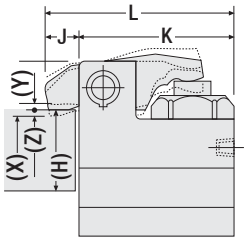
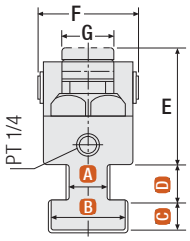
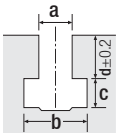
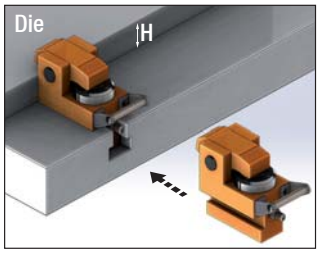
Hydraulic Clamp "CB"

Code: 1015-CB









Hydraulic Pressure: 250 Kgf / cm²

Type ⟶		CB01	CB02	CB04	CB06	CB10	CB16	CB25
Capacity of Clamp	Ton	1	2	4	6	10	16	25
Total Stroke (X)	mm	6	8	8	8	8	8	8
Stroke of Clamp (Y)	mm	2.5	3	3	3	3	3	3
Preserved Stroke (Z)	mm	3.5	5	5	5	5	5	5
Total Volume of Cylinder	cc	3	7.5	13	21	38	55	98

* Please indicate the dimensions of T-Slot (a-b-c-d) and the thickness of the base for the die (H) when ordering.

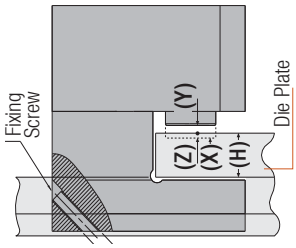
- The dimensions of clamps A, B, C and D are made based on the dimension of T-Slot.

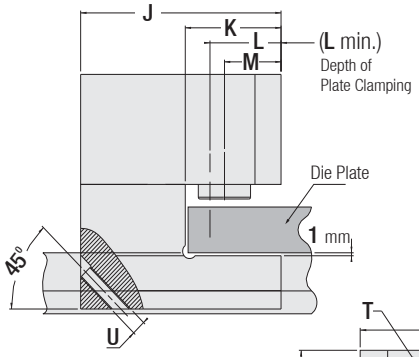
Standard Temperature: 60⁰
Optional Temperature: 160⁰

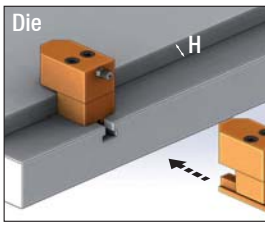
Order Code	L	K	J	H	H + d Min. Max.	E Min.	F	G	a Min.	c Min.	P
1015-CB01	74.5	60	14.5	25	100	42	44	20	10	6.5	PT 1/8
1015-CB02	110	90	20	25	100	73	68	32	14	10	PT 1/4
1015-CB04	134	110	24	25	130	77	79	40	18	12	PT 1/4
1015-CB06	159	130	29	30	150	92	96	46	22	14	PT 1/4
1015-CB10	189	159	30	40	140	114	117	54	24	16	PT 1/4
1015-CB16	230	200	30	40	130	126	129	58	28	20	PT 1/4
1015-CB25	265	235	30	45	120	148	156	70	36	23	PT 1/4

Hydraulic Clamp "CC"

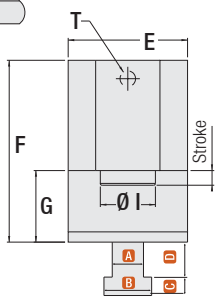
Code: 1015-CC

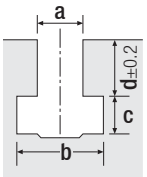






Hydraulic Pressure: 250 Kgf / cm²





Type ⟶		CC01	CC02	CC04	CC06	CC10
Capacity of Clamp	Ton	1	2	4	6	10
Total Stroke (X)	mm	9	9	9	12	12
Stroke of Clamp (Y)	mm	4	4	4	4	4
Preserved Stroke (Z)	mm	5	5	5	8	8
Total Volume of Cylinder	cc	3	7.5	13	21	38

Order Code	H Min. - Max.	A Min.	C Min.	E	F	G	I	J	K	L Min.	M	T	U (metric)
1015-CC01	20 - 35	10	6.5	43	G+43	H+9	16	75	33	27	21.5	1/8	M5
1015-CC02	25 - 40	14	10	50	G+50	H+9	18	91	43	30	25	1/8	M5
1015-CC04	25 - 40	18	12	65	G+60	H+9	30	115	55	40	32.5	1/8	M8
1015-CC06	35 - 55	22	14	80	G+65	H+12	37.5	130	65	48	40	1/4	M10
1015-CC10	40 - 60	24	16	100	G+82	H+12	50	160	85	60	49	1/4	M12

* Please indicate the dimensions of T-Slot (a-b-c-d) and the thickness of the base for the die (H) when ordering.

- The dimensions of clamps A, B, C and D are made based on the dimension of T-Slot.

Standard Temperature: 60⁰
Optional Temperature: 160⁰

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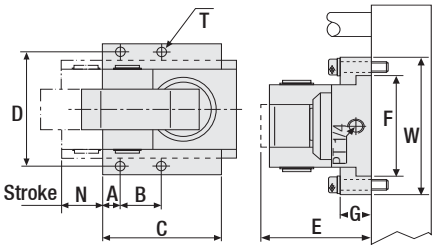
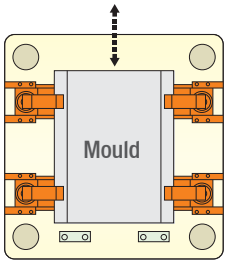
Hydraulic Clamp "CD"

Code: 1015-CD





Type ⟶		CD02	CD04	CD06	CD10	CD16	CD25
Capacity of Clamp	Ton	2	4	6	10	16	25
Total Stroke (X)	mm	8	8	8	8	8	8
Stroke of Clamp (Y)	mm	3	3	3	3	3	3
Preserved Stroke (Z)	mm	5	5	5	5	5	5
Total Volume of Cylinder	cc	7.5	13	21	38	55	98

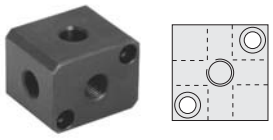
Hydraulic Pressure:
250 Kgf / cm^2

- It can be used in machines with holes on the plate.

Standard Temperature: 60^0
Optional Temperature: 160^0

Order Code	A	B	C	D	E Min.	F	G	W	N Max.	T
1015-CD02	12	20	80	98	90	76	30	124	124	M10 x 20D
1015-CD04	12	25	100	109	93	87	30	135	135	M12 x 24D
1015-CD06	15	30	120	126	109	104	30	152	152	M12 x 24D
1015-CD10	15	35	150	148	131	124	36	174	174	M14 x 28D
1015-CD16	20	40	200	166	142	138	44	200	200	M18 x 36D
1015-CD25	20	45	235	200	163	168	48	240	240	M22 x 45D

Tube Connector / Order Code: 1036BT



Rotary Joint / Order Code: 1036DE

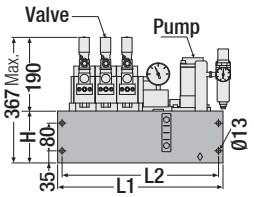
Clamp Bracket / Order Code: 1036CA

Clamp Bracket / Order Code: 1036CB

Accessories for Quick Die & Mould Change System

Air Powered Hydraulic Pump Unit

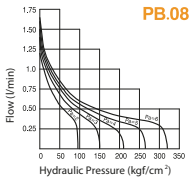
Code: 1040-PB & 1040-PC



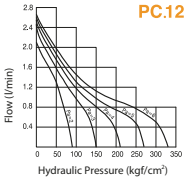
Order Code	L1	L2
PB.0801P1V	250	225
PB.0801P2V	310	285
PB.0801P3V	428	403
PB.0801P4V	487	462
PC.1201P3V	-	397

- The Hydraulic Pump is driven by air. Once the hydraulic pressure reaches the pressure setting, it stops pumping which is energy saving.
- The circuit control system is designed with the function of checking and avoiding oil leakage. If pneumatic pressure out, the hydraulic pressure still maintains.
- It is suggested to adopt pump code: 1040-PC1201P3V when used with Hydraulic Clamp type CA16-CB16 or CA25-CB25.
- With pressure control valve.
- Capacity 400 bar max.

PB.08



PC.12



Electrical Hydraulic Pump Unit

Code: 1040-VD

- It is suitable for direct connection system.
- Please specify flow speed (l/min.) before ordering.

Order Code	Valve	Flow (l/min)	Flow (l/min)	Bar
1040-1P1VD	1	6	14	150
1040-1P2VD	2	6	14	150
1040-1P3VD	3	6	14	150
1040-1P4VD	4	6	14	150

Air Powered Hydraulic Pump Unit

Code: 1040-V

- It is suitable for quick coupling system.
- Please specify flow speed (l/min.) before ordering.

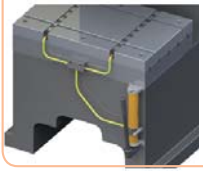
Order Code	Valve	Flow (l/min)	Flow (l/min)	Bar
1040-1P1V	1	6	14	150
1040-1P2V	2	6	14	150
1040-1P3V	3	6	14	150
1040-1P4V	4	6	14	150

Control Unit

Order Code	Circuit
1041-QDC1	1
1041-QDC2	2
1041-QDC3	3
1041-QDC4	4

Hydraulic Hand Pump

Order Code:
1040-PB0101



Modular Quick Coupling

Order Code: 1042-02

- Provides distribution between units in hydraulic system installation.

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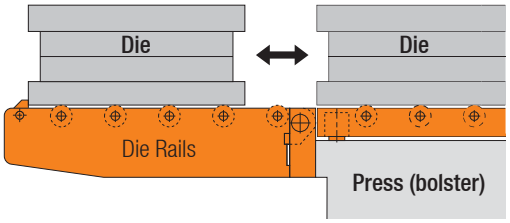
Die Rails Systems / Bolster Extensions

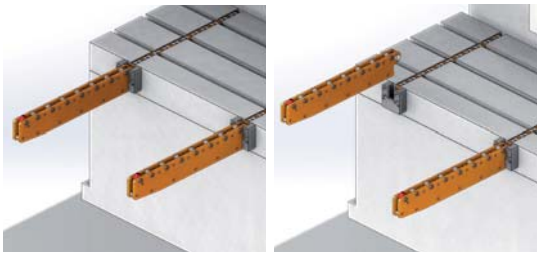


Types: RC - RD - RE / RF

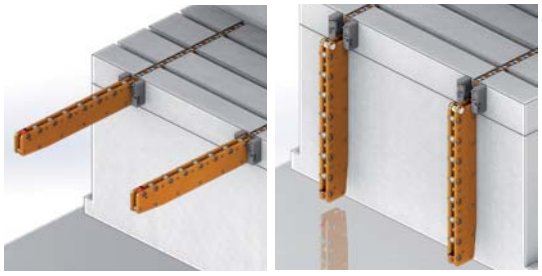
① — ②

Type	Folding Method	Specification
RC	Removable	580
RD	Vertically Foldable	760
RE	Foldable (short)	880
RF	Foldable (long)	990

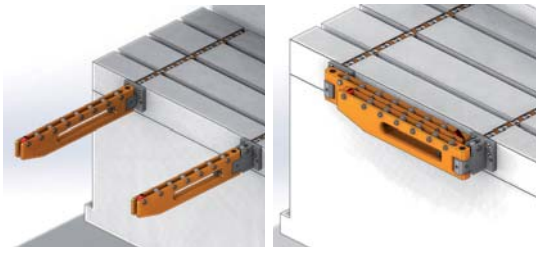
Type: RC / Removable



Type: RD / Vertically Foldable

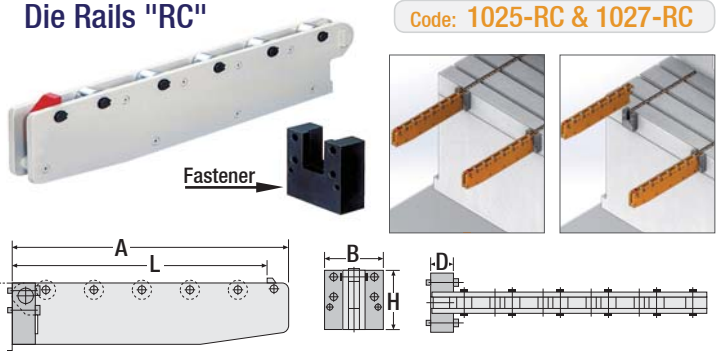


Type: RE - RF / Foldable



Die Rails "RC"

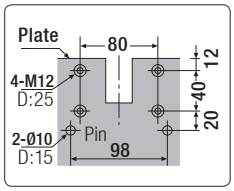
Code: 1025-RC & 1027-RC



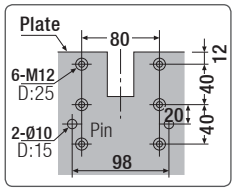
* In "RC" type, Die Rail and Fastener can be used separately.

Order Code	Fastener Type	L (mm)	Max. Capacity	A (mm)	Fastener (mm) D	Fastener (mm) B	Fastener (mm) H	Installation	Number of Roller
1025-RC580	RC-12	500	800 Kgf	550	48	115	118	Method "A"	5 pcs
1025-RC760	RC-12	700	600 Kgf	750					7 pcs
1025-RC880	RC-16	800	800 Kgf	850			158	Method "B"	8 pcs
1025-RC990	RC-20	900	900 Kgf	950			188		9 pcs
1027-RC05125	RC-14H	500	1250 Kgf	550	55	130	138	Method "C"	7 pcs
1027-RC05160	RC-16H		1600 Kgf				158		
1027-RC05200	RC-18H		2000 Kgf				178		
1027-RC07125	RC-14H	700	1250 Kgf	750	55	130	138	Method "C"	9 pcs
1027-RC07160	RC-16H		1600 Kgf				158		
1027-RC07200	RC-18H		2000 Kgf				178		
1027-RC08125	RC-16H	800	1250 Kgf	850	55	130	158	Method "C"	10 pcs
1027-RC08160	RC-18H		1600 Kgf				178		
1027-RC08200	RC-20H		2000 Kgf				188		
1027-RC09160	RC-22H	900	1600 Kgf	950	55	130	218	"C"	11 pcs

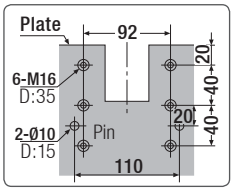
Installation Methods



Method "A"



Method "B"



Method "C"

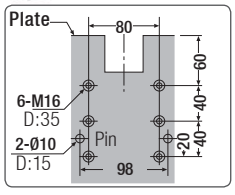
Die Rails - Heavy Duty "RS"

Code: 1037-RS

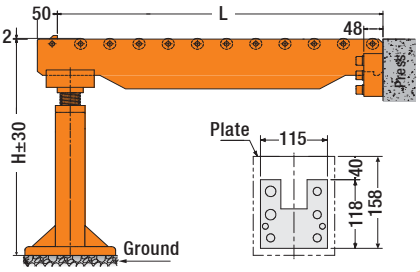
Order Example

1037-RS — (L) — (H) — (W)

Use length — The height between press lower plate (bolster) and the ground — Die weight



Installation Method for "RS"



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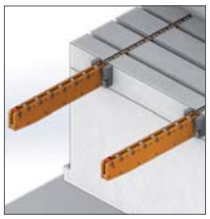
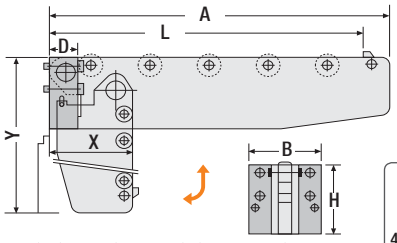
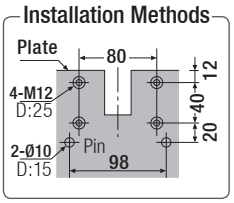
Die Rails "RD" / Vertically Foldable

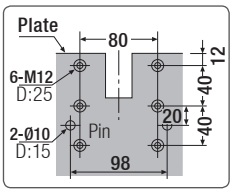
Code: 1030-RD



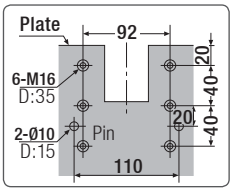




Method "A"



Method "B"



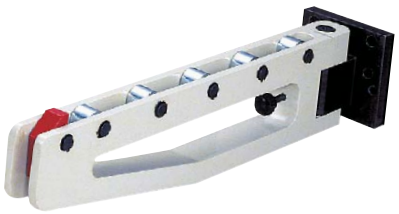
Method "C"

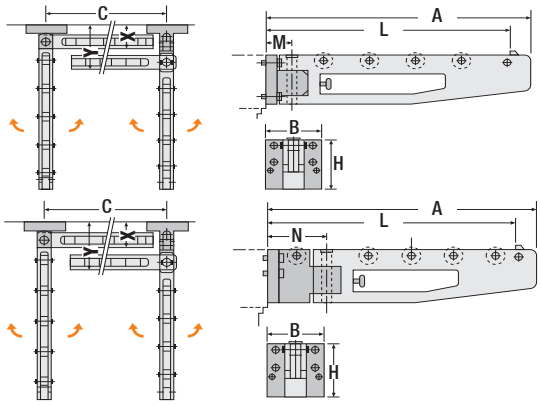
* The mounting length (Y) of type "RD" should be less than the height between bolster plate and the ground.

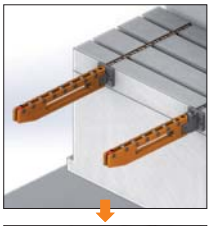
Order Code	L (mm)	Max. Capacity	A (mm)	Folded Dim. (mm)		Fastener (mm)			Number of Roller	Installation
				X	Y	D	B	H		
1030-RD580	500	800 Kgf	550	140	620	52	115	118	5 pcs	Method "A"
1030-RD760	700	600 Kgf	750	140	820				7 pcs	
1030-RD880	800	800 Kgf	850	180	960			158	8 pcs	Method "B"
1030-RD990	900	900 Kgf	950	220	1100			188	9 pcs	
1030-RD05125	500	1250 Kgf	550	170	645	62	130	138	7 pcs	Method "C"
1030-RD05160		1600 Kgf		190	670			158	7 pcs	
1030-RD05200		2000 Kgf		210	675			178	7 pcs	
1030-RD07125	700	1250 Kgf	750	170	840	62	130	138	9 pcs	Method "C"
1030-RD07160		1600 Kgf		190	865			158	9 pcs	
1030-RD07200		2000 Kgf		210	890			178	9 pcs	
1030-RD08125	800	1250 Kgf	850	190	960	62	130	158	10 pcs	Method "C"
1030-RD08160		1600 Kgf		210	985			178	10 pcs	
1030-RD08200		2000 Kgf		220	995			188	10 pcs	
1030-RD09160	900	1600 Kgf	950	250	1130	62	130	218	11 pcs	"C"

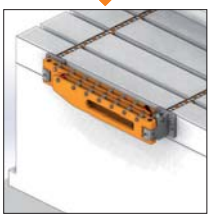
Die Rails "RE - RF" / Foldable

Code: 1033-RERF & 1035-RERF









* The distance for installing the two Die Rails of type RE - RF should be more than the distance between the installations "C".

* The Die Rails RE - RF can be folded to the right or left at the end of operation.

Order Code	L (mm)	Max. Capacity	A (mm)	C (mm)	Folded Dim. (mm)		Fastener (mm)		Number of Roller	M (mm)	N (mm)	Installation
					X	Y	B	H				
1033-RERF580	500	800 Kgf	550	525	90	150	115	118	5 pcs	57	120	Method "A"
1033-RERF760	700	600 Kgf	750	725					7 pcs			
1033-RERF880	800	800 Kgf	850	825				158	8 pcs			Method "B"
1033-RERF990	900	900 Kgf	950	925				188	9 pcs			
1035-RERF05160	500	1600 Kgf	550	525	105	170	130	158	7 pcs	74	140	Method "C"
1035-RERF05200		2000 Kgf						178				
1035-RERF07160	700	1600 Kgf	750	725	105	170	130	158	9 pcs	74	140	Method "C"
1035-RERF07200		2000 Kgf						178				
1035-RERF08160	800	1600 Kgf	850	825	105	170	130	178	10 pcs	74	140	Method "C"
1035-RERF08200		2000 Kgf						188				
1035-RERF09160	900	1600 Kgf	950	925	105	170	130	218	11 pcs	74	140	Method "C"
1035-RERF09200		2000 Kgf						248				

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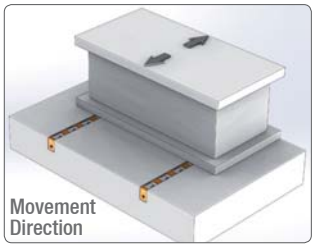
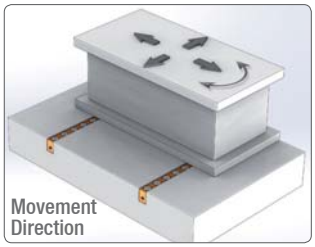
Die Lifters "DL36" & "DB36" / Hydraulic

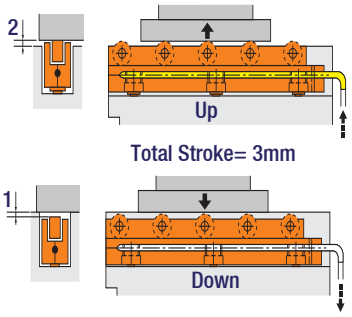
Code: DL36 & DB36



Code: DL36 (with rollers)



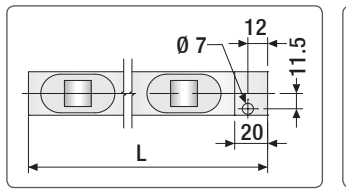
Code: DB36 (with balls)



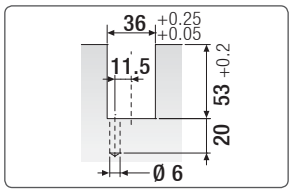
Standard Temperature: 60⁰
Optional Temperature: 160⁰

Order: Code. Type

Order Example:
DB36. 1020-0300



Outer Dimensions DL36 & DB36

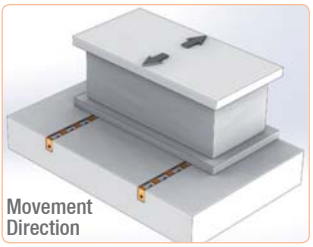


Machining Method for Plate

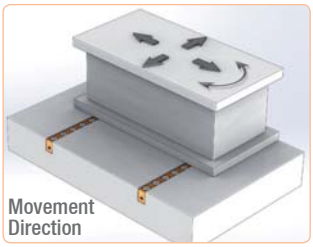
Type	L (mm)	DL36		DB36		Hyd. Cylinder	
		Roller	Capacity	Ball	Capacity	Piston	Capacity
1020-0200	200	3 pcs	1050 kg	5 pcs	600 kg	2 pcs	1700 kg
1020-0300	300	5	1750 kg	7	840 kg		
1020-0400	400	6	1700 kg	10	1200 kg		
1020-0500	500	8	2600 kg	12	1440 kg	3	2600 kg
1020-0600	600	9		15	1800 kg		
1020-0700	700	11		17	2040 kg		
1020-0800	800	12		20	2400 kg		
1020-0900	900	14	3500 kg	22	2640 kg	4	3500 kg
1020-1000	1000	15		25	3000 kg		
1020-1100	1100	16		27	3240 kg		
1020-1200	1200	17	4400 kg	30	3600 kg	5	4400 kg
1020-1300	1300	18		32	3840 kg		
1020-1400	1400	19		35	4200 kg		
1020-1500	1500	20		37	4400 kg		
1020-1600	1600	22	5300 kg	40	4800 kg	6	5300 kg
1020-1700	1700	24		42	5040 kg		
1020-1800	1800	25		45	5300 kg		
1020-1900	1900	27		47			

Die Lifters "DLS36" & "DBS36" / Spring Loaded

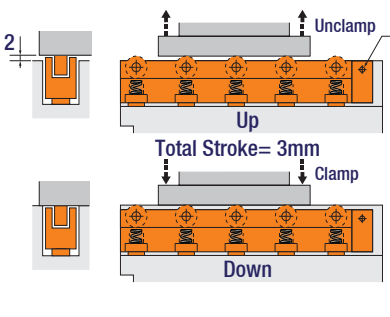
Code: DLS36 & DBS36



Code: DLS36 (with rollers)



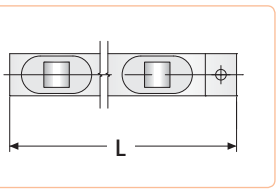
Code: DBS36 (with balls)



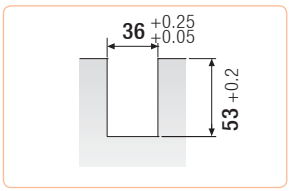
Standard Temperature: 60⁰
Optional Temperature: 160⁰

Order: Code. Type

Order Example:
DLS36. 1022-0200



Outer Dimensions DLS36 & DBS36



Machining Method for Plate

Type	L (mm)	DLS36			DBS36		
		Roller		Capacity	Ball		Capacity
1022-0200	200	3 pcs	3	600 kg	5 pcs	5	500 kg
1022-0300	300	5	5	1000 kg	7	7	700 kg
1022-0400	400	6	6	1200 kg	10	10	1000 kg
1022-0500	500	8	8	1600 kg	12	12	1200 kg
1022-0600	600	9	9	1800 kg	15	15	1500 kg
1022-0700	700	11	11	2200 kg	17	17	1700 kg
1022-0800	800	12	12	2400 kg	20	20	2000 kg
1022-0900	900	14	14	2800 kg	22	22	2200 kg
1022-1000	1000	15	15	3000 kg	25	25	2500 kg
1022-1100	1100	16	16	3200 kg	27	27	2700 kg
1022-1200	1200	17	17	3400 kg	30	30	3000 kg
1022-1300	1300	18	18	3600 kg	32	32	3200 kg
1022-1400	1400	19	19	3800 kg	35	35	3500 kg
1022-1500	1500	20	20	4000 kg	37	37	3700 kg
1022-1600	1600	22	22	4400 kg	40	40	4000 kg
1022-1700	1700	24	24	4800 kg	42	42	4200 kg
1022-1800	1800	25	25	5000 kg	45	45	4500 kg
1022-1900	1900	27	27	5400 kg	47	47	4700 kg

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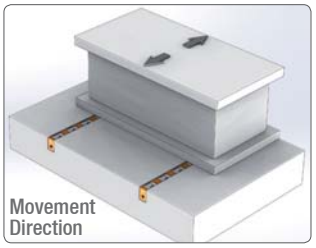
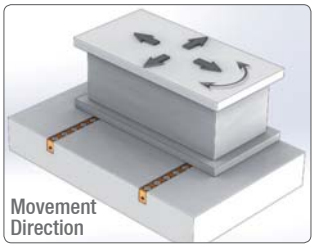
Die Lifters "DL50" & "DB50" / Hydraulic

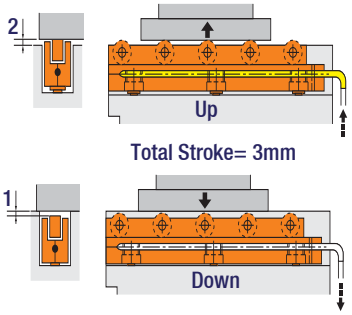
Code: DL50 & DB50



Code: DL50 (with rollers)



Code: DB50 (with balls)

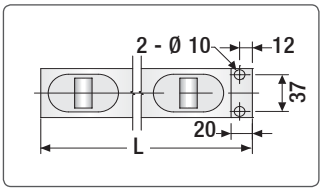


Standard Temperature: 60^0
Optional Temperature: 160^0

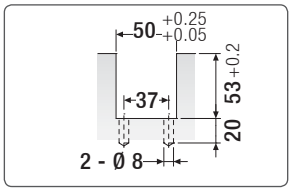
Order: Code. Type

Order Example:
DL50. 1020-0300

Dimensions before "L: 2100 mm":

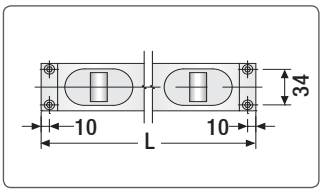


Outer Dimensions DL50 & DB50

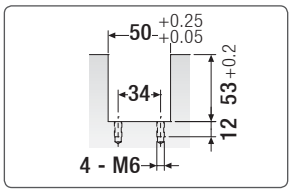


Machining Method for Plate

Dimensions "L: 2100 mm" and after:

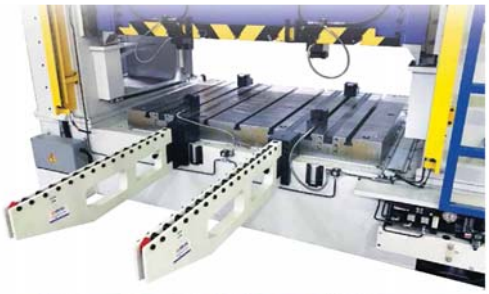


Outer Dimensions DL50 & DB50



Machining Method for Plate

Type	L (mm)	DL50		DB50		Hyd. Cylinder	
		Roller	Capacity	Ball	Capacity	Piston	Capacity
1020-0200	200	2 pcs	1000 kg	4 pcs	640 kg	2 pcs	2200 kg
1020-0300	300	3	1500 kg	6	960 kg		
1020-0400	400	4	2000 kg	9	1440 kg		
1020-0500	500	5	2500 kg	11	1760 kg	3	3300 kg
1020-0600	600	6	3000 kg	13	2080 kg		
1020-0700	700	7	3300 kg	16	2560 kg		
1020-0800	800	8	3300 kg	18	2880 kg		
1020-0900	900	9	4400 kg	20	3200 kg	4	4400 kg
1020-1000	1000	10		23	3680 kg		
1020-1100	1100	11		25	4000 kg		
1020-1200	1200	12	5500 kg	27	4320 kg	5	5500 kg
1020-1300	1300	13		29	4640 kg		
1020-1400	1400	14		31	4960 kg		
1020-1500	1500	15		33	5280 kg		
1020-1600	1600	16	6500 kg	35	5600 kg	6	6600 kg
1020-1700	1700	17		38	6080 kg		
1020-1800	1800	18		40	6400 kg		
1020-1900	1900	19		42	6720 kg		
1020-2000	2000	20	7700 kg	44	7040 kg	7	7700 kg
1020-2100	2100	21		46	7360 kg		
1020-2200	2200	22		48	7680 kg		
1020-2300	2300	23		50	7700 kg		
1020-2400	2400	24	8800 kg	52	8320 kg	8	8800 kg
1020-2500	2500	25		54	8640 kg		



Technical Support for Quick Die & Mould Change Systems

You can request the "Quick Die & Mould Change Systems Information Form" from us or you can download it directly from Guvenal web-site. The form filled by you will be examined by our engineers and the most suitable method will be produced for you.

* * *

We are supporting you with customizable offers about technical and costing issues of your projects and we are producing the best solutions.

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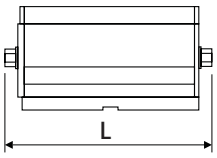
Permanent Magnetic Clamping Block

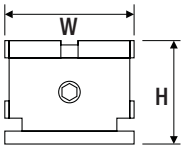
Code: ECB

- Ideal Technology for Medium and Large Workpieces
- Can Do 5-Sides Machining
- Robust and Flexible Clamping Method
- Fast, Easy, Compact and Balanced System

Side View:



Front View:



The all models of "ECB - Magnetic Clamping Blocks" are a new sense of clamping methods for metal workig on Cnc machining center and milling machine in quick clamp workpieces. Especially, it is ideal to machining parts at Mould & Die production. A special clamping and machining technology without requiring any power supply.

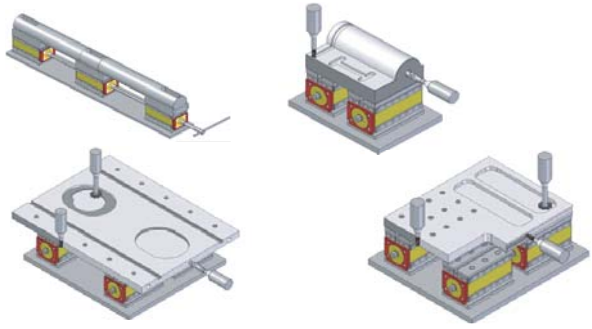
Specifications:

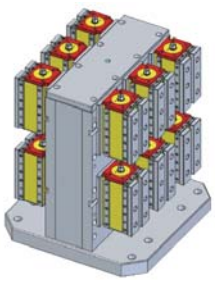
- Free to set up position, numbers and distance of Magnetic Clamping Block according to the dimension of workpiece.
- The products including changeable Induction Soft Block. It can be revised surface to be 100% accuracy on the machine for clamp workpieces. Can be also cutting, drilling, tapping and slotting directly to the Induction Soft Block during machining workpiece. Multi-function of Induction Soft Block, the user can make it by themselves according to workpiece required.
- Suitable for medium and large workpieces, not suitable for small workpieces.
- Minimum dimension of workpiece required as larger than area of two Magnetic Clamping Blocks. Compact structure, time - effort and space saving.

Important:

- Please always make sure the Switch was in ON position before machining. Please always switch it OFF when not in use.
- The Magnetic Clamping Blocks are not suitable for non-magnetic materials, such as brass, copper, aluminium, stainless steel and etc.

Some Applications:





Order Code: ECB-50

Holding Force: 500 Kgf / per unit
Min. Workpiece Thickness: 15 mm
L x W x H Dimensions: 159.5 x 76 x 78 mm
Mag. Clamping Area (L x W): 126 x 76 mm
Weight: 7 kg

Special Offer:
€ 490,00

Order Code: ECB-75

Holding Force: 750 Kgf / per unit
Min. Workpiece Thickness: 15 mm
L x W x H Dimensions: 207.5 x 76 x 78 mm
Mag. Clamping Area (L x W): 174 x 76 mm
Weight: 9.5 kg

Special Offer:
€ 599,00

Order Code: ECB-120

Holding Force: 1200 Kgf / per unit
Min. Workpiece Thickness: 20 mm
L x W x H Dimensions: 220 x 108 x 108 mm
Mag. Clamping Area (L x W): 188 x 108 mm
Weight: 18 kg

Special Offer:
€ 850,00

Order Code: ECB-210

Holding Force: 2100 Kgf / per unit
Min. Workpiece Thickness: 30 mm
L x W x H Dimensions: 274 x 133 x 134 mm
Mag. Clamping Area (L x W): 234 x 133 mm
Weight: 36 kg

Special Offer:
€ 1.255,00

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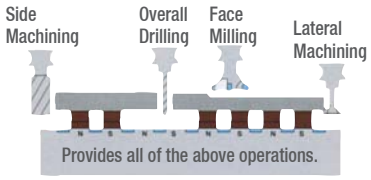


Electro-Permanent Magnetic Chuck

- Super Power Magnetic Force = 1250 Kgf / per 4 Pole
- We Present "Tool Cabinet as a Free Gift"
- Can Do 5-Sides Machining
- Clamping within a Few Seconds
- Monoblock Design / Compact & Robust

Electro-Permanent Magnetic Chucks are most suitable for heavy duty operations on small & medium workpieces and even for rough milling. Suitable for drilling and finishing operations on workpieces. All 5-sides of the workpiece can be machined in the same setting if clamped magnetically.

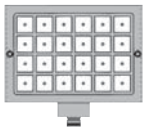
Specifications:
- Perfect safety in case of power failure. No electricity needed to keep the Magnetic Chuck ON.
- A minimum of 4 alternate magnetic poles contact is necessary for optimum clamping.
- More functions for cooperate with Induction Blocks (it is provided to you free by Guvenal).
- Magnetic force = 1250 Kgf / per 4 pole.
- Adjustable magnetic force (8 level).
- Can do 5-sides machining.
- Easy and practical to clamp a workpiece. It provides significant savings in clamping time.
- Recommended minimum thickness of workpiece: 10 mm.

Standard Accessories / Set Content:

1. Electro-Permanent Magnetic Chuck
2. Controller
3. Remote Control (to adjust the magnetic force)
4. Induction Blocks (according to the number of poles)
5. Tool Cabinet (mobile)
6. Fasteners & Connection Cables
7. User & Training Manual

Order Code: EEPM-3040

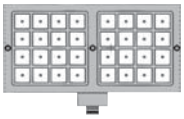
Total Holding Force: 7500 Kgf
Width: 300 mm **x Length:** 430 mm
Height: 60 mm
Pole Dimension: 50 x 50 mm
Number of Pole: 24 pcs
Voltage (single phase): 220V
Controller Voltage (single phase): 220V
Chuck Net Weight: 61 kg



Special Offer:
€ 1.790,00
2 pcs. Chuck + 1 Controller
€ 3.079,00

Order Code: EEPM-4060

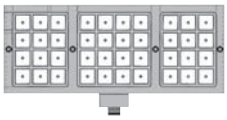
Total Holding Force: 15000 Kgf
Width: 420 mm **x Length:** 590 mm
Height: 60 mm
Pole Dimension: 50 x 50 mm
Number of Pole: 48 pcs
Voltage (single phase): 220V
Controller Voltage (single phase): 220V
Chuck Net Weight: 100 kg



Special Offer:
€ 2.690,00
2 pcs. Chuck + 1 Controller
€ 4.930,00

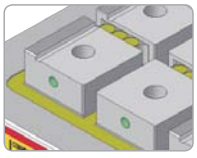
Order Code: EEPM-40100

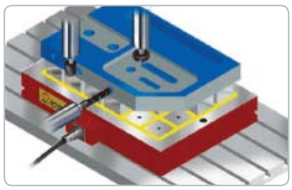
Total Holding Force: 26200 Kgf
Width: 420 mm **x Length:** 990 mm
Height: 60 mm
Pole Dimension: 50 x 50 mm
Number of Pole: 84 pcs
Voltage (single phase): 220V
Controller Voltage (single phase): 220V
Chuck Net Weight: 193 kg

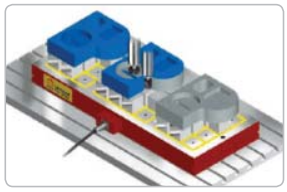


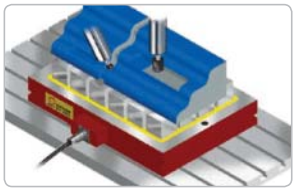
Special Offer:
€ 3.890,00
2 pcs. Chuck + 1 Controller
€ 7.060,00

Some Applications:









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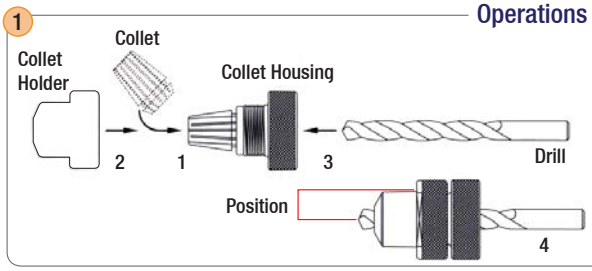
Drill Sharpening Machine

The budget friendly and handy Drill Sharpening Machine is ideal for resharpening HSS and Carbide drills. Practical using thanks to easy, compact and robust design.

1

Operations



2

1. Set up the drill to the collet holder:
Follow up the steps 1,2,3 and 4 for set up the drill to the collet holder (without tighting), as shown on image-1.

2. Set up the diameter of drill:
* Turn right the scale to be "0" position.
* Adjust the scale to meet the diameter of the drill.

3

3. Set up the drill to the sharpening position:
Insert the collet holder with drill and turn right, then tight the drill by collet holder for set up the sharpening position, as shown on image-3.
Important: Please always check the center edge of drill must be parallel with the gap of "Collet Holder", as shown on the **image-1 / "position"**.

4

4. Adjust the drill tip & chip evacuation shape angles:
Adjust the drill tip & chip evacuation shape angles to the suitable / desired position. Turn right for bigger, turn left for smaller, as shown on image-4.

5

5 & 6. Sharpen the drill tip & chip evacuation shape:
* Turn on the power of the machine.
* Insert the collet holder with drill and push to the sharpening wheel slowly, then move left and right repeatedly to sharpen the drill until the sharpening sound disappeared, as shown on image-5.
* Take out the collet holder with drill and change to the other side to sharpen again in same way as above mentioned, as shown on image-6.
Turn off the power of the machine.
Your drill is ready to use.

6

Standard - Chip Evacuation Shapes:

The center point suitable for carbide / hard steels, HSS E cobalt, Tin coated etc. hard materials

The center point suitable for general materials such as iron, general steel and brass.. etc.

The center point suitable for soft materials such as copper, aluminium, plastic.. etc.

Order Code: EDG-213

Drill Diameter: Ø 2 - 13 mm
Point Angle of Sharpening: 90⁰ - 140⁰
Sharpening Wheel: CBN #400 / for HSS Drills (Ø2-13)
Motor / Power Supply: 250W / AC 220V
Speed: 5500 RPM
Net Weight: 8.5 kg

Special Offer:
€ 645,00

Order Code: EDG-1226

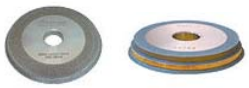
Drill Diameter: Ø 12 - 26 mm
Point Angle of Sharpening: 90⁰ - 140⁰
Sharpening Wheel: CBN #400 / for HSS Drills (Ø12-26)
Motor / Power Supply: 450W / AC 220V
Speed: 4500 RPM
Net Weight: 26 kg

Special Offer:
€ 1.365,00

Standard Accessories / Set Content:

1. Drill Sharpening Machine
2. Tool Cabinet
3. 12 pcs ER Collet Set for EDG-213 / 15 pcs ER Collet Set for EDG-1226
4. CBN Sharpening Wheel for HSS Drills
5. Collet Holder
6. Hex Keys (4 - 5 - 6 mm)
7. Connection Cables
8. User & Training Manual

Optional Sharpening Wheels:
(order code = product description)



* **EDG-213N-1D** = "SDC Wheel #400" for Carbide Drills / Ø 2 - 13
* **EDG-213N-1C** = "CBN Wheel #400" for HSS Drills / Ø 2 - 13

* **EDG-1226N-1D** = "SDC Wheel #400" for Carbide Drills / Ø 12 - 26
* **EDG-1226N-1C** = "CBN Wheel #400" for HSS Drills / Ø 12 - 26

- Drill Sharpening in 30 Seconds
- We Present "Tool Cabinet as a Free Gift"
- Operation is Fast and Easy
- The Left & Right Sharpening Method Gives the Sharpest and the Most Durable Drill

Please clean the sharpening chips often for avoid the chip scrape to the sharpening base and keep usage life.

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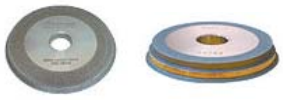
End Mill Sharpening Machine

The budget friendly and handy End Mill Sharpening Machine is ideal for resharpening Carbide and HSS end mills. Practical using thanks to easy, compact and robust design. Easy to operate, no experience required for sharpening a precision end mill.

Standard Accessories / Set Content:

1. End Mill Sharpening Machine
2. Tool Cabinet
3. 10 pcs ER Collet Set for EMG-413 / 6 pcs ER Collet Set for EMG-1325
4. 2 pcs Sharpening Wheel
5. Collet Holder (for 2/4 flute end mill)
6. Collet Holder (for 3 flute end mill)
7. Hex Key (4 mm)
8. Connection Cables
9. User & Training Manual

Optional Sharpening Wheels:
(order code = product description)

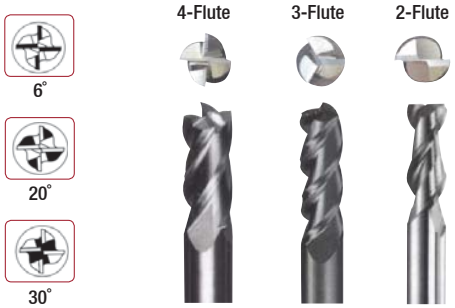


* **EMG-413-1D** = "SDC Wheel #300" for Carbide End Mills / Ø 4 - 5
* **EMG-413-2D** = "SDC Wheel #300" for Carbide End Mills / Ø 6 - 13
* **EMG-413-1C** = "CBN Wheel #300" for HSS End Mills / Ø 4 - 5
* **EMG-413-2C** = "CBN Wheel #300" for HSS End Mills / Ø 6 - 13

* **EMG-1225-1D** = "SDC Wheel #150" for Carbide End Mills / Ø 12 - 25
* **EMG-1225-1C** = "CBN Wheel #150" for HSS End Mills / Ø 12 - 25

- End Mill Sharpening in 1 Minute
- We Present "Tool Cabinet as a Free Gift"
- Operation is Fast and Easy
- Provide Savings

Please clean the sharpening chips often for avoid the chip scrape to the sharpening base and keep usage life.



Order Code: **EMG-413**

End Mill Diameter: Ø 4 - 13 mm
End Mill Angle: 6⁰ - 20⁰ - 30⁰
Sharpening Wheel 1: SDC #300 / for Carbide End Mills (Ø4-5)
Sharpening Wheel 2: SDC #300 / for Carbide End Mills (Ø6-13)
Motor / Power Supply: 450W / AC 220V
Speed: 6000 RPM
Net Weight: 17 kg

Special Offer:
€ 1.255,00

Order Code: **EMG-1325**

End Mill Diameter: Ø 12 - 25 mm
End Mill Angle: 6⁰ - 20⁰ - 30⁰
Sharpening Wheel 1: CBN #150 / for HSS End Mills (Ø12-25)
Sharpening Wheel 2: SDC #150 / for Carbide End Mills
Motor / Power Supply: 1000W / AC 220V
Speed: 4300 RPM
Net Weight: 31 kg

Special Offer:
€ 1.580,00

Drill & End Mill Cutter

The handy Drill & End Mill Cutter is ideal for cutting Carbide and HSS tools. Practical using thanks to easy, compact and robust design. Easy to operate, no experience required for cutting a precision tool.

Order Code: **ECO-316**

Diameter: Ø 3 - 16 mm
Cutting Wheel: SDC #100 / for Carbide Tools
Motor / Power Supply: 600W / AC 220V
Speed: 6000 RPM
Net Weight: 13 kg

Special Offer:
€ 490,00

Standard Accessories:

1. Drill & End Mill Cutter
2. SDC #100 Cutting Wheel
3. Hex Keys (4 - 10 mm)
4. Connection Cables
5. User & Training Manual

Optional Cutting Wheels:
(order code = product description)

* **ECO-316-1C**
"CBN Wheel #100" for HSS Tools
* **ECO-316-1D**
"SDC Wheel #100" for Carbide Tools

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Tolerance and Fit Systems

Technical Drawing / Terms: If producer and quality supervisor can speak the same language, the products will be perfect.

Tolerance Definition: Error margins of workpieces in standard dimensions in the meaning of tolerance (indulgence).
Tolerance is the error margins within the lower and upper limit specified by taking the main dimensions as a reference. A standardization has been done around the world and certain standards have been determined due to negative situations such as difference of the products in the past, rejects and economic / labourship losse.
Selecting small tolerances in the production method improve the quality but increases the cost. Selecting large tolerances decreases both costs and quality. Therefore, tolerance values in the Machine and Die / Mould production has been standardized.

We pay attention to products that do not have different features. This system is important for product replacements and repairs. Guvenal - GTH branded Die & Mould Components are designed according to DIN / ISO norms. The different standard types of other local producers are to create problems and difficulties in the production phase. These dies and moulds shipped to other countries will create the same problems and difficulties at the destination. For this reason, we recommend you to prefer Guvenal - GTH brand products for your dies and moulds, especially systems used as sets.

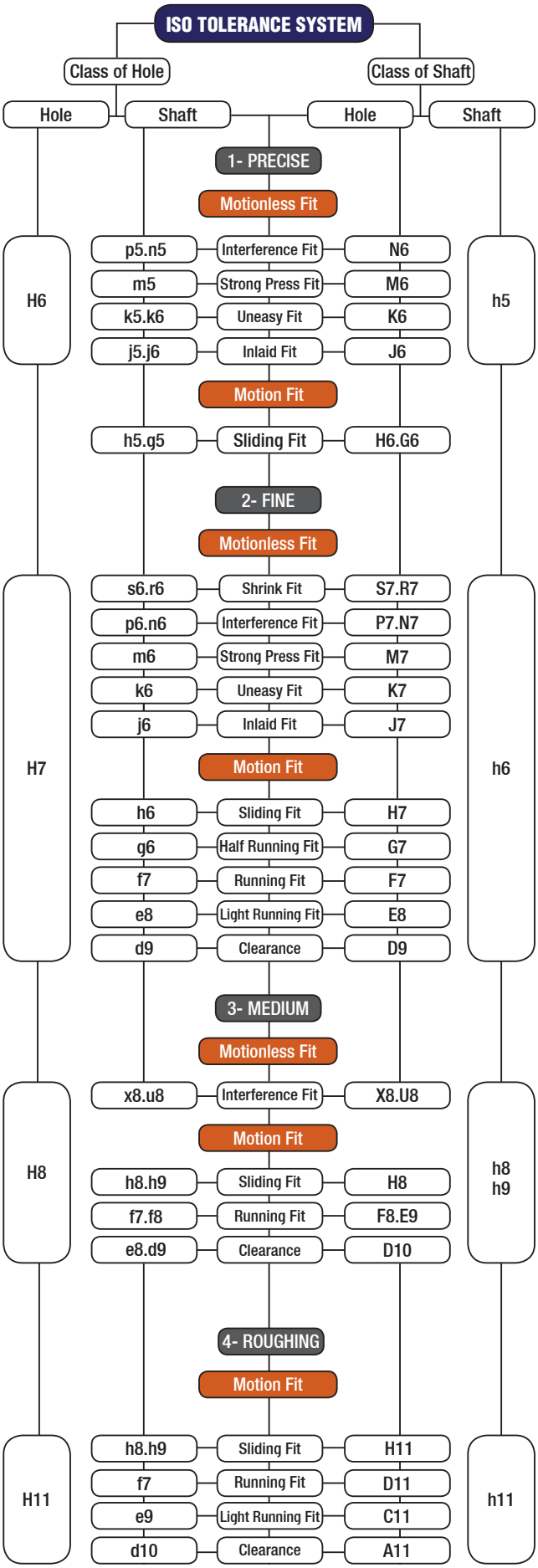
There are two types of tolerance depending on the type of writing:
1- Numerical Tolerance:
Written nearby principal dimensions (basic dimension).
Example: $40^{+0.05}_{-0.01}$ 40 ± 0.05

2- Letter Tolerance:
The letters and numbers which classified according to DIN and ISO systems are written to right hand side of the principal dimension and read according to type of micron.
Example: 40^{H7} 40_{h6}

There are two types of tolerance according to their practice:
1- Manufacturing Tolerance: It is based on the difference between the largest dimension and the smallest dimension.
2- Fit Tolerance: It is made according to shaft and hole system that indicated by DIN and ISO system. Beside, it is the relation due to difference between dimensions of two simple components (hole and shaft) to be joined each other.

Recommendation:
It is easy to machining external surfaces of workpieces. Since it will be hard to machining internal surfaces, hole dimensions should be kept fixed and a precise machining is performed by giving tolerance to the shaft.

Comparing of DIN and ISO Systems
1- Both systems have been classified according to normal hole and normal shaft system.
2- Normal temperature has been accepted as 20^{0}C in both systems.
3- Tolerance differences of shafts and holes, often tolerance comparement and keeping the basis for tolerance of difference to a zero base line is the same in both.
4- At DIN System there are 4 types of fit which are Precise, Fine, Medium and Roughing. At ISO System there are 18 kind different quality.
5- At DIN System the product diameter were found to be arithmetic average, at ISO System it is found by diameter's geometric average.



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ISO Tolerances for Holes / mm (ISO 286-2)

(micron / 0,001 mm)

>	3	6	10	18	30	40	50	65	80	100
(incl) <	6	10	18	30	40	50	65	80	100	120
E6	+ 28 + 20	+ 34 + 25	+ 43 + 32	+ 53 + 40	+ 66 + 50		+ 76 + 60		+ 94 + 72	
E7	+ 32 + 20	+ 40 + 25	+ 50 + 32	+ 61 + 40	+ 75 + 50		+ 90 + 60		+ 107 + 72	
E11	+ 95 + 20	+ 115 + 25	+ 142 + 32	+ 170 + 40	+ 210 + 50		+ 250 + 60		+ 292 + 72	
E12	+ 140 + 20	+ 175 + 25	+ 212 + 32	+ 250 + 40	+ 300 + 50		+ 360 + 60		+ 422 + 72	
E13	+ 200 + 20	+ 245 + 25	+ 302 + 32	+ 370 + 40	+ 440 + 50		+ 520 + 60		+ 612 + 72	
F6	+18 + 10	+ 22 + 13	+ 27 + 16	+ 33 + 20	+ 41 + 2		+ 49 + 30		+ 58 + 36	
F7	+ 22 + 10	+ 28 + 13	+ 34 + 16	+ 41 + 20	+ 50 + 25		+ 60 + 30		+ 71 + 36	
F8	+ 28 + 10	+ 35 + 13	+ 43 + 16	+ 53 + 20	+ 64 + 25		+ 76 + 30		+ 90 + 36	
G6	+ 12 + 4	+ 14 + 5	+ 17 + 6	+ 20 + 7	+ 25 + 9		+ 29 + 10		+ 32 + 12	
G7	+ 16 + 4	+ 20 + 5	+ 24 + 6	+ 28 + 7	+ 34 + 9		+ 40 + 10		+ 47 + 12	
G8	+ 22 + 4	+ 27 + 5	+ 33 + 6	+ 40 + 7	+ 48 + 9		+ 56 + 10		+ 66 + 12	
H3	0 + 2.5	0 + 2.5	0 + 3	0 + 4	0 + 4		0 + 5		0 + 6	
H6	+ 8 0	+ 9 0	+ 11 0	+ 13 0	+ 16 0		+ 19 0		+ 22 0	
H7	+ 12 0	+ 15 0	+ 18 0	+ 21 0	+ 25 0		+ 30 0		+ 35 0	
H8	+ 18 0	+ 22 0	+ 27 0	+ 33 0	+ 39 0		+ 46 0		+ 54 0	
H9	+ 30 0	+ 36 0	+ 43 0	+ 52 0	+ 62 0		+ 74 0		+ 87 0	
H10	+ 48 0	+ 58 0	+ 70 0	+ 84 0	+ 100 0		+ 120 0		+ 140 0	
H11	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0		+ 190 0		+ 220 0	
J6	+ 5 - 3	+ 5 - 4	+ 6 - 5	+ 8 - 5	+ 10 - 6		+ 13 - 6		+ 16 - 6	
J7	+ 6 - 6	+ 8 - 7	+ 10 - 8	+ 12 - 9	+ 14 - 11		+ 18 - 12		+ 22 - 13	
J8	+ 10 - 8	+ 12 - 10	+ 15 - 12	+ 20 - 13	+ 24 - 15		+ 28 - 18		+ 34 - 20	
JS6	+ 4 - 4	+ 4.5 - 4.5	+ 5.5 - 5.5	+ 6.5 - 6.5	+ 8 - 8		+ 9.5 - 9.5		+ 11 - 11	
JS7	+ 6 - 6	+ 7.5 - 7.5	+ 9 - 9	+10.5 - 10.5	+ 12.5 - 12.5		+ 15 - 15		+ 17.5 - 17.5	
JS8	+ 9 - 9	+ 11 - 11	+13.5 - 13.5	+16.5 - 16.5	+ 19.5 - 19.5		+ 23 - 23		+ 27 - 27	
K6	+ 2 - 6	+ 2 - 7	+ 2 - 9	+ 2 - 11	+ 3 - 13		+ 4 - 15		+ 4 - 18	
K7	+ 3 - 9	+ 5 - 10	+ 6 - 12	+ 6 - 15	+ 7 - 18		+ 9 - 21		+ 10 - 25	
K8	+ 5 - 13	+ 16 - 16	8 - 19	+ 10 - 23	+ 12 - 27		+ 14 - 32		+ 16 - 38	
M6	- 1 - 9	+ 3 - 12	- 4 - 15	- 4 - 17	- 4 - 20		- 5 - 24		- 6 - 28	
M7	0 - 12	0 - 15	0 - 18	0 -21	0 - 25		0 - 30		0 - 35	
M8	+ 2 - 16	+ 1 - 21	+ 2 - 25	+ 4 - 29	+ 5 - 34		+ 5 - 41		+ 6 - 48	
N6	- 5 - 13	- 7 - 16	- 9 - 20	- 11 -24	- 12 - 28		- 14 - 33		- 16 - 38	
N7	- 4 - 16	- 4 - 19	- 5 - 23	- 7 -28	- 8 - 33		- 9 - 39		- 10 - 45	
N8	- 2 - 20	- 3 - 25	- 3 - 30	- 3 - 36	- 3 - 42		- 4 - 50		- 4 - 58	
P6	- 9 - 17	- 12 - 21	- 15 - 26	- 18 - 31	- 21 - 37		- 26 - 45		- 30 - 52	
P7	- 8 - 20	- 9 - 24	- 11 - 29	- 14 - 35	- 17 - 42		- 21 - 51		- 24 - 59	
P8	- 12 - 30	- 15 - 37	- 18 - 45	- 22 - 55	- 26 - 65		- 32 - 78		- 37 - 91	
R6	- 12 - 20	- 16 - 25	- 20 - 31	- 24 - 37	- 29 - 45	- 35 - 54	- 37 - 56	- 44 - 66	- 47 - 69	
R7	- 11 - 23	- 13 - 28	- 16 - 34	- 20 - 41	- 25 - 50	- 30 - 60	- 32 - 62	- 38 - 73	- 41 - 76	

ISO Tolerances for Shafts / mm (ISO 286-2)

(micron / 0,001 mm)

>	3	6	10	18	30	40	50	65	80	100
(incl) <	6	10	18	30	40	50	65	80	100	120
a12	- 270 - 390	- 280 - 430	- 290 - 470	- 300 - 510	- 310 - 560	- 320 - 570	- 340 - 640	- 360 - 660	- 380 - 730	- 410 - 760
d6	- 30 - 38	- 40 - 49	- 50 - 61	- 65 - 78		- 80 - 96		- 100 - 119		- 120 - 142
e6	- 20 - 28	- 25 - 34	- 32 - 43	- 40 - 53		- 50 - 66		- 60 - 79		- 72 - 94
e13	- 220	- 270	- 334	- 410 - 440		- 50		- 60 - 520		- 72 - 612
f5	- 25	- 32	- 40	- 49 - 36		- 25		- 30 - 43		- 36 - 51
f6	- 10 - 18	- 13 - 22	- 16 - 27	- 20 - 33		- 25 - 41		- 30 - 49		- 36 - 58
f7	- 10 - 22	- 13 - 28	- 16 - 34	- 20 - 41		- 25 - 50		- 30 - 60		- 36 - 71
g5	- 4 - 9	- 5 - 11	- 6 - 14	- 7 - 16		- 9 - 20		- 10 - 23		- 12 - 27
g6	- 4 - 12	- 5 - 14	- 6 - 17	- 7 - 20		- 9 - 25		- 10 - 29		- 12 - 34
g7	- 4 - 16	- 5 - 20	- 6 - 24	- 7 - 28		- 9 - 34		- 10 - 40		- 12 - 47
h3	0 - 2.5	0 - 2.5	0 - 3	0 - 4		0 - 4		0 - 5		0 - 6
h4	0 - 4	0 - 4	0 - 5	0 - 6		0 - 7		0 - 8		0 - 10
h5	0 - 5	0 - 6	0 - 8	0 - 9		0 11		0 13		0 15
h6	0 -8	0 - 9	0 - 11	0 - 13		0 - 16		0 - 19		0 - 22
h7	0 - 12	0 - 15	0 - 18	0 - 21		0 - 25		0 - 30		0 - 35
h8	0 - 18	0 - 22	0 - 27	0 - 33		0 - 39		0 - 46		0 - 54
h9	0 - 30	0 - 36	0 - 43	0 - 52		0 - 62		0 - 74		0 - 87
h10	0 - 48	0 - 58	0 - 70	0 - 84		0 - 100		0 - 120		0 - 140
h11	0 - 75	0 - 90	0 - 110	0 - 130		0 - 160		0 - 190		0 - 220
h12	0 - 120	0 - 150	0 - 180	0 - 210		0 - 250		0 - 300		0 - 350
j5	+ 3 - 2	+ 4 - 2	+ 5 - 3	+ 5 - 4		+ 6 - 5		+ 6 - 7		+ 6 - 9
j6	+ 6 - 2	+ 7 - 2	+ 8 - 3	+ 9 - 4		+ 11 - 5		+ 12 - 7		+ 13 - 9
j7	+ 8 - 4	+ 10 - 5	+ 12 - 16	+ 13 - 8		+ 15 - 10		+ 18 - 22		+ 20 - 15
js5	+ 2.5 - 5	+ 3 - 3	+ 4 - 4	+ 4.5 - 4.5		+ 5.5 - 5.5		+ 6.5 - 6.5		+ 7.5 - 7.5
js6	+ 4 - 4	+ 4.5 - 4.5	+ 5.5 - 5.5	+ 6.5 - 6.5		+ 8 - 8		+ 9.5 - 9.5		+ 11 - 11
js7	+ 6 - 6	+ 7.5 - 7.5	+ 9 - 9	+ 10.5 - 10.5		+ 12.5 - 12.5		+ 15 - 15		+ 17.5 - 17.5
k5	+ 6 + 1	+ 7 + 1	+ 9 + 1	+ 11 + 2		+ 13 + 2		+ 15 + 2		+ 18 + 3
k6	+ 9 + 1	+ 10 + 1	+ 12 + 1	+ 15 + 2		+ 18 + 2		+ 21 + 2		+ 25 + 3
k7	+ 13 + 1	+ 16 + 1	+ 19 + 1	+ 23 + 2		+ 27 + 2		+ 32 + 2		+ 38 + 3
m5	+ 9 + 4	+ 12 + 6	+ 15 + 7	+ 17 + 8		+ 20 + 9		+ 24 + 11		+ 28 + 13
m6	+ 12 + 4	+ 15 + 6	+ 18 + 7	+ 21 + 8		+ 25 + 9		+ 30 + 11		+ 35 + 13
m7	+ 16 + 4	+ 21 + 6	+ 25 + 7	+ 29 + 8		+ 34 + 9		+ 41 + 11		+ 48 + 13
n5	+ 13 + 8	+ 16 + 10	+ 20 + 12	+ 24 + 15		+ 28 + 17		+ 33 + 20		+ 38 + 23
n6	+ 16 + 8	+ 19 + 10	+ 23 + 12	+ 28 + 15		+ 33 + 17		+ 39 + 20		+ 45 + 23
n7	+ 20 + 8	+ 25 + 10	+ 30 + 12	+ 36 + 15		+ 42 + 17		+ 50 + 20		+ 58 + 23
p5	+ 17 + 12	+ 21 + 15	+ 26 + 18	+ 31 + 22		+ 37 + 26		+ 45 + 32		+ 52 + 37
p6	+ 20 + 12	+ 24 + 15	+ 29 + 18	+ 35 + 22		+ 42 + 26		+ 51 + 32		+ 59 + 37
r6	+ 23 + 15	+ 28 + 19	+ 34 + 23	+ 41 + 28		+ 50 + 34	+ 60 + 41	+ 62 + 43	+ 73 + 51	+ 76 + 54

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Commonly Used Hole-basis Fits

Hole	Tolerance Zone Class of Hole																
	Clearance Fit							Transition Fit			Interference Fit						
H6						g5	h5	js5	k5	m5							
					f6	g6	h6	js6	k6	m6	n6*	p6					
H7					f6	g6	h6	js6	k6	m6	n6	p6*	r6*	s6	t6	u6	x6
				e7	f7		h7	js7									
H8					f8		h7										
				e8			h8										
H9			d9	e9													
			d8	e8			h8										
H10		c9	d9	e9			h9										
	b9	c9	d9														

Commonly Used Shaft-basis Fits

Shaft	Tolerance Zone Class of Shaft																
	Clearance Fit							Transition Fit			Interference Fit						
h5							H6	JS6	K6	M6	N6*	P6					
h6					F6	G6	H6	JS6	K6	M6	N6	P6*					
					F7	G7	H7	JS7	K7	M7	N7	P7	R7	S7	T7	U7	X7
h7				E7	F8		H7										
					F8		H8										
h8			D8	E8	F8		H8										
			D9	E9			H9										
h9			D8	E8			H8										
		C9	D9	E9			H9										
	B10	C10	D10														

* Some exceptions for these fits may occur depending on the dimension.

Some Tolerances Value without in Tables

Basic Step Dimension from .... to .... (mm)	Tolerance Zone Class of Hole			Tolerance Zone Class of Shaft			
	H3	H4	H5	h3	h4	h5	js4
1 3	+ 2 + 2	+ 3 0	+ 4 0	0 - 2	0 - 3	0 - 4	+ 1.5 - 1.5
3 6	+ 2.5 0	+ 4 0	+ 5 0	0 - 2.5	0 - 4	0 - 5	+ 2 - 2
6 10	+ 2.5 0	+ 4 0	+ 6 0	0 - 2.5	0 - 4	0 - 6	+ 2 - 2
10 18	+ 3 0	+ 5 0	+ 8 0	0 - 3	0 - 5	0 - 8	+ 2.5 - 2.5
18 30	+ 4 0	+ 6 0	+ 9 0	0 - 4	0 - 6	0 - 9	+ 3 - 3
30 50	+ 4 0	+ 7 0	+ 11 0	0 - 4	0 - 7	0 - 11	+ 3.5 - 3.5
50 80	+ 5 0	+ 8 0	+ 13 0	0 - 5	0 - 8	0 - 13	+ 4 - 4
80 120	+ 6 0	+ 10 0	+ 15 0	0 - 6	0 - 10	0 - 15	+ 5 - 5
120 180	+ 8 0	+ 12 0	+ 18 0	0 - 8	0 - 12	0 - 18	+ 6 - 6
180 250	+ 10 0	+ 14 0	+ 20 0	0 - 10	0 - 14	0 - 20	+ 7 - 7
250 315	+ 12 0	+ 16 0	+ 23 0	0 - 12	0 - 18	0 - 23	+ 8 - 8
315 400	+ 13 0	+ 18 0	+ 25 0	0 - 13	0 - 18	0 - 25	+ 9 - 9
400 500	+ 15 0	+ 20 0	+ 27 0	0 - 15	0 - 20	0 - 27	+ 10 - 10

Tightening Torques & Tension Loads for Hex-Socket Head Cap Screws

Nominal Diameter (metric)	Hex Key (mm)	Thread Pitch (mm)	Class 12.9 Tension Load (kgf.m)	Class 12.9 Tightening Torque (N.m)
M2	1.5	0.40	from 1649 to 1517	from 0.52 to 0.63
M2.5	2	0.45	2746 2531	1.06 1.30
M3	2.5	0.50	4117 3800	1.84 2.26
M3.5	-	0.60	5529 5100	2.84 3.47
M4	3	0.70	7140 6585	4.22 5.16
M5	4	0.80	11683 10789	8.32 10.2
M6	5	1.00	16452 15185	14.30 17.51
M7	-	1.00	24079 22274	23.52 29.04
M8	6	1.25	30197 27897	34.44 42.31
M10	8	1.50	48075 44440	67.87 83.56
M12	10	1.75	70087 64814	116.20 143.18
M14	12	2.00	95816 88632	184.84 228.03
M16	14	2.00	132442 122729	287.36 357.10
M18	14	2.50	160424 148453	396.50 489.90
M20	17	2.50	206678 191522	560.50 969.60
M22	17	2.50	257530 238923	766.85 957.80
M24	19	3.00	297784 275946	969.15 1204.33
M27	19	3.00	390753 362615	1417.63 1772.15
M30	22	3.50	475873 441351	1933.30 2411.40
M33	24	3.50	592711 550321	2614.50 3275.20
M36	27	4.00	695526 645441	3370.30 4213.40
M39	-	4.00	835380 775921	4359.90 5470.80
M42	32	4.50	955884 887420	5404.20 6768.50
M45	-	4.50	1123036 1043387	6768.60 8503.50
M48	36	5.00	1256949 1167287	8122.00 10186.10
M52	-	5.00	1512368 1405684	10462.40 13164.30
M56	41	5.50	1742185 1618931	12953.70 16882.40
M60	-	5.50	2033432 1890903	16046.90 16282.40
M64	46	6.00	2306271 2144137	19393.30 24418.60
M68	-	6.00	2641950 2457681	23421.30 29559.10

1 kgf.m = 9.81 N.m 1 N.m = 0.102 kgf.m

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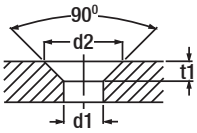
Mechanical Properties of Screws — TS 3576 (DIN ISO 898)

Material Properties		3.6	4.6	4.8	5.6	5.8	6.8	8.8	9.8	10.9	12.9
Tensile Strength	Rm N/mm^2	300	400		500		600	800	900	1000	1200
Yield Strength	R eL N/mm^2	180	240	320	300	400	480	-	-	-	-
0.2% Yield Strength	Rp 0.2 N/mm^2	-	-	-	-	-	-	640	720	900	1000
Elongation %	A	25	22	14	20	10	8	12	10	9	8

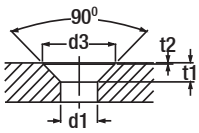
Countersunk Head Screws / Hex-Socket — DIN 74

Type - A

Medium Quality (o) — for TS 1023 / 1,3,4,7

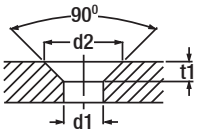


Fine Quality (i) — for TS 432 / 10,11,12,14,15,16

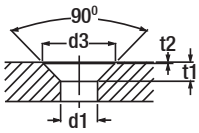


Type - B

Medium Quality (o)



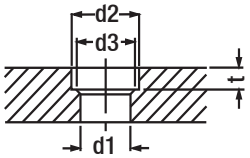
Fine Quality (i)



for DIN 7991 (TS 1023 / 13) screws

Screw Dimension			M2	M3	M4	M5	M6	M8	M10	M12	M16	M20
Quality o	d1	H13	2.4	3.4	4.5	5.5	6.6	9	11	14	18	22
	d2	H13	4.6	6.5	8.6	10.4	12.4	16.4	20.4	24.4	32.4	40.4
	t1		1.1	1.6	2.1	2.5	2.9	3.7	4.7	5.2	7.2	9.2
Quality i	d1		2.2	3.2	4.3	5.3	6.4	8.4	10.5	13	17	21
	r3		4.3	6	8	10	11.5	15	19	23	30	37
	t1		1.2	1.7	2.2	2.6	3	4	5	5.7	7.7	9.7
	t2	H13	0.15	0.25	0.3	0.3	0.45	0.7	0.7	0.7	1.2	1.7
Quality o	d1	H13	-	3.4	4.5	5.5	6.6	9	14	18	18	22
	d2		-	6.6	9	11	13	17.2	21.5	26	32	38
	t1	H12	-	1.6	2.3	2.8	3.2	4.1	5.3	6	7	8
Quality i	d1	H12	-	3.2	4.3	5.3	6.4	8.4	10.5	13	17	21
	r3		-	6.3	8.3	10.4	12.4	16.5	20.5	25	31	37
	t1		-	1.7	2.4	2.9	3.3	4.4	5.5	6.5	7.5	8.5
	t2		-	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.5

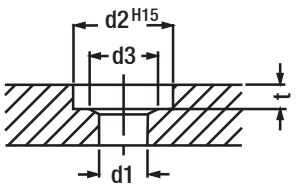
Hex-Socket Head Cap Screws — DIN 974-1 / DIN 74



Type - H: DIN TS 1020 / 18, TS 1020 / 17
Type - J: DIN TS 1020 / 16
Type - K: DIN TS 1020 / 15

Screw Dimension		M5	M6	M8	M10	M12	M14	M16	M20	M24	M30
d1	o - H13	5.5	6.6	9	11	14	16	18	22	26	33
	i - H12	5.3	6.4	8.4	10.5	13	15	17	21	25	-
d2	H13	10	11	15	18	20	24	26	33	40	48
d3		only burr				16	18	20	24	28	36
t	Type - H	4	4.7	6	7	8	9	10.5	12.5	14.5	-
	Type - J	4.2	4.8	6	7.5	8.5	9.5	11.5	13.5	15.5	19.5
	Type - K	5.7	6.8	9	11	13	15	17.5	21.5	25.5	32

Countersunk Head Screws and Fillister Head Screw — DIN 974-2 / DIN 74



DIN 931, 934 etc., (TS 1021 / ... etc.)

Type-SA & **Type-TA** = for Socket Wrench
Type-SB & **Type-TB** = for Box Wrench

Screw Dimension		M5	M6	M8	M10	M12	M14	M16	M20	M24	M30
d1	o - H13	5.5	6.6	9	11	14	16	18	22	28	33
	i - H12	5.3	6.4	8.4	10.5	13	15	17	21	25	-
d2	SA.TA	15	18	24	28	33	36	40	46	57	71
H15	SB.TB	18	20	26	33	36	43	46	53	71	82
d3		only burr							16	20	24
t	SA.SB	4.2	4.8	6.5	8	9	10	11.5	14.5	16.5	21
	TA.TB	4.7	5.8	7.5	9	11	12	14.5	17.5	20.5	26

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Steel Hardness Conversion Table

Tensile Strength N / mm²	Vickers HV	Brinell HB	Rockwell HRC
835	260	247	24
850	265	252	24.8
865	270	257	25.6
880	275	261	26.4
900	280	266	27.1
915	285	271	27.8
930	290	276	28.5
950	295	280	29.2
965	300	285	29.8
1030	310	295	31
1060	320	304	32.2
1095	330	314	33.3
1125	340	323	33.4
1155	350	333	33.5
1190	360	342	36.6
1220	370	352	37.7
1255	380	361	38.8
1290	390	371	39.8
1320	400	380	40.8
1350	410	390	41.8
1385	420	399	42.7
1420	430	409	43.6
1455	440	418	44.5
1485	450	428	45.3
1520	460	437	46.1
1555	470	447	46.9
1595	480	(456)	47.7
1630	490	(466)	48.4
1665	500	(476)	49.1
1700	510	(485)	49.8
1740	520	(495)	50.5
1775	530	(504)	51.1
1810	540	(513)	51.7
1845	550	(523)	52.3
1880	560	(532)	53
1920	570	(542)	53.6
1955	580	(551)	54.1
1995	590	(561)	54.7
2030	600	(570)	55.2
2070	610	(580)	55.7
2105	620	(589)	56.3
2145	630	(599)	56.8
2180	640	(608)	57.3
-	650	(618)	57.8
-	660	-	58.3
-	670	-	58.8
-	680	-	59.2
-	690	-	59.7
-	700	-	60.1
-	720	-	61
-	740	-	61.8
-	760	-	62.5
-	780	-	63.3
-	800	-	64
-	820	-	64.7
-	840	-	65.3

Bronze Alloys Comparison Table

Material	DIN	EN	NF/AFNOR	BS	ISO	JIS	SAE / AISI & Other
2.0220	CuZn5	CW500L	CuZn5	CZ125	CuZn5	C2100	C21000 . B134 - 1
2.0230	CuZn10	CW501L	CuZn10	CZ101	CuZn10	C2200	C22000
2.0240	CuZn15	CW502L	CuZn15	CZ102	CuZn15	C2300	C23000.B 134 - 6.B135-1
2.0250	CuZn20	CW503L	CuZn20	CZ102	CuZn20	C2400	C24000
2.0265	CuZn30	CW505L	CuZn30	CZ102	CuZn30	C2600	C26000.B 134 - 6.B135-2
2.0321	CuZn37	CW508L	CuZn37	CZ108	-	C2700	C27200 . MS63
2.0360	CuZn40	CW509L	CuZn40	CZ109	CuZn40	C2800	C28000
2.0598	CuZn25Al5	CC762	-	HTB3	CuZn25	-	C86300 . SAE 430B
2.0596	CuZn34Al2	-	U-Z 36 N3	HTB1	-	-	C86200 . SAE 430A
2.0592	CuZn35Al1	-	U-Z 36 N3	HTB1	CuZn35	-	C86500 . SAE 43
2.0510	CuZn37Al1	CW716R	-	-	-	-	-
2.0550	CuZn40Al2	CW713R	-	C2135	CuZn37	-	C76420 . So - MS Al2
2.0561	CuZn40Al1	CW718R	-	-	-	-	-
2.0401	CuZn39Pb3	CW614N	-	CZ121 Pb3	-	-	MS58
2.0241	CuZn39Pb2	CW617N	-	CZ123	-	-	So - MS58 Pb2
2.0460	CuZn20Al2	CW720R	-	-	-	-	-
2.0872	CuNi10Fe1Mn	-	-	-	-	-	-
2.0882	CuNi30Mn1Fe	CW354H	-	-	-	-	-
2.0936	CuAl10Fe3Mn2	-	-	-	-	-	-
2.0975	CuAl8Mn	-	-	-	-	-	-
2.0936	CuAl10Fe	CW306G	-	-	-	-	C45200 . B150 . B124
2.0975.04	CuAl10Ni	-	U - A - 10N	-	-	-	C95500
2.0978	CuAl11Fe6Ni6	CW308G	-	-	-	-	-
-	CuAl10Ni5Fe4	CW307G	-	CN102	-	-	C63000 B 171 - 95
2.1020	CuSn6	CW452K	-	-	-	-	-
2.1030	CuSn8	CW453K	-	-	-	-	-

Standard Progression of Surface Roughness (reference)

Arithmetical Average Roughness "Ra"			Max. Height "Ry"	10 Point Average Roughness "Rz"	"Ry - Rz" Reference Length	Conventional Finishing Symbols
Standard Progression	Cut-off Value λc (mm)	Modern Finishing Symbols	Standard Progression		ℓn(mm)	
0.012 0.025 0.05 0.1 0.2	0.08	0.012 / 0.2	0.05 0.1 0.2 0.4 0.8	0.05 0.1 0.2 0.4 0.8	0.08	▽▽▽▽
	0.25				0.25	
	0.8				0.8	
0.4 0.8 1.6		0.4 / 1.6	1.6 3.2 6.3	1.6 3.2 6.3		▽▽▽
3.2 6.3	2.5	3.2 / 6.3	12.5 25	12.5 25	2.5	▽▽
12.5 25	8	12.5 / 25	50 100	50 100		▽
50 100	-	50 / 100	200 400	200 400	8 -	-

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Steel Grades Comparison Table

Case Hardening Steels

Material Nr.	ISO (683/1, 10, 11)	SAE AISI	BS 970 Part-1	DIN	NF A35 - 551 - 554	JIS G 4052
1.5713	13NiCr6	3115	-	13NiCr6	10NC6	-
1.5752	14NiCr14	3415 - 3310	655H13	14NiCr14	14NC12	-
1.5919	15CrNi6	3115	S107.970-3	15CrNi6	16NC6	-
1.5920	18CrNi8	6264	080M46	18CrNi8	-	-
1.6523	21NiCrMo2	8620	805H20.805M20	21NiCrMo2	20NCD2	SNCM220H
1.6587	17NiCrMo6	4820, 4317	820A16	17NiCrMo6	18NCD6	-
1.7015	15Cr3	5015	523M15.530A32	15Cr3	12C3.15Cr2.18C3	-
1.7034	34Cr4	5135	530A36.530M36	34Cr4	37Cr4.38C4	-
1.7035	41Cr4	5140	530A40.530M40	41Cr4	41Cr4.42C4	-
1.7131	16MnCr5	5115	527M17.590H17	16MnCr5	16MC5.16MnCr5	-
1.7139	16MnCrS5	5115	527M17.590H17	16MnCrS5	16MC5	SMnC420H
1.7147	20MnCr5	5120	-	20MnCr5	20MC5	SMnC420H
1.7149	20MnCrS5	4820, 4826	-	20MnCrS5	-	-
1.7243	18CrMo4	-	708M20	18CrMo4	18CD4	-
1.7321	20MoCr4	8620	805A22	20MoCr4	20MoCr4KD	-
1.7323	20MoCrS4	8620	-	20MoCrS4	-	-
1.7352	25CrMo4	-	-	25CrMo4	-	-
1.7326	25CrMoS4	-	-	25CrMoS4	-	-

Tempered Steels

Material Nr.	ISO (683/1, 10, 11)	SAE AISI	BS 970 Part - 1	DIN	NF A35 - 551 - 554	JIS G 4052
1.6511	-	4340, 9840	817M37, 816M40	36CrNiMo4	35NCD5, 40NCD3	-
1.6580	-	4340	823M30	30CrNiMo8	30CND8	SNCM431
1.6582	-	4340, 4337	816M40, 817M40	34CrNiMo6	35NCD3	SNCM447
1.7006	-	5045, 5046	-	46Cr2	42C2, 46Cr2	-
1.7033	34Cr4	5132	530A32, 530M32	34Cr4	32C4, 34Cr4	SCr430
1.7034	34Cr4	5135	530A36, 530M32	37Cr4	38Cr4, 38C4	SCr435
1.7035	41Cr4	5140	530A40, 530M40	41Cr4	41Cr4, 42C4	SCr440
1.7218	-	4130	708A25	25CrMo4	25CD4, 25CrMo4	SCM430
1.7220	34CrMo4	4135, 4137	708A37	34CrMo4	35CrMo4, 35CD4	SCM432
1.7225	42CrMo4	4140, 4142	708M40, 311-5/1	42CrMo4	42CD4TS	SCM440
1.7228	-	4150	708A47	50CrMo4	50CrMo4	SCM445

ISO: International Organization for Standardization
DIN: Deutsches Institut für Nörmung / German Standards
SAE: Society Automotive Engineers
BS: British Standards
AISI: American Iron and Steel Institute
JIS: Japan Industrial Standards
UNI: Ente Nazionale Italiano di Unificazione
NF: Norme Francaise

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Steel Grades Comparison Table

Cold Work Tool Steels

Material Nr.	DIN	AISI	BS	NF / AFNOR	JIS
1.2080	X210Cr12	D3	BD3	Z200C12, X200Cr12	SKD1
1.2345	X50XrVMo 5 - 1	-	-	-	-
1.2379	X155CrVMo 12 - 1	D2	BD2	Z160CDV12	SKD11
1.2380	X220CrVMo 13 - 4	-	-	-	-
1.2436	X210CrW12	D6	D6	-	SKD2
1.2601	X165CrMoVa12	-	-	-	SKD11

Hot Work Tool Steels

Material Nr.	DIN	AISI	BS	NF / AFNOR	JIS
1.2343	X38CrMoV 5 - 1	H11	BH11	Z38CDV5	SKD6
1.2344	X40CrMoV 5.1	H13	BH13	Z40CDV5	SKD61
1.2365	X32CrMoV 3.3	H10	BH10	32CDV28	SKD7
1.2367	X38CrMoV 5.3	H11	BH11	-	SKD61
1.2581	X30WCRV 9.3	H21	BH21	Z30WCV9	SKD5
1.2714	X 165CrMoVa 12	6F3, L6	BS224	55NCDV7	SKT4

Plastic Mould Steels

Material Nr.	DIN	AISI	BS	ASTM	NF / AFNOR
1.2083	X42Cr13	420	SUS 420J2	-	X41CR13KU
1.2312	40CrMnMoS 8-6	P20 + S	-	-	-
1.2738	40CrMnNiMo 8 - 6 - 4	P20	SNCM	90MV8	40CMND8

Oil Hardening Tool Steels

Material Nr.	DIN	AISI	BS	NF / AFNOR	JIS
1.2510	100MnCRW4	01	-	-	SK33
1.2842	90MnCrV8	02	BO2	90MV8	-

Spring Steels

Material Nr.	DIN	AISI	BS	NF / AFNOR	EN 100027-2
1.0900	38Si6	-	-	-	1.5022
1.0902	46Si7	9245	-	45S7	1.5024
1.0903	51Si7	9255	-	50S7	1.5025
1.0904	55Si7	5155H, 9225	251A58	55S7	1.5026
1.0908	60SiMn5	-	-	-	1.5142
1.0961	60SiCr7	9262	-	-	-
1.0970	38Si7	-	-	-	1.5023
1.5028	65Si7	9260H	251A61	60S7	1.5028
1.5029	71Si7	-	-	-	-
1.5225	51MnV7	-	-	-	-
1.7103	67SiCr8	9254	-	-	1.7103
1.7138	52MnCrB3	50B50	-	-	-
1.7176	55Cr3	5155	-	-	-
1.7701	51CrMoV7	-	-	-	-

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