

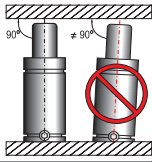
Operating Instruction !

Gas Spring Controlled Tour / Cycle

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.



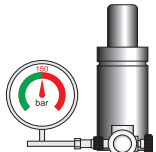
Please do not allow to become polluted the surface of the cylinder with solid and liquid contaminants.



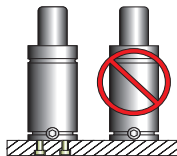
Please do not charge the gas cylinder with any gas other than nitrogen / N₂.



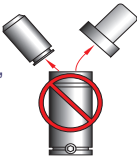
Do not charge gas cylinder with pressure over 150 bar.



Do not mount the gas cylinder without securing it.



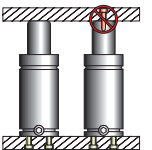
Do not demount the cylinder.
When compulsory, the gas cylinders can be used as reversed.



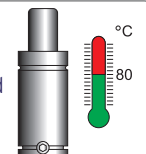
The gas cylinder should not be mounted / maintained other than the authorized personnel.



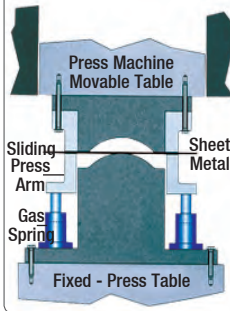
Do not use the hole on the shaft while securing the gas cylinder.



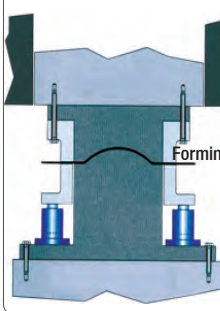
When using the gas cylinder, do not allow to exceed 80°C of the die temperature.



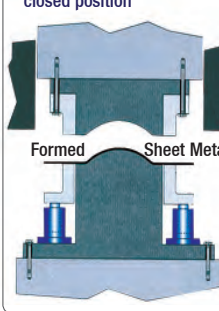
- Starting of running cycle
- Die gas spring is released



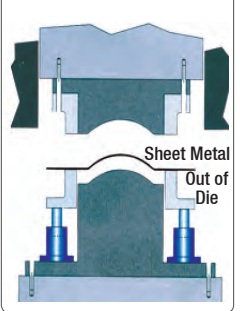
- Press die in closed position
- Gas springs in loading



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



- Press die in open position
- Gas springs are released



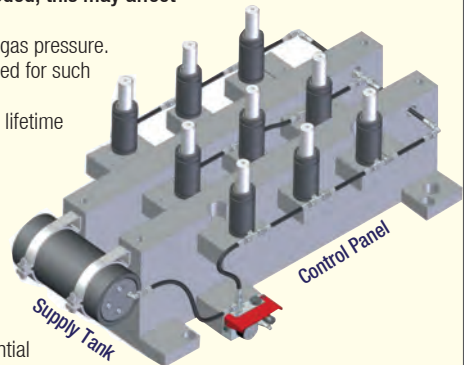
Guvenal - GTH Gas Springs: The gas springs are coded with colours according to their spring forces.

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.

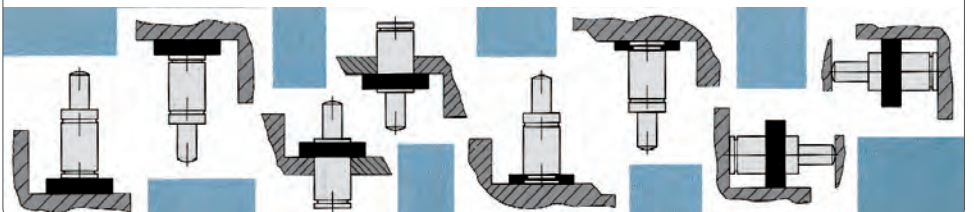
To use the die gas springs safely and for a long time, follow the instructions below !

- * During mounting gas spring into the hole, it should be inserted loosely (+1).
- * The gas spring should be designed with **0.5 ms, 1.6 ms or 2 ms** stroke reserves respectively. Thus, the nominal value can totally 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	Page No
KN 19	10 ~ 100	125 Kg.	250 Kg.	Ø 19	Ø 10	65 ~ 245	133
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	134
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	135
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	136
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	137
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	138
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	139
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	140
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	141
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	142
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	143
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	144
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	145
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	146
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	



BUREAU VERITAS

CE 0062

PED
97/23/EC

GTH



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.

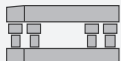
Mounting / series connections should be made by the authorized personnel. They can be used in any mounting position unless it is affected by external forces.

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

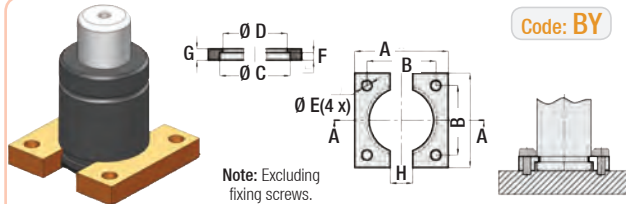
If the instructions are followed, it is guaranteed for 2 years.

Model	Stroke mm	Initial Force	Final Force	Cylinder Dia.	Piston Dia.	Length mm	Page No
AD 500	6 ~ 125	500	700	45	20	62 ~ 300	147
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	

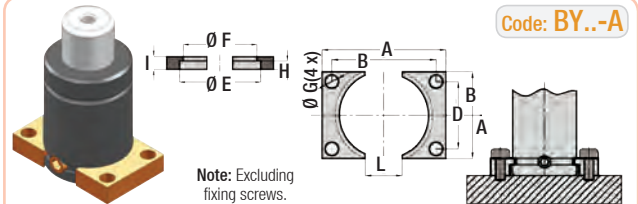
Guvenal - GTH Gas Springs
are producing in Turkey

Dies  Page
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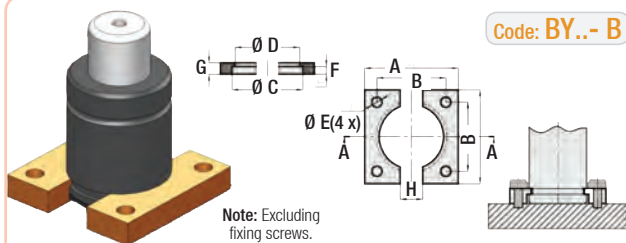
Gas Spring Fixing Elements, Mounting



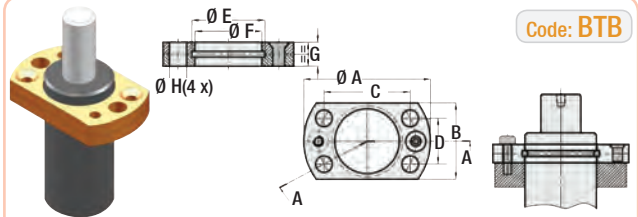
Order	Cylinder Ø	A	B	C	D	E	F	G	H
BY.32	Ø 32	50	35	32.5	28.5	6.6	4	7	5
BY.38	Ø 38	55	40	38.5	34.5	6.6	4	7	5
BY.45	Ø 45	70	50	45.5	41.5	9	4	7	20
BY.50	Ø 50	75	56.5	50.5	44.5	9	8	12	24
BY.63	Ø 63	85	63.5	63.5	57.5	11	8	12	24
BY.75	Ø 75	100	73.5	75.5	68.5	11	8	12	24
BY.95	Ø 95	120	92	95.5	88.5	13.5	8	12	24
BY.120	Ø 120	140	109.5	120.5	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



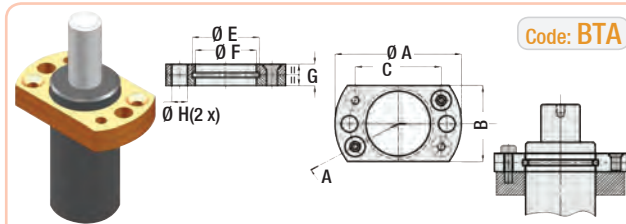
Order	Cylinder Ø	A	B	C	D	E	F	G	H	I	L
BY.32-A	Ø 32	50	27	40	18	32.5	28.5	6.6	4	7	20
BY.38-A	Ø 38	55	33	44	20	38.5	34.5	6.6	4	7	20
BY.45-A	Ø 45	70	40	57	27	45.5	41.5	9	4	7	25
BY.50-A	Ø 50	75	45	62	32	50.5	44.5	9	8	12	25
BY.63-A	Ø 63	85	58	69	42	63.5	57.5	11	8	12	30
BY.75-A	Ø 75	100	70	84	54	75.5	68.5	11	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



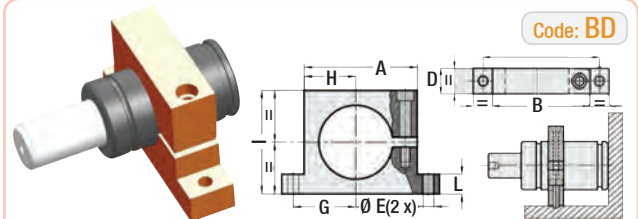
Order	Cylinder Ø	A	B	C	D	E	F	G	H
BY.32-B	32	50	35	32.5	28.5	6.6	4	7	12
BY.38-B	38	55	40	38.5	34.5	6.6	4	7	12
BY.63-B	63	100	73.5	64	57.5	11	8	12	24



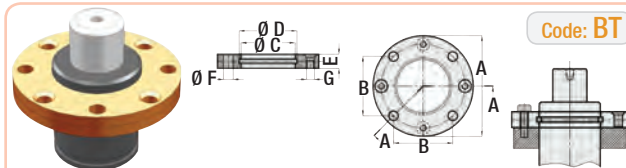
Order	Cylinder Ø	A	B	C	D	E	F	G	H	Ring
BTB.19	Ø 19	44	25	30	12	6.6	M4	19.5	9	Ø 2
BTB.25	Ø 25	50	30	34	18	6.6	M4	25.5	9	Ø 2



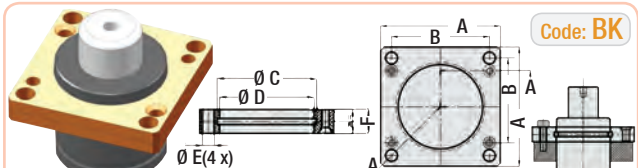
Order	Cylinder Ø	A	B	C	E	F	G	H	Ring
BTA.12	Ø 12	34	21	24	6.6	M3	13.7	9	Ø 1.6
BTA.15	Ø 15	37	24	27	6.6	M3	16.7	9	Ø 1.6
BTA.19	Ø 19	45	25	32	6.6	M4	19.5	9	Ø 2
BTA.25	Ø 25	50	30	38	6.6	M4	25.5	9	Ø 2
BTC.19	Ø 19	45	25	32	6.6	M3	19.5	7	Ø 2



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



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



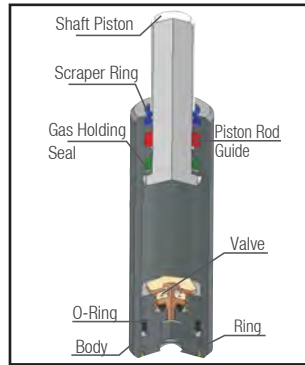
Order	Cylinder Ø	A	B	C	D	E	F	Ring	J
BK.32	32	45	35	9	32.5	7	M4	2	17
BK.38	38	52	40	9	38.5	7	M4	2	17
BK.45	45	64	50	13	45.5	9	M5	2	23
BK.50	50	70	56.5	13	50.5	9	M5	4	24
BK.63	63	90	73.5	16	63.5	11	M5	5	27
BK.75	75	90	73.5	16	75.5	11	M6	5	29
BK.95	95	110	92	18	95.5	13	M6	5	33
BK.120	120	130	109.5	21	120.5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

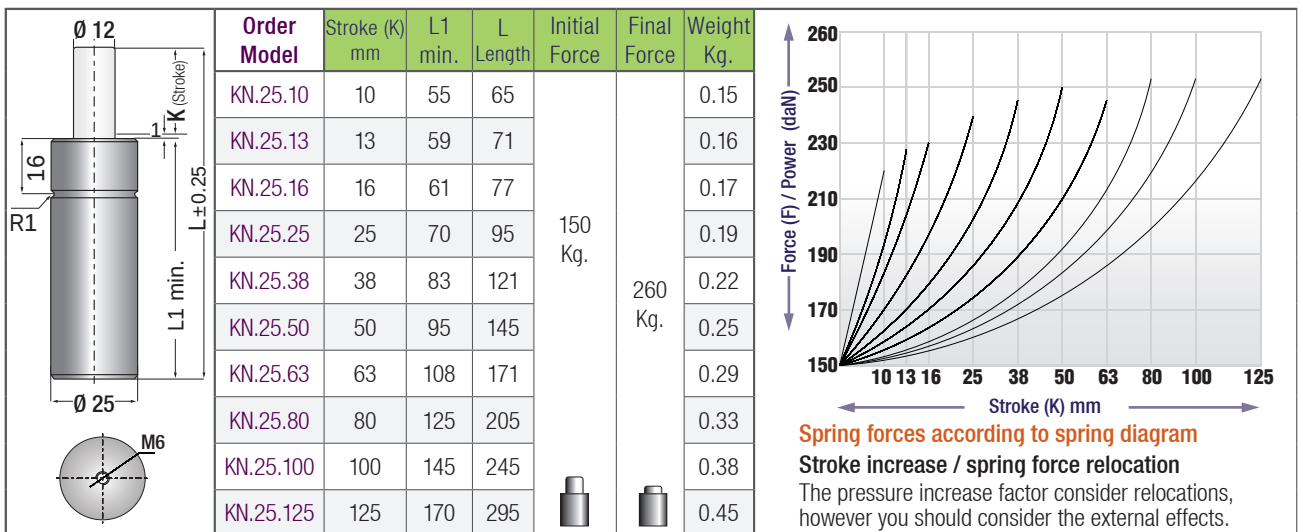
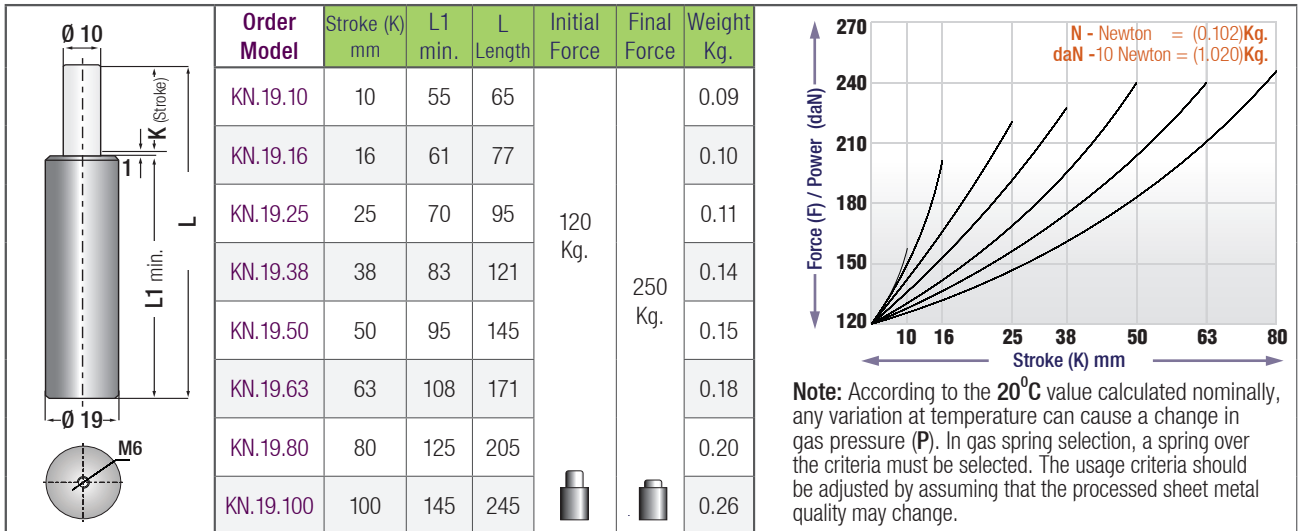
Adjustable forces, maximum flexibility.

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.

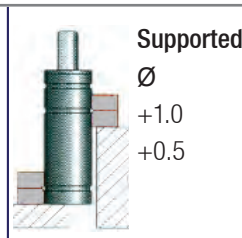
Max. Pressure: **150 Bar** - Max. Speed : **0.6 m/s** - Max. Temp. : **0-80°C**



KN Series, Gas Spring - Mini & Low Force



Fixing with screw from the bottom is only recommended for stroke lengths up to 25mm.
Mounting selections:
 BT - BTA - BTB



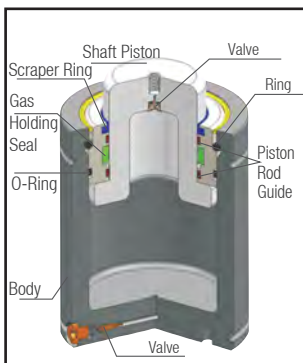
Gas Spring Mounting Examples:
 Mount gas springs directly via threaded holes at the bottom or by using fixing elements. Generally for other fitting position of gas springs that are completed their mounting by extractor with screw from bottom in compliance with your die, you can select fitting type specified at drawing. Refer to "page 132" for selections.

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.

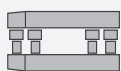
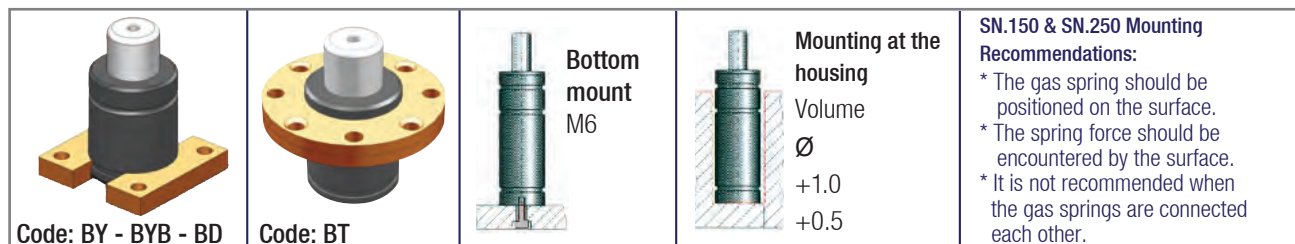
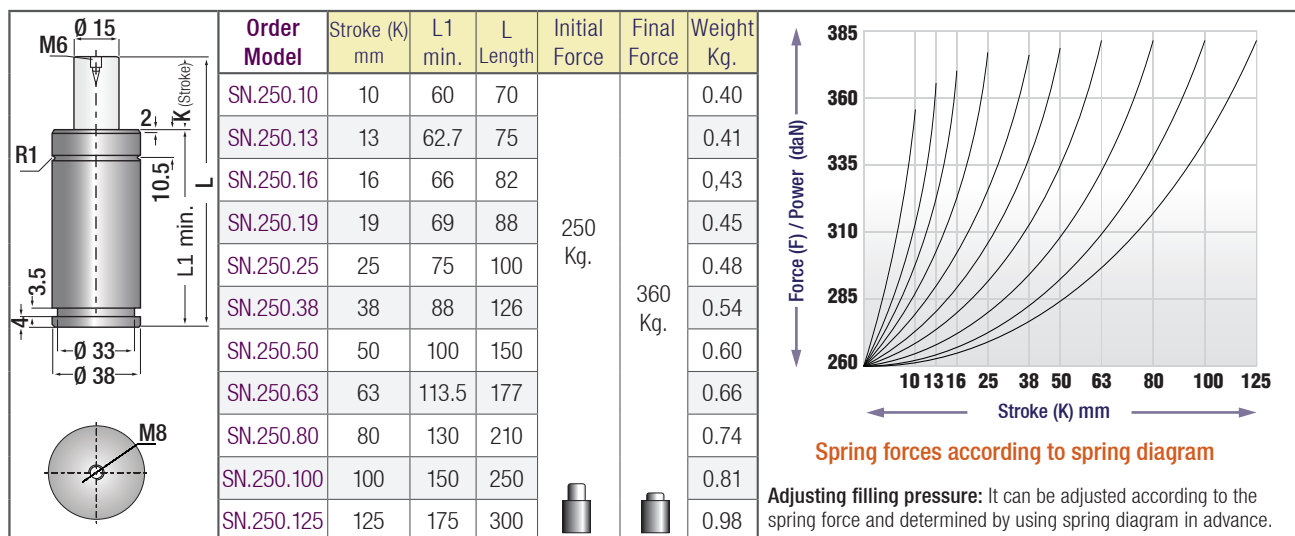
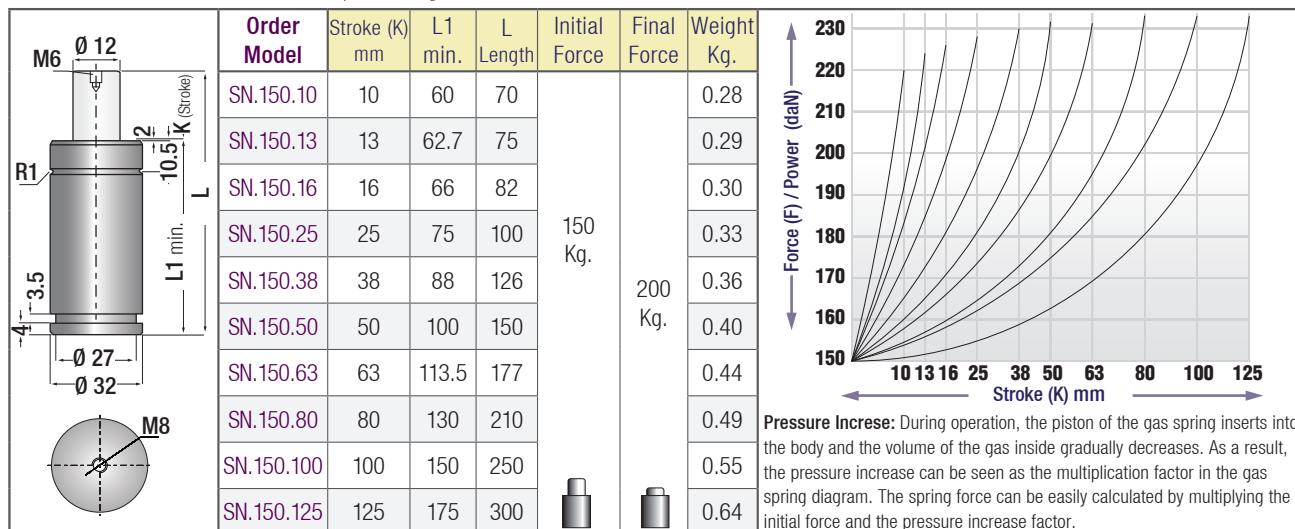
SN Series, Gas Spring - ISO 11901

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°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.

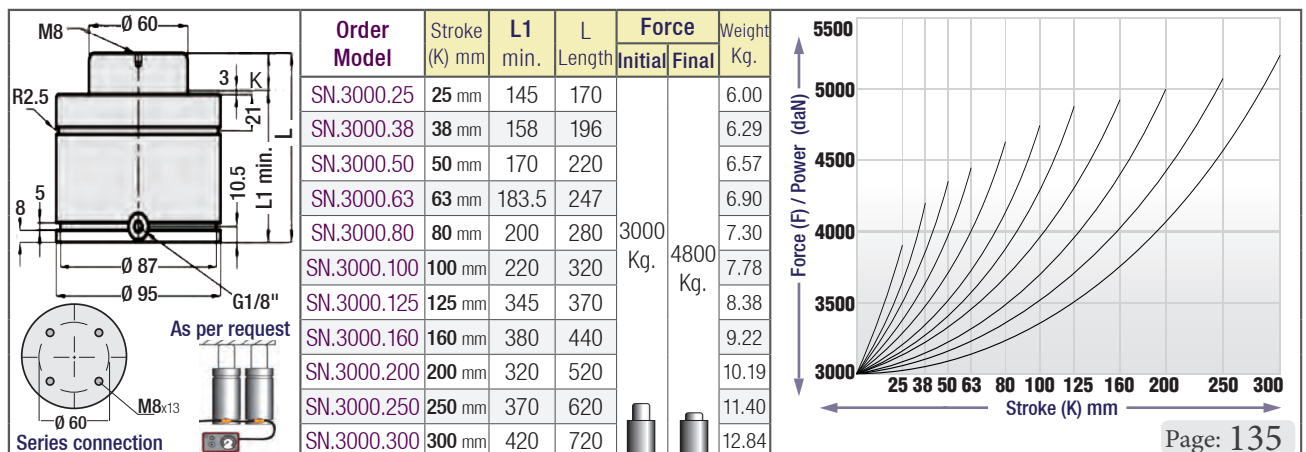
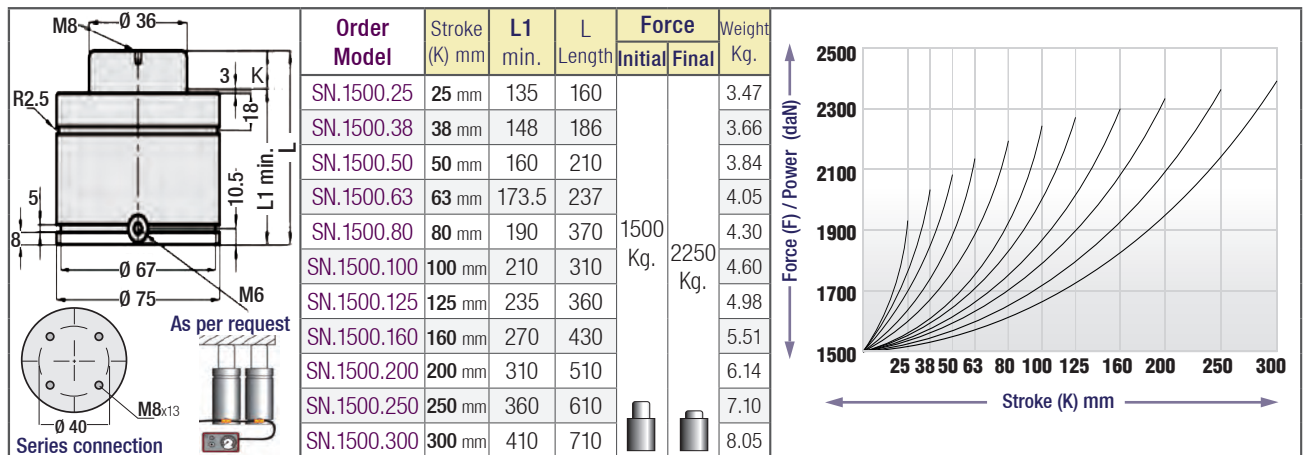
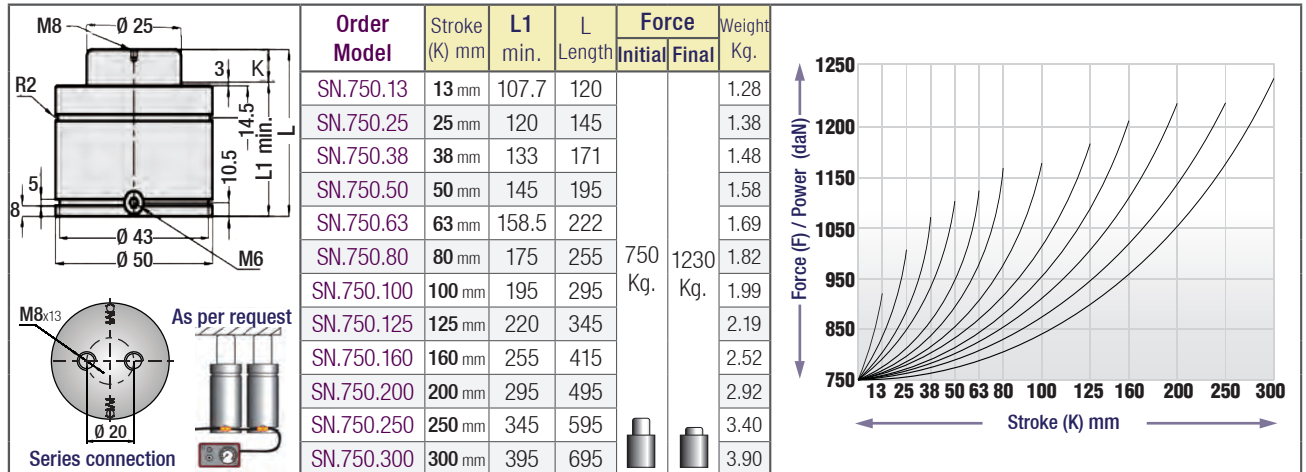
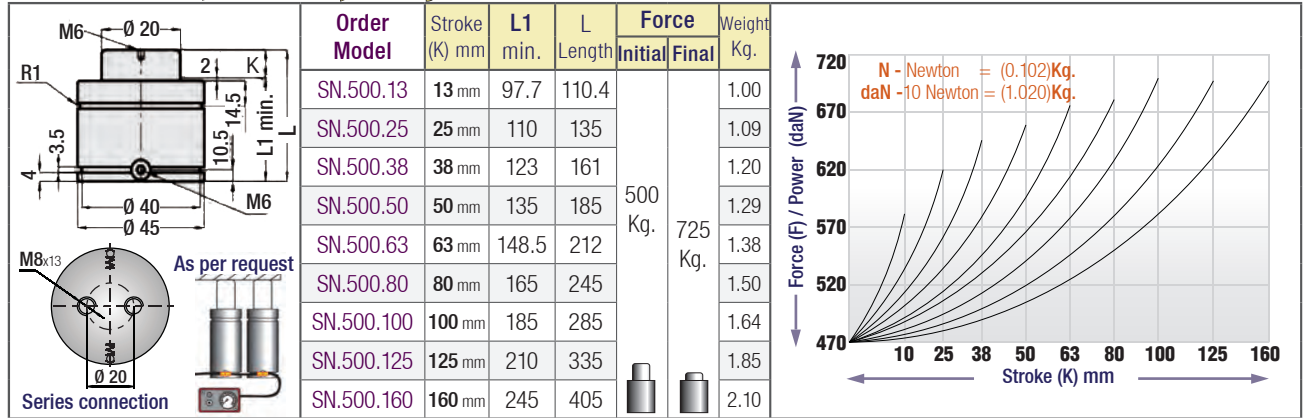
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80°C**



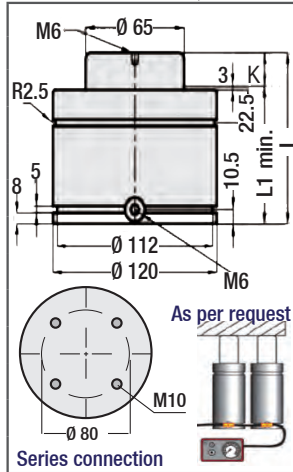
SN Series, Gas Spring - ISO 11901



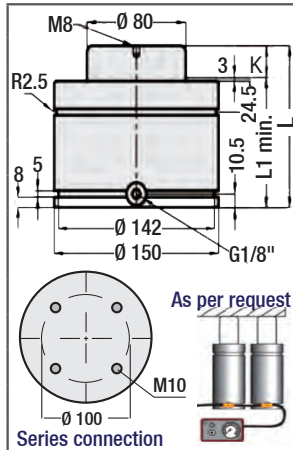
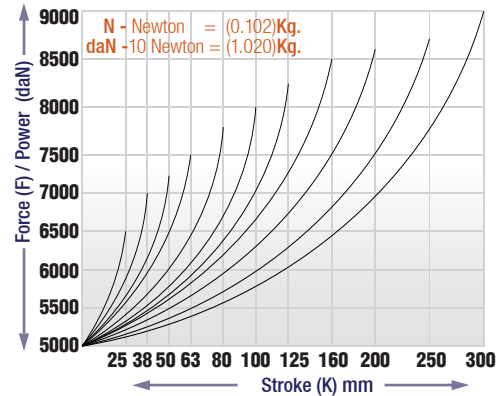
SN Series, Gas Spring - ISO 11901



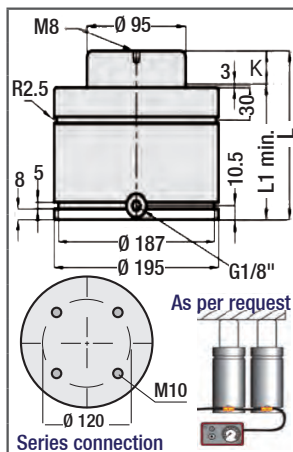
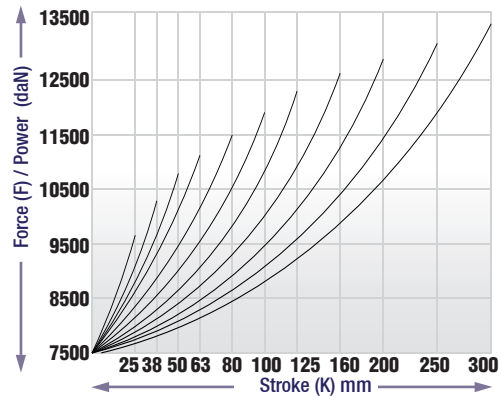
SN Series, Gas Spring - ISO 11901



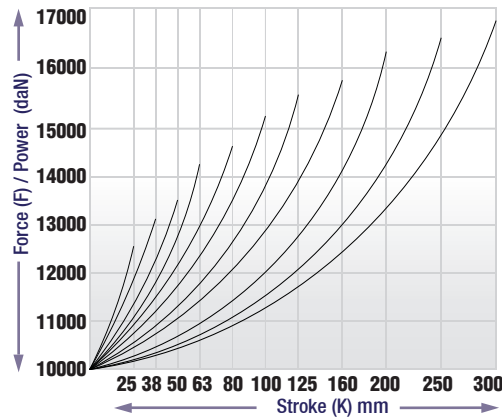
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
SN.5000.25	25 mm	165	190	5000 Kg.	8500 Kg.	11.07
SN.5000.38	38 mm	178	216			11.60
SN.5000.50	50 mm	190	240			12.08
SN.5000.63	63 mm	203.5	367			12.70
SN.5000.80	80 mm	220	300			13.28
SN.5000.100	100 mm	340	340			14.08
SN.5000.125	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



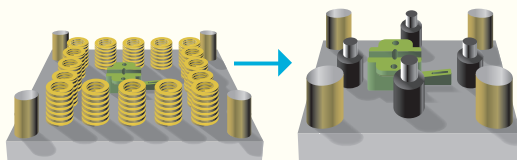
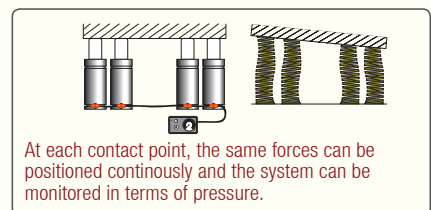
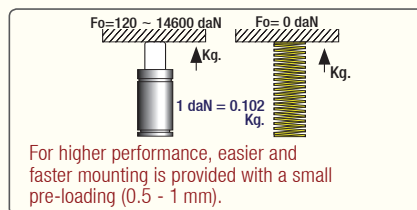
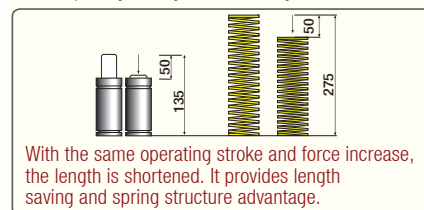
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
SN.7500.25	25 mm	180	205	7500 Kg.	12300 Kg.	19.10
SN.7500.38	38 mm	193	231			19.95
SN.7500.50	50 mm	205	255			20.70
SN.7500.63	63 mm	218.5	282			21.50
SN.7500.80	80 mm	235	315			22.50
SN.7500.100	100 mm	255	335			23.70
SN.7500.125	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		Weight Kg.
				Initial	Final	
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	360			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



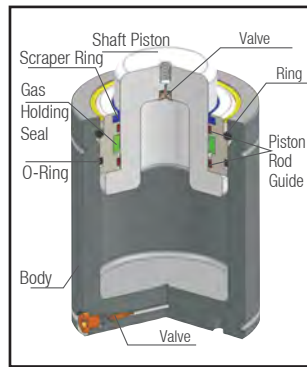
With the gas spring usage, the necessary application area, height, the occupied volume, the retaining spring number for pre-loading are decreased significantly.

Y Series, Gas Spring - Space Saving

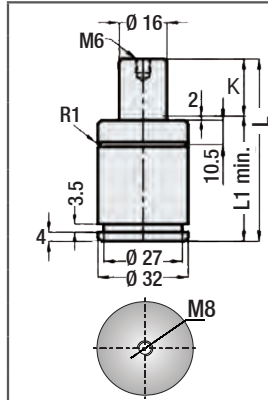
It may be connected to hose systems (after Y.500) and used in different measurements for space saving in SN / ISO series. Do not be confused about recommended maximum cycle/minute specified in diagrams for a certain type of product group and maximum speed. The force curves are especially related to stroke (20°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. 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.

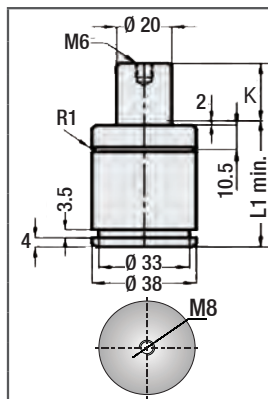
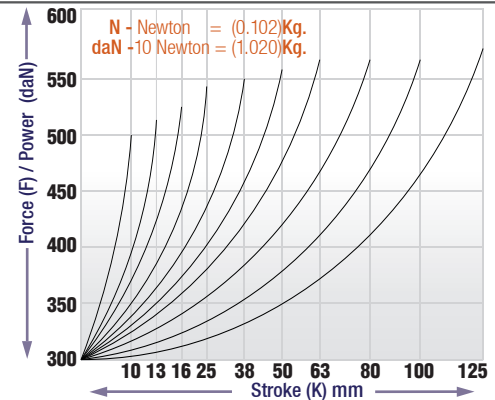
Max. Pressure: **150 Bar** - Max. Speed : **1.6 m/s** - Max. Temp. : **0-80°C**



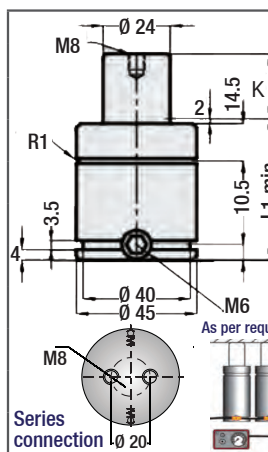
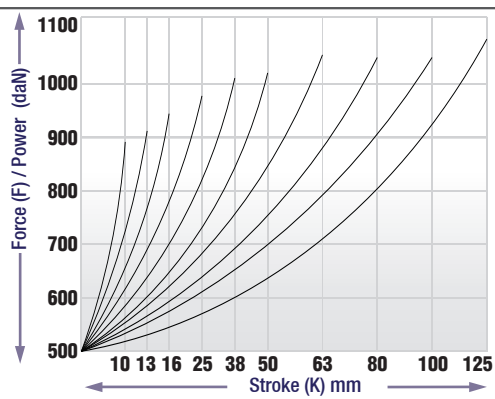
Y Series, Gas Spring - Space Saving



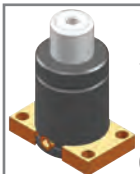
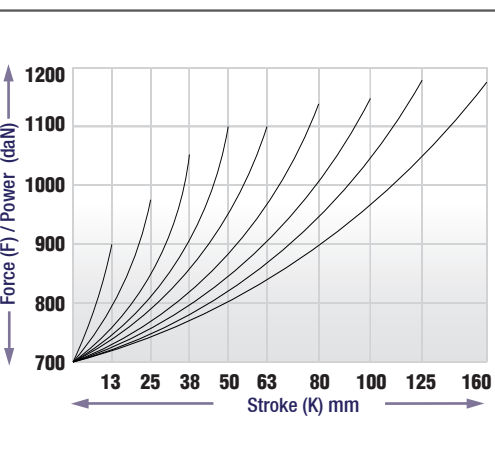
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
Y.300.10	10 mm	60	70	300 Kg.	550 Kg.	0.29
Y.300.13	13 mm	62.7	75			0.30
Y.300.16	16 mm	66	82			0.31
Y.300.25	25 mm	75	100			0.34
Y.300.38	38 mm	88	126			0.38
Y.300.50	50 mm	100	150			0.43
Y.300.63	63 mm	113.5	177			0.48
Y.300.80	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		Weight Kg.
				Initial	Final	
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		Weight Kg.
				Initial	Final	
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	700 Kg.	1100 Kg.	1.92



For perpendicular type series / hose connection systems
Code: BY..A



Code: BT - BK - BD



Bottom mount
M6



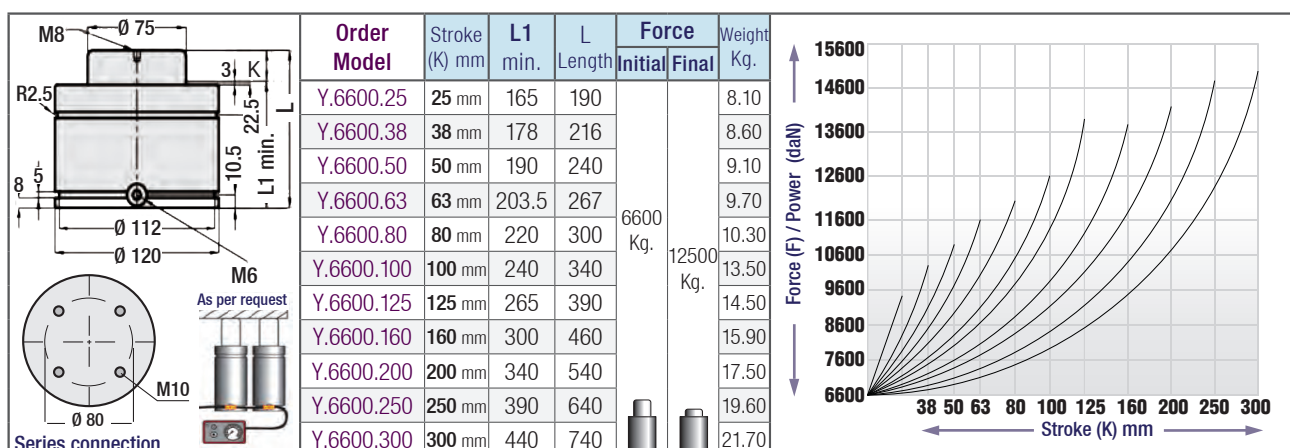
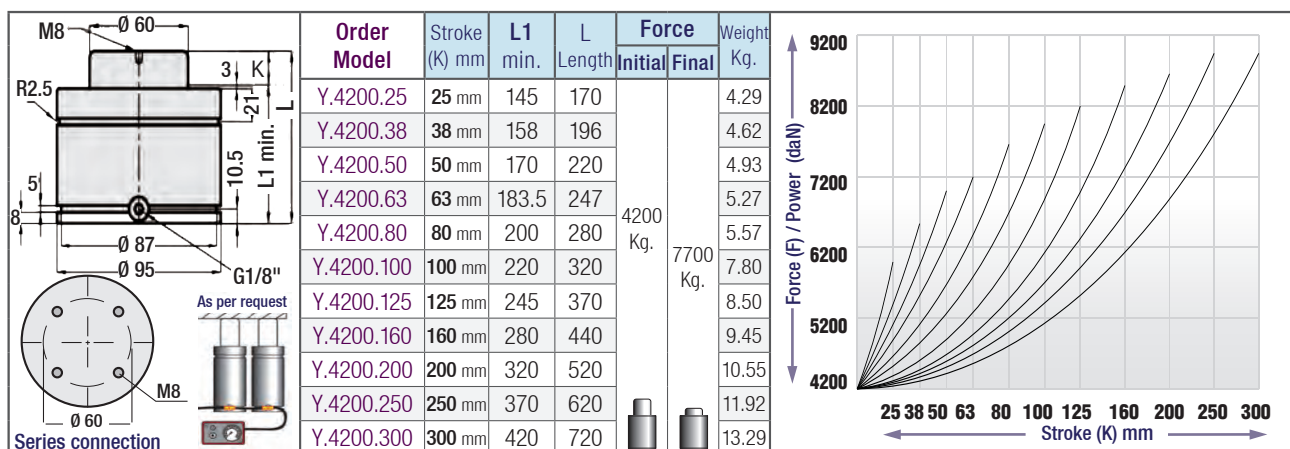
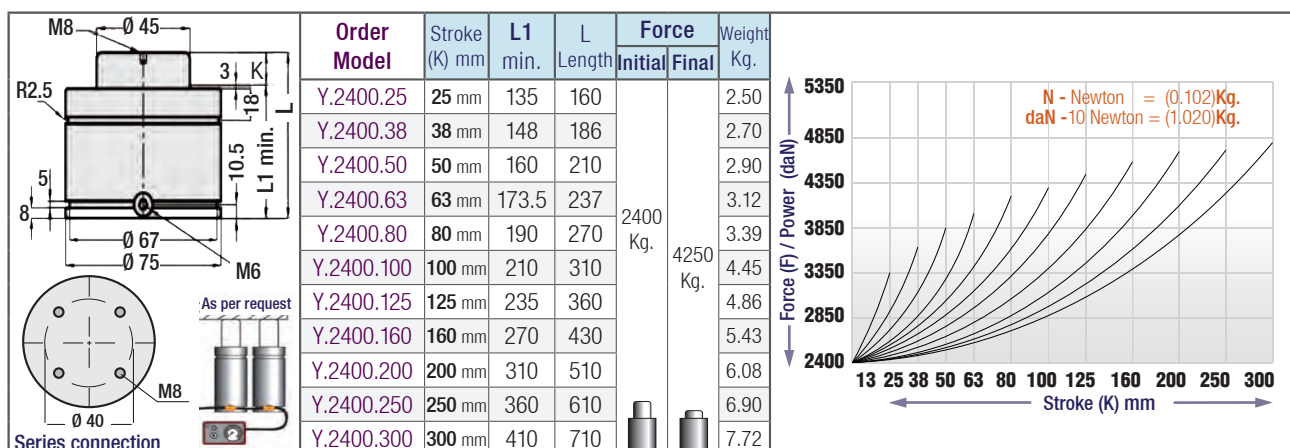
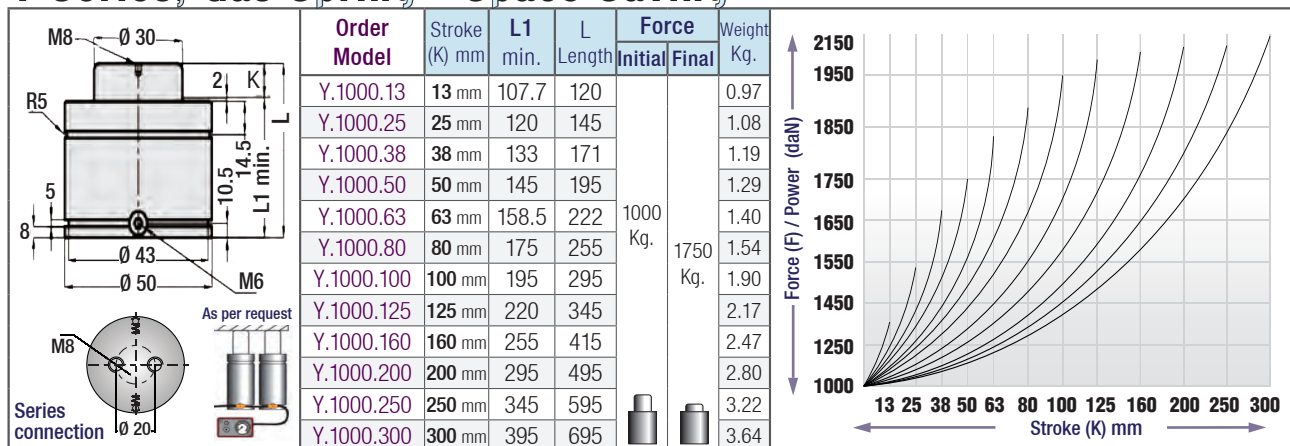
Mounting at the housing volume
Ø
+1.0
+0.5

Dies



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Y Series, Gas Spring - Space Saving

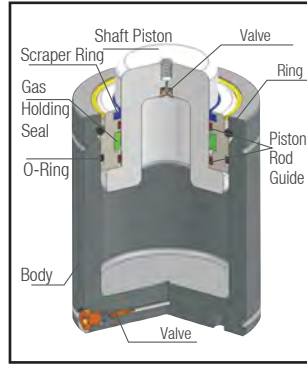


YO Series, Gas Spring - High Force

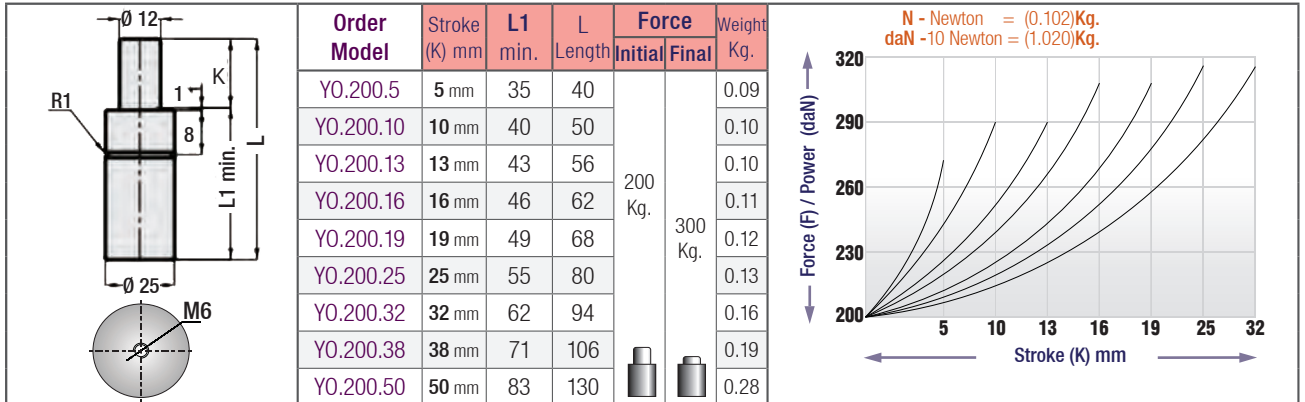
YO series are designed to save space and they provide minimum height as possible today with the highest forces. They can be connected in series to the hose systems. Wide connection range and accessories for all kinds of applications.

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°C**



YO Series, Gas Spring - High Force

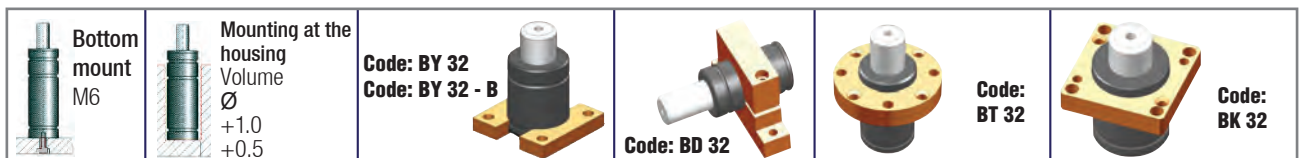
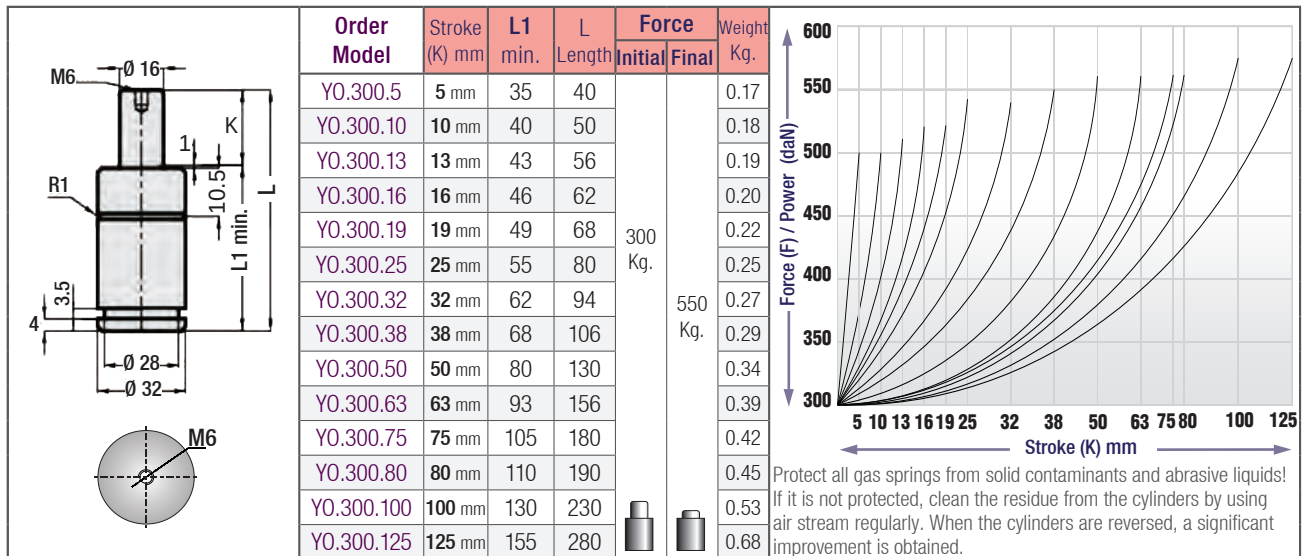


Pressure Increase: During operation, the piston of the gas spring inserts into the body and the volume of the gas inside gradually decreases. As a result, the pressure increase can be seen as the multiplication factor in the gas spring diagram. The spring force can be easily calculated by multiplying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

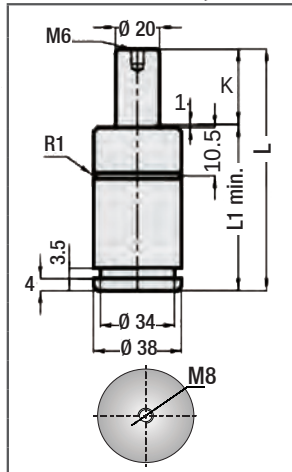
Spring forces according to spring diagram: The stroke increase / spring force replacement, pressure increase factor and replacements are considered, however you should take into consideration external effects. Lateral loads should not be applied on gas springs.

When press goes down, the lateral forces and the vibrations from the die should be checked.

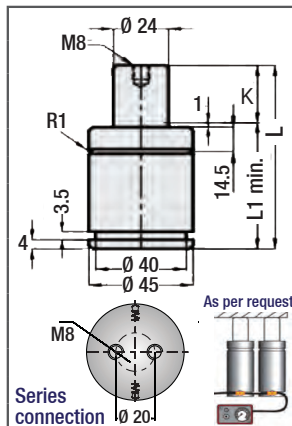
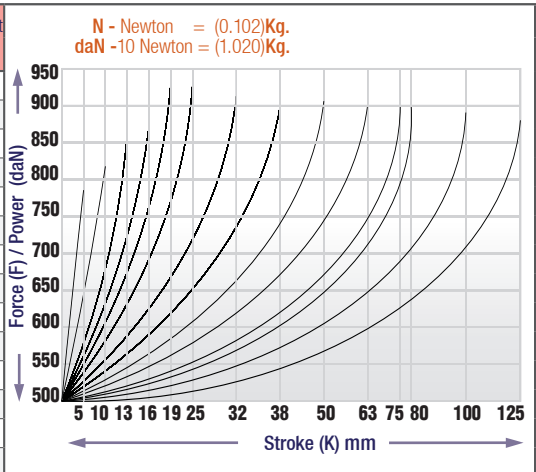


Mounting: The gas springs should be placed to surface on flat and in vertical position, the surface should encountered the gas spring force. Do not repair worn springs. The worn springs should be replaced.

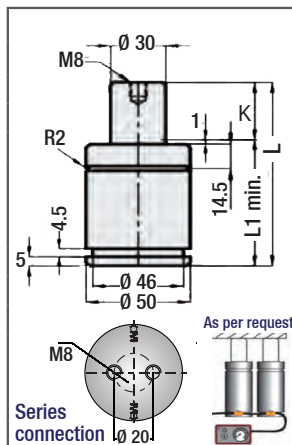
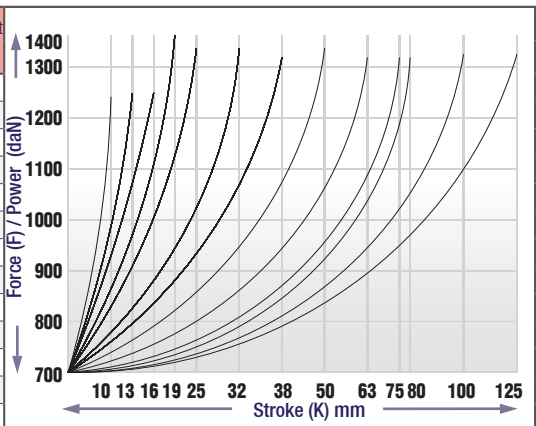
YO Series, Gas Spring - High Force



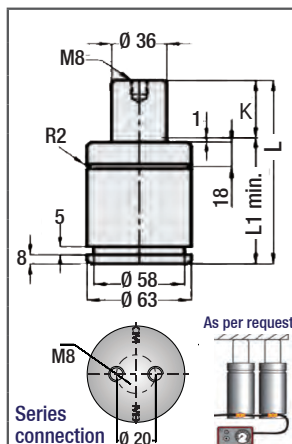
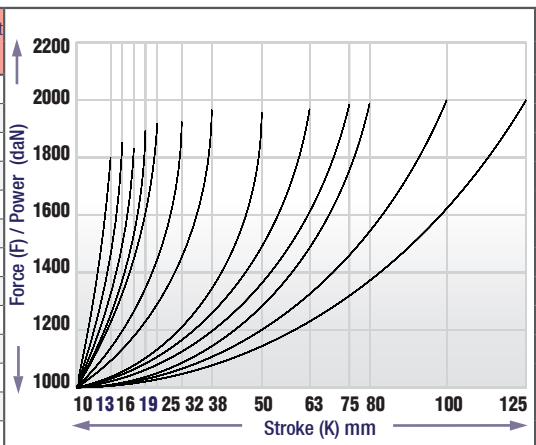
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
YO.500.5	5 mm	35	40	500 Kg.	950 Kg.	0.25
YO.500.10	10 mm	40	50			0.27
YO.500.13	13 mm	43	56			0.29
YO.500.16	16 mm	46	62			0.31
YO.500.19	19 mm	49	68			0.33
YO.500.25	25 mm	55	80			0.36
YO.500.32	32 mm	62	94			0.40
YO.500.38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



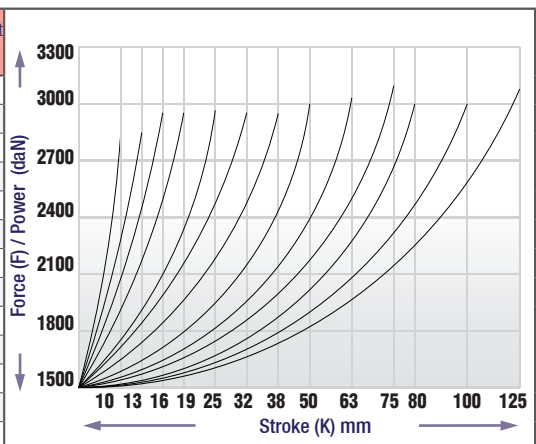
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
YO.700.10	10 mm	42	52	700 Kg.	1400 Kg.	0.39
YO.700.13	13 mm	45	58			0.42
YO.700.16	16 mm	48	64			0.45
YO.700.19	19 mm	51	70			0.48
YO.700.25	25 mm	57	82			0.53
YO.700.32	32 mm	64	96			0.58
YO.700.38	38 mm	70	108			0.62
YO.700.50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



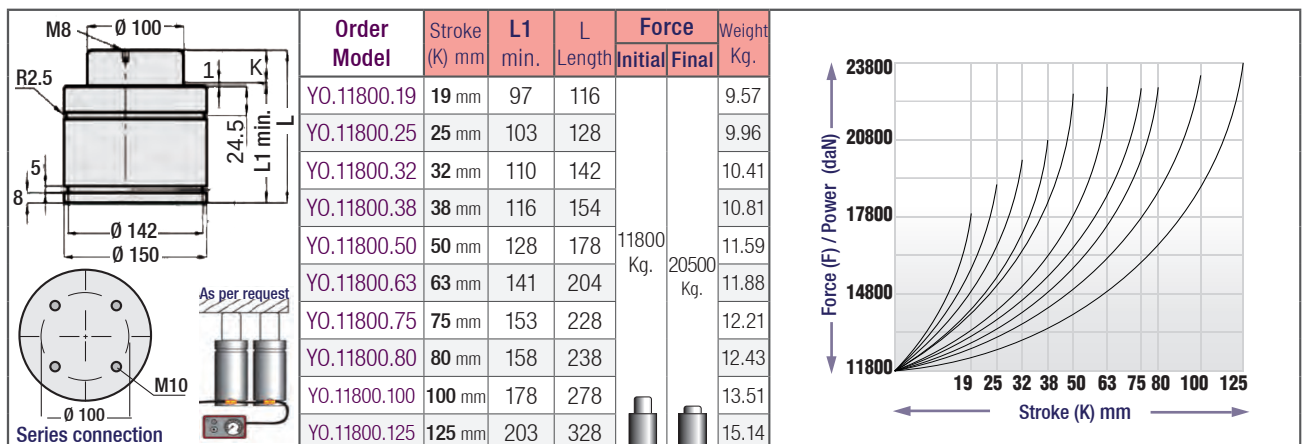
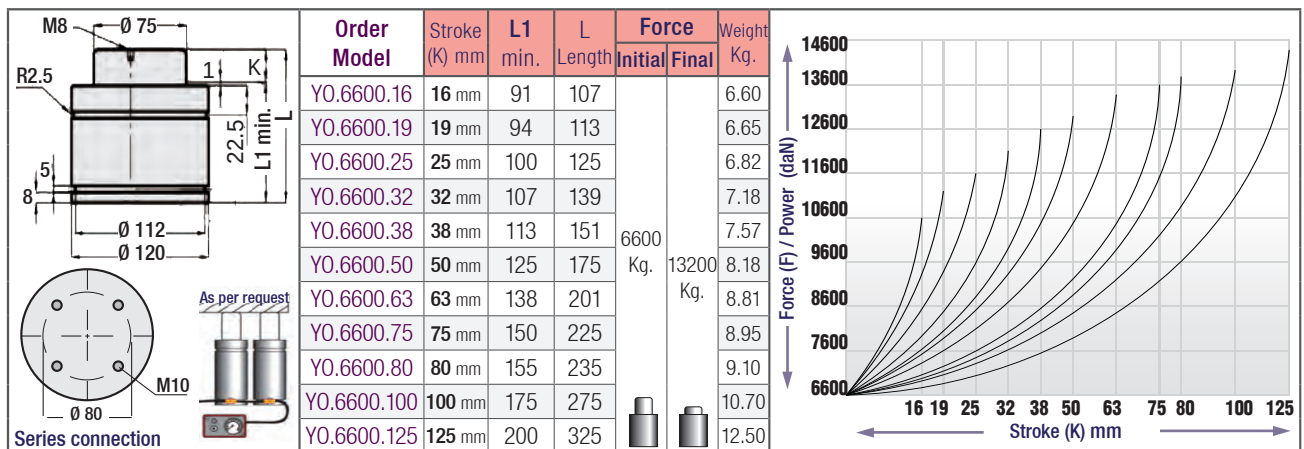
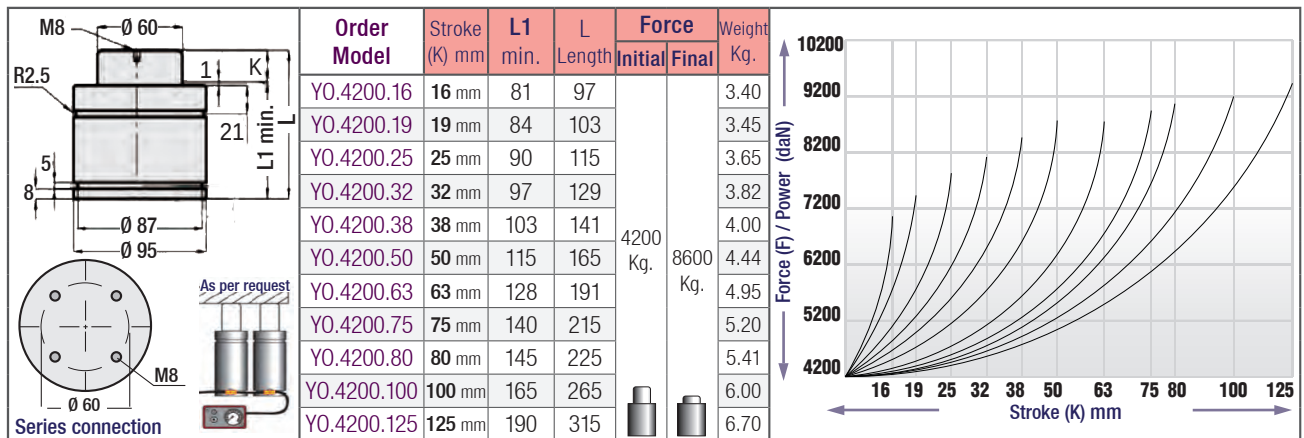
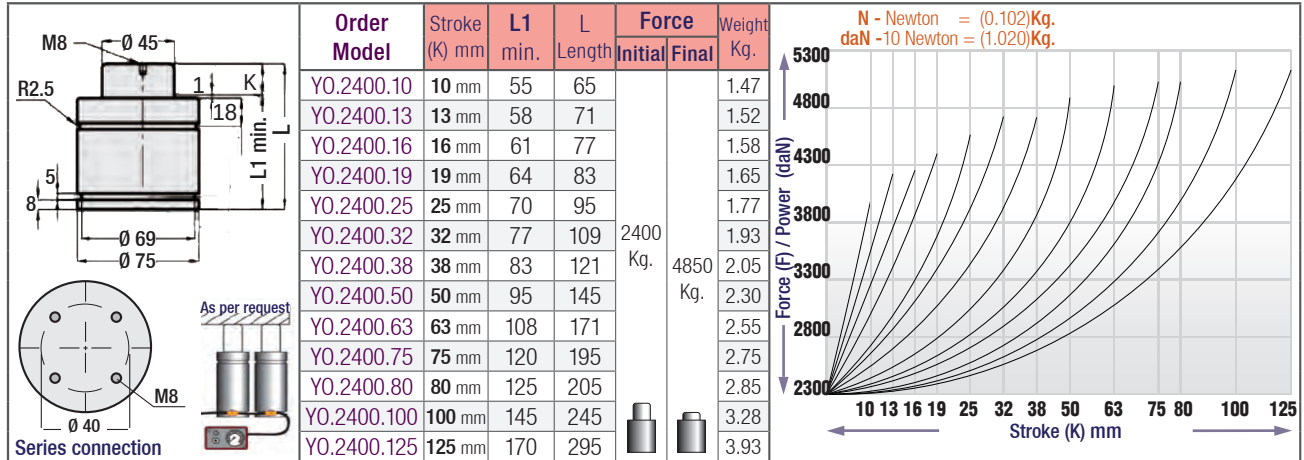
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
YO.1000.10	10 mm	48	58	1000 Kg.	2250 Kg.	0.57
YO.1000.13	13 mm	51	64			0.59
YO.1000.16	16 mm	54	70			0.62
YO.1000.19	19 mm	57	76			0.65
YO.1000.25	25 mm	63	88			0.70
YO.1000.32	32 mm	70	102			0.77
YO.1000.38	38 mm	76	114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



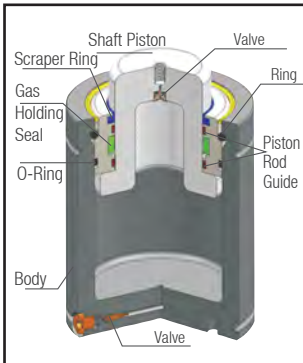
YO Series, Gas Spring - High Force



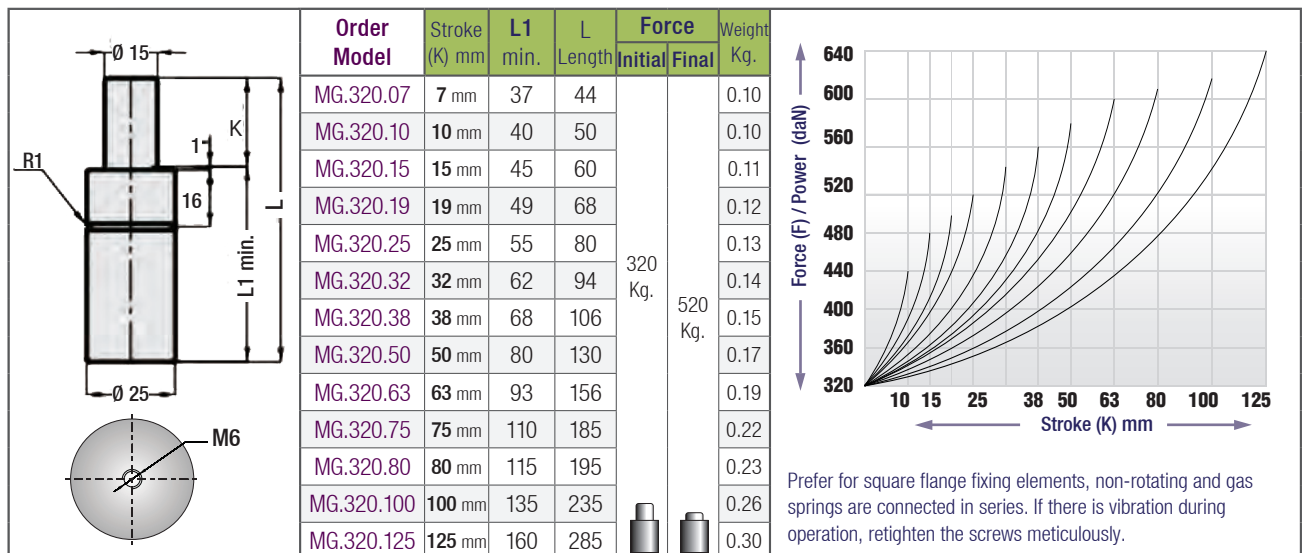
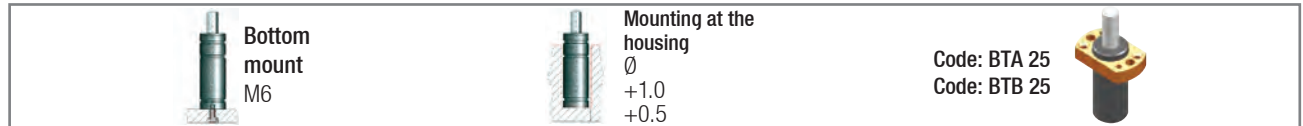
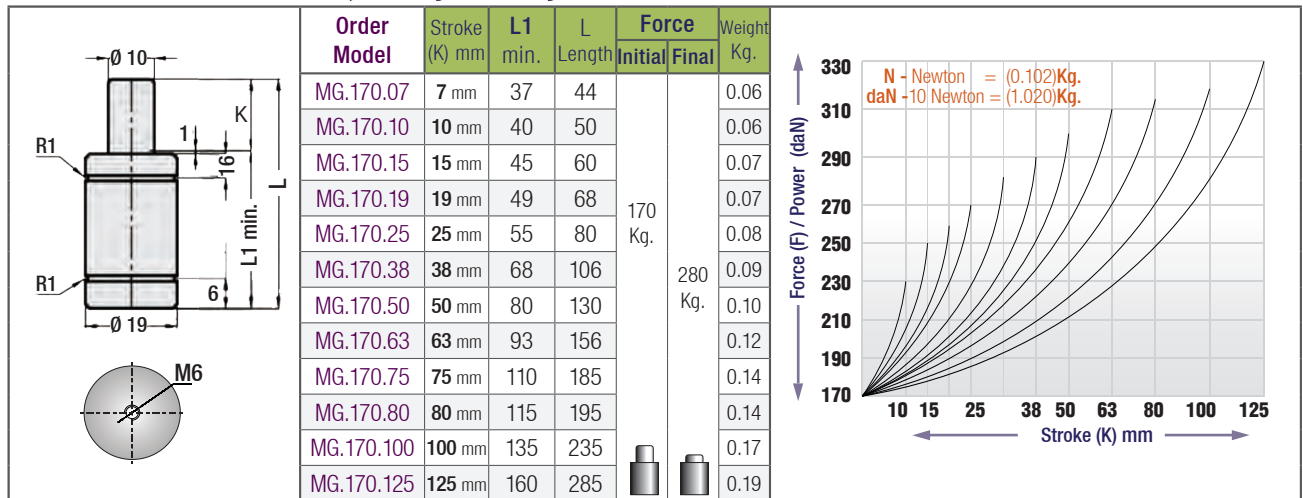
MG Series, Gas Spring - High Stroke Rates

High force - strong gas spring cylinders provide die cost reduction, wide stroke / stroke option adjustments with optimum bearing and the highest increased spring forces. Wide range of connections and accessories for all kinds of applications. When filling / charging the gas spring, the maximum pressure level recommended for each model should not be exceeded (150 bar). This standard series connection is recommended when supply tanks are used. In gas spring selection, a spring over the criteria must be selected. The usage criteria should be adjusted by assuming that the processed sheet metal quality may change.

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

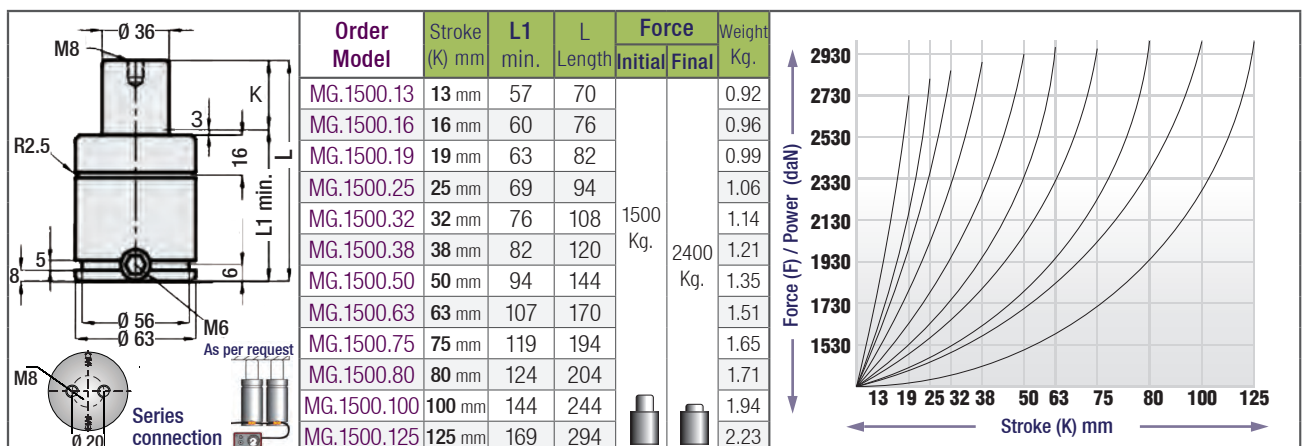
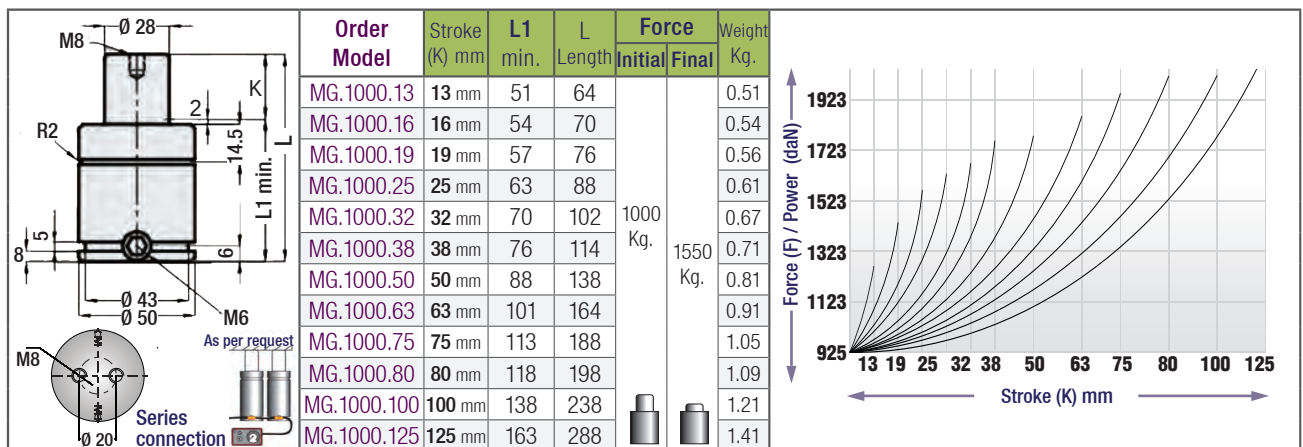
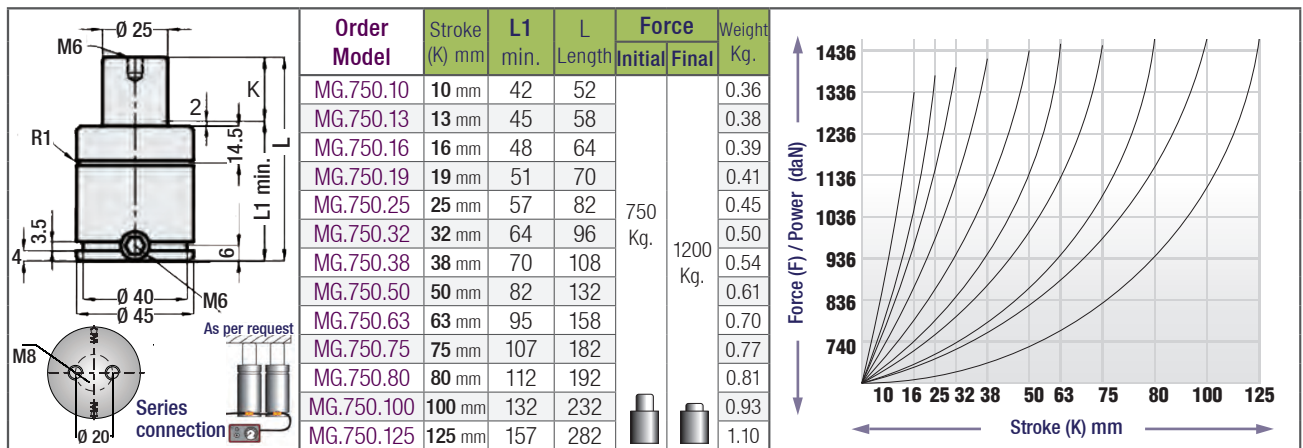
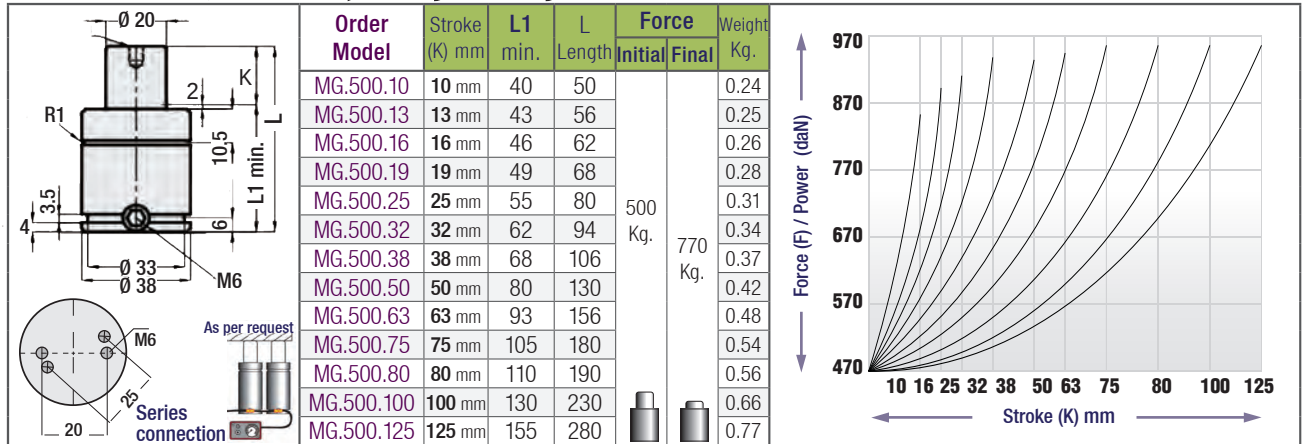


MG Series, Gas Spring - High Stroke Rates



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.

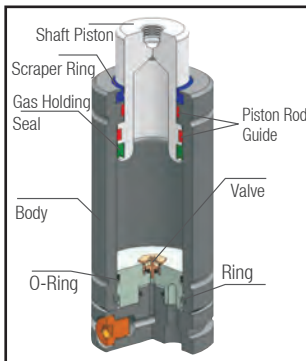
MG Series, Gas Spring - High Stroke Rates



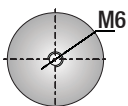
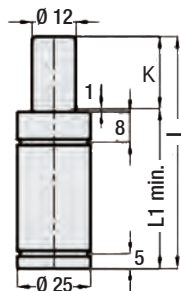
GC Series, Gas Spring - Super Pressure

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.

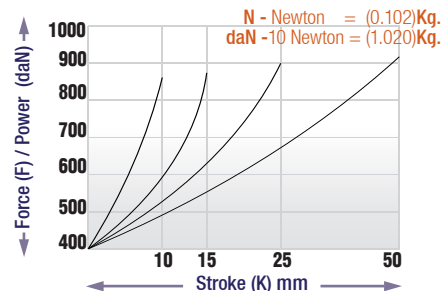
Max. Pressure: **150 Bar** - Max. Speed : **0.5 m/s** - Max. Temp. : **0-80°C**



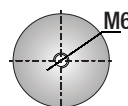
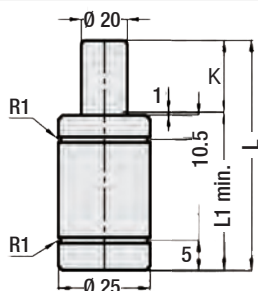
GC Series, Gas Spring - Super Pressure



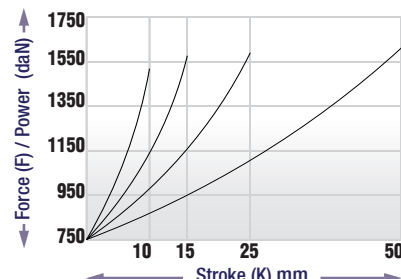
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
GC.420.06	6 mm	50	56	420 Kg.	840 Kg.	0.14
GC.420.10	10 mm	60	70			0.16
GC.420.16	16 mm	75	91			0.19
GC.420.25	25 mm	95	120			0.23
GC.420.32	32 mm	108	140			0.25
GC.420.40	40 mm	125	165			0.28
GC.420.50	50 mm	145	195			0.32



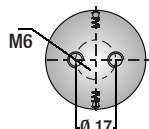
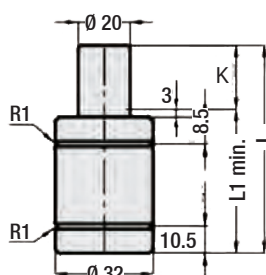
Pressure Increase: During operation, the piston of the gas spring inserts into the body and the volume of the gas inside gradually decreases. As a result, the pressure increase can be seen as the multiplication factor in the gas spring diagram. The spring force can be easily calculated by multiplying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



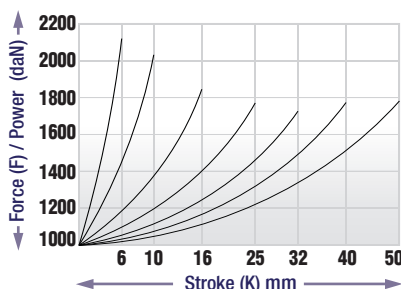
Order Model	Stroke (K) mm	L1 min.	L Length	Force		Weight Kg.
				Initial	Final	
GC.750.06	6 mm	57	63	750 Kg.	1200 Kg.	0.23
GC.750.10	10 mm	65	75			0.25
GC.750.16	16 mm	77	93			0.28
GC.750.25	25 mm	95	120			0.33
GC.750.32	32 mm	108	140			0.37
GC.750.40	40 mm	125	165			0.42
GC.750.50	50 mm	145	195			0.47



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		Weight Kg.
				Initial	Final	
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

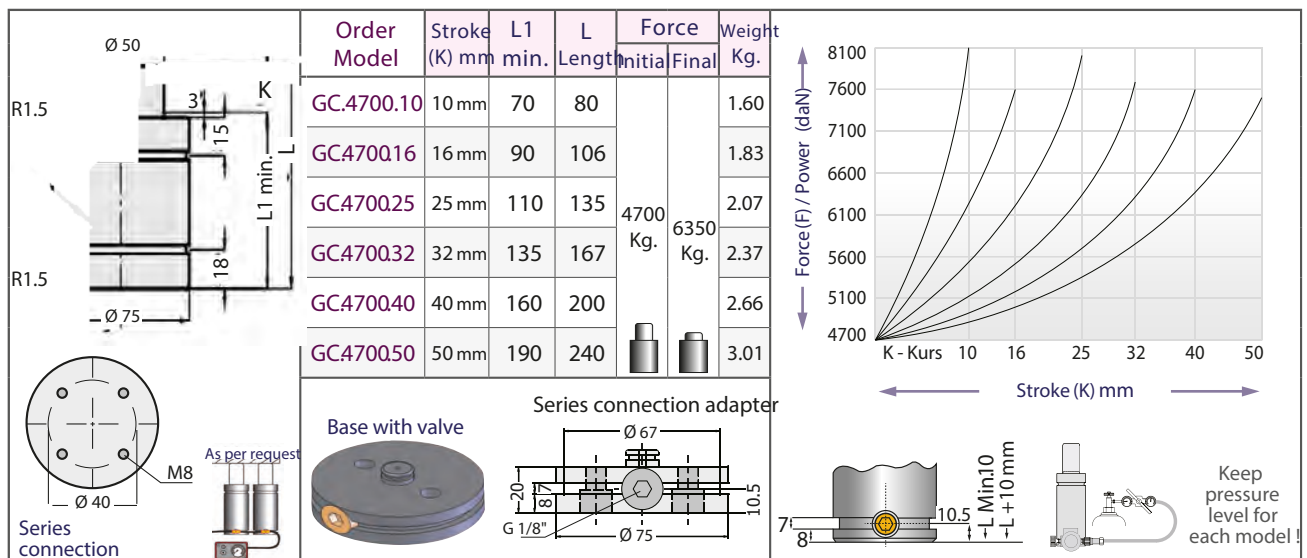
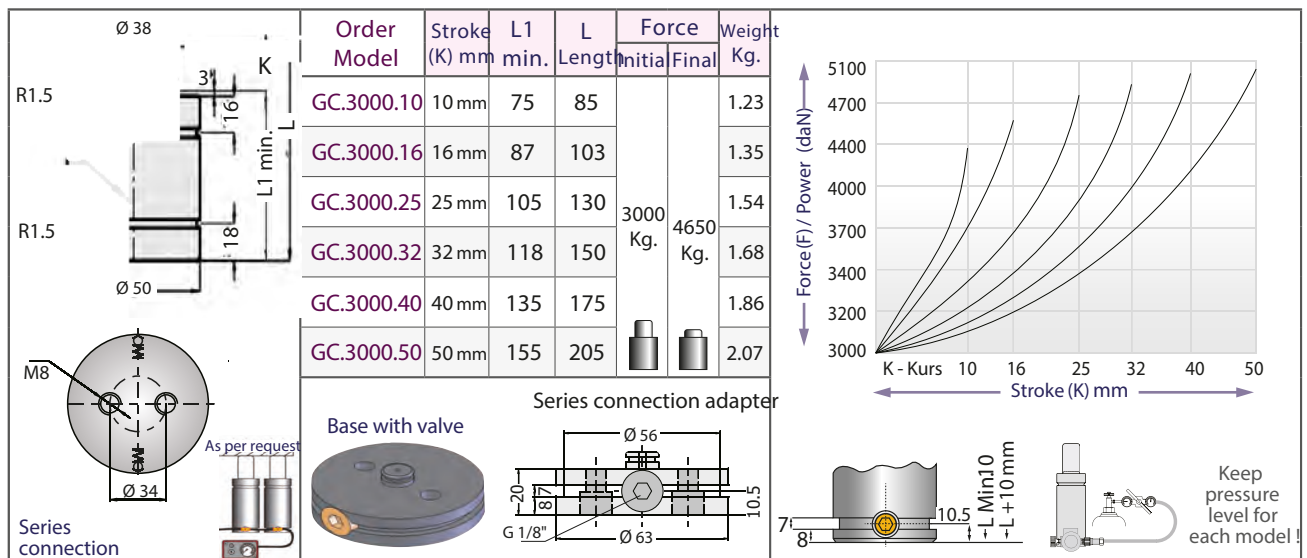
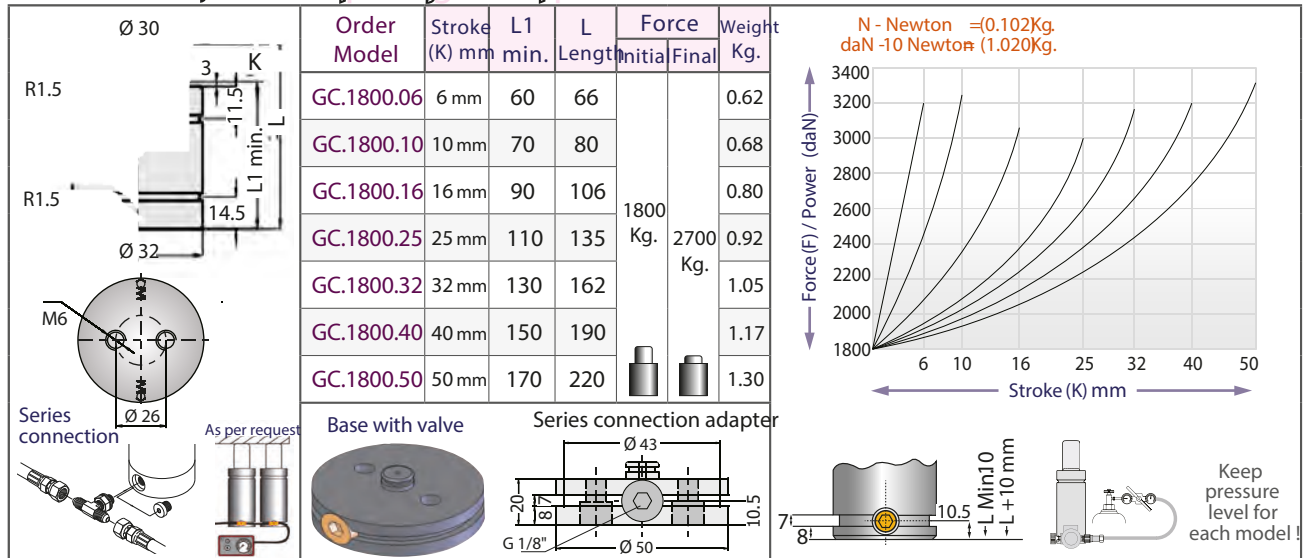
Code:
BY



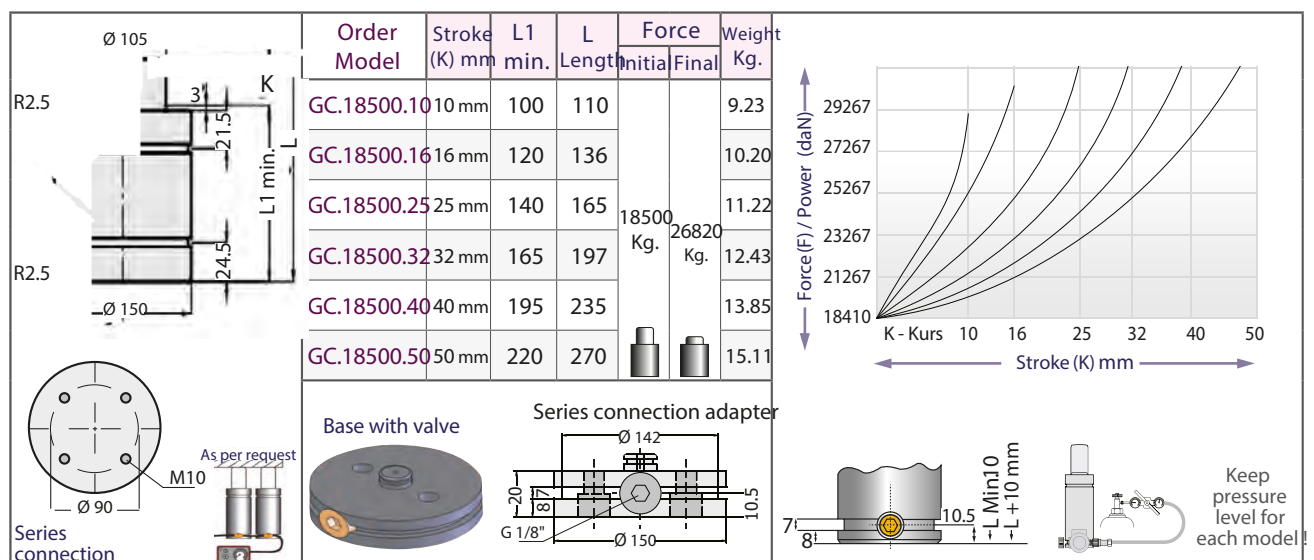
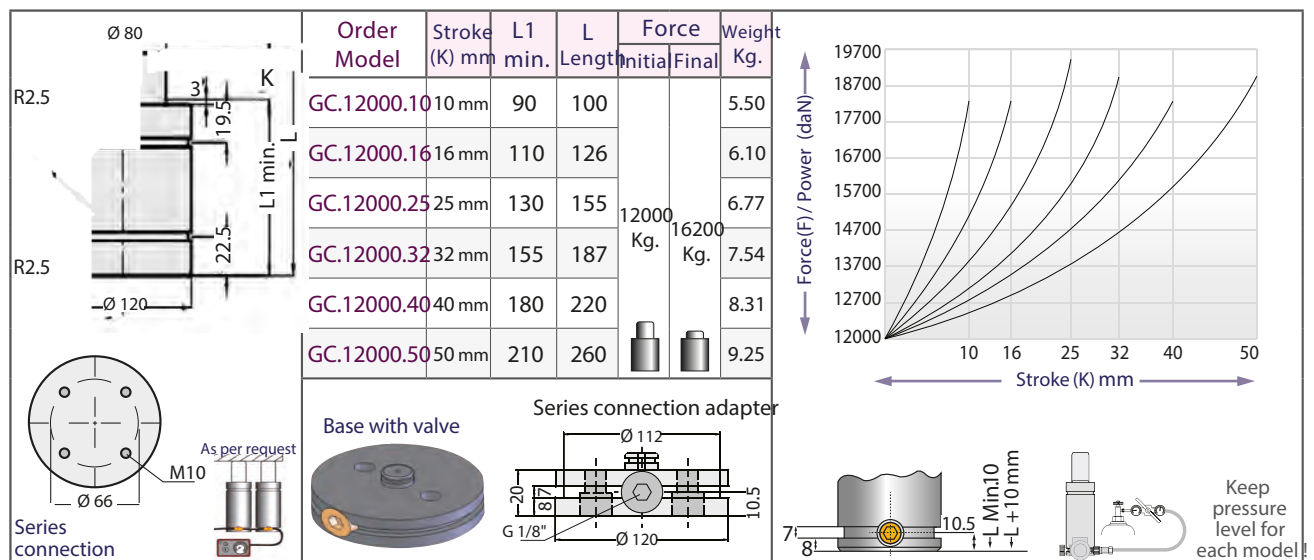
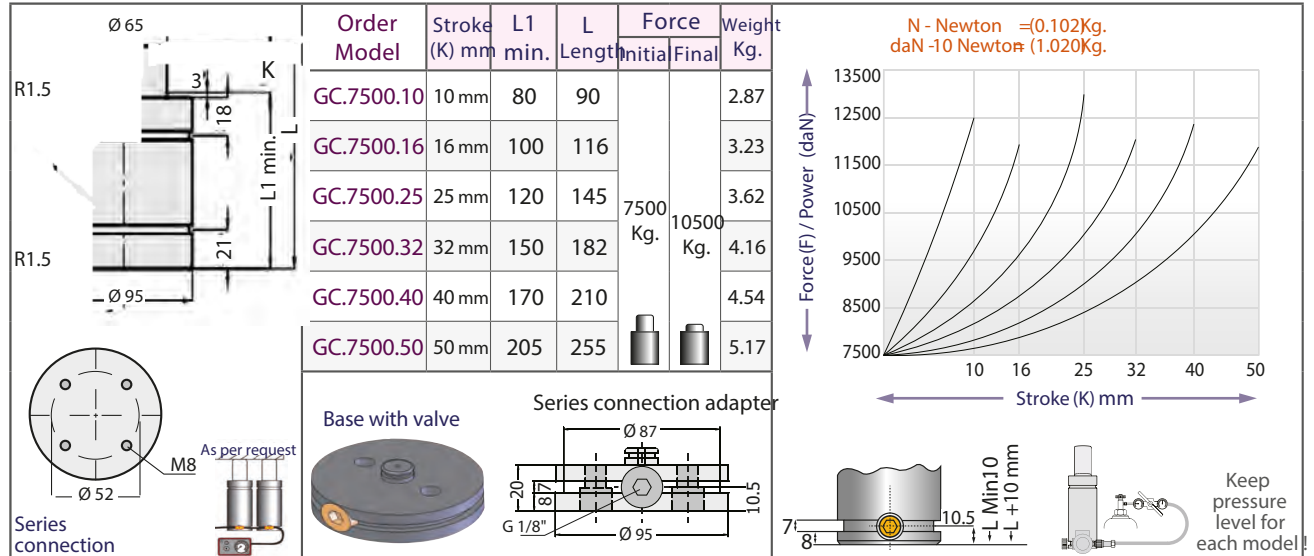
Code:
BK



GC Series, Gas Spring - Super Pressure



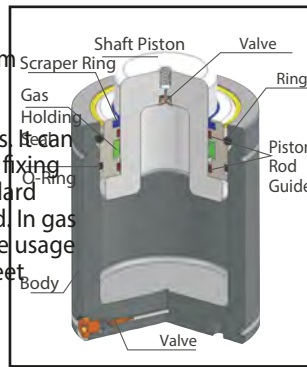
GC Series, Gas Spring - Super Pressure



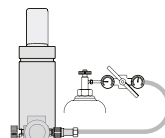
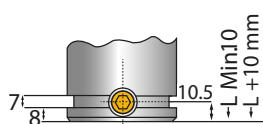
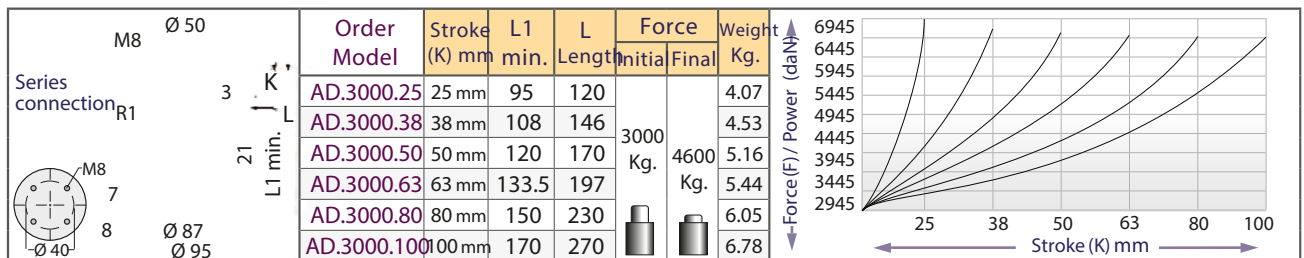
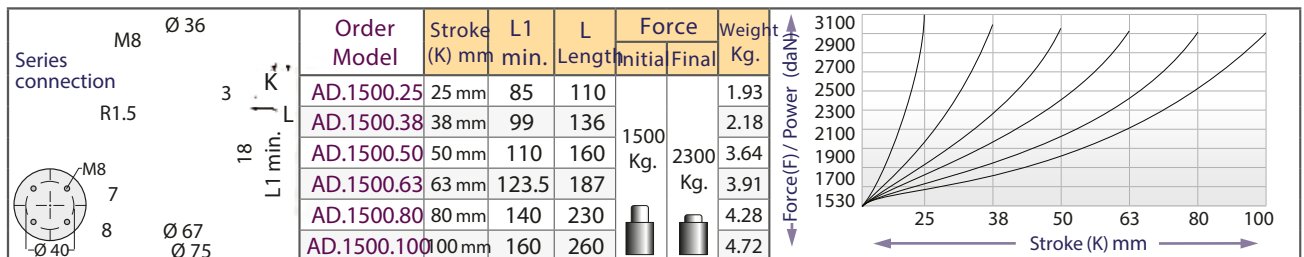
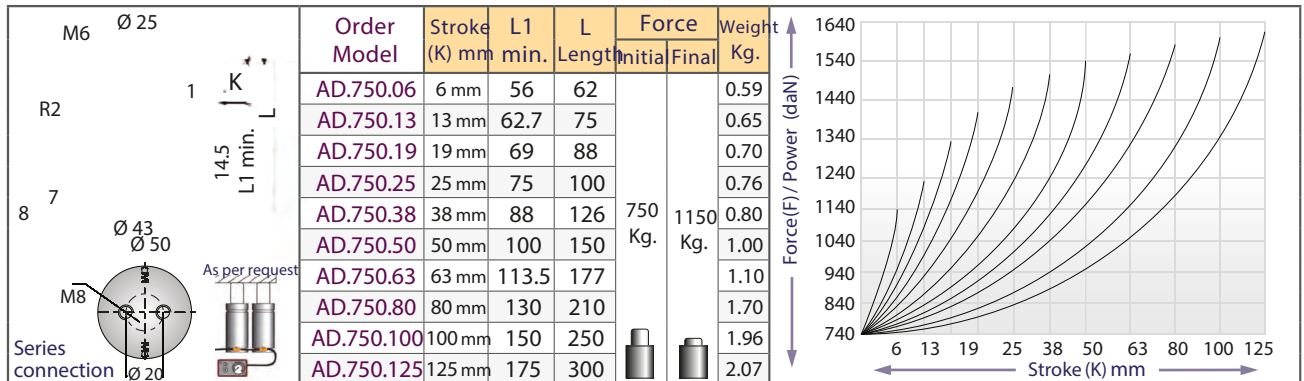
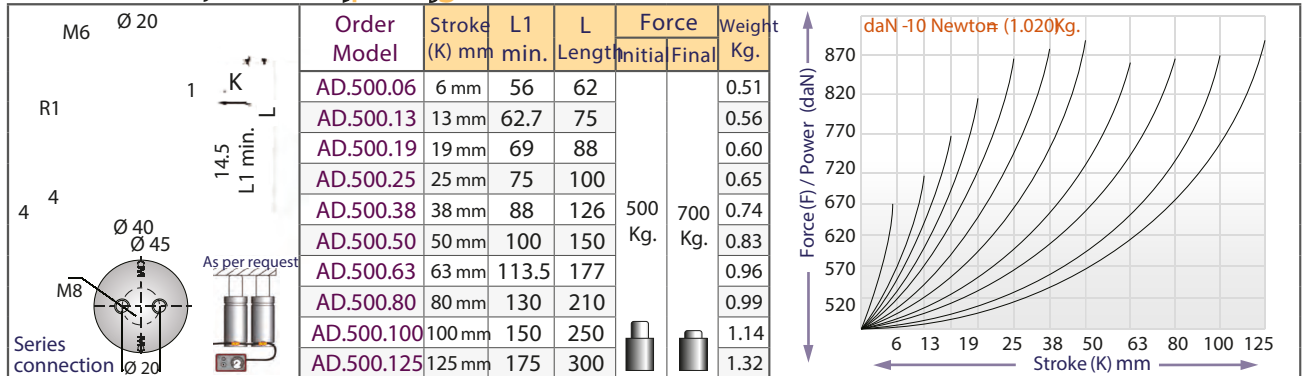
AD Series, Gas Spring - Low Profile

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 50 Bar - Max. Speed 0.5 m/s - Max. Temp. 0-80°C

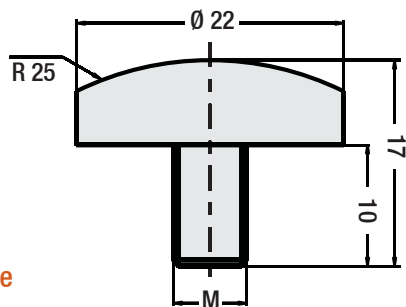


AD Series, Gas Spring - Low Profile

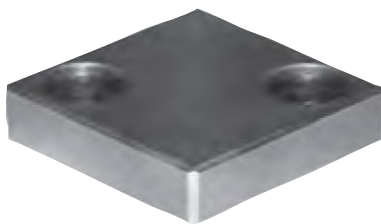
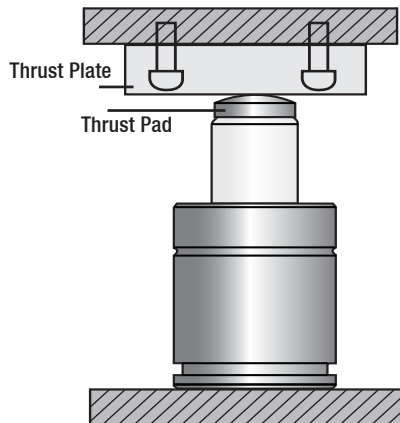


Keep pressure level for each model !

Refer to "page 132" for gas spring fixing elements.



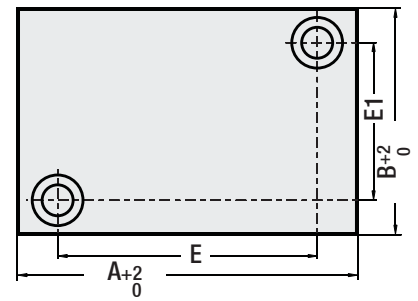
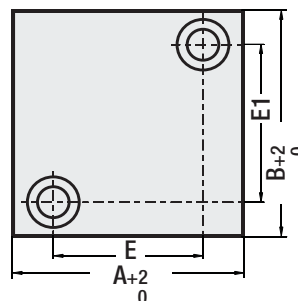
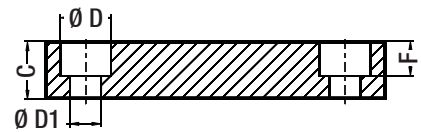
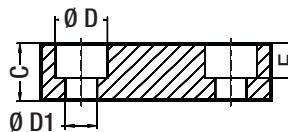
Mounting Example



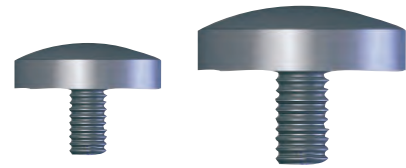
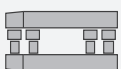
Thrust Plate for Gas Springs

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	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



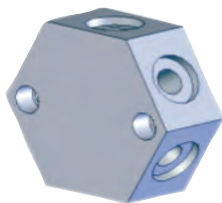
Thrust Pad for Gas Springs

Code: **HRM**

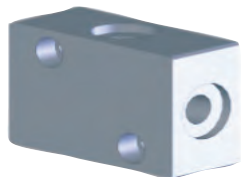
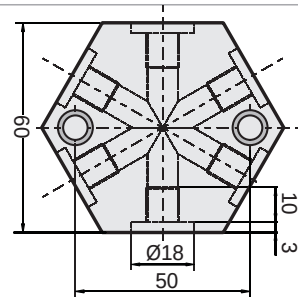
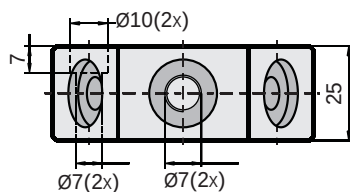
Piston protection head (balancing / straightening)

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

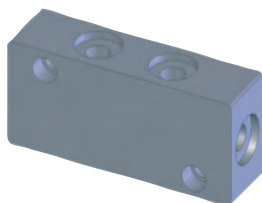
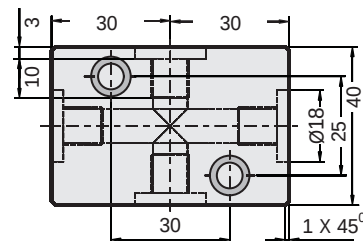
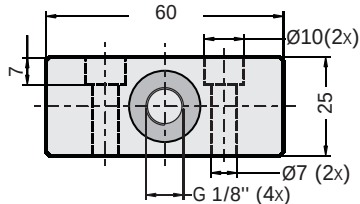
It is a useful product which protects piston head and absorbs vibrations in the die. The hardened thrust pad reduces lateral pressure in cases of declined pressure or laterally replacing parts. The lateral load resistance of the gas springs is increased by using the thrust pads and the thrust plates together. It does that by reducing friction. Even though no thrust pad is used, a thrust plate will be very useful for your system.



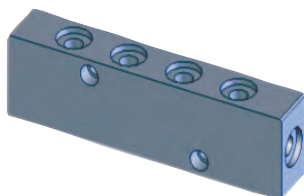
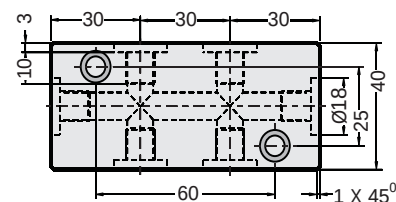
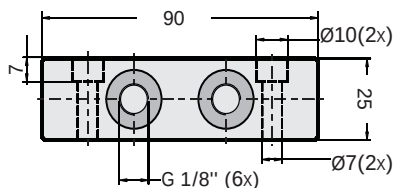
Order Code: DBC.6



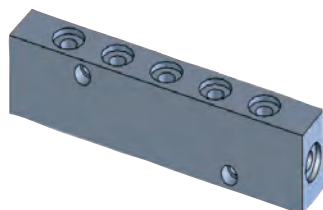
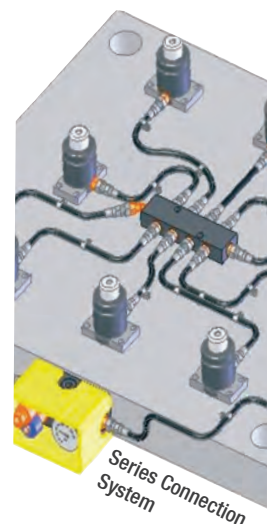
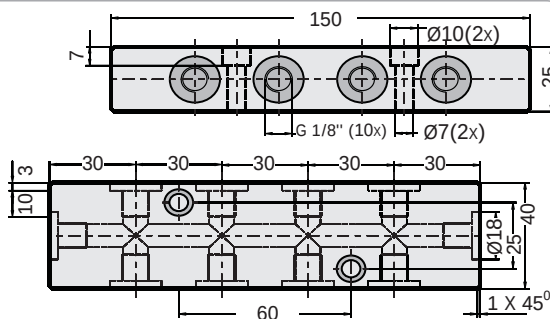
Order Code: DB.4



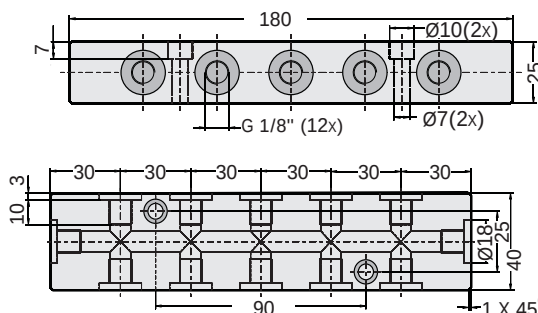
Order Code: DB.6

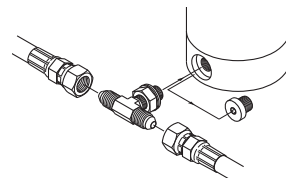
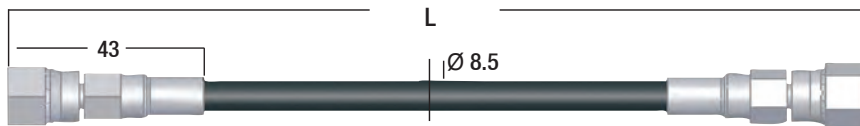


Order Code: DB.10



Order Code: DB.12





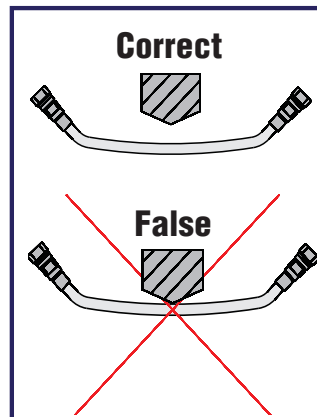
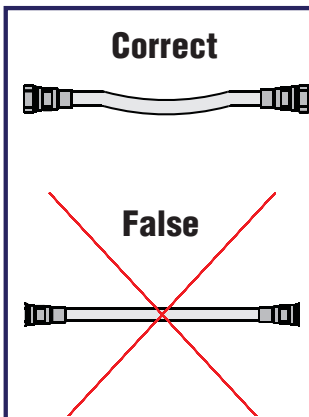
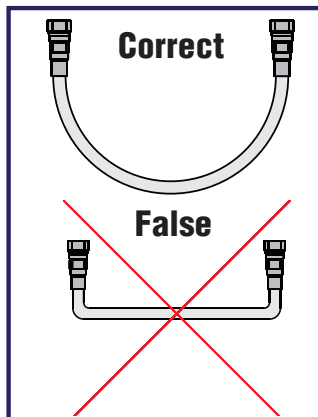
Hose for Gas Spring Distribution Blocks

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

Order: **HRM. L (Length)**

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 Y0.700 up to Y0.11800

From G.180 up to G.1200

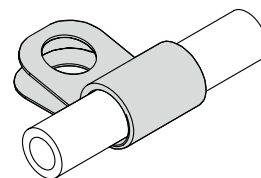
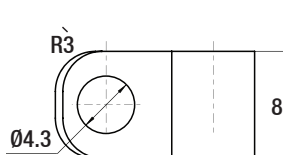
Before beginning this process, ensure that all pressure is discharged and piston is withdrawn completely. In cases that any mounting / inserted part is removed, ensure that control pressure is discharged completely over control panel.

Hoses should be stable in flat position in the system. (bending radius is 13 mm).

Working temperature: + 80°C.

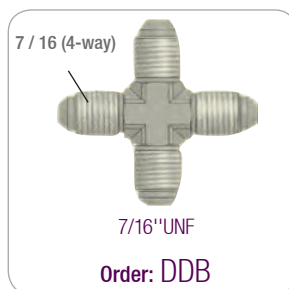
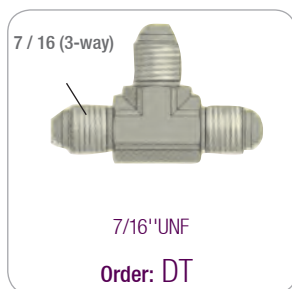
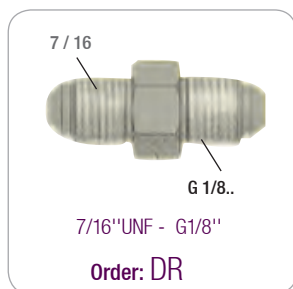
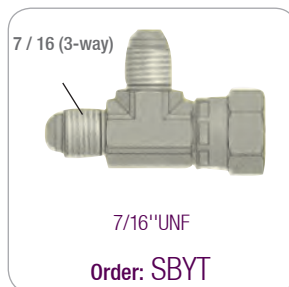
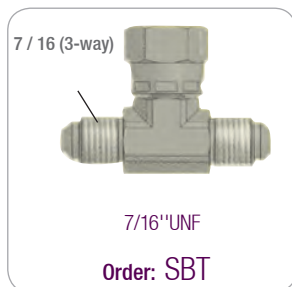
Hose Clamp

Order Code: **HK**



It is used as hose clamp in connection systems.

Gas Spring Fittings



Thread & Pipe Sealant (for fittings)

Thread & pipe sealant are sealed threaded bolts against water, oil, gas and chemicals safely.

* High quality sealant.
* 150 - 200°C heat protection.

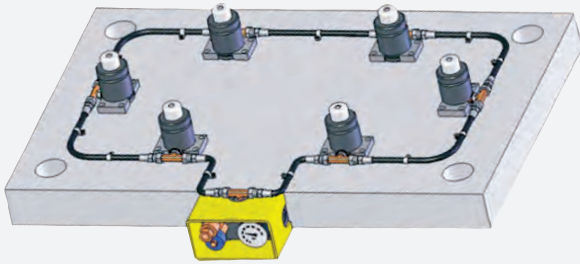


Order	Package
678.511.5	50 ml.
678.511.25	250 ml.

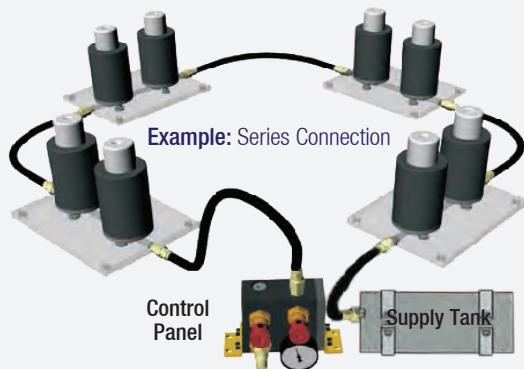


Serial Connection, Practical Examples

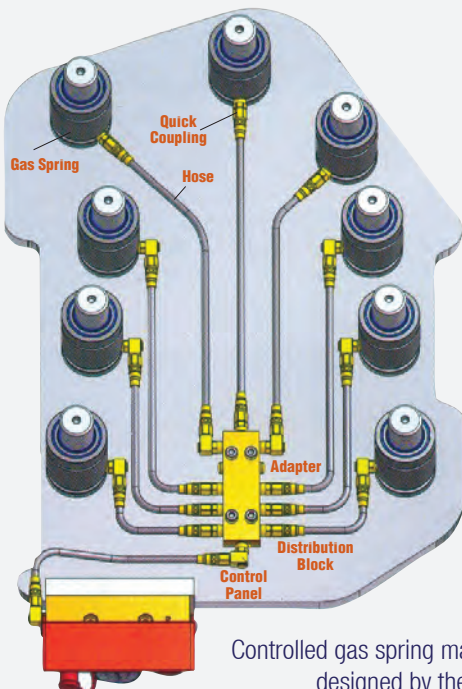
To make gas spring connection with a system, it enables to monitor gas spring pressure out of die and to adjust and correct it by increasing - reducing gas.



The springs are connected each other and there should be a control line to the distribution installation.



Example: Series Connection



Controlled gas spring manifold systems designed by the user.

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.

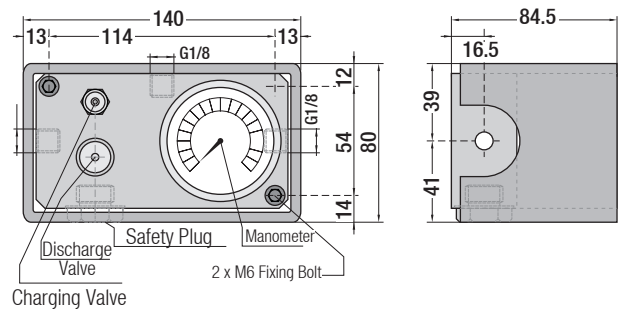


Control Panel for Gas Spring

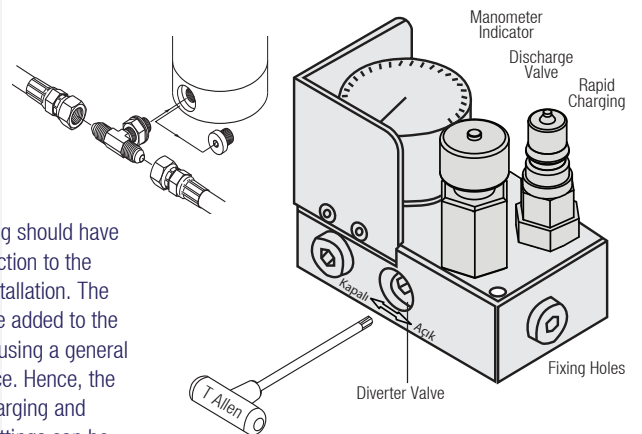
Code: KPA

(series connection systems, router unit)

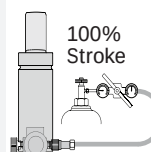
These standard products with wide connection and accessory options are used for all kind of applications that supply tanks are used.



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.

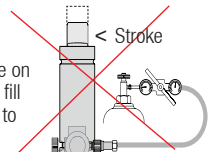


Order: KPA



100% Stroke

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..



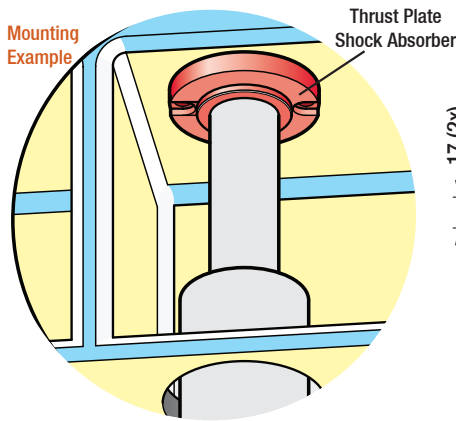
< Stroke

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

Dies



Page
151



Code: **G113**

Shock Absorbing for Gas Spring

Order	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

(daN) 1 Newton : 0.102 Kg.

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.

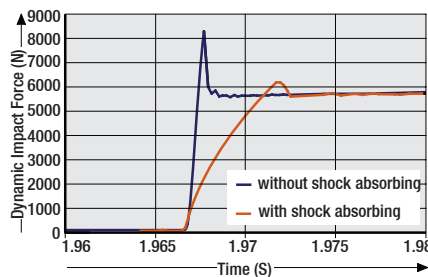
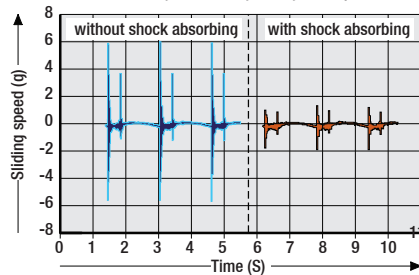
Working temperature: between 0° and 80°C.

Recommended stroke / minute: 20

Max. stroke speed: 1.6 m / s

Max. shock absorbing stroke: 3 mm

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 compression head 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.

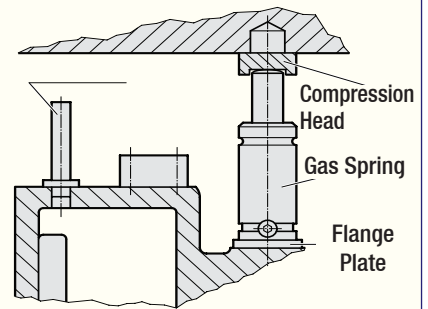
Support pins are for security after gas spring process.

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.

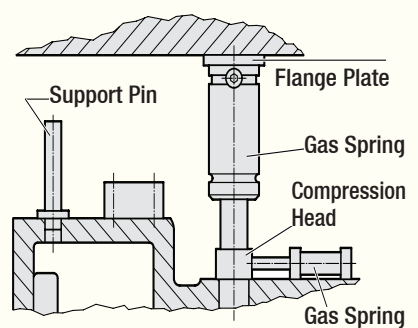
While preparing for production, springs enable reach various parts of dies. When die is mounted to press, support pins and compression head should be removed (before stamping).

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 Lower Body



3 - Gas Spring Mounted to Upper Body

