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□ Features

The standards of TOSS gas springs are as below :

- Initial load : 50kgf ~ 7,500kgf
- Stroke : 10mm ~ 300mm
- Maximum charging pressure : 150kgf/cm².
- TOSS has a wide range to choose from, which are the TSM, TSS and TSL series.
- Easy to use in small moulds.
- Available in two types :
 - **Self Contained Type** : Individually used as an independent gas spring.
 - **Fitting Type** : Multiple gas springs that is connected by pipes. The pressure for each gas spring can be adjusted simultaneously.

Conversion between these two types is possible.

- Recharging and discharging is simple and pressure can be adjusted easily.

□ Quality Assurance

All TOSS gas springs comes with a two years guarantee period from date of loading from the warehouse or one million strokes. Every troubleshooting service and (or) exchange of parts during this term is free of charge. However, should there arise any critical defects after the two years guarantee period, the products shall be replaced free of charge.

□ Maintenance

All TOSS gas springs are manufactured based on a simple structure, which requires no repair throughout its useful life. TOSS gas springs, which are damaged during operations after its useful life may be easily repaired and revived by simply replacing the damaged parts. In addition, adequate load can be specified by directly adjusting the pressure at sites.

□ Installation & Operation

When installing the TOSS gas spring, the piston rods of the gas springs must be installed parallel to the operation direction and vertical to the installation ground. Failure to do so will result in the generation of odd load and abrasion of piston rods, bearings, and seals etc., which will reduce the life span of the gas spring.

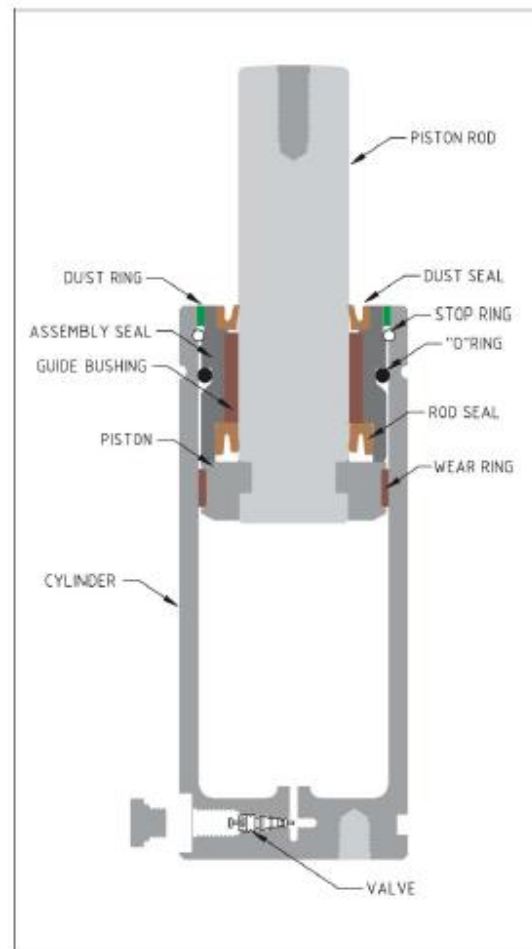
To prevent damage to the gas spring and to maximize its life span, please allow ten percent margin to the standard stroke to reduce shock that is caused by the compression of gas. Sometimes, gas springs can also be damaged when the piston rods touch the bottom surface.

Although a tap of M8 is used for the assembly and disassembly of the upper part of the piston rods, this should not be used to fix gas springs or any connecting devices.

During installation, please ensure that there is about 1MM of margin space between the contact surface and the upper part of the piston rods.

TOSS gas springs can be used just as it is. There is no need for pre-pressure because the initial pressure is strong enough. Any increase of pre-pressure can damage the molds.

Do not cut or grind the upper part of the piston rods or grind the lower part of the gas springs, as it is dangerous. When installing the TOSS, please ensure that the bottom surface of the TOSS touches the mold to absorb the load of gas spring. However, when assembling with mounts, there should be space between the mount and the bottom surface of the mold. This is to prevent the mold from breaking should heavy load breaks the mount.



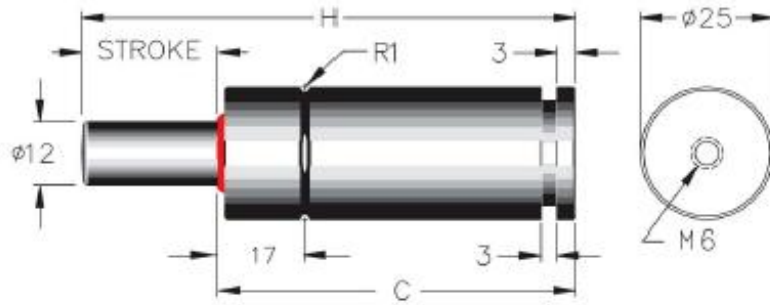


TSM0150

NITROGEN GAS SPRING



YELLOW RED BLUE GREEN



HOW TO SPECIFY

GAS SPRING

TSM0150

× 050

- YELLOW

MOUNT

SP0150

TSM0150		
STROKE	H	C
10	62	52
13	68	55
15	72	57
16	74	58
20	82	62
25	92	67
30	102	72
35	112	77
38	118	80
40	122	82
45	132	87
50	142	92
60	165	105
63	172	109
70	185	115
80	205	125

TSM0150

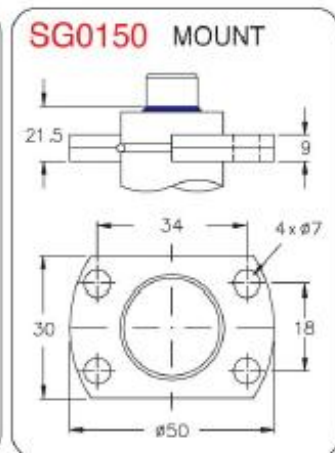
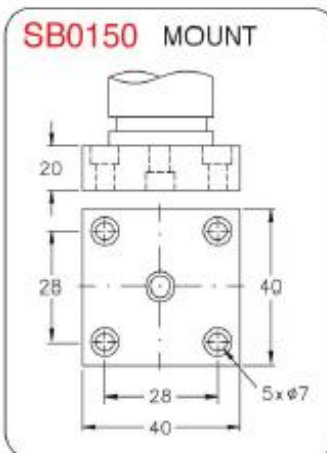
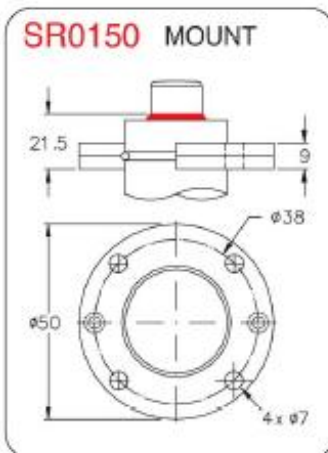
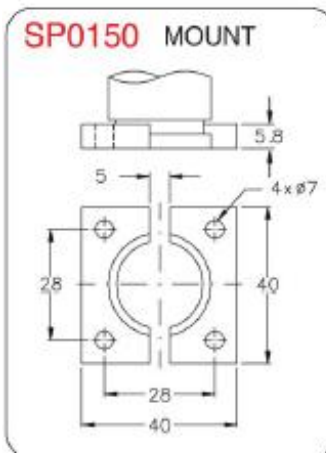
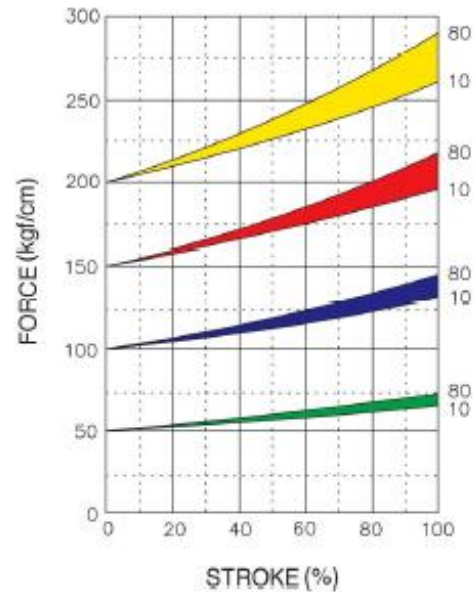
TSM0150 is pre-charged when shipped and comes in four types, depending on the force. The pressure cannot be adjusted but Nitrogen (N₂) is rechargeable.

COLOR	FORCE(kgf)	PRESSURE(kg/cm ²)
YELLOW	200	175
RED	150	135
BLUE	100	90
GREEN	50	45

Note:

- All of TOSS gas spring must be secured with a stroke reserved at least 10% of the length of the stroke.
- Not allowed disassembled in any case without manufacturer's instructions.

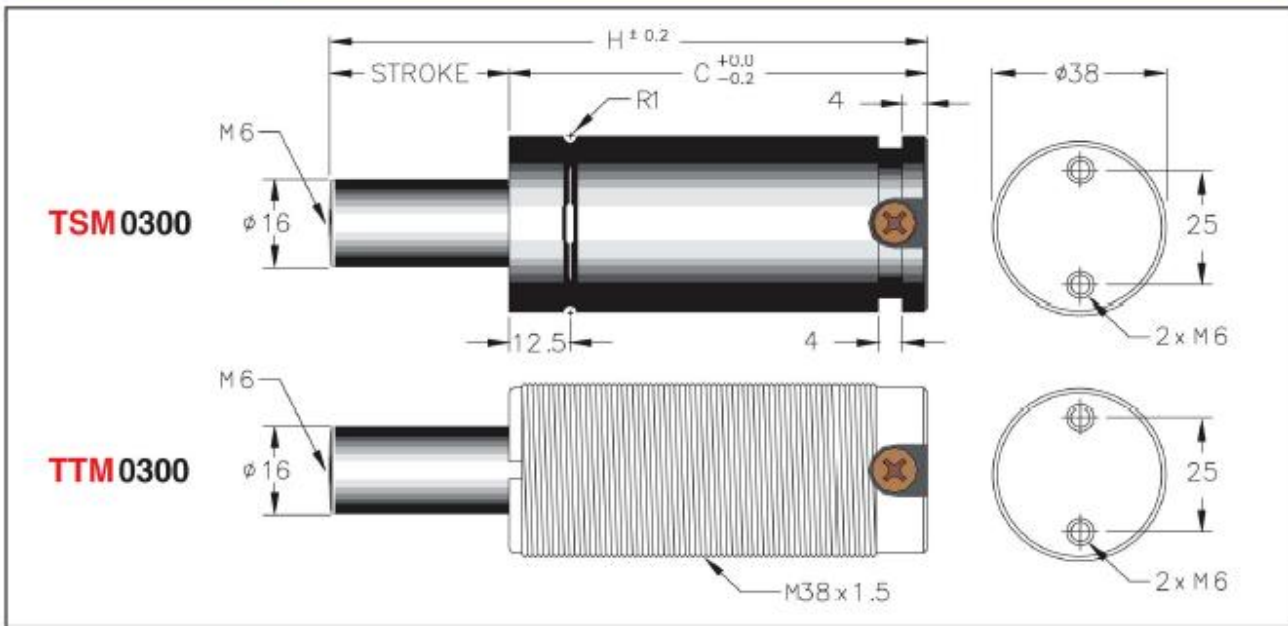
FORCE CHART





TSM, TTM, 0300

NITROGEN GAS SPRING

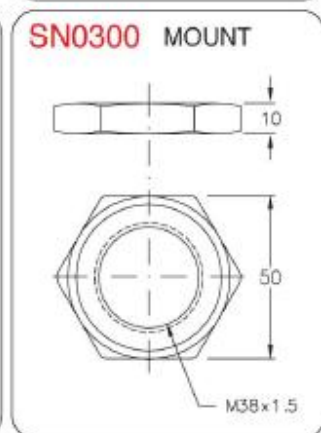
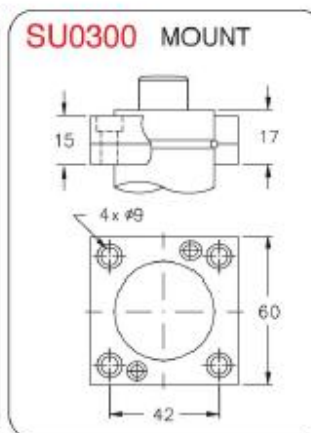
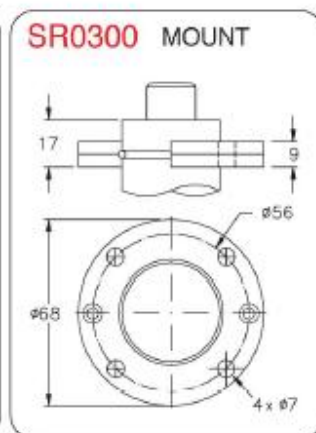
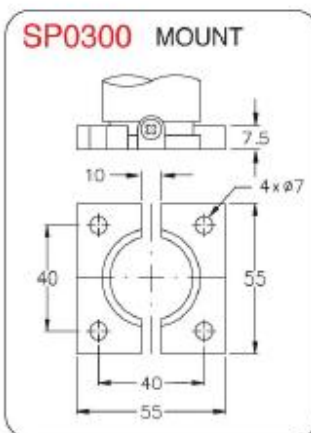
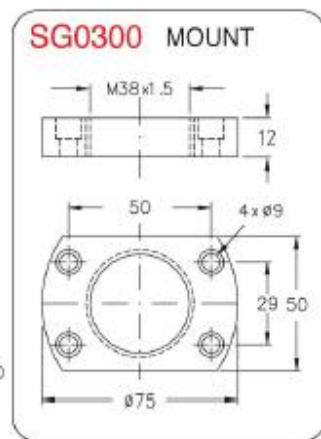
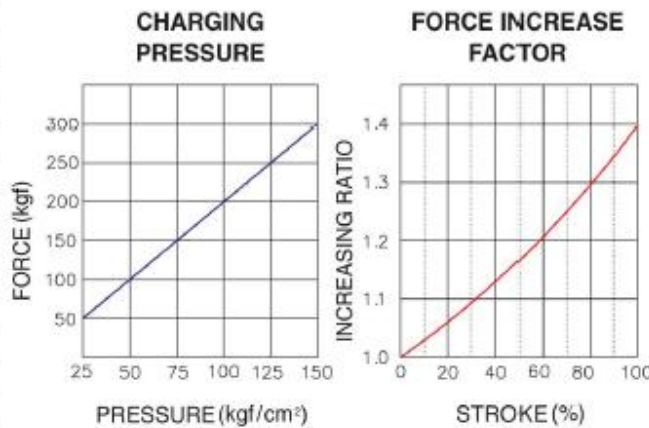


TSM, TTM0300		
STROKE	H	C
10	70	60
15	80	65
20	90	70
25	100	75
30	110	80
35	120	85
38	126	88
40	130	90
45	140	95
50	150	100
60	170	110
63	176	113
70	190	120
80	210	130
90	230	140
100	250	150
110	270	160
120	290	170
125	300	175

HOW TO SPECIFY | GAS SPRING **TSM0300 × 050 - 150**

MODEL STROKE CHARGING
 SP0300 PRESSURE (kgf/cm²)

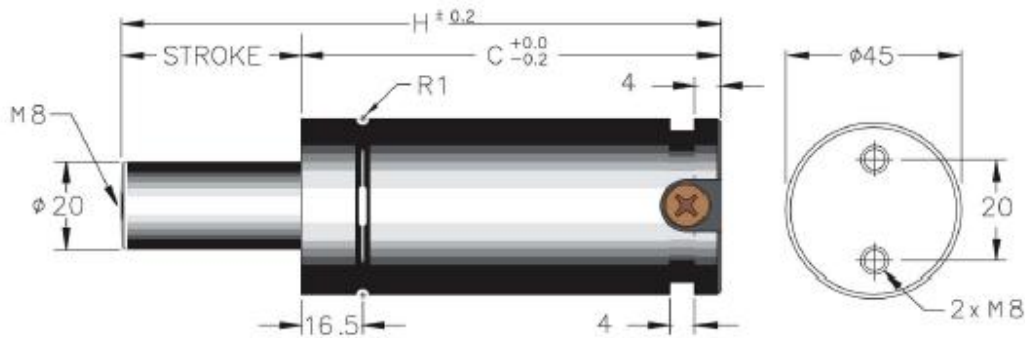
Charging pressure has to be specified. Otherwise, 150kgf/cm² will be automatically charged.





TSM, TSL, 0500

NITROGEN GAS SPRING



| HOW TO SPECIFY |

GAS SPRING

TSM0500
MODEL

× **050**
STROKE

- **150**
CHARGING
PRESSURE (kgf/cm²)

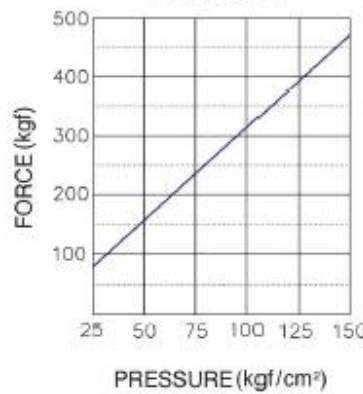
MOUNT

SP0500

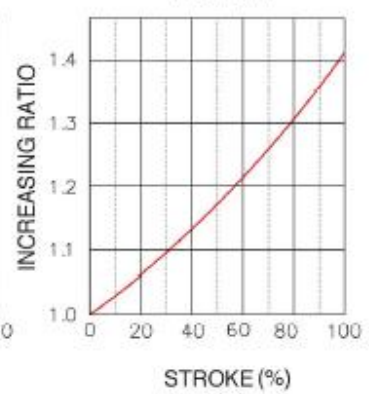
Charging pressure has to be specified. Otherwise, 150kgf/cm² will be automatically charged.

STROKE MM	TSM0500		TSL0500	
	H	C	H	C
10	70	60	105	95
15	80	65	115	100
20	90	70	125	105
25	100	75	135	110
30	110	80	145	115
35	120	85	155	120
38	126	88	161	123
40	130	90	165	125
45	140	95	175	130
50	150	100	185	135
60	170	110	205	145
63	176	113	211	148
70	190	120	225	155
80	210	130	245	165
90	230	140	265	175
100	250	150	285	185
110	270	160	305	195
120	290	170	325	205
125	300	175	335	210

CHARGING PRESSURE



FORCE INCREASE FACTOR

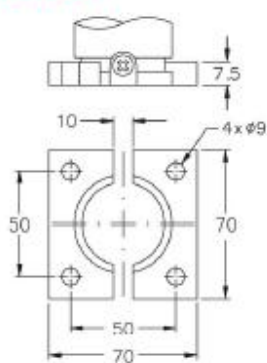


$$\text{Charging pressure (kgf/cm}^2\text{)} = \frac{\text{Demanded Force (kgf)}}{3.1}$$

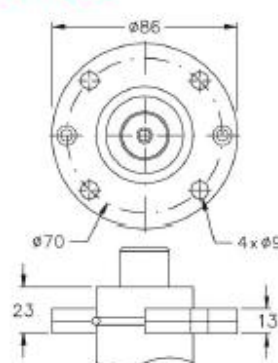
EX) What comes to the charging pressure of gas spring which demands force 350kgf?

$$113 \text{ kgf/cm}^2 = \frac{350 \text{ kgf}}{3.1}$$

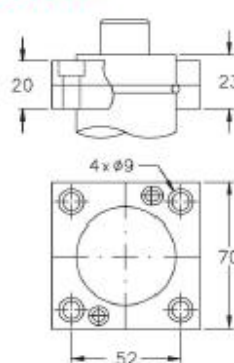
SP0500 MOUNT



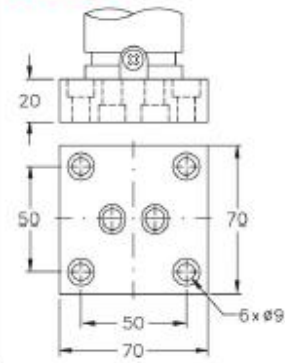
SR0500 MOUNT



SU0500 MOUNT



SB0500 MOUNT

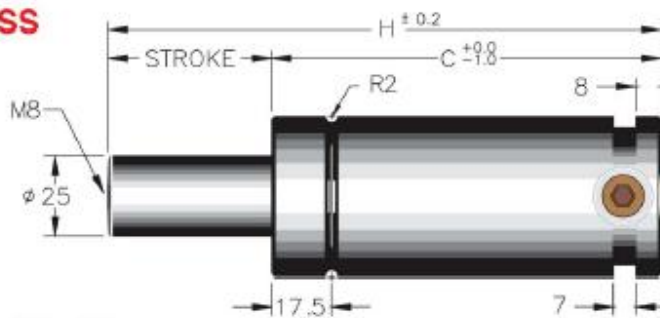




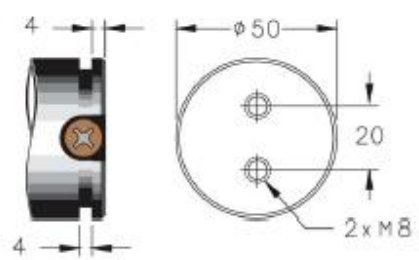
TSM, TSS, TSL, 0750

NITROGEN GAS SPRING

TSL.TSS



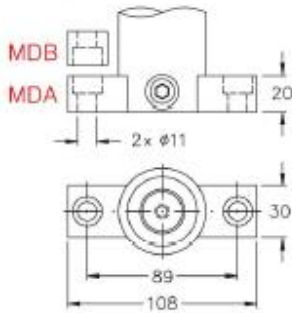
TSM



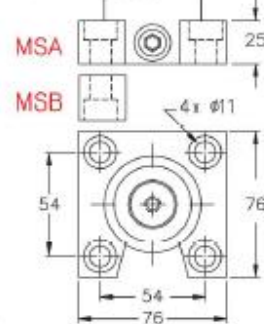
PORT SIZE: **TSL,TSS** 7/16-20
TSM M6

*TSM0750 AVAILABLE ONLY FOR SELF-CONTAINED TYPE.

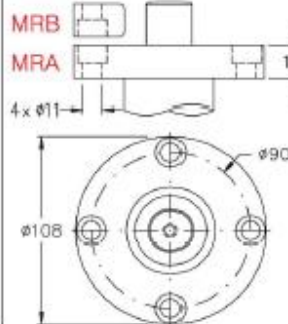
MD MOUNT FIXED



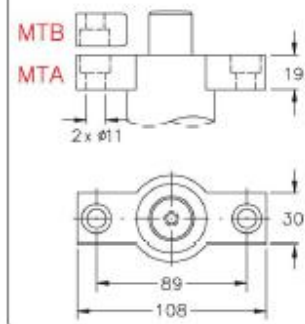
MS MOUNT FIXED



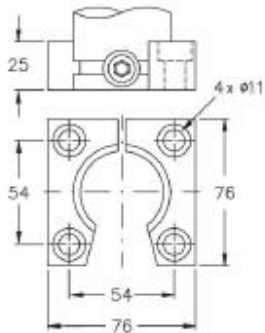
MR MOUNT FIXED



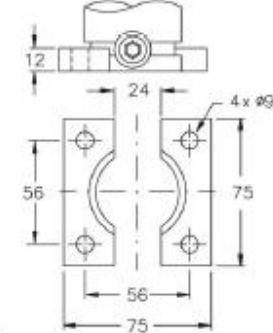
MT MOUNT FIXED



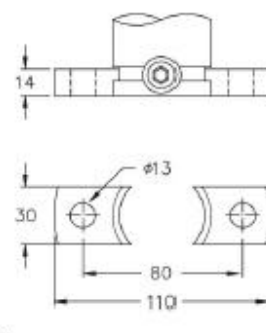
SS0750 MOUNT ASSEMBLING



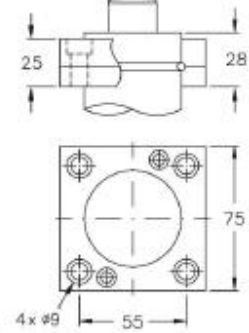
SP0750 MOUNT ASSEMBLING



SL0750 MOUNT ASSEMBLING



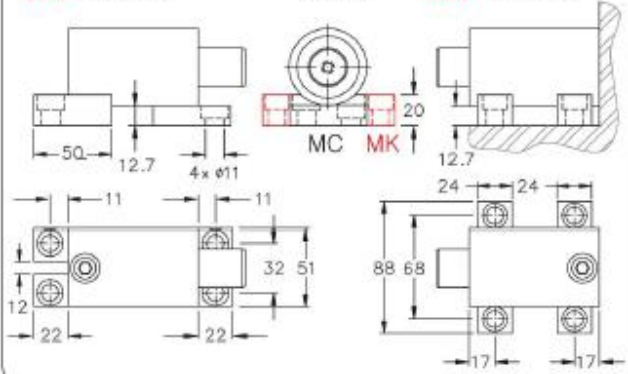
SU0750 MOUNT ASSEMBLING



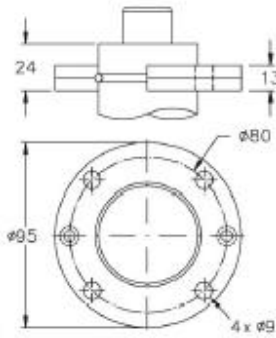
MC MOUNT

FIXED

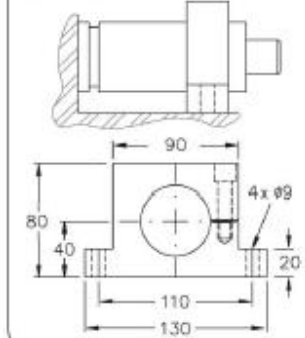
MK MOUNT



SR0750 MOUNT ASSEMBLING



SC0750 MOUNT ASSEMBLING





TOSS GAS SPRING

NITROGEN GAS SPRING

HOW TO SPECIFY

STANDARD	TSS0750 × 50S(F) - 150						
MOUNT	SS0750						
MOUNT FIXED	TSS0750	×	50S(F)	-	MSA	-	150
	MODEL		SELF-CONTAINED(S)		MOUNT		CHARGING PRESSURE
			FITTING-SYSTEM(F)				(kgf/cm²)

Charging pressure has to be specified. Otherwise, 150kgf/cm² will be automatically charged.

(UNIT: MM)

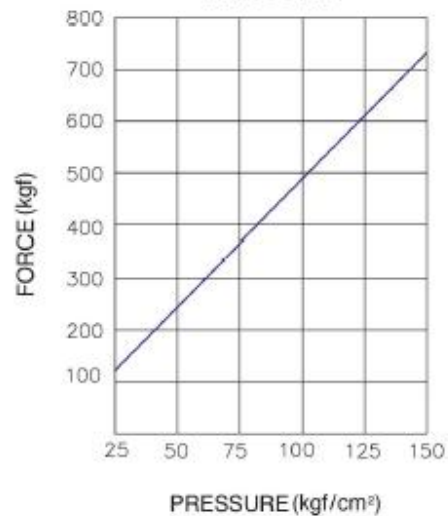
STROKE MM	TSM0750		TSS0750		TSL0750	
	H	C	H	C	H	C
10	70	60	90	80	115	105
12.7	75.4	62.7	95.4	82.7	120.4	107.7
15	80	65	100	85	125	110
20	90	70	110	90	135	115
25	100	75	120	95	145	120
30	110	80	130	100	155	125
35	120	85	140	105	165	130
38	126	88	146	108	171	133
40	130	90	150	110	175	135
45	140	95	160	115	185	140
50	150	100	170	120	195	145
60	170	110	190	130	215	155
63	176	113	196	133	222	158
70	190	120	210	140	235	165
75	200	125	220	145	245	170
80	210	130	230	150	255	175
90	230	140	250	160	275	185
100	250	150	270	170	295	195
125	300	175	320	195	345	220
150	-	-	370	220	395	245
160	-	-	390	230	415	255
175	-	-	420	245	445	270
200	-	-	470	270	495	295
250	-	-	-	-	595	345
300	-	-	-	-	695	395

(UNIT: INCH)

STROKE INCH	TSM0750		TSS0750		TSL0750	
	H	C	H	C	H	C
0.50	3.00	2.50	3.74	3.24	4.74	4.24
0.75	3.50	2.75	4.24	3.49	5.24	4.49
1.00	4.00	3.00	4.74	3.74	5.74	4.74
1.50	5.00	3.50	5.74	4.24	6.74	5.24
2.00	6.00	4.00	6.74	4.74	7.74	5.74
2.50	7.00	4.50	7.74	5.24	8.74	6.24
3.00	8.00	5.00	8.74	5.74	9.74	6.74
3.50	9.00	5.50	9.74	6.24	10.74	7.24
4.00	10.00	6.00	10.74	6.74	11.74	7.74
4.50	11.00	6.50	11.74	7.24	12.74	8.24
5.00	12.00	7.00	12.74	7.74	13.74	8.74
5.50	-	-	13.74	8.24	14.74	9.24
6.00	-	-	14.74	8.74	15.74	9.74
6.50	-	-	15.74	9.24	16.74	10.24
7.00	-	-	16.74	9.74	17.74	10.74
7.50	-	-	17.74	10.24	18.74	11.24
8.00	-	-	18.74	10.74	19.74	11.74
8.50	-	-	-	-	20.74	12.24
9.00	-	-	-	-	21.74	12.74
10.00	-	-	-	-	23.74	13.74

*For special type, please ask if available.

CHARGING PRESSURE



$$\text{Charging pressure (kgf/cm}^2\text{)} = \frac{\text{Demanded Force (kgf)}}{4.9}$$

EX) What comes to the charging pressure of gas spring which demands force 600 kgf ?

$$122 \text{ kgf/cm}^2 = \frac{600 \text{ kgf}}{4.9}$$

FORCE INCREASE FACTOR

