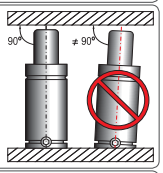
Operating Instruction !

Do not use gas spring cylinders out of max. values specified.

Set up the gas spring in vertical position. Use it vertical.

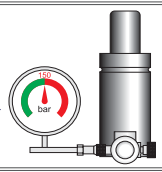


Do not apply any mechanical process on the body or the shaft.

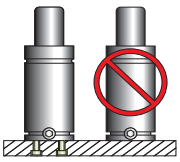
Please do not allow to become polluted the surface of the cylinder with solid and liquid contaminants.

Please do not charge the gas cylinder with any gas other than nitrogen / N2.

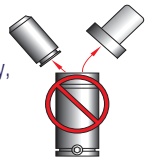
Do not charge gas cylinder with pressure over 150 bar.



Do not mount the gas cylinder without securing it.

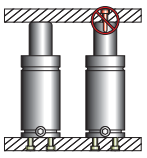


Do not demount the cylinder. When compulsory, the gas cylinders can be used as reversed.

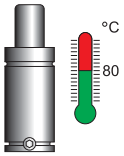


The gas cylinder should not be mounted / maintained other than the authorized personnel.

Do not use the hole on the shaft while securing the gas cylinder.

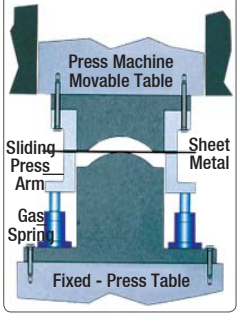


When using the gas cylinder, do not allow to exceed 80°C of the die temperature.

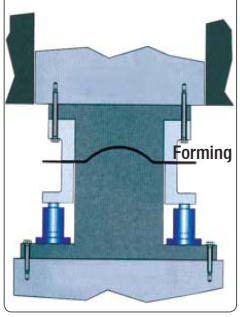


Gas Spring Controlled Tour / Cycle

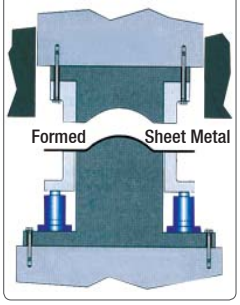
- Starting of running cycle
- Die gas spring is released



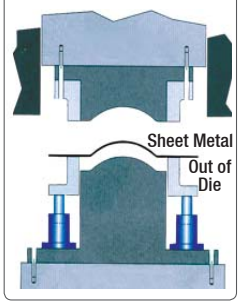
- Press die in closed position
- Gas springs in loading



- Press die in open position
- Gas springs are pending in closed position

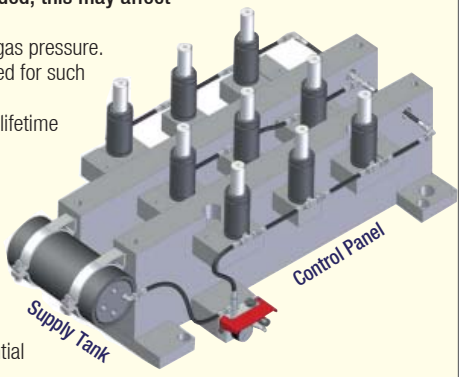


- Press die in open position
- Gas springs are released

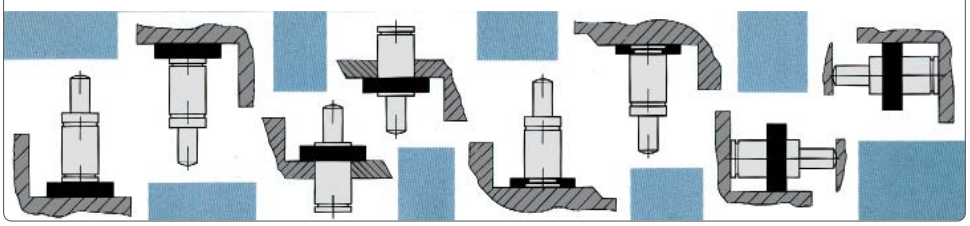


Guvenal - GTH Gas Springs: The gas springs are coded with colours according to their spring forces.
All springs are designed independent on their spring forces. The reason that the forces are different from each other is that the gas is filled under different pressures. At the bottom of the spring, the 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.



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 1828

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.

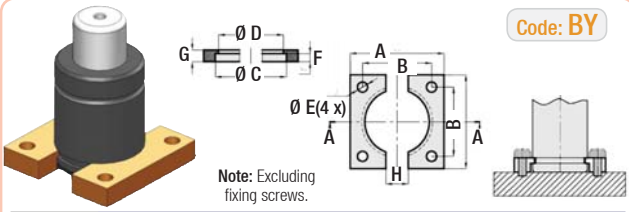
Guvenal - GTH Gas Springs produced in accord with the European Instructions and tested by our authorized engineers.

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

Gas Spring Fixing Elements, Mounting

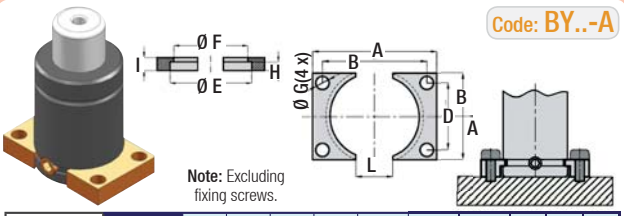
Code: BY



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

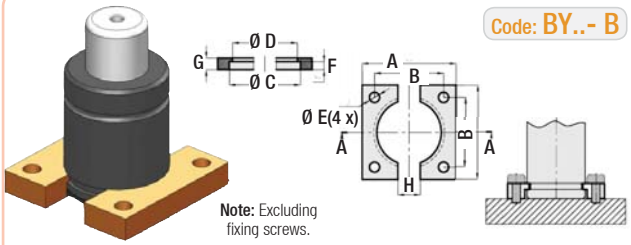
Code: BY..-A



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

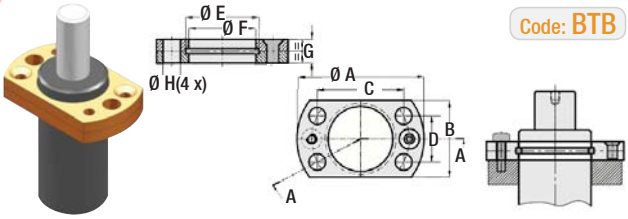
Code: BY..- B



Note: Excluding fixing screws.

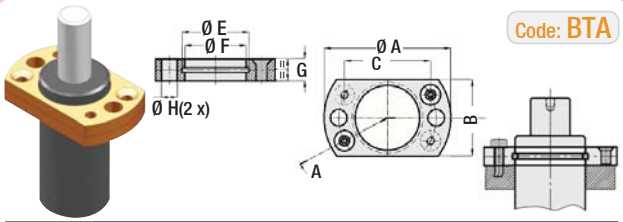
Order	Cylinder Ø	A	B	C	D	E	F	G	H
BY.32-B	32	50	35	32.5	28.5	6.6	4	7	12
BY.38-B	38	55	40	38.5	34.5	6.6	4	7	12
BY.63-B	63	100	73.5	64	57.5	11	8	12	24

Code: BTB



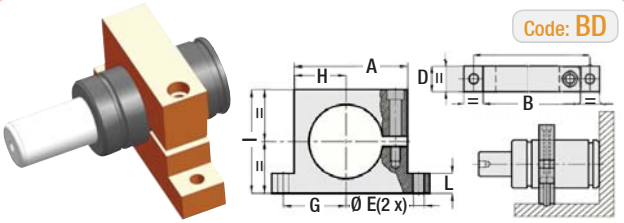
Order	Cylinder Ø	A	B	C	D	E	F	G	H	Ring
BTB.19	Ø 19	44	25	30	12	6.6	M4	19.5	9	Ø 2
BTB.25	Ø 25	50	30	34	18	6.6	M4	25.5	9	Ø 2

Code: BTA



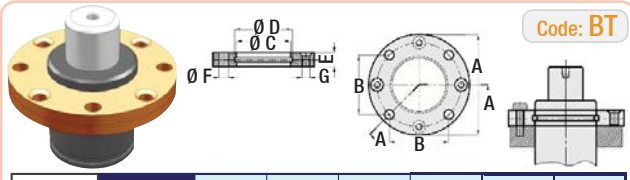
Order	Cylinder Ø	A	B	C	E	F	G	H	Ring
BTA.12	Ø 12	34	21	24	6.6	M3	13.7	9	Ø 1.6
BTA.15	Ø 15	37	24	27	6.6	M3	16.7	9	Ø 1.6
BTA.19	Ø 19	45	25	32	6.6	M4	19.5	9	Ø 2
BTA.25	Ø 25	50	30	38	6.6	M4	25.5	9	Ø 2
BTC.19	Ø 19	45	25	32	6.6	M3	19.5	7	Ø 2

Code: BD



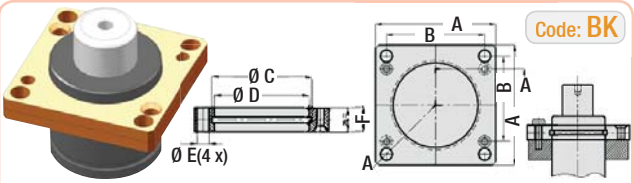
Order	Cylinder Ø	A	B	C	D	E	F	G	H	I	L	F
BD.32	32	90	54	32	20	9	72	31	22	45	15	M8
BD.38	38	95	59	38	20	9	77	34	25	55	15	M8
BD.45	45	100	64	45	20	9	82	37	28	60	15	M8
BD.50	50	130	90	50	30	9	110	50	40	80	20	M8
BD.75	75	160	115	75	30	11	137	63.5	52.5	105	20	M10
BD.95	95	195	145	95	30	13.5	170	80	67.5	125	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

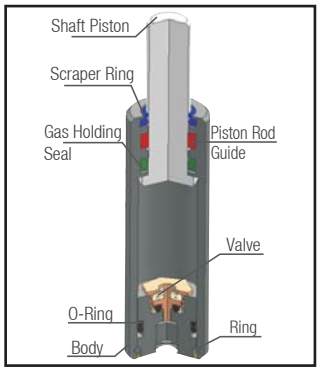


Order	Cylinder Ø	A	B	C	D	E	F	Ring	J
BK.32	32	45	35	9	32.5	7	M4	2	17
BK.38	38	52	40	9	38.5	7	M4	2	17
BK.45	45	64	50	13	45.5	9	M5	2	23
BK.50	50	70	56.5	13	50.5	9	M5	4	24
BK.63	63	90	73.5	16	63.5	11	M5	5	27
BK.75	75	90	73.5	16	75.5	11	M6	5	29
BK.95	95	110	92	18	95.5	13	M6	5	33
BK.120	120	130	109.5	21	120.5	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

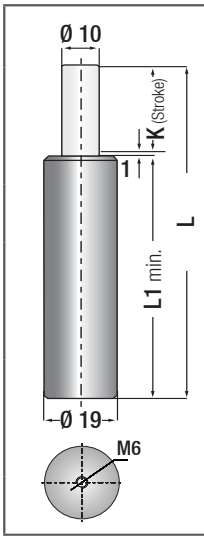
KN Series, Gas Spring - Mini & Low Force

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.

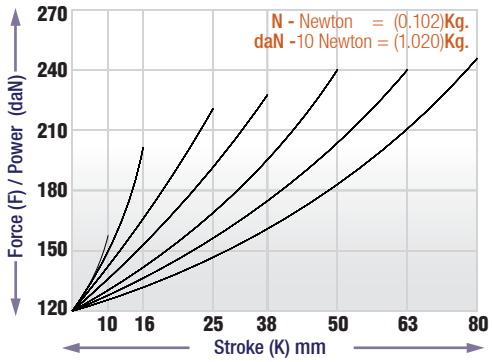
Max. Pressure: **150 Bar** - Max. Speed : **0.6 m/s** - Max. Temp. : **0-80^{0}C**



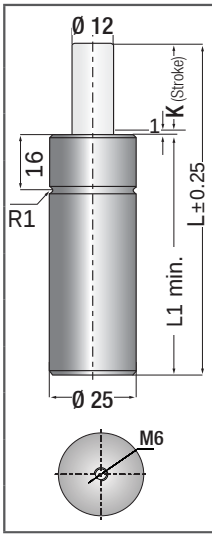
KN Series, Gas Spring - Mini & Low Force



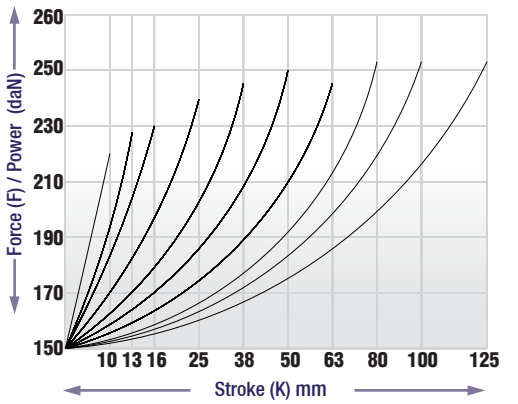
Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
KN.19.10	10	55	65	120 Kg.	250 Kg.	0.09
KN.19.16	16	61	77			0.10
KN.19.25	25	70	95			0.11
KN.19.38	38	83	121			0.14
KN.19.50	50	95	145			0.15
KN.19.63	63	108	171			0.18
KN.19.80	80	125	205			0.20
KN.19.100	100	145	245			0.26



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

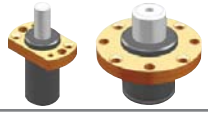


Spring forces according to spring diagram

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

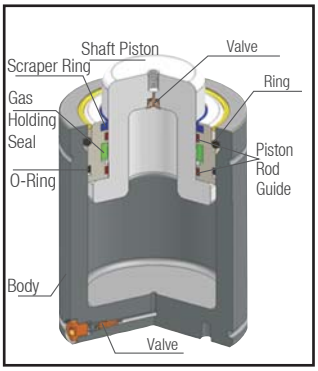
Gas Spring Mounting Examples:
Mount gas springs directly via threaded holes at the bottom or by using fixing elements. Generally for other fitting position of gas springs that are completed their mounting by extractor with screw from bottom in compliance with your die, you can select fitting type specified 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.

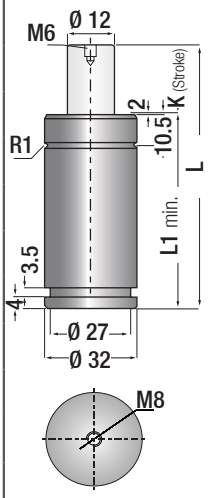
SN Series, Gas Spring - ISO 11901

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.

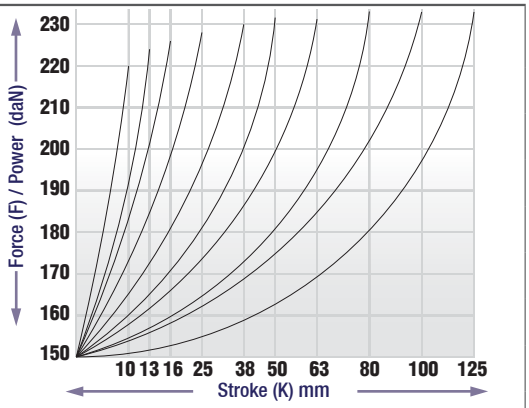
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80^{0}C**



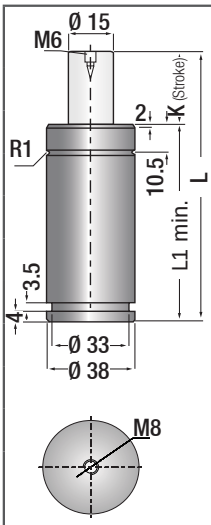
SN Series, Gas Spring - ISO 11901



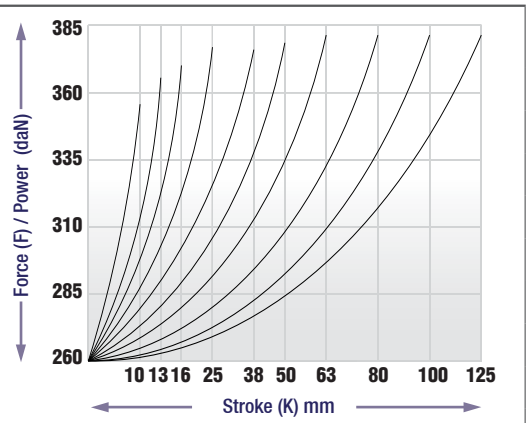
Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
SN.150.10	10	60	70	150 Kg.	200 Kg.	0.28
SN.150.13	13	62.7	75			0.29
SN.150.16	16	66	82			0.30
SN.150.25	25	75	100			0.33
SN.150.38	38	88	126			0.36
SN.150.50	50	100	150			0.40
SN.150.63	63	113.5	177			0.44
SN.150.80	80	130	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.

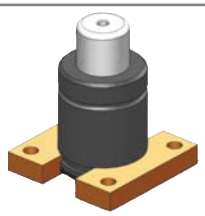


Order Model	Stroke (K) mm	L1 min.	L Length	Initial Force	Final Force	Weight Kg.
SN.250.10	10	60	70	250 Kg.	360 Kg.	0.40
SN.250.13	13	62.7	75			0.41
SN.250.16	16	66	82			0,43
SN.250.19	19	69	88			0.45
SN.250.25	25	75	100			0.48
SN.250.38	38	88	126			0.54
SN.250.50	50	100	150			0.60
SN.250.63	63	113.5	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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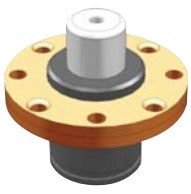


Code: BT

Bottom mount
M6

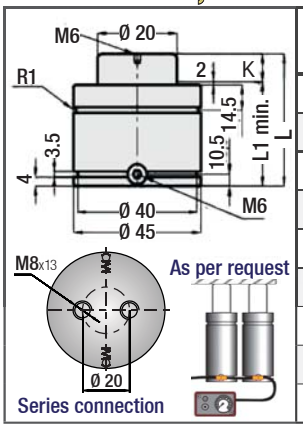
Mounting at the housing
Volume
Ø
+1.0
+0.5

SN.150 & SN.250 Mounting Recommendations:

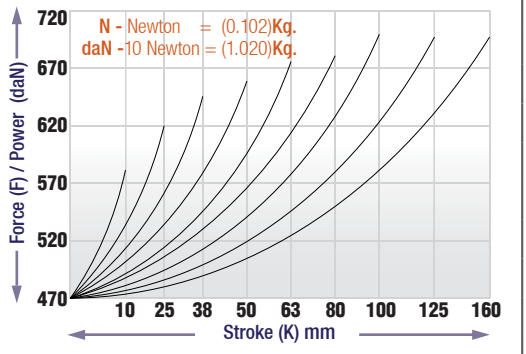
* The gas spring should be positioned on the surface.
* The spring force should be encountered by the surface.
* It is not recommended when the gas springs are connected each other.

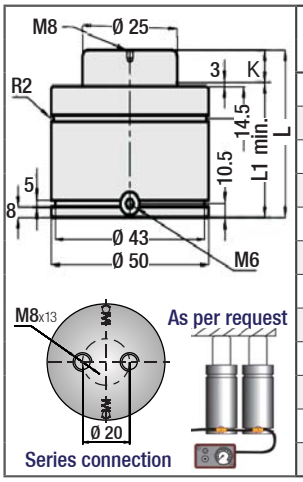
Gas Spring Usage Rules: The screw at the top of the piston head must not be used for mounting of gas spring! This screw is just for maintenance...
Wrong tapping causes wearing in sealing elements and shortening their lifetime. The gas spring should be mounted in parallel to the force to be applied.
The body bottom or retaining flange should be positioned vertically for the force. The surfaces that contacting the bottom and the piston should be hardened.

SN Series, Gas Spring - ISO 11901

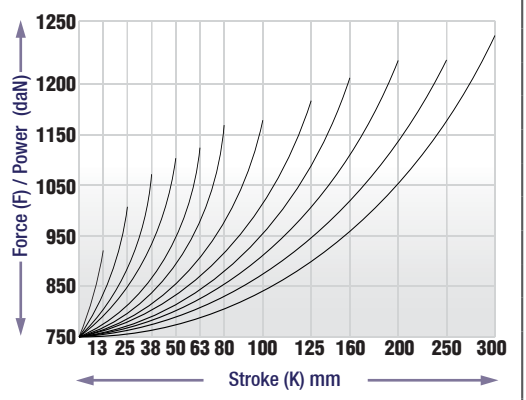


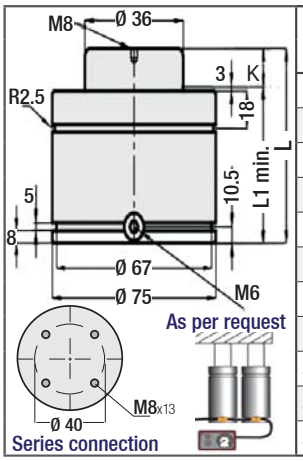
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.500.13	13 mm	97.7	110.4	500 Kg.	725 Kg.	1.00
SN.500.25	25 mm	110	135			1.09
SN.500.38	38 mm	123	161			1.20
SN.500.50	50 mm	135	185			1.29
SN.500.63	63 mm	148.5	212			1.38
SN.500.80	80 mm	165	245			1.50
SN.500.100	100 mm	185	285			1.64
SN.500.125	125 mm	210	335			1.85
SN.500.160	160 mm	245	405			2.10



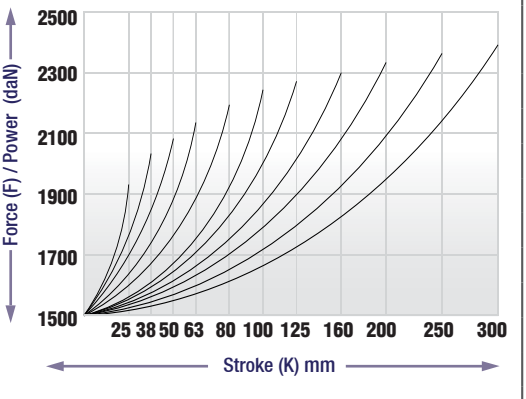


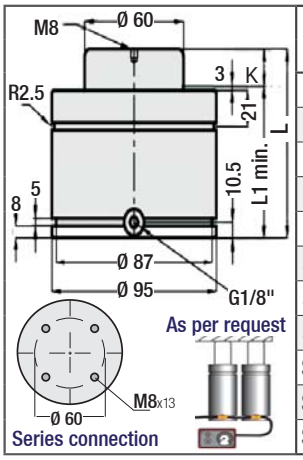
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.750.13	13 mm	107.7	120	750 Kg.	1230 Kg.	1.28
SN.750.25	25 mm	120	145			1.38
SN.750.38	38 mm	133	171			1.48
SN.750.50	50 mm	145	195			1.58
SN.750.63	63 mm	158.5	222			1.69
SN.750.80	80 mm	175	255			1.82
SN.750.100	100 mm	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



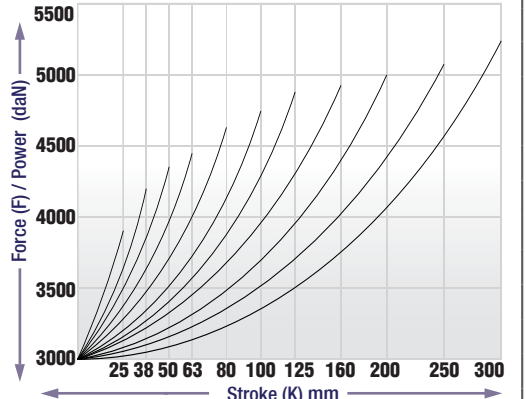


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.1500.25	25 mm	135	160	1500 Kg.	2250 Kg.	3.47
SN.1500.38	38 mm	148	186			3.66
SN.1500.50	50 mm	160	210			3.84
SN.1500.63	63 mm	173.5	237			4.05
SN.1500.80	80 mm	190	270			4.30
SN.1500.100	100 mm	210	310			4.60
SN.1500.125	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

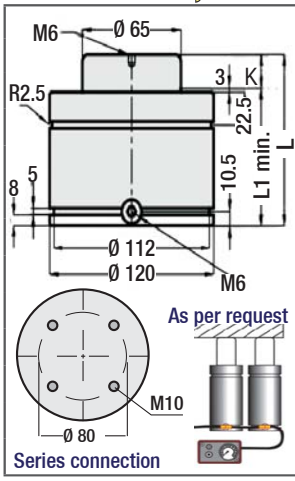




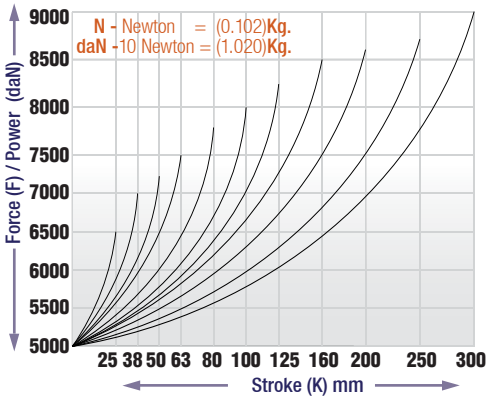
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.3000.25	25 mm	145	170	3000 Kg.	4800 Kg.	6.00
SN.3000.38	38 mm	158	196			6.29
SN.3000.50	50 mm	170	220			6.57
SN.3000.63	63 mm	183.5	247			6.90
SN.3000.80	80 mm	200	280			7.30
SN.3000.100	100 mm	220	320			7.78
SN.3000.125	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

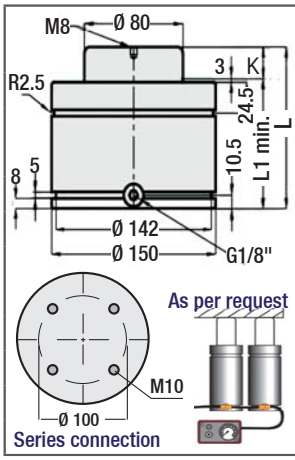


SN Series, Gas Spring - ISO 11901

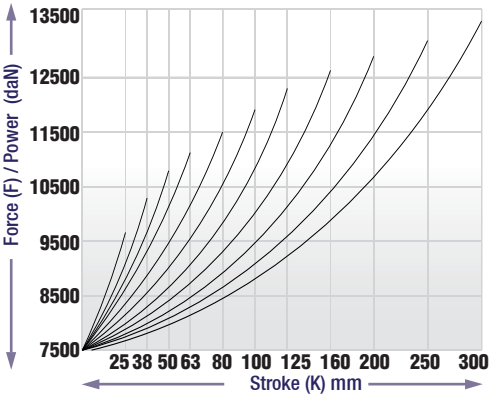


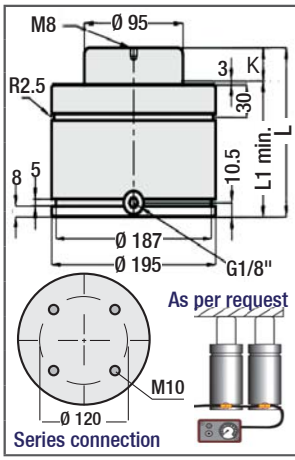
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.5000.25	25 mm	165	190	5000 Kg.	8500 Kg.	11.07
SN.5000.38	38 mm	178	216			11.60
SN.5000.50	50 mm	190	240			12.08
SN.5000.63	63 mm	203.5	267			12.70
SN.5000.80	80 mm	220	300			13.28
SN.5000.100	100 mm	340	340			14.08
SN.5000.125	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



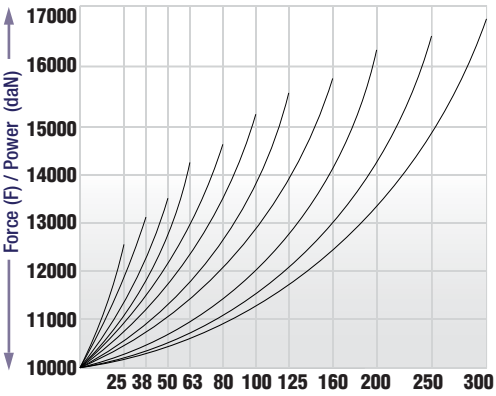


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.7500.25	25 mm	180	205	7500 Kg.	12300 Kg.	19.10
SN.7500.38	38 mm	193	231			19.95
SN.7500.50	50 mm	205	255			20.70
SN.7500.63	63 mm	218.5	282			21.50
SN.7500.80	80 mm	235	315			22.50
SN.7500.100	100 mm	255	355			23.70
SN.7500.125	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

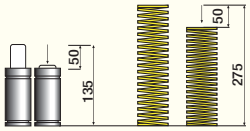




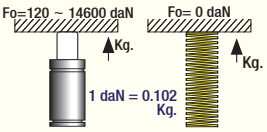
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
SN.10000.25	25 mm	185	210	10000 Kg.	16000 Kg.	35.09
SN.10000.38	38 mm	198	236			36.55
SN.10000.50	50 mm	210	260			37.89
SN.10000.63	63 mm	223.5	287			39.40
SN.10000.80	80 mm	240	320			41.24
SN.10000.100	100 mm	260	360			43.48
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



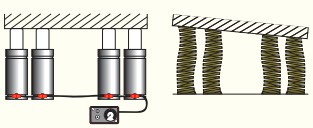
Gas Spring Usage Advantages



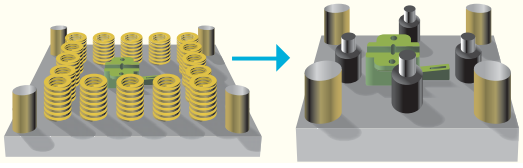
With the same operating stroke and force increase, the length is shortened. It provides length saving and spring structure advantage.



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.

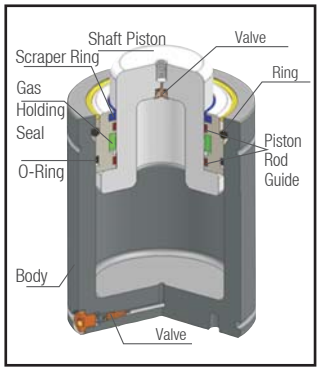


With the gas spring usage, the necessary application area, height, the occupied volume, the retainig spring number for pre-loading are decreased significanlty.

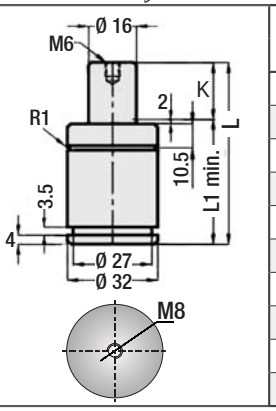
Y Series, Gas Spring - Space Saving

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.

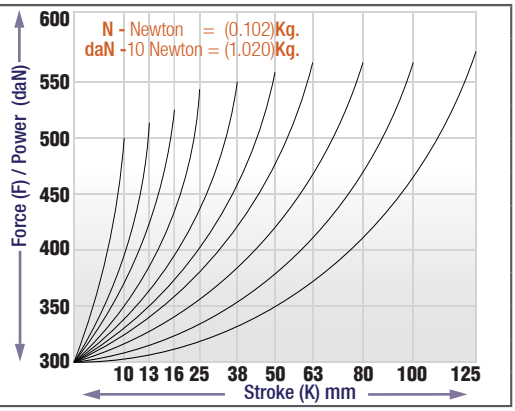
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80^{0}C**

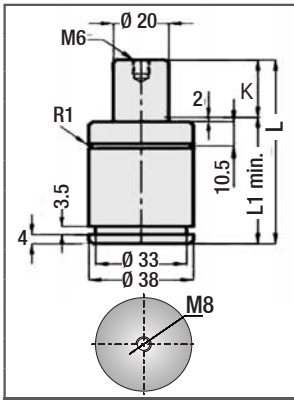


Y Series, Gas Spring - Space Saving

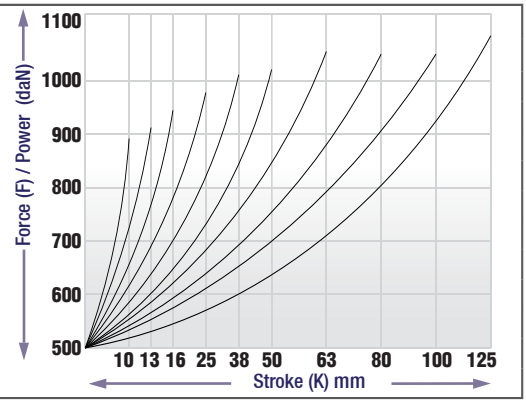


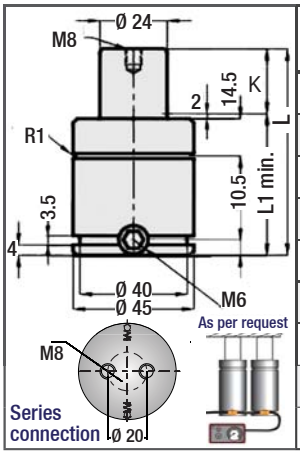
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.300.10	**10** mm	60	70	300 Kg.	550 Kg.	0.29
Y.300.13	**13** mm	62.7	75			0.30
Y.300.16	**16** mm	66	82			0.31
Y.300.25	**25** mm	75	100			0.34
Y.300.38	**38** mm	88	126			0.38
Y.300.50	**50** mm	100	150			0.43
Y.300.63	**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



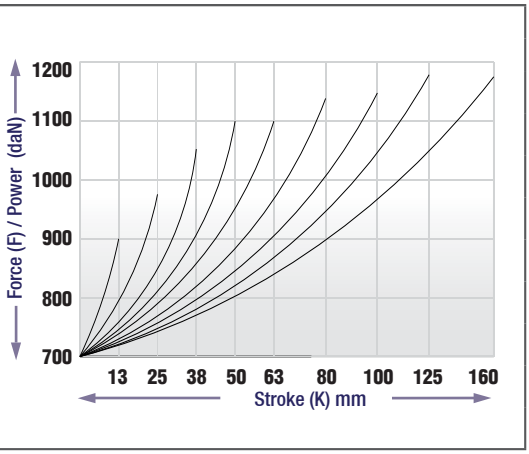


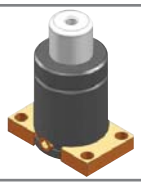
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.500.10	**10** mm	60	70	500 Kg.	1050 Kg.	0.42
Y.500.13	**13** mm	62.7	75			0.43
Y.500.16	**16** mm	66	82			0.45
Y.500.19	**19** mm	69	88			0.48
Y.500.25	**25** mm	75	100			0.50
Y.500.38	**38** mm	88	126			0.56
Y.500.50	**50** 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



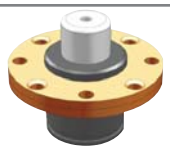


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.700.13	**13** mm	97.7	110	700 Kg.	1100 Kg.	0.69
Y.700.25	**25** mm	110	135			0.77
Y.700.38	**38** mm	123	161			0.86
Y.700.50	**50** mm	135	185			0.94
Y.700.63	**63** mm	148.5	212			1.03
Y.700.80	**80** mm	165	245			1.14
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

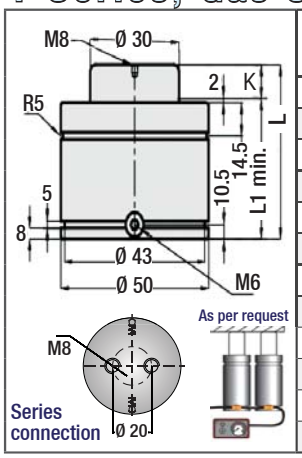


Code: BT - BK - BD

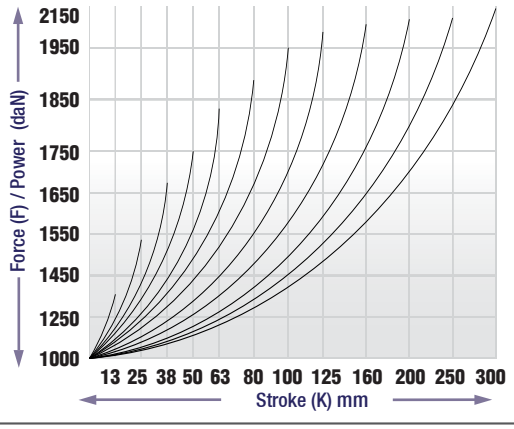
Bottom mount
M6

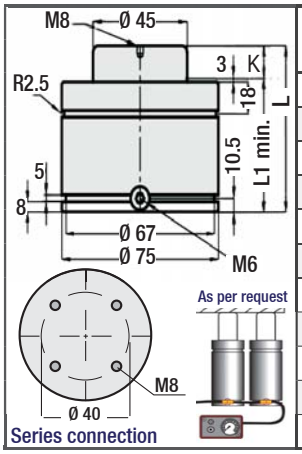
Mounting at the housing
Volume
Ø
+1.0
+0.5

Y Series, Gas Spring - Space Saving

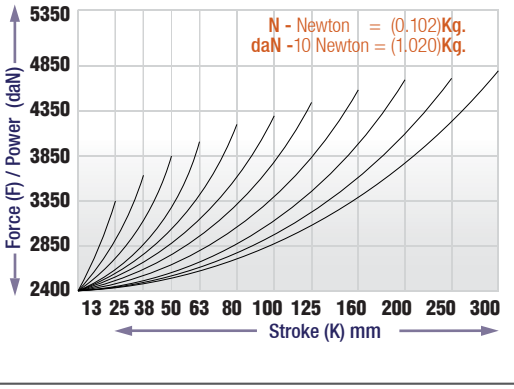


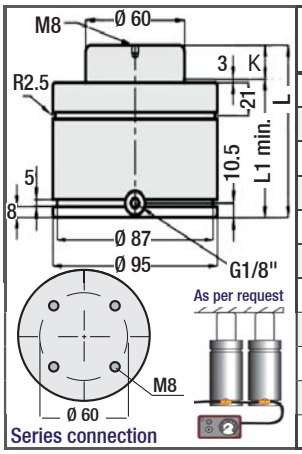
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.1000.13	13 mm	107.7	120	1000 Kg.	1750 Kg.	0.97
Y.1000.25	25 mm	120	145			1.08
Y.1000.38	38 mm	133	171			1.19
Y.1000.50	50 mm	145	195			1.29
Y.1000.63	63 mm	158.5	222			1.40
Y.1000.80	80 mm	175	255			1.54
Y.1000.100	100 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



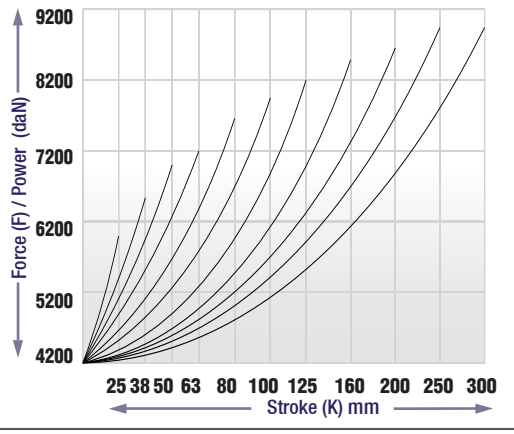


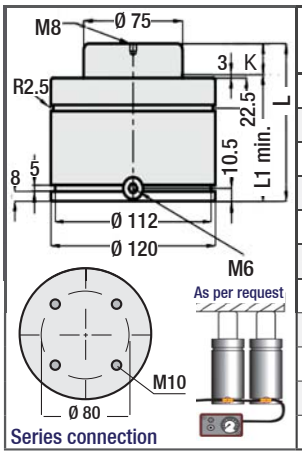
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.2400.25	25 mm	135	160	2400 Kg.	4250 Kg.	2.50
Y.2400.38	38 mm	148	186			2.70
Y.2400.50	50 mm	160	210			2.90
Y.2400.63	63 mm	173.5	237			3.12
Y.2400.80	80 mm	190	270			3.39
Y.2400.100	100 mm	210	310			4.45
Y.2400.125	125 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



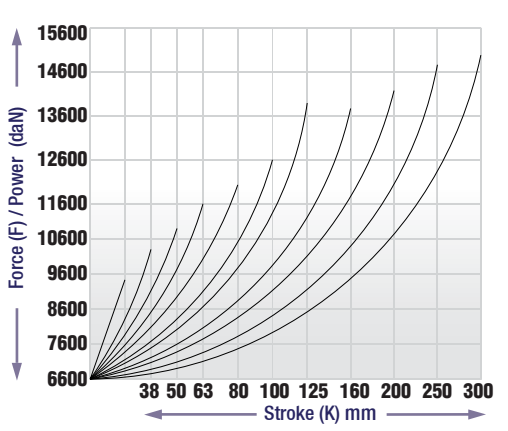


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.4200.25	25 mm	145	170	4200 Kg.	7700 Kg.	4.29
Y.4200.38	38 mm	158	196			4.62
Y.4200.50	50 mm	170	220			4.93
Y.4200.63	63 mm	183.5	247			5.27
Y.4200.80	80 mm	200	280			5.57
Y.4200.100	100 mm	220	320			7.80
Y.4200.125	125 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



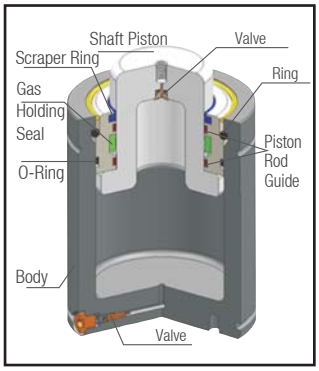


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
Y.6600.25	25 mm	165	190	6600 Kg.	12500 Kg.	8.10
Y.6600.38	38 mm	178	216			8.60
Y.6600.50	50 mm	190	240			9.10
Y.6600.63	63 mm	203.5	267			9.70
Y.6600.80	80 mm	220	300			10.30
Y.6600.100	100 mm	240	340			13.50
Y.6600.125	125 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

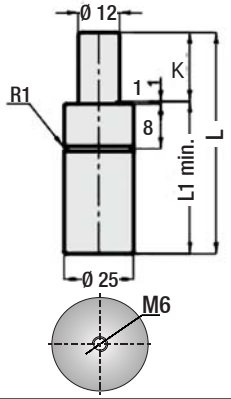


YO Series, Gas Spring - High Force

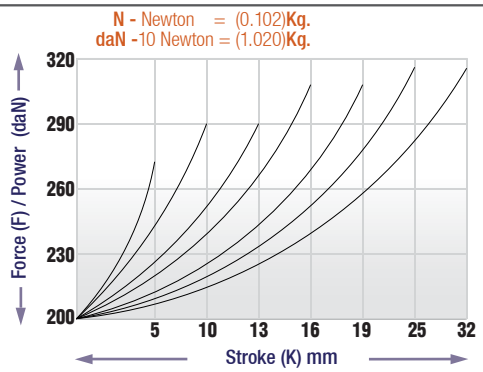
YO series are designed to save space and they provide minimum height as possible today with the highest forces. They can be connected in series to the hose systems. Wide connection range and accessories for all kinds of applications.
When filling / charging the gas spring, the maximum pressure level 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**



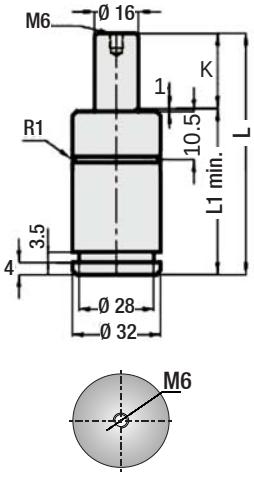
YO Series, Gas Spring - High Force



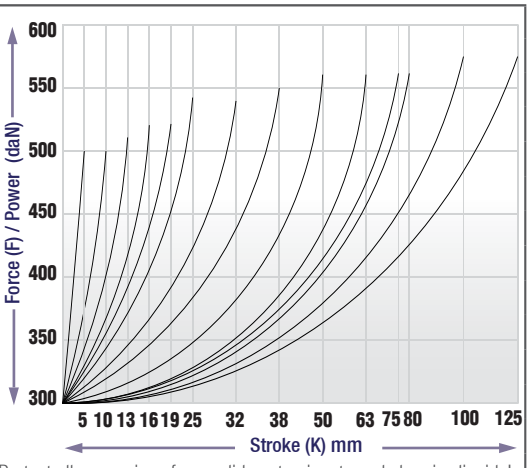
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.200.5	**5** mm	35	40	200 Kg.	300 Kg.	0.09
YO.200.10	**10** mm	40	50			0.10
YO.200.13	**13** mm	43	56			0.10
YO.200.16	**16** mm	46	62			0.11
YO.200.19	**19** mm	49	68			0.12
YO.200.25	**25** mm	55	80			0.13
YO.200.32	**32** 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

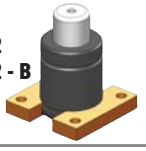


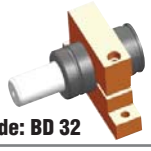
Protect all gas springs from solid contaminants and abrasive liquids! If it is not protected, clean the residue from the cylinders by using air stream regularly. When the cylinders are reversed, a significant improvement is obtained.

Bottom mount
M6

Mounting at the housing
Volume
Ø
+1.0
+0.5

Code: BY 32
Code: BY 32 - B





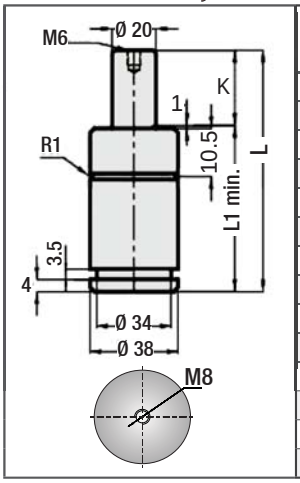
Code: BD 32

Code: BT 32

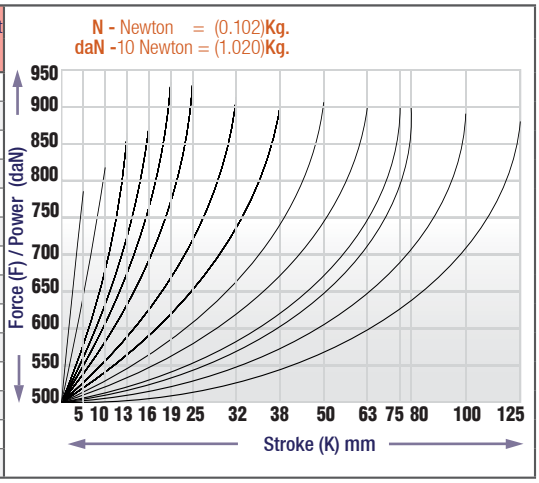
Code: BK 32

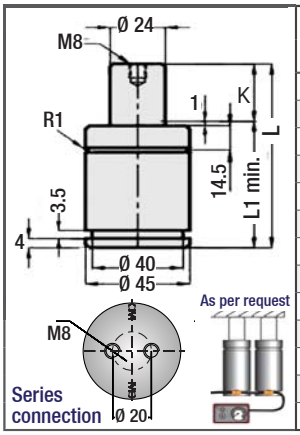
Mounting: The gas springs should be placed to surface on flat and in vertical position, the surface should encountered the gas spring force. Do not repair worn springs. The worn springs should be replaced.

YO Series, Gas Spring - High Force

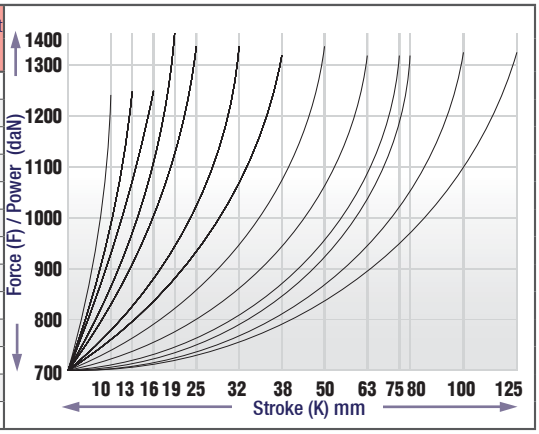


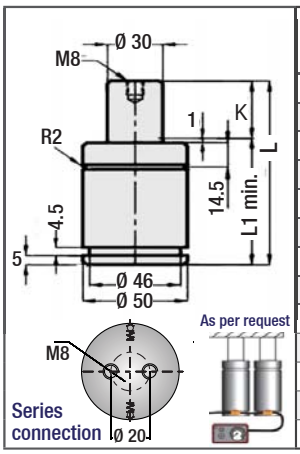
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.500.5	5 mm	35	40	500 Kg.	950 Kg.	0.25
YO.500.10	10 mm	40	50			0.27
YO.500.13	13 mm	43	56			0.29
YO.500.16	16 mm	46	62			0.31
YO.500.19	19 mm	49	68			0.33
YO.500.25	25 mm	55	80			0.36
YO.500.32	32 mm	62	94			0.40
YO.500.38	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



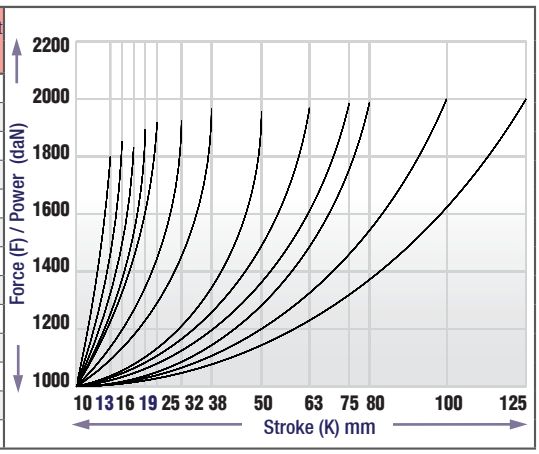


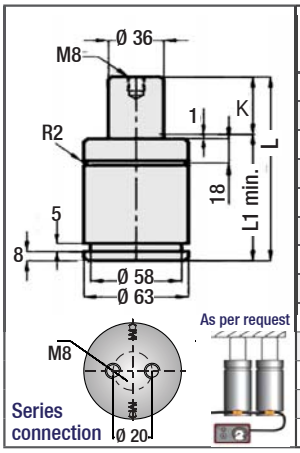
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.700.10	10 mm	42	52	700 Kg.	1400 Kg.	0.39
YO.700.13	13 mm	45	58			0.42
YO.700.16	16 mm	48	64			0.45
YO.700.19	19 mm	51	70			0.48
YO.700.25	25 mm	57	82			0.53
YO.700.32	32 mm	64	96			0.58
YO.700.38	38 mm	70	108			0.62
YO.700.50	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



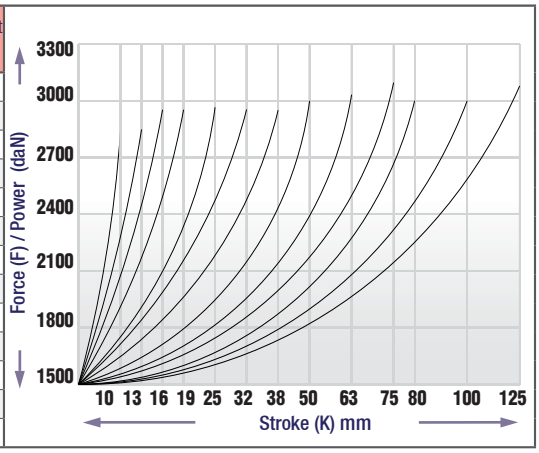


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.1000.10	10 mm	48	58	1000 Kg.	2250 Kg.	0.57
YO.1000.13	13 mm	51	64			0.59
YO.1000.16	16 mm	54	70			0.62
YO.1000.19	19 mm	57	76			0.65
YO.1000.25	25 mm	63	88			0.70
YO.1000.32	32 mm	70	102			0.77
YO.1000.38	38 mm	76	114			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

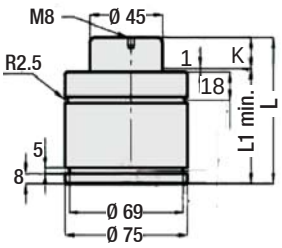




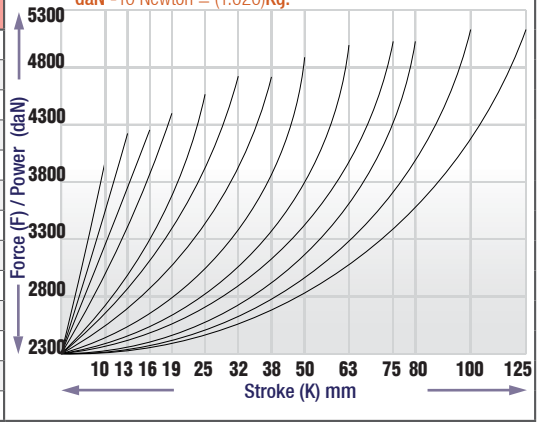
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.1500.10	10 mm	54	64	1500 Kg.	2950 Kg.	1.02
YO.1500.13	13 mm	57	70			1.05
YO.1500.16	16 mm	60	76			1.10
YO.1500.19	19 mm	63	82			1.15
YO.1500.25	25 mm	69	94			1.25
YO.1500.32	32 mm	76	108			1.35
YO.1500.38	38 mm	82	120			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

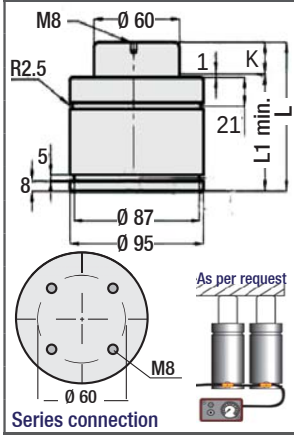


YO Series, Gas Spring - High Force

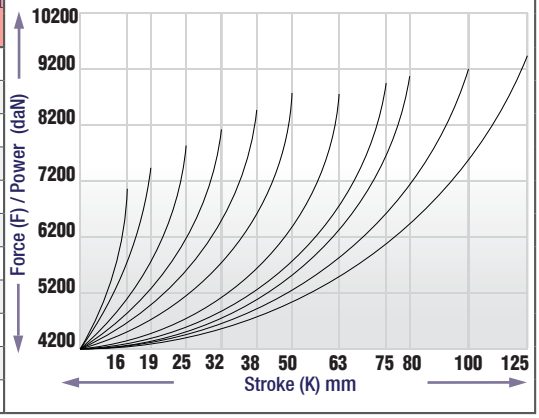


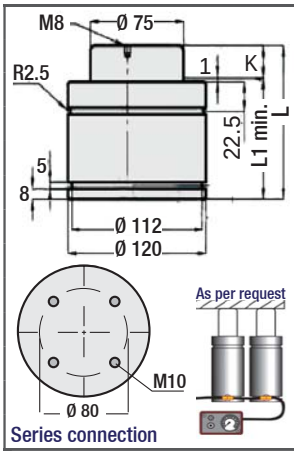
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.2400.10	10 mm	55	65	2400 Kg.	4850 Kg.	1.47
YO.2400.13	13 mm	58	71			1.52
YO.2400.16	16 mm	61	77			1.58
YO.2400.19	19 mm	64	83			1.65
YO.2400.25	25 mm	70	95			1.77
YO.2400.32	32 mm	77	109			1.93
YO.2400.38	38 mm	83	121			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



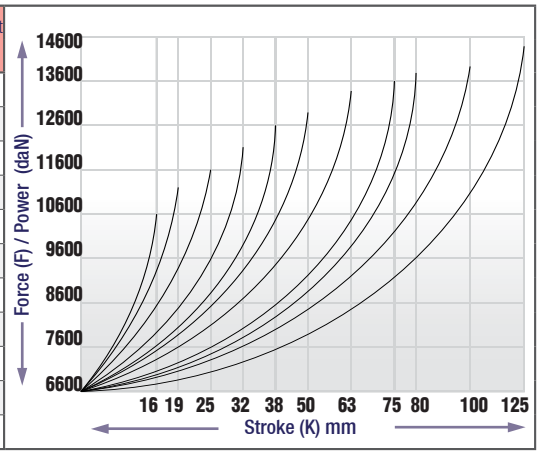


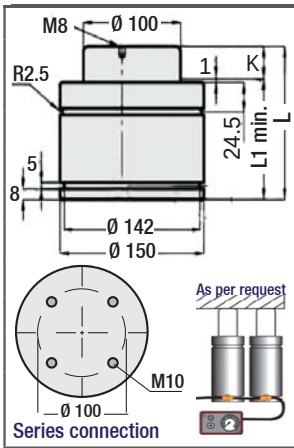
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.4200.16	16 mm	81	97	4200 Kg.	8600 Kg.	3.40
YO.4200.19	19 mm	84	103			3.45
YO.4200.25	25 mm	90	115			3.65
YO.4200.32	32 mm	97	129			3.82
YO.4200.38	38 mm	103	141			4.00
YO.4200.50	50 mm	115	165			4.44
YO.4200.63	63 mm	128	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



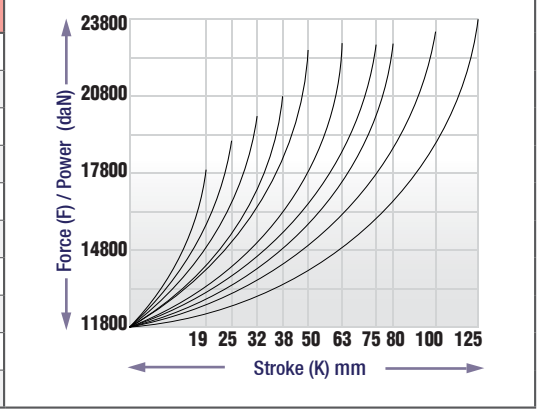


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.6600.16	16 mm	91	107	6600 Kg.	13200 Kg.	6.60
YO.6600.19	19 mm	94	113			6.65
YO.6600.25	25 mm	100	125			6.82
YO.6600.32	32 mm	107	139			7.18
YO.6600.38	38 mm	113	151			7.57
YO.6600.50	50 mm	125	175			8.18
YO.6600.63	63 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





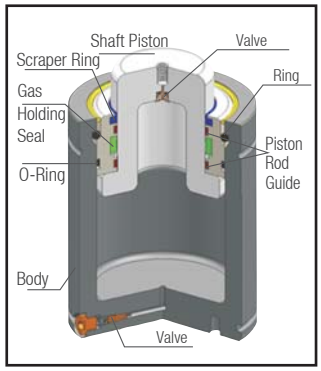
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
YO.11800.19	19 mm	97	116	11800 Kg.	20500 Kg.	9.57
YO.11800.25	25 mm	103	128			9.96
YO.11800.32	32 mm	110	142			10.41
YO.11800.38	38 mm	116	154			10.81
YO.11800.50	50 mm	128	178			11.59
YO.11800.63	63 mm	141	204			11.88
YO.11800.75	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



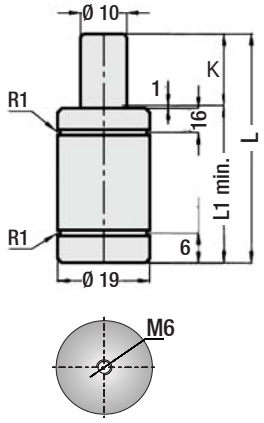
MG Series, Gas Spring - High Stroke Rates

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.

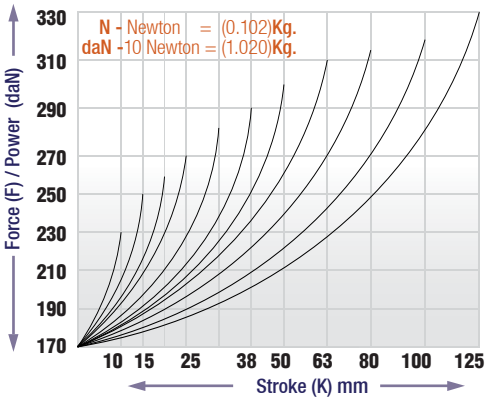
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80ºC**



MG Series, Gas Spring - High Stroke Rates



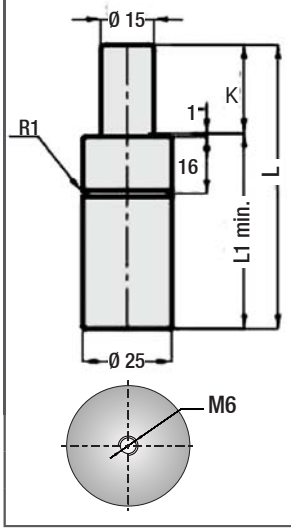
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.170.07	**7** mm	37	44	170 Kg.	280 Kg.	0.06
MG.170.10	**10** mm	40	50			0.06
MG.170.15	**15** mm	45	60			0.07
MG.170.19	**19** mm	49	68			0.07
MG.170.25	**25** mm	55	80			0.08
MG.170.38	**38** mm	68	106			0.09
MG.170.50	**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



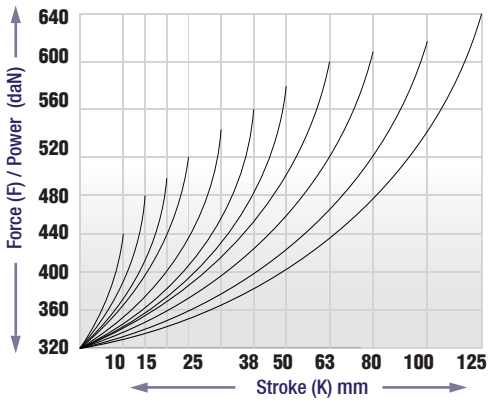
Bottom mount M6

Mounting at the housing
Ø
+1.0
+0.5

Code: BTA 25
Code: BTB 25

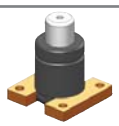


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.320.07	**7** mm	37	44	320 Kg.	520 Kg.	0.10
MG.320.10	**10** mm	40	50			0.10
MG.320.15	**15** mm	45	60			0.11
MG.320.19	**19** mm	49	68			0.12
MG.320.25	**25** mm	55	80			0.13
MG.320.32	**32** mm	62	94			0.14
MG.320.38	**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

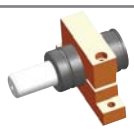


Prefer for square flange fixing elements, non-rotating and gas springs are connected in series. If there is vibration during operation, retighten the screws meticulously.

Bottom mount M6



Code: BY 32
Code: BY 32 - B



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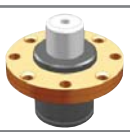

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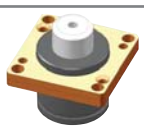
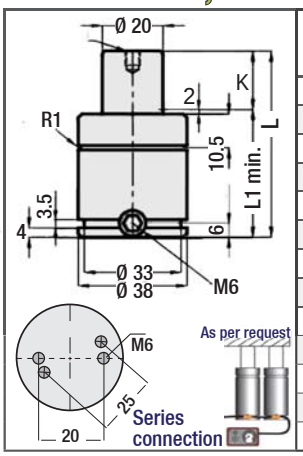


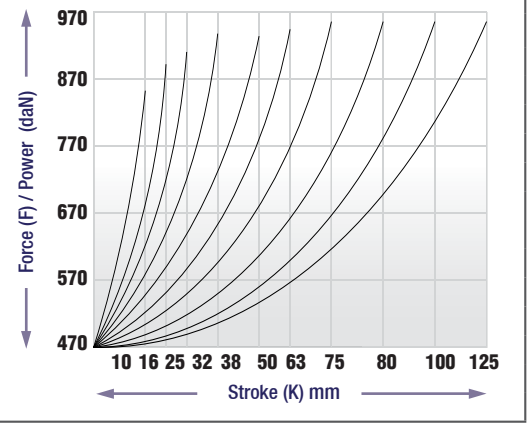
Code: BK 32

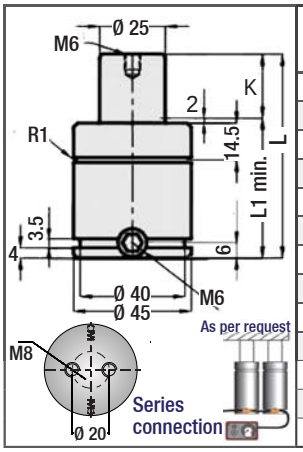
All Die Gas Spring Cylinders: They are designed with a stroke reserve between 1 to 3 mm. Thus, the nominal value (stroke) can be totally implemented. However, it is recommended not to exceed 90% of the stroke value in order to avoid an extra stroke risk caused by the changes or errors in the system. Otherwise, it may cause irreparable damages to the cylinders and serious dangers for the personnel.

MG Series, Gas Spring - High Stroke Rates

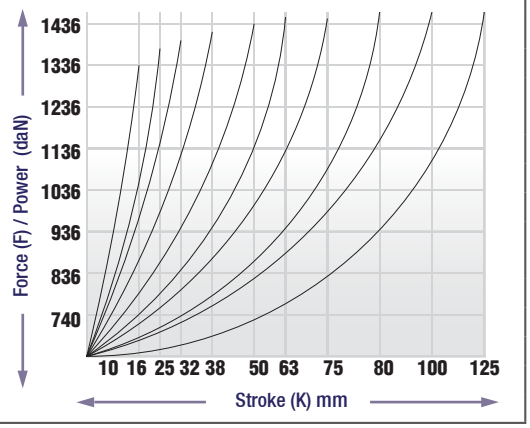


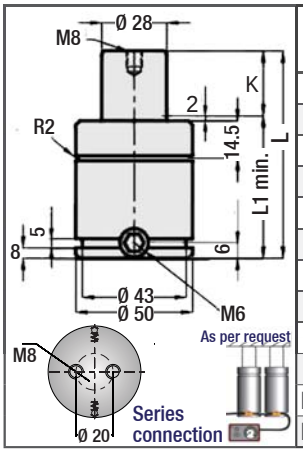
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.500.10	**10** mm	40	50	500 Kg.	770 Kg.	0.24
MG.500.13	**13** mm	43	56			0.25
MG.500.16	**16** mm	46	62			0.26
MG.500.19	**19** mm	49	68			0.28
MG.500.25	**25** mm	55	80			0.31
MG.500.32	**32** mm	62	94			0.34
MG.500.38	**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



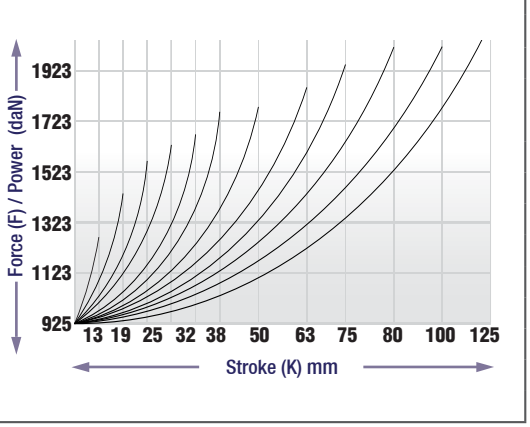


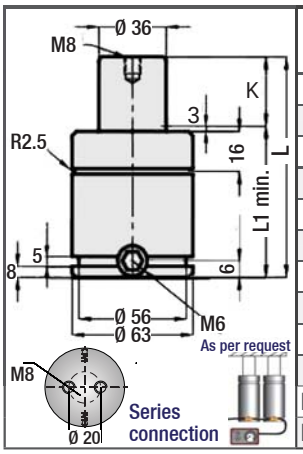
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.750.10	**10** mm	42	52	750 Kg.	1200 Kg.	0.36
MG.750.13	**13** mm	45	58			0.38
MG.750.16	**16** mm	48	64			0.39
MG.750.19	**19** mm	51	70			0.41
MG.750.25	**25** mm	57	82			0.45
MG.750.32	**32** mm	64	96			0.50
MG.750.38	**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



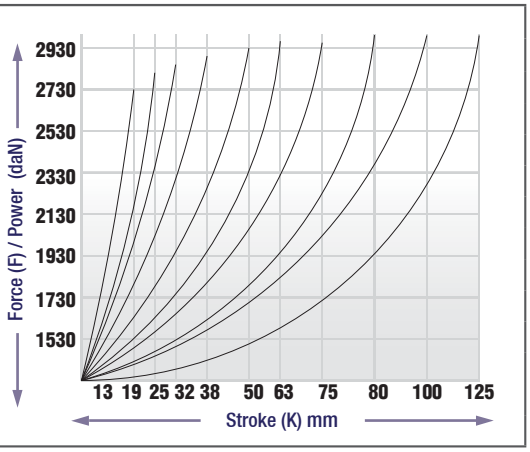


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.1000.13	**13** mm	51	64	1000 Kg.	1550 Kg.	0.51
MG.1000.16	**16** mm	54	70			0.54
MG.1000.19	**19** mm	57	76			0.56
MG.1000.25	**25** mm	63	88			0.61
MG.1000.32	**32** mm	70	102			0.67
MG.1000.38	**38** mm	76	114			0.71
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



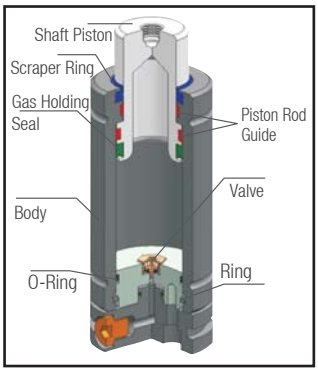


Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
MG.1500.13	**13** mm	57	70	1500 Kg.	2400 Kg.	0.92
MG.1500.16	**16** mm	60	76			0.96
MG.1500.19	**19** mm	63	82			0.99
MG.1500.25	**25** mm	69	94			1.06
MG.1500.32	**32** mm	76	108			1.14
MG.1500.38	**38** mm	82	120			1.21
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

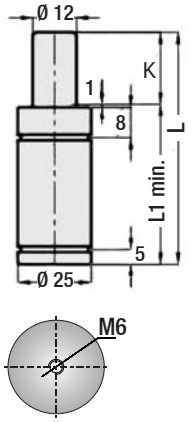


GC Series, Gas Spring - Super Pressure

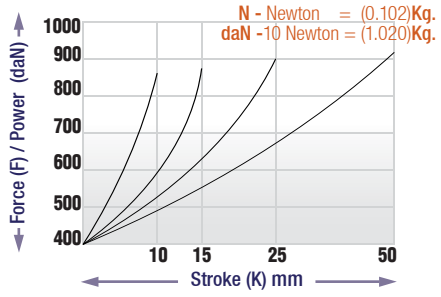
Compact super pressure gas springs: The series which has piston sealing for maximum force has the highest forces, high pressure but shorter lifetime. It can be connected in series to the hoses. Wide connection range and accessories for all kinds of applications.
When filling / charging the gas spring, 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**



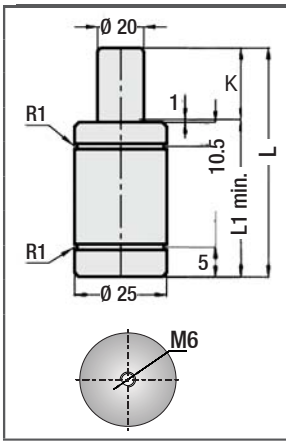
GC Series, Gas Spring - Super Pressure



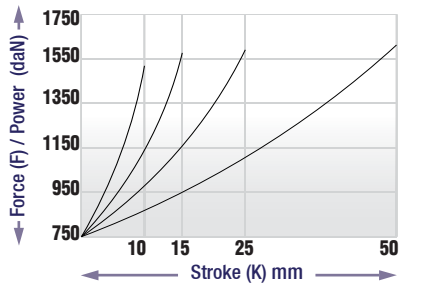
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.420.06	**6** mm	50	56	420 Kg.	840 Kg.	0.14
GC.420.10	**10** mm	60	70			0..16
GC.420.16	**16** mm	75	91			0.19
GC.420.25	**25** mm	95	120			0.23
GC.420.32	**32** mm	108	140			0.25
GC.420.40	**40** mm	125	165			0.28
GC.420.50	**50** mm	145	195			0.32



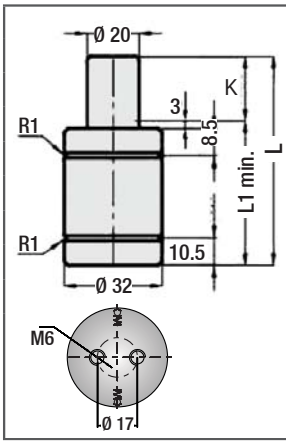
Pressure Increse: During operation, the piston of the gas spring inserts into the body and the volume of the gas inside gradually decreases. As a result, the pressure increase can be seen as the multiplication factor in the gas spring diagram. The spring force can be easily calculated by multiplying the initial force and the pressure increase factor.



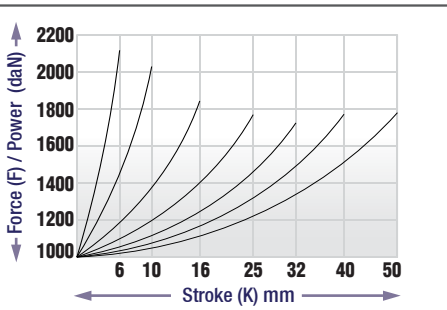
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.750.06	**6** mm	57	63	750 Kg.	1200 Kg.	0.23
GC.750.10	**10** mm	65	75			0.25
GC.750.16	**16** mm	77	93			0.28
GC.750.25	**25** mm	95	120			0.33
GC.750.32	**32** mm	108	140			0.37
GC.750.40	**40** mm	125	165			0.42
GC.750.50	**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



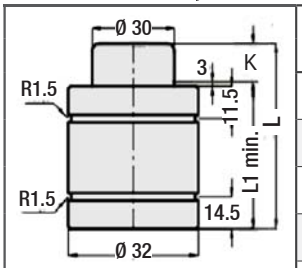
Bottom mount M6

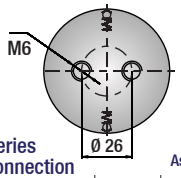
Mounting at the housing Ø +1.0 +0.5

Code: **BY**

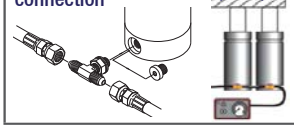
Code: **BK**

GC Series, Gas Spring - Super Pressure





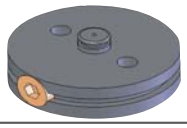
Series connection



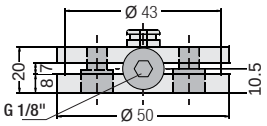
As per request

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

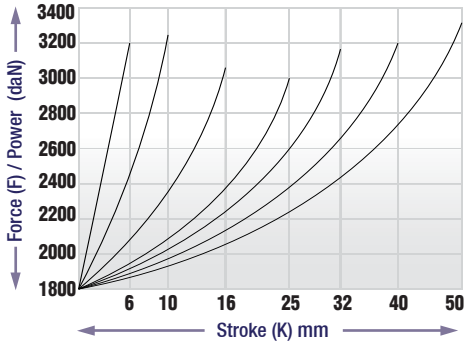
Base with valve

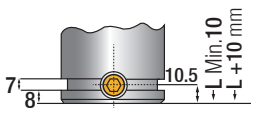


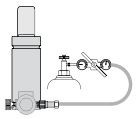
Series connection adapter



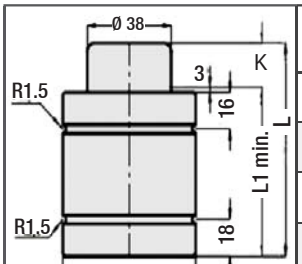
N - Newton = (0.102)Kg.
daN -10 Newton = (1.020)Kg.

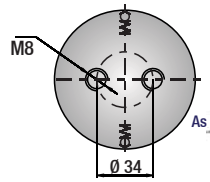






Keep pressure level for each model !





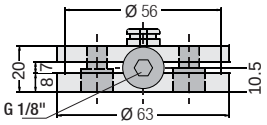
Series connection

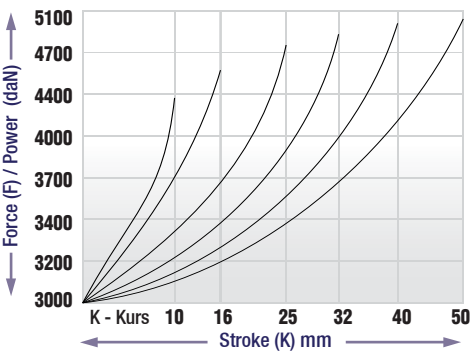
As per request

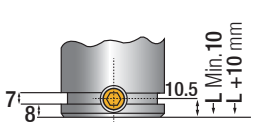
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.3000.10	10 mm	75	85	3000 Kg.	4650 Kg.	1.23
GC.3000.16	16 mm	87	103			1.35
GC.3000.25	25 mm	105	130			1.54
GC.3000.32	32 mm	118	150			1.68
GC.3000.40	40 mm	135	175			1.86
GC.3000.50	50 mm	155	205			2.07

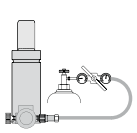
Base with valve

Series connection adapter

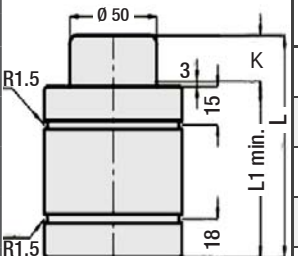


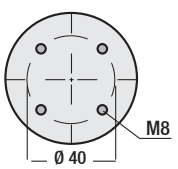






Keep pressure level for each model !





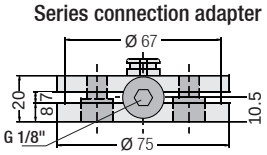
Series connection

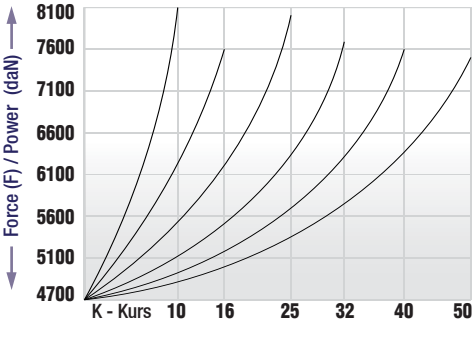
As per request

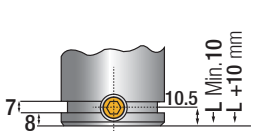
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.4700.10	10 mm	70	80	4700 Kg.	6350 Kg.	1.60
GC.4700.16	16 mm	90	106			1.83
GC.4700.25	25 mm	110	135			2.07
GC.4700.32	32 mm	135	167			2.37
GC.4700.40	40 mm	160	200			2.66
GC.4700.50	50 mm	190	240			3.01

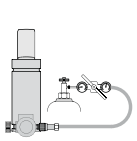
Base with valve

Series connection adapter

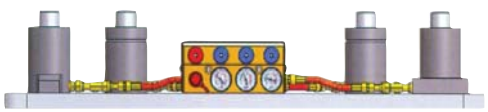




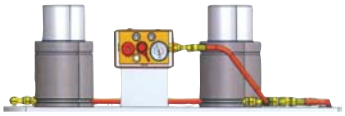




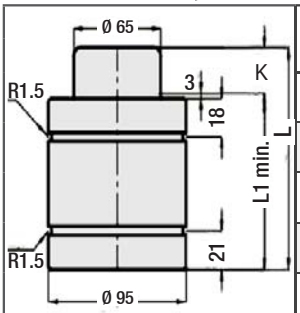
Keep pressure level for each model !

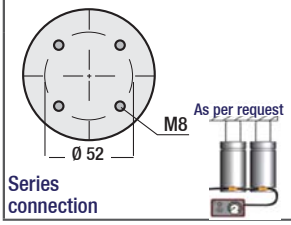


Valve inlets of the series connection cylinders;
Specify 1 or 2 valves when placing order!



GC Series, Gas Spring - Super Pressure

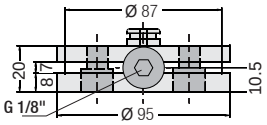




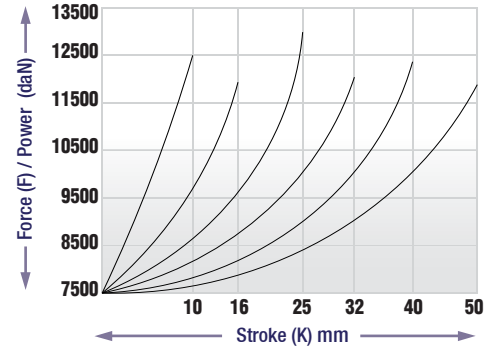
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.7500.10	10 mm	80	90	7500 Kg.	10500 Kg.	2.87
GC.7500.16	16 mm	100	116			3.23
GC.7500.25	25 mm	120	145			3.62
GC.7500.32	32 mm	150	182			4.16
GC.7500.40	40 mm	170	210			4.54
GC.7500.50	50 mm	205	255			5.17

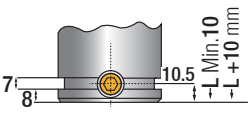
Base with valve

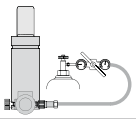
Series connection adapter



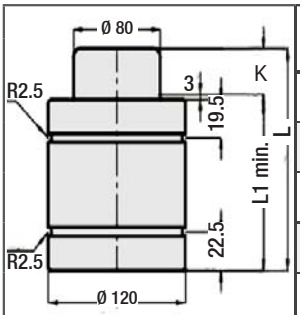
N - Newton = (0.102)Kg.
daN -10 Newton = (1.020)Kg.

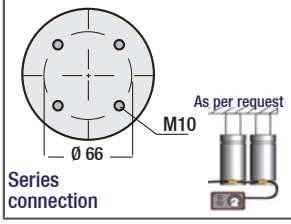






Keep pressure level for each model !

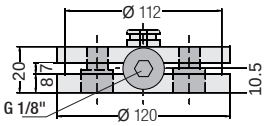


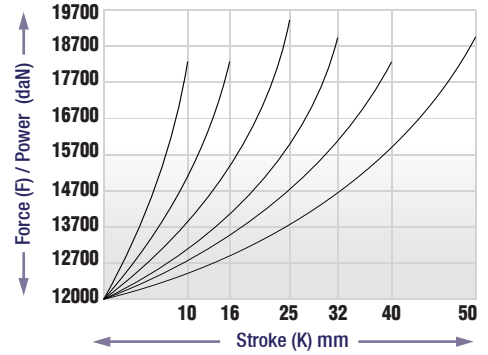


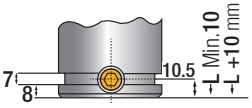
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.12000.10	10 mm	90	100	12000 Kg.	16200 Kg.	5.50
GC.12000.16	16 mm	110	126			6.10
GC.12000.25	25 mm	130	155			6.77
GC.12000.32	32 mm	155	187			7.54
GC.12000.40	40 mm	180	220			8.31
GC.12000.50	50 mm	210	260			9.25

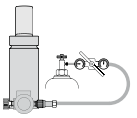
Base with valve

Series connection adapter

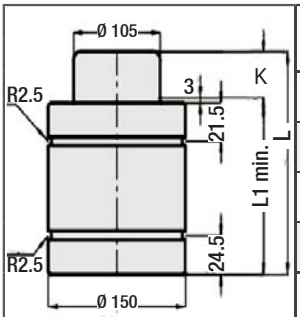


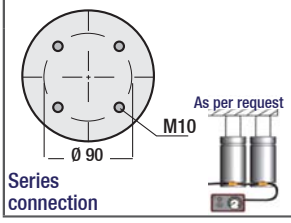






Keep pressure level for each model !

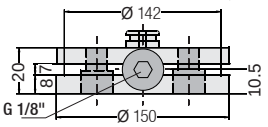


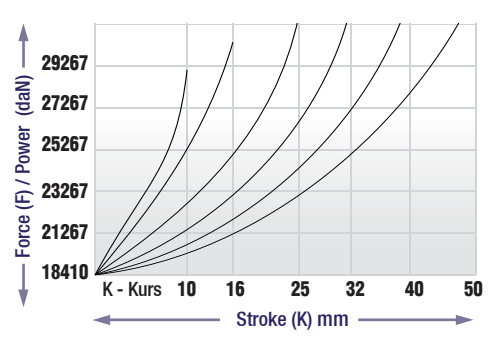


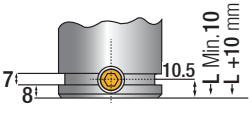
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
GC.18500.10	10 mm	100	110	18500 Kg.	26820 Kg.	9.23
GC.18500.16	16 mm	120	136			10.20
GC.18500.25	25 mm	140	165			11.22
GC.18500.32	32 mm	165	197			12.43
GC.18500.40	40 mm	195	235			13.85
GC.18500.50	50 mm	220	270			15.11

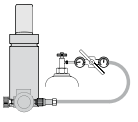
Base with valve

Series connection adapter

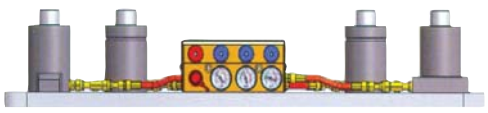




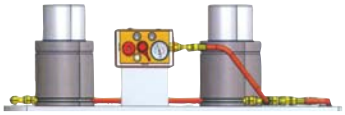




Keep pressure level for each model !

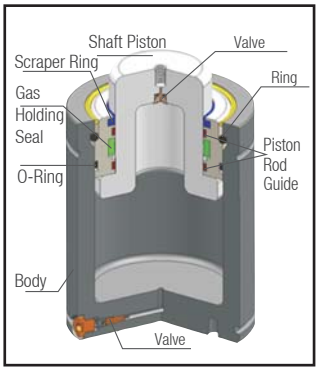


Valve inlets of the series connection cylinders;
Specify 1 or 2 valves when placing order!

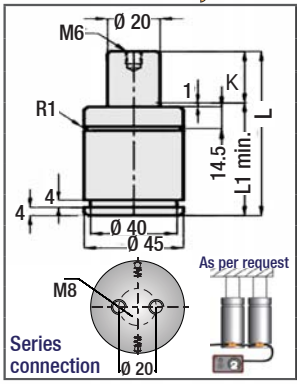


AD Series, Gas Spring - Low Profile

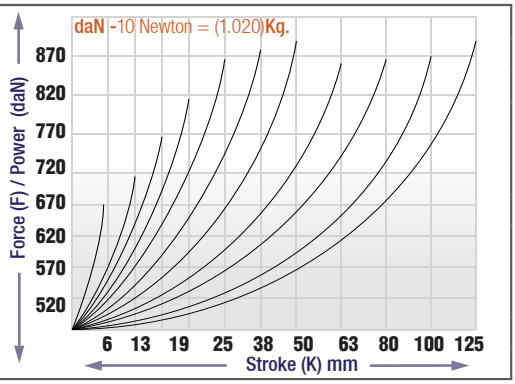
With its compact series features, requirement of protection from liquids, high stroke forces. 30% maximum pressure increase compared to the "Y Series" having similar sizes. Two layers of permanent lubrication. Ideal product for forming / shaping dies. It can be connected to the hose systems. Wide range 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**

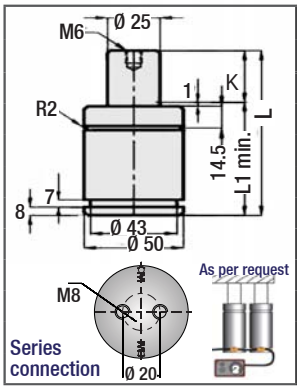


AD Series, Gas Spring - Low Profile

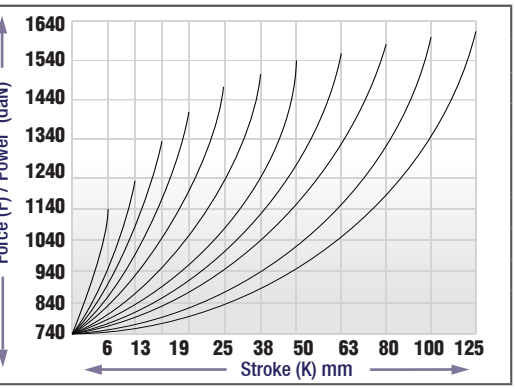


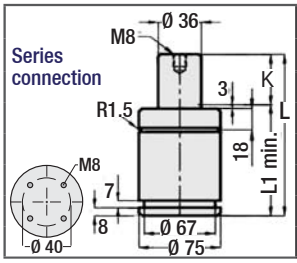
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.500.06	**6** mm	56	62			0.51
AD.500.13	**13** mm	62.7	75			0.56
AD.500.19	**19** mm	69	88			0.60
AD.500.25	**25** mm	75	100			0.65
AD.500.38	**38** mm	88	126	500 Kg.	700 Kg.	0.74
AD.500.50	**50** mm	100	150			0.83
AD.500.63	**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



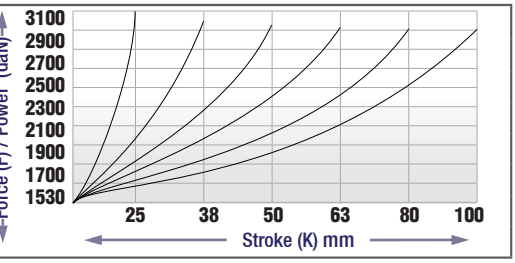


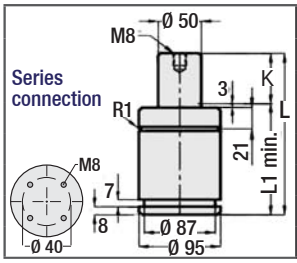
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.750.06	**6** mm	56	62			0.59
AD.750.13	**13** mm	62.7	75			0.65
AD.750.19	**19** mm	69	88			0.70
AD.750.25	**25** mm	75	100			0.76
AD.750.38	**38** mm	88	126	750 Kg.	1150 Kg.	0.80
AD.750.50	**50** mm	100	150			1.00
AD.750.63	**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



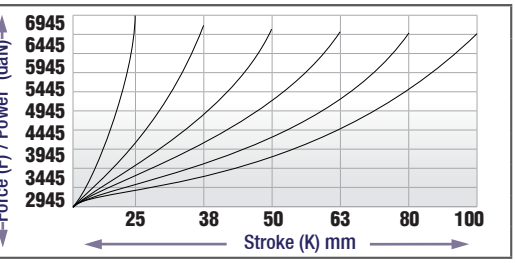


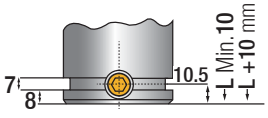
Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.1500.25	**25** mm	85	110			1.93
AD.1500.38	**38** mm	99	136			2.18
AD.1500.50	**50** mm	110	160	1500 Kg.	2300 Kg.	3.64
AD.1500.63	**63** mm	123.5	187			3.91
AD.1500.80	**80** mm	140	230			4.28
AD.1500.100	**100** mm	160	260			4.72

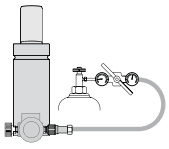




Order Model	Stroke (K) mm	L1 min.	L Length	Force Initial	Force Final	Weight Kg.
AD.3000.25	**25** mm	95	120			4.07
AD.3000.38	**38** mm	108	146			4.53
AD.3000.50	**50** mm	120	170	3000 Kg.	4600 Kg.	5.16
AD.3000.63	**63** mm	133.5	197			5.44
AD.3000.80	**80** mm	150	230			6.05
AD.3000.100	**100** mm	170	270			6.78

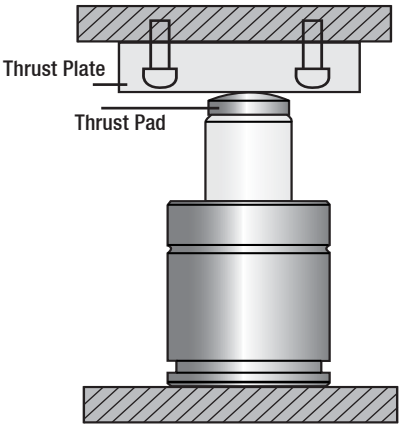


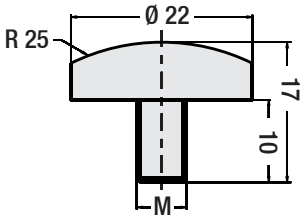




Keep pressure level for each model !

Mounting Example





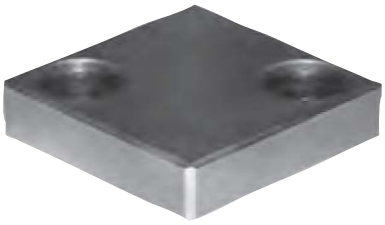
Thrust Pad for Gas Springs

Code: HRM

Piston protection head (balancing / straightening)

Order Code	M
HRM.6	M6 x 10
HRM.8	M8 x 10

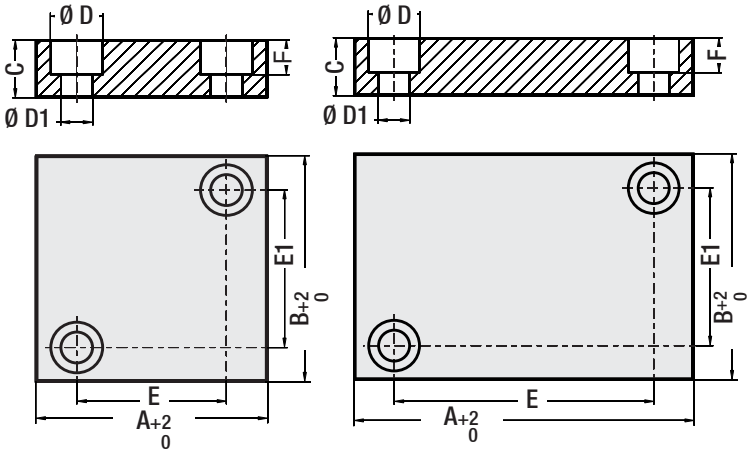
It is a useful product which protects piston head and absorbs vibrations in the die. The hardened thrust pad reduces lateral pressure in cases of declined pressure or laterally replacing parts. The lateral load resistance of the gas springs is increased by using the thrust pads and the thrust plates 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

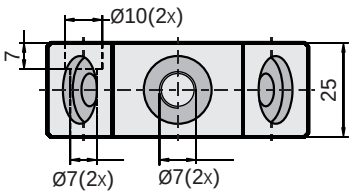
Note: We recommend using the thrust pad and the thrust plate combination in gas springs with wide stroke capacity.

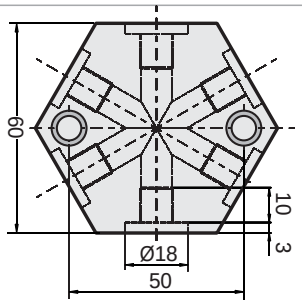
Material: CK45
Surface Hardened

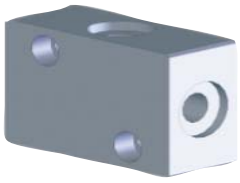
Gas Spring Distribution Blocks

Code: DB

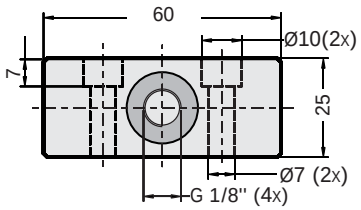
Order Code: DBC.6

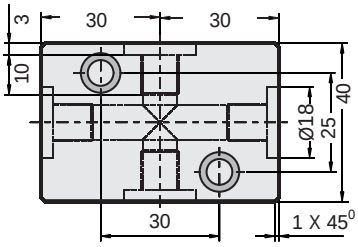


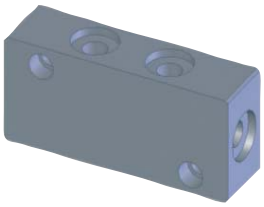




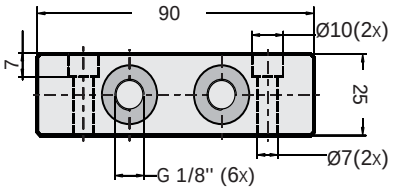
Order Code: DB.4

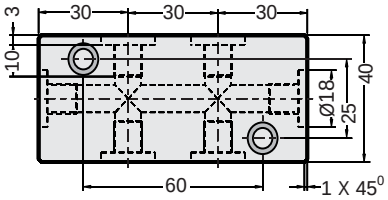


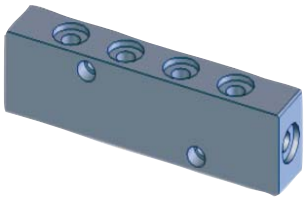




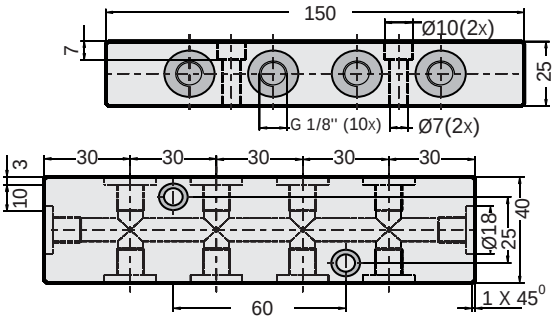
Order Code: DB.6

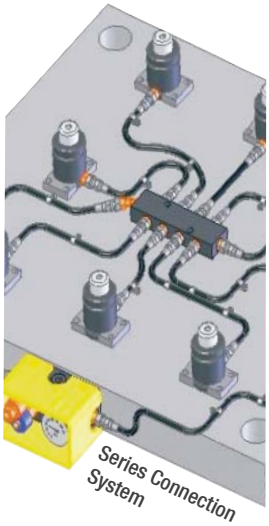


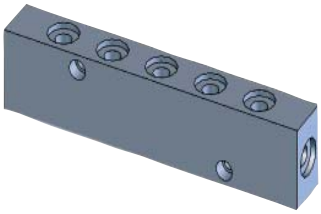




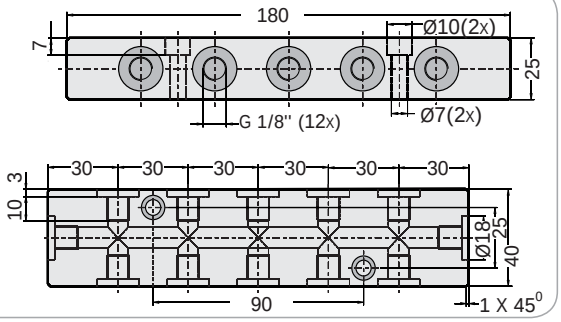
Order Code: DB.10



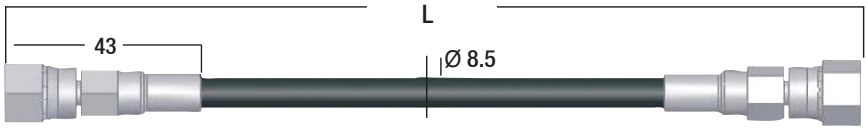


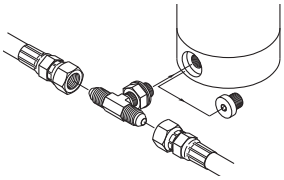


Order Code: DB.12



Material: CK 45 / Surface Hardened
"Custom-made production (material) as per request"



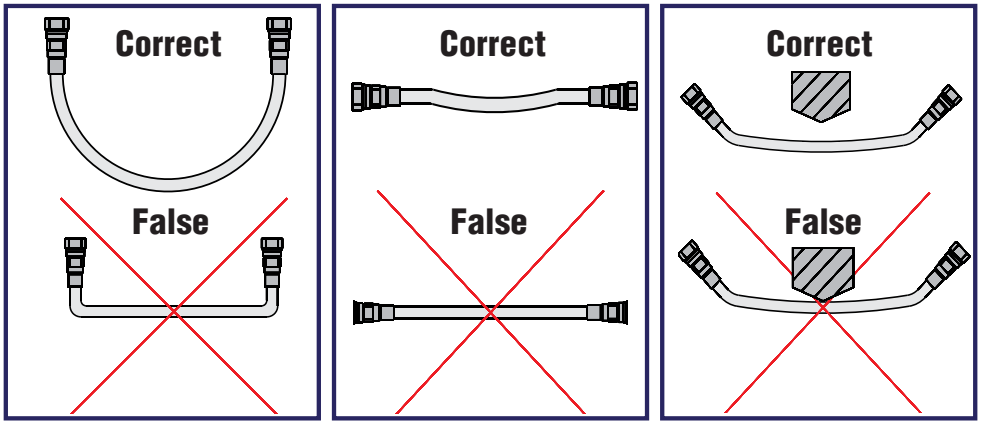


Hose for Gas Spring Distribution Blocks

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

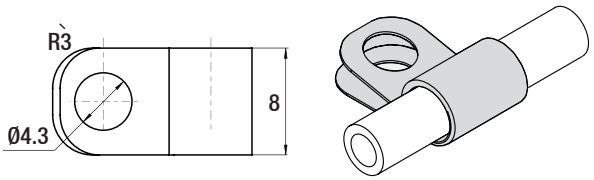
From YO.700 up to YO.11800

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.

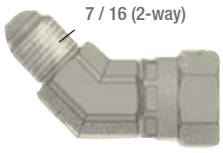
Hose Clamp

Order Code: HK



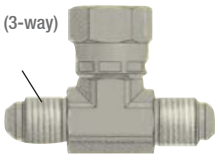
It is used as hose clamp in connection systems.

Gas Spring Fittings



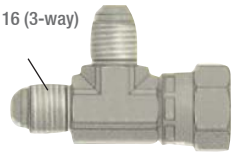
7/16''UNF

Order: SD.45



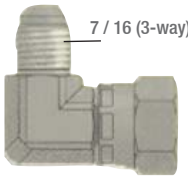
7/16''UNF

Order: SBT



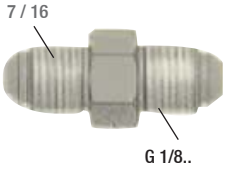
7/16''UNF

Order: SBYT



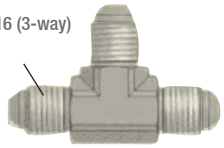
7/16''UNF

Order: SD 90



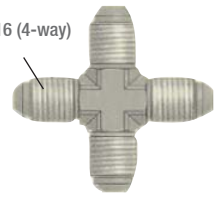
7/16''UNF - G1/8''

Order: DR



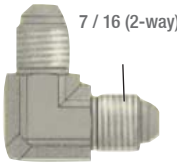
7/16''UNF

Order: DT



7/16''UNF

Order: DDB



7/16''UNF

Order: DD

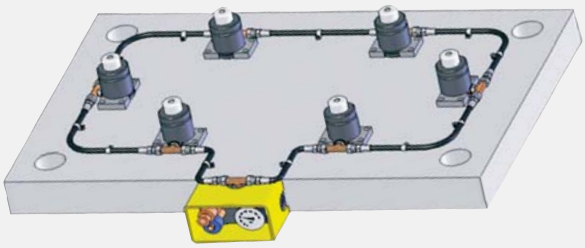
Liquid Sealant with Teflon (PTFE)

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.

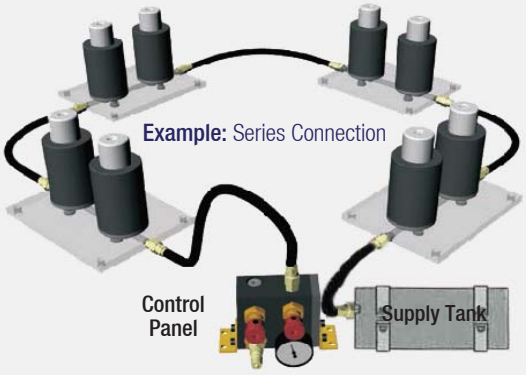
Order Code: W610511 Package: 50 ml.

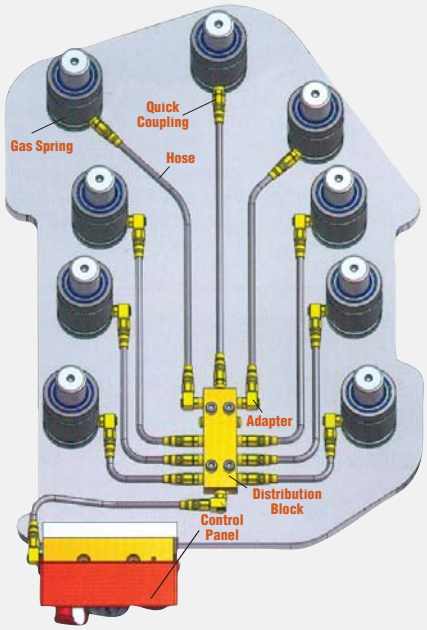
Serial Connection, Practical Examples

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.





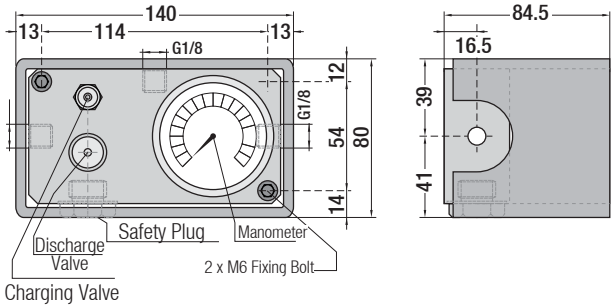
Each gas spring should have a direct connection to the distribution installation. The springs may be added to the installation by using a general pressure source. Hence, the gas filling / charging and discharging settings can be generally done. The springs in the series can be filled / charged and discharged individually.

Control Panel for Gas Spring

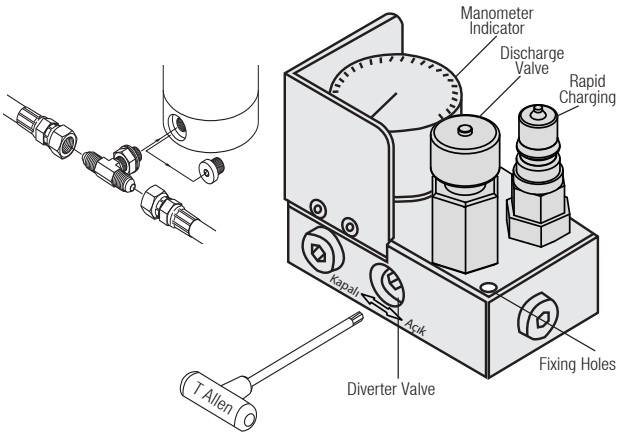
Order Code: KPA

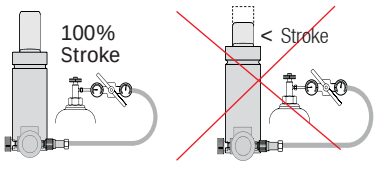
(series connection systems, router unit)

These standard products with wide connection and accessory options are used for all kind of applications that supply tanks are used.



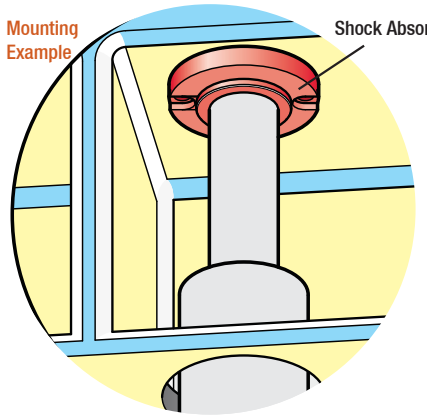
Standard control panel to change pressure, to adjust and to control connection system. It is consisted from manometer connected, steel plate, charging and discharge valves, 3 pieces outlet and steel casing that safety disc can be connected when desired.

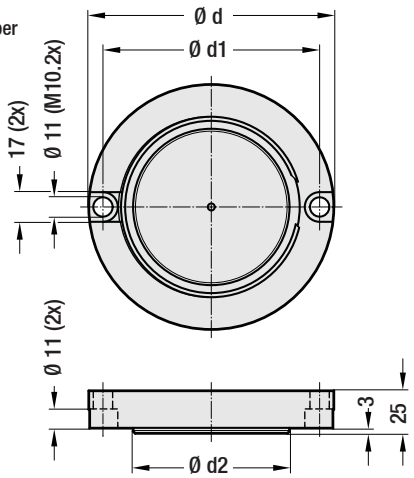




While controlling gas springs, you must remove gas spring valve!

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..





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

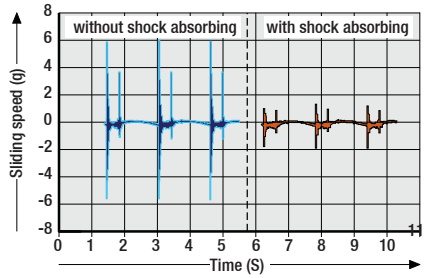
Shock absorbing thrust plates are designed to minimize main problems of dies. Specially designed shock absorbing unit has been developed to reduce following the issues.
- Excessive impact.
- High costs in terms of press maintenance and corresponding units.
- High noise levels.
- Low quality production risk.

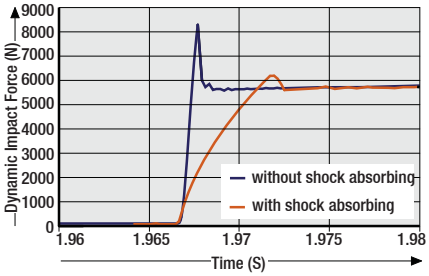
In case of using shock absorbing plates with gas springs:
- After maximum 3 mm shock absorbing stroke, gas spring shock absorbing pressure plate reaches its previous spring power.
- Shock absorbing thrust plate should be mounted between die plate and gas spring piston shaft.

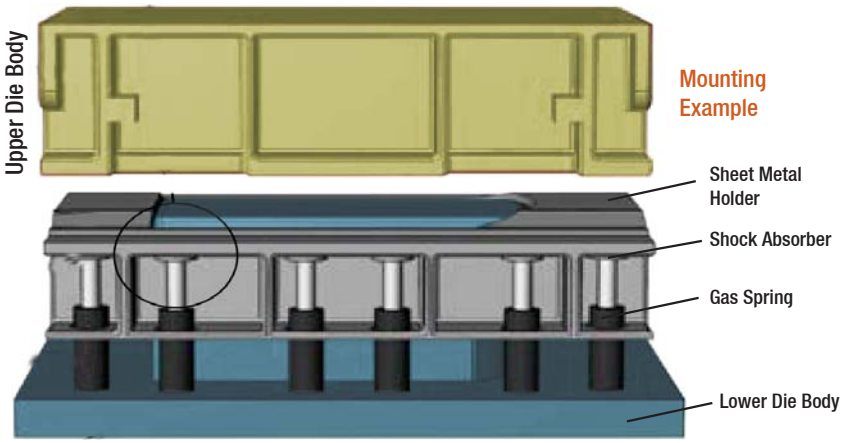
Working temperature: between 0° and 80°C.
Recommended stroke / minute: 20
Max. stroke speed: 1.6 m / s
Max. shock absorbing stroke: 3 mm

Material: Polyurethane
Steel (nitrided)

Shock Absorbing Working Diagram (function)







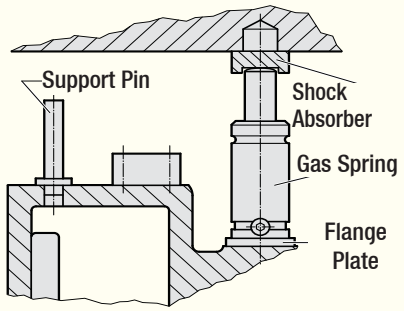
Application of Gas Springs

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.

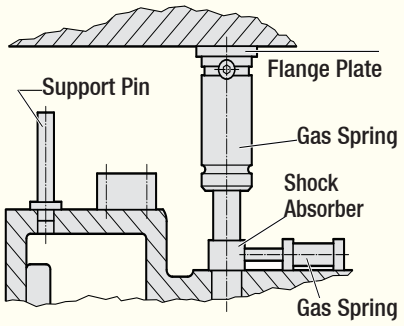
Support pins are for security after gas spring process. When dies are stacked, increased weight can cause crushing of springs, in this case, they are fitted on upper die support pins. When upper die is lifted, gas springs lift the upper body again. While preparing for production, springs enable reach 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