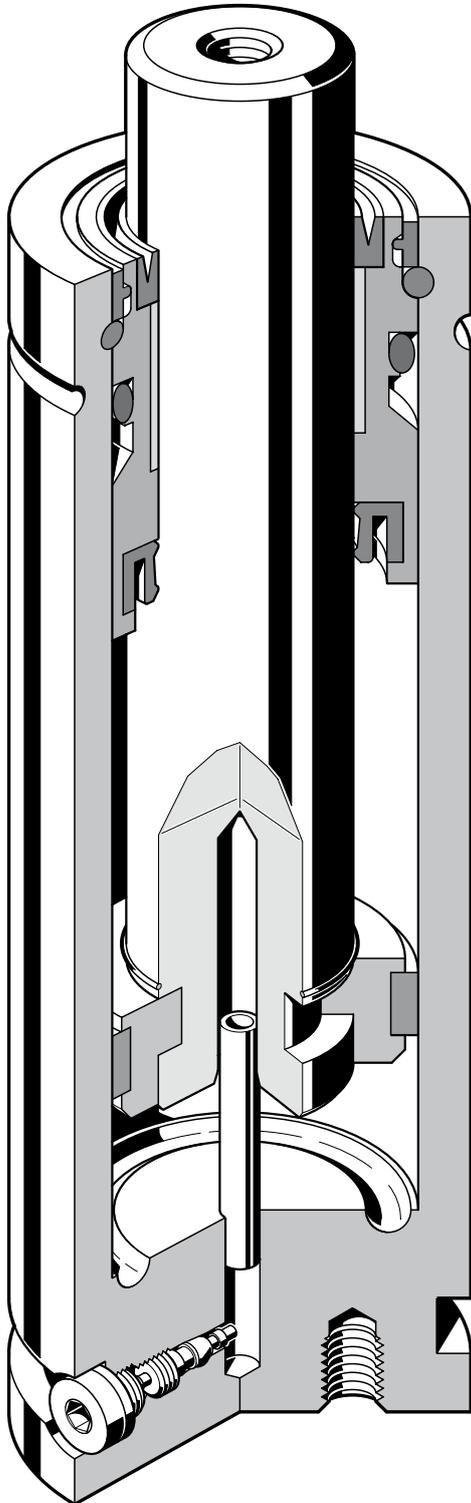


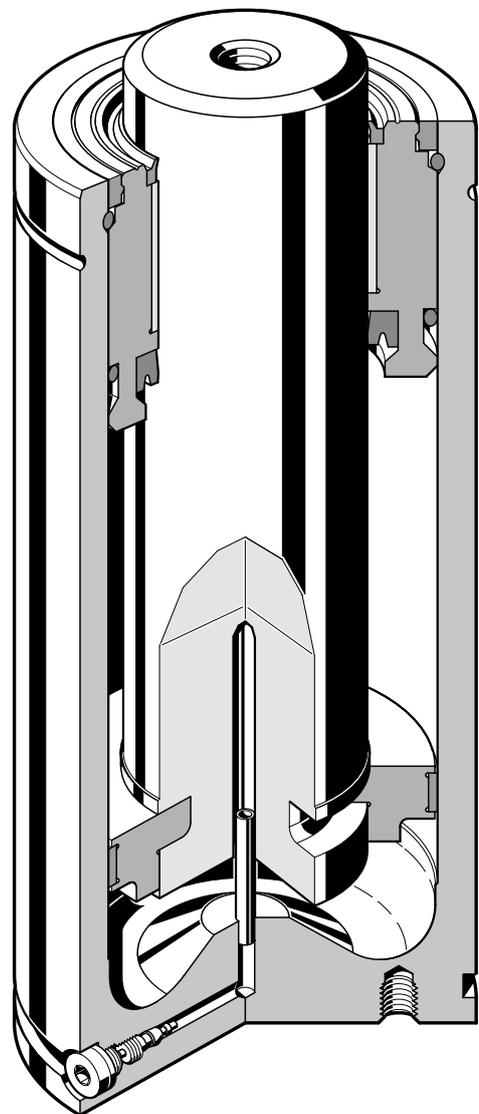
GAS SPRINGS



**GAS SPRING
TWO-CHAMBER SYSTEM**

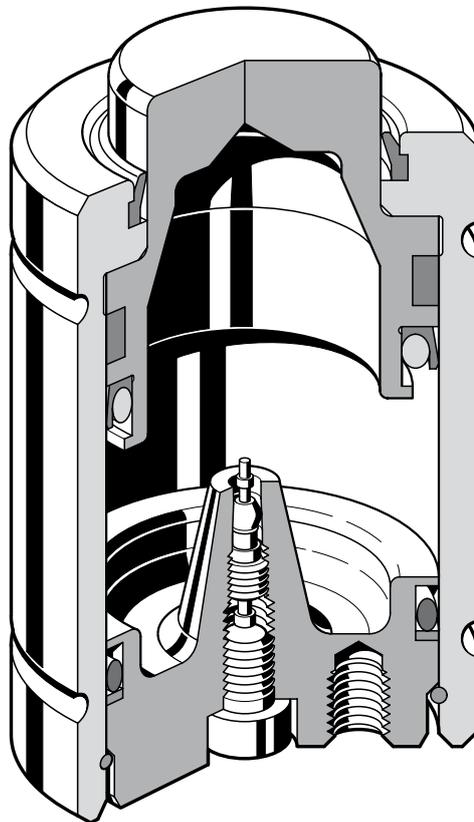


2480.12.



2480.13.

**GAS SPRING
SINGLE-CHAMBER SYSTEM**



2490.

GAS SPRINGS

FIBRO Gas Springs

FIBRO Gas springs are an ideal supplement to and expansion of the traditional FIBRO product lines of helical, disc and elastomer springs for manufacturing tools, devices, moulds and machines.

FIBRO gas springs close a gap where ever the accent is on accommodation of the utmost force component within a minimum of space – or where exceedingly large travel is demanded: FIBRO Gas springs take care of both demands, even in combination.

FIBRO Gas springs are filled with nitrogen and do not require any pressure space that is positioned externally or in tool plates. They also require no gas supply lines.

In certain special cases, however, monitoring of charge pressure in the installed state is required. These may be found in the list of accessory products if needed.

As long as all mounting details are laid out with due circumspection, it is no problem at all to remove and install FIBRO Gas springs.

Operating instructions are included with every delivery of FIBRO Gas springs.

Application examples are shown on the following pages.

Functioning

The pressure medium is a commercially available, environment-friendly nitrogen.

FIBRO gas springs have a standard charge pressure of max. 150 bar

(180 bar).

Depending on the spring size and spring type, starting spring forces of 2 daN to 20000 daN can be realised.

Pressure build-up

In operation the piston rod enters the spring space whose volume is progressively reduced. Depending on the stroke length, the volume of the pressure chamber is reduced. The resulting increase in pressure can be read from the diagram of the spring size as a factor. The final force is therefore the initial spring force 3 Pressure build-up factor.

Operating temp.

The spring temperature should not exceed +80 °C.

Charge pressure

Modification of charge pressure allows variation of the force rating and can be predetermined from the spring diagram.

Installation recommendations

FIBRO gas springs can be used in any installation position. Whether or not external forces act on them when at rest is of no consequence and can therefore be calculated easily.



ALL FIBRO GAS SPRINGS MEET THE REQUIREMENTS OF THE PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU

The Pressure Equipment Directive (2014/68/EU) was ratified by the European parliament and the Council of Europe in May 1997. The requirements of the pressure equipment directive came into force throughout the EU on 29 May 2002.

The directive defines pressure equipment as vessels, pipework, safety devices and pressure accessories. In terms of the directive a vessel is a casing which is designed and manufactured to contain fluids under pressure.

It follows from this definition that nitrogen gas springs of all sizes are deemed to be pressure vessels and must in this respect comply with the pressure equipment directive (2014/68/EU) from 29 May 2002.

GAS SPRINGS

Maintenance

FIBRO gas springs are designed for long-term maintenance-free operation. We recommend lightly oiling the piston rod before using. Sealing and guide elements can be replaced easily in very little time. They are available in a spare parts kit. Each spare parts kit comes with detailed instructions for maintenance of Gas springs.

Attention

When safety functions are triggered (overstroke, return stroke, or over-pressure protection), the gas springs can no longer be repaired!

Caution

Gas springs may only be charged with commercial grade 5.0 nitrogen gas.

Accessories

The range of accessories for gas springs includes fastening devices, charging and control units, screw connections and lines for setting up compound systems.

FIBRO is not liable if fittings that are not original FIBRO fittings or fastening, accessory, and attachment parts that are not released by FIBRO are used.

Warning signs

The signs should be affixed near the springs in as prominent a position as possible.

<p>WARNING</p> <p>This tool is equipped with ___ Gas Springs with a max. pressure of 150 or 180 bar, depending on spring type. Working pressure ___ bar. Read maintenance instructions before working on gas springs.</p> <p>FIBRO</p> <p>Business Area Standard Parts D-74851 Hassmersheim · Postfach 1120 T +49 (0) 6266-73-0* · F +49 (0) 6266-73-237</p>

Size 35 x 50 mm

Language	Order No.
German	2480.00.035.050.1
English	2480.00.035.050.2
French	2480.00.035.050.3
Italian	2480.00.035.050.4
Spanish	2480.00.035.050.5
Polish	2480.00.035.050.PL
Czech	2480.00.035.050.CZ
Turkish	2480.00.035.050.TR
Chinese	2480.00.035.050.CN

<p>WARNING</p> <p>This tool is equipped with ___ Gas Springs with a max. pressure of 150 or 180 bar, depending on spring type.</p> <table border="1"> <thead> <tr> <th>No. pcs.</th> <th>spring type</th> <th>fill.press./bar</th> <th>force/daN</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table> <p>Read maintenance instructions before working on gas springs.</p> <p>FIBRO</p> <p>Business Area Standard Parts D-74851 Hassmersheim · Postfach 1120 T +49 (0) 6266-73-0* · F +49 (0) 6266-73-237</p>	No. pcs.	spring type	fill.press./bar	force/daN	1	_____	_____	_____	2	_____	_____	_____	3	_____	_____	_____	4	_____	_____	_____	5	_____	_____	_____
No. pcs.	spring type	fill.press./bar	force/daN																					
1	_____	_____	_____																					
2	_____	_____	_____																					
3	_____	_____	_____																					
4	_____	_____	_____																					
5	_____	_____	_____																					

Size 75x105 mm

Language	Order No.
German	2480.00.075.105.1
English	2480.00.075.105.2
French	2480.00.075.105.3
Italian	2480.00.075.105.4
Spanish	2480.00.075.105.5
Polish	2480.00.075.105.PL
Czech	2480.00.075.105.CZ
Turkish	2480.00.075.105.TR
Chinese	2480.00.075.105.CN

Size 110 x 150 mm

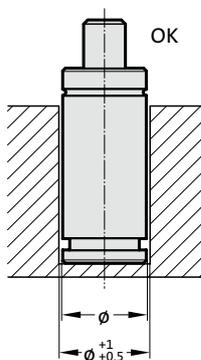
Language	Order No.
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English	2480.00.110.150.2
French	2480.00.110.150.3
Italian	2480.00.110.150.4
Spanish	2480.00.110.150.5
Polish	2480.00.110.150.PL
Czech	2480.00.110.150.CZ
Turkish	2480.00.110.150.TR
Chinese	2480.00.110.150.CN

GAS SPRINGS - INSTALLATION GUIDELINES

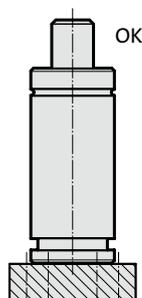
Mounting examples

Mounting possibilities for gas springs are listed below.

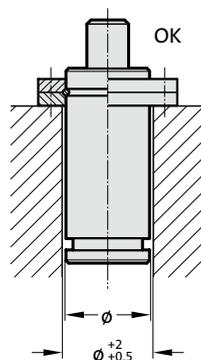
For additional information on mounting, see the corresponding pages in the catalogue.



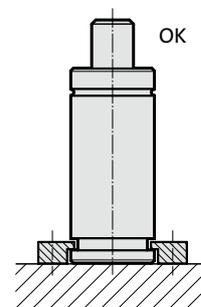
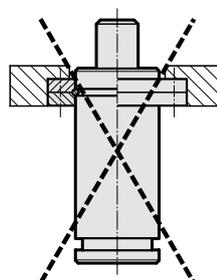
Installed loose in the bore.



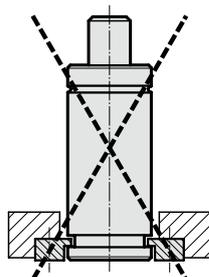
Screw mounted at the base with 2480.011.



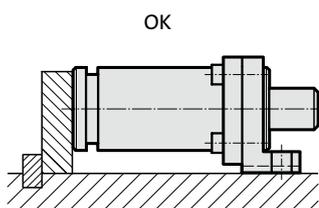
Fixed with 2480.055./057./058./064.



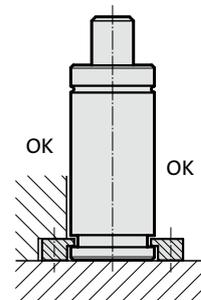
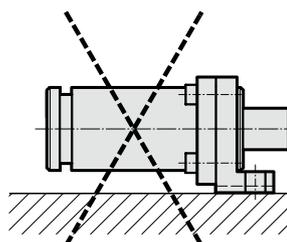
Fixed with 2480.007./008.



Fixed with 2480.007./008.



Fixed with 2480.044./045./047.

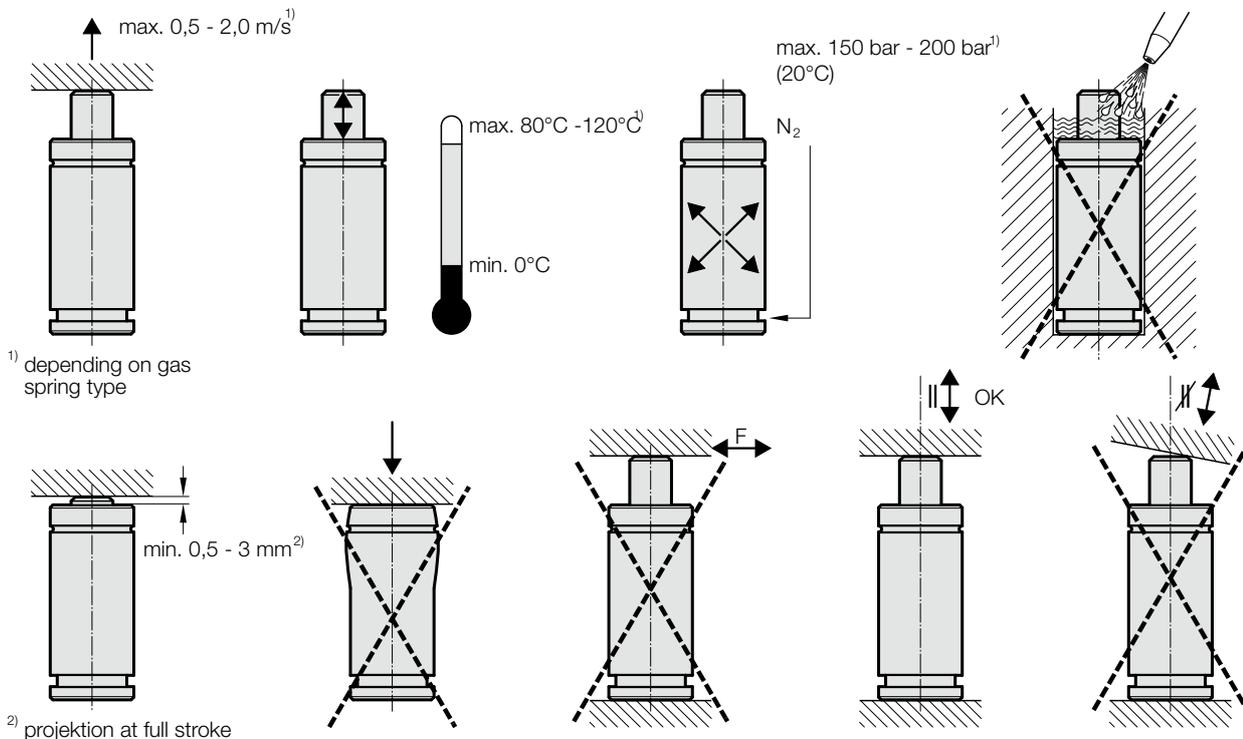


Fixed with 2480.022.

GAS SPRINGS - INSTALLATION GUIDELINES

To achieve the best possible service-life and safety from the gas spring, the directions below must be followed.

Mounting instructions



- Before inserting the gas springs, check the corresponding filling pressure.
- Secure the gas spring to the tool/machine whenever possible, using the threaded hole(s) in the base of the gas spring or a suitable flange. Never exceed the maximum torque values for the threads in the base of the gas spring: (M6 = 10 Nm; M8 = 24 Nm; M10 = 45 Nm; M12 = 80 Nm)
- The threaded hole in the piston rod top should not be used for mounting purposes. It is only to be used when carrying and servicing the gas spring.
- Do not use the gas spring in such a way that the piston rod is realised freely from its compressed position, as this could cause internal damage to the gas spring.
- Make sure the gas spring is mounted parallel to the direction of the compression stroke.
- Ensure the contact surface of the piston rod top is perpendicular to the direction of the compression stroke and is sufficiently hardened.
- The gas spring should not be subjected to the side loads.
- Protect the piston rod against mechanical damage and contact with fluids.
- We recommend providing a stroke reserve of 10% of the nominal stroke length or 5 mm.
- The maximum charging pressure as a function of the working temperature must not be exceeded as it may effect the safety of the product.
- Exceeding the gas spring's recommended operating temperature will shorten the service-life of the gas spring.
- The entire contact surface of the piston rod / piston should be used (except 2479.030./031., 3479.030.).
- Do not remove bottom 2480./2497.00.20. from spring until all gas pressure has been discharged.



FIBRO GAS SPRINGS – THE SAFER CHOICE

OPTIMUM SAFETY FOR TOOLS AND OPERATORS

At FIBRO, safety and reliability are paramount. Particularly when it comes to our gas springs. With their unique range of safety features, FIBRO gas springs are one of the safest on the market.

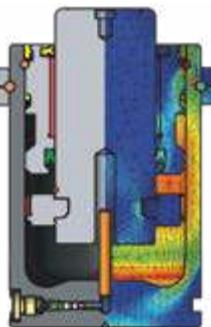
FIBRO safety features 1)



PED approval for 2 million strokes

FIBRO gas springs are developed, manufactured and tested for a minimum of 2 million* full strokes in accordance with PED 2014/68/EU. The springs deliver this full performance at the maximum permissible limits in terms of filling pressure and operating temperature – even when combined with any of the various mounting types available.

* Calculation value for durability



Normalien · Standard Parts · DE-74855 Hassmersheim FIBRO
 T +49(0)2266-73-0 · F +49(0)2266-73-237

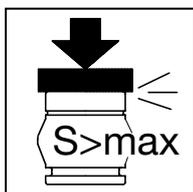
Bestell-Nr.: **2480.13.05000.050**
 Order-No.: FIBRO
 Fülldruck: 150 bar Federkraft: 5000 daN
 Filling pressure: 150 bar Spring Force: 5000 daN

PED-zugelassen für 2.000.000 Hübe bei voller Hübauslastung.
 PED-approved for 2,000,000 strokes at full stroke load.

Gasdruckfeder – Warnung! Nicht öffnen - hoher Druck; Fülldruck max. 150 bar. Bitte Bedienungsanleitung beachten!
Gas Spring – Warning! Do not open-high pressure; filling pressure max. 150 bar. Please follow instructions for use!
Ressort à gaz – Attention! Ne pas ouvrir - haute pression; pression de remplissage max. 15 MPa. Veuillez observer les instructions d'emploi!
Molle a gas – Attenzione! Non aprire - pressione alta massima; pressione di riempimento max. 150 bar. Si prega di osservare le istruzioni per l'uso!
¡Muelle de gas – Atención! No abrir - alta presión; cargado a mass. 150 bar. ¡Por favor observar las instrucciones!

The benefit for you: ► **Guaranteed safety and reliability for the entire service life of the spring**

Repair kits and qualified training sessions available through FIBRO Service offer increased effectiveness and process reliability.

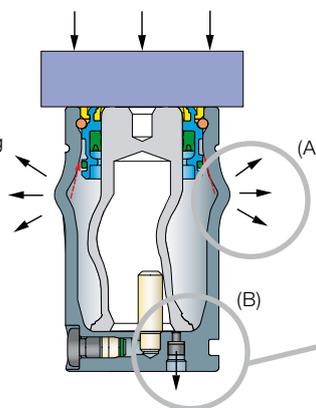


Overstroke protection

Conventional gas springs may burst in the event of an over-extended stroke. Components may come loose and be ejected.

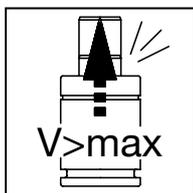
FIBRO gas springs are different:

in the event of an overstroke and depending on the spring type the patented protection system will ensure that either the cylinder wall of the gas spring is deformed in a predefined manner (A) or the piston rod destroys a rupture bolt in the floor of the cylinder (B), thereby allowing the gas to escape into the atmosphere.



The benefit for you: ► **No risk of parts flying around in the event of an overstroke**

Possible causes of triggering: Lack of stroke limitations in the tool/machine and placing the piston rods under a load (e.g. sheet-metal holder, slide reset, etc.), double sheet, incorrect installation position, etc.

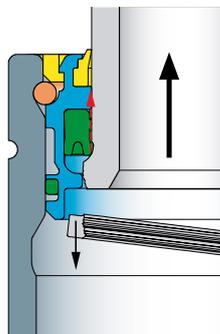


Return stroke protection

If, for any reason, tool components should get stuck and the piston rod should be freely released from its compressed position, conventional gas springs may pose a safety risk as the piston may not be retained in the gas spring.

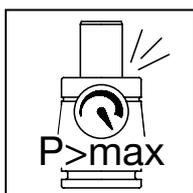
FIBRO gas springs are different:

special guides and a patented safety stop in the piston rods ensure your safety. If the speed is too high during the return stroke, the collar on the piston rod will automatically break. The integrated safety stop then destroys the seal, which allows the gas to escape into the atmosphere and the gas spring to become depressurised.



The benefit for you: ► **No risk of a piston rod firing out if the return stroke is too fast**

Possible causes of triggering: Sudden loosening of jammed components, such as sheet-metal holder, slide, ejector, scraper function, etc.

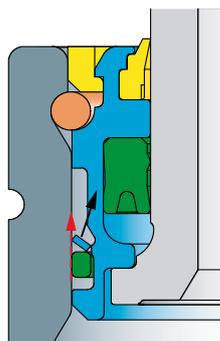


Overpressure protection

Conventional gas springs can burst if the internal pressure rises above a maximum permitted value. If this happens, parts flying around can become dangerous projectiles.

FIBRO gas springs are different:

if the pressure rises above the maximum permitted value, the safety collar on the sealing set is automatically destroyed. The gas then escapes into the atmosphere and the gas spring is depressurised.



The benefit for you: ► **No risk of bursting parts in the event of overpressure**

Possible causes of triggering: Incorrect filling (max. filling pressure 150 or 180 bar, nitrogen), infeed of liquid operating material, etc.

After a protection function is triggered, the spring cannot be repaired and can no longer be used. It must be replaced completely.

1) The safety features mentioned here have been implemented – with few exceptions – on all FIBRO gas springs.

Please refer to the relevant data sheets to check the current safety equipment which is provided with the gas spring you are interested in, or contact FIBRO GmbH directly for more information. For the safe handling of gas springs and other nitrogen products, the safety regulations must be observed. Maintenance work on the product may only be done, if nitrogen gas is no longer contained in the gas spring.

FIBRO GAS SPRINGS – THE SAFER CHOICE

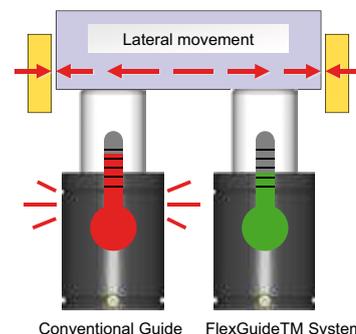
OPTIMUM SAFETY FOR TOOLS AND OPERATORS

FIBRO reliability features



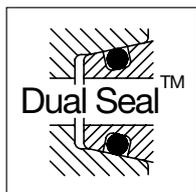
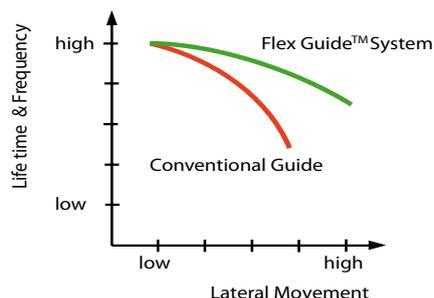
Flexible guides: The Flex Guide™ System

The Flex Guide™ System is a flexible guide in the gas spring which absorbs lateral movements of the piston rod. It minimises friction and lowers the operating temperature.



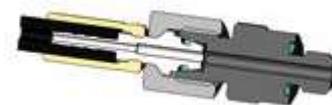
The benefits for you:

- ▶ **Extended service life**
- ▶ **Increased stroke frequency, i.e. more strokes per minute**



Safe hose connections: The Dual Seal™ System

The FIBRO Dual Seal™ System combines a metal seal with a soft elastomer seal. On hose connection systems, the system provides two leak-tight connections and prevents rotation.



The benefits for you:

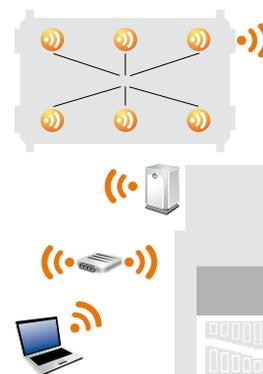
- ▶ **Leak-tight connection, even under vibrations**
- ▶ **High process reliability**
- ▶ **Minimised tool down time**
- ▶ **Simple installation thanks to anti-rotation function**



Wireless monitoring:

The Wireless Pressure Monitoring (WPM) System

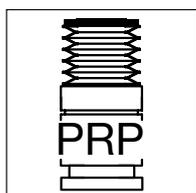
The optional Wireless Pressure Monitoring System (WPM) (patent pending) wirelessly monitors the pressure and temperature of FIBRO gas springs. Before a defective part is produced, the press operator receives a message from the WPM and can take appropriate action.



The benefits for you:

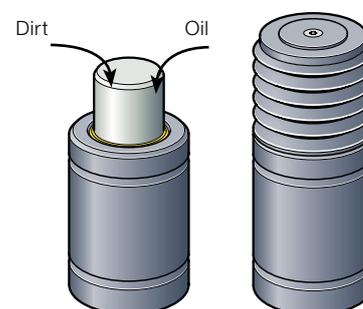
- ▶ **Preventative quality assurance**
- ▶ **High process reliability**
- ▶ **Minimised tool down time**
- ▶ **Reduced maintenance and costs**

Potential faults are individually displayed. As a result, service intervals can be extended. Maintenance and repair costs are reduced.



Protected piston rods: FIBRO Concertina Shrouds

The FIBRO Piston Rod Protection (patented) reliably protects the piston rods in gas springs against dirt, oil and emulsion. In this way, the system prevents damage to the piston rod surface and leaks at internal seals.



The benefit for you:

- ▶ **Significantly longer service life for gas springs under harsh operating conditions**

GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in length in mm	Standard	Note	Order No.
----------------------	-----------------	--------------	-----------------------	----------	------	-----------

Gas springs, Ejector pin units

5	M16x1,5	10 - 125	65 - 295	VDI		2479.030.00005.
10	M16x1,5	10 - 125	65 - 295	VDI		2479.030.00010.
20	M16x1,5	10 - 125	65 - 295	VDI		2479.030.00020.
40	M16x1,5	10 - 125	65 - 295	VDI		2479.030.00040.
4	M16x2	10 - 125	65 - 295	VDI		2479.031.00004.
5	M16x2	10 - 125	65 - 295	VDI		2479.031.00005.
10	M16x2	10 - 125	65 - 295	VDI		2479.031.00010.
20	M16x2	10 - 125	65 - 295	VDI		2479.031.00020.
40	M16x2	10 - 125	65 - 295	VDI		2479.031.00040.
20	M24x1,5	10 - 125	65 - 295	VDI		2479.032.00020.
40	M24x1,5	10 - 125	65 - 295	VDI		2479.032.00040.
80	M24x1,5	10 - 125	65 - 295	VDI		2479.032.00080.
170	M24x1,5	10 - 125	65 - 295	VDI		2479.032.00170.
20	M24x1,5	10 - 125	65 - 295	WDX		2479.034.00020.
40	M24x1,5	10 - 125	65 - 295	WDX		2479.034.00040.
80	M24x1,5	10 - 125	65 - 295	WDX		2479.034.00080.
170	M24x1,5	10 - 125	65 - 295	WDX		2479.034.00170.

Gas springs, small dimensions

13	12	7 - 125	56 - 295			2482.72.00013.
25	12	7 - 125	56 - 295			2482.72.00025.
38	12	7 - 125	56 - 295			2482.72.00038.
50	12	7 - 125	56 - 295			2482.72.00050.
18	15	7 - 125	56 - 295			2482.73.00018.1
35	15	7 - 125	56 - 295			2482.73.00035.1
50	15	7 - 125	56 - 295			2482.73.00050.1
70	15	7 - 125	56 - 295			2482.73.00070.1
30	19	7 - 125	56 - 295	VDI, ISO		2482.74.00030.2
50	19	7 - 125	56 - 295	VDI, ISO		2482.74.00050.2
70	19	7 - 125	56 - 295	VDI, ISO		2482.74.00070.2
90	19	7 - 125	56 - 295	VDI, ISO		2482.74.00090.2
50	24,9	10 - 125	62 - 295	VDI, ISO		2480.21.00050.
100	24,9	10 - 125	62 - 295	VDI, ISO		2480.21.00100.
150	24,9	10 - 125	62 - 295	VDI, ISO		2480.21.00150.
200	24,9	10 - 125	62 - 295	VDI, ISO		2480.21.00200.
50	32	10 - 125	70 - 300	VDI, ISO		2480.22.00050.1
100	32	10 - 125	70 - 300	VDI, ISO		2480.22.00100.1
150	32	10 - 125	70 - 300	VDI, ISO		2480.22.00150.1
200	32	10 - 125	70 - 300	VDI, ISO		2480.22.00200.1
	24,9	10 - 125	62 - 295			2480.23.

Standard-Gas springs

250	38	10 - 125	70 - 300	VDI, ISO		2480.13.00250.
500	45,2	10 - 160	105 - 405	VDI, ISO		2480.13.00500.
750	50,2	13 - 300	120,4 - 695	VDI, ISO		2480.13.00750.
1500	75,2	13 - 300	135 - 710	VDI, ISO		2480.12.01500.
3000	95,2	13 - 300	145 - 720	VDI, ISO		2480.13.03000.
5000	120,2	25 - 300	190 - 740	VDI, ISO		2480.13.05000.
7500	150,2	25 - 300	205 - 755	VDI, ISO		2480.13.07500.
10000	195	25 - 300	210 - 760	VDI, ISO		2480.12.10000.

Standard-Gas springs – HEAVY DUTY

750	45,2	13 - 200	111 - 485			2488.13.00750
1000	50,2	13 - 300	121 - 695	VDI, ISO		2488.13.01000.
1500	63,2	13 - 300	121 - 695			2488.13.01500
2400	75,2	25 - 300	160 - 710	VDI, ISO		2488.13.02400.
4200	95,2	25 - 300	170 - 720	VDI, ISO		2488.13.04200.
6600	120,2	25 - 300	190 - 740	VDI, ISO		2488.13.06600.
9500	150,2	25 - 300	205 - 755	VDI, ISO		2488.13.09500.
20000	195	25 - 300	210 - 760			2488.13.20000

Gas springs with through bore passage

270	38	16 - 80	108 - 236			2496.12.00270.
490	50,2	16 - 80	112 - 240			2496.12.00490.
1060	75,2	16 - 100	122 - 290			2496.12.01060.

GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in length in mm	Standard	Note	Order No.
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Gas springs with increased spring force – POWERLINE

170	19	7 - 125	44 - 285	VDI, ISO		2487.12.00170.
320	24,9	7 - 125	44 - 285	ISO		2487.12.00320.
350	32	10 - 125	50 - 280	VDI, ISO		2487.12.00350.
500	38	10 - 125	50 - 280	VDI, ISO		2487.12.00500.
750	45,2	10 - 125	52 - 282	VDI, ISO		2487.12.00750.
1000	50,2	13 - 125	64 - 288	VDI, ISO		2487.12.01000.
1500	63,2	13 - 125	70 - 294	VDI, ISO		2487.12.01500.
2400	75,2	16 - 125	77 - 295	VDI, ISO		2487.12.02400.
4200	95,2	16 - 125	90 - 308	VDI, ISO		2487.12.04200.
6600	120,2	16 - 125	100 - 318	VDI, ISO		2487.12.06600.
9500	150,2	19 - 125	116 - 328	VDI, ISO		2487.12.09500.
20000	195	19 - 125	148 - 360			2487.12.20000.

Gas spring with reinforced spring base POWERLINE

350	32	10 - 125	60 - 290			2487.12.33.00350.
500	38	10 - 125	60 - 290			2487.12.33.00500.
750	45,2	10 - 125	67 - 297			2487.12.33.00750.
1000	50,2	13 - 125	78 - 302			2487.12.33.01000.
1500	63,2	13 - 125	78 - 302			2487.12.33.01500.
2400	75,2	16 - 125	91 - 309			2487.12.33.02400.
4200	95,2	16 - 125	94 - 312			2487.12.33.04200.
6600	120,2	16 - 125	104 - 322			2487.12.33.06600.

Gas springs CX – COMPACT XTREME

500	32	10 - 80	75 - 225			2497.12.00500.
1000	38	10 - 80	75 - 240			2497.12.01000.
1900	50,2	10 - 80	80 - 245			2497.12.01900.

Compact-Gas springs

420	24,9	6 - 50	56 - 195			2490.14.00420.
750	32	6 - 50	63 - 195			2490.14.00750.
1000	38	6 - 50	61 - 230			2490.14.01000.
1800	50,2	6 - 65	66 - 271			2490.14.01800.
3000	63,2	10 - 65	85 - 256			2490.14.03000.
4700	75,2	10 - 65	80 - 273			2490.14.04700.
7500	95,2	10 - 65	90 - 279			2490.14.07500.
11800	120,2	10 - 65	100 - 320			2490.14.11800.
18300	150,2	10 - 65	110 - 323			2490.14.18300.

Gas springs low build height

500	45,2	6 - 125	62 - 300			2485.12.00500.
750	50,2	6 - 125	62 - 300			2485.12.00750.
1500	75,2	25 - 100	110 - 260			2485.12.01500.

Gas springs SPC - SPEED CONTROL™, cushioned

750	75,2	125 - 300	360 - 710			2486.12.00750.
1500	95,2	125 - 300	370 - 720			2486.12.01500.
3000	120,2	125 - 300	390 - 740			2486.12.03000.
5000	150,2	125 - 300	405 - 755			2486.12.05000.

Gas springs DS for die separation

3000	95,2	80 - 300	280 - 720			2486.22.03000.
5000	120,2	80 - 300	300 - 740			2486.22.05000.
7500	150,2	80 - 300	315 - 755			2486.22.07500.

Gas springs to WDX Standard / request your catalogue

GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in length in mm	Standard	Note	Order No.
-------------------------	--------------------	--------------	--------------------------	----------	------	-----------

Gas springs, threaded

50 - 200	M28×1,5	10 - 125	62 - 292			2480.32.00050.-00200.
250	M38×1,5	13 - 100	75,4 - 250			2480.32.00250.
250	38	13 - 100	75,4 - 250			2480.82.00250.
1000	50,2	13 - 125	64 - 288			2487.82.01000.
15	M28×1,5	125	292			2480.33.00015.125
50	M28×1,5	125	292			2480.33.00050.125
100	M28×1,5	125	292			2480.33.00100.125
150	M28×1,5	125	292			2480.33.00150.125
200	M28×1,5	125	292			2480.33.00200.125

Gas springs for working temperatures up to 120°C

Gas springs LCF, damped

750	50,2	13 - 300	120,4 - 695			2484.13.00750.
1500	75,2	25 - 300	160 - 710			2484.12.01500.
3000	95,2	25 - 300	170 - 720			2484.13.03000.
5000	120,2	25 - 300	190 - 740			2484.13.05000.
7500	150,2	25 - 300	205 - 755			2484.13.07500.

Controllable gas springs / request your catalogue **2489.**

Air Springs, to VW standard / request your catalogue **2491.**

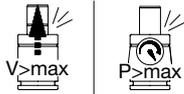
Manifold systems / request your catalogue **2495.**

Composite plates / request your catalogue **2494.**

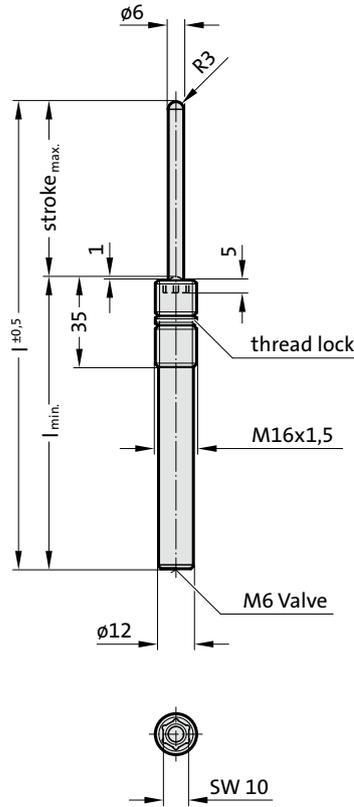
GAS SPRINGS (SPRING-LOADED THRUST PIECES)



GAS SPRING (SPRING PLUNGER), WITH HEXAGON SOCKET, VDI 3004



2479.030.



Description:

Spring plungers are used as ejectors, damper pins, fixing and retaining pins in many sectors of the tool-, jig- and fixture-making industries. Assembly requires the use of special FIBRO insertion tool (2470.12.010.017).

Note:

Worn gas springs cannot be repaired, they have to be replaced completely.

Pressure medium: Nitrogen - N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 6 bar
 Working temperature: $0^\circ C$ to $+80^\circ C$
 Temperature related force increase: $\pm 0.3\%/^\circ C$
 Max. recommended extensions per minute: approx. 100 (at $20^\circ C$)
 Max. piston speed: 1.6 m/s

Upon customers request, also available unfilled, Order No 2479.030.00000....., Colour: black

²⁾ Hexagon nut order supplementary: 2479.004.016.15 (M16 x 1,5)

2479.030. Gas spring (Spring plunger), with hexagon socket, VDI 3004

Spring type:

Order No*	Stroke _{max.}	l	l _{min.}	.00005.		.00010.		.00020.		.00040.	
				F _{initial} [daN]	F _{final} [daN]						
2479.030.□□□□□.010	10	65	55	6	10.3	11	19	21	36.1	42	73
2479.030.□□□□□.020	20	85	65	6	9.4	11	17.2	21	32.8	42	66.1
2479.030.□□□□□.030	30	105	75	6	9.1	11	16.7	21	31.9	42	64.5
2479.030.□□□□□.040	40	125	85	6	9	11	16.5	21	31.5	42	63.7
2479.030.□□□□□.050	50	145	95	6	9.6	11	17.6	21	33.6	42	67.7
2479.030.□□□□□.060	60	165	105	6	9.4	11	17.3	21	33	42	66.5
2479.030.□□□□□.070	70	185	115	6	9.3	11	17	21	32.5	42	65.7
2479.030.□□□□□.080	80	205	125	6	9.2	11	16.8	21	32.1	42	65.1
2479.030.□□□□□.100	100	245	145	6	9.1	11	16	21	31.9	42	64.3
2479.030.□□□□□.125	125	295	170	6	9	11	16.5	21	31.5	42	63.8

complete with spring type

Spring force marking:

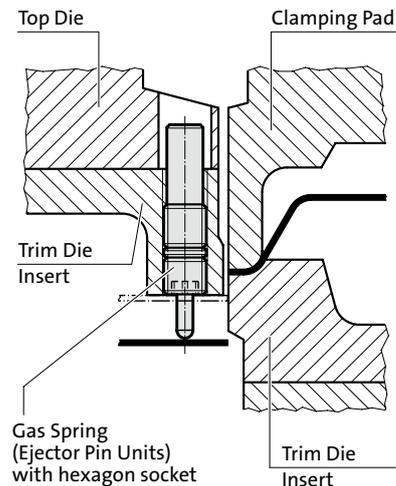
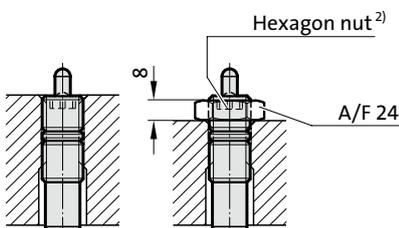
Spring type - Pressure [bar] - Colour:

.00005. - 20 - green

.00010. - 40 - blue

.00020. - 75 - red

.00040. - 150 - yellow



GAS SPRING (SPRING PLUNGER), WITH HEXAGON SOCKET, VDI 3004

Description:

Spring plungers are used as ejectors, damper pins, fixing and retaining pins in many sectors of the tool-, jig- and fixture-making industries. Assembly requires the use of special FIBRO insertion tool (2470.12.010.017).

Note:

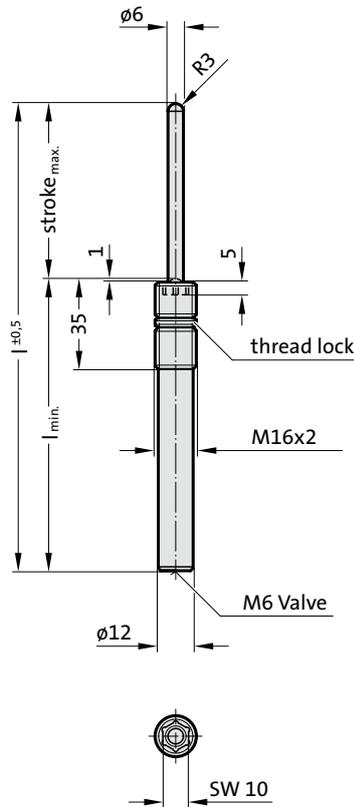
Worn gas springs cannot be repaired, they have to be replaced completely.

Pressure medium: Nitrogen - N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 6 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 100 (at 20°C)
 Max. piston speed: 1.6 m/s

Upon customers request, also available unfilled, Order No 2479.031.00000....., Colour: black

²⁾ Hexagon nut order supplementary: 2479.004.016.20 (M16 x 2)

2479.031.



2479.031. Gas spring (Spring plunger), with hexagon socket, VDI 3004

Spring type:

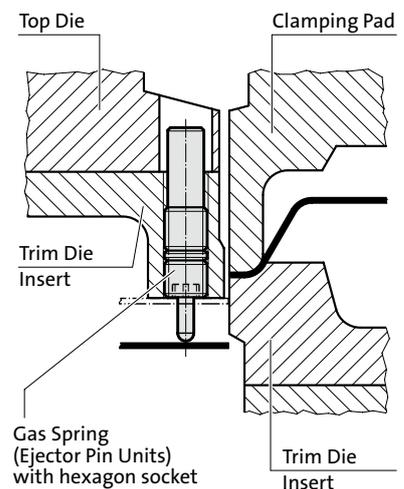
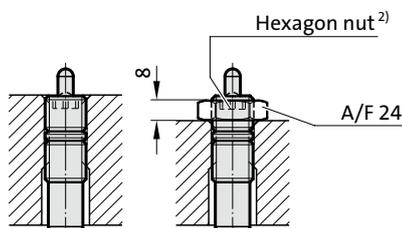
Order No*	Stroke _{max.}	l	l _{min.}	.00004.		.00005.		.00010.		.00020.		.00040.	
				F _{initial} [daN]	F _{final} [daN]								
2479.031.□□□□□.010	10	65	55	3.4	6	6	10.3	11	19	21	36.1	42	73
2479.031.□□□□□.020	20	85	65	3.4	5.2	6	9.4	11	17.2	21	32.8	42	66.1
2479.031.□□□□□.030	30	105	75	3.4	5.2	6	9.1	11	16.7	21	31.9	42	64.5
2479.031.□□□□□.040	40	125	85	3.4	5.2	6	9	11	16.5	21	31.5	42	63.7
2479.031.□□□□□.050	50	145	95	3.4	5.4	6	9.6	11	17.6	21	33.6	42	67.7
2479.031.□□□□□.060	60	165	105	3.4	5.4	6	9.4	11	17.3	21	33	42	66.5
2479.031.□□□□□.070	70	185	115	3.4	5.4	6	9.3	11	17	21	32.5	42	65.7
2479.031.□□□□□.080	80	205	125	3.4	5.2	6	9.2	11	16.8	21	32.1	42	65.1
2479.031.□□□□□.100	100	245	145	3.4	5.2	6	9.1	11	16	21	31.9	42	64.3
2479.031.□□□□□.125	125	295	170	3.4	5.2	6	9	11	16.5	21	31.5	42	63.8

*complete with spring type

Spring force marking:

Spring type - Pressure [bar] - Colour:

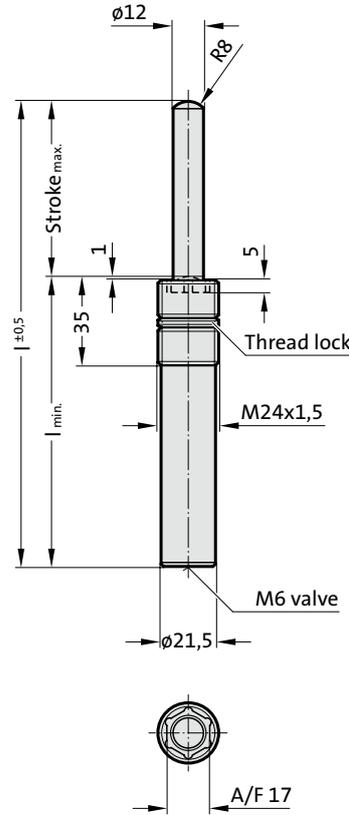
- .00004. - 12 - violet
- .00005. - 20 - green
- .00010. - 40 - blue
- .00020. - 75 - red
- .00040. - 150 - yellow



GAS SPRING (SPRING PLUNGER), WITH HEXAGON SOCKET, VDI 3004



2479.032.



Description:

Spring plungers are used as ejectors, damper pins, fixing and retaining pins in many sectors of the tool-, jig- and fixture-making industries. Assembly requires the use of special FIBRO insertion tool (2470.12.010.017).

Note:

Worn gas springs cannot be repaired, they have to be replaced completely.

Pressure medium: Nitrogen - N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 20 bar
 Working temperature: $0^{\circ}C$ to $+80^{\circ}C$
 Temperature related force increase: $\pm 0.3\%/^{\circ}C$
 Max. recommended extensions per minute: approx. 100 (at $20^{\circ}C$)
 Max. piston speed: 1.6 m/s

Upon customers request, also available unfilled, Order No 2479.032.00000....., Colour: black

²⁾ Hexagon nut order supplementary: 2479.004.024.15

2479.032. Gas spring (Spring plunger), with hexagon socket, VDI 3004

Spring type:

Order No*	Stroke _{max.}	l	l _{min.}	.00020.		.00040.		.00080.		.00170.	
				F _{initial} [daN]	F _{final} [daN]						
2479.032.□□□□□.010	10	65	55	23	33.1	45	64.8	85	122.4	170	244.8
2479.032.□□□□□.020	20	85	65	23	36.3	45	71.1	85	134.3	170	256.6
2479.032.□□□□□.030	30	105	75	23	38.2	45	74.7	85	141.1	170	282.2
2479.032.□□□□□.040	40	125	85	23	39.3	45	76.9	85	145.4	170	290.7
2479.032.□□□□□.050	50	145	95	23	42.5	45	83.2	85	157.3	170	314.5
2479.032.□□□□□.060	60	165	105	23	42.5	45	83.2	85	157.3	170	314.5
2479.032.□□□□□.070	70	185	115	23	42.8	45	83.7	85	158.1	170	316.2
2479.032.□□□□□.080	80	205	125	23	42.8	45	83.7	85	158.1	170	316.2
2479.032.□□□□□.100	100	245	145	23	43	45	84.1	85	159	170	318
2479.032.□□□□□.125	125	295	170	23	43	45	84.1	85	159	170	318

*complete with spring type

Spring force marking:

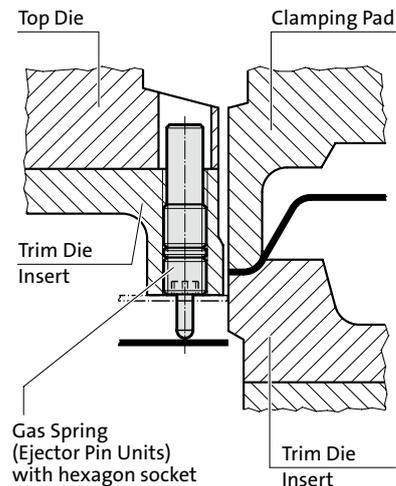
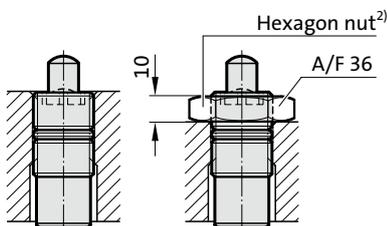
Spring type - Pressure [bar] - Colour:

.00020. - 20 - green

.00040. - 40 - blue

.00080. - 75 - red

.00170. - 150 - yellow



GAS SPRING (SPRING PLUNGER), TO WDX

Description:

Spring plungers are used as ejectors, damper pins, fixing and retaining pins in many sectors of the tool-, jig- and fixture-making industries. Assembly requires the use of special FIBRO insertion tool (2470.12.010.017).

Note:

Worn gas springs cannot be repaired, they have to be replaced completely.

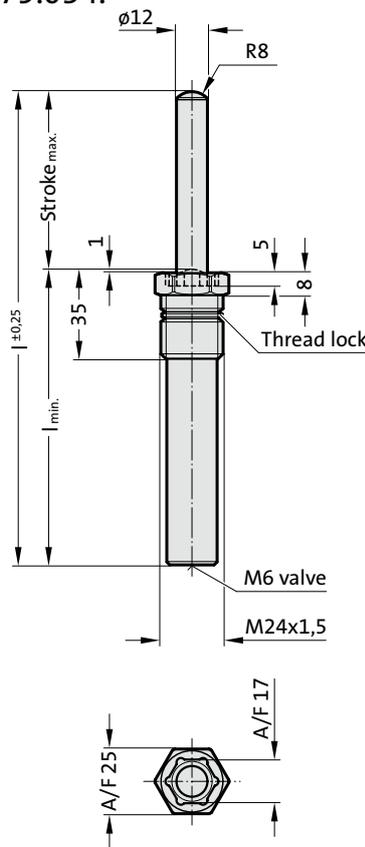
Pressure medium: Nitrogen - N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 20 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 30 to 80 (at 20°C)
 Max. piston speed: 1.6 m/s

Attention!

Different colour coding for spring force used in WDX standard

Upon customers request, also available unfilled, Order No 2479.034.00000....., Colour: black

2479.034.



2479.034. Gas spring (Spring plunger), to WDX

Spring type:

Order No*	Stroke _{max.}	l	l _{min.}	.00020.		.00040.		.00080.		.00170.	
				F _{initial} [daN]	F _{final} [daN]						
2479.034.□□□□□.010	10	65	55	23	32.5	45	65	85	122	170	243.5
2479.034.□□□□□.016	16	77	61	23	36.6	45	73.3	85	137.4	170	274.8
2479.034.□□□□□.020	20	85	65	23	36	45	72	85	134.5	170	268
2479.034.□□□□□.025	25	95	70	23	38.9	45	77.8	85	145.9	170	291.8
2479.034.□□□□□.030	30	105	75	23	37.5	45	75	85	141	170	281.5
2479.034.□□□□□.038	38	121	83	23	40.7	45	81.4	85	152.7	170	305.4
2479.034.□□□□□.040	40	125	85	23	38.5	45	77	85	144.5	170	289
2479.034.□□□□□.050	50	145	95	23	42	45	83.5	85	156.5	170	313
2479.034.□□□□□.060	60	165	105	23	42	45	84	85	157	170	314
2479.034.□□□□□.070	70	185	115	23	42	45	84	85	157.5	170	315
2479.034.□□□□□.080	80	205	125	23	42	45	84	85	159	170	315.5
2479.034.□□□□□.100	100	245	145	23	42	45	84.5	85	158	170	316.5
2479.034.□□□□□.125	125	295	170	23	42	45	84.5	85	158.5	170	317

*complete with spring type

Spring force marking:

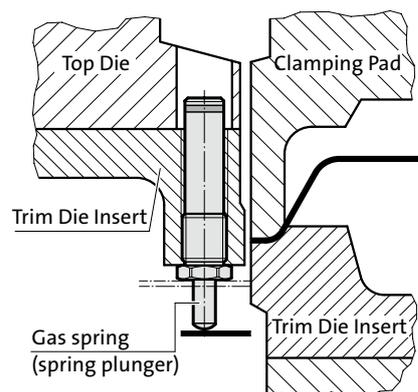
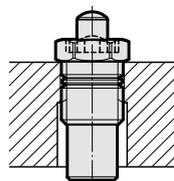
Spring type - Pressure [bar] - Colour:

.00020. - 20 - green

.00040. - 40 - blue

.00080. - 75 - red

.00170. - 150 - yellow

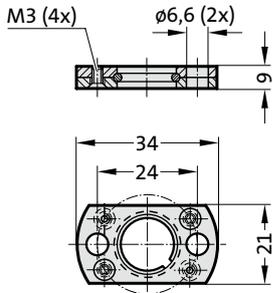


GAS SPRING, SMALL DIMENSION, LOW FORCE



GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

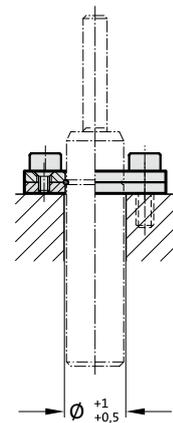
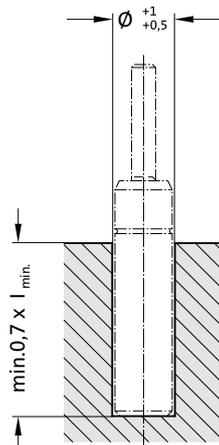
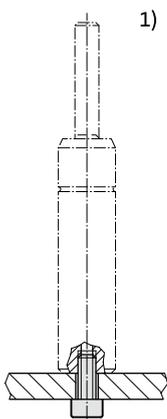
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Note:

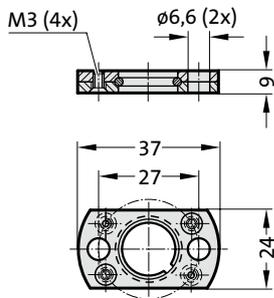
¹⁾ Fixing at bottom thread only recommended for stroke length up to 25 mm.

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

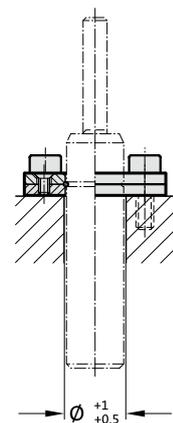
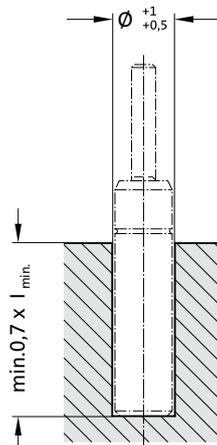
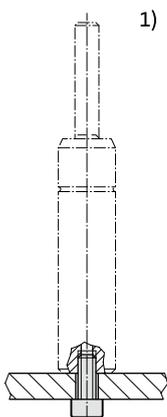
2480.051.00018



Note:

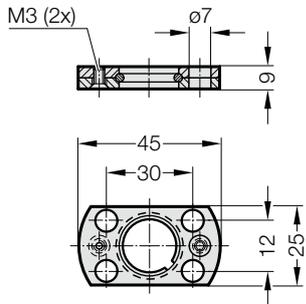
¹⁾ Fixing at bottom thread only recommended for stroke length up to 25 mm.

Mounting examples:

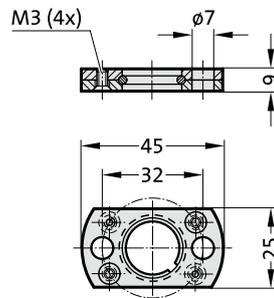


GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

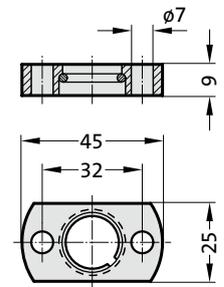
2480.051.01.00030



2480.051.03.00030



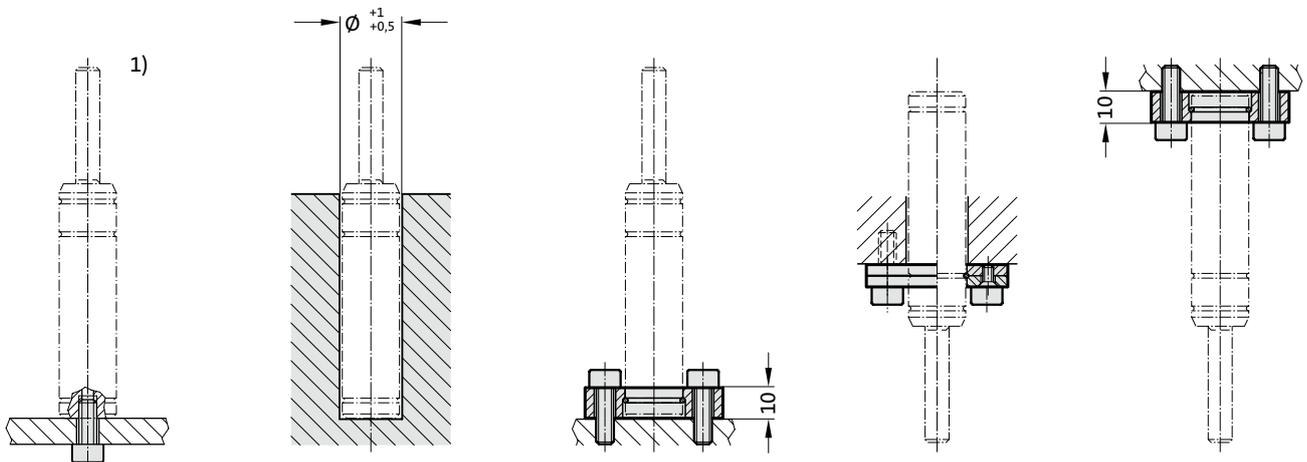
2480.052.00030



Note:

¹⁾ Fixing at bottom thread only recommended for stroke length up to 25 mm.

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

The gas springs are colour-coded according to the spring force rating ranges 30-50-70-90 daN.

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures.

Gas can be added or reduced from below.

Note:

Worn gas springs cannot be repaired, they have to be replaced completely.

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 100 to 150 (at 20°C)

Max. piston speed: 1.6 m/s

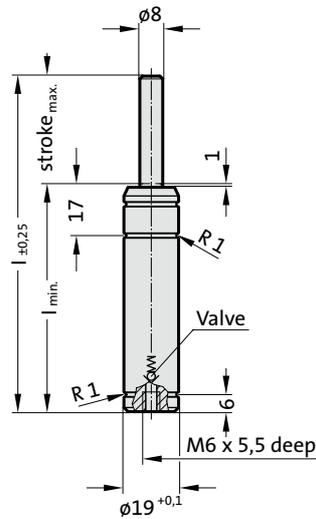
Spring forces as per spring diagram.

Upon customers request, also available

unfilled, Order No 2482.74.00000.2,

Colour: black

2482.74..2



2482.74..2 Gas spring, small dimension and low force

Order No*	Stroke _{max.}	l	l _{min.}
2482.74.□□□□.007.2	7	56	49
2482.74.□□□□.010.2	10	62	52
2482.74.□□□□.015.2	15	72	57
2482.74.□□□□.025.2	25	92	67
2482.74.□□□□.038.2	38.1	118.2	80.1
2482.74.□□□□.050.2	50	142	92
2482.74.□□□□.063.2	63.5	172	108.5
2482.74.□□□□.080.2	80	205	125
2482.74.□□□□.100.2	100	245	145
2482.74.□□□□.125.2	125	295	170

*complete with initial spring force

Spring force marking:

Initial spring force [daN] - Pressure [bar] - Colour:

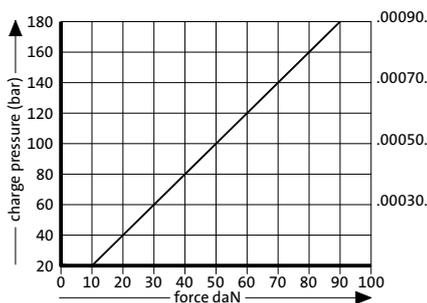
.00030. - 60 - green

.00050. - 100 - blue

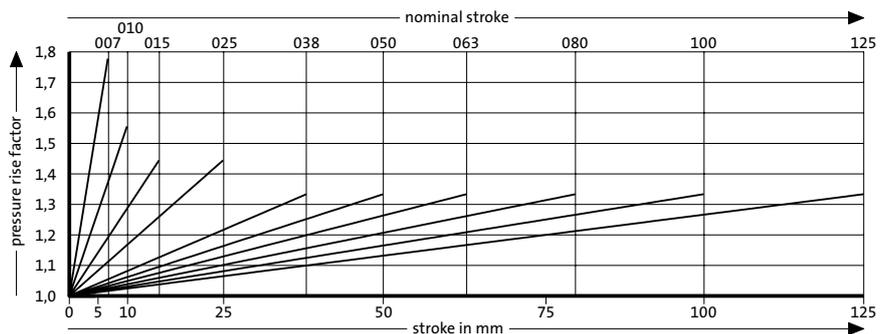
.00070. - 140 - red

.00090. - 180 - yellow

Initial spring force versus charge pressure



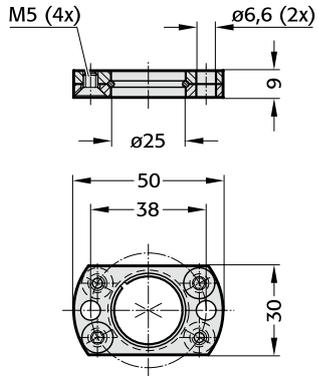
Spring force Diagram displacement versus stroke rise



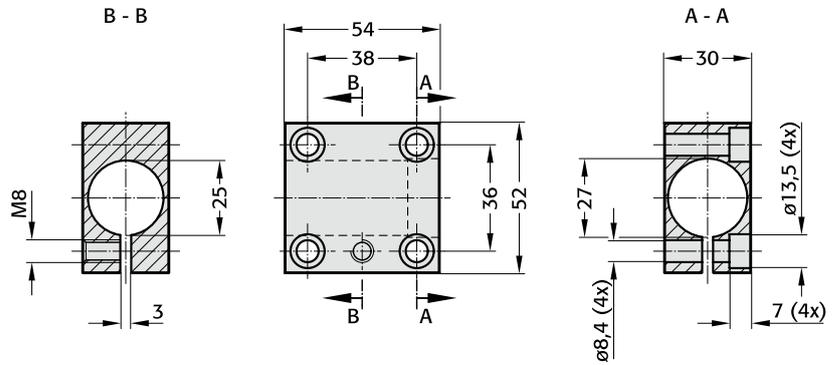
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

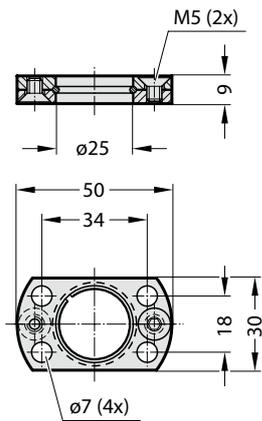
2480.051.00150



2480.053.00150



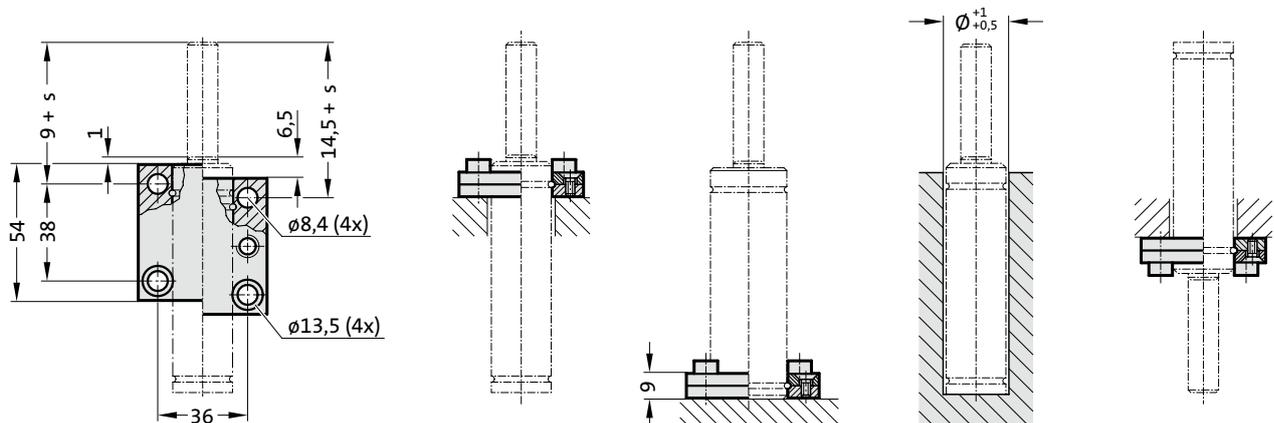
2480.054.00150



Note:

2) Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

The gas springs are colour-coded according to the spring force rating ranges 50–100–150–200 daN.

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures.

Do take into consideration the colour-coded pressure rating during repair work and recharging.

Note:

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

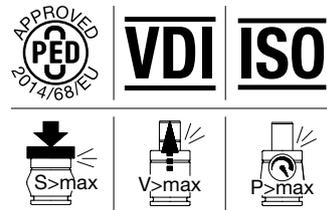
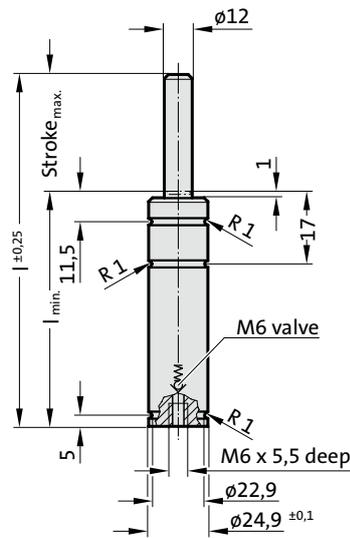
approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2480.21.00000....., Colour: black

2480.21.



2480.21. Gas spring, small dimension and low force

Order No*	Stroke _{max.} (s)	l	l _{min.}
2480.21.□□□□.010	10	62	52
2480.21.□□□□.013	12.7	67.4	54.7
2480.21.□□□□.015	15	72	57
2480.21.□□□□.016	16	74	58
2480.21.□□□□.025	25	92	67
2480.21.□□□□.038	38.1	118.2	80.1
2480.21.□□□□.050	50	142	92
2480.21.□□□□.063	63.5	172	108.5
2480.21.□□□□.080	80	205	125
2480.21.□□□□.100	100	245	145
2480.21.□□□□.125	125	295	170

*complete with initial spring force

Spring force marking:

Initial spring force [daN] - Pressure [bar] - Colour:

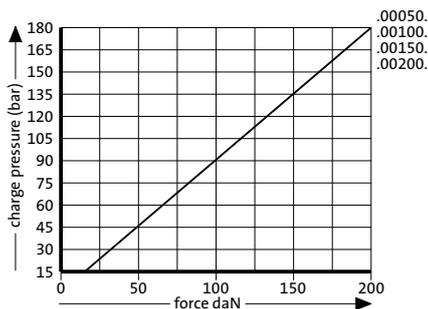
.00050. - 45 - green

.00100. - 90 - blue

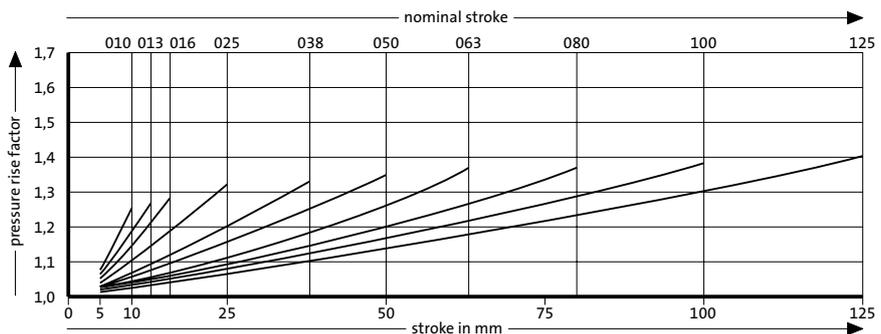
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



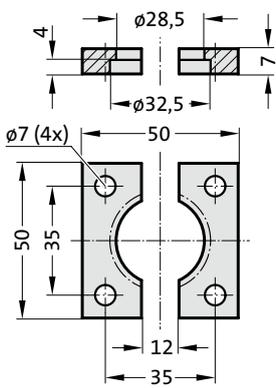
Spring force Diagram displacement versus stroke rise



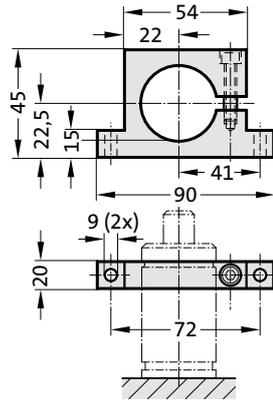
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

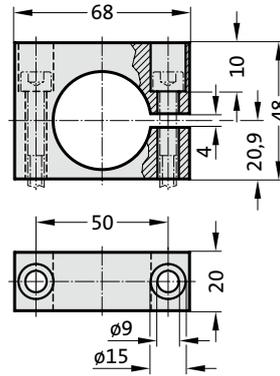
2480.022.00150



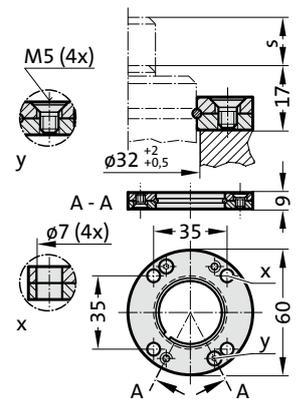
2480.044.00150²⁾



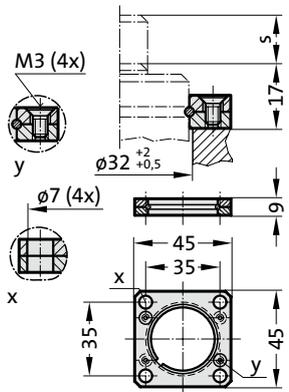
2480.044.03.00150²⁾



2480.055.00150



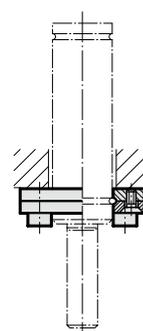
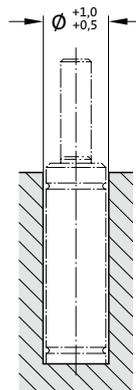
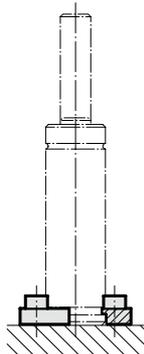
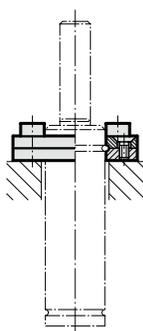
2480.057.00150



Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

The gas springs are colour-coded according to the spring force rating ranges 50–100–150–200 daN.

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures.

Do take into consideration the colour-coded pressure rating during repair work and recharging.

Note:

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

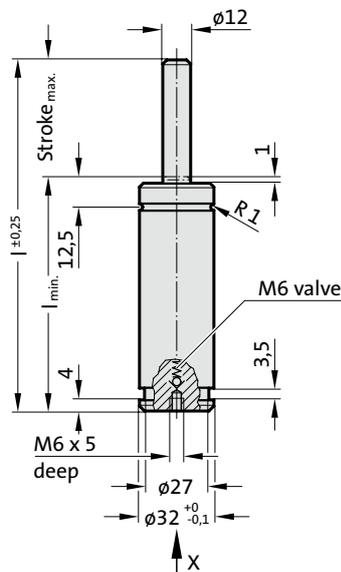
approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

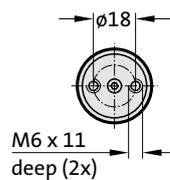
Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2480.22.00000....., Colour: black

2480.22. .1



View X - Gas spring



2480.22. .1 Gas spring, small dimension and low force

Order No*	Stroke _{max.} (s)	l	l _{min.}
2480.22.□□□□□.010.1	10	70	60
2480.22.□□□□□.013.1	12.7	75.4	62.7
2480.22.□□□□□.016.1	16	82	66
2480.22.□□□□□.025.1	25	100	75
2480.22.□□□□□.038.1	38.1	126.2	88.1
2480.22.□□□□□.050.1	50	150	100
2480.22.□□□□□.063.1	63.5	177	113.5
2480.22.□□□□□.080.1	80	210	130
2480.22.□□□□□.100.1	100	250	150
2480.22.□□□□□.125.1	125	300	175

*complete with initial spring force

Spring force marking:

Initial spring force [daN] - Pressure [bar] - Colour:

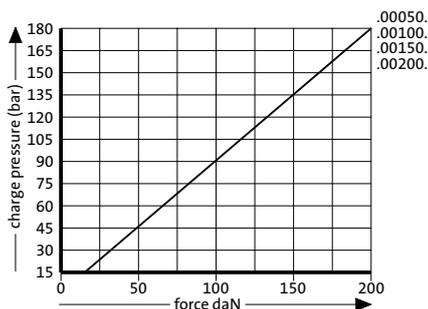
.00050. - 45 - green

.00100. - 90 - blue

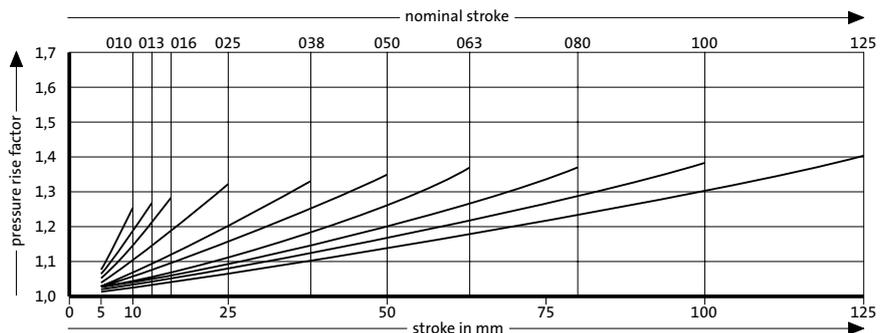
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



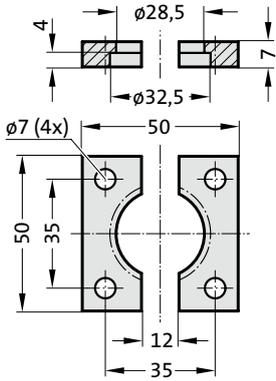
Spring force Diagram displacement versus stroke rise



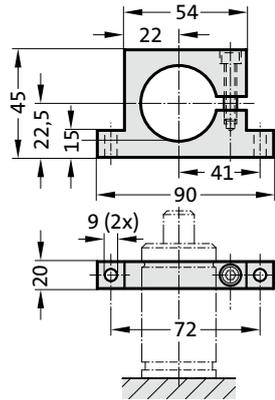
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

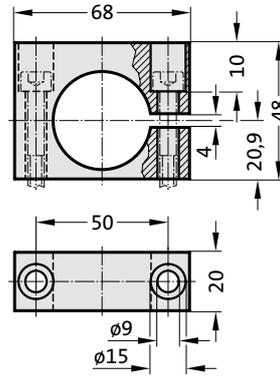
2480.022.00150



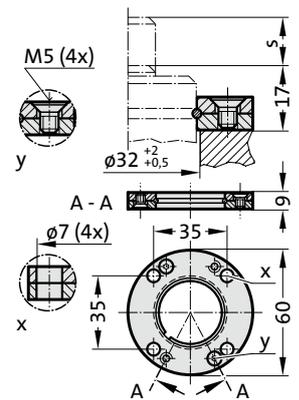
2480.044.00150²⁾



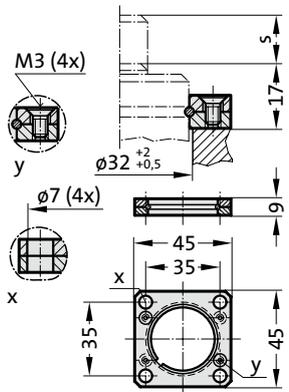
2480.044.03.00150²⁾



2480.055.00150



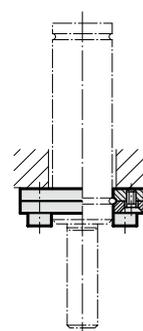
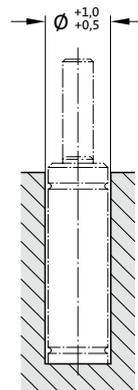
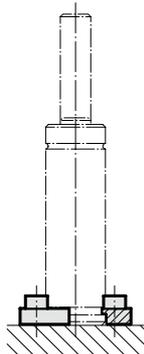
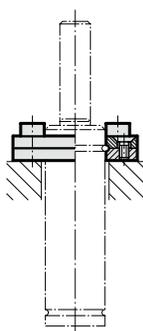
2480.057.00150



Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

The gas springs are colour-coded according to the spring force rating ranges 50–100–150–200 daN.

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures.

Do take into consideration the colour-coded pressure rating during repair work and recharging.

Note:

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

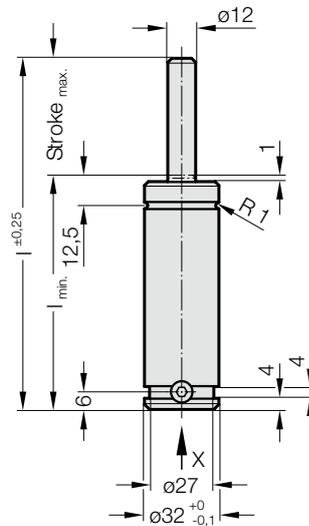
approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

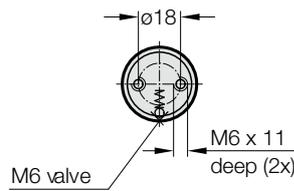
Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2480.22.00000....., Colour: black

2480.22. .2



View X - Gas spring



2480.22. .2 Gas spring, small dimension and low force

Order No*	Stroke _{max.} (s)	l	l _{min.}
2480.22.□□□□□.010.2	10	70	60
2480.22.□□□□□.013.2	12.7	75.4	62.7
2480.22.□□□□□.016.2	16	82	66
2480.22.□□□□□.025.2	25	100	75
2480.22.□□□□□.038.2	38.1	126.2	88.1
2480.22.□□□□□.050.2	50	150	100
2480.22.□□□□□.063.2	63.5	177	113.5
2480.22.□□□□□.080.2	80	210	130
2480.22.□□□□□.100.2	100	250	150
2480.22.□□□□□.125.2	125	300	175

*complete with initial spring force

Spring force marking:

Initial spring force [daN] - Pressure [bar] - Colour:

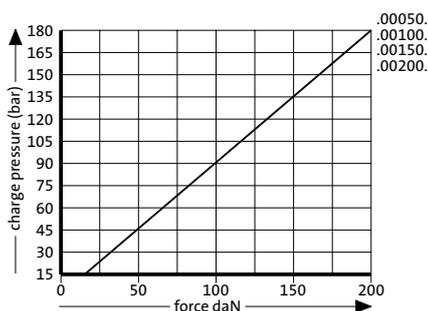
.00050. - 45 - green

.00100. - 90 - blue

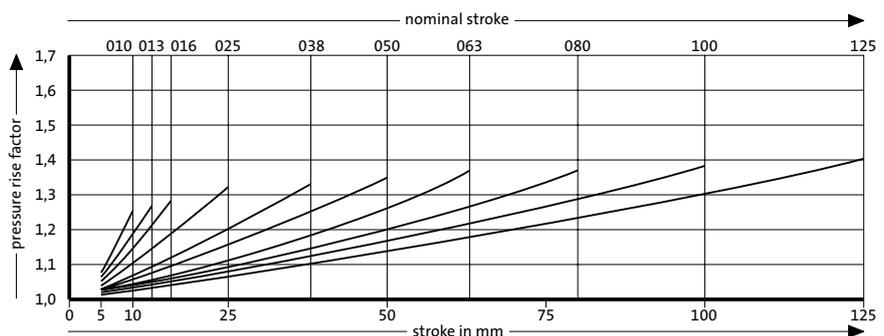
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



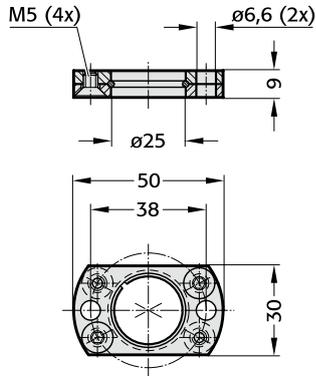
Spring force Diagram displacement versus stroke rise



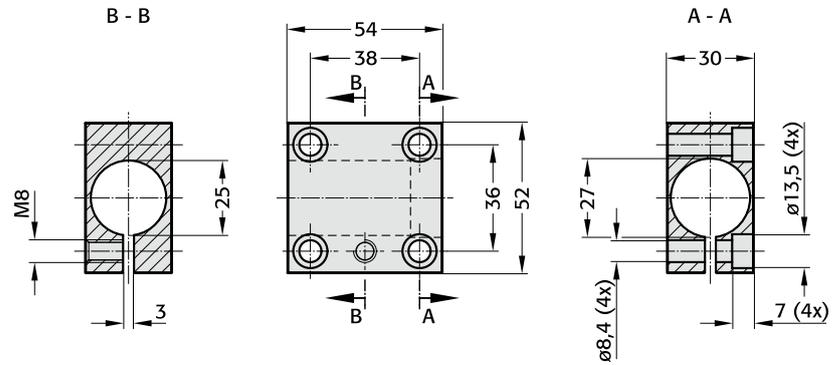
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

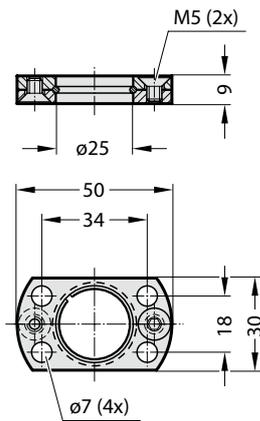
2480.051.00150



2480.053.00150



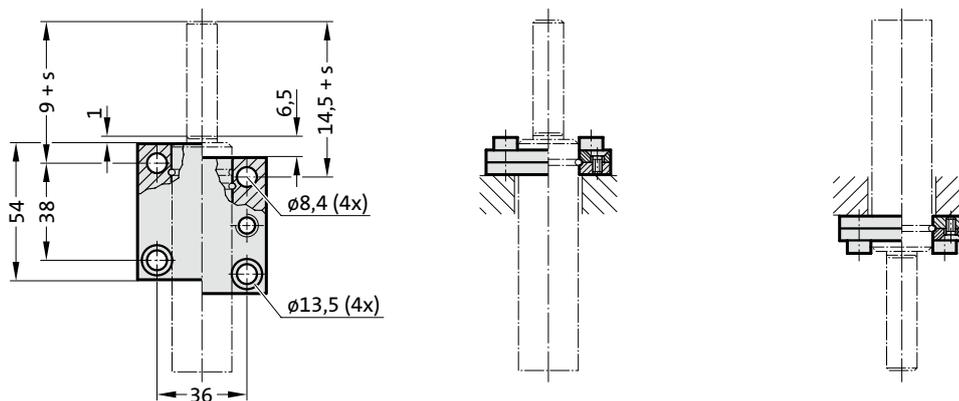
2480.054.00150



Note:

Only gas spring with a stroke of 25 mm or greater can be attached using the upper groove. Only gas spring with a stroke of 38,1 mm or greater can be attached using the lower groove.

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

Gas spring will be delivered unfilled and can only be used in a permanent connection (valveless).

Note:

Initial spring force at 180 bar = 200 daN

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen - N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C bis +80°C

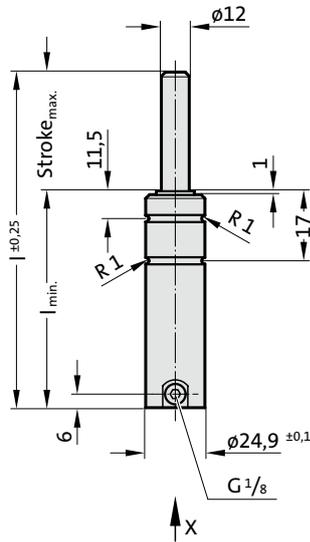
Temperature related force increase: ± 0,3%/°C

Max. recommended extensions per minute: ca. 80 to 100 (at 20°C)

Max. piston speed: 1,6 m/s

Spring forces as per spring diagram.

2480.23.



View X

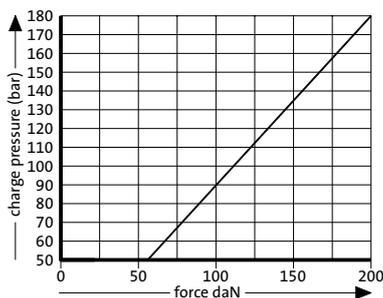


2480.23.

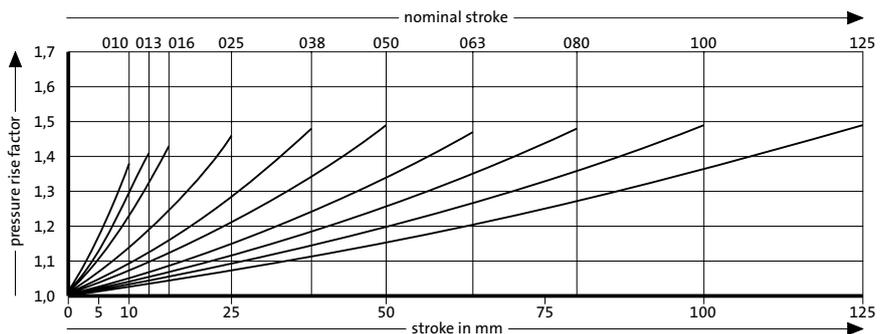
Gas spring, small dimension and low force

Order No	Stroke _{max} (s)	l _{min}	l
2480.23.00000.010	10	52	62
2480.23.00000.013	12.7	54.7	67.4
2480.23.00000.016	16	58	74
2480.23.00000.025	25	67	92
2480.23.00000.038	38.1	80.1	118.2
2480.23.00000.050	50	92	142
2480.23.00000.063	63.5	108.5	172
2480.23.00000.080	80	125	205
2480.23.00000.100	100	145	245
2480.23.00000.125	125	170	295

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



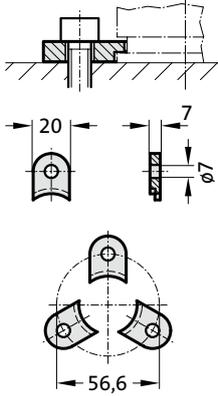
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS STANDARD

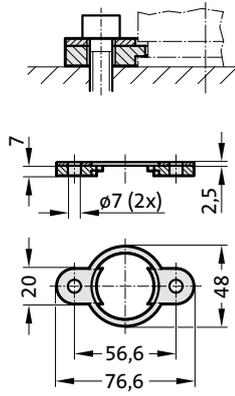


GAS SPRING, STANDARD MOUNTING VARIATIONS

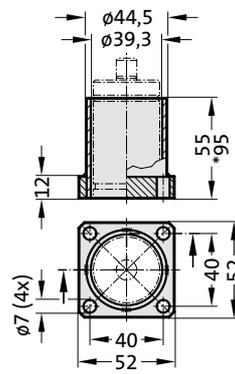
2480.007.00250



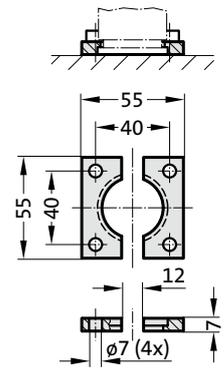
2480.008.00250³⁾



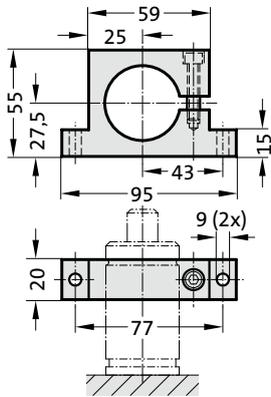
2480.010.00250.055³⁾
2480.010.00250.095*³⁾



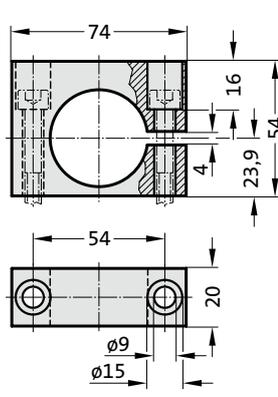
2480.022.00250



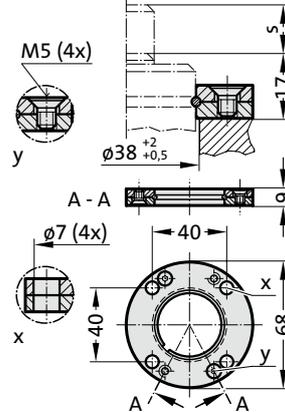
2480.044.00250²⁾



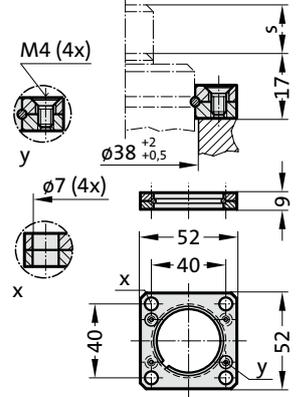
2480.044.03.00250²⁾



2480.055.00250



2480.057.00250



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.13.00250

Gas spring without valve

Order No (example): 2480.13.00250. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 50 bar

Working temperature: 0°C to +80°C

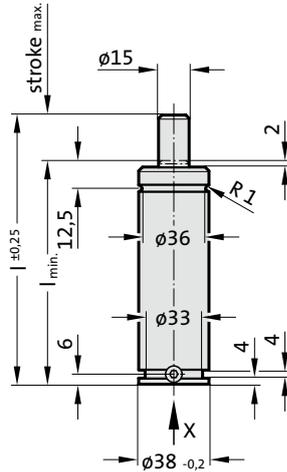
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

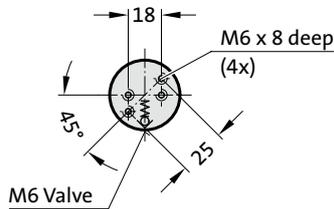
approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2480.13.00250.



View X

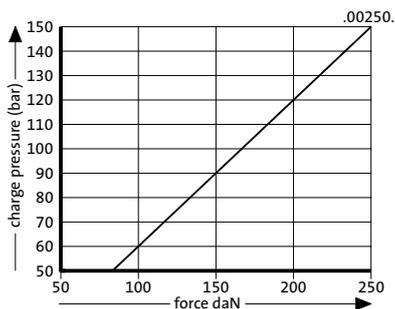


2480.13.00250.

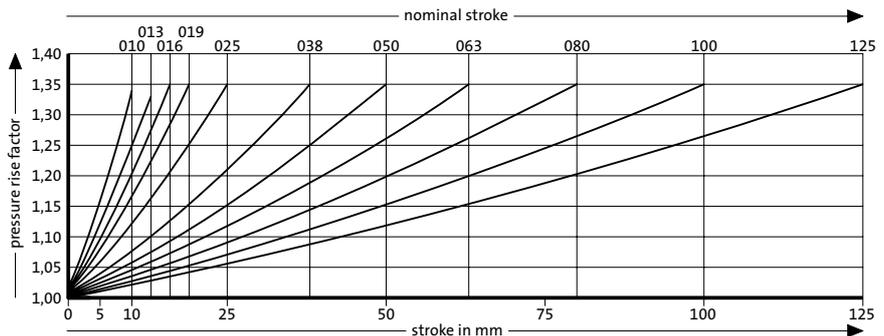
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.00250.010	10	60	70
2480.13.00250.013	12.7	62.7	75.4
2480.13.00250.016	16	66	82
2480.13.00250.019	19	69	88
2480.13.00250.025	25	75	100
2480.13.00250.038	38.1	88.1	126.2
2480.13.00250.050	50	100	150
2480.13.00250.063	63.5	113.5	177
2480.13.00250.080	80	130	210
2480.13.00250.100	100	150	250
2480.13.00250.125	125	175	300

Initial spring force versus charge pressure



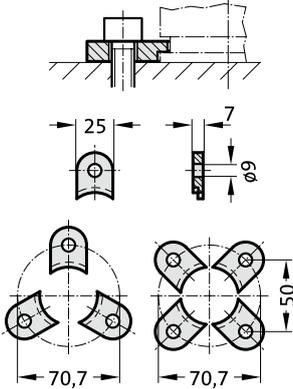
Spring force Diagram displacement versus stroke rise



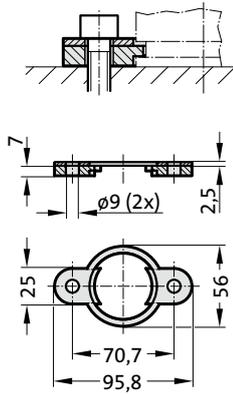
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

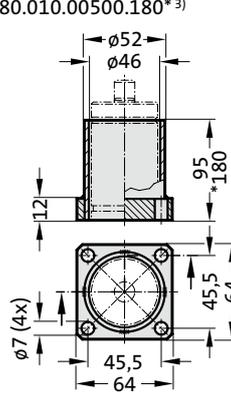
2480.007.00500



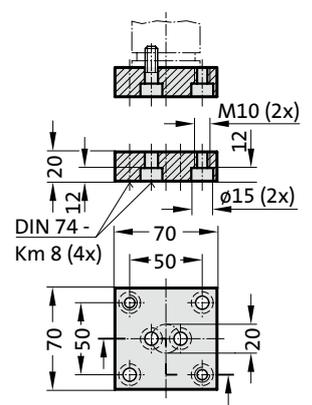
2480.008.00500³⁾



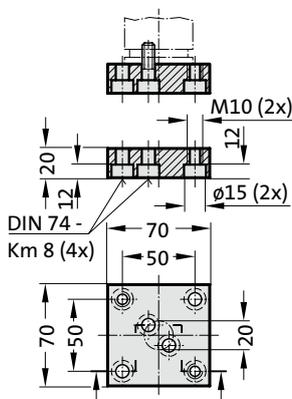
2480.010.00500.095³⁾
2480.010.00500.180*³⁾



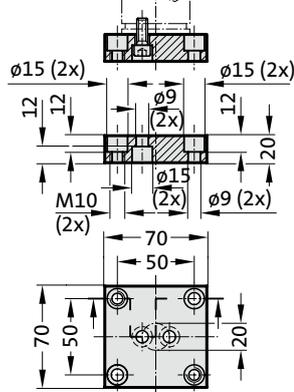
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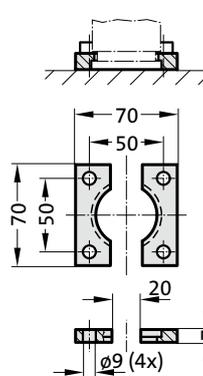
2480.011.00500.1



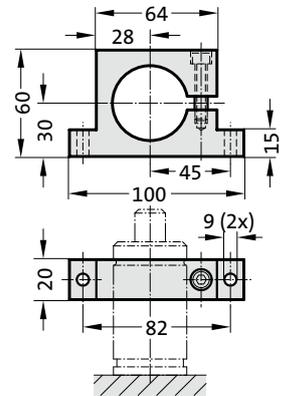
2480.011.00500.2



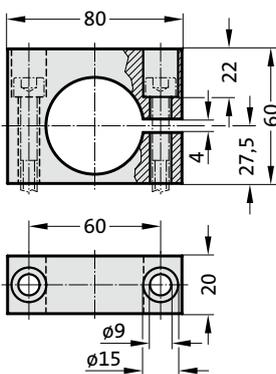
2480.022.00500



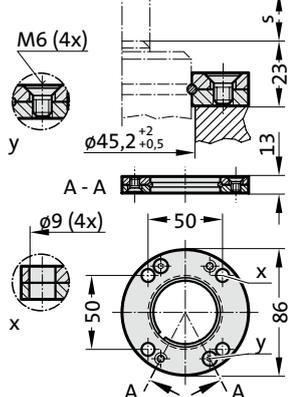
2480.044.00500²⁾



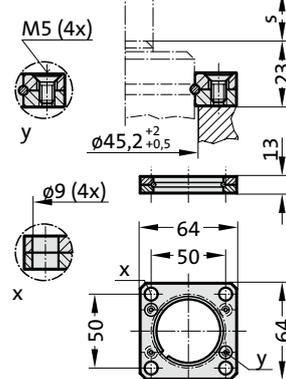
2480.044.03.00500²⁾



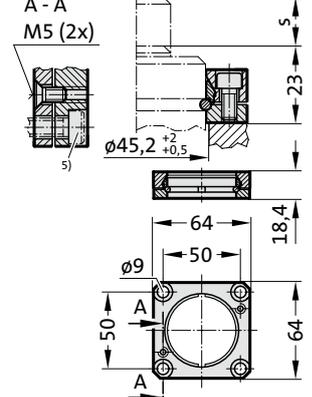
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2480.13.00500

Gas spring without valve

Order No (example): 2480.13.00500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 50 bar

Working temperature: 0°C to +80°C

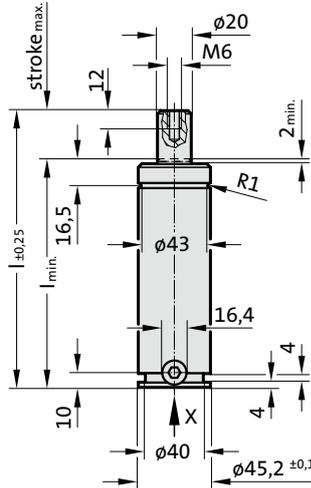
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

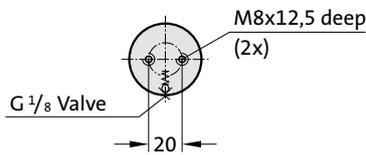
approx. 40 to 80 (at 20°C)

Max. piston speed: 1.6 m/s

2480.13.00500.



View X

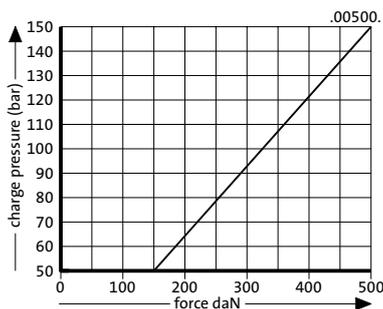


2480.13.00500.

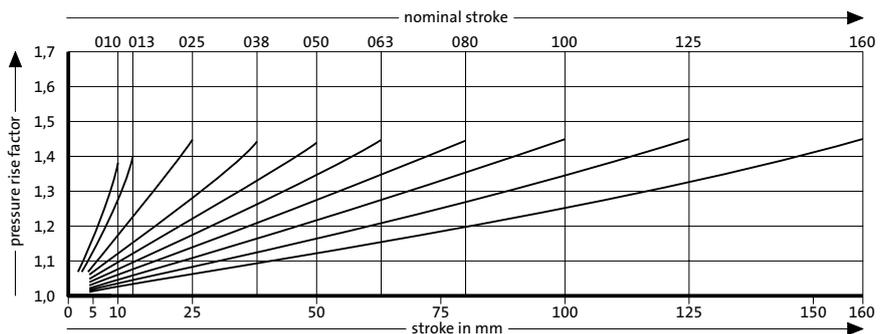
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.00500.010	10	95	105
2480.13.00500.013	12.7	97.7	110.4
2480.13.00500.025	25	110	135
2480.13.00500.038	38.1	123.1	161.2
2480.13.00500.050	50	135	185
2480.13.00500.063	63.5	148.5	212
2480.13.00500.080	80	165	245
2480.13.00500.100	100	185	285
2480.13.00500.125	125	210	335
2480.13.00500.160	160	245	405

Initial spring force versus charge pressure



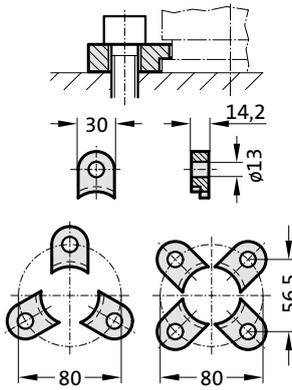
Spring force Diagram displacement versus stroke rise



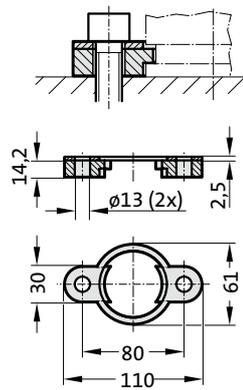
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

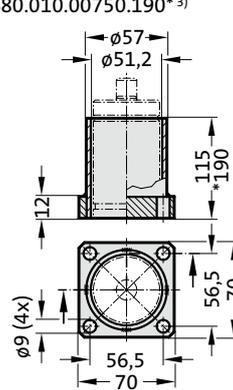
2480.007.00750



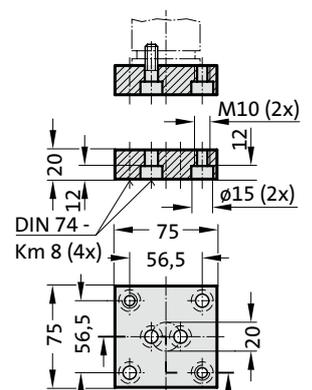
2480.008.00750³⁾



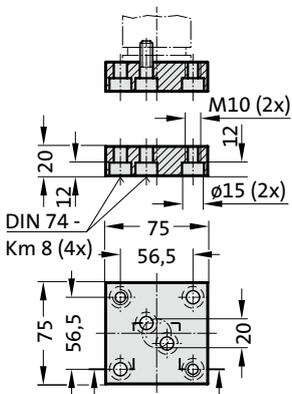
2480.010.00750.115³⁾
2480.010.00750.190*³⁾



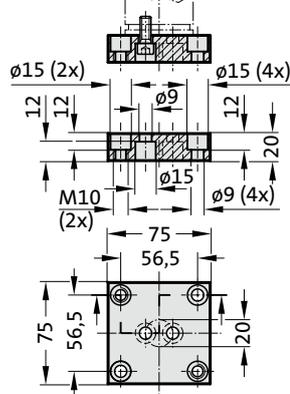
2480.011.00750



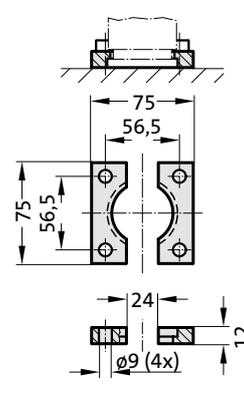
2480.011.00750.1



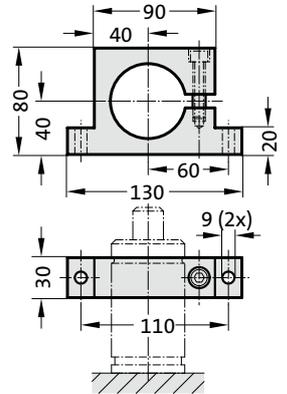
2480.011.00750.3



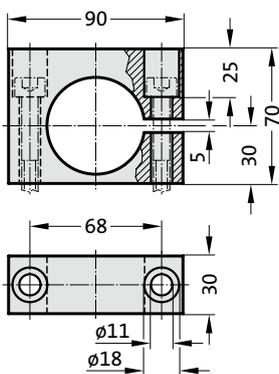
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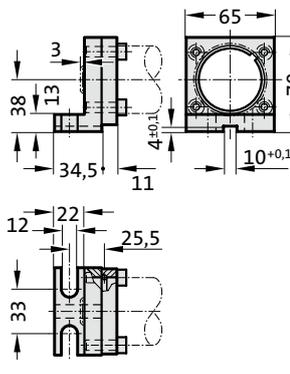
2480.044.00750²⁾



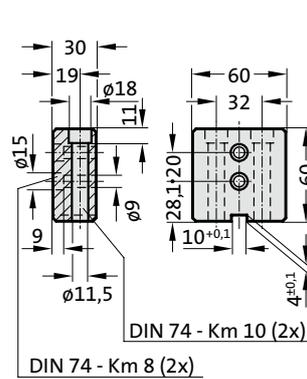
2480.044.03.00750²⁾



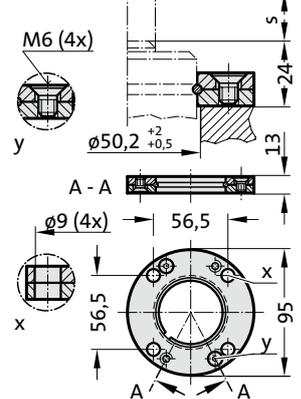
2480.045.00750²⁾



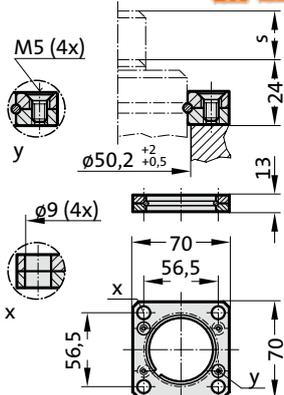
2480.047.00750²⁾



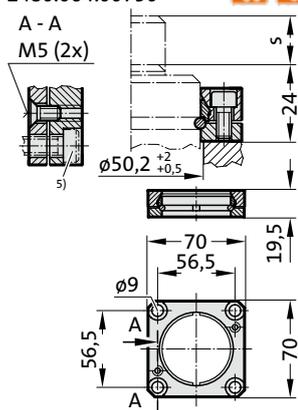
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 750 daN

Order No for spare parts kit: 2480.13.00750
 Order No for spare parts kit: to Renault standard EM24.54.700 2480.13.00750.R

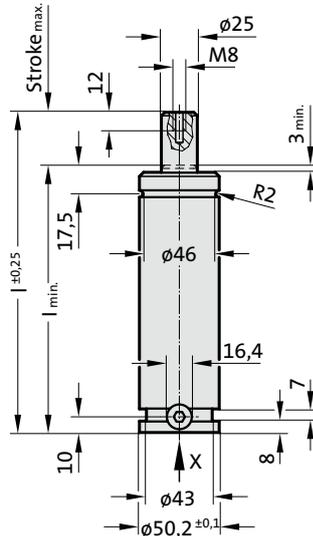
Gas spring without valve
 Order No (example): 2480.13.00750. .P

Gas spring to Renault standard EM24.54.700
 Order No (example): 2480.13.00750. .R
 Gas spring to Renault standard EM24.54.700 without valve
 Order No (example): 2480.13.00750. .R.P

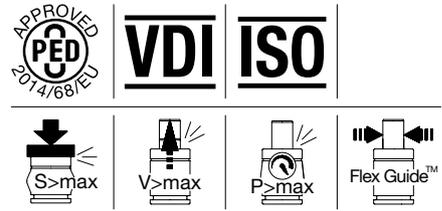
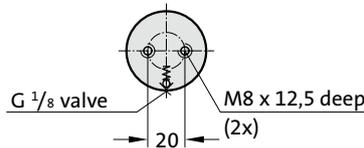
1) Special stroke lengths
 Not for gas springs to Renault Standard EM24.54.700.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s
 for 2480.R: 2.0 m/s

2480.13.00750.



View X - Gas spring

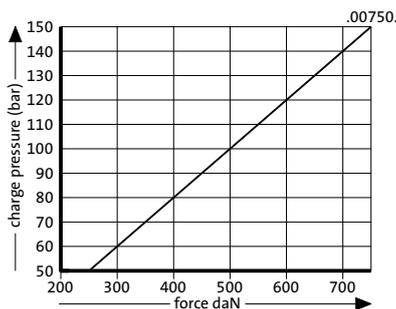


2480.13.00750.

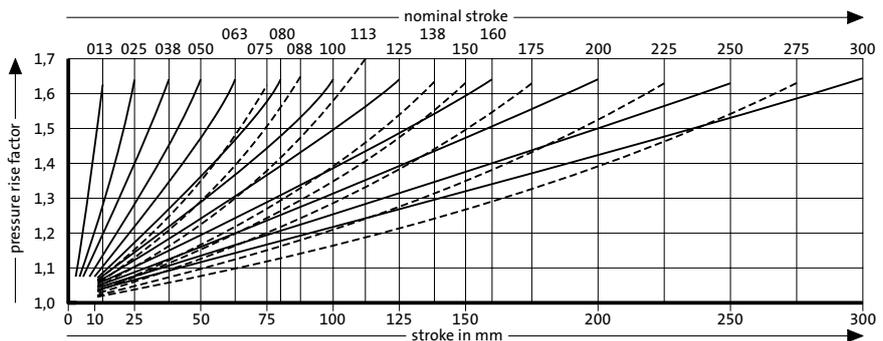
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.00750.013	12.7	107.7	120.4
2480.13.00750.025	25	120	145
2480.13.00750.038	38.1	133.1	171.2
2480.13.00750.050	50	145	195
2480.13.00750.063	63.5	158.5	222
2480.13.00750.075 1)	75	170	245
2480.13.00750.080	80	175	255
2480.13.00750.088 1)	87.5	182.5	270
2480.13.00750.100	100	195	295
2480.13.00750.113 1)	112.5	207.5	320
2480.13.00750.125	125	220	345
2480.13.00750.138 1)	137.5	232.5	370
2480.13.00750.150 1)	150	245	395
2480.13.00750.160	160	255	415
2480.13.00750.175 1)	175	270	445
2480.13.00750.200	200	295	495
2480.13.00750.225 1)	225	320	545
2480.13.00750.250	250	345	595
2480.13.00750.275	275	370	645
2480.13.00750.300	300	395	695

Initial spring force versus charge pressure



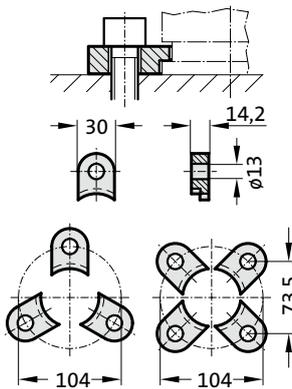
Spring force Diagram displacement versus stroke rise



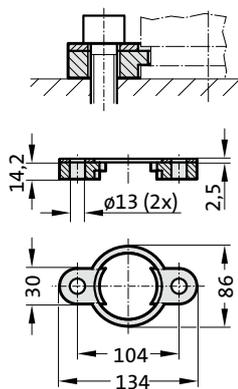
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

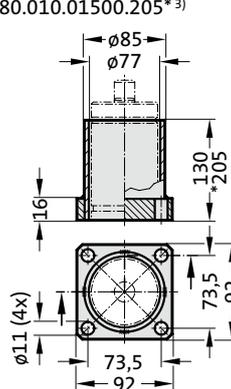
2480.007.01500



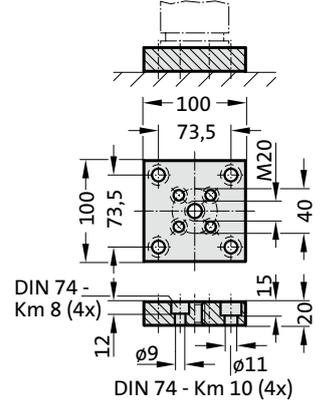
2480.008.01500³⁾



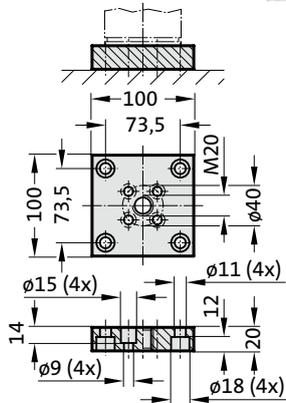
2480.010.01500.130³⁾
2480.010.01500.205*³⁾



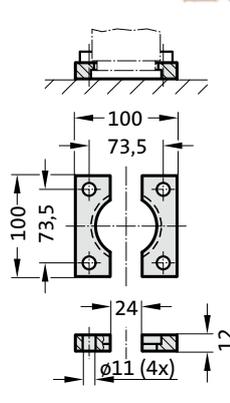
2480.011.01500



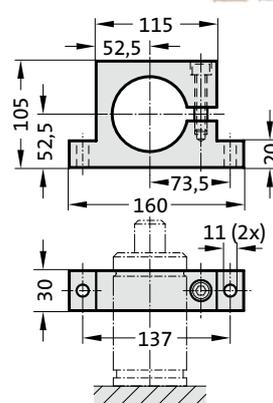
2480.011.01500.2



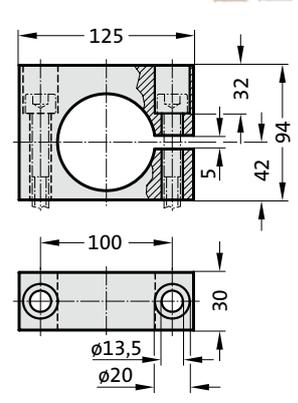
2480.022.01500



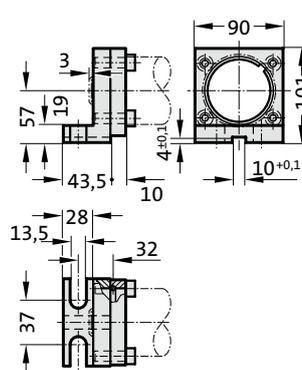
2480.044.01500²⁾



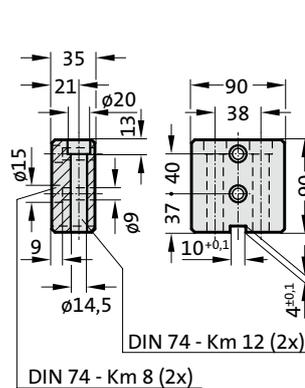
2480.044.03.01500²⁾



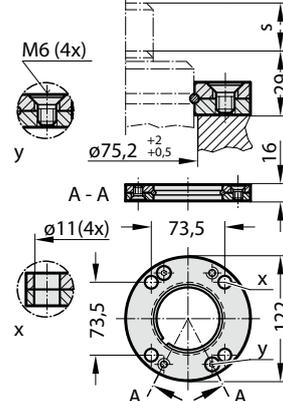
2480.045.01500²⁾



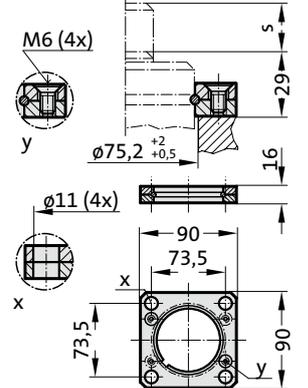
2480.047.01500²⁾



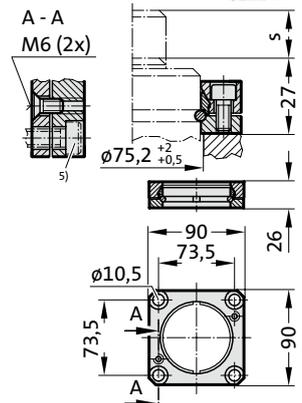
2480.055.01500



2480.057.01500



2480.064.01500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2480.12.01500
 Order No for spare parts kit: to Renault standard EM24.54.700 2480.12.01500.R

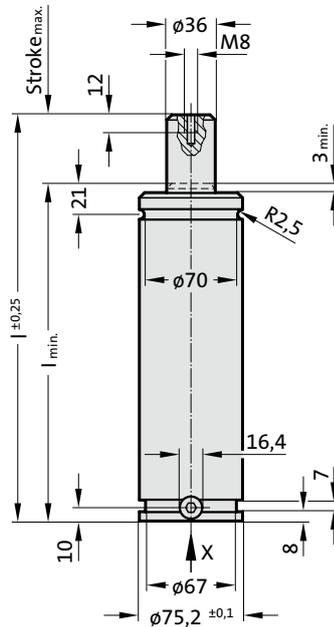
Gas spring without valve
 Order No (example): 2480.13.01500. .P

Gas spring to Renault standard EM24.54.700
 Order No (example): 2480.12.01500. .R
 Gas spring to Renault standard EM24.54.700 without valve
 Order No (example): 2480.13.01500. .R.P

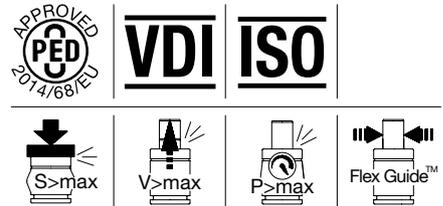
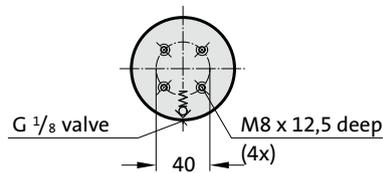
1) Special stroke lengths
 Not for gas springs to Renault Standard EM24.54.700.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s for 2480.R: 2.0 m/s

2480.12.01500.



View X - Gas spring

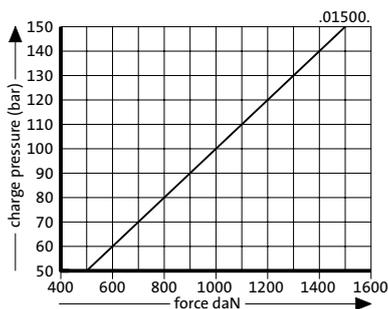


2480.12.01500.

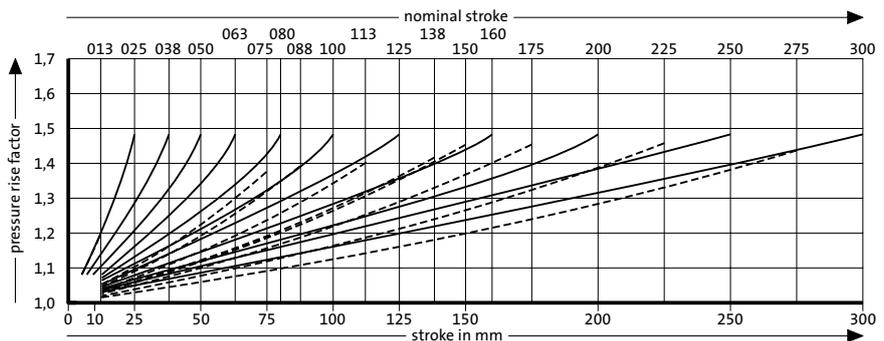
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.12.01500.013 1)	12.7	122.3	135
2480.12.01500.025	25	135	160
2480.12.01500.038	38.1	148.1	186.2
2480.12.01500.050	50	160	210
2480.12.01500.063	63.5	173.5	237
2480.12.01500.075 1)	75	185	260
2480.12.01500.080	80	190	270
2480.12.01500.088 1)	87.5	197.5	285
2480.12.01500.100	100	210	310
2480.12.01500.113 1)	112.5	222.5	335
2480.12.01500.125	125	235	360
2480.12.01500.138 1)	137.5	247.5	385
2480.12.01500.150 1)	150	260	410
2480.12.01500.160	160	270	430
2480.12.01500.175 1)	175	285	460
2480.12.01500.200	200	310	510
2480.12.01500.225 1)	225	335	560
2480.12.01500.250	250	360	610
2480.12.01500.275	275	385	660
2480.12.01500.300	300	410	710

Initial spring force versus charge pressure



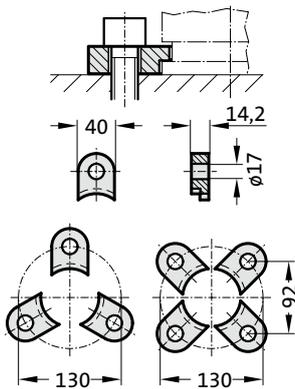
Spring force Diagram displacement versus stroke rise



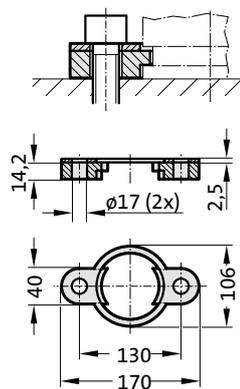
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

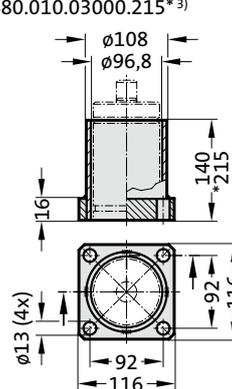
2480.007.03000



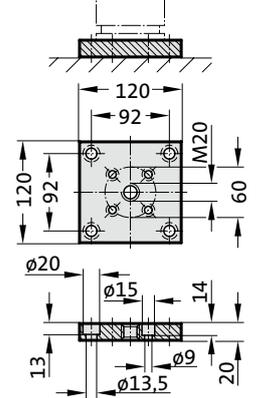
2480.008.03000³⁾



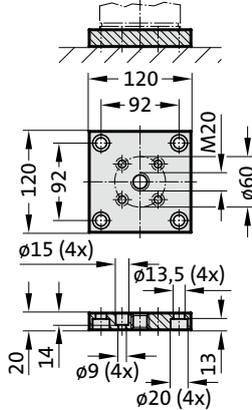
2480.010.03000.140³⁾
2480.010.03000.215*³⁾



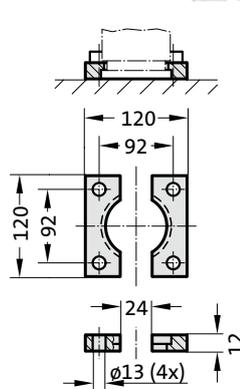
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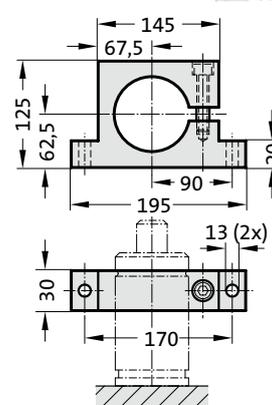
2480.011.03000.2



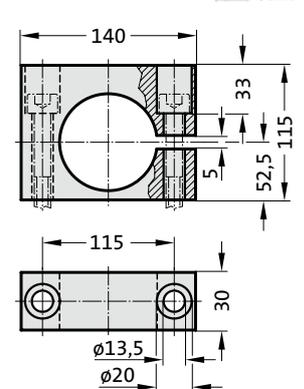
2480.022.03000



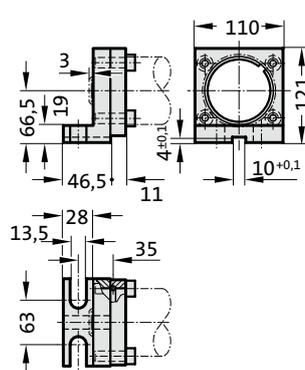
2480.044.03000²⁾



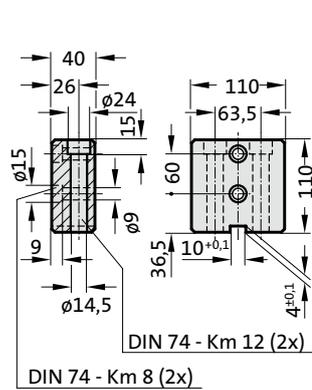
2480.044.03.03000²⁾



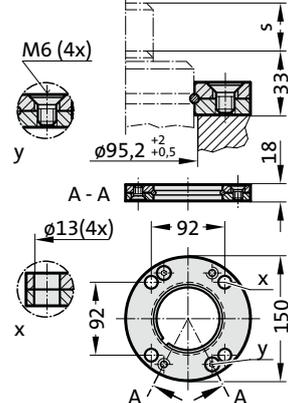
2480.045.03000²⁾



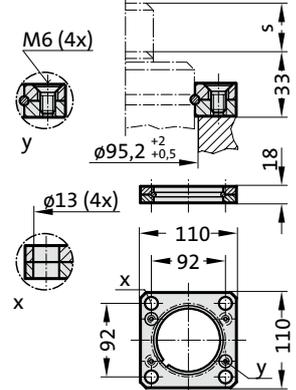
2480.047.03000²⁾



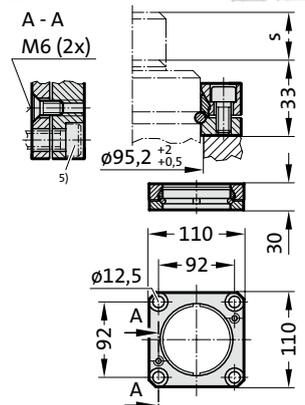
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 3000 daN

Order No for spare parts kit: 2480.13.03000
 Order No for spare parts kit: to Renault standard EM24.54.700 2480.13.03000.R

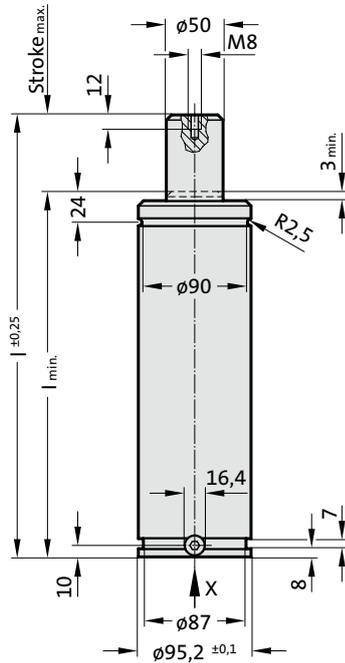
Gas spring without valve
 Order No (example): 2480.13.03000. .P

Gas spring to Renault standard EM24.54.700
 Order No (example): 2480.13.03000. .R
 Gas spring to Renault standard EM24.54.700 without valve
 Order No (example): 2480.13.03000. .R.P

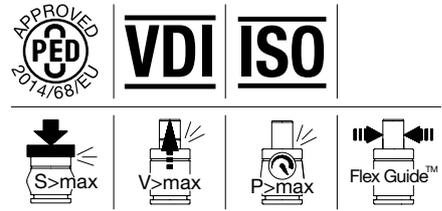
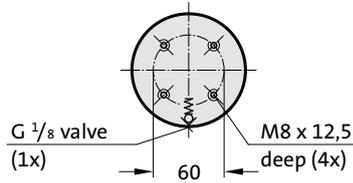
1) Special stroke lengths
 Not for gas springs to Renault Standard EM24.54.700.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s for 2480.R: 2.0 m/s

2480.13.03000.



View X - Gas spring

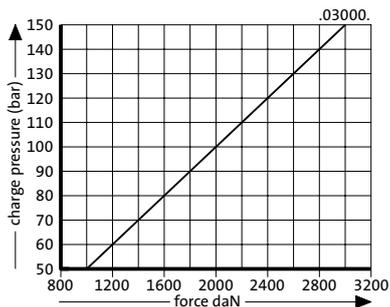


2480.13.03000.

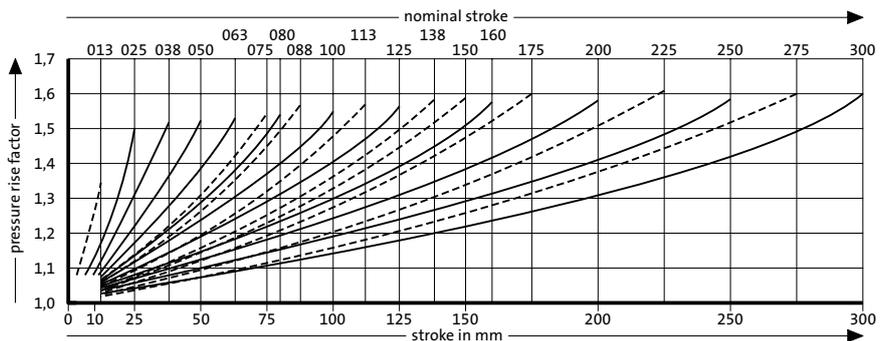
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.03000.013	1) 12.7	132.3	145
2480.13.03000.025	25	145	170
2480.13.03000.038	38.1	158.1	196.2
2480.13.03000.050	50	170	220
2480.13.03000.063	63.5	183.5	247
2480.13.03000.075	1) 75	195	270
2480.13.03000.080	80	200	280
2480.13.03000.088.11)	87.5	207.5	295
2480.13.03000.100	100	220	320
2480.13.03000.113	1) 112.5	232.5	345
2480.13.03000.125	125	245	370
2480.13.03000.138	1) 137.5	257.5	395
2480.13.03000.150	1) 150	270	420
2480.13.03000.160	160	280	440
2480.13.03000.175	1) 175	295	470
2480.13.03000.200	200	320	520
2480.13.03000.225	1) 225	345	570
2480.13.03000.250	250	370	620
2480.13.03000.275	1) 275	395	670
2480.13.03000.300	300	420	720

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 5000 daN

Order No for spare parts kit: 2480.13.05000
 Order No for spare parts kit: to Renault standard EM24.54.700 2480.13.05000.R

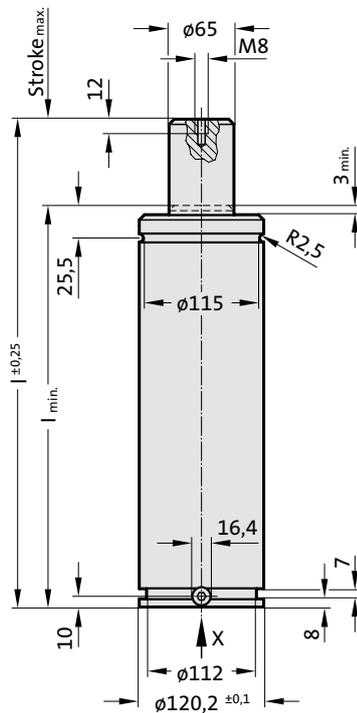
Gas spring without valve
 Order No (example): 2480.13.05000. .P

Gas spring to Renault standard EM24.54.700
 Order No (example): 2480.13.05000. .R
 Gas spring to Renault standard EM24.54.700 without valve
 Order No (example): 2480.13.05000. .R.P

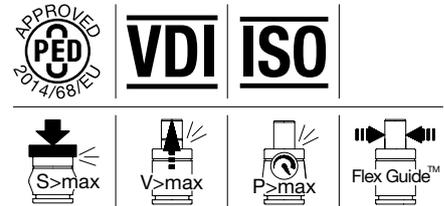
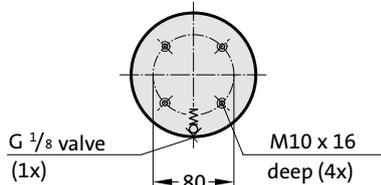
1) Special stroke lengths
 Not for gas springs to Renault Standard EM24.54.700.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s
 for 2480.R: 2.0 m/s

2480.13.05000.



View X - Gas spring

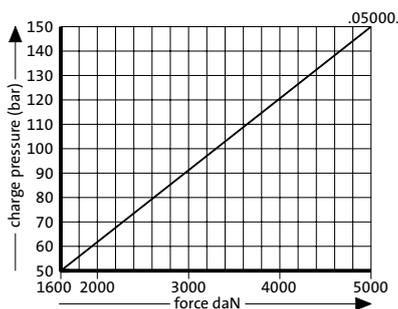


2480.13.05000.

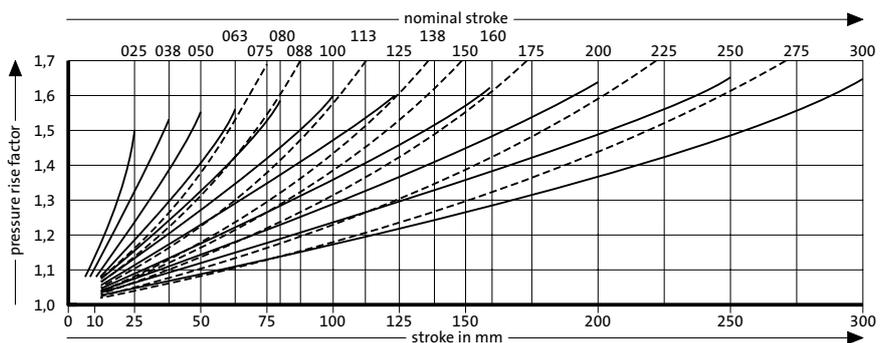
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.05000.025	25	165	190
2480.13.05000.038	38.1	178.1	216.2
2480.13.05000.050	50	190	240
2480.13.05000.063	63.5	203.5	267
2480.13.05000.075 1)	75	215	290
2480.13.05000.080	80	220	300
2480.13.05000.088 1)	87.5	227.5	315
2480.13.05000.100	100	240	340
2480.13.05000.113 1)	112.5	252.5	365
2480.13.05000.125	125	265	390
2480.13.05000.138 1)	137.5	277.5	415
2480.13.05000.150 1)	150	290	440
2480.13.05000.160	160	300	460
2480.13.05000.175 1)	175	315	490
2480.13.05000.200	200	340	540
2480.13.05000.225 1)	225	365	590
2480.13.05000.250	250	390	640
2480.13.05000.275 1)	275	415	690
2480.13.05000.300	300	440	740

Initial spring force versus charge pressure



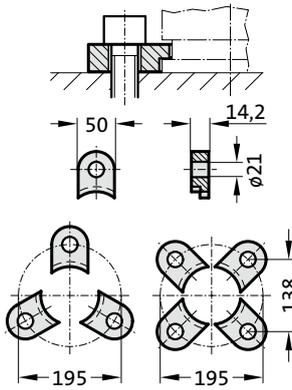
Spring force Diagram displacement versus stroke rise



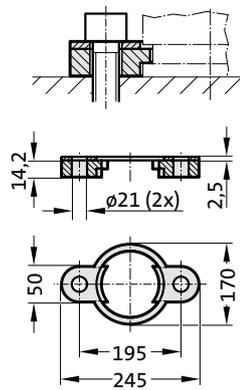
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

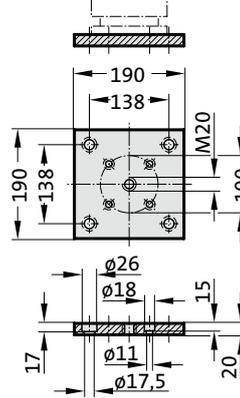
2480.007.07500



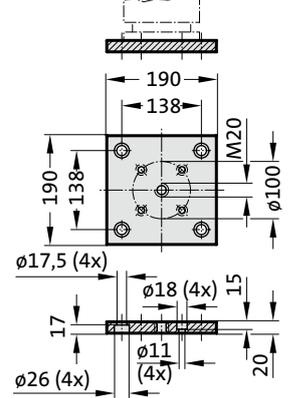
2480.008.07500³⁾



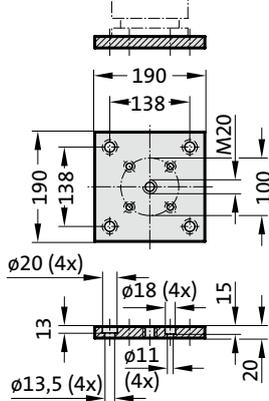
2480.011.07500



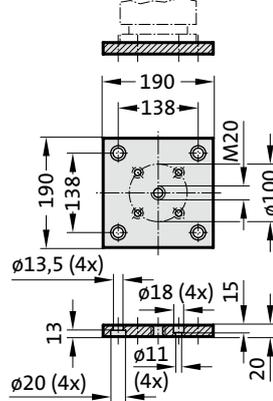
2480.011.07500.2



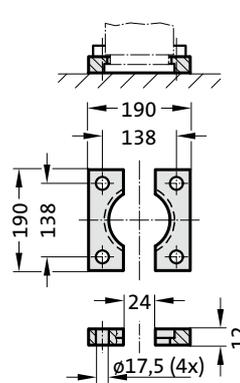
2480.011.03.07500



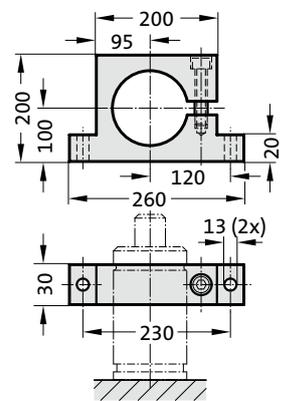
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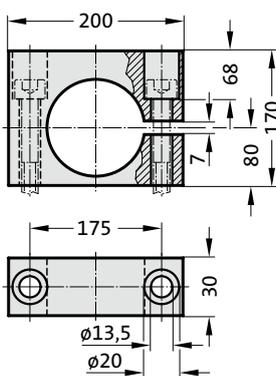
2480.022.07500



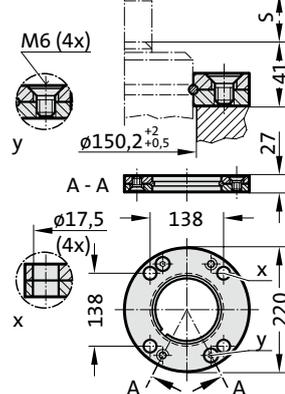
2480.044.07500²⁾



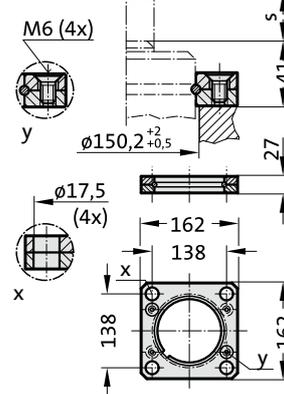
2480.044.03.07500²⁾



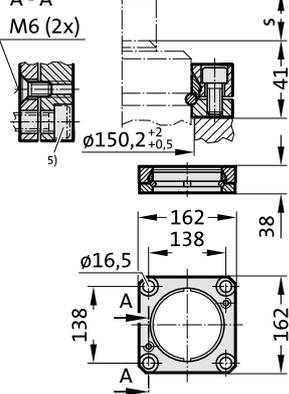
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 7500 daN

Order No for spare parts kit: 2480.13.07500
 Order No for spare parts kit: to Renault standard EM24.54.700 2480.13.07500.R

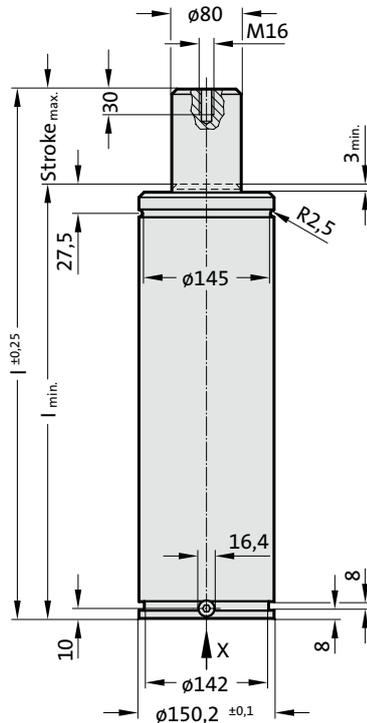
Gas spring without valve
 Order No (example): 2480.13.07500. .P

Gas spring to Renault standard EM24.54.700
 Order No (example): 2480.13.07500. .R
 Gas spring to Renault standard EM24.54.700 without valve
 Order No (example): 2480.13.07500. .R.P

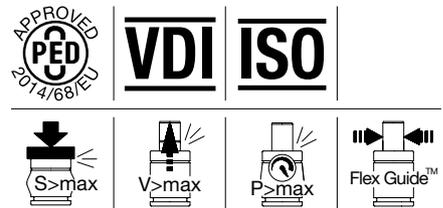
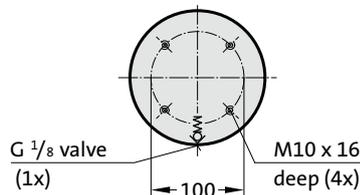
1) Special stroke lengths
 Not for gas springs to Renault Standard EM24.54.700.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s
 for 2480.R: 2.0 m/s

2480.13.07500.



View X - Gas spring

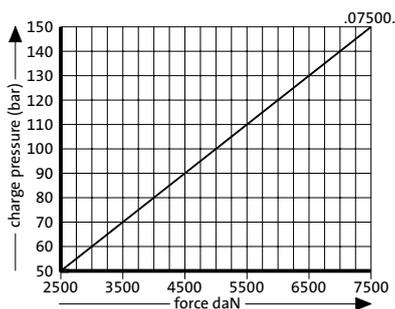


2480.13.07500.

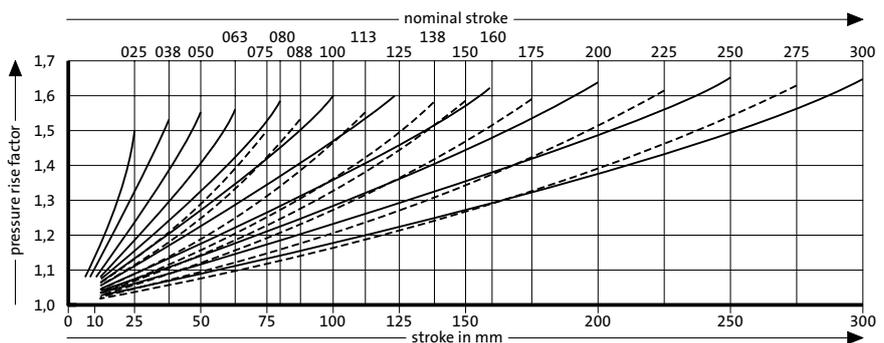
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.07500.025	25	180	205
2480.13.07500.038	38.1	193.1	231.2
2480.13.07500.050	50	205	255
2480.13.07500.063	63.5	218.5	282
2480.13.07500.075 1)	75	230	305
2480.13.07500.080	80	235	315
2480.13.07500.088 1)	87.5	242.5	330
2480.13.07500.100	100	255	355
2480.13.07500.113 1)	112.5	267.5	380
2480.13.07500.125	125	280	405
2480.13.07500.138 1)	137.5	292.5	430
2480.13.07500.150 1)	150	305	455
2480.13.07500.160	160	315	475
2480.13.07500.175 1)	175	330	505
2480.13.07500.200	200	355	555
2480.13.07500.225 1)	225	380	605
2480.13.07500.250	250	405	655
2480.13.07500.275 1)	275	430	705
2480.13.07500.300	300	455	755

Initial spring force versus charge pressure



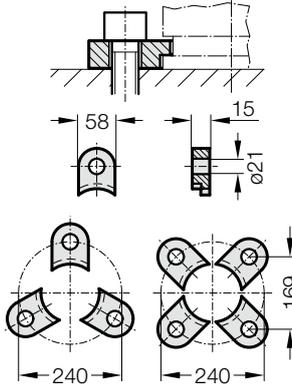
Spring force Diagram displacement versus stroke rise



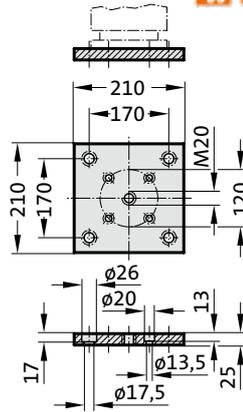
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

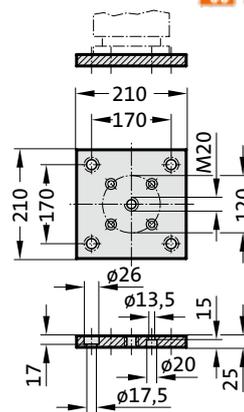
2480.007.10000



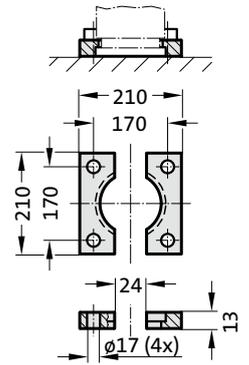
2480.011.10000



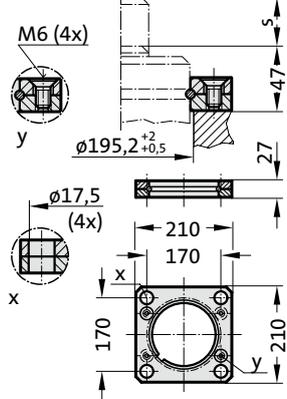
2480.011.10000.2



2480.022.10000



2480.057.10000



GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 10000 daN

Order No for spare parts kit: 2480.12.10000

Gas spring without valve

Order No (example): 2480.12.10000. .P

Gas spring to Renault standard EM24.54.700

Order No (example): 2480.12.10000. .R

Gas spring to Renault standard EM24.54.700 without valve

Order No (example): 2480.12.10000. .R.P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

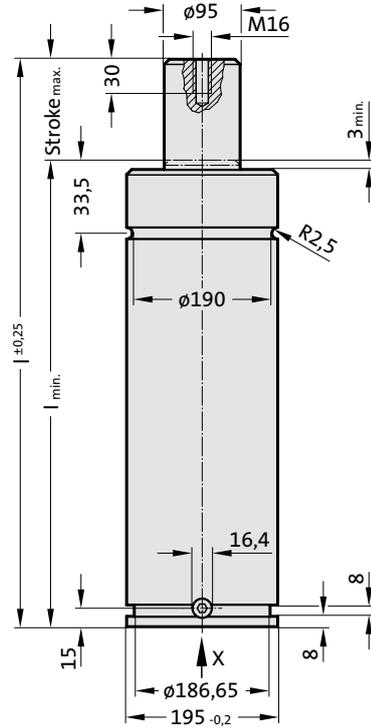
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

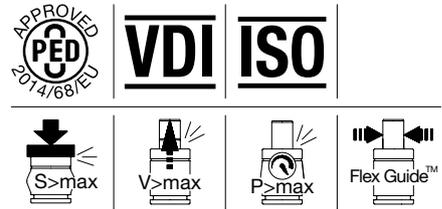
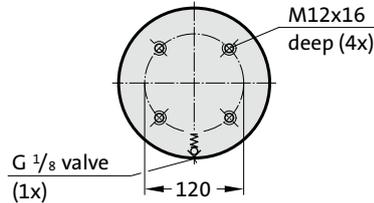
approx. 15 to 40 (at 20°C)

Max. piston speed: 1.6 m/s

2480.12.10000.



View X - Gas spring

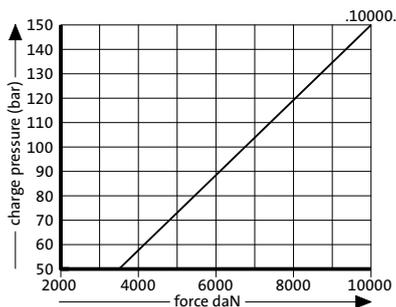


2480.12.10000.

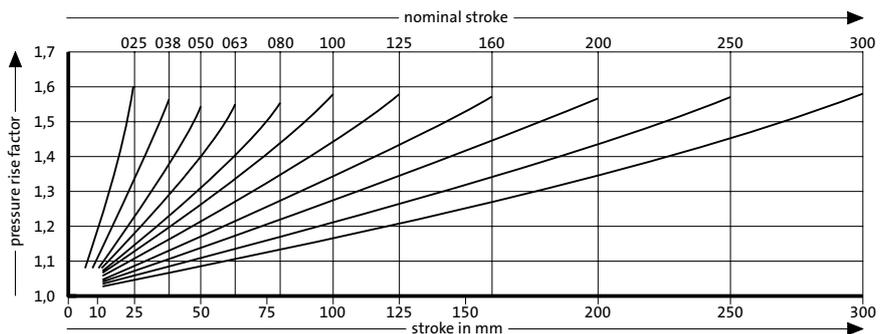
Gas spring, Standard

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.12.10000.025	25	185	210
2480.12.10000.038	38.1	198.1	236.2
2480.12.10000.050	50	210	260
2480.12.10000.063	63.5	223.5	287
2480.12.10000.080	80	240	320
2480.12.10000.100	100	260	360
2480.12.10000.125	125	285	410
2480.12.10000.160	160	320	480
2480.12.10000.200	200	360	560
2480.12.10000.250	250	410	660
2480.12.10000.300	300	460	760

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



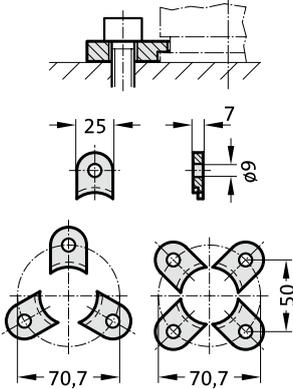
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS HEAVY DUTY

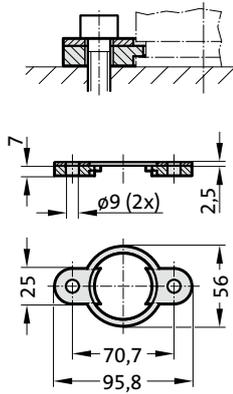


GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

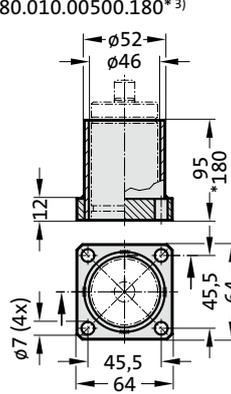
2480.007.00500



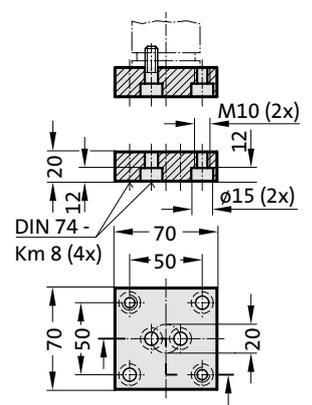
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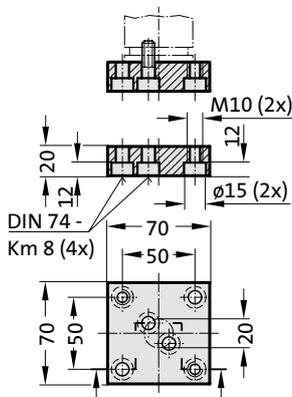
2480.010.00500.095³⁾
2480.010.00500.180*³⁾



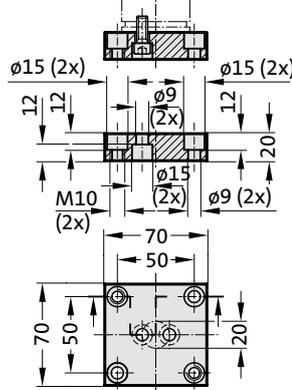
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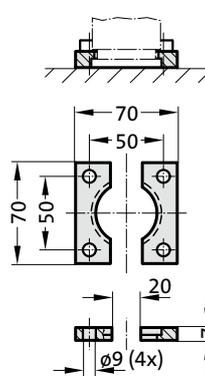
2480.011.00500.1



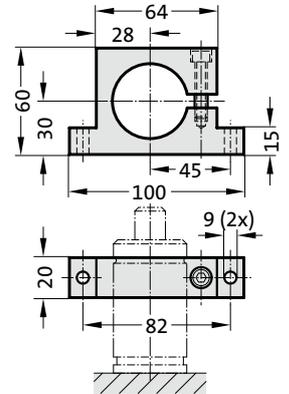
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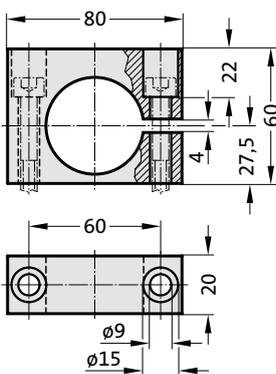
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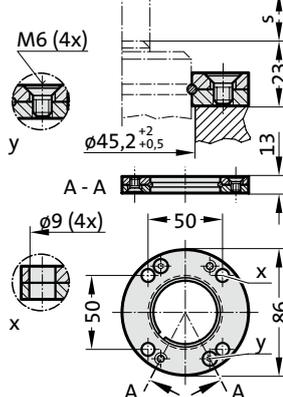
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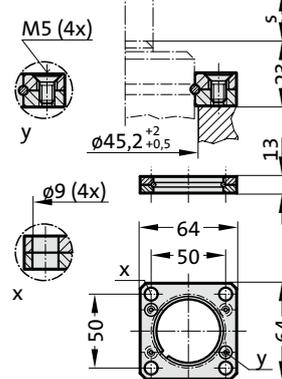
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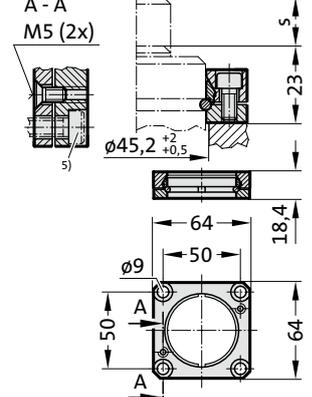
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 740 daN

Order No for spare parts kit: 2488.13.00750

Gas spring without valve

Order No (example): 2488.13.00750. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

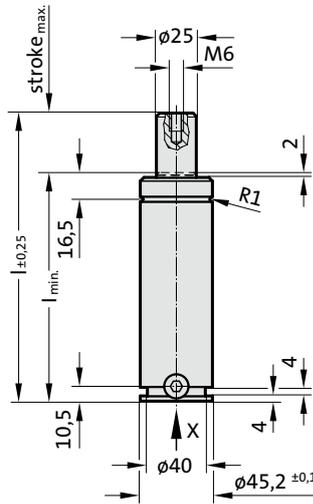
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

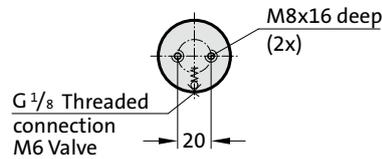
approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.00750.



View X

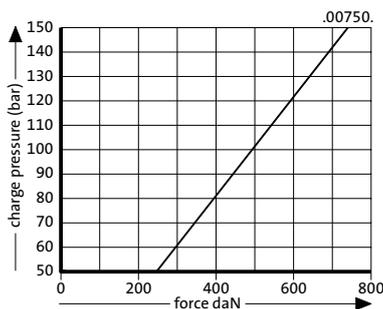


2488.13.00750.

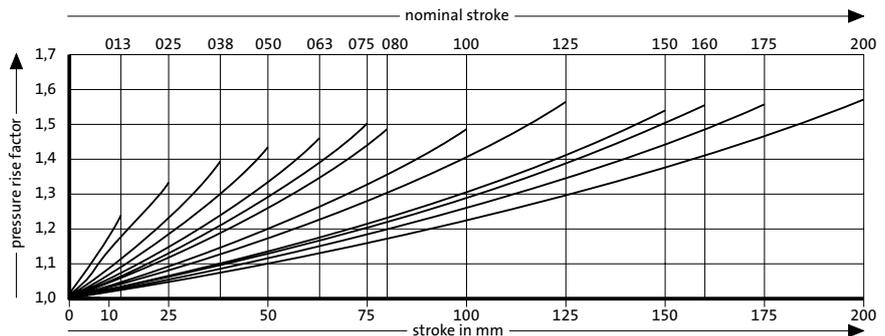
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.00750.013	13	98	111
2488.13.00750.025	25	110	135
2488.13.00750.038	38	123	161
2488.13.00750.050	50	135	185
2488.13.00750.063	63	148	211
2488.13.00750.075	75	160	235
2488.13.00750.080	80	165	245
2488.13.00750.100.	100	185	285
2488.13.00750.125.	125	210	335
2488.13.00750.150.	150	235	385
2488.13.00750.160.	160	245	405
2488.13.00750.175.	175	260	435
2488.13.00750.200.	200	285	485

Initial spring force versus charge pressure



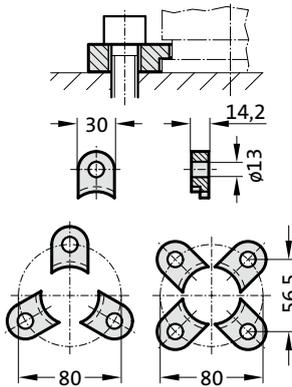
Spring force Diagram displacement versus stroke rise



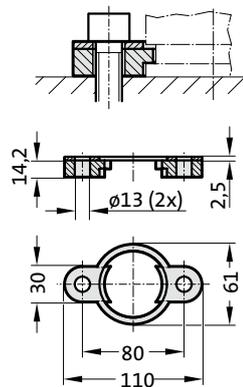
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

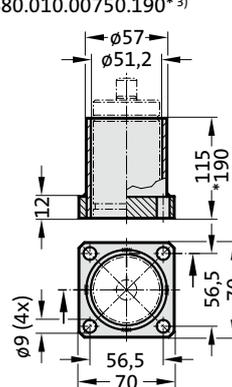
2480.007.00750



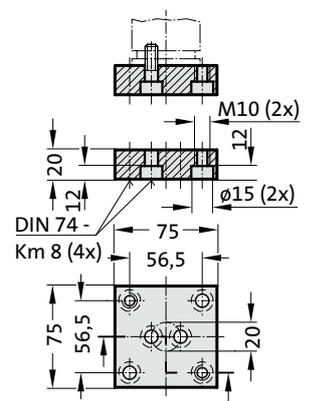
2480.008.00750³⁾



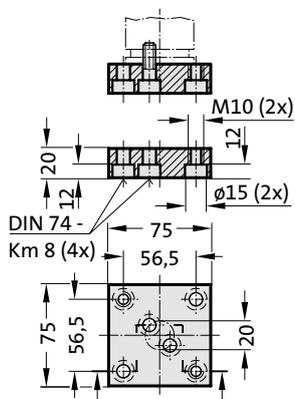
2480.010.00750.115³⁾
2480.010.00750.190*³⁾



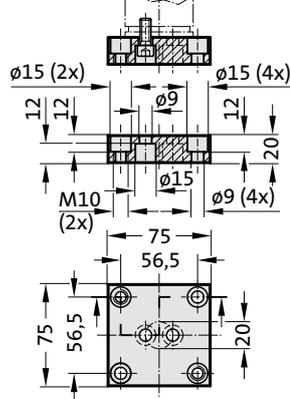
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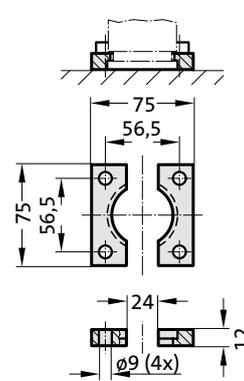
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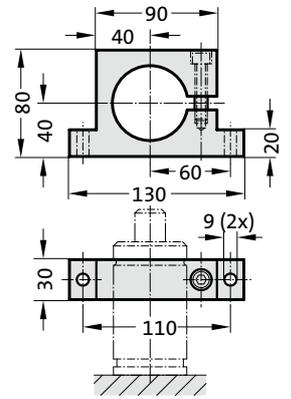
2480.011.00750.3



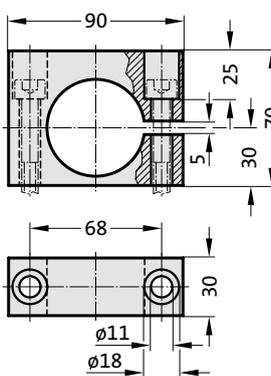
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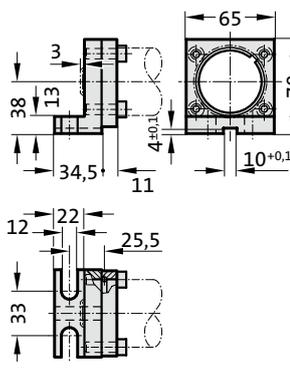
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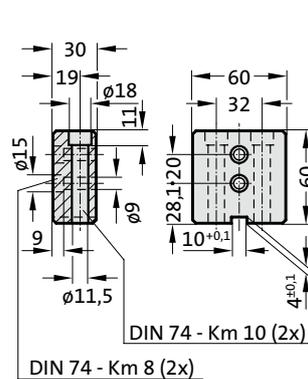
2480.044.03.00750²⁾



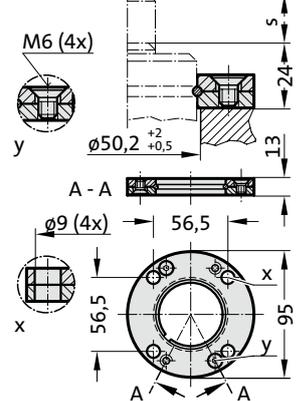
2480.045.00750²⁾



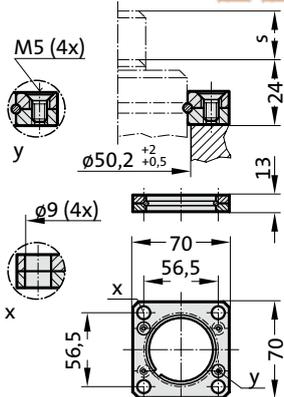
2480.047.00750²⁾



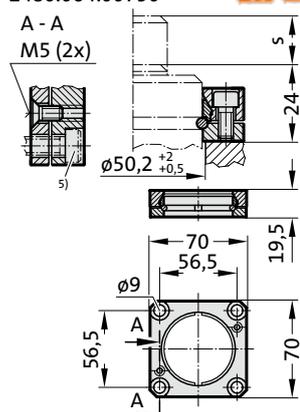
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 920 daN

Order No for spare parts kit: 2488.13.01000

Gas spring without valve

Order No (example): 2488.13.01000. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

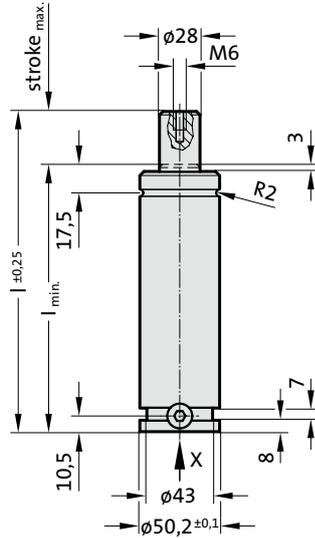
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

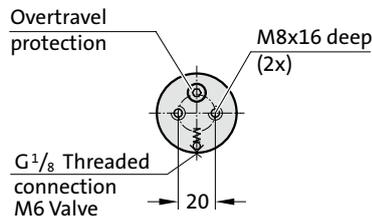
approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.01000.



View X

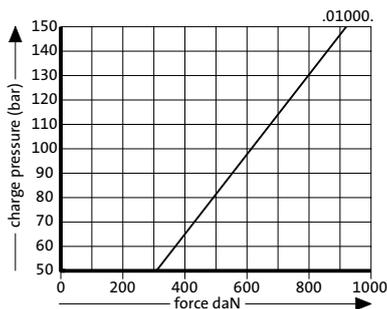


2488.13.01000.

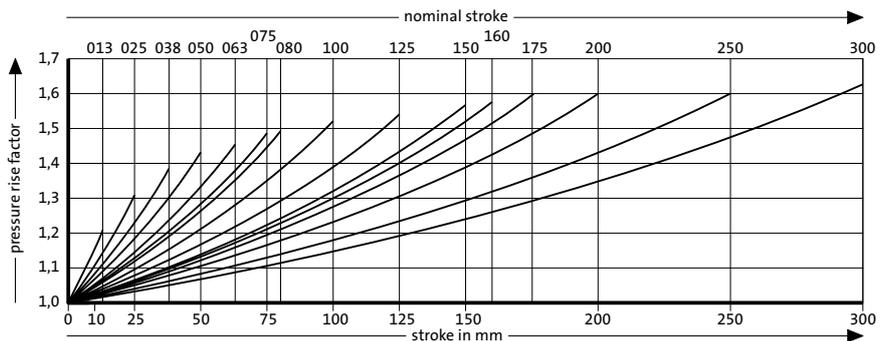
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.01000.013	13	108	121
2488.13.01000.025	25	120	145
2488.13.01000.038	38	133	171
2488.13.01000.050	50	145	195
2488.13.01000.063	63	158	221
2488.13.01000.075	75	170	245
2488.13.01000.080	80	175	255
2488.13.01000.100	100	195	295
2488.13.01000.125	125	220	345
2488.13.01000.150	150	245	395
2488.13.01000.160	160	255	415
2488.13.01000.175	175	270	445
2488.13.01000.200	200	295	495
2488.13.01000.250	250	345	595
2488.13.01000.300	300	395	695

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2488.13.01500

Gas spring without valve

Order No (example): 2488.13.01500. . P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

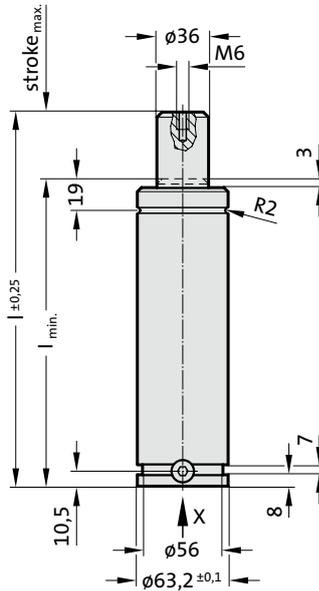
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

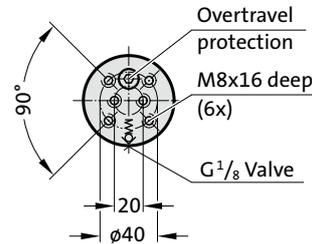
approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.01500.



View X

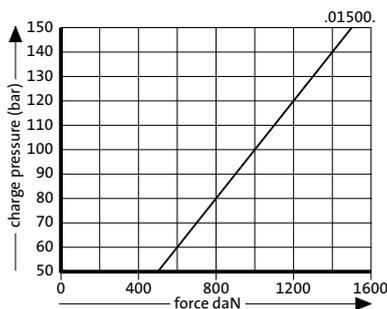


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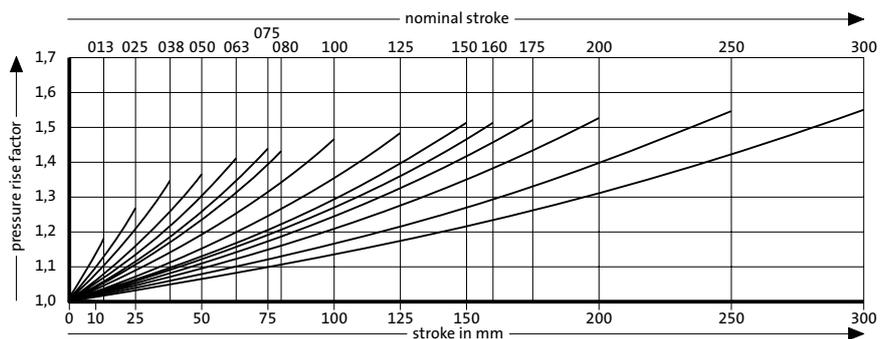
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.01500.013	13	108	121
2488.13.01500.025	25	120	145
2488.13.01500.038	38	133	171
2488.13.01500.050	50	145	195
2488.13.01500.063	63	158	221
2488.13.01500.075	75	170	245
2488.13.01500.080	80	175	255
2488.13.01500.100	100	195	295
2488.13.01500.125	125	220	345
2488.13.01500.150	150	245	395
2488.13.01500.160	160	255	415
2488.13.01500.175	175	270	445
2488.13.01500.200	200	295	495
2488.13.01500.250	250	345	595
2488.13.01500.300	300	395	695

Initial spring force versus charge pressure



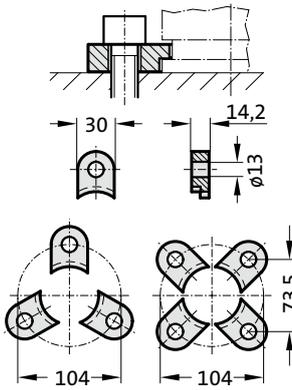
Spring force Diagram displacement versus stroke rise



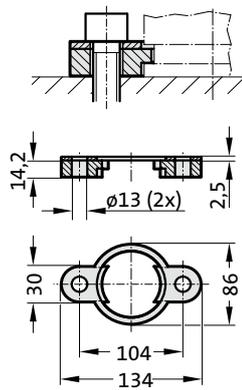
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

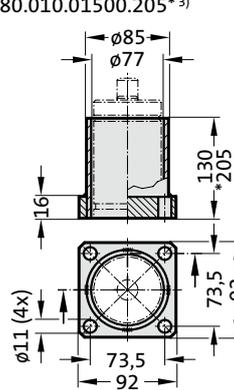
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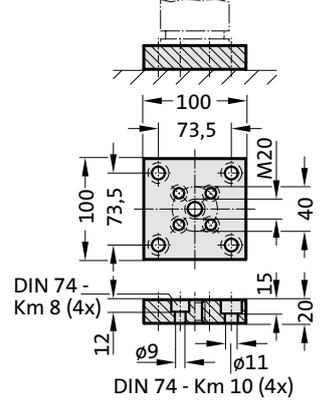
2480.008.01500³⁾



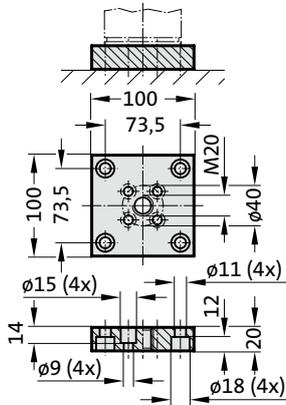
2480.010.01500.130³⁾
2480.010.01500.205*³⁾



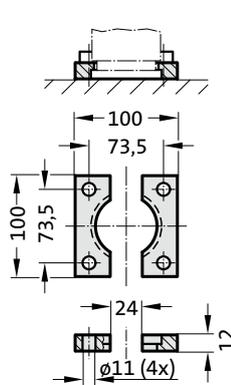
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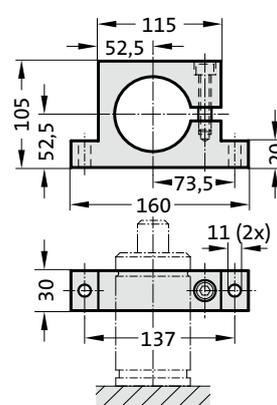
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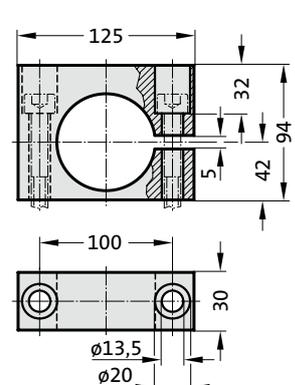
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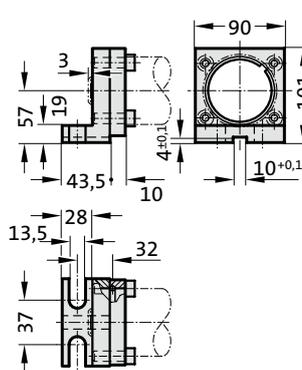
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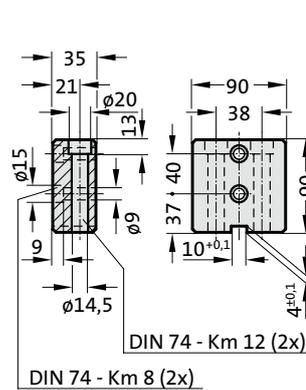
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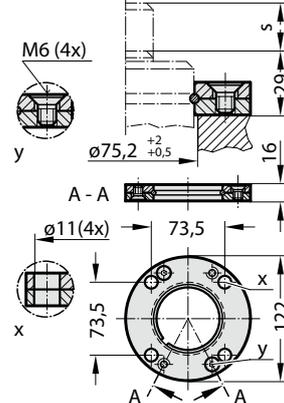
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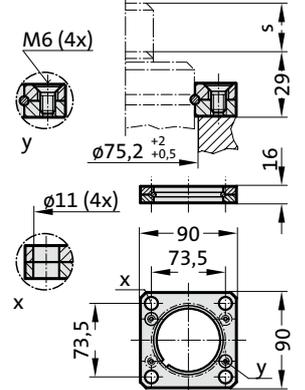
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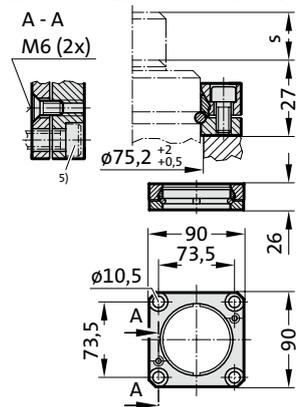
2480.055.01500



2480.057.01500



2480.064.01500⁴⁾

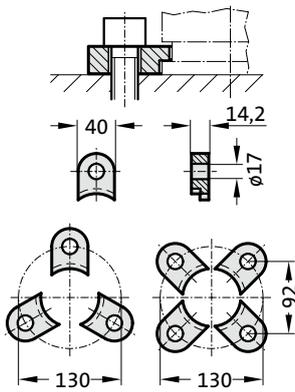


Note:

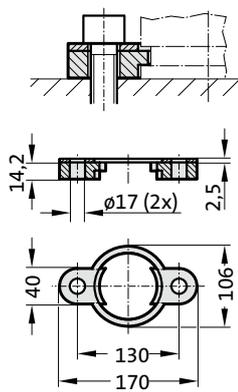
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

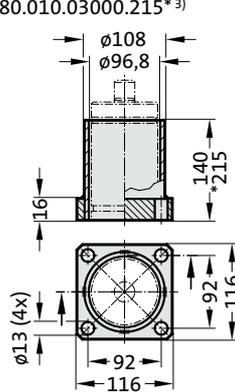
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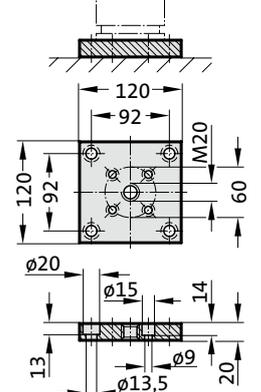
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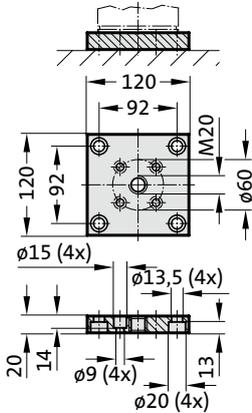
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2480.010.03000.215*³⁾



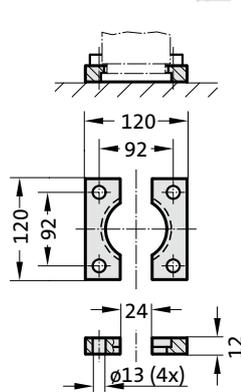
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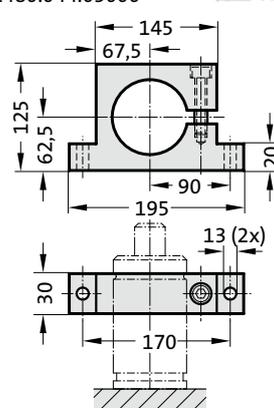
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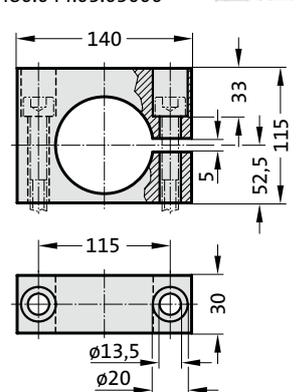
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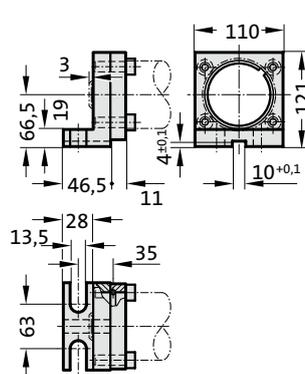
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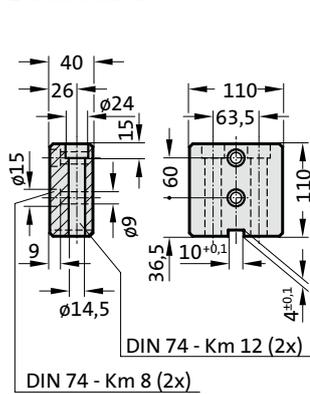
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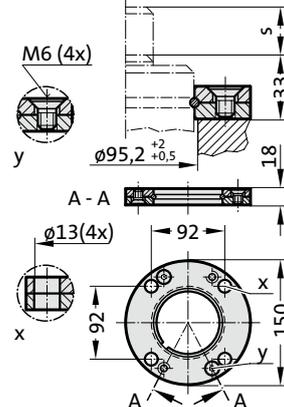
2480.045.03000²⁾



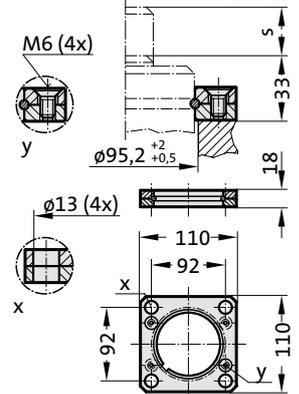
2480.047.03000²⁾



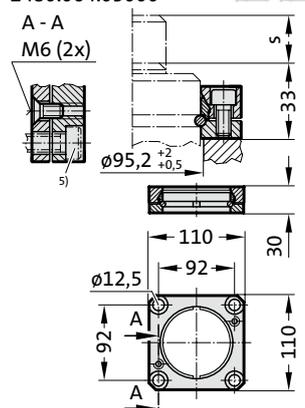
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 4200 daN

Order No for spare parts kit: 2488.13.04200

Gas spring without valve

Order No (example): 2488.13.04200..P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

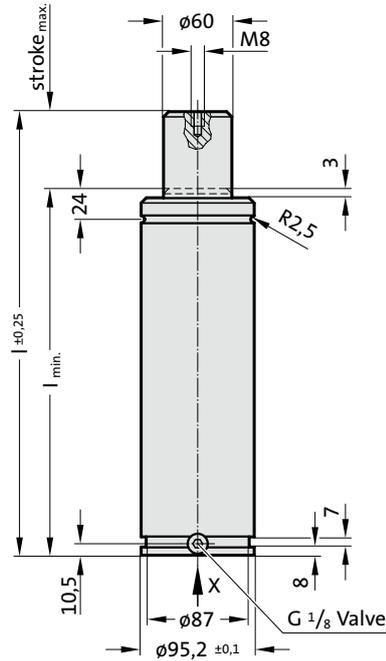
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

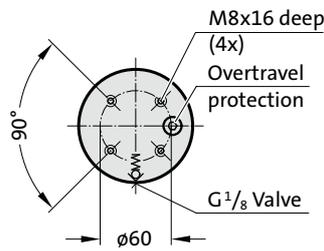
approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.04200.



View X

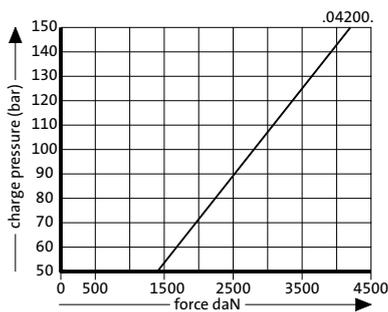


2488.13.04200.

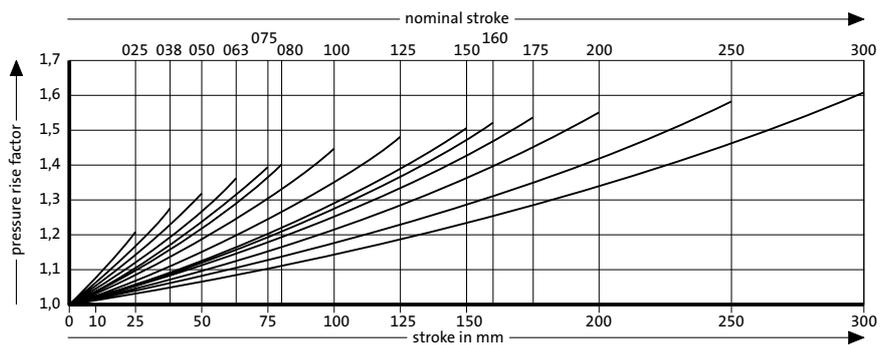
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.04200.025	25	145	170
2488.13.04200.038	38	158	196
2488.13.04200.050	50	170	220
2488.13.04200.063	63	183	246
2488.13.04200.075	75	195	270
2488.13.04200.080	80	200	280
2488.13.04200.100	100	220	320
2488.13.04200.125	125	245	370
2488.13.04200.150	150	270	420
2488.13.04200.160	160	280	440
2488.13.04200.175	175	295	470
2488.13.04200.200	200	320	520
2488.13.04200.250	250	370	620
2488.13.04200.300	300	420	720

Initial spring force versus charge pressure



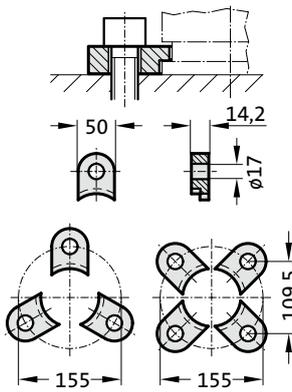
Spring force Diagram displacement versus stroke rise



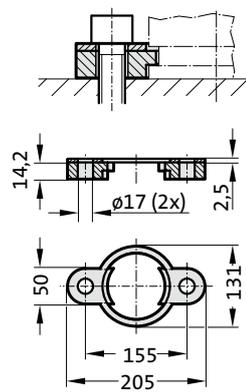
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

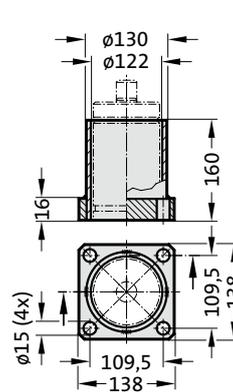
2480.007.05000



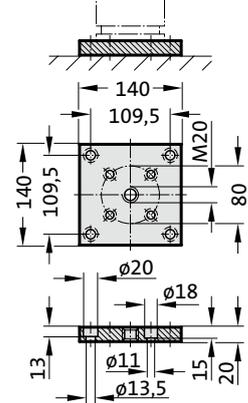
2480.008.05000³⁾



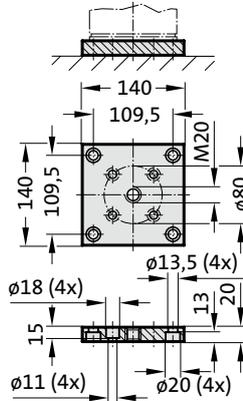
2480.010.05000.160³⁾



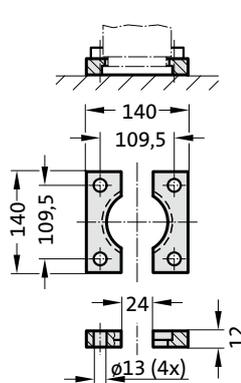
2480.011.05000



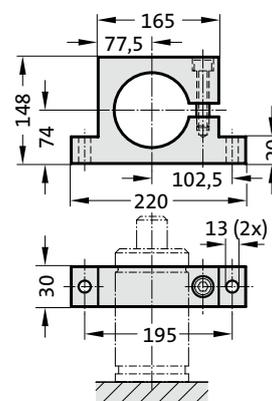
2480.011.05000.2



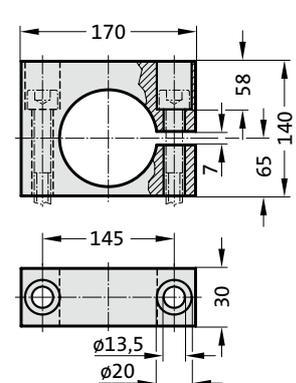
2480.022.05000



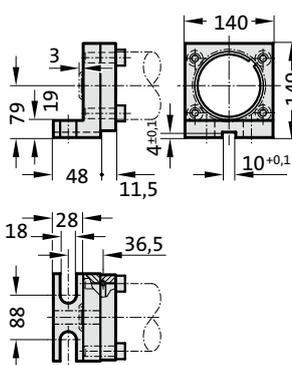
2480.044.05000²⁾



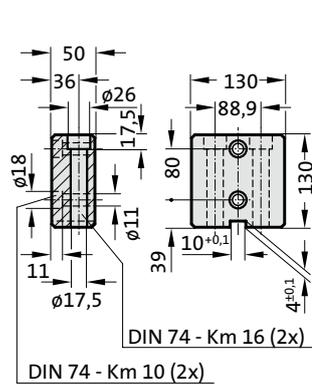
2480.044.03.05000²⁾



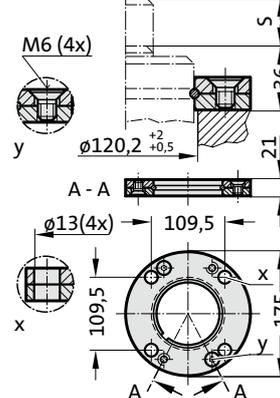
2480.045.05000²⁾



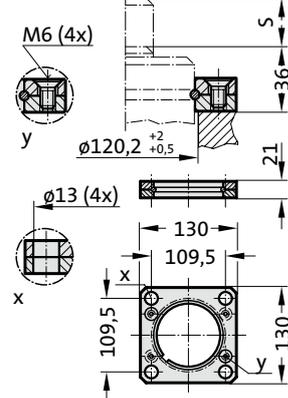
2480.047.05000²⁾



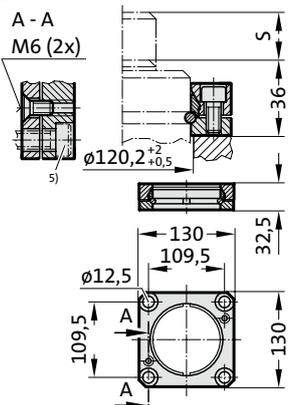
2480.055.05000



2480.057.05000



2480.064.05000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 6600 daN

Order No for spare parts kit: 2488.13.06600

Gas spring without valve

Order No (example): 2488.13.06600..P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

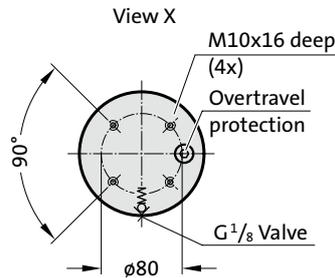
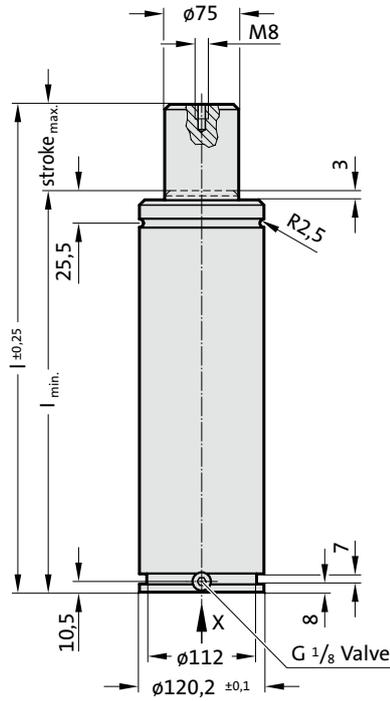
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.06600.

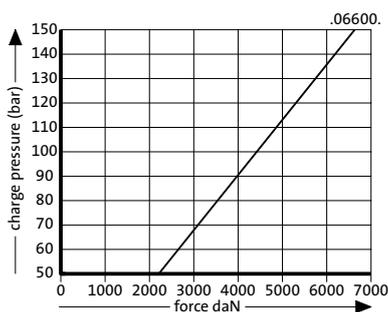


2488.13.06600.

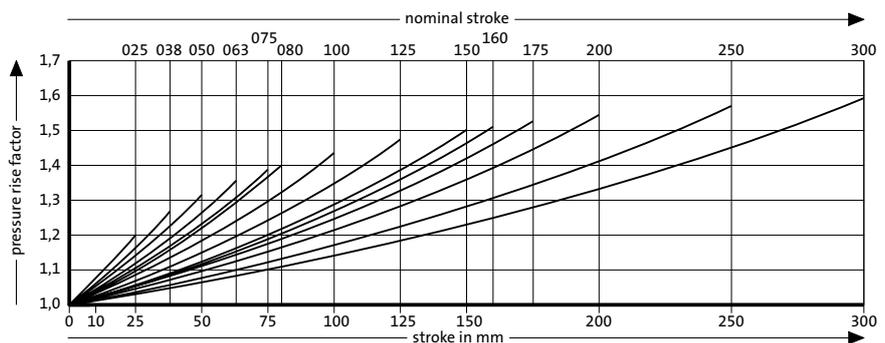
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.06600.025	25	165	190
2488.13.06600.038	38	178	216
2488.13.06600.050	50	190	240
2488.13.06600.063	63	203	266
2488.13.06600.075	75	215	290
2488.13.06600.080	80	220	300
2488.13.06600.100	100	240	340
2488.13.06600.125	125	265	390
2488.13.06600.150	150	290	440
2488.13.06600.160	160	300	460
2488.13.06600.175	175	315	490
2488.13.06600.200	200	340	540
2488.13.06600.250	250	390	640
2488.13.06600.300	300	440	740

Initial spring force versus charge pressure



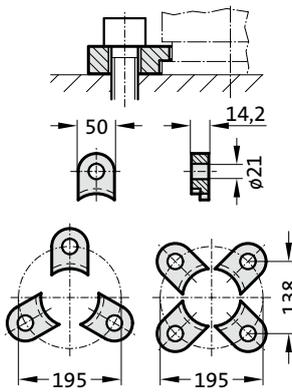
Spring force Diagram displacement versus stroke rise



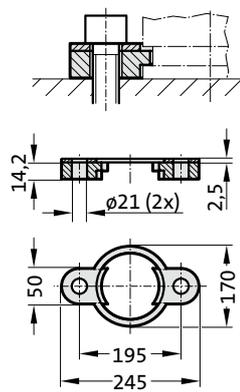
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

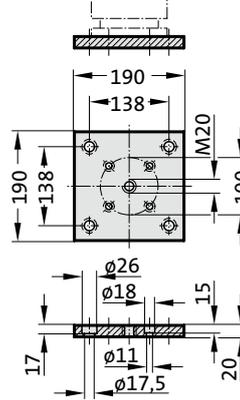
2480.007.07500



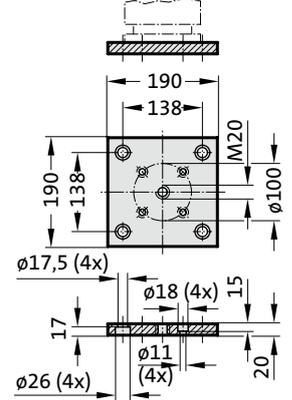
2480.008.07500³⁾



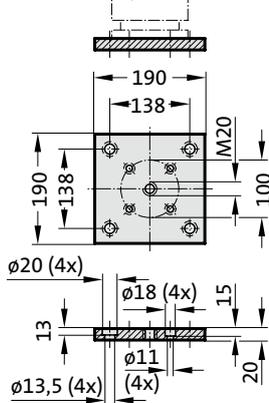
2480.011.07500



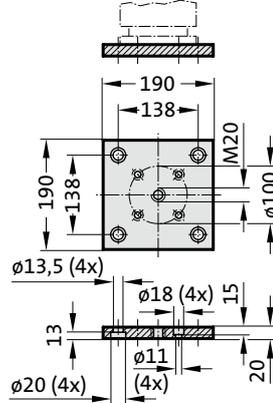
2480.011.07500.2



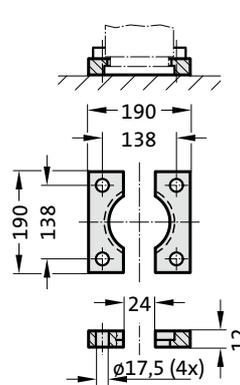
2480.011.03.07500



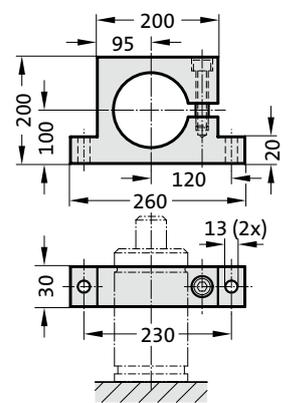
2480.011.03.07500.2



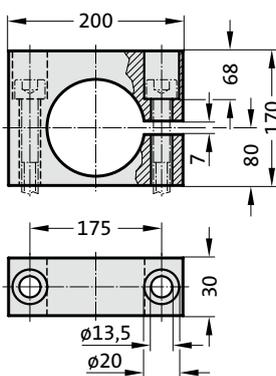
2480.022.07500



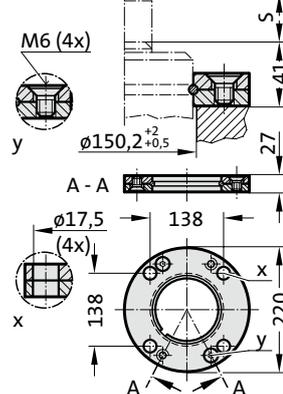
2480.044.07500²⁾



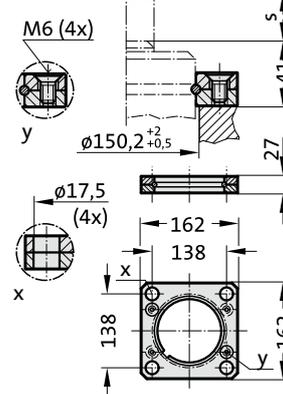
2480.044.03.07500²⁾



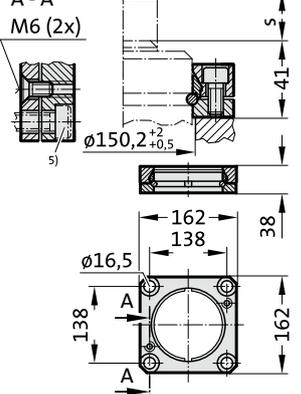
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 9500 daN

Order No for spare parts kit: 2488.13.09500

Gas spring without valve

Order No (example): 2488.13.09500..P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

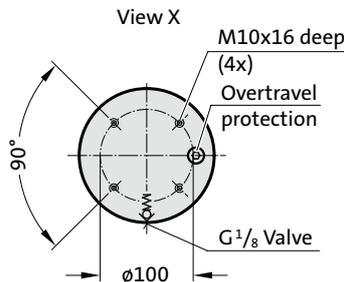
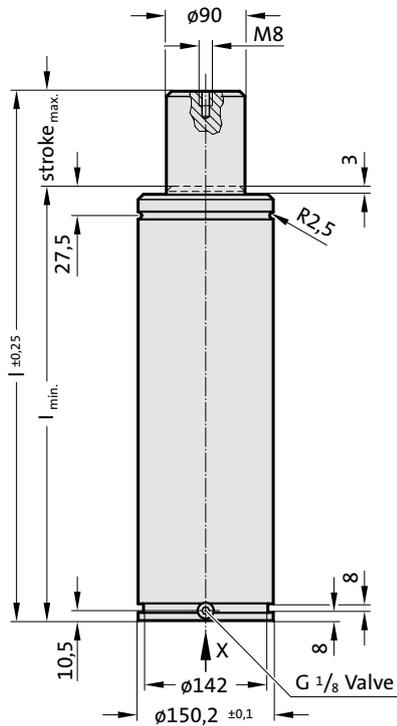
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.09500.

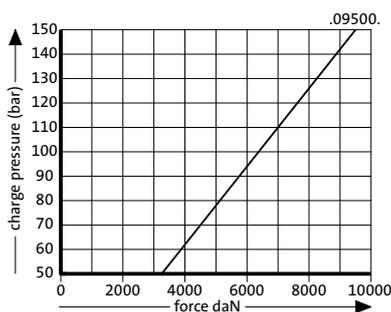


2488.13.09500.

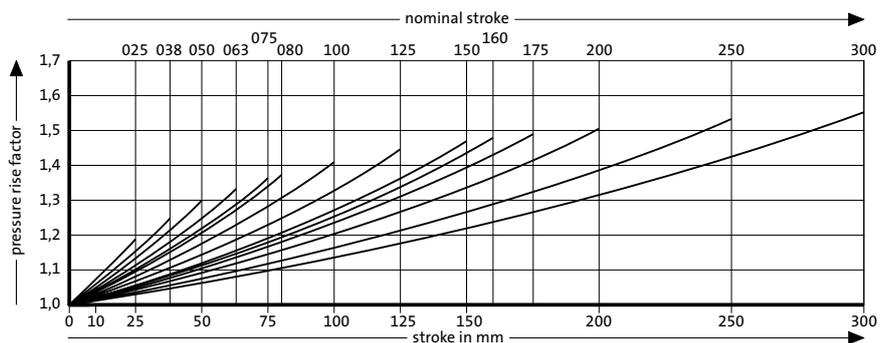
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.09500.025	25	180	205
2488.13.09500.038	38	193	231
2488.13.09500.050	50	205	255
2488.13.09500.063	63	218	281
2488.13.09500.075	75	230	305
2488.13.09500.080	80	235	315
2488.13.09500.100	100	255	355
2488.13.09500.125	125	280	405
2488.13.09500.150	150	305	455
2488.13.09500.160	160	315	475
2488.13.09500.175	175	330	505
2488.13.09500.200	200	355	555
2488.13.09500.250	250	405	655
2488.13.09500.300	300	455	755

Initial spring force versus charge pressure



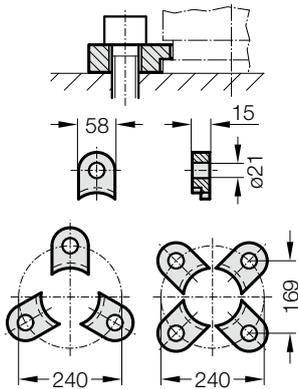
Spring force Diagram displacement versus stroke rise



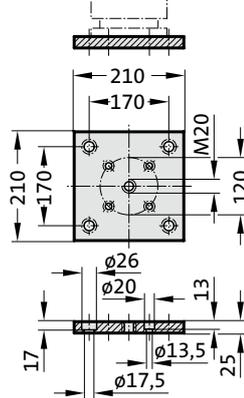
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

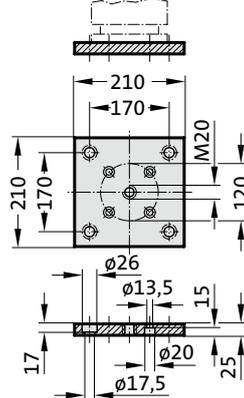
2480.007.10000



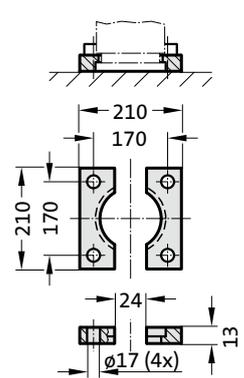
2480.011.10000



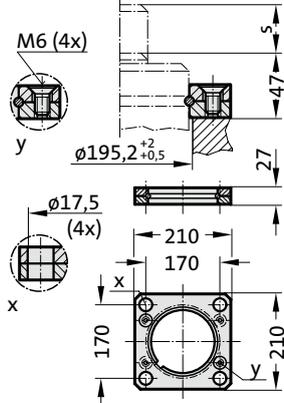
2480.011.10000.2



2480.022.10000



2480.057.10000



GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 20000 daN

Order No for spare parts kit: 2488.13.20000

Gas spring without valve

Order No (example): 2488.13.20000. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

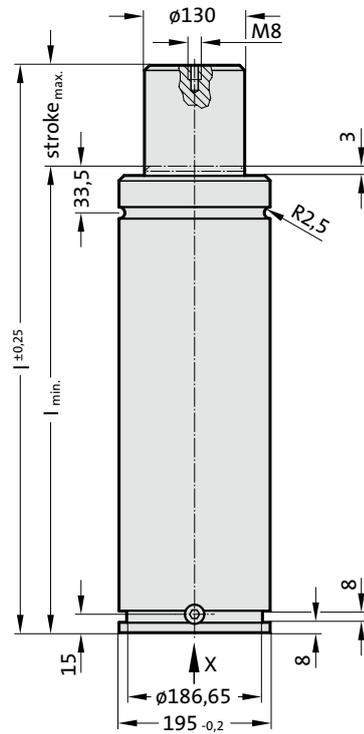
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

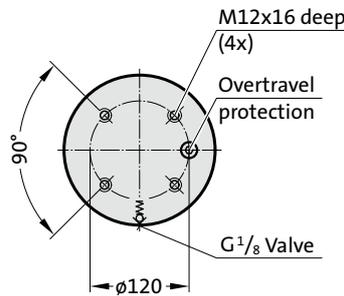
approx. 15 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2488.13.20000.



View X

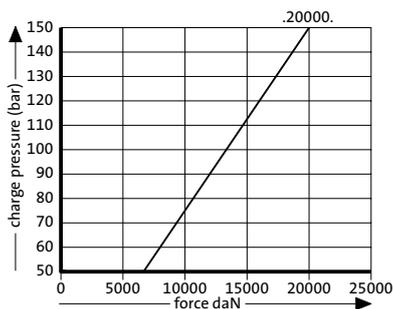


2488.13.20000.

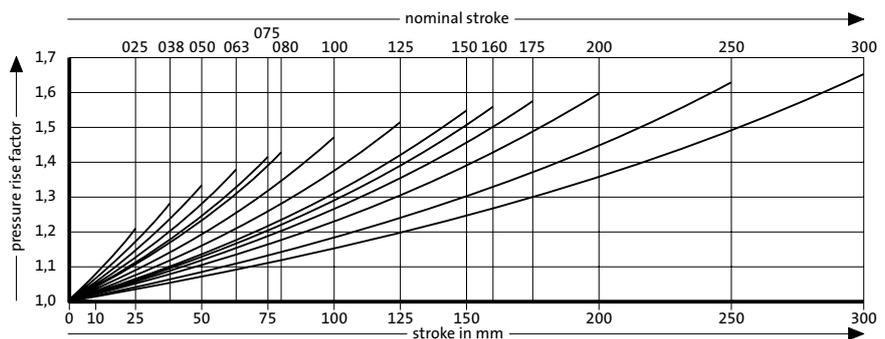
Gas spring HEAVY DUTY

Order No	Stroke _{max.} (s)	l _{min.}	l
2488.13.20000.025	25	185	210
2488.13.20000.038	38	198	236
2488.13.20000.050	50	210	260
2488.13.20000.063	63	223	286
2488.13.20000.075	75	235	310
2488.13.20000.080	80	240	320
2488.13.20000.100	100	260	360
2488.13.20000.125	125	285	410
2488.13.20000.150	150	310	460
2488.13.20000.160	160	320	480
2488.13.20000.175	175	335	510
2488.13.20000.200	200	360	560
2488.13.20000.250	250	410	660
2488.13.20000.300	300	460	760

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



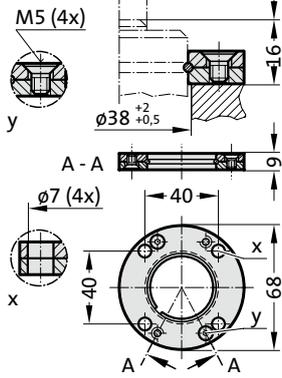
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH THROUGH BORE PASSAGE

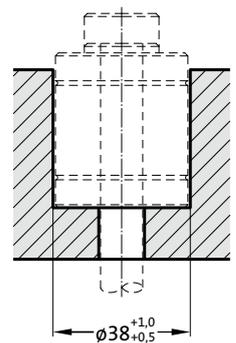
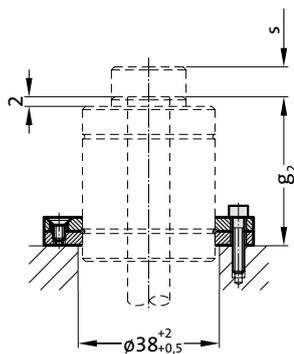
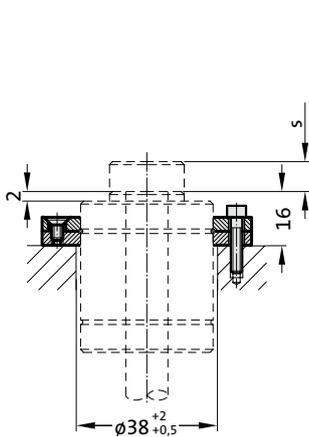
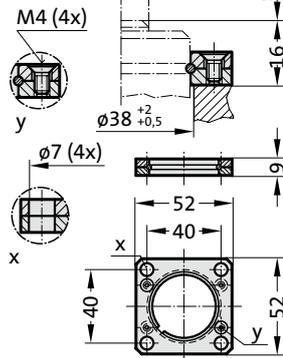


GAS SPRING WITH THROUGH BORE PASSAGE MOUNTING VARIATIONS

2480.055.00250



2480.057.00250



GAS SPRING WITH THROUGH BORE PASSAGE

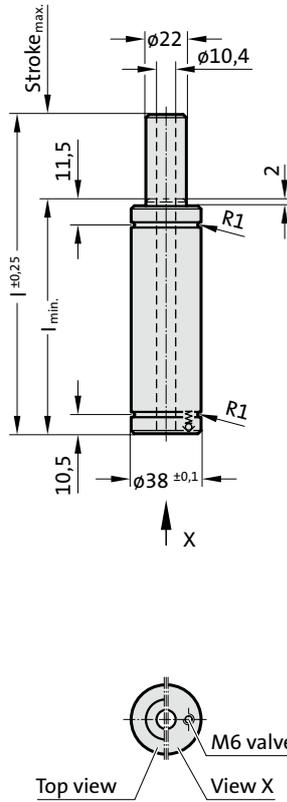
Note:

Initial spring force at 150 bar = 270 daN

Order No for spare parts kit: 2496.12.00270

- Pressure medium: Nitrogen N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 50 bar
- Working temperature: 0°C to +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
- Max. piston speed: 0.5 m/s

2496.12.00270.



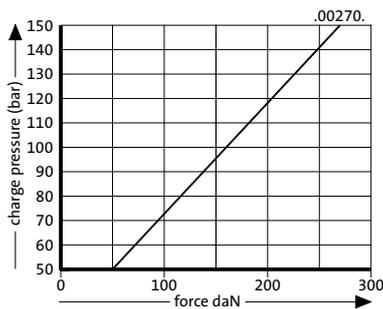
2496.12.00270.

Gas spring with through bore passage

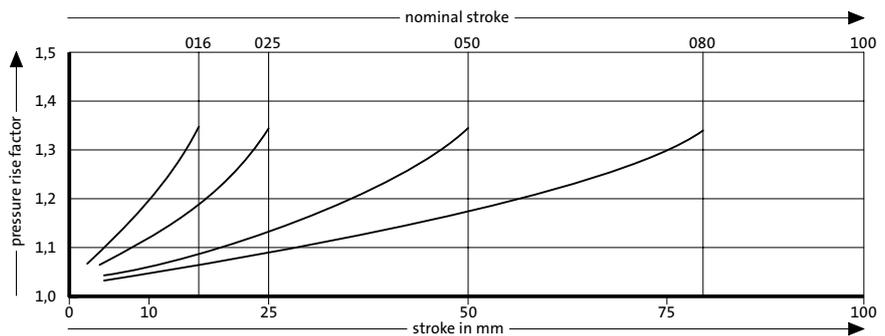
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2496.12.00270.016	16	92	108	86
2496.12.00270.025	25	101	126	95
2496.12.00270.050	50	126	176	120
2496.12.00270.080	80	156	236	150

see mounting example

Initial spring force versus charge pressure



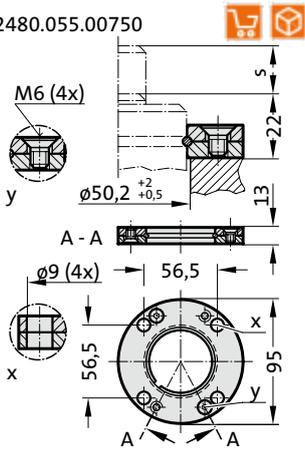
Spring force Diagram displacement versus stroke rise



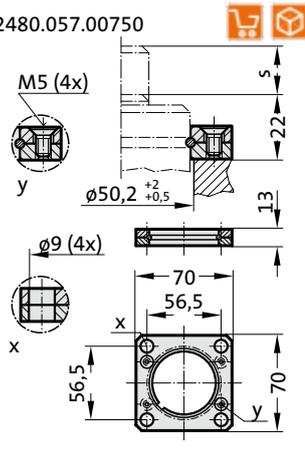
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH THROUGH BORE PASSAGE MOUNTING VARIATIONS

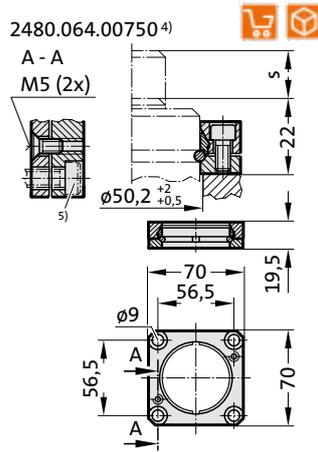
2480.055.00750



2480.057.00750



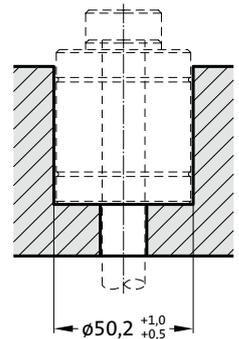
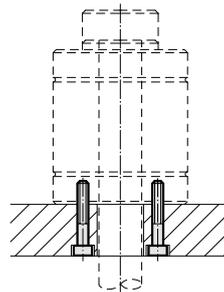
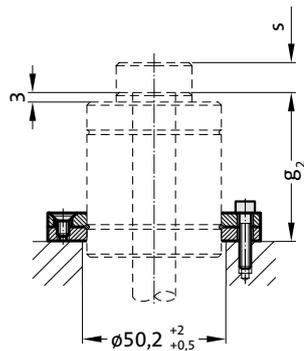
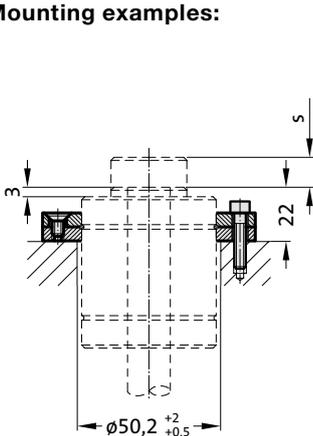
2480.064.00750⁴⁾



Note:

- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

Mounting examples:



GAS SPRING WITH THROUGH BORE PASSAGE

Note:

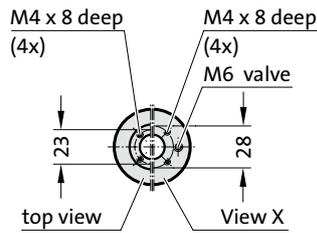
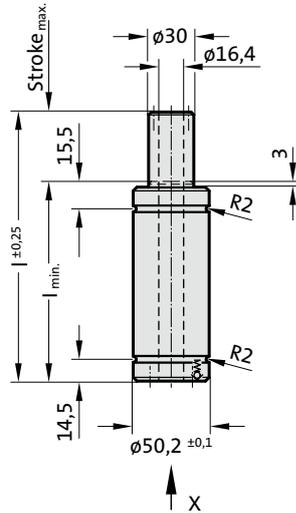
Initial spring force at 150 bar = 490 daN

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!

Order No for spare parts kit: 2496.12.00490

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 50 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 0.5 m/s

2496.12.00490.



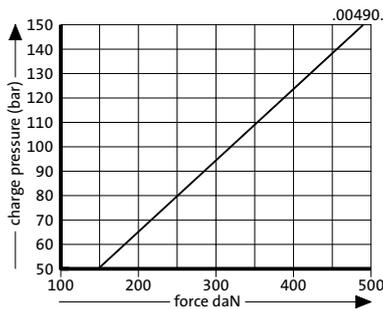
2496.12.00490.

Gas spring with through bore passage

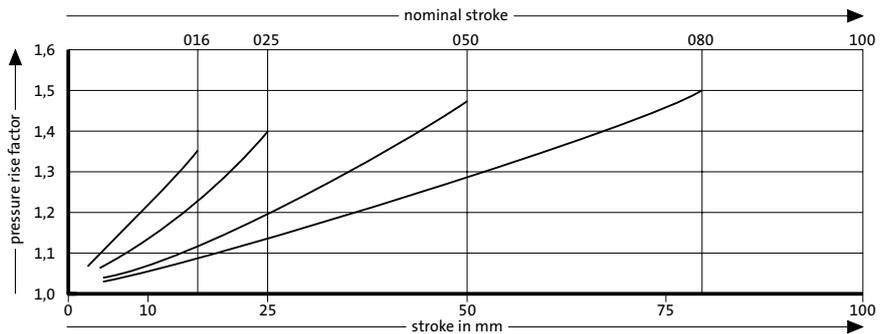
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2496.12.00490.016	16	96	112	88
2496.12.00490.025	25	105	130	97
2496.12.00490.050	50	130	180	122
2496.12.00490.080	80	160	240	152

see mounting example

Initial spring force versus charge pressure



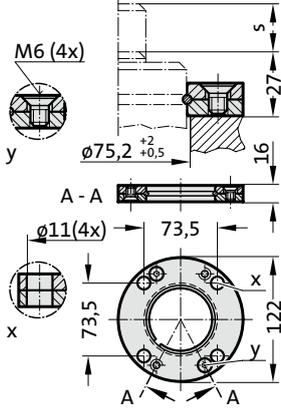
Spring force Diagram displacement versus stroke rise



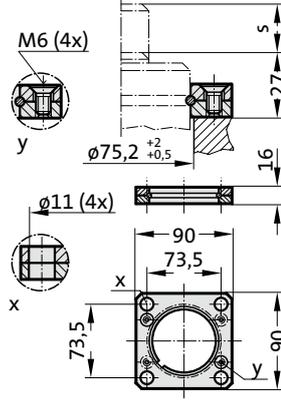
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH THROUGH BORE PASSAGE MOUNTING VARIATIONS

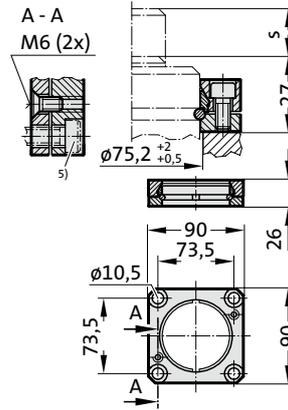
2480.055.01500



2480.057.01500



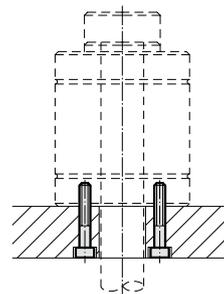
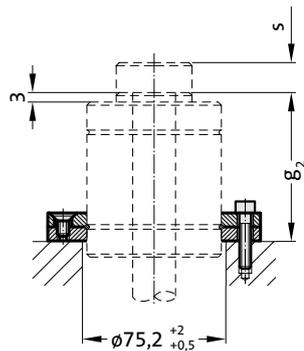
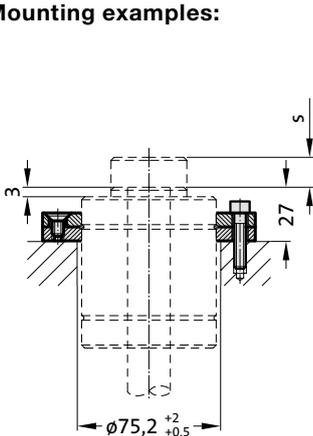
2480.064.01500⁴⁾



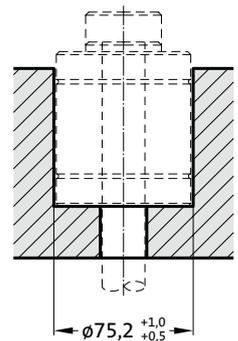
Note:

- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

Mounting examples:



see Note!



GAS SPRING WITH THROUGH BORE PASSAGE

Note:

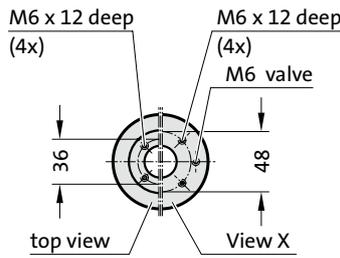
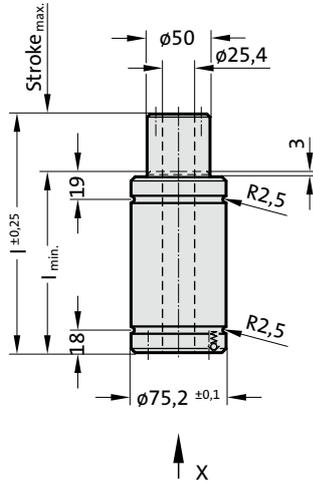
Initial spring force at 150 bar = 1060 daN

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!

Order No for spare parts kit: 2496.12.01060

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 50 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 15 to 40 (at 20°C)
 Max. piston speed: 0.5 m/s

2496.12.01060.



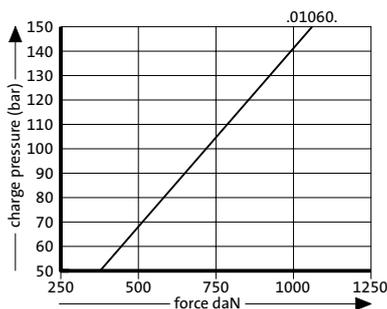
2496.12.01060.

Gas spring with through bore passage

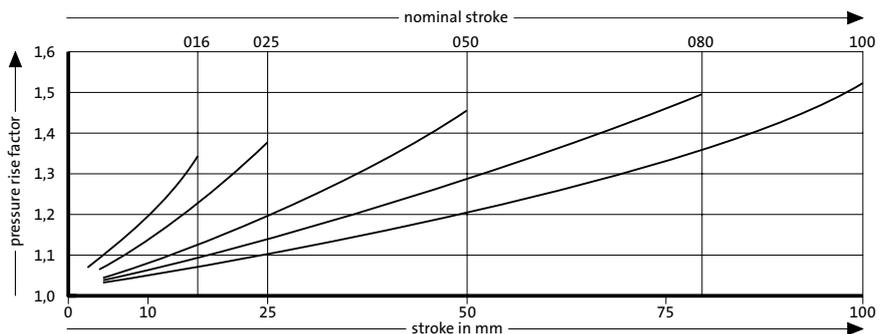
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2496.12.01060.016	16	106	122	96
2496.12.01060.025	25	115	140	105
2496.12.01060.050	50	140	190	130
2496.12.01060.080	80	170	250	160
2496.12.01060.100	100	190	290	180

see mounting example

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



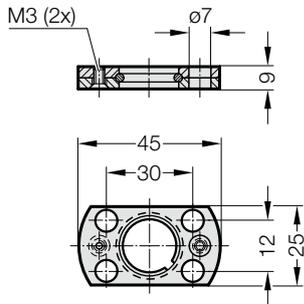
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS POWERLINE

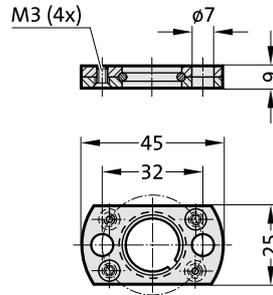


GAS SPRING POWERLINE MOUNTING VARIATIONS

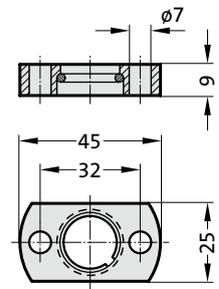
2480.051.01.00030



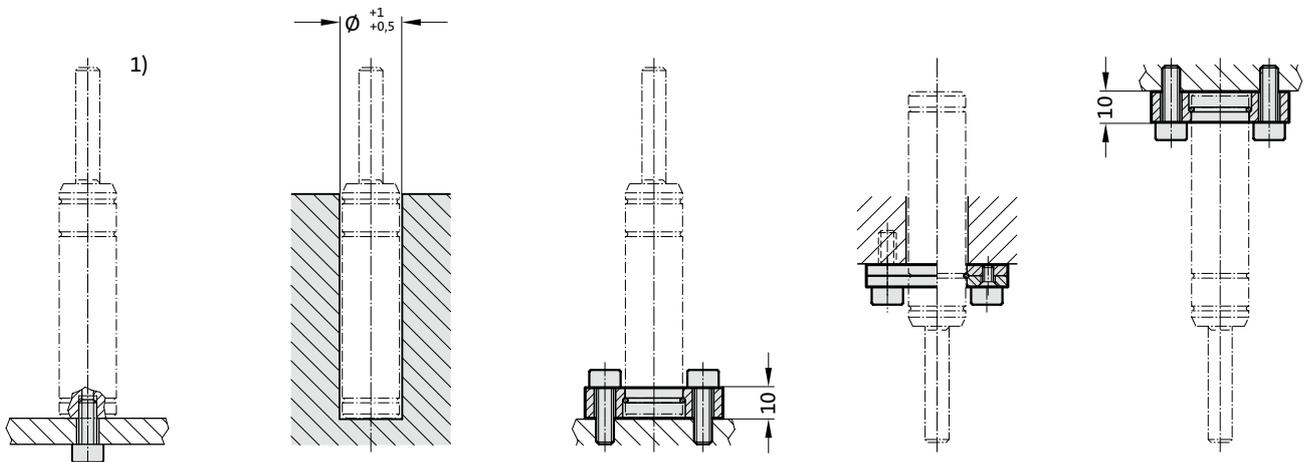
2480.051.03.00030



2480.052.00030



Mounting examples:



GAS SPRING POWERLINE

Note:

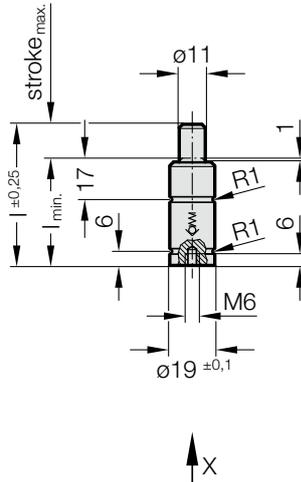
Initial spring force at 180 bar = 170 daN

Worn gas springs cannot be repaired, they have to be replaced completely.

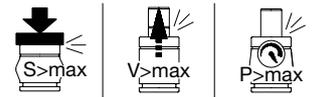
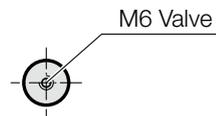
1) Fixing at bottom thread only recommended for stroke length up to 25 mm.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 180 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 40 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

2487.12.00170.



View X

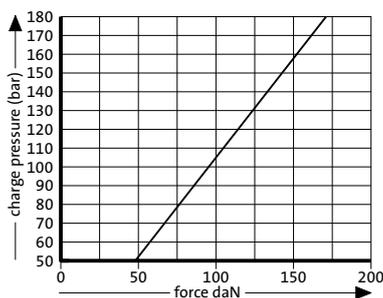


2487.12.00170.

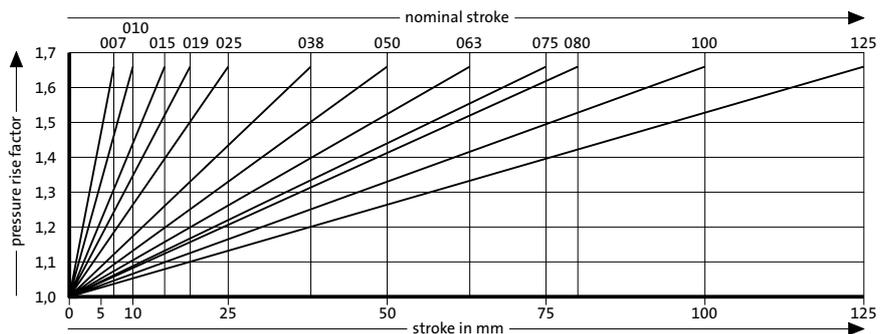
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.00170.007	7	37	44
2487.12.00170.010	10	40	50
2487.12.00170.015	15	45	60
2487.12.00170.019	19	49	68
2487.12.00170.025	25	55	80
2487.12.00170.038	38	68	106
2487.12.00170.050	50	80	130
2487.12.00170.063	63	93	156
2487.12.00170.075	75	110	185
2487.12.00170.080	80	115	195
2487.12.00170.100	100	135	235
2487.12.00170.125	125	160	285

Initial spring force versus charge pressure



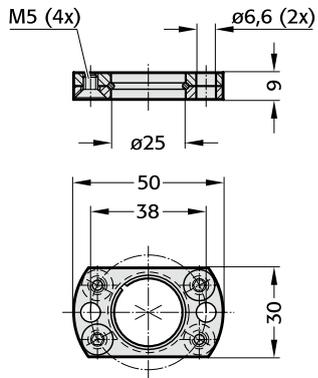
Spring force Diagram displacement versus stroke rise



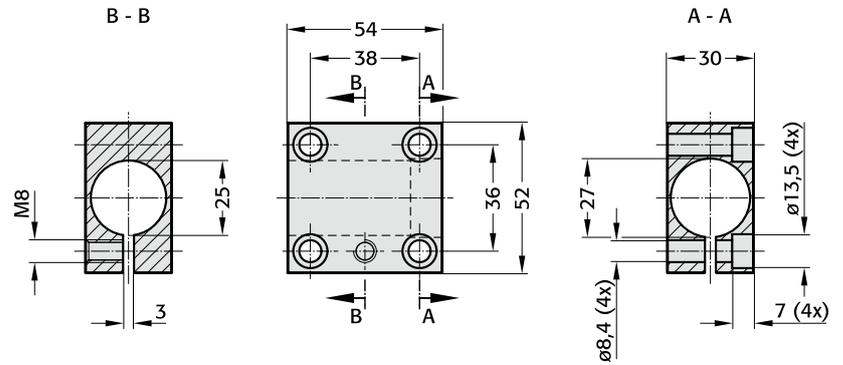
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

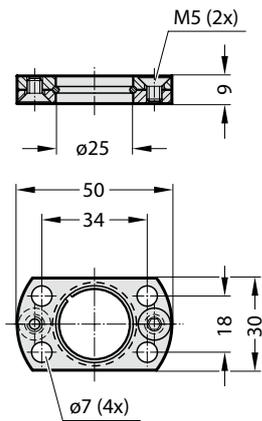
2480.051.00150



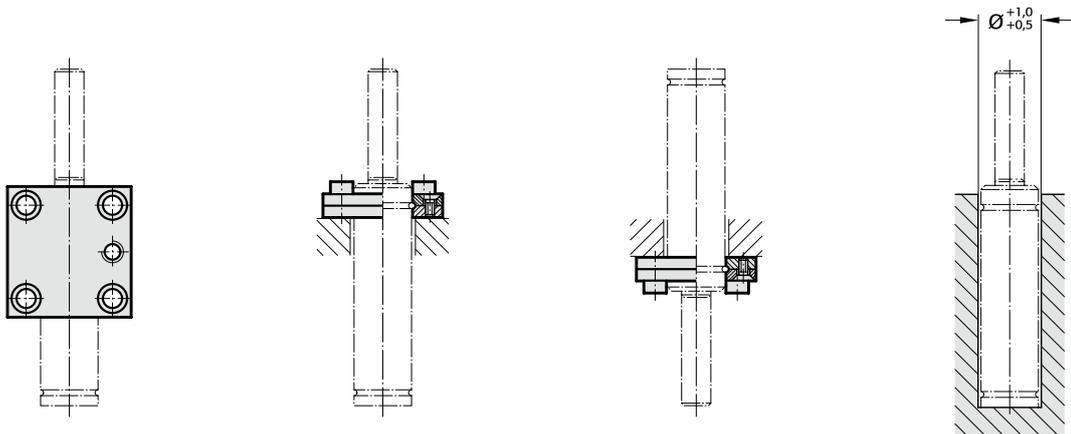
2480.053.00150



2480.054.00150

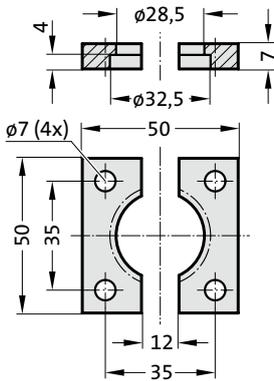


Mounting examples:

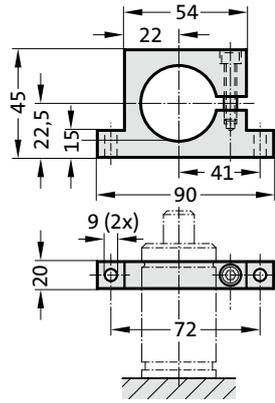


GAS SPRING POWERLINE MOUNTING VARIATIONS

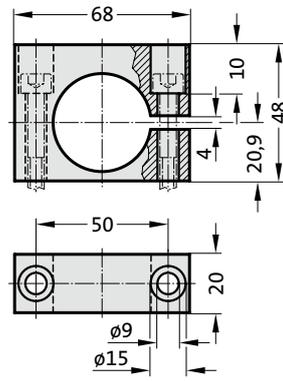
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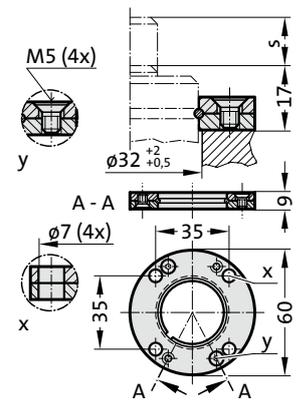
2480.044.00150²⁾



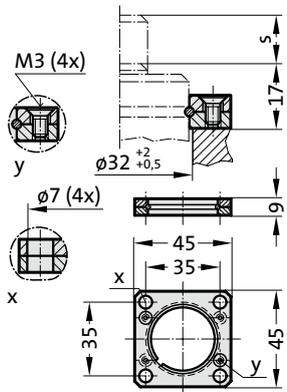
2480.044.03.00150²⁾



2480.055.00150



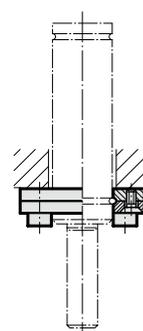
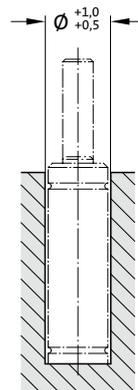
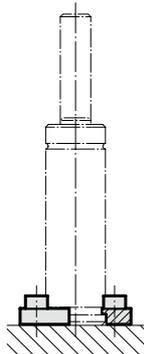
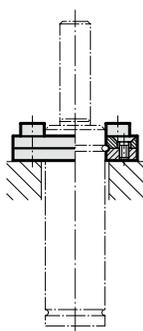
2480.057.00150



Note:

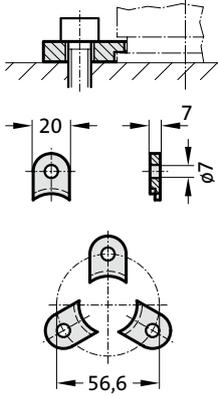
²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:

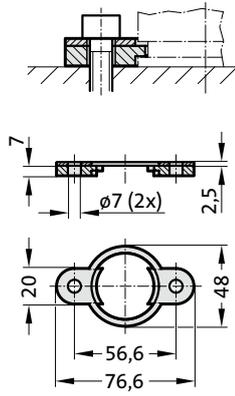


GAS SPRING POWERLINE MOUNTING VARIATIONS

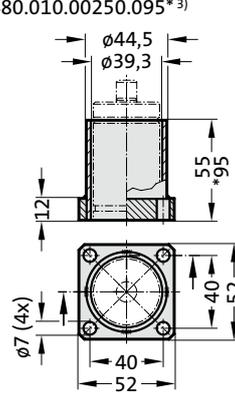
2480.007.00250



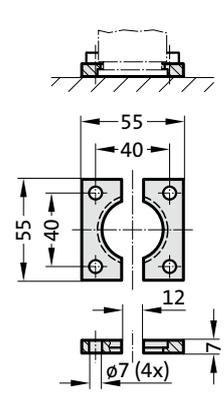
2480.008.00250³⁾



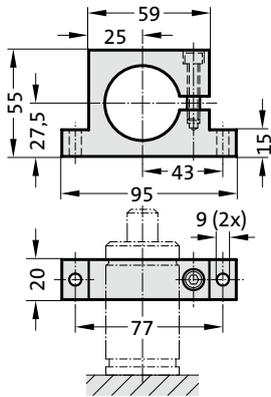
2480.010.00250.055³⁾
2480.010.00250.095*³⁾



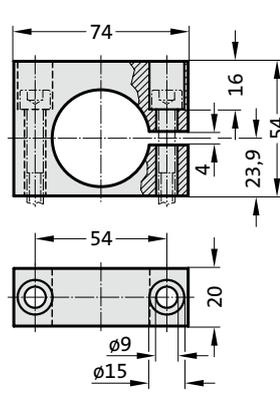
2480.022.00250



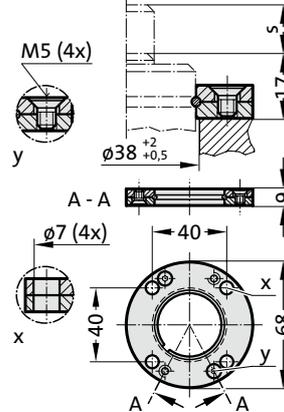
2480.044.00250²⁾



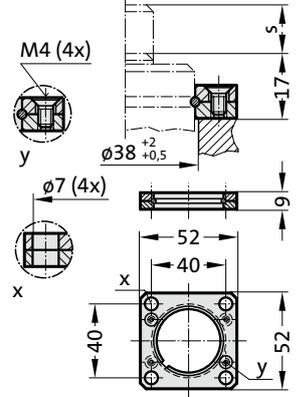
2480.044.03.00250²⁾



2480.055.00250



2480.057.00250



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2487.12.00500

Gas spring without valve

Order No (example): 2487.12.00500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

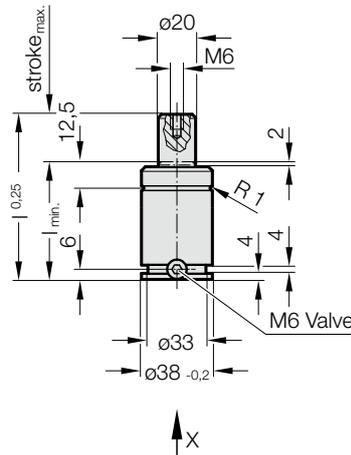
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

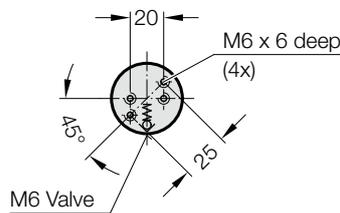
approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.00500.



View X

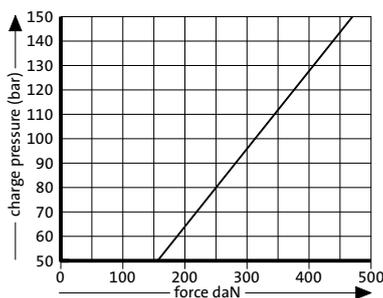


2487.12.00500.

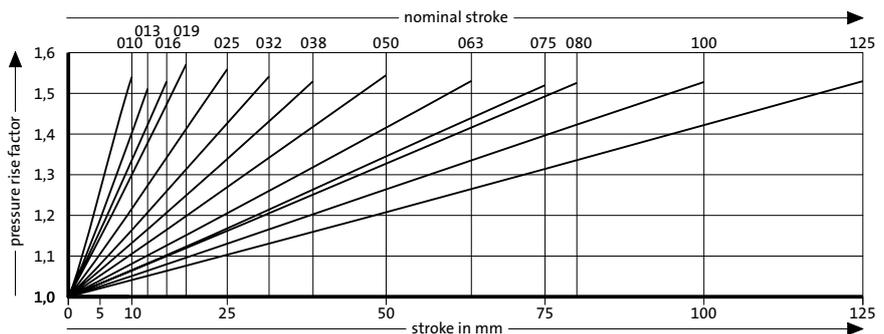
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.00500.010	10	40	50
2487.12.00500.013	13	43	56
2487.12.00500.016	16	46	62
2487.12.00500.019	19	49	68
2487.12.00500.025	25	55	80
2487.12.00500.032	32	62	94
2487.12.00500.038	38	68	106
2487.12.00500.050	50	80	130
2487.12.00500.063	63	93	156
2487.12.00500.075	75	105	180
2487.12.00500.080	80	110	190
2487.12.00500.100	100	130	230
2487.12.00500.125	125	155	280

Initial spring force versus charge pressure



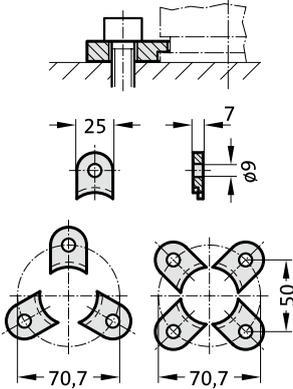
Spring force Diagram displacement versus stroke rise



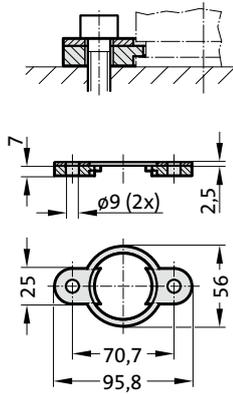
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

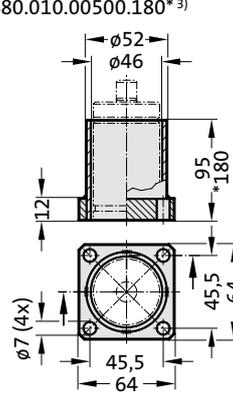
2480.007.00500



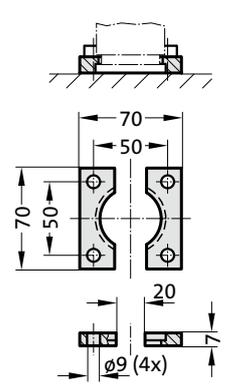
2480.008.00500³⁾



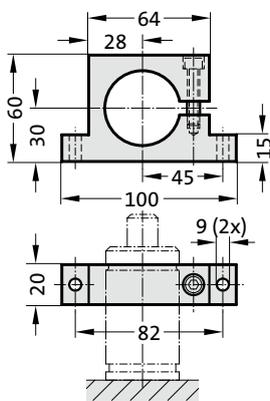
2480.010.00500.095³⁾
2480.010.00500.180*³⁾



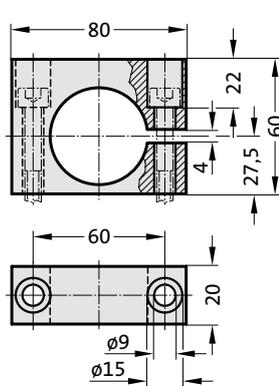
2480.022.00500



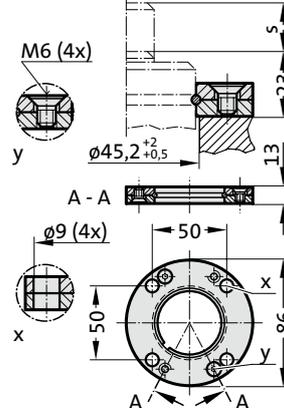
2480.044.00500²⁾



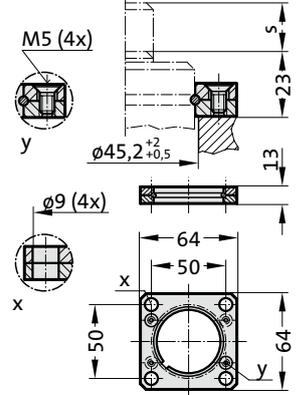
2480.044.03.00500²⁾



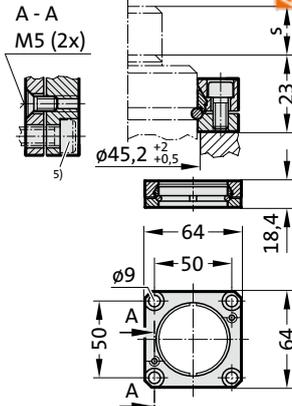
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾

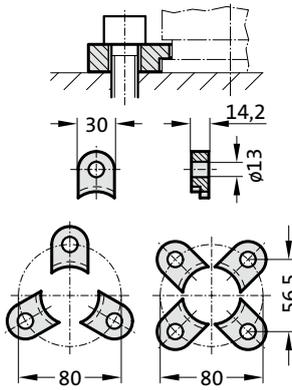


Note:

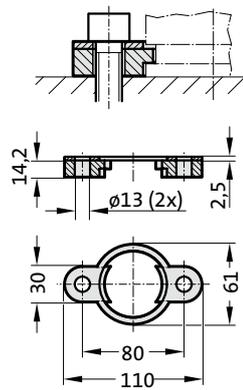
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE MOUNTING VARIATIONS

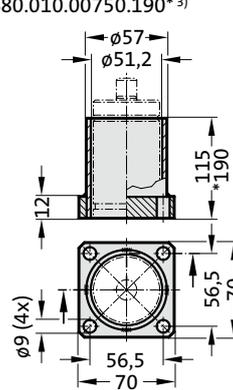
2480.007.00750



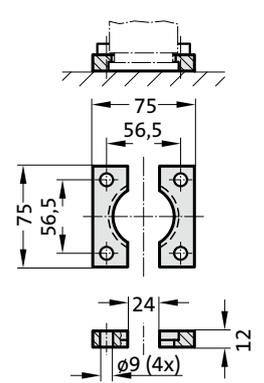
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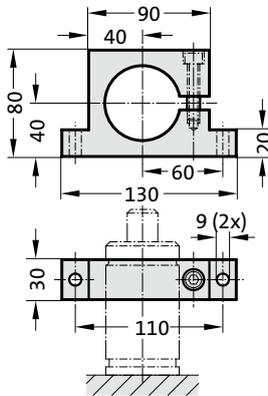
2480.010.00750.115³⁾
2480.010.00750.190*³⁾



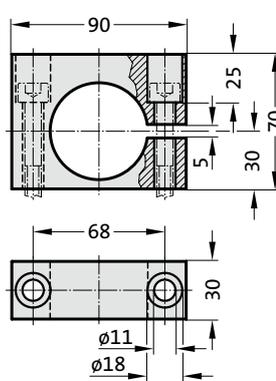
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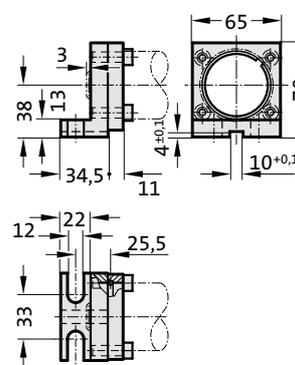
2480.044.00750²⁾



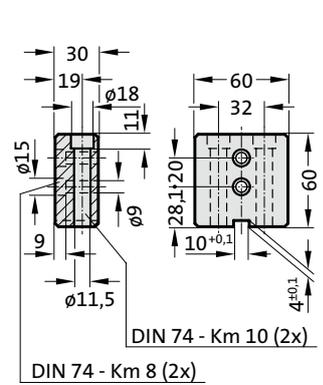
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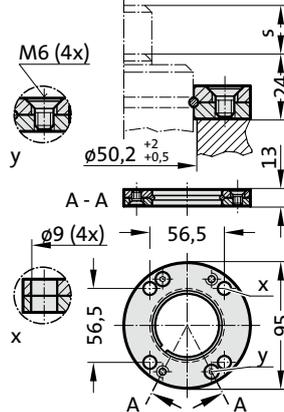
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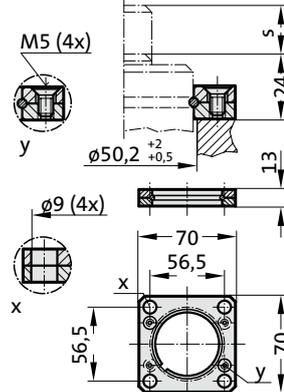
2480.047.00750²⁾



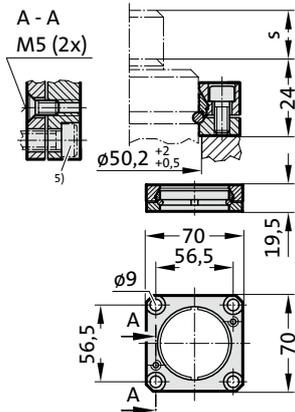
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾

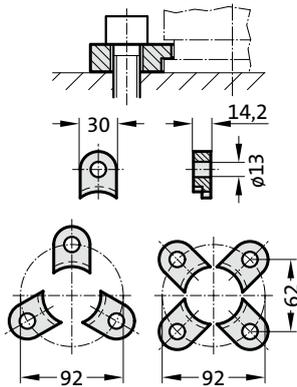


Note:

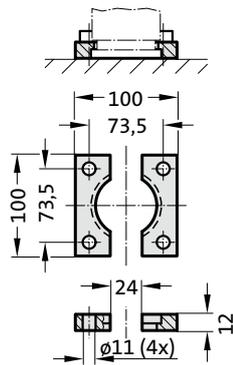
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE MOUNTING VARIATIONS

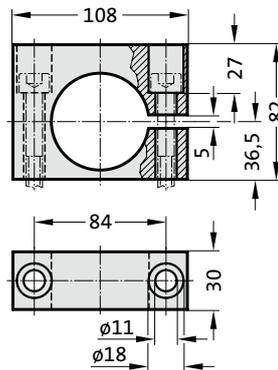
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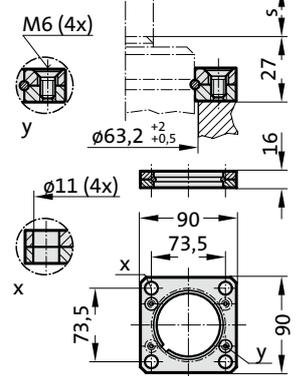
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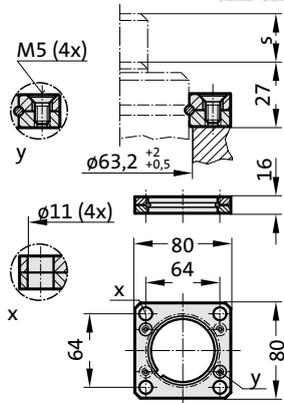
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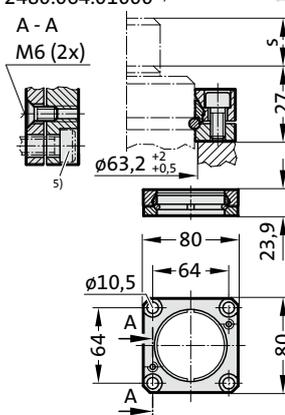
2480.057.01000



2480.057.03.01000



2480.064.01000⁴⁾



Note:

²⁾ Attention:

The spring force must be absorbed by the stop Surface!

⁴⁾ Square collar flange, non-rotating, fixing for composite connection.

⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2487.12.01500

Gas spring without valve

Order No (example): 2487.12.01500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

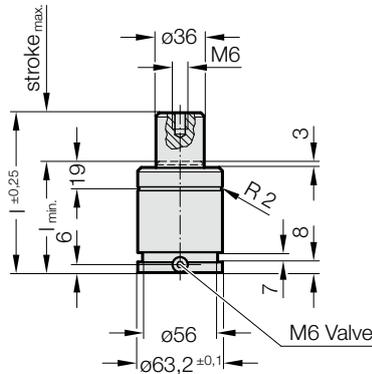
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 50 to 100 (at 20°C)

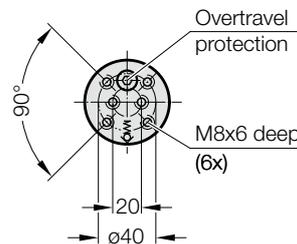
Max. piston speed: 1.6 m/s

2487.12.01500.



↑ X

View X

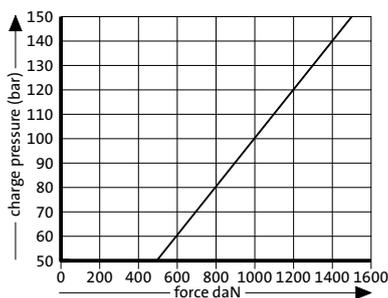


2487.12.01500.

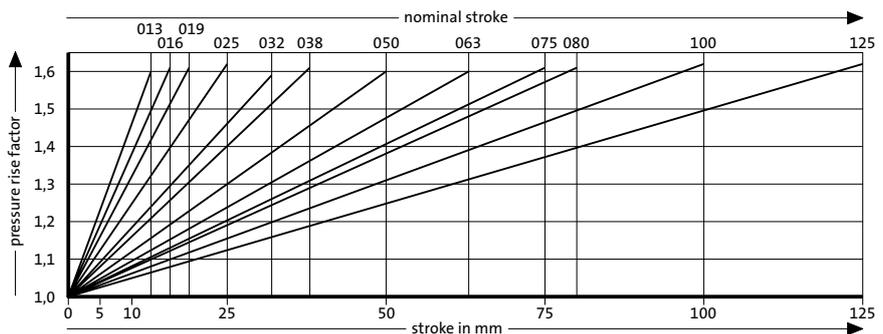
Gas spring POWERLINE

Order No	Stroke _{max} (s)	l _{min}	l
2487.12.01500.013	13	57	70
2487.12.01500.016	16	60	76
2487.12.01500.019	19	63	82
2487.12.01500.025	25	69	94
2487.12.01500.032	32	76	108
2487.12.01500.038	38	82	120
2487.12.01500.050	50	94	144
2487.12.01500.063	63	107	170
2487.12.01500.075	75	119	194
2487.12.01500.080	80	124	204
2487.12.01500.100	100	144	244
2487.12.01500.125	125	169	294

Initial spring force versus charge pressure



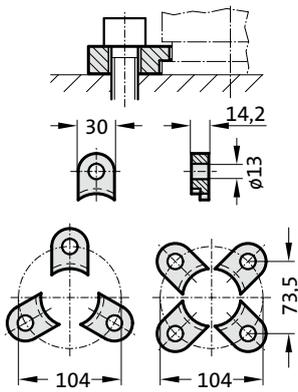
Spring force Diagram displacement versus stroke rise



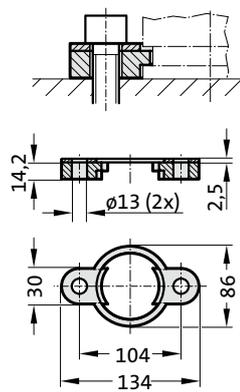
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

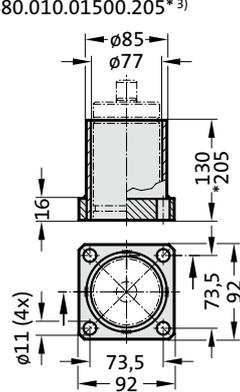
2480.007.01500



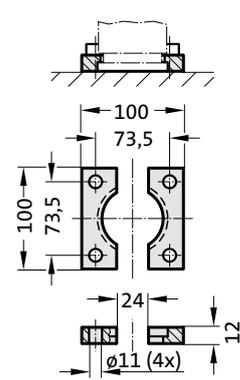
2480.008.01500³⁾



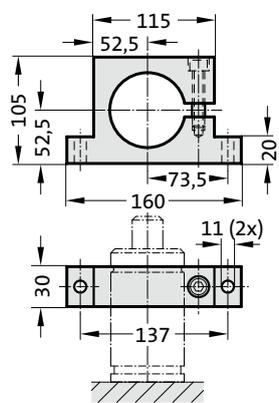
2480.010.01500.130³⁾
2480.010.01500.205³⁾



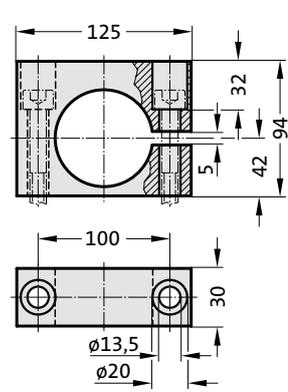
2480.022.01500



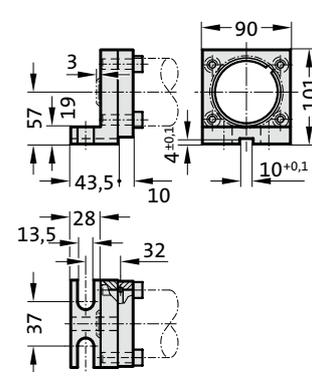
2480.044.01500²⁾



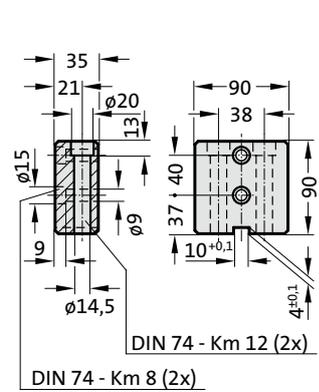
2480.044.03.01500²⁾



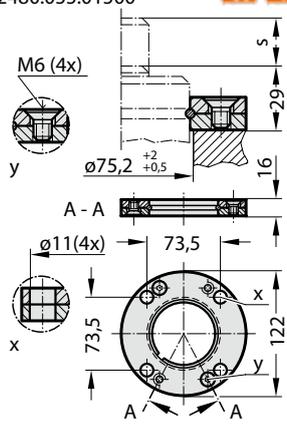
2480.045.01500²⁾



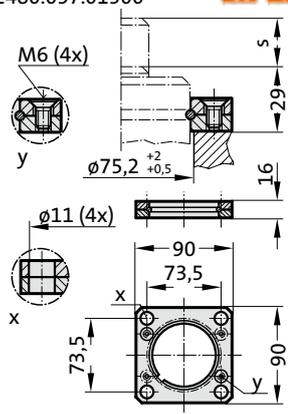
2480.047.01500²⁾



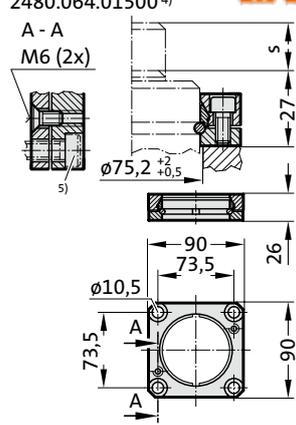
2480.055.01500



2480.057.01500



2480.064.01500⁴⁾

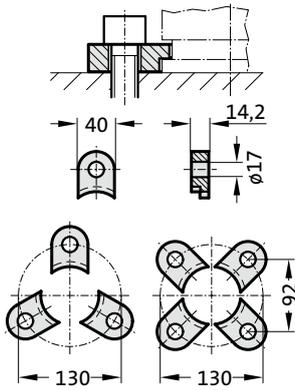


Note:

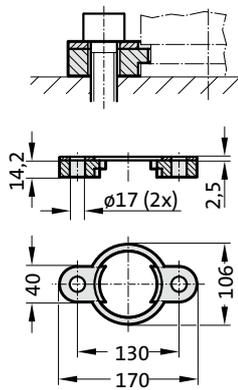
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE MOUNTING VARIATIONS

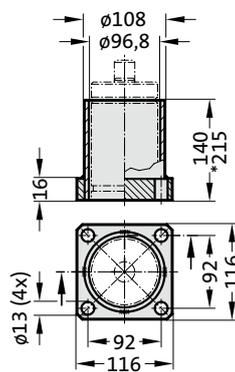
2480.007.03000



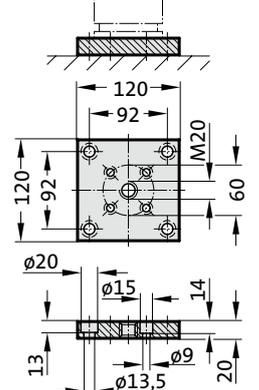
2480.008.03000³⁾



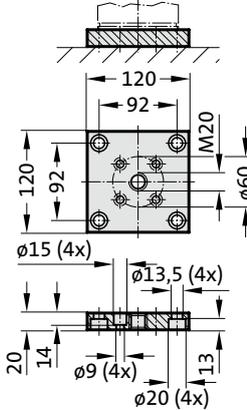
2480.010.03000.140³⁾
2480.010.03000.215*³⁾



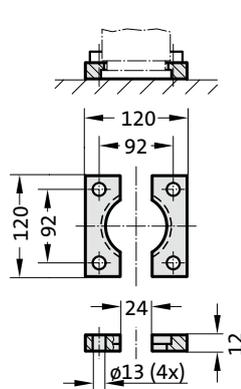
2480.011.03000



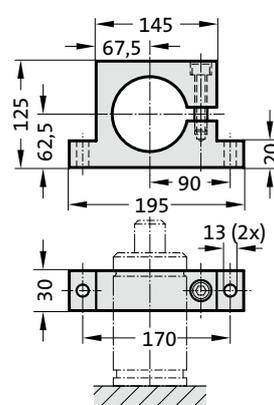
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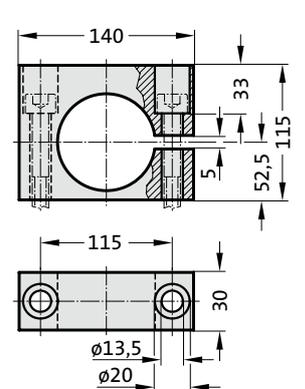
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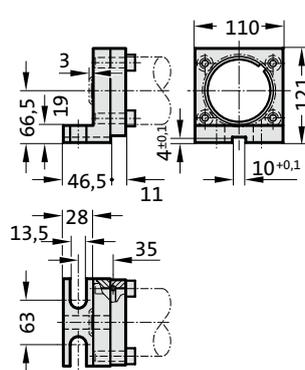
2480.044.03000²⁾



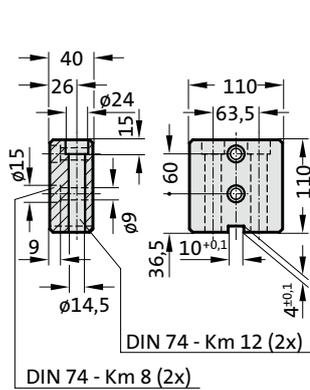
2480.044.03.03000²⁾



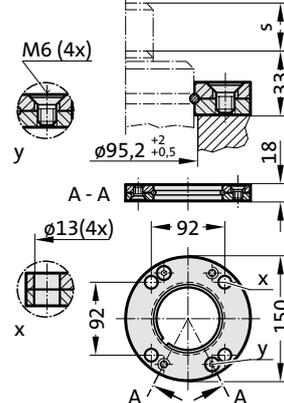
2480.045.03000²⁾



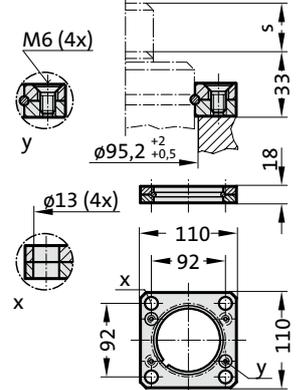
2480.047.03000²⁾



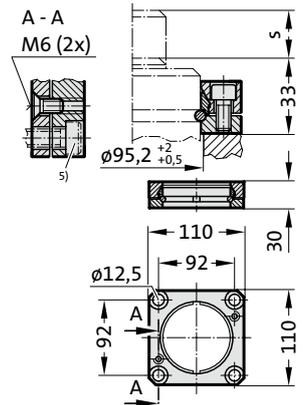
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 4200 daN

Order No for spare parts kit: 2487.12.04200

Gas spring without valve

Order No (example): 2487.12.04200. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

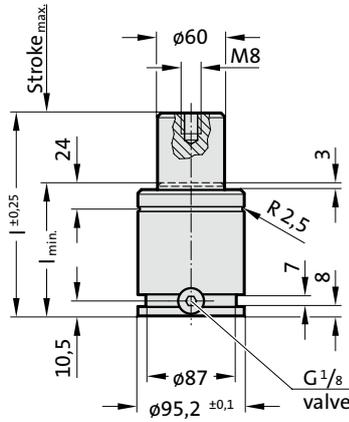
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 20 to 100 (at 20°C)

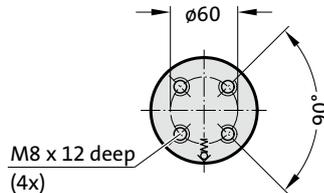
Max. piston speed: 1.6 m/s

2487.12.04200.



X

View X

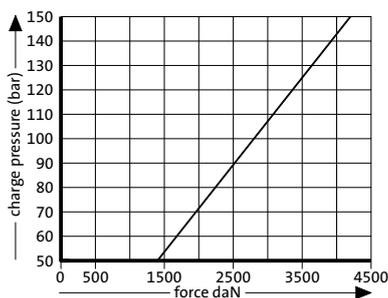


2487.12.04200.

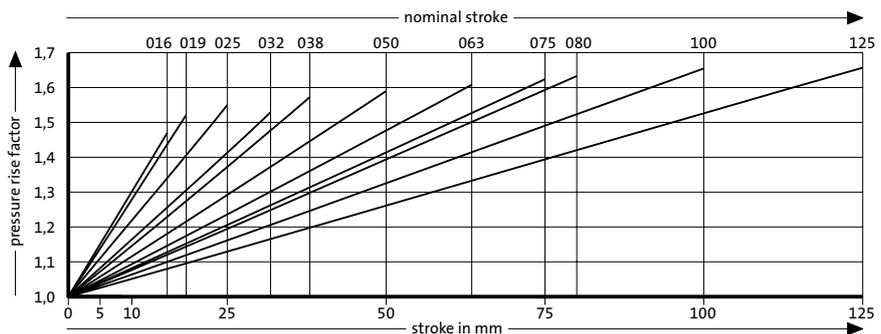
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	I _{min.}	I
2487.12.04200.016	16	74	90
2487.12.04200.019	19	77	96
2487.12.04200.025	25	83	108
2487.12.04200.032	32	90	122
2487.12.04200.038	38	96	134
2487.12.04200.050	50	108	158
2487.12.04200.063	63	121	184
2487.12.04200.075	75	133	208
2487.12.04200.080	80	138	218
2487.12.04200.100	100	158	258
2487.12.04200.125	125	183	308

Initial spring force versus charge pressure



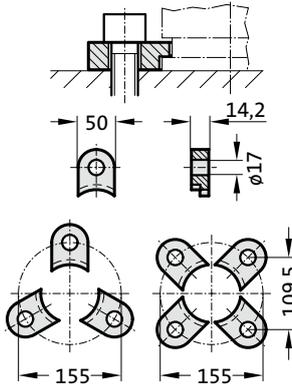
Spring force Diagram displacement versus stroke rise



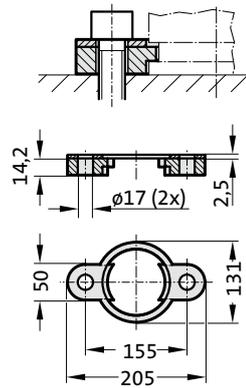
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

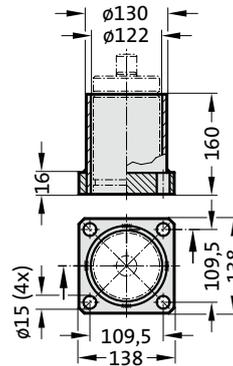
2480.007.05000



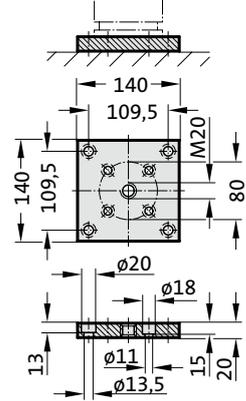
2480.008.05000³⁾



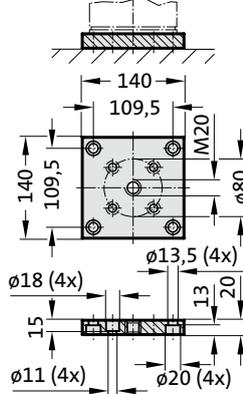
2480.010.05000.160³⁾



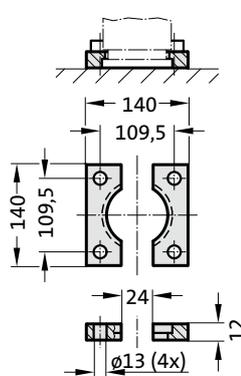
2480.011.05000



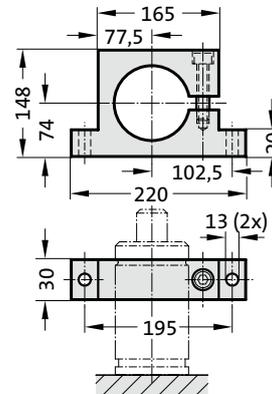
2480.011.05000.2



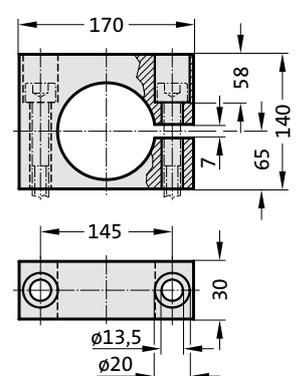
2480.022.05000



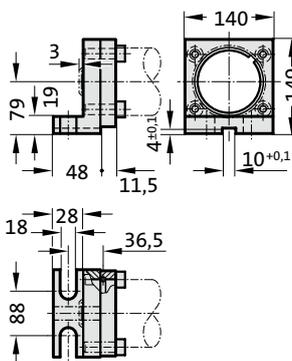
2480.044.05000²⁾



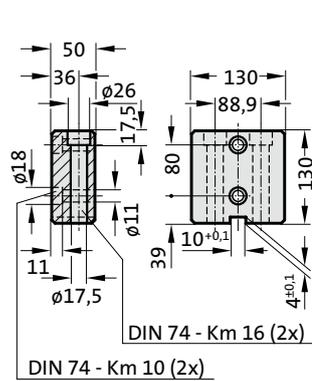
2480.044.03.05000²⁾



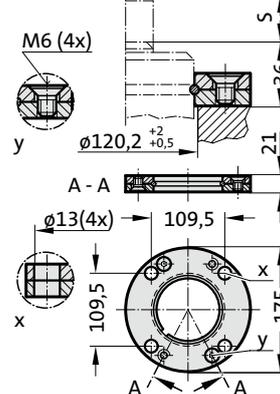
2480.045.05000²⁾



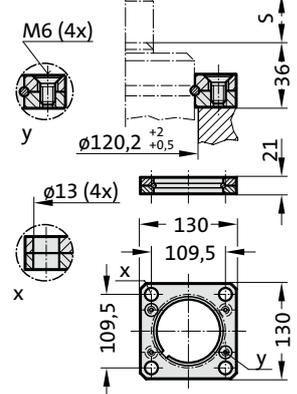
2480.047.05000²⁾



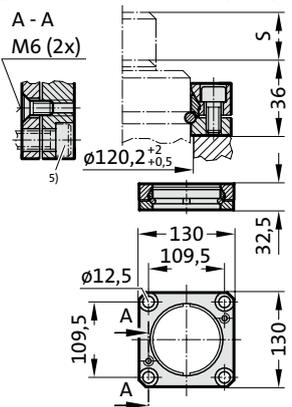
2480.055.05000



2480.057.05000



2480.064.05000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 6630 daN

Order No for spare parts kit: 2487.12.06600

Gas spring without valve

Order No (example): 2487.12.06600. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

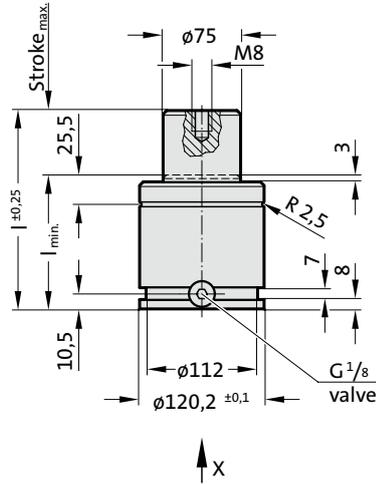
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

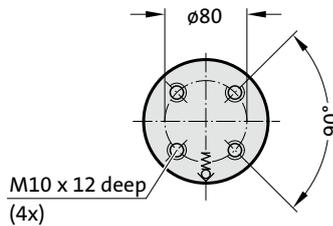
approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.06600.



View X

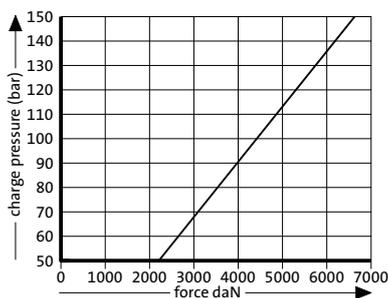


2487.12.06600.

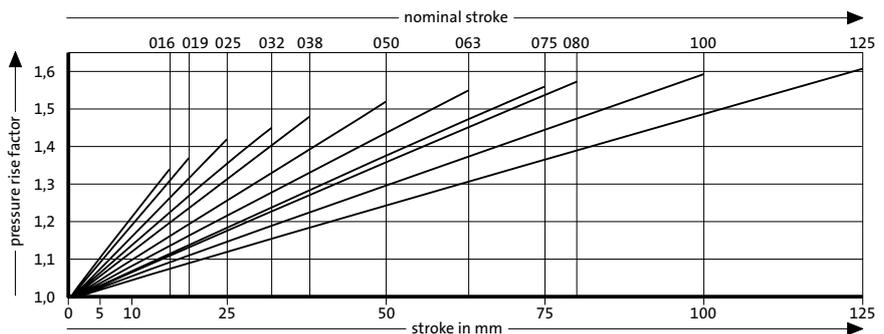
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.06600.016	16	84	100
2487.12.06600.019	19	87	106
2487.12.06600.025	25	93	118
2487.12.06600.032	32	100	132
2487.12.06600.038	38	106	144
2487.12.06600.050	50	118	168
2487.12.06600.063	63	131	194
2487.12.06600.075	75	143	218
2487.12.06600.080	80	148	228
2487.12.06600.100	100	168	268
2487.12.06600.125	125	193	318

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 9500 daN

Order No for spare parts kit: 2487.12.09500

Gas spring without valve

Order No (example): 2487.12.09500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

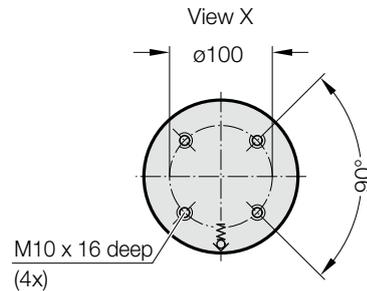
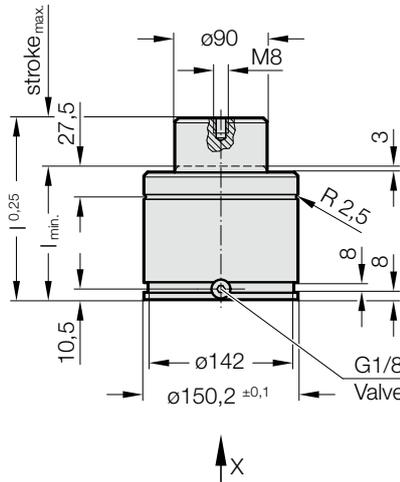
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.09500.

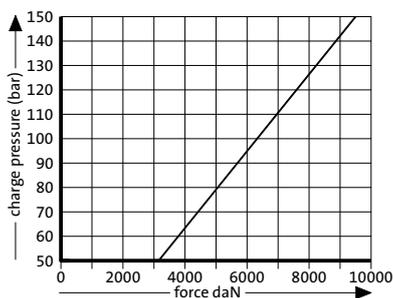


2487.12.09500.

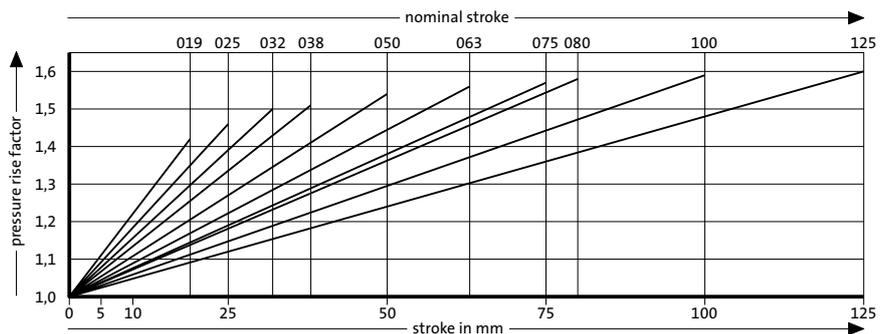
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.09500.019	19	97	116
2487.12.09500.025	25	103	128
2487.12.09500.032	32	110	142
2487.12.09500.038	38	116	154
2487.12.09500.050	50	128	178
2487.12.09500.063	63	141	204
2487.12.09500.075	75	153	228
2487.12.09500.080	80	158	238
2487.12.09500.100.	100	178	278
2487.12.09500.125.	125	203	328

Initial spring force versus charge pressure



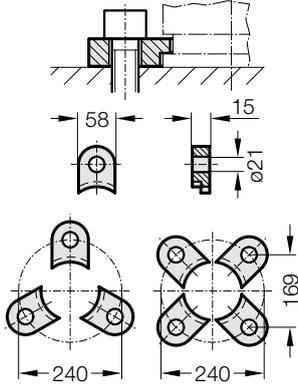
Spring force Diagram displacement versus stroke rise



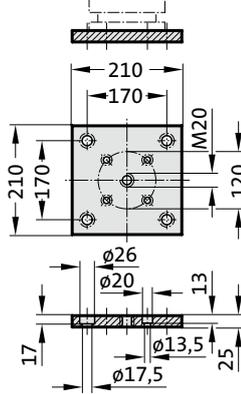
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

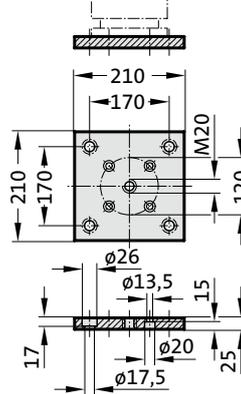
2480.007.10000



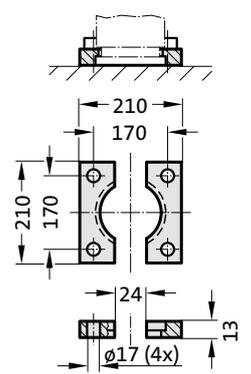
2480.011.10000



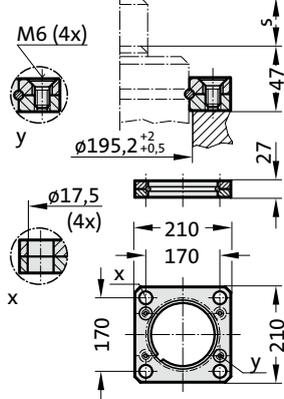
2480.011.10000.2



2480.022.10000



2480.057.10000



GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 20000 daN

Order No for spare parts kit: 2487.12.20000

Gas spring without valve

Order No (example): 2487.12.20000. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

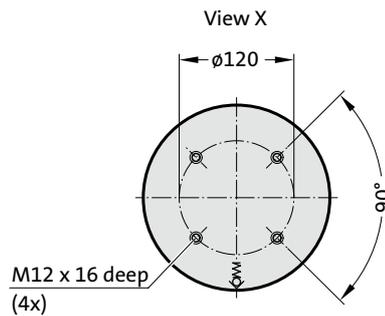
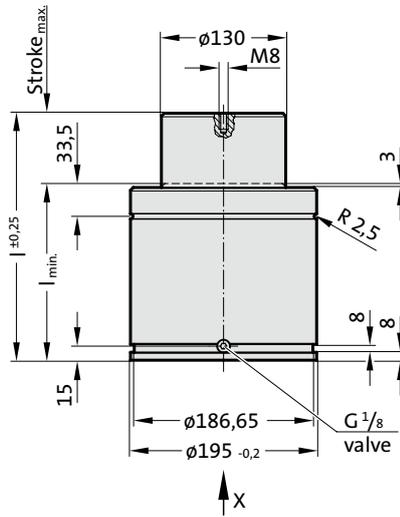
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 10 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.20000.

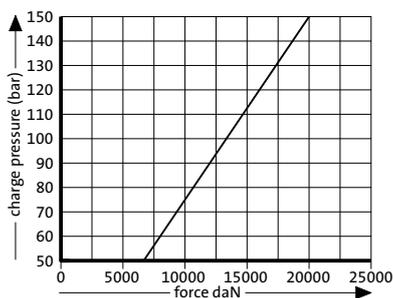


2487.12.20000.

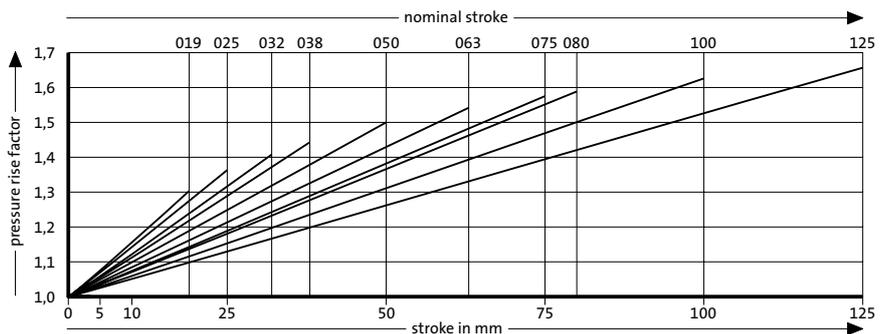
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.20000.019	19	129	148
2487.12.20000.025	25	135	160
2487.12.20000.032	32	142	174
2487.12.20000.038	38	148	186
2487.12.20000.050	50	160	210
2487.12.20000.063	63	173	236
2487.12.20000.075	75	185	260
2487.12.20000.080	80	190	270
2487.12.20000.100	100	210	310
2487.12.20000.125	125	235	360

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS POWERLINE, WITH REINFORCED SPRING BASE



GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

Note:

Initial spring force at 180 bar = 350 daN

Order No for spare parts kit: 2487.12.00350

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

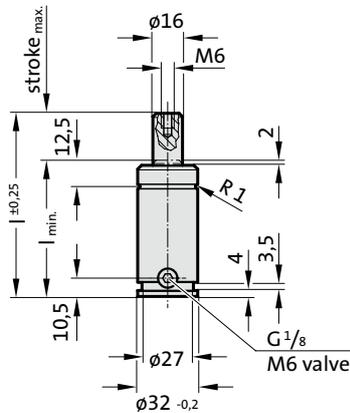
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

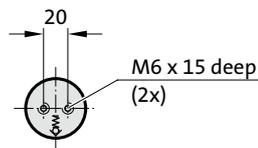
Max. recommended extensions per minute: approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.33.00350.



View X

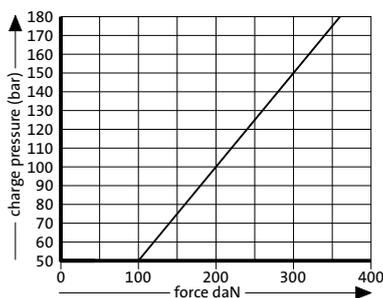


2487.12.33.00350.

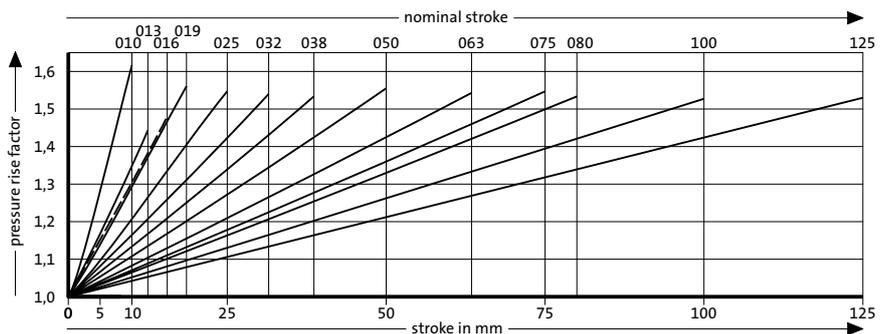
Gas spring POWERLINE with reinforced spring base

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.33.00350.010	10	50	60
2487.12.33.00350.013	13	53	66
2487.12.33.00350.016	16	56	72
2487.12.33.00350.019	19	59	78
2487.12.33.00350.025	25	65	90
2487.12.33.00350.032	32	72	104
2487.12.33.00350.038	38	78	116
2487.12.33.00350.050	50	90	140
2487.12.33.00350.063	63	103	166
2487.12.33.00350.075	75	115	190
2487.12.33.00350.080	80	120	200
2487.12.33.00350.100	100	140	240
2487.12.33.00350.125	125	165	290

Initial spring force versus charge pressure



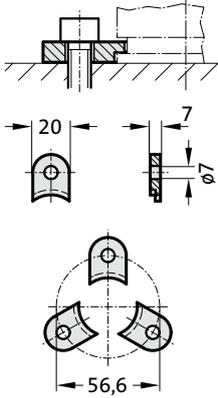
Spring force Diagram displacement versus stroke rise



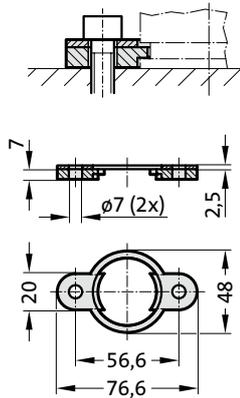
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

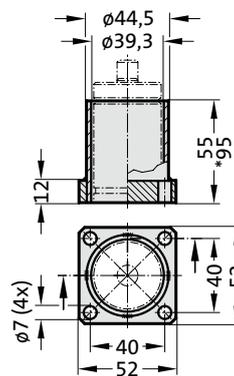
2480.007.00250



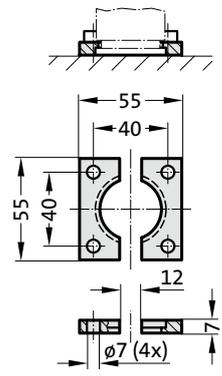
2480.008.00250³⁾



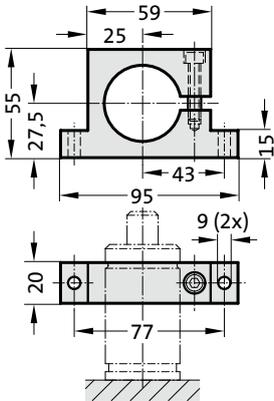
2480.010.00250.055³⁾
2480.010.00250.095*³⁾



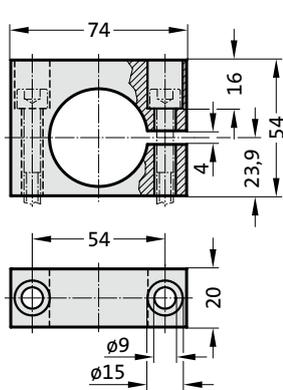
2480.022.00250



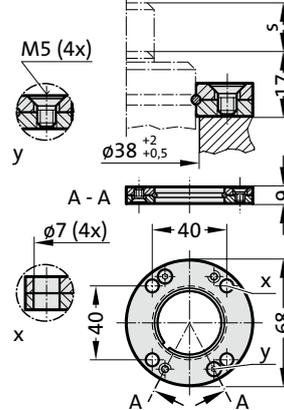
2480.044.00250²⁾



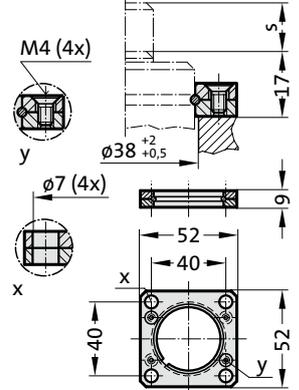
2480.044.03.00250²⁾



2480.055.00250



2480.057.00250



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

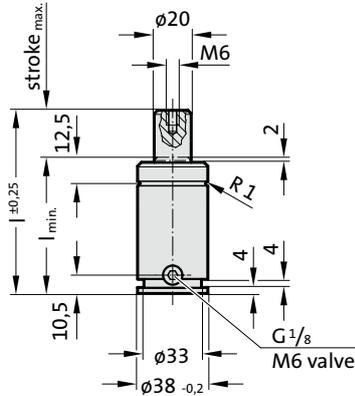
Note:

Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2487.12.00500

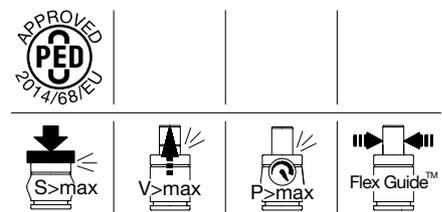
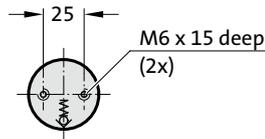
Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 20 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

2487.12.33.00500.



X

View X

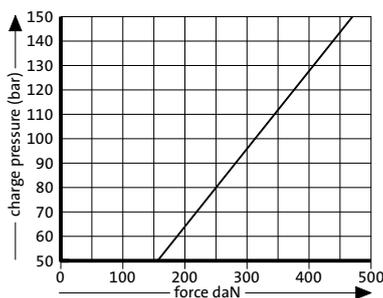


2487.12.33.00500.

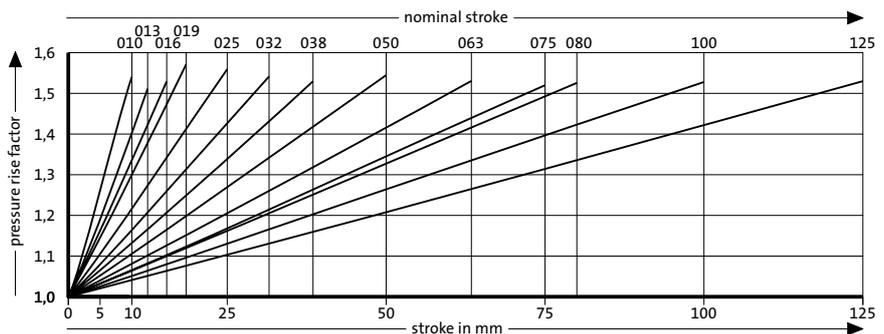
Gas spring POWERLINE with reinforced spring base

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.33.00500.010	10	50	60
2487.12.33.00500.013	13	53	66
2487.12.33.00500.016	16	56	72
2487.12.33.00500.019	19	59	78
2487.12.33.00500.025	25	65	90
2487.12.33.00500.032	32	72	104
2487.12.33.00500.038	38	78	116
2487.12.33.00500.050	50	90	140
2487.12.33.00500.063	63	103	166
2487.12.33.00500.075	75	115	190
2487.12.33.00500.080	80	120	200
2487.12.33.00500.100	100	140	240
2487.12.33.00500.125	125	165	290

Initial spring force versus charge pressure



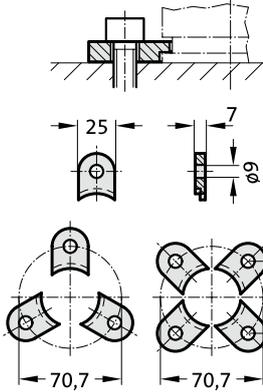
Spring force Diagram displacement versus stroke rise



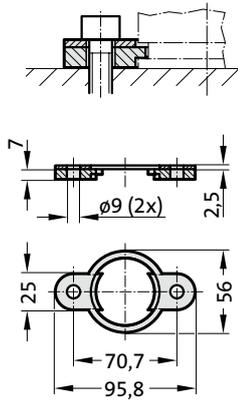
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

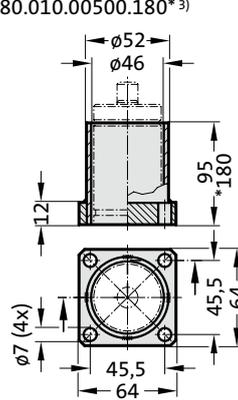
2480.007.00500



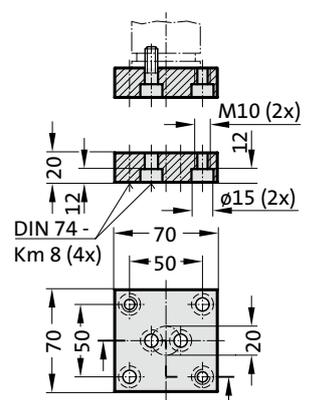
2480.008.00500³⁾



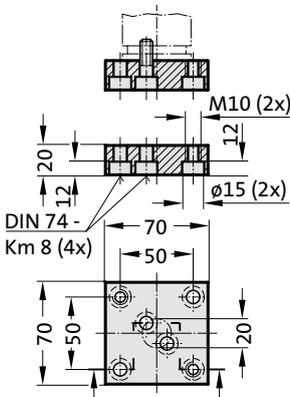
2480.010.00500.095³⁾
2480.010.00500.180*³⁾



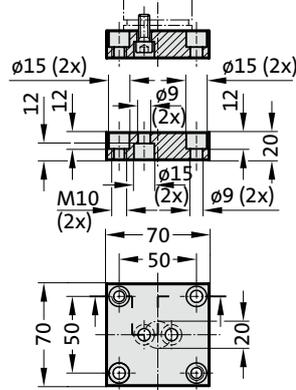
2480.011.00500



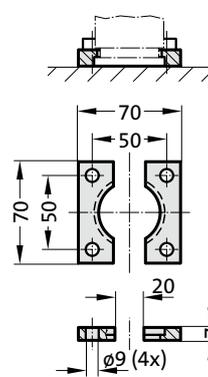
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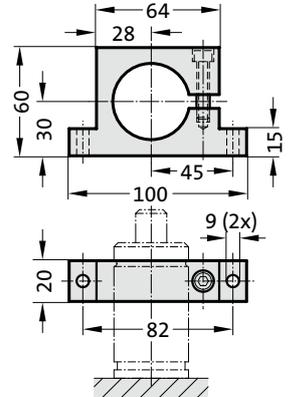
2480.011.00500.2



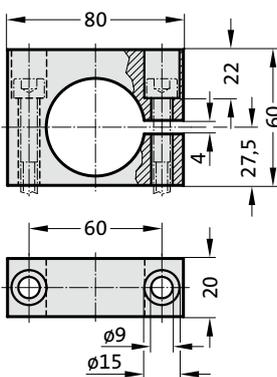
2480.022.00500



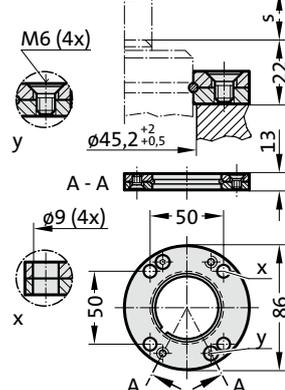
2480.044.00500²⁾



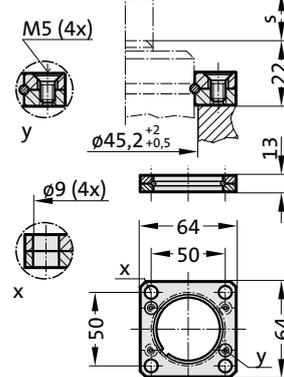
2480.044.03.00500²⁾



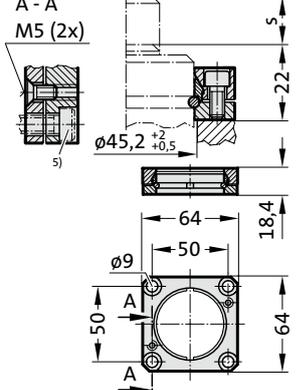
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾

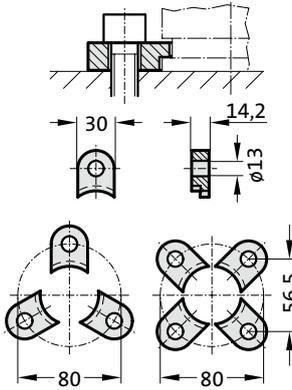


Note:

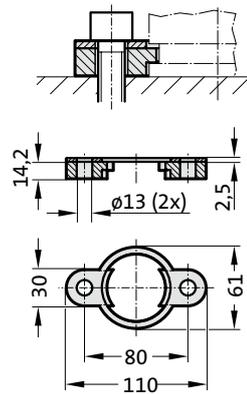
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

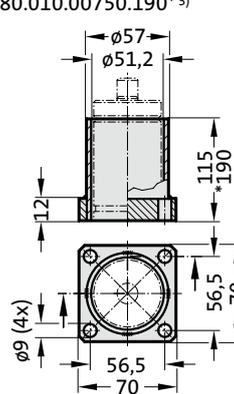
2480.007.00750



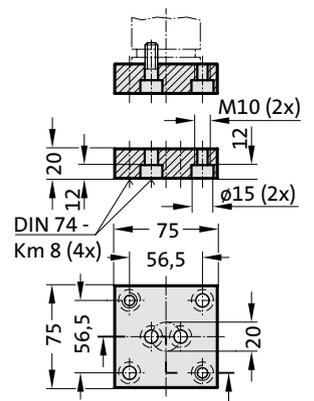
2480.008.00750³⁾



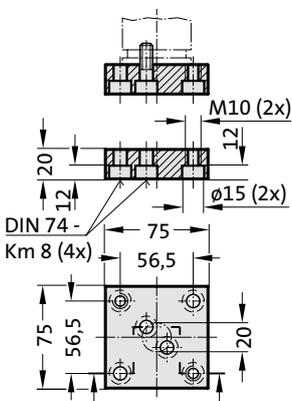
2480.010.00750.115³⁾
2480.010.00750.190*³⁾



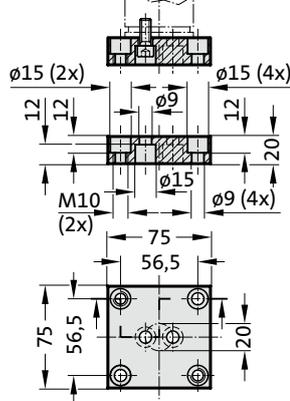
2480.011.00750



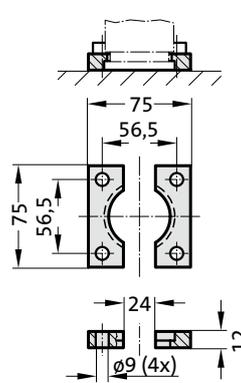
2480.011.00750.1



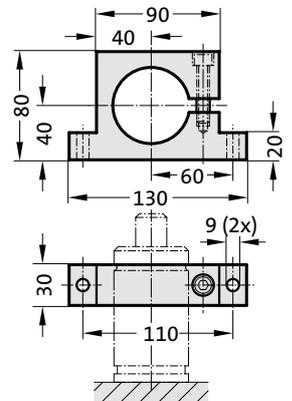
2480.011.00750.3



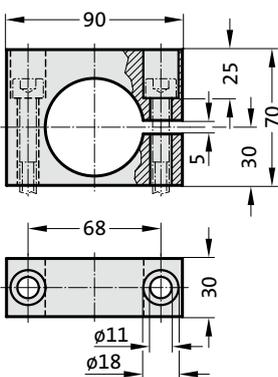
2480.022.00750



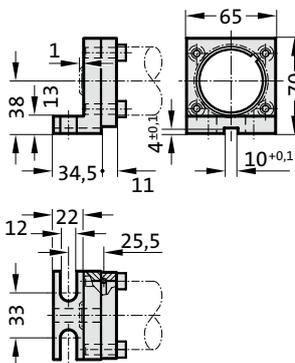
2480.044.00750²⁾



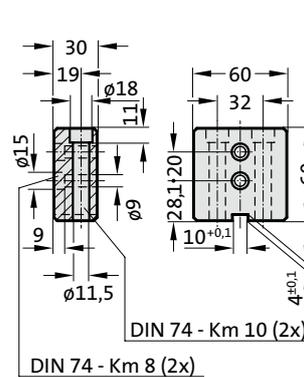
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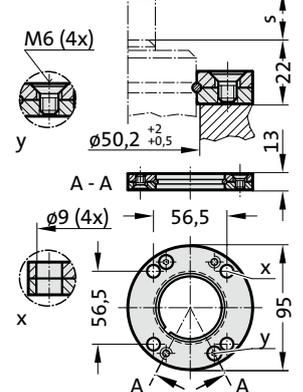
2480.045.00750²⁾



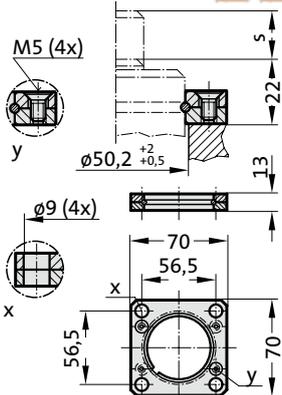
2480.047.00750²⁾



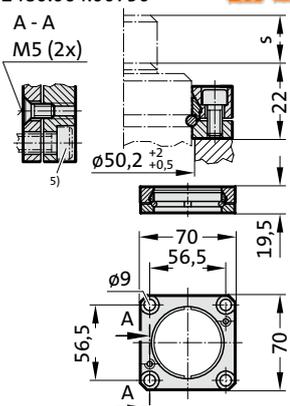
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾

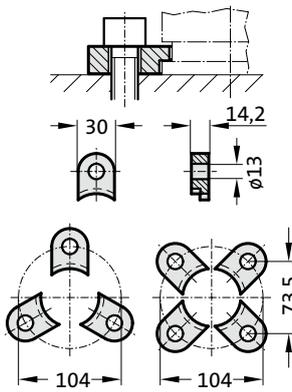


Note:

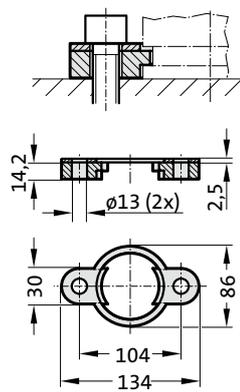
- ²⁾ Attention:
The spring force must be absorbed by the stop surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

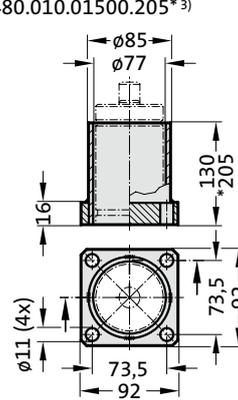
2480.007.01500



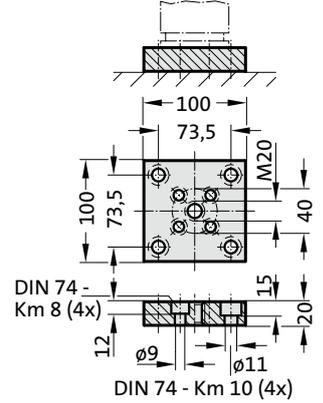
2480.008.01500³⁾



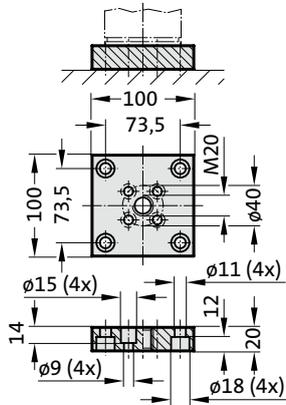
2480.010.01500.130³⁾
2480.010.01500.205³⁾



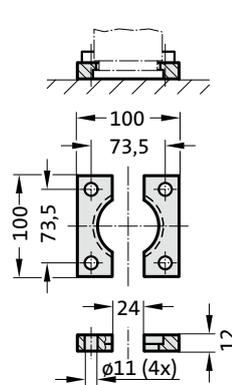
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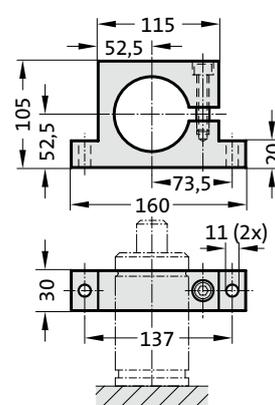
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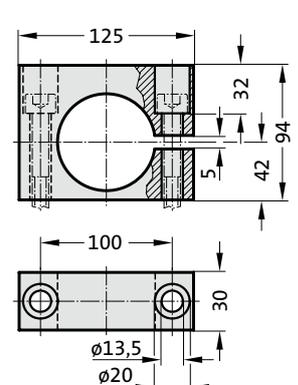
2480.022.01500



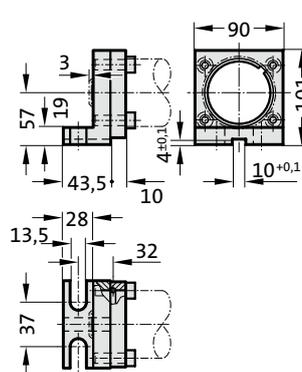
2480.044.01500²⁾



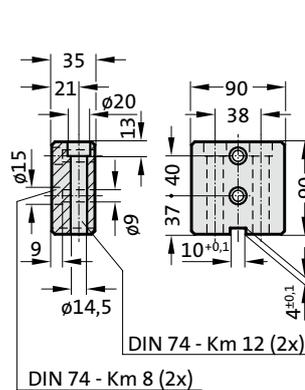
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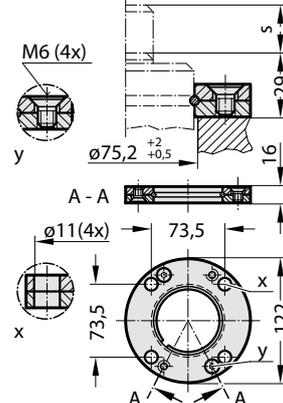
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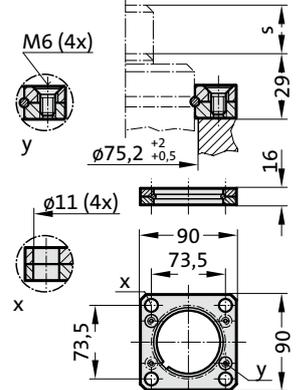
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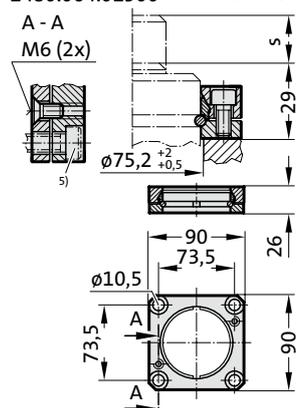
2480.055.01500



2480.057.01500



2480.064.01500⁴⁾

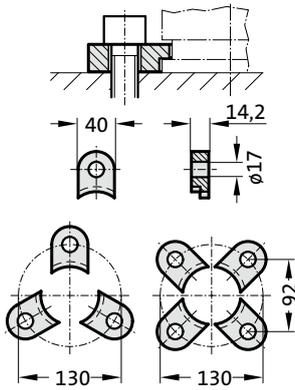


Note:

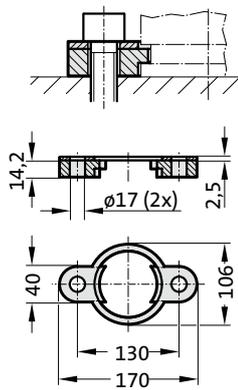
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

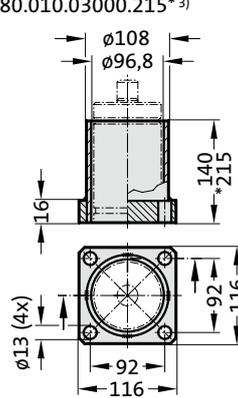
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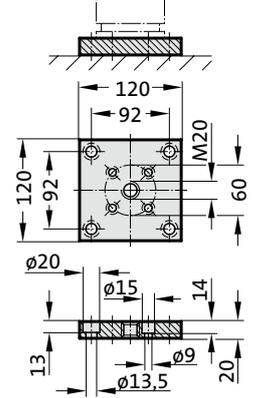
2480.008.03000³⁾



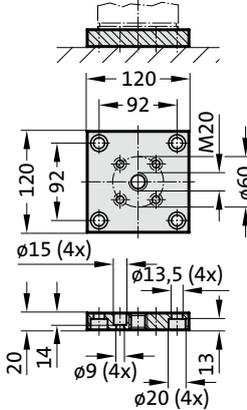
2480.010.03000.140³⁾
2480.010.03000.215*³⁾



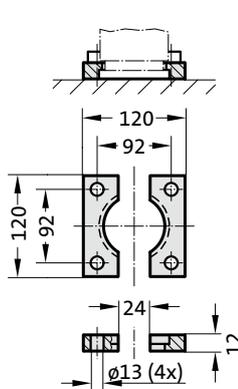
2480.011.03000



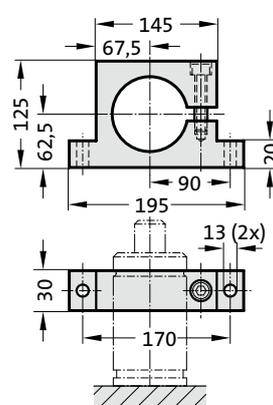
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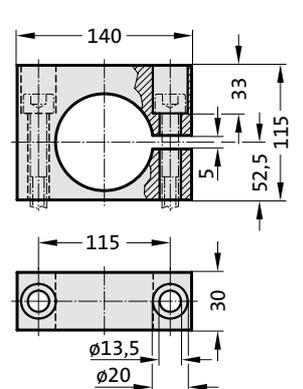
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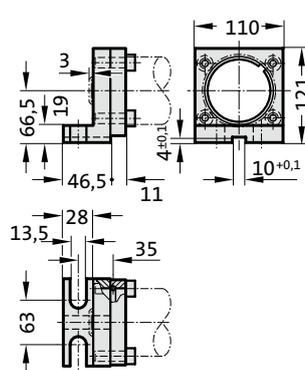
2480.044.03000²⁾



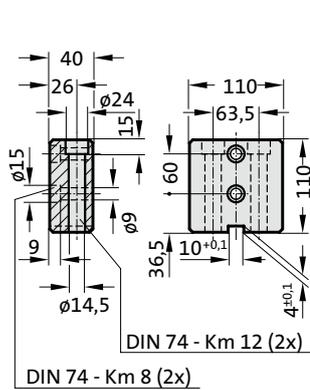
2480.044.03.03000²⁾



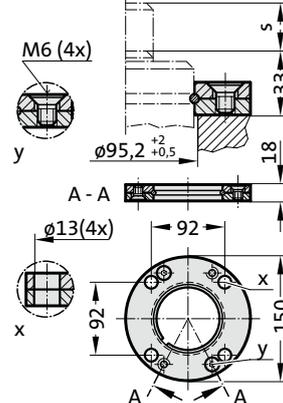
2480.045.03000²⁾



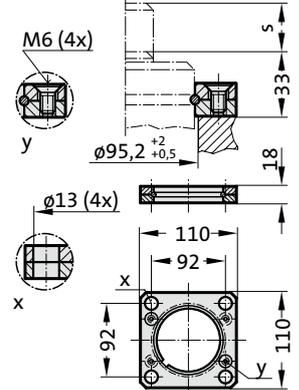
2480.047.03000²⁾



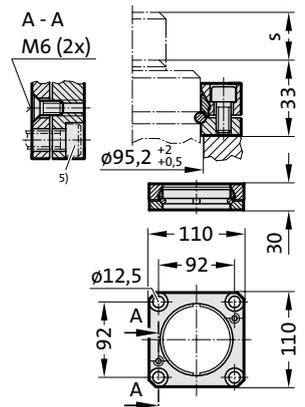
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

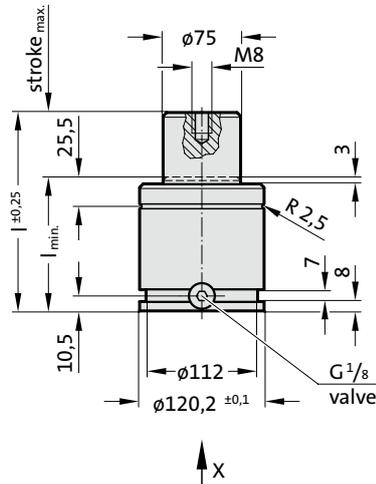
Note:

Initial spring force at 150 bar = 6630 daN

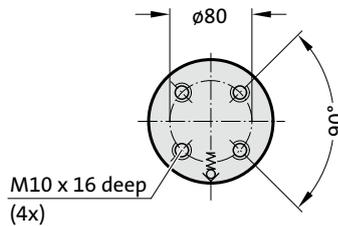
Order No for spare parts kit: 2487.12.06600

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 20 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

2487.12.33.06600.



View X

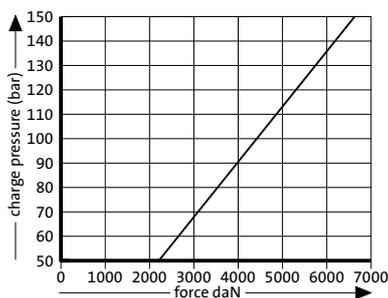


2487.12.33.06600.

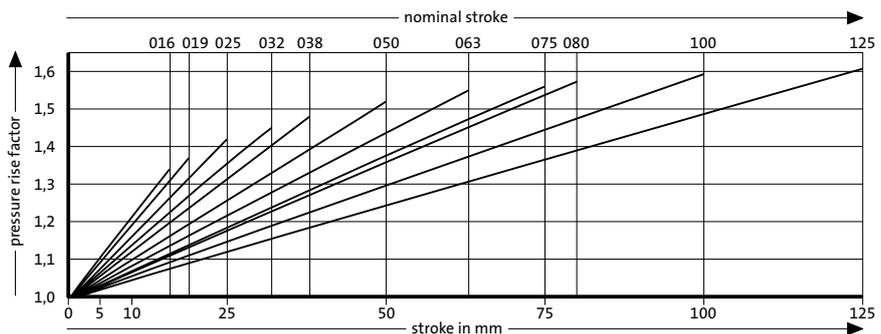
Gas spring POWERLINE with reinforced spring base

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.33.06600.016	16	88	104
2487.12.33.06600.019	19	91	110
2487.12.33.06600.025	25	97	122
2487.12.33.06600.032	32	104	136
2487.12.33.06600.038	38	110	148
2487.12.33.06600.050	50	122	172
2487.12.33.06600.063	63	135	198
2487.12.33.06600.075	75	147	222
2487.12.33.06600.080	80	152	232
2487.12.33.06600.100	100	172	272
2487.12.33.06600.125	125	197	322

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



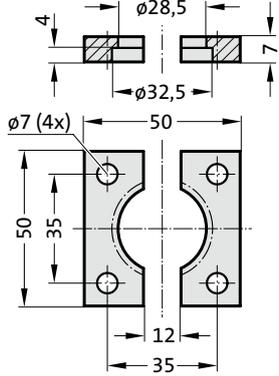
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS CX - COMPACT XTREME

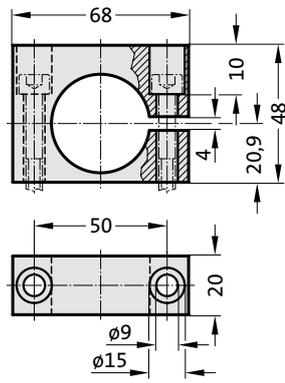


GAS SPRING CX - COMPACT XTREME, MOUNTING VARIATIONS

2480.022.00150



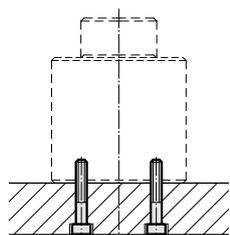
2480.044.03.00150²⁾



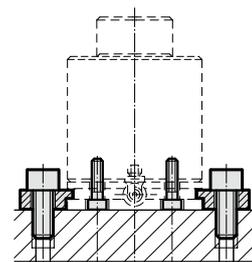
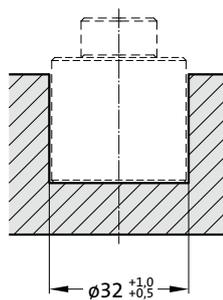
Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



see Note!



with Adapter Baseplate

GAS SPRING CX - COMPACT XTREME,

Note:

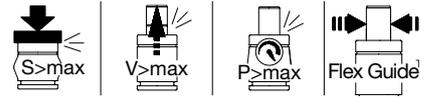
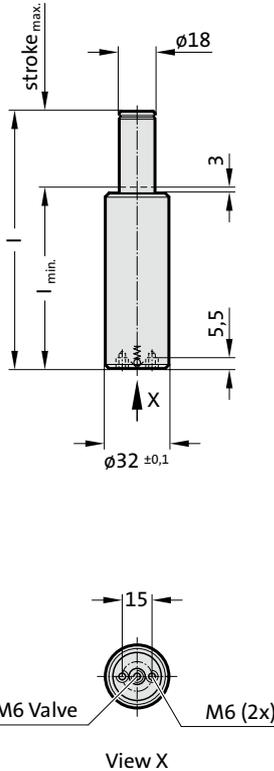
Initial spring force at 200 bar = 500 daN

Order No for spare parts kit: 2497.12.00500

For stroke lengths over 25 mm, the gas pressure springs in the tool should be attached to the base through the threaded holes. When mounting to floor, contact over the entire floor of the cylinder tube must be ensured! Before fitting the adapter base plate remove the valve from the gas spring. If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂
 Max. filling pressure: 200 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 70 to 200 (at 20°C)
 Max. piston speed: 1.6 m/s

2497.12.00500.



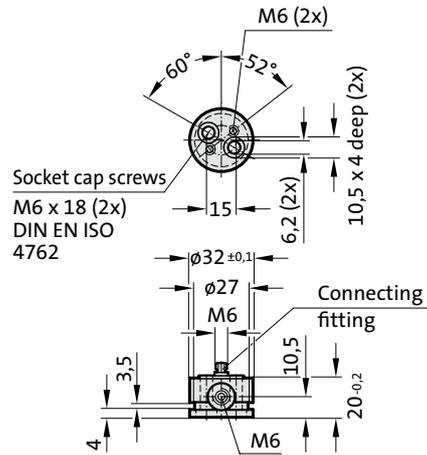
2497.12.00500.

Gas spring CX - Compact xtreme,

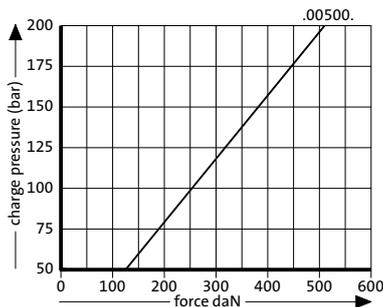
Order No	Stroke _{max.} (s)	l _{min.}	l
2497.12.00500.010	10	65	75
2497.12.00500.015	15	70	85
2497.12.00500.025	25	80	105
2497.12.00500.038	38	92	130
2497.12.00500.050	50	105	155
2497.12.00500.063	63	127	190
2497.12.00500.080	80	145	225

2497.00.20.00500

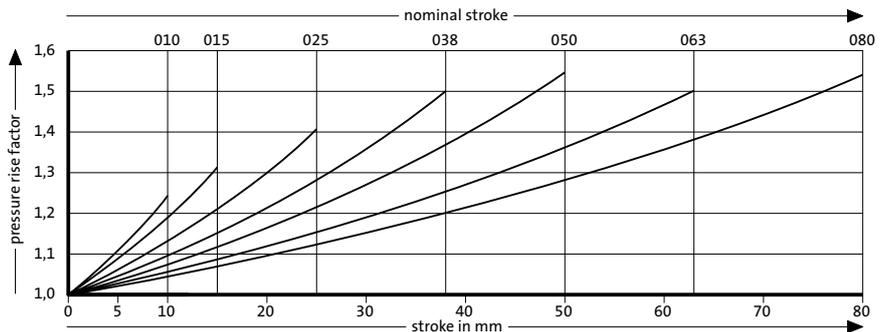
Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



Initial spring force versus charge pressure



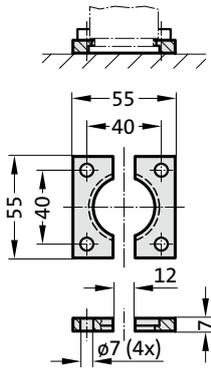
Spring force Diagram displacement versus stroke rise



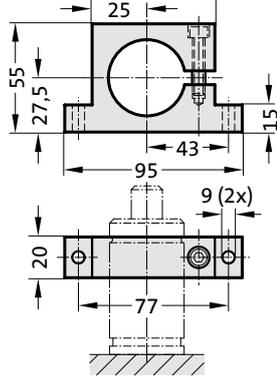
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING CX - COMPACT XTREME, MOUNTING VARIATIONS

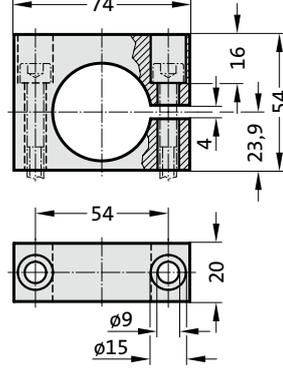
2480.022.00250



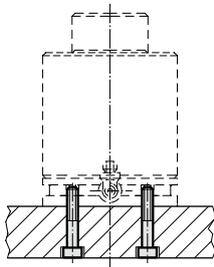
2480.044.00250²⁾



2480.044.03.00250²⁾



Mounting example:

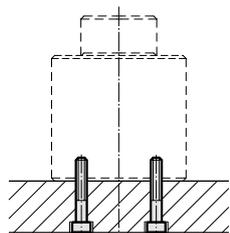


with Adapter Baseplate

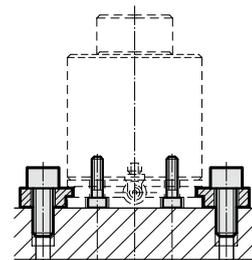
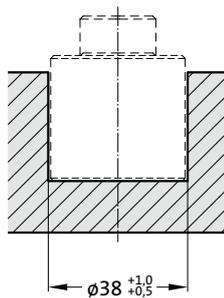
Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



see Note!



with Adapter Baseplate

GAS SPRING CX - COMPACT XTREME,

Note:

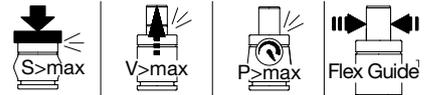
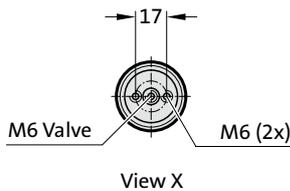
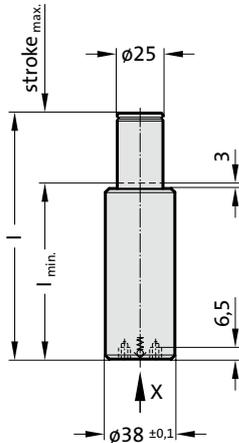
Initial spring force at 200 bar = 1000 daN

Order No for spare parts kit: 2497.12.01000

For stroke lengths over 25 mm, the gas pressure springs in the tool should be attached to the base through the threaded holes.
When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!
Before fitting the adapter base plate remove the valve from the gas spring.
If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂
Max. filling pressure: 200 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 70 to 200 (at 20°C)
Max. piston speed: 1.6 m/s

2497.12.01000.



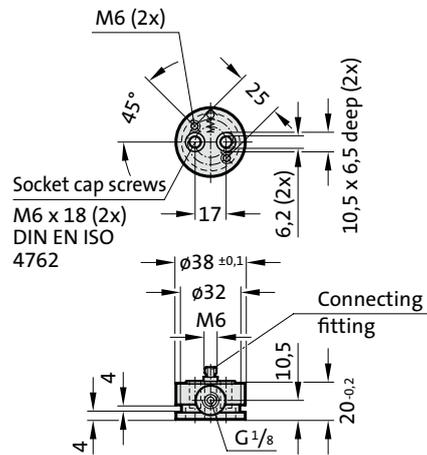
2497.12.01000.

Gas spring CX - Compact xtreme,

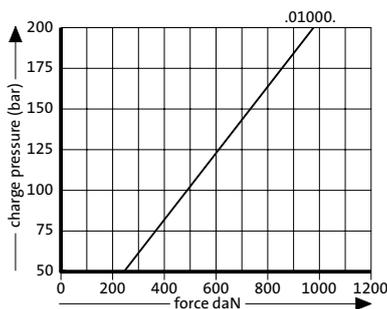
Order No	Stroke _{max.} (s)	l _{min.}	l
2497.12.01000.010	10	65	75
2497.12.01000.015	15	70	85
2497.12.01000.025	25	80	105
2497.12.01000.038	38	97	135
2497.12.01000.050	50	110	160
2497.12.01000.063	63	142	205
2497.12.01000.080	80	160	240

2497.00.20.01000

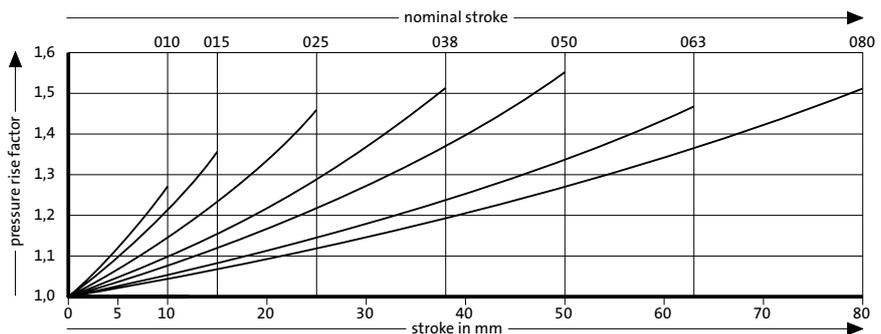
Adapter baseplate with connecting fitting, with valve



Initial spring force versus charge pressure



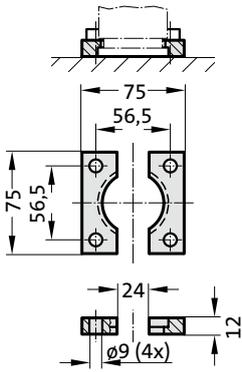
Spring force Diagram displacement versus stroke rise



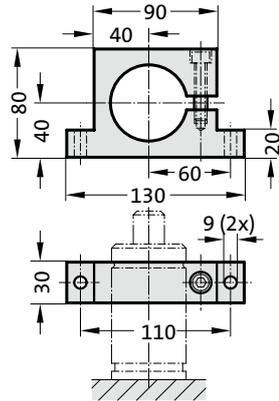
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING CX - COMPACT XTREME, MOUNTING VARIATIONS

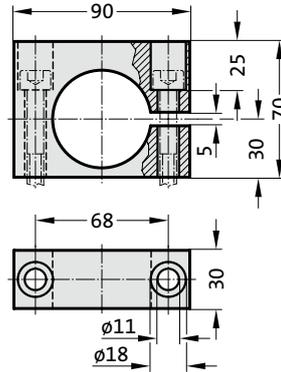
2480.022.00750



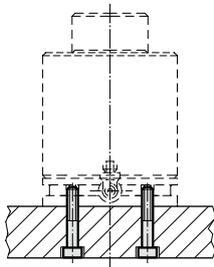
2480.044.00750²⁾



2480.044.03.00750²⁾



Mounting example:

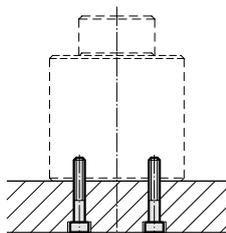


with Adapter Baseplate

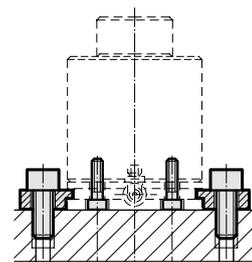
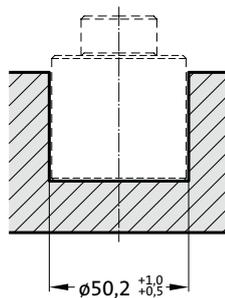
Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



see Note!



with Adapter Baseplate

GAS SPRING CX - COMPACT XTREME,

Note:

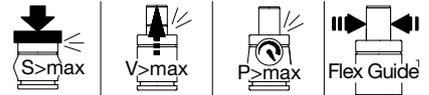
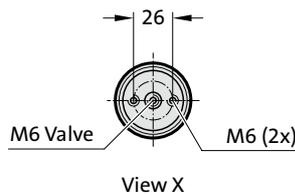
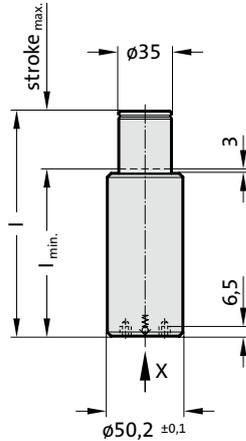
Initial spring force at 200 bar = 1900 daN

Order No for spare parts kit: 2497.12.01900

For stroke lengths over 25 mm, the gas pressure springs in the tool should be attached to the base through the threaded holes.
When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!
Before fitting the adapter base plate remove the valve from the gas spring.
If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂
Max. filling pressure: 200 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 50 to 130 (at 20°C)
Max. piston speed: 1.6 m/s

2497.12.01900.



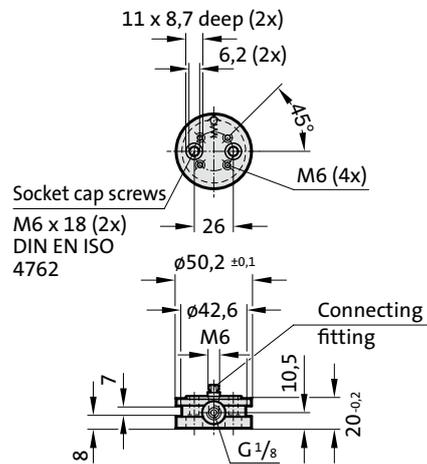
2497.12.01900.

Gas spring CX - Compact xtreme,

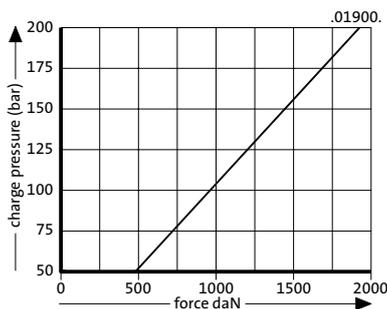
Order No	Stroke _{max.} (s)	l _{min.}	l
2497.12.01900.010	10	70	80
2497.12.01900.015	15	80	95
2497.12.01900.025	25	90	115
2497.12.01900.038	38	112	150
2497.12.01900.050	50	125	175
2497.12.01900.063	63	142	205
2497.12.01900.080	80	165	245

2497.00.20.01900

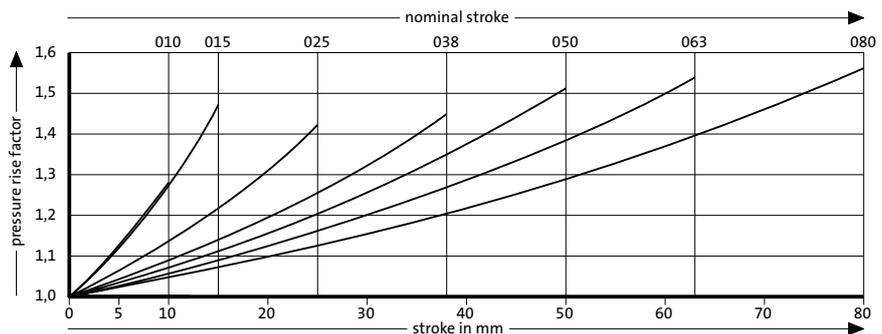
Adapter baseplate with connecting fitting, with valve



Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



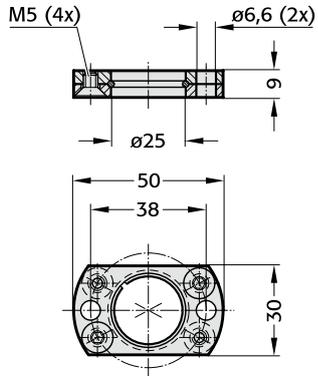
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS COMPACT FOR SMALL DISPLACEMENTS AND HIGH FORCES

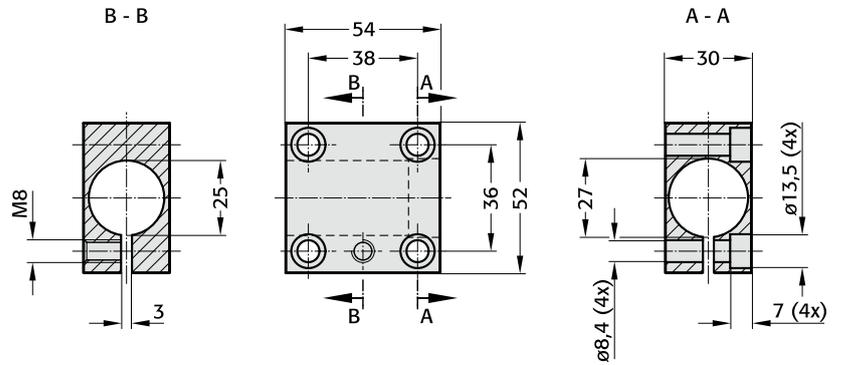


COMPACT GAS SPRING MOUNTING VARIATIONS

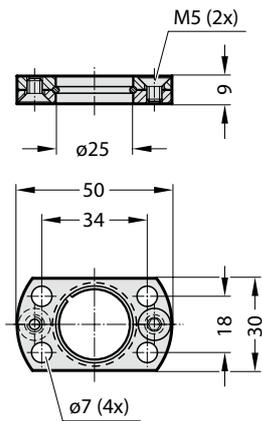
2480.051.00150



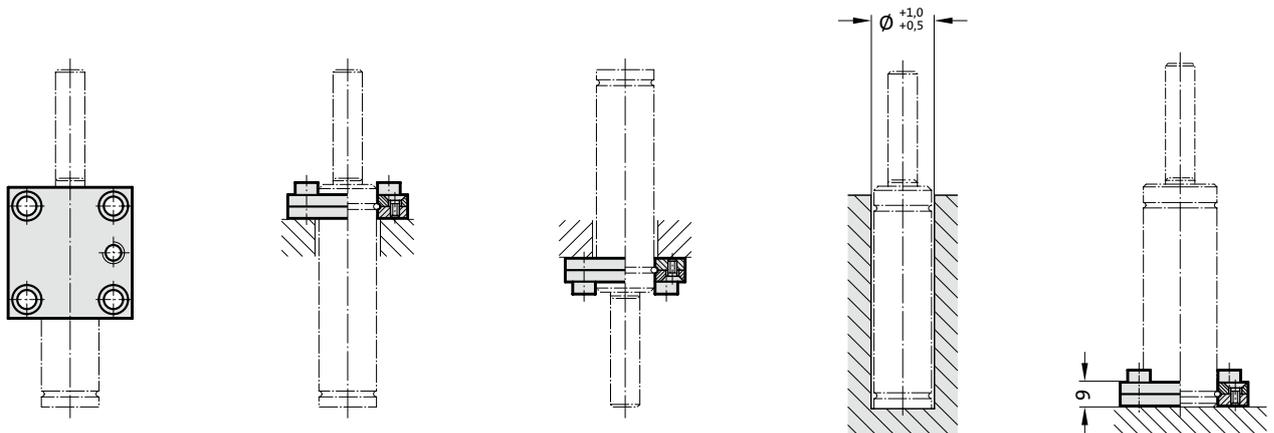
2480.053.00150



2480.054.00150



Mounting examples:



COMPACT GAS SPRING

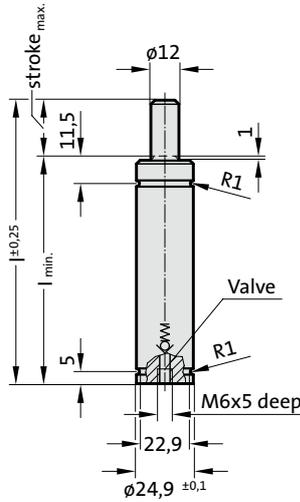
Note:

Initial spring force at 150 bar = 420 daN

Worn gas springs cannot be repaired, they have to be replaced completely.

- Pressure medium: Nitrogen N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 25 bar
- Working temperature: 0°C to +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 50 to 100 (at 20°C)
- Max. piston speed: 0.8 m/s

2490.14.00420.

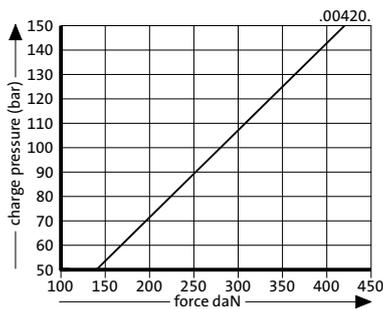


2490.14.00420.

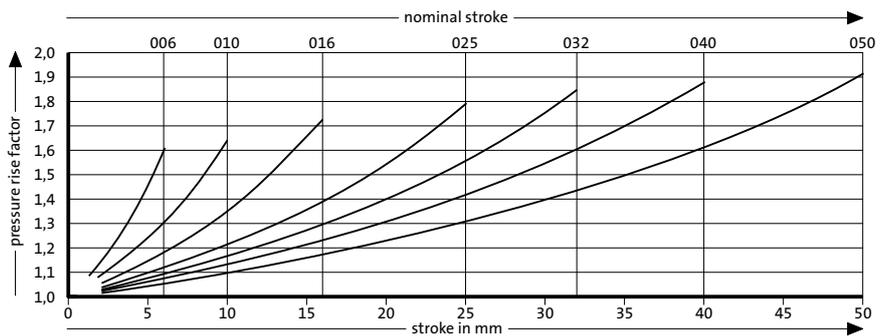
Compact gas spring

Order No	Stroke _{max.} (s)	l _{min.}	l
2490.14.00420.006	6	50	56
2490.14.00420.010	10	60	70
2490.14.00420.016	16	75	91
2490.14.00420.025	25	95	120
2490.14.00420.032	32	108	140
2490.14.00420.040	40	125	165
2490.14.00420.050	50	145	195

Initial spring force versus charge pressure



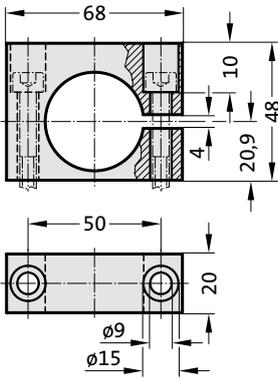
Spring force Diagram displacement versus stroke rise



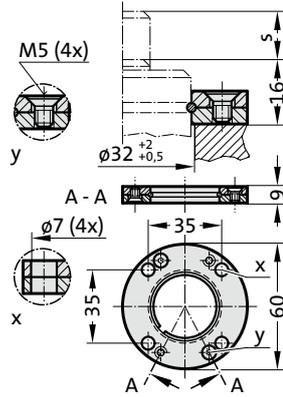
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

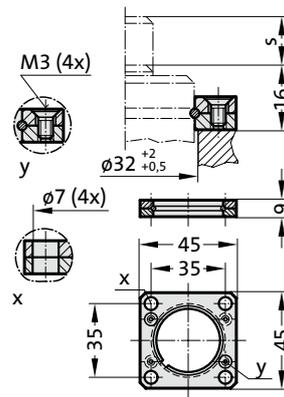
2480.044.03.00150²⁾



2480.055.00150



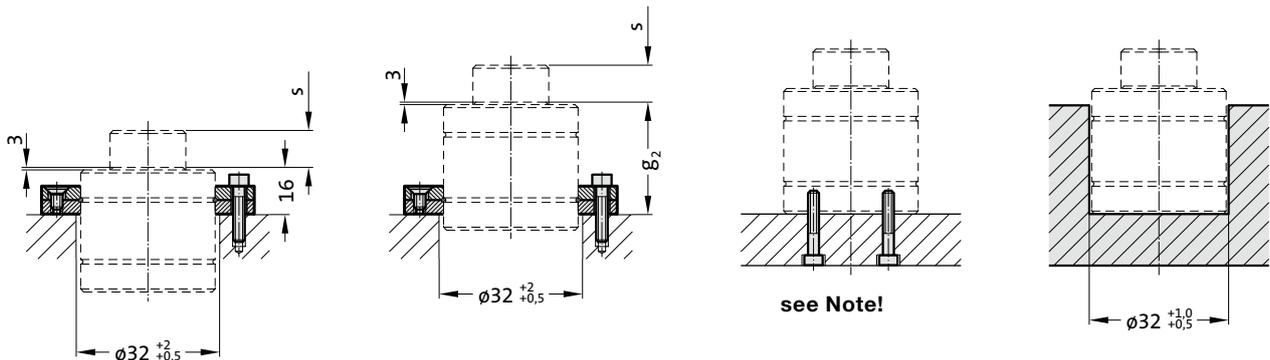
2480.057.00150



Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



COMPACT GAS SPRING

Note:

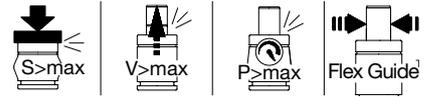
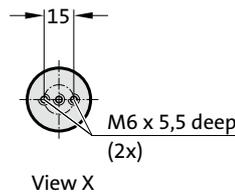
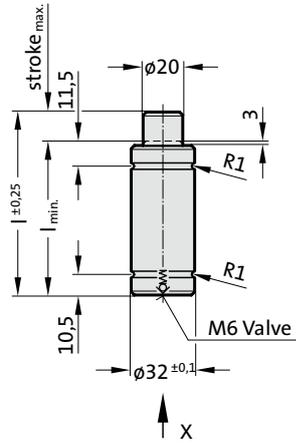
Initial spring force at 150 bar = 750 daN

Worn gas springs cannot be repaired, they have to be replaced completely.

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!

- Pressure medium: Nitrogen N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 25 bar
- Working temperature: 0°C to +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 50 to 100 (at 20°C)
- Max. piston speed: 0.8 m/s

2490.14.00750.



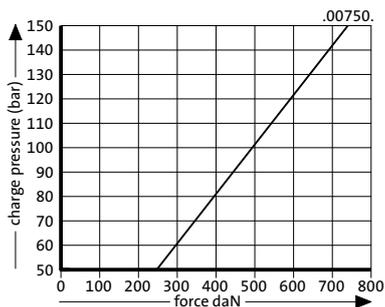
2490.14.00750.

Compact gas spring

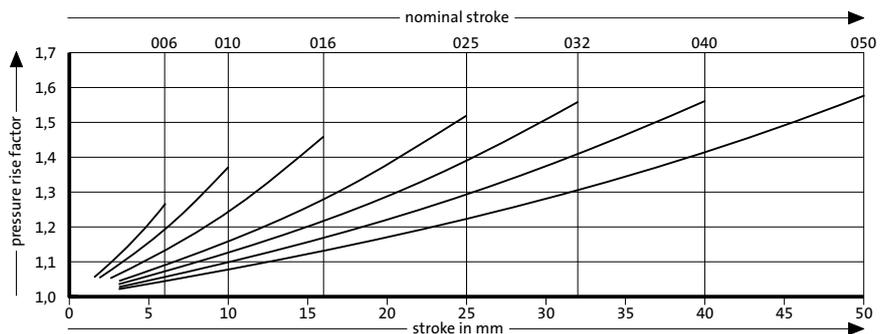
Order No	Stroke _{max} (s)	I _{min.}	I	g ₂ *
2490.14.00750.006	6	57	63	51
2490.14.00750.010	10	65	75	59
2490.14.00750.016	16	77	93	71
2490.14.00750.025	25	95	120	89
2490.14.00750.032	32	108	140	102
2490.14.00750.040	40	125	165	119
2490.14.00750.050	50	145	195	139

*see mounting example

Initial spring force versus charge pressure



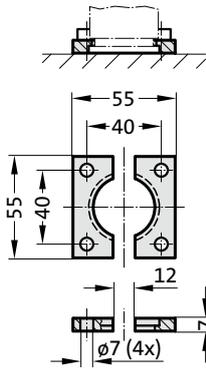
Spring force Diagram displacement versus stroke rise



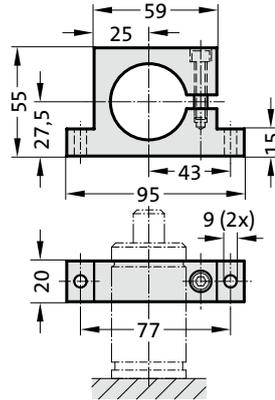
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

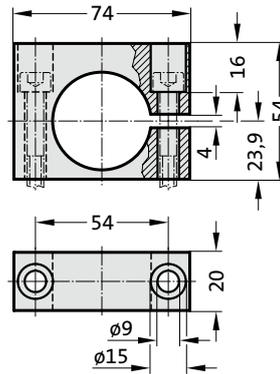
2480.022.00250



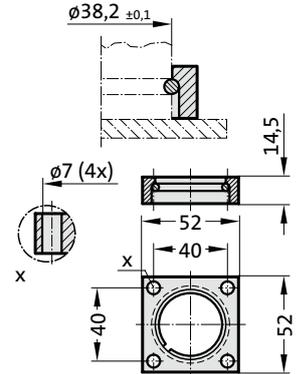
2480.044.00250²⁾



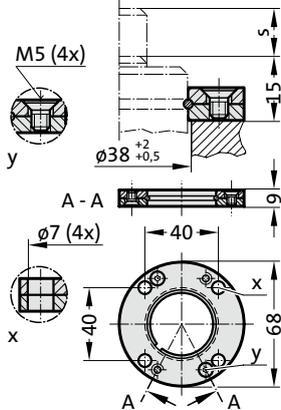
2480.044.03.00250²⁾



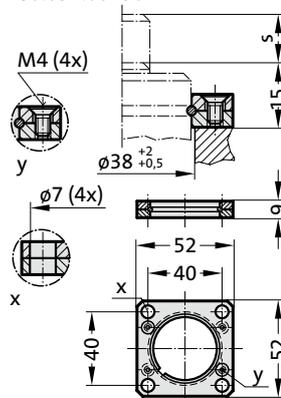
2480.052.01000



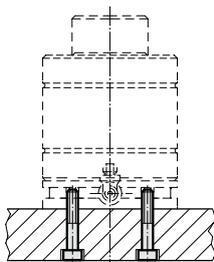
2480.055.00250



2480.057.00250



Mounting example:

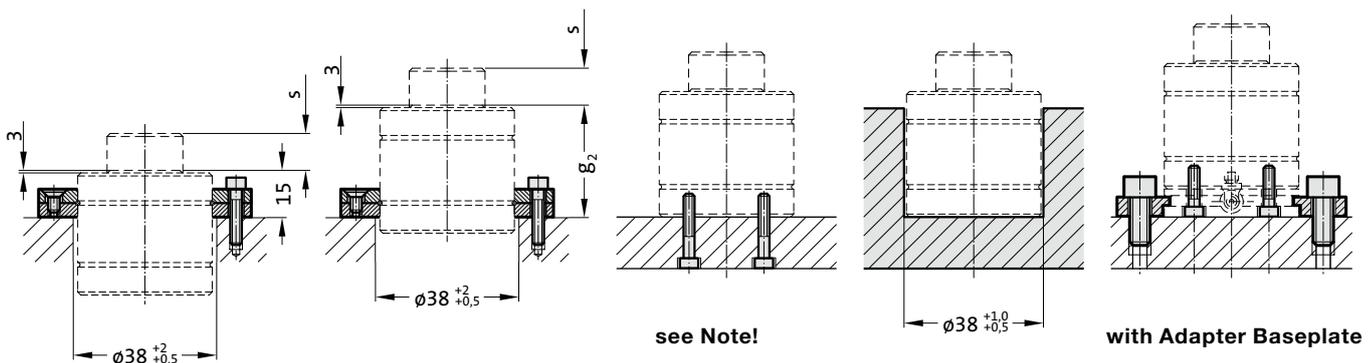


with Adapter Baseplate

Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



see Note!

with Adapter Baseplate

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 1000 daN

Order No for spare parts kit: 2490.14.01000

Gas spring without valve

Order No (example): 2490.14.01000 . P

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured! Before fitting the adapter base plate remove the valve from the gas spring. If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

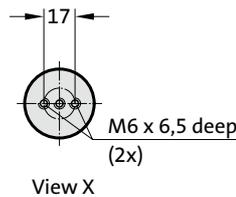
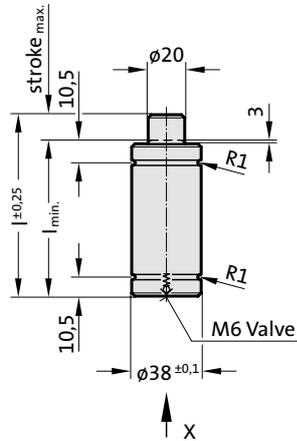
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 100 (at 20°C)

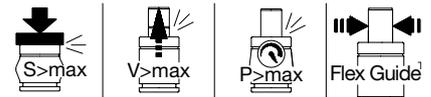
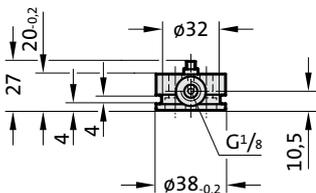
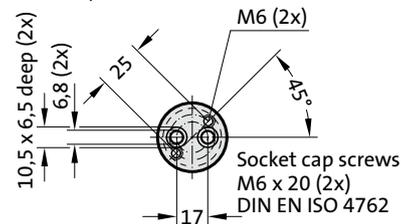
Max. piston speed: 0.8 m/s

2490.14.01000.



2480.00.20.01000

Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



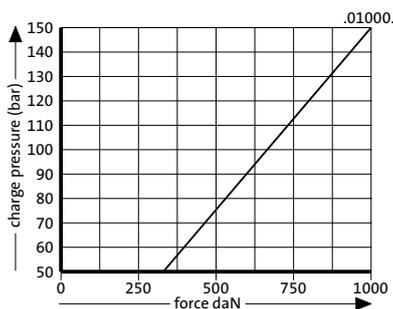
2490.14.01000.

Compact gas spring

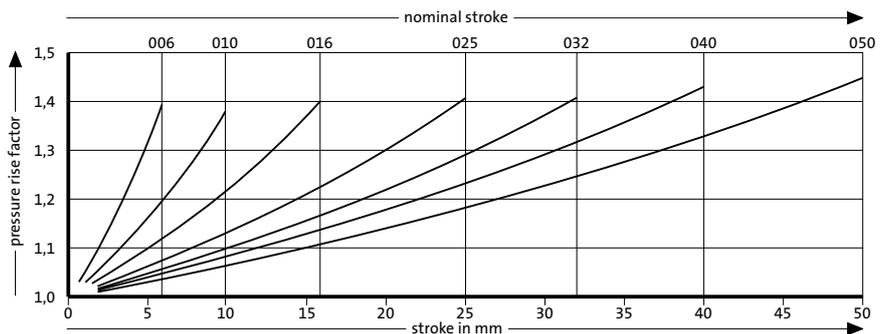
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2490.14.01000.006	6	55	61	49
2490.14.01000.010	10	68	78	62
2490.14.01000.016	16	84	100	78
2490.14.01000.025	25	110	135	104
2490.14.01000.032	32	135	167	129
2490.14.01000.040	40	155	195	149
2490.14.01000.050	50	180	230	174

*see mounting example

Initial spring force versus charge pressure



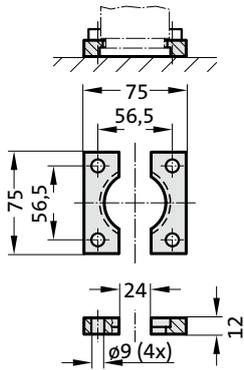
Spring force Diagram displacement versus stroke rise



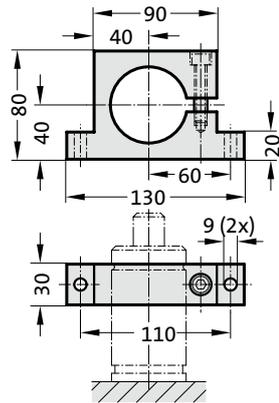
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

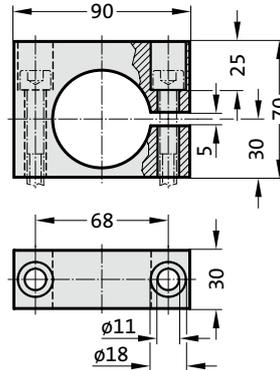
2480.022.00750



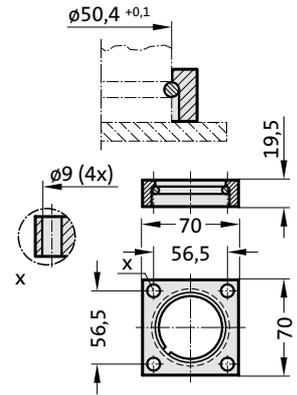
2480.044.00750²⁾



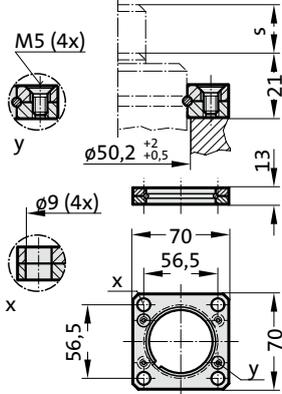
2480.044.03.00750²⁾



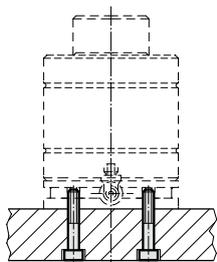
2480.052.1.01800



2480.058.00750



Mounting example:

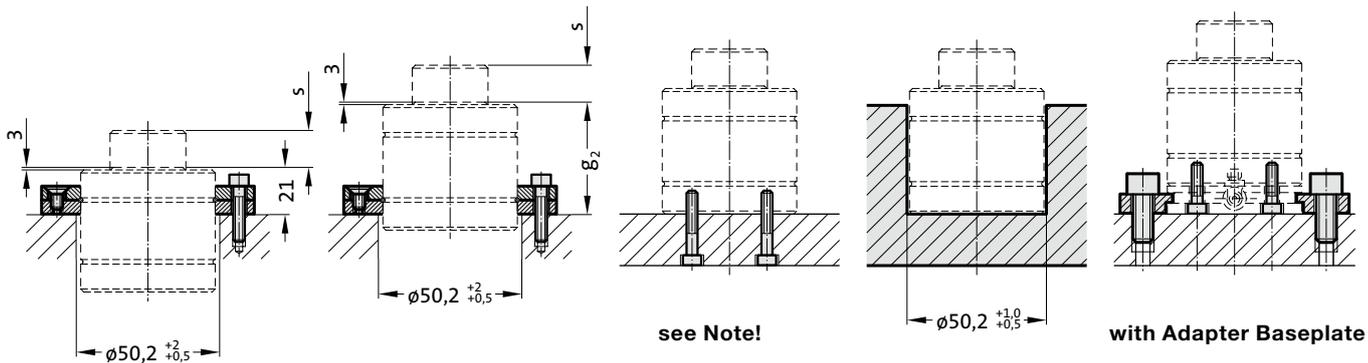


with Adapter Baseplate

Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



see Note!

with Adapter Baseplate

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 1800 daN

Order No for spare parts kit: 2490.14.01800

Gas spring without valve

Order No (example): 2490.14.01800. .P

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured! Before fitting the adapter base plate remove the valve from the gas spring. If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

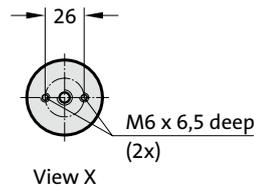
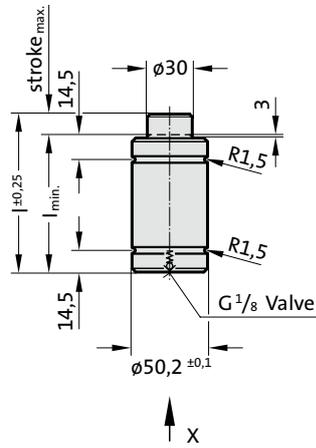
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 50 to 100 (at 20°C)

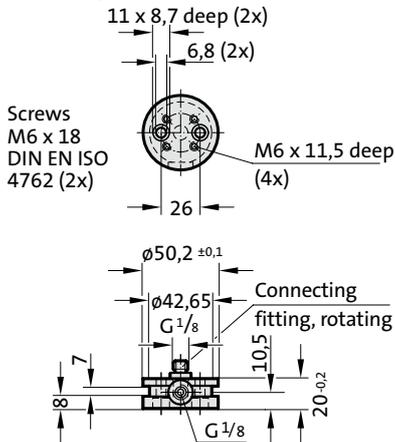
Max. piston speed: 0.8 m/s

2490.14.01800.



2480.00.20.01800

Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



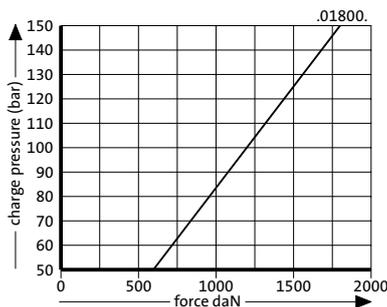
2490.14.01800.

Compact gas spring

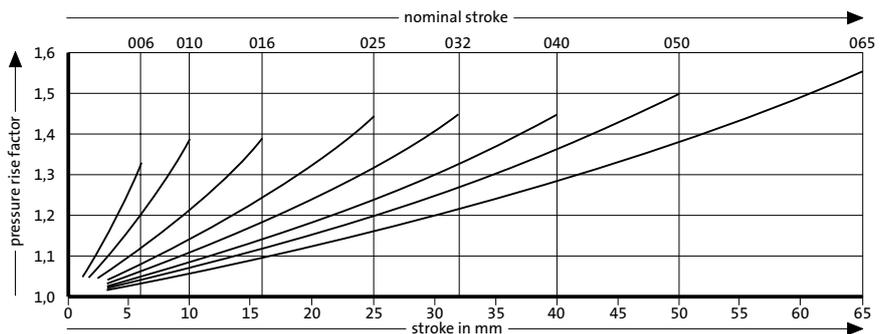
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2490.14.01800.006	6	60	66	52
2490.14.01800.010	10	70	80	62
2490.14.01800.016	16	90	106	82
2490.14.01800.025	25	110	135	102
2490.14.01800.032	32	130	162	122
2490.14.01800.040	40	150	190	142
2490.14.01800.050	50	170	220	162
2490.14.01800.065	65	206	271	198

*see mounting example

Initial spring force versus charge pressure



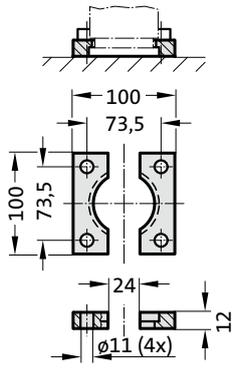
Spring force Diagram displacement versus stroke rise



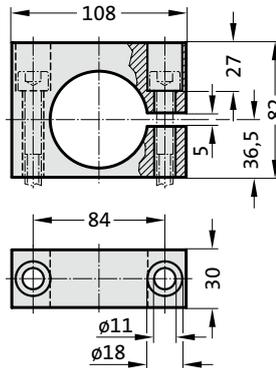
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

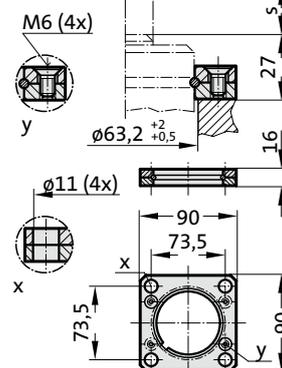
2480.022.01000



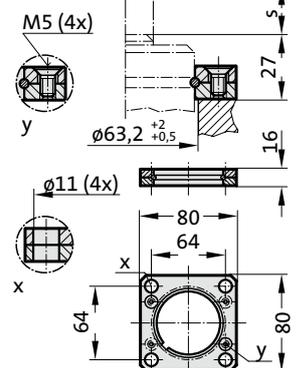
2480.044.03.01000²⁾



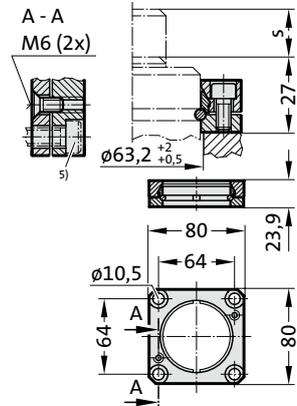
2480.057.01000



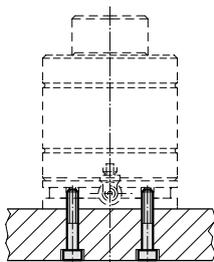
2480.057.03.01000



2480.064.01000⁴⁾



Mounting example:

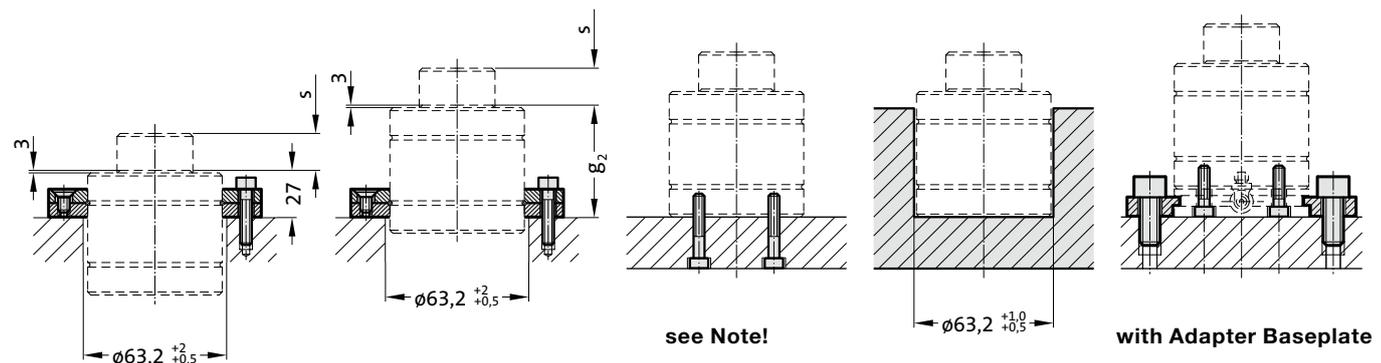


with Adapter Baseplate

Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

Mounting examples:



see Note!

with Adapter Baseplate

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 3000 daN

Order No for spare parts kit: 2490.14.03000

Gas spring without valve

Order No (example): 2490.14.03000 .P

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured! Before fitting the adapter base plate remove the valve from the gas spring. If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

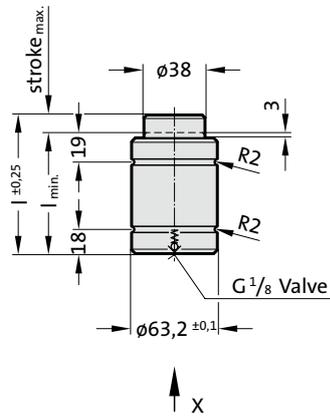
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

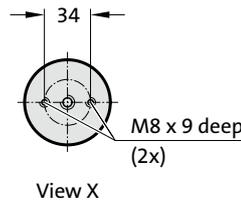
approx. 80 to 100 (at 20°C)

Max. piston speed: 0.8 m/s

2490.14.03000.

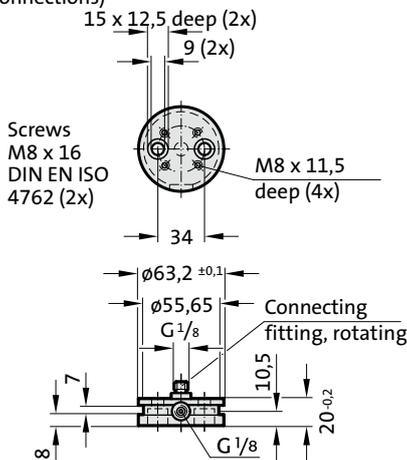


↑ X



2480.00.20.03000

Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



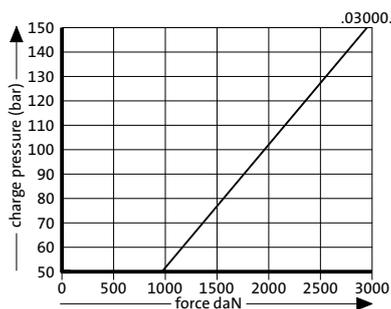
2490.14.03000.

Compact gas spring

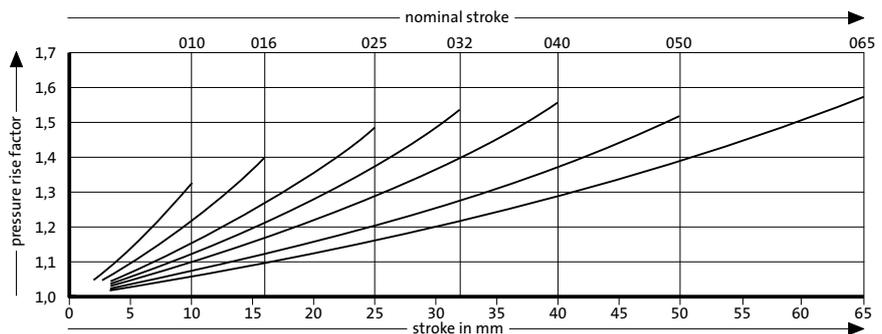
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2490.14.03000.010	10	75	85	65
2490.14.03000.016	16	87	103	77
2490.14.03000.025	25	105	130	95
2490.14.03000.032	32	118	150	108
2490.14.03000.040	40	135	175	125
2490.14.03000.050	50	155	205	145
2490.14.03000.065	65	191	256	181

*see mounting example

Initial spring force versus charge pressure



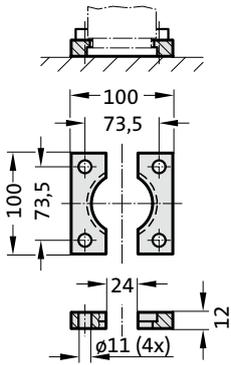
Spring force Diagram displacement versus stroke rise



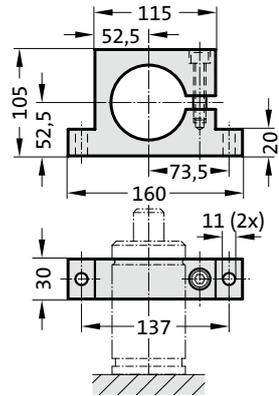
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

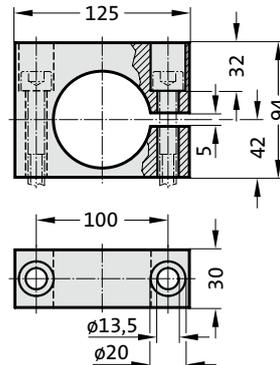
2480.022.01500



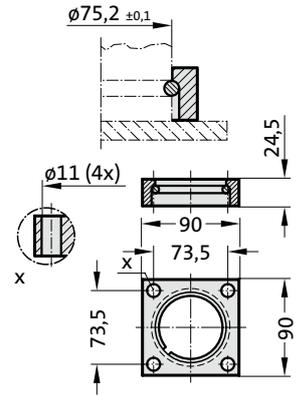
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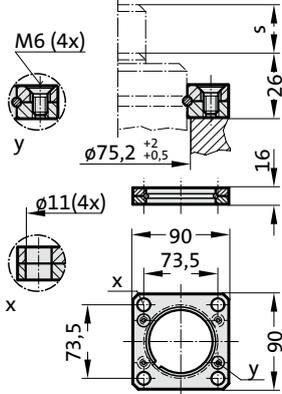
2480.044.03.01500²⁾



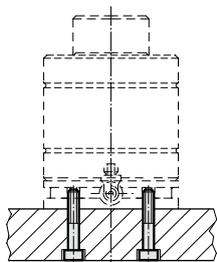
2480.052.04700



2480.058.01500



Mounting example:

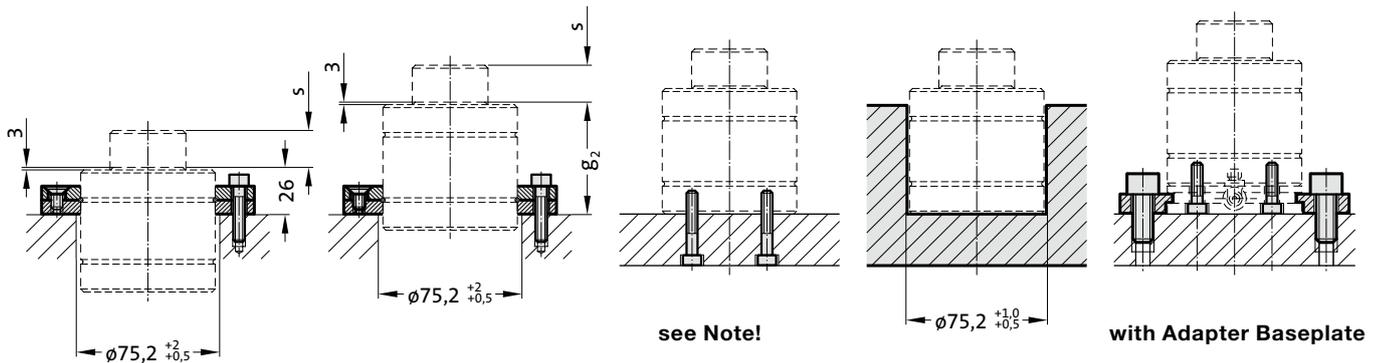


with Adapter Baseplate

Note:

²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:



COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 4700 daN

Order No for spare parts kit: 2490.14.04700

Gas spring without valve

Order No (example): 2490.14.04700. .P

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!
 Before fitting the adapter base plate remove the valve from the gas spring.
 If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

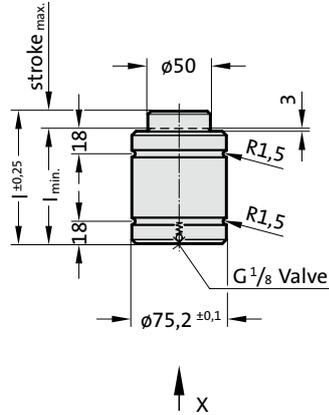
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

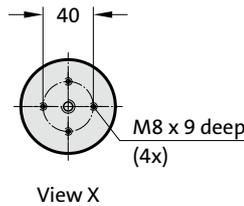
approx. 80 to 100 (at 20°C)

Max. piston speed: 0.8 m/s

2490.14.04700.

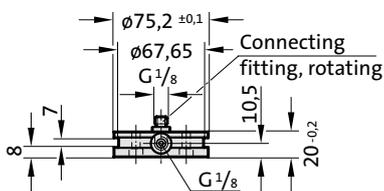
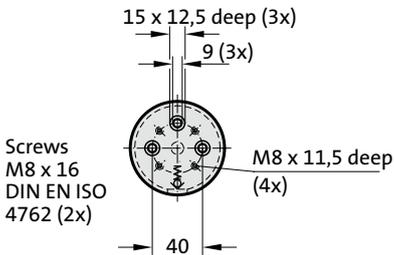


↑ X

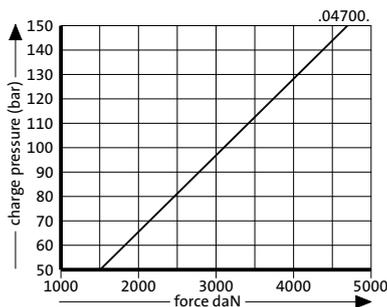


2480.00.20.04700

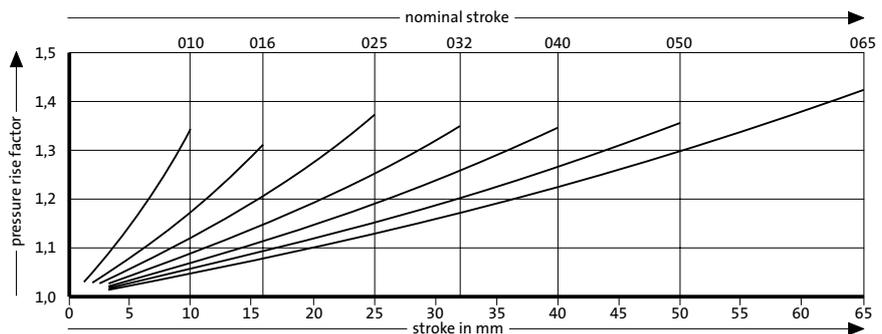
Adapter baseplate with connecting Fitting



Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!



2490.14.04700.

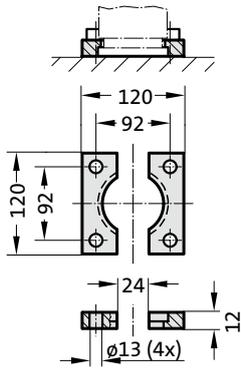
Compact gas spring

Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2490.14.04700.010	10	70	80	60
2490.14.04700.016	16	90	106	80
2490.14.04700.025	25	110	135	100
2490.14.04700.032	32	135	167	125
2490.14.04700.040	40	160	200	150
2490.14.04700.050	50	190	240	180
2490.14.04700.065	65	208	273	198

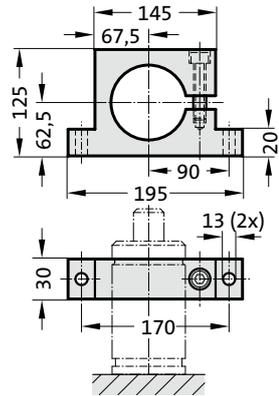
*see mounting example

COMPACT GAS SPRING MOUNTING VARIATIONS

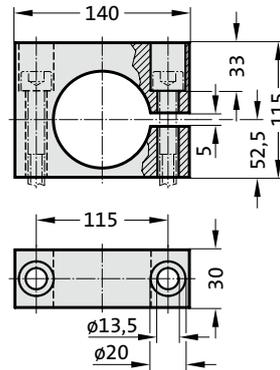
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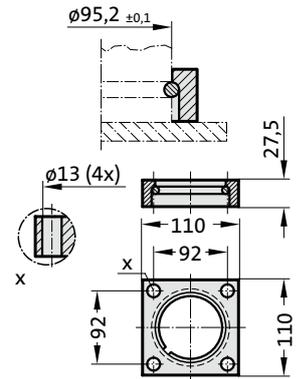
2480.044.03000²⁾



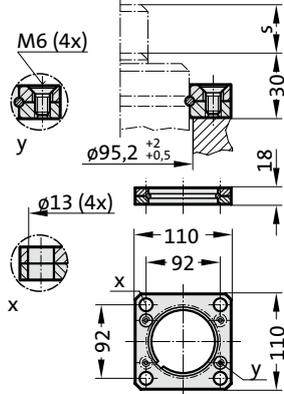
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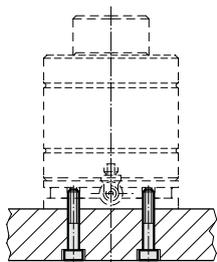
2480.052.07500



2480.058.03000



Mounting example:

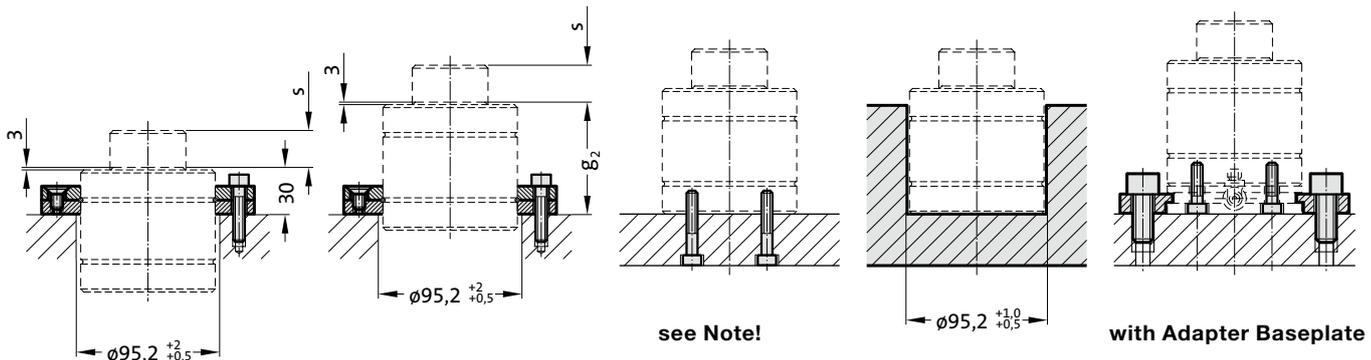


with Adapter Baseplate

Note:

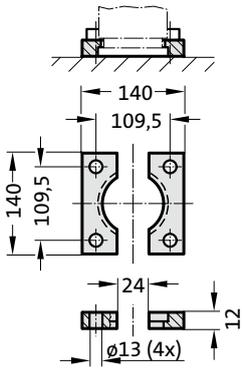
²⁾ Attention:
The spring force must be absorbed by the stop Surface!

Mounting examples:

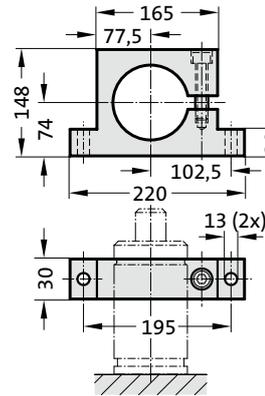


COMPACT GAS SPRING MOUNTING VARIATIONS

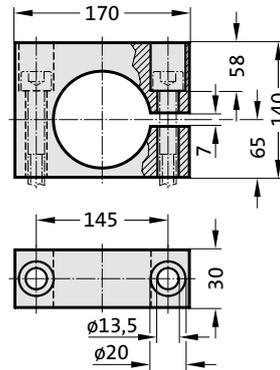
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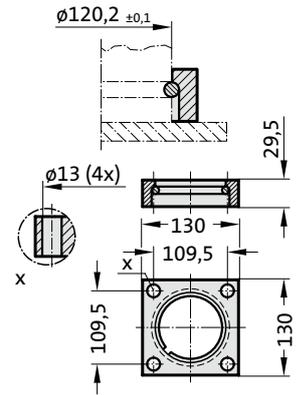
2480.044.05000²⁾



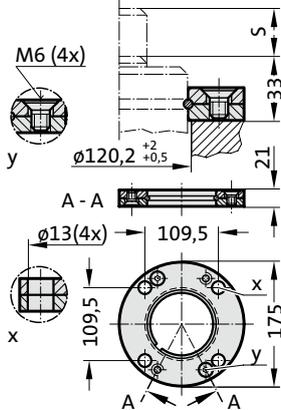
2480.044.03.05000²⁾



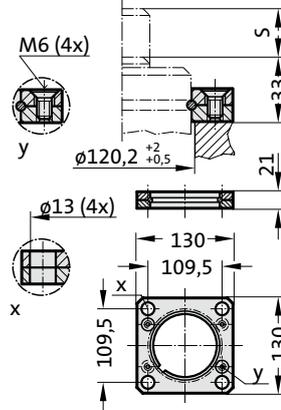
2480.052.11800



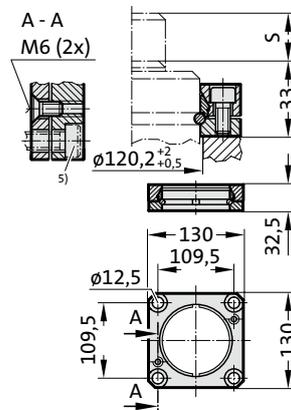
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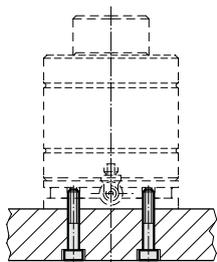
2480.057.05000



2480.064.05000⁴⁾



Mounting example:

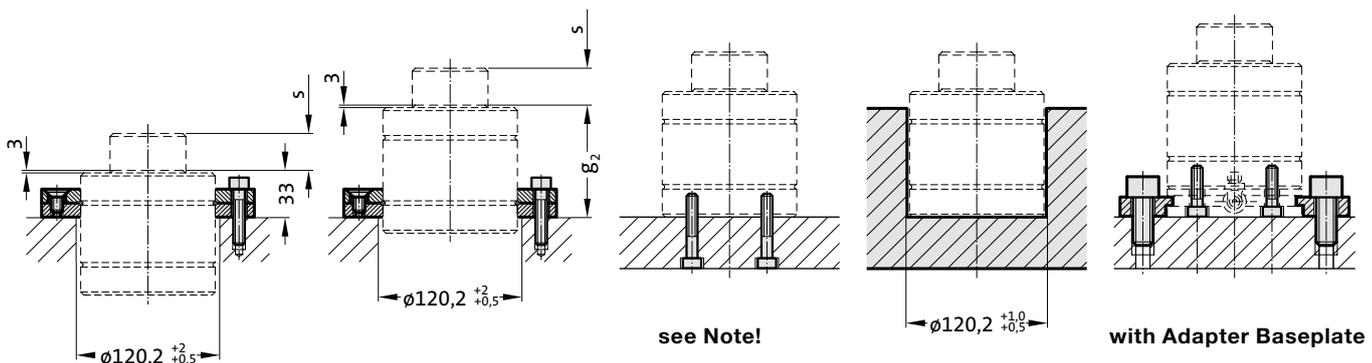


with Adapter Baseplate

Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

Mounting examples:



COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 11800 daN

Order No for spare parts kit: 2490.14.11800

Gas spring without valve

Order No (example): 2490.14.11800. .P

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured! Before fitting the adapter base plate remove the valve from the gas spring. If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

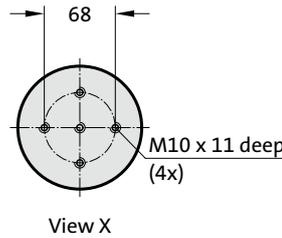
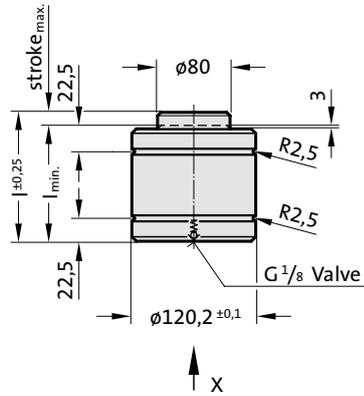
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 80 to 100 (at 20°C)

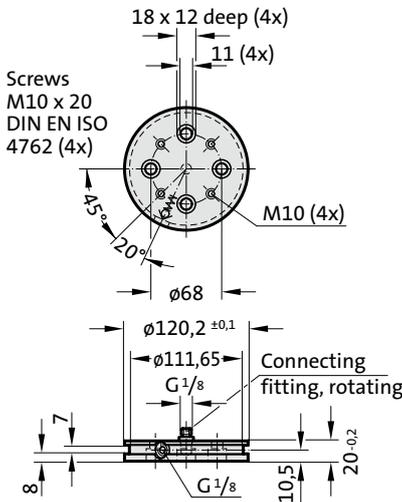
Max. piston speed: 0.8 m/s

2490.14.11800.



2480.00.20.11800

Adapter baseplate with connecting Fitting



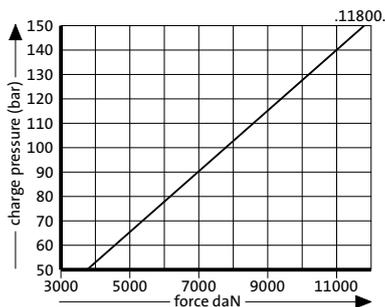
2490.14.11800.

Compact gas spring

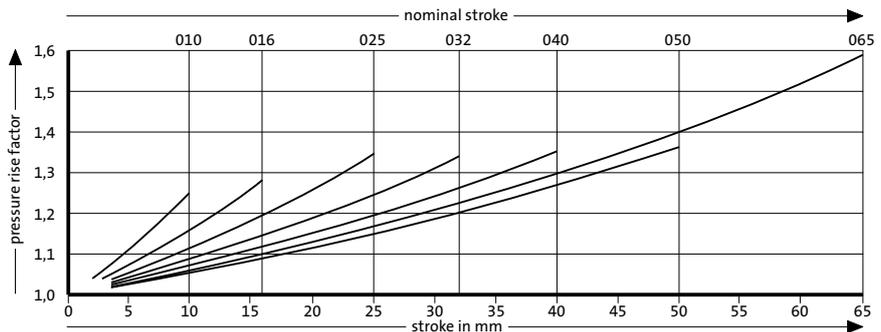
Order No	Stroke _{max.} (s)	I _{min.}	I	g ₂ *
2490.14.11800.010	10	90	100	78
2490.14.11800.016	16	110	126	98
2490.14.11800.025	25	130	155	118
2490.14.11800.032	32	155	187	143
2490.14.11800.040	40	180	220	168
2490.14.11800.050	50	210	260	198
2490.14.11800.065	65	255	320	243

*see mounting example

Initial spring force versus charge pressure



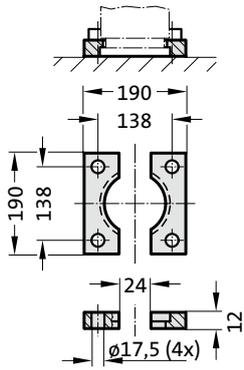
Spring force Diagram displacement versus stroke rise



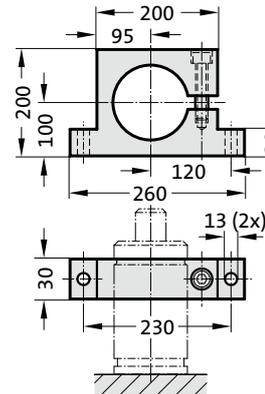
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

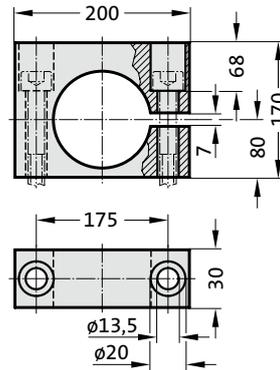
2480.022.07500



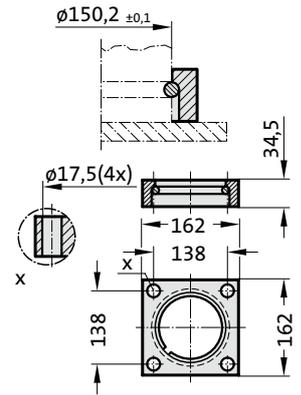
2480.044.07500²⁾



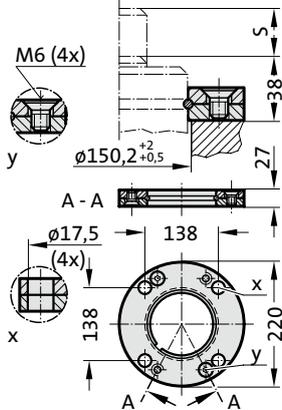
2480.044.03.07500²⁾



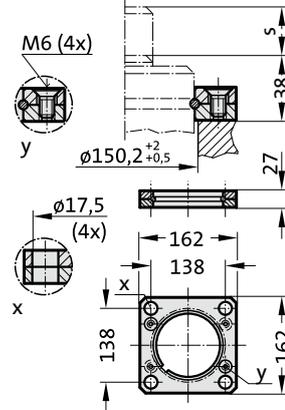
2480.052.18300



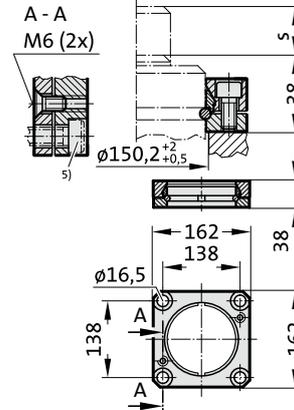
2480.055.07500



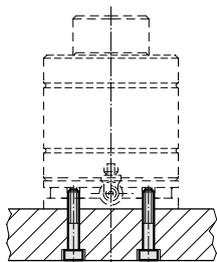
2480.057.07500



2480.064.07500⁴⁾



Mounting example:

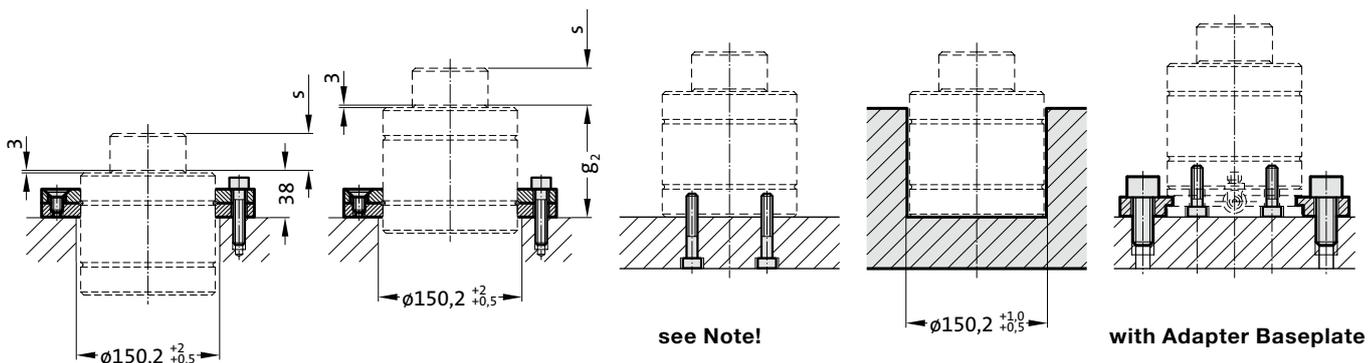


with Adapter Baseplate

Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

Mounting examples:



COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 18300 daN

Order No for spare parts kit: 2490.14.18300

Gas spring without valve

Order No (example): 2490.14.18300. .P

When mounting to floor, contact over the entire floor of the cylinder tube must be ensured! Before fitting the adapter base plate remove the valve from the gas spring. If vibration occurs, tighten the fixing screws accordingly.

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

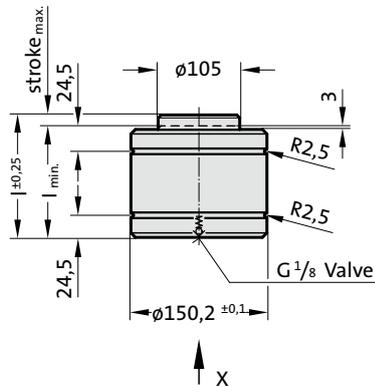
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 80 to 100 (at 20°C)

Max. piston speed: 0.8 m/s

2490.14.18300.



2490.14.18300.

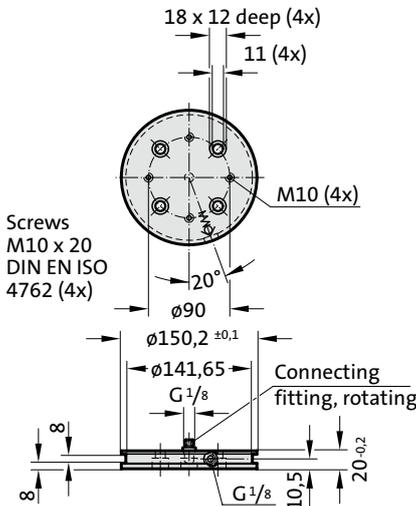
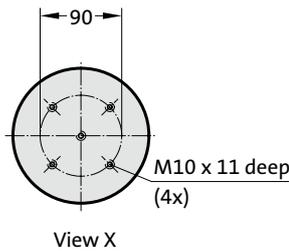
Compact gas spring

Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2490.14.18300.010	10	100	110	89
2490.14.18300.016	16	120	136	109
2490.14.18300.025	25	140	165	129
2490.14.18300.032	32	165	197	154
2490.14.18300.040	40	195	235	184
2490.14.18300.050	50	220	270	209
2490.14.18300.065	65	258	323	247

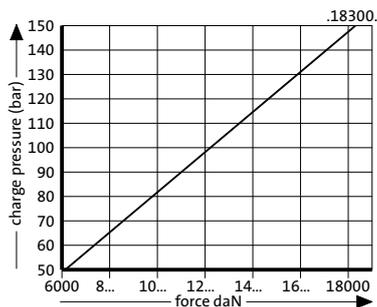
*see mounting example

2480.00.20.18300

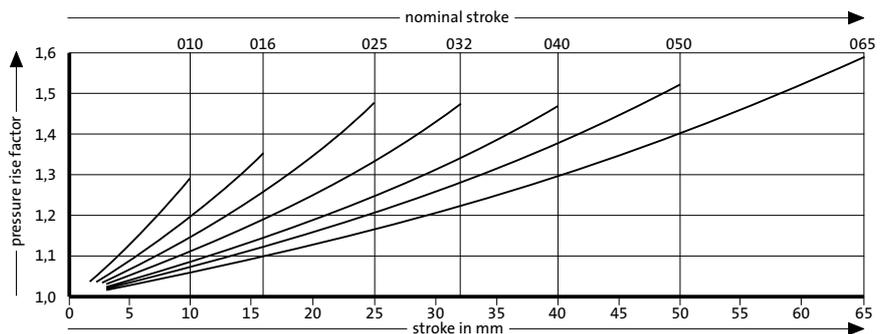
Adapter baseplate with connecting Fitting



Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS LOW BUILD HEIGHT



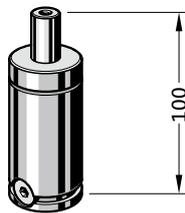
GAS SPRINGS LOW BUILD HEIGHT

Normal construction

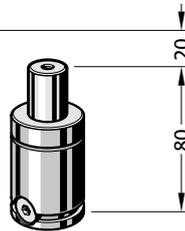
Compact construction

POWERLINE

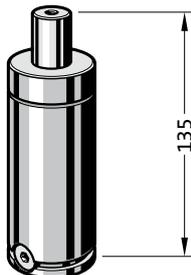
Construction heights with the same stroke and the same / increased spring force



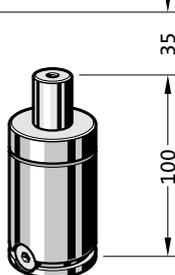
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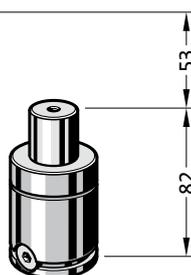
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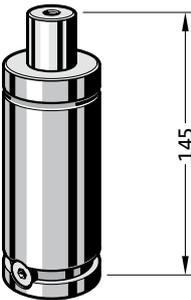
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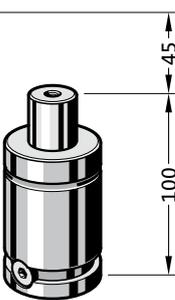
2485.12.00500.025



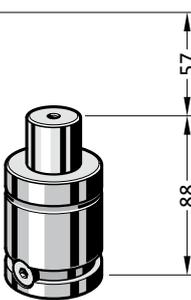
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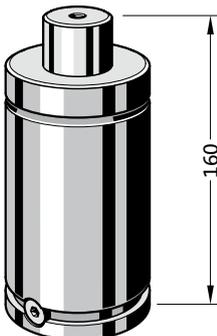
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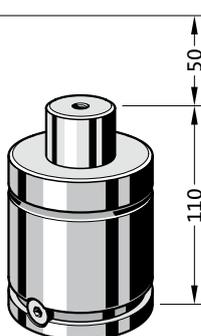
2485.12.00750.025



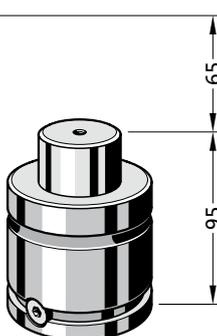
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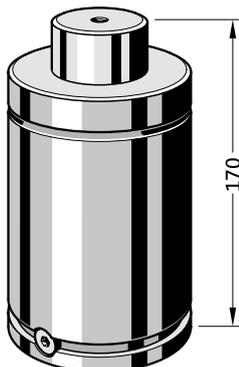
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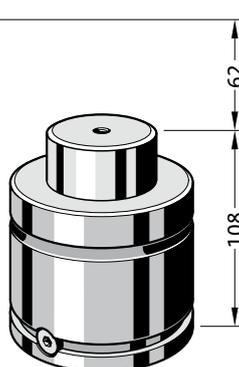
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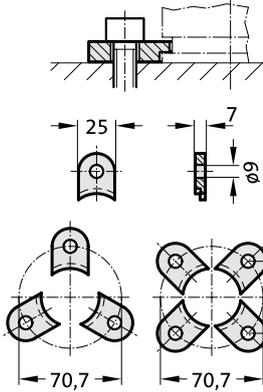
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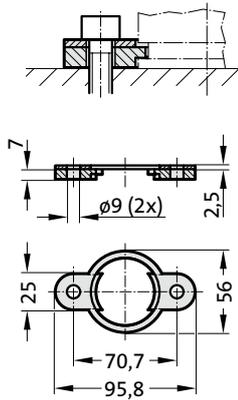
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GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

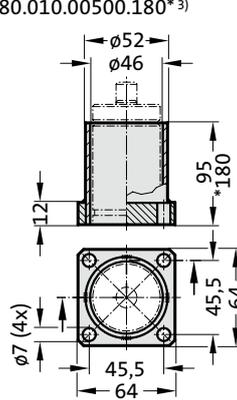
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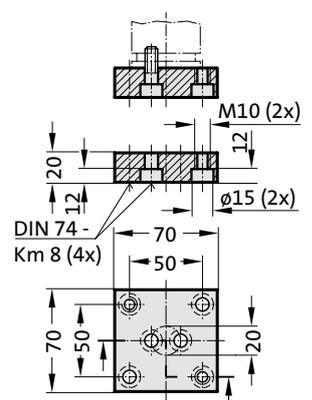
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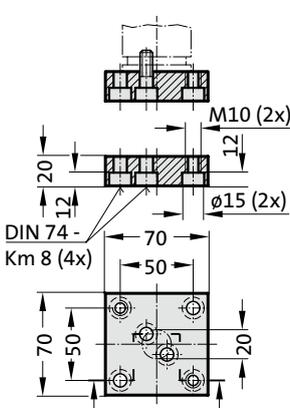
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2480.010.00500.180*³⁾



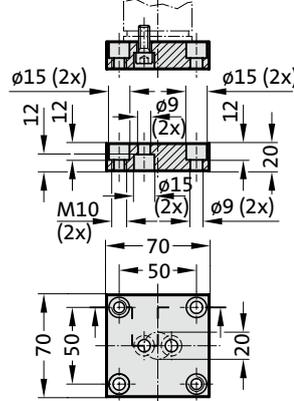
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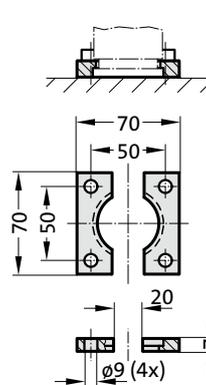
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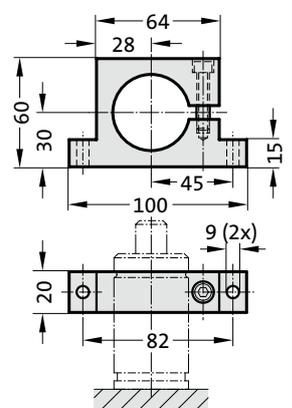
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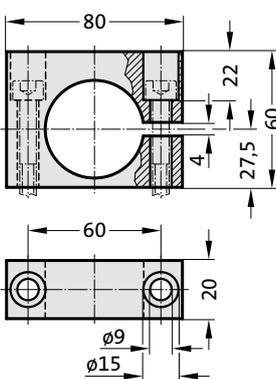
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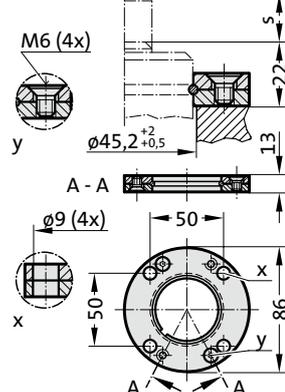
2480.044.00500²⁾



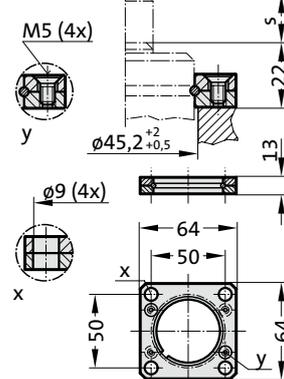
2480.044.03.00500²⁾



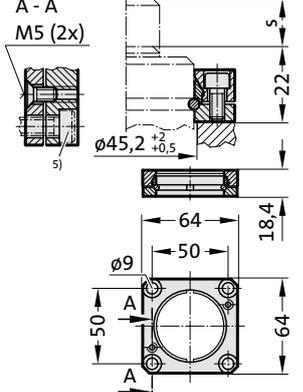
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, WITH LOW BUILD HEIGHT

Note:

Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2485.12.00500

Gas spring without valve

Order No (example): 2485.12.00500 . P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 50 bar

Working temperature: 0°C to +80°C

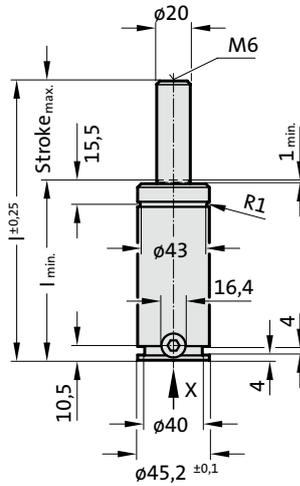
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

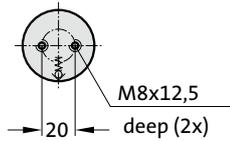
approx. 40 to 80 (at 20°C)

Max. piston speed: 1.6 m/s

2485.12.00500.



View X - Gas spring

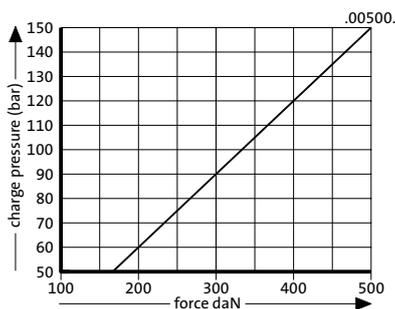


2485.12.00500.

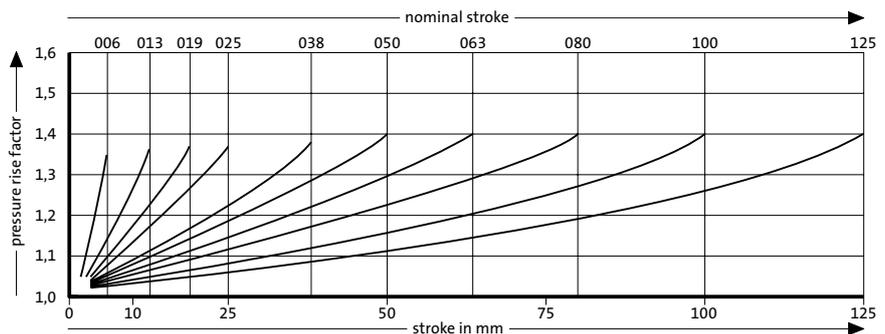
Gas spring, with low build height

Order No	Stroke _{max.} (s)	l _{min.}	l
2485.12.00500.006	6	56	62
2485.12.00500.013	12.7	62.7	75.4
2485.12.00500.019	19	69.1	88.1
2485.12.00500.025	25	75	100
2485.12.00500.038	38.1	88.1	126.2
2485.12.00500.050	50	100	150
2485.12.00500.063	63.5	113.5	177
2485.12.00500.080	80	130	210
2485.12.00500.100	100	150	250
2485.12.00500.125	125	175	300

Initial spring force versus charge pressure



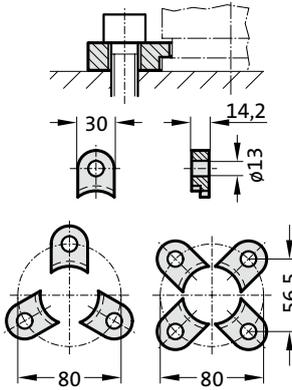
Spring force Diagram displacement versus stroke rise



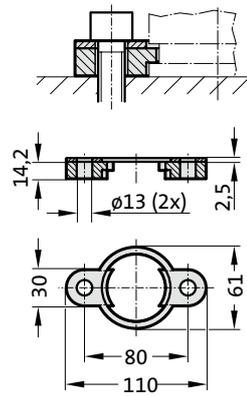
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

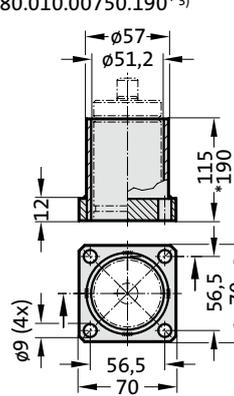
2480.007.00750



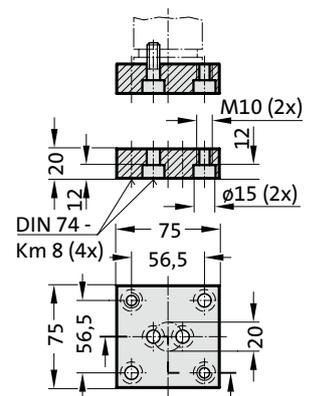
2480.008.00750³⁾



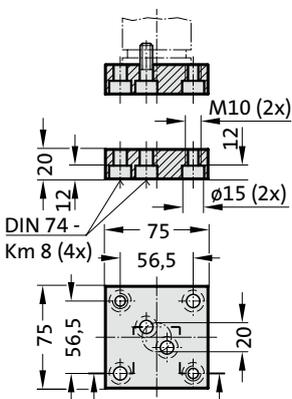
2480.010.00750.115³⁾
2480.010.00750.190*³⁾



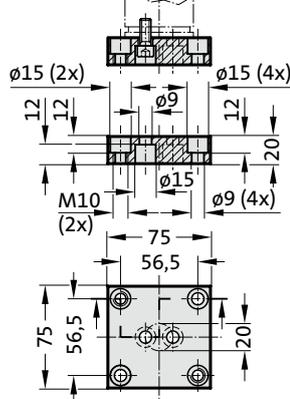
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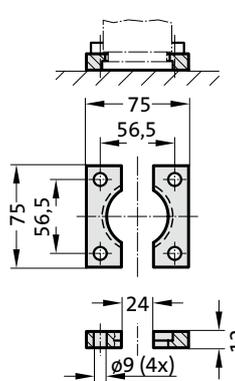
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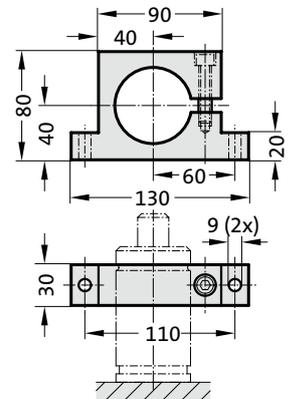
2480.011.00750.3



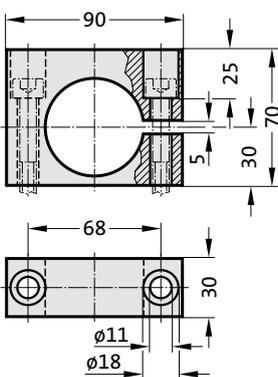
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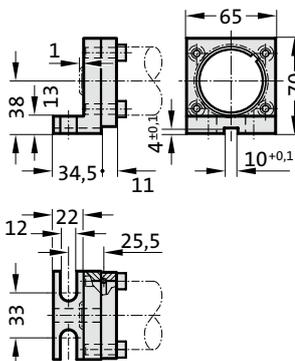
2480.044.00750²⁾



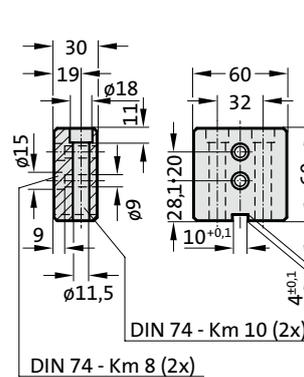
2480.044.03.00750²⁾



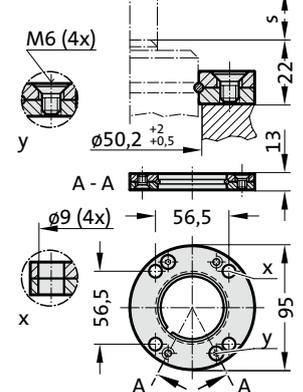
2480.045.00750²⁾



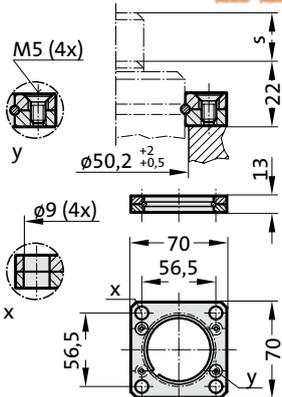
2480.047.00750²⁾



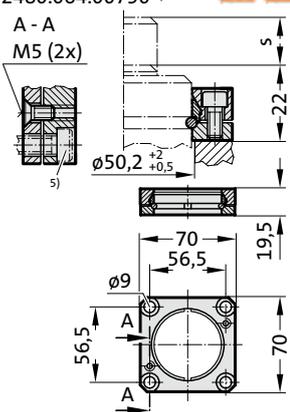
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING, WITH LOW BUILD HEIGHT

Note:

Initial spring force at 150 bar = 750 daN

Order No for spare parts kit: 2485.12.00750

Gas spring without valve

Order No (example): 2485.12.00750. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

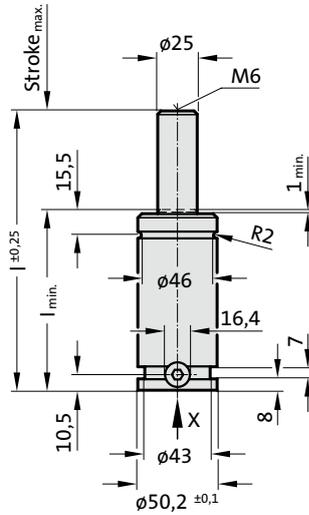
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

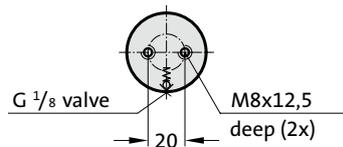
approx. 15 to 40 (at 20°C)

Max. piston speed: 1.6 m/s

2485.12.00750.



View X - Gas spring

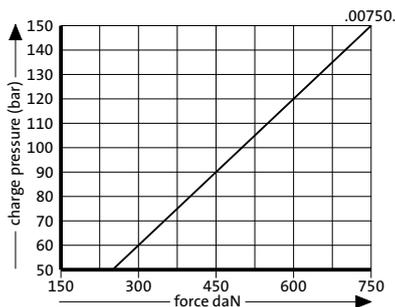


2485.12.00750.

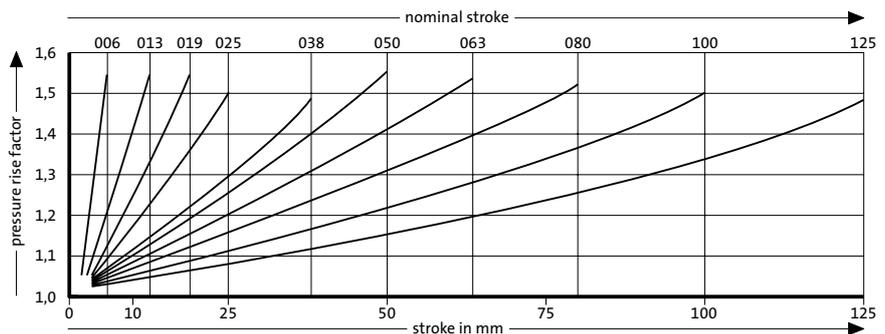
Gas spring, with low build height

Order No	Stroke _{max.} (s)	l _{min.}	l
2485.12.00750.006	6	56	62
2485.12.00750.013	12.7	62.7	75.4
2485.12.00750.019	19	69.1	88.1
2485.12.00750.025	25	75	100
2485.12.00750.038	38.1	88.1	126.2
2485.12.00750.050	50	100	150
2485.12.00750.063	63.5	113.5	177
2485.12.00750.080	80	130	210
2485.12.00750.100	100	150	250
2485.12.00750.125	125	175	300

Initial spring force versus charge pressure



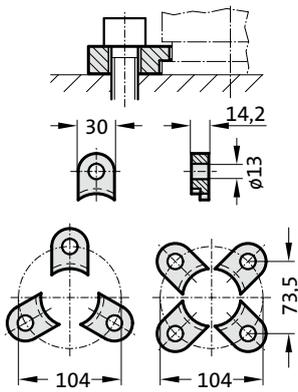
Spring force Diagram displacement versus stroke rise



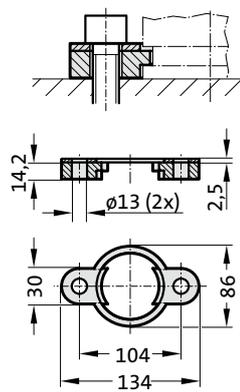
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

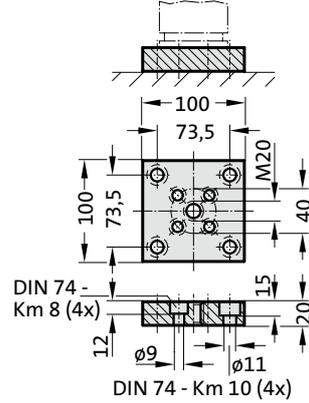
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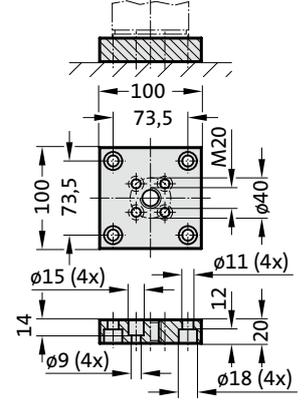
2480.008.01500³⁾



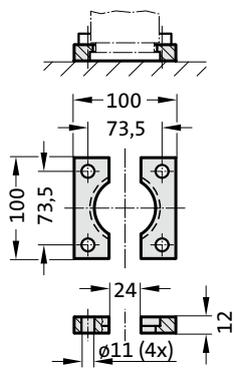
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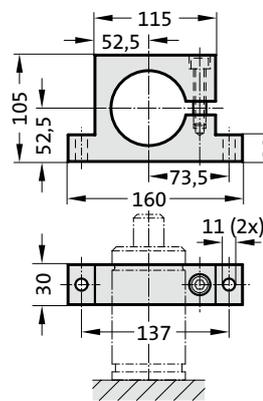
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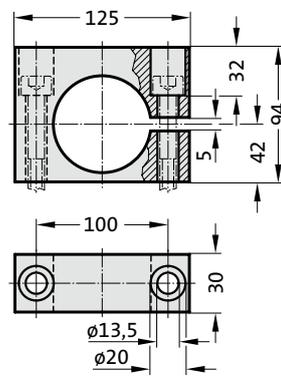
2480.022.01500



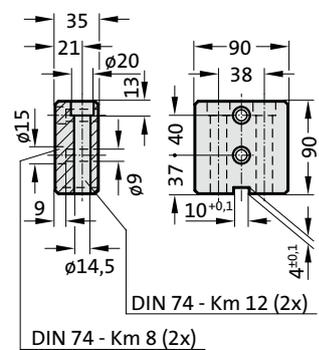
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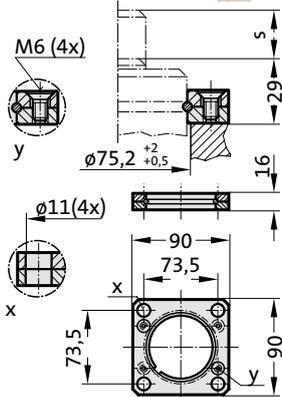
2480.044.03.01500²⁾



2480.047.01500²⁾



2480.058.01500



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.

GAS SPRING, WITH LOW BUILD HEIGHT

Note:

Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2485.12.01500

Gas spring without valve

Order No (example): 2485.12.01500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

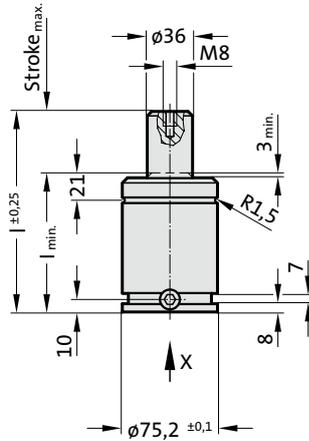
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

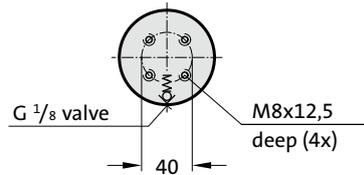
approx. 15 to 40 (at 20°C)

Max. piston speed: 1.6 m/s

2485.12.01500.



View X - Gas spring

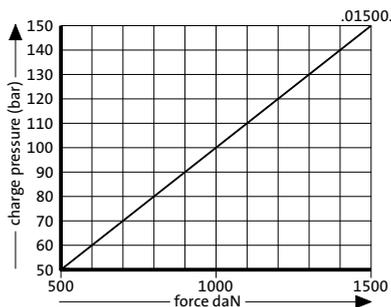


2485.12.01500.

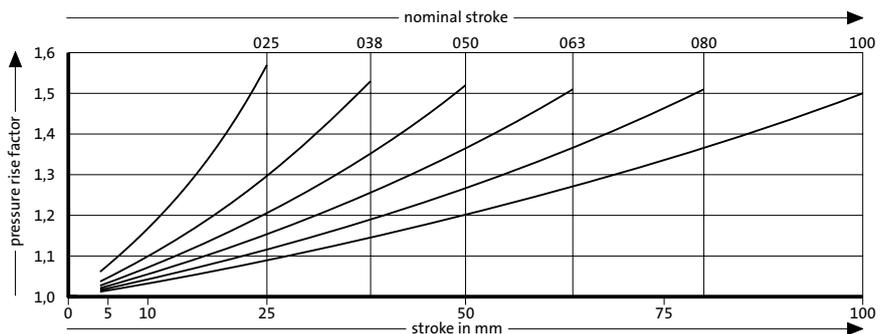
Gas spring, with low build height

Order No	Stroke _{max.} (s)	l _{min.}	l
2485.12.01500.025	25	85	110
2485.12.01500.038	38.1	98.1	136.2
2485.12.01500.050	50	110	160
2485.12.01500.063	63.5	123.5	187
2485.12.01500.080	80	140	220
2485.12.01500.100	100	160	260

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS SPC - SPEED CONTROL™



GAS SPRINGS SPC - SPEED CONTROL™

Description:

FIBRO SPC - SPEED CONTROL™ gas springs have been engineered to reduce or eliminate blank holder bounce; commonly associated with increased return stroke speeds from link drive presses.

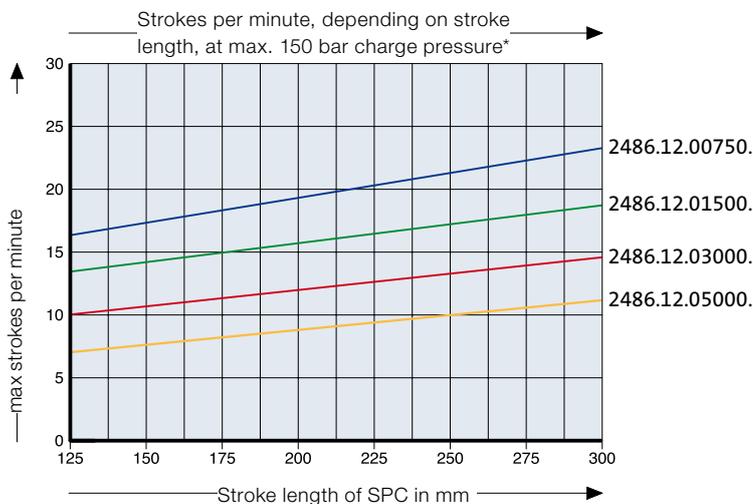
The SPC gas springs have an integrated return stroke delay, which reduces the speed of the gas spring to 0.4 m/s during the last 30 mm stroke. This gently stops the sheet holder.

Properties:

- prevents the blank holder springing back
- Productivity increase due to more efficient parts transport
- Easy to install in existing tools
- Stroke lengths of 125 to 300 mm
- can be connected to existing hose system

GAS SPRINGS SPC - SPEED CONTROL™

Performance:



The diagram shows the max. possible number of strokes per minutes [min⁻¹] of SPC gas springs with a max. filling pressure (150 bar) and max. used stroke lengths before there is a risk of excessive heating.



Note !

The number of strokes per minutes can be doubled by halving the initial filling pressure.

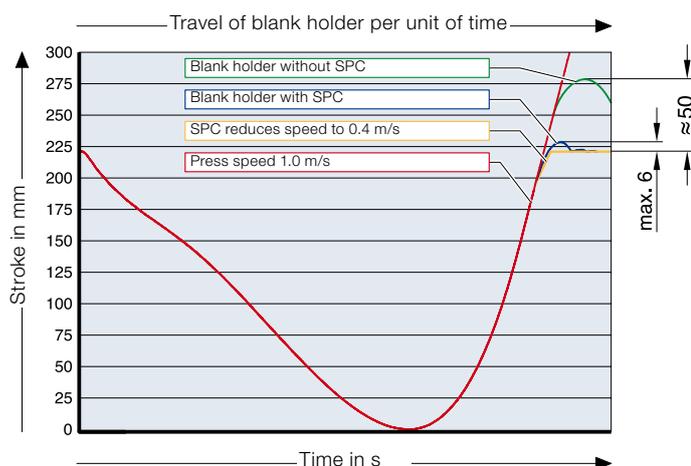


Caution !

SPC gas springs are subject to a higher heating than standard gas springs. For this reason, please ensure adequate ventilation of the SPC gas springs in the tool.

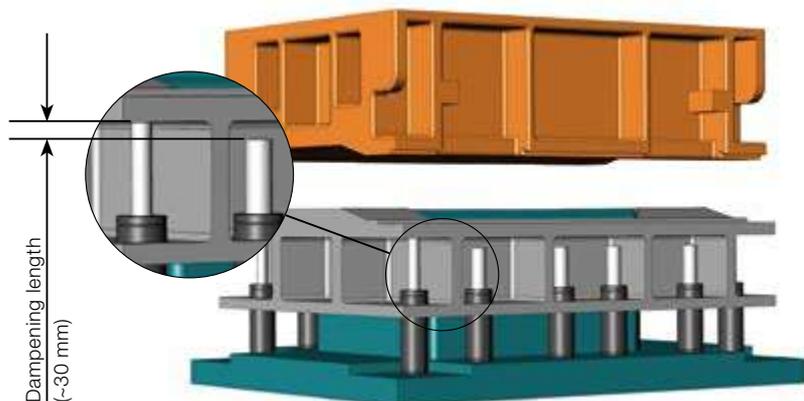
*At ambient room temperature with free air flow

Function example:



SPC - SPEED CONTROL™ gas springs gave a 90% reduction of blank holder bounce.

Installation:



It is important that approx. 25 to 30 mm before the sheet metal retainer has reached its home position, only SPC gas springs are applied. Therefore, for the retrofitting of existing tools with SPC gas springs we recommend the following two options:

Option 1:

Replace all existing gas springs holding the blank holder with SPC gas springs

Option 2:

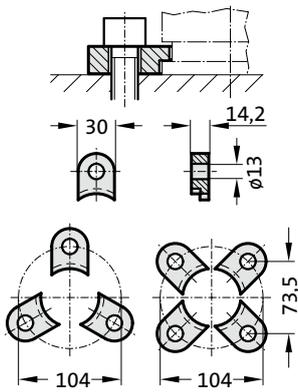
SPC gas springs with a min. 25 mm longer nominal stroke length than with the "main gas pressure springs" are positioned at the four corners of the blank holder. This lifts the blank holder from the "main gas pressure springs".

Attention:

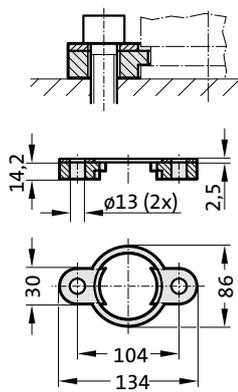
Springs must be installed with a recess of 25 mm to balance the total length difference (2 x stroke length = 50 mm). Alternatively, the contact surface of the sheet metal retainer can be recessed in order to achieve the same effect.

GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

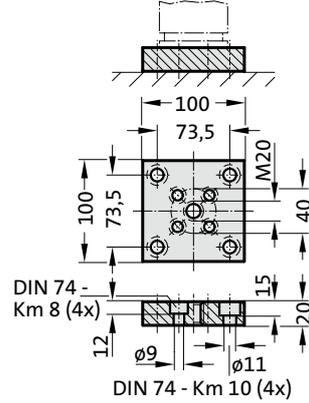
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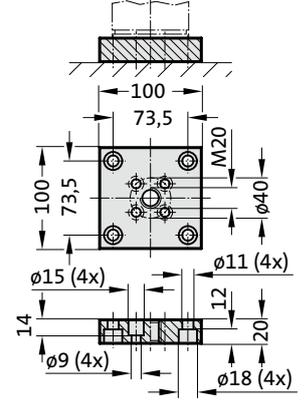
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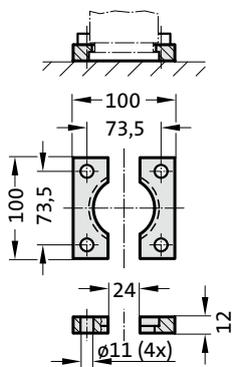
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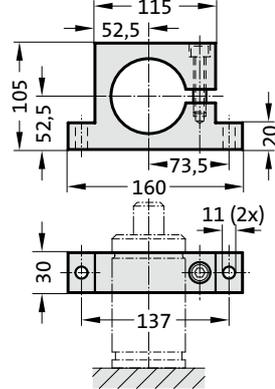
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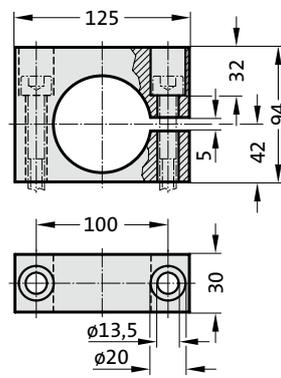
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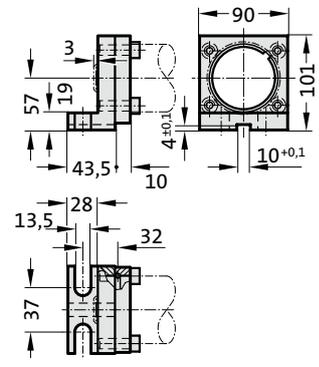
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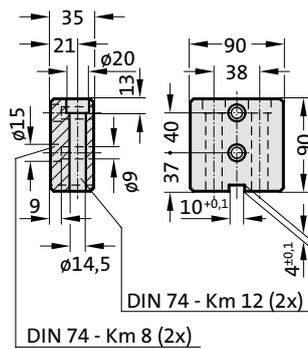
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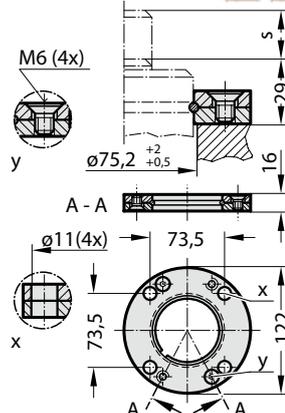
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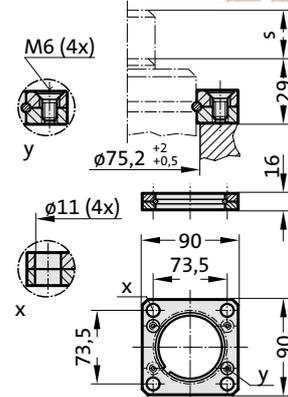
2480.047.01500²⁾



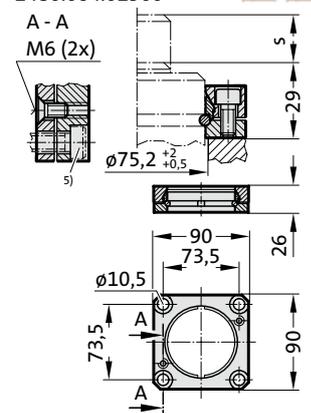
2480.055.01500



2480.057.01500



2480.064.01500⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING SPEED CONTROL, CUSHIONED

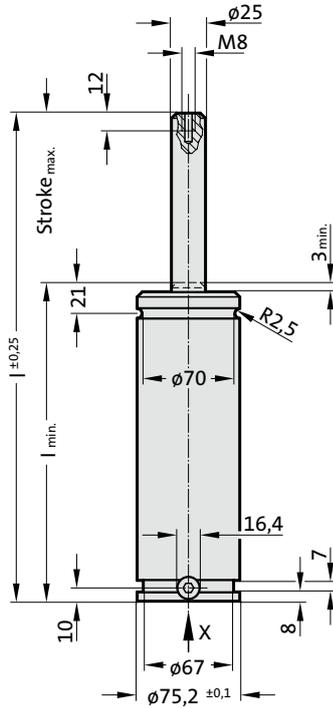
Note:

Initial spring force at 150 bar = 750 daN

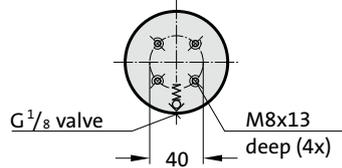
Order No for spare parts kit: 2486.12.00750

- Pressure medium: Nitrogen N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 25 bar
- Working temperature: 0°C to +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 16 to 24 (at 20°C)
- Dampening length: ~ 30 mm
- Piston rod speed, decelerated: 0.4 m/s

2486.12.00750.



View X - Gas spring

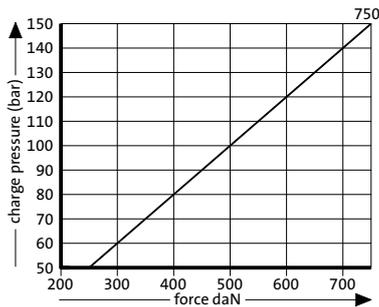


2486.12.00750.

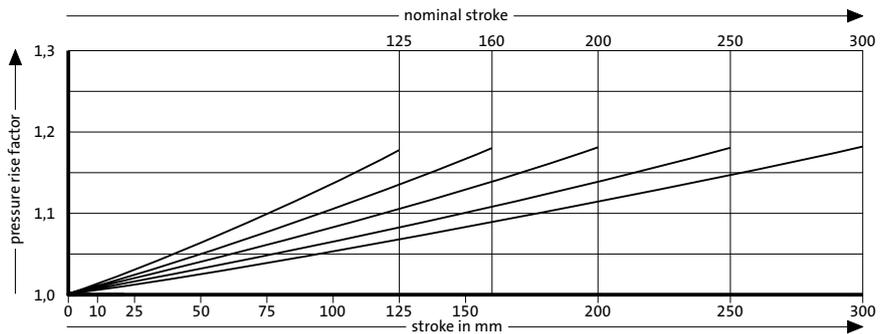
Gas spring SPEED CONTROL, cushioned

Order No	Stroke _{max.} (s)	l _{min.}	l
2486.12.00750.125	125	235	360
2486.12.00750.160	160	270	430
2486.12.00750.200	200	310	510
2486.12.00750.250	250	360	610
2486.12.00750.300	300	410	710

Initial spring force versus charge pressure



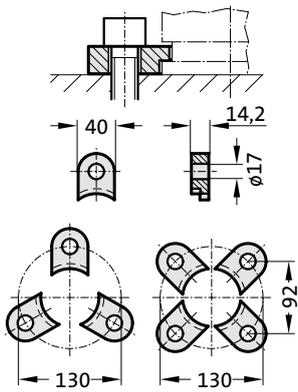
Spring force Diagram displacement versus stroke rise



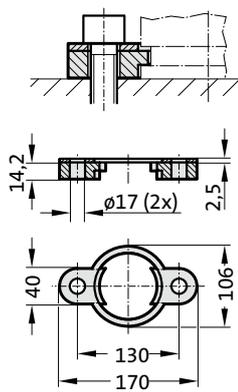
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

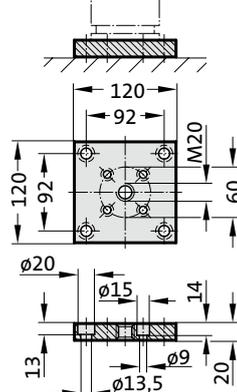
2480.007.03000



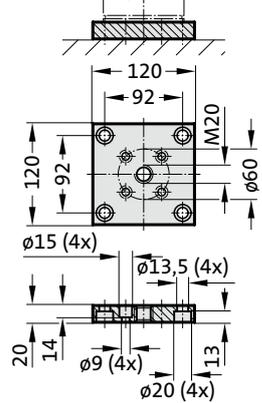
2480.008.03000³⁾



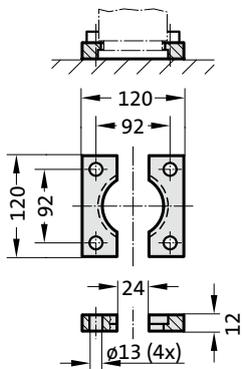
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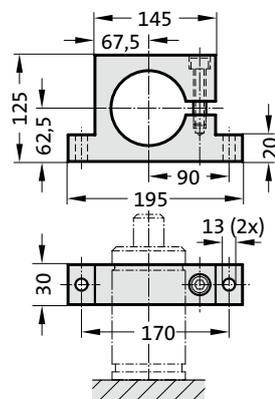
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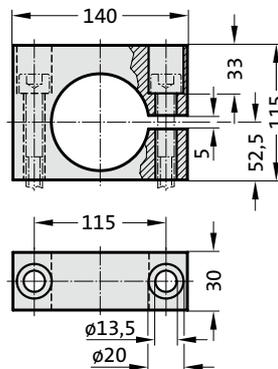
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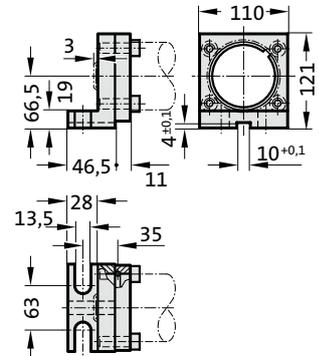
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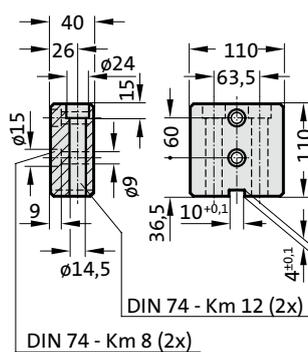
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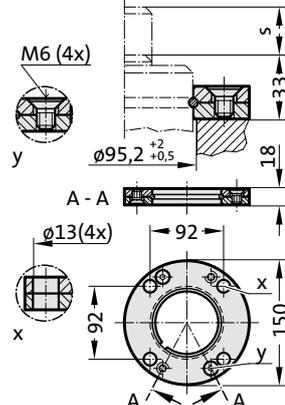
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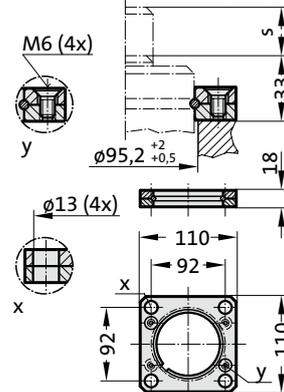
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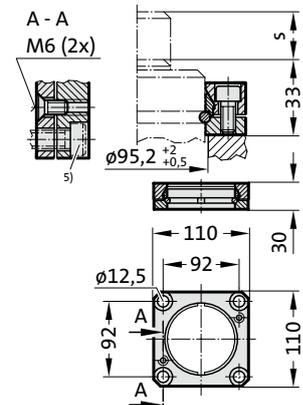
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING SPEED CONTROL, CUSHIONED

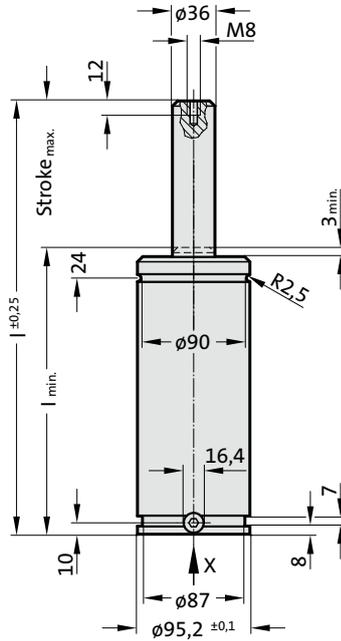
Note:

Initial spring force at 150 bar = 1500 daN

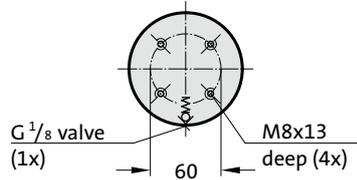
Order No for spare parts kit: 2486.12.01500

- Pressure medium: Nitrogen N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 25 bar
- Working temperature: 0°C to +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 14 to 19 (at 20°C)
- Dampening length: ~ 30 mm
- Piston rod speed, decelerated: 0.4 m/s

2486.12.01500.



View X - Gas spring

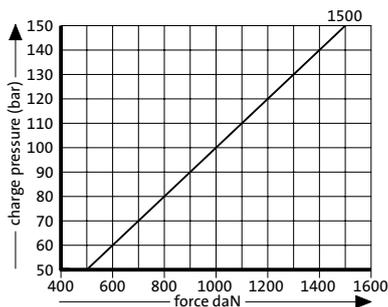


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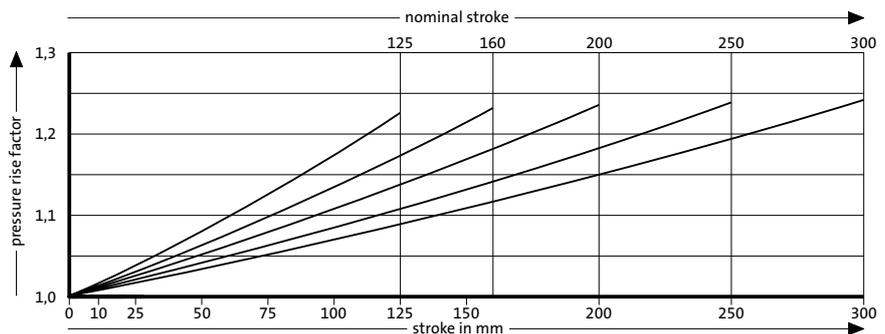
Gas spring SPEED CONTROL,
cushioned

Order No	Stroke _{max.} (s)	I _{min.}	I
2486.12.01500.125	125	245	370
2486.12.01500.160	160	280	440
2486.12.01500.200	200	320	520
2486.12.01500.250	250	370	620
2486.12.01500.300	300	420	720

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING SPEED CONTROL, CUSHIONED

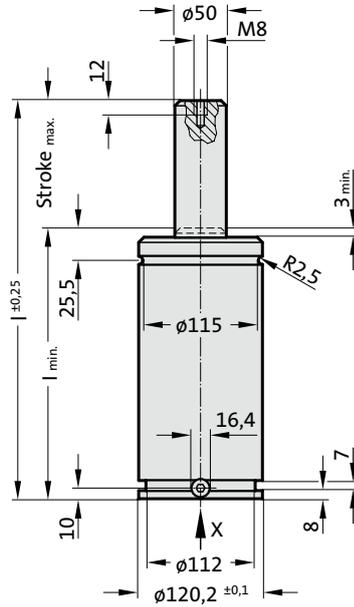
Note:

Initial spring force at 150 bar = 3000 daN

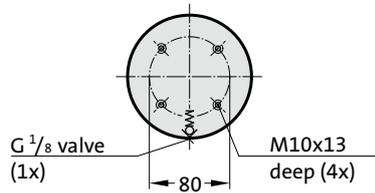
Order No for spare parts kit: 2486.12.03000

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 10 to 13 (at 20°C)
 Dampening length: ~ 30 mm
 Piston rod speed, decelerated: 0.4 m/s

2486.12.03000.



View X - Gas spring

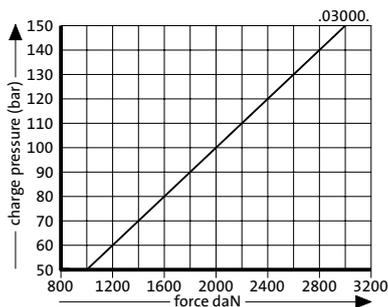


2486.12.03000.

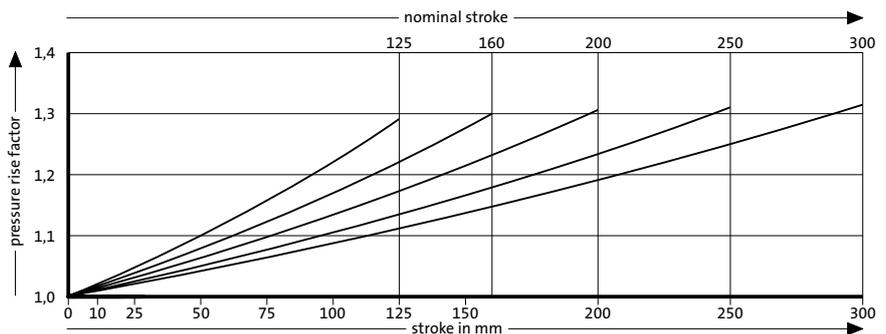
Gas spring SPEED CONTROL, cushioned

Order No	Stroke _{max.} (s)	l _{min.}	l
2486.12.03000.125	125	265	390
2486.12.03000.160	160	300	460
2486.12.03000.200	200	340	540
2486.12.03000.250	250	390	640
2486.12.03000.300	300	440	740

Initial spring force versus charge pressure



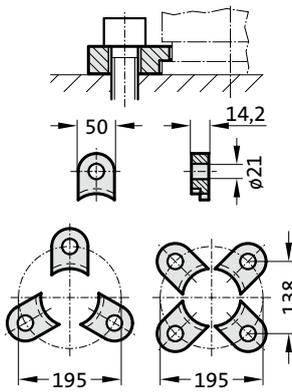
Spring force Diagram displacement versus stroke rise



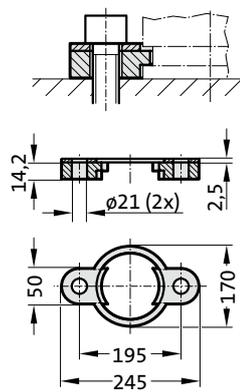
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

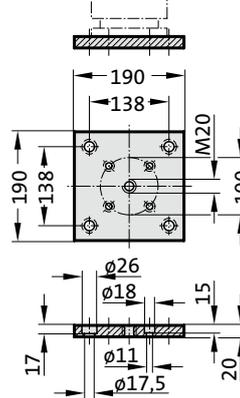
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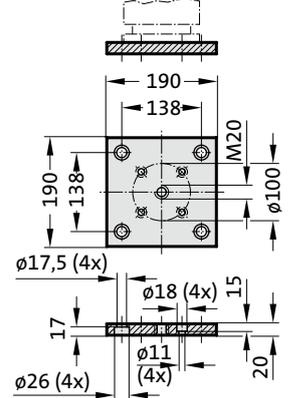
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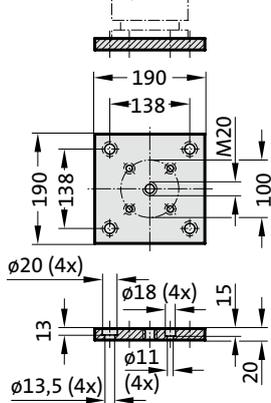
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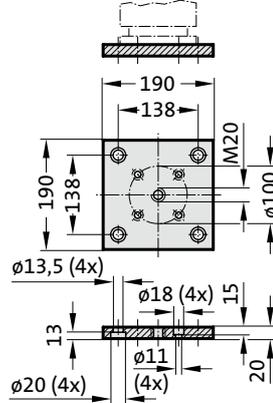
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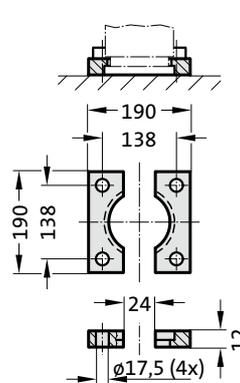
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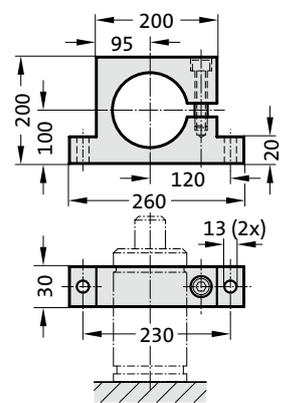
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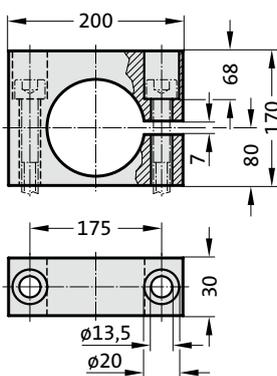
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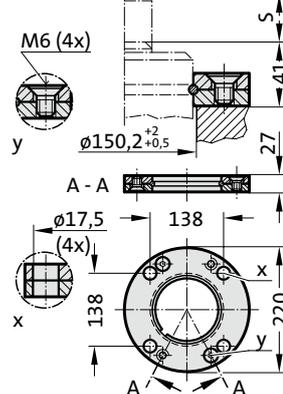
2480.044.07500²⁾



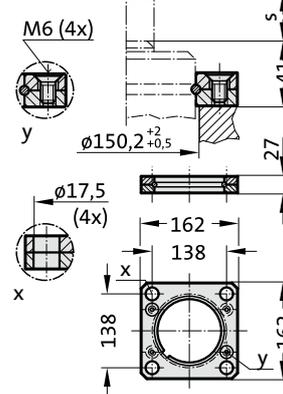
2480.044.03.07500²⁾



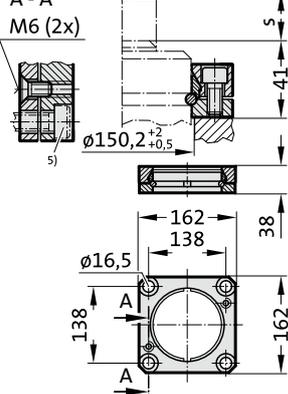
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



Note:

- 2) Attention:
The spring force must be absorbed by the stop Surface!
- 3) Not for use with composite connection.
- 4) Square collar flange, non-rotating, fixing for composite connection.
- 5) Machine screws with hexagonal socket (compact head recommended)

GAS SPRING SPEED CONTROL, CUSHIONED

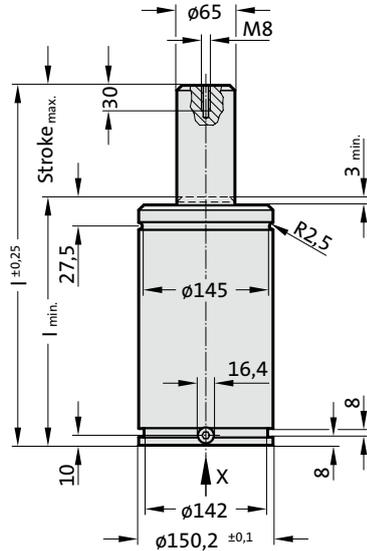
Note:

Initial spring force at 150 bar = 5000 daN

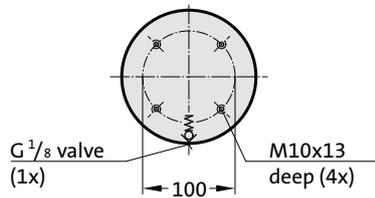
Order No for spare parts kit: 2486.12.05000

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 6 to 11 (at 20°C)
 Dampening length: ~ 30 mm
 Piston rod speed, decelerated: 0.4 m/s

2486.12.05000.



View X - Gas spring

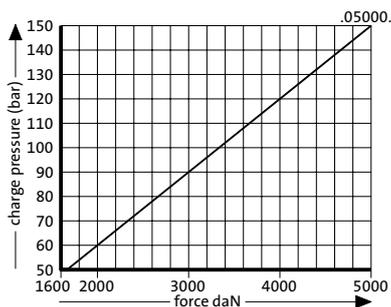


2486.12.05000.

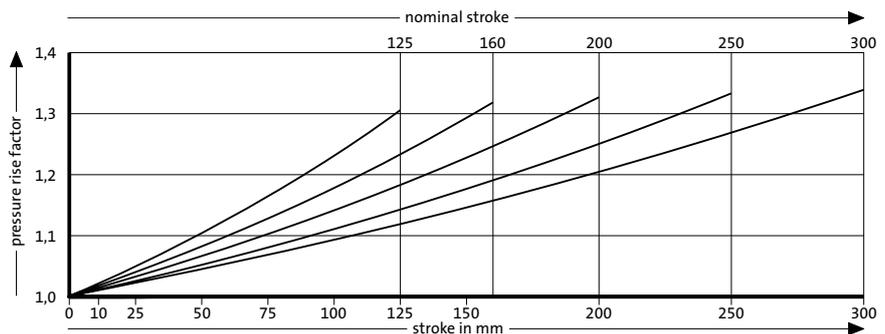
Gas spring SPEED CONTROL, cushioned

Order No	Stroke _{max.} (s)	I _{min.}	I
2486.12.05000.125	125	280	405
2486.12.05000.160	160	315	475
2486.12.05000.200	200	355	555
2486.12.05000.250	250	405	655
2486.12.05000.300	300	455	755

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS DS FOR DIE SEPARATION



GAS SPRINGS DS FOR DIE SEPARATION

Description

In line of reducing the set-up time while installing the tool in the press there are used autonomous acted gas springs for tool spacing. While using conventional gas springs they are activated with every press stroke about the whole stroke length. The new FIBRO gas spring, DS (Die Separation) have been developed especially for tool spacing. Because of the slow return stroke speed, the gas spring DS does not need the total stroke length. The FIBRO gas spring, DS minimises unwanted friction in the tool, press and in the gas spring itself. A further benefit is that they use up to 80% less energy than "conventional" standard gas springs.

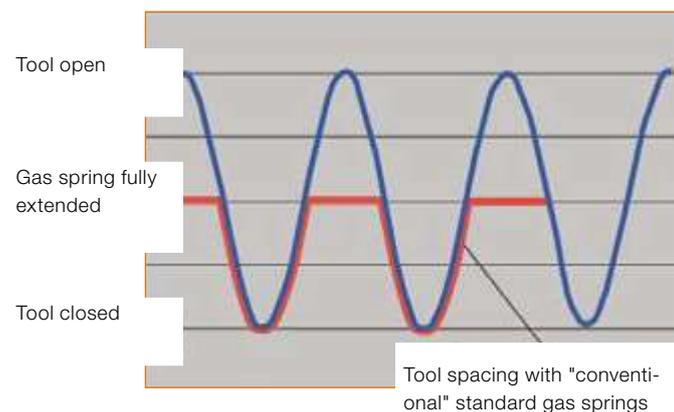
Function:

When conventional standard gas springs are used to distance the upper and lower parts of the die, additional initial forces are exerted on each stroke carried out. This force can increase further at the end of the stroke (see diagram 1). When using the "new" DS gas springs in the same application, the force is reduced to less than 10% for each stroke (diagram 2). The return stroke speed of the gas springs DS is very slow. The duration of the complete return stroke is 1-2 minutes. However, this slow speed has no negative influence on the end position (gas springs fully extended). The piston rod is actuated oscillating up to 10% of the total stroke depending on the production rate.

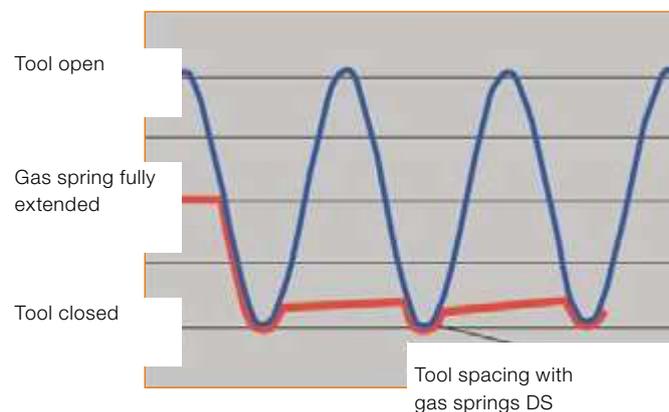
Properties:

- Initial spring forces of 3000 daN to 7500 daN
- Stroke lengths of 50 mm to 300 mm
- Standardised dimensions in accordance with ISO, VDI, CNOMO
- Very slow return stroke speed 0.2 m/min
- Standard safety features (FIBRO Safer Choice)
 - Safety piston rod
 - Excess pressure protection
 - Overtravel protection
- High flexibility during fixing from the top mounting notch and lower fixing groove, together with the tapped bores in the spring base

Diagrams 1

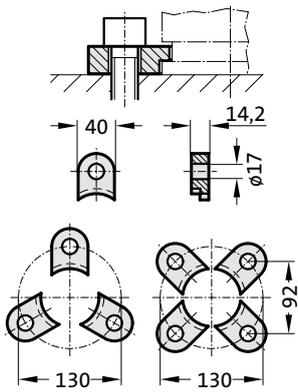


Diagrams 2

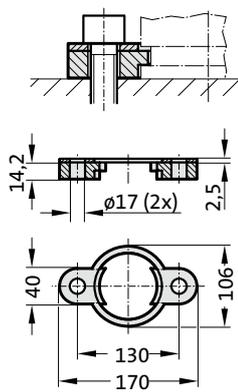


GAS SPRING DS MOUNTING VARIATIONS

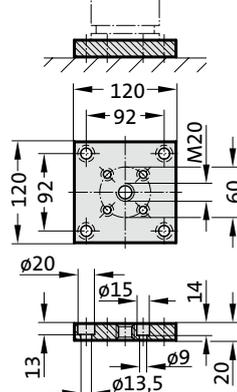
2480.007.03000



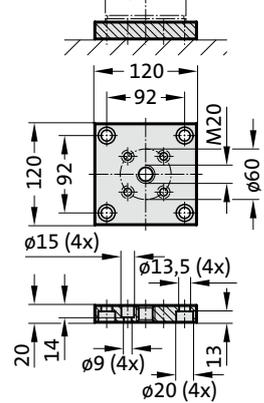
2480.008.03000³⁾



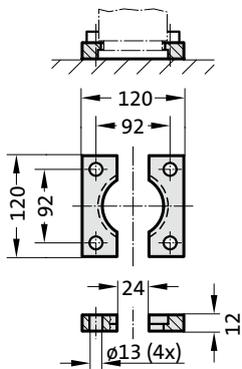
2480.011.03000



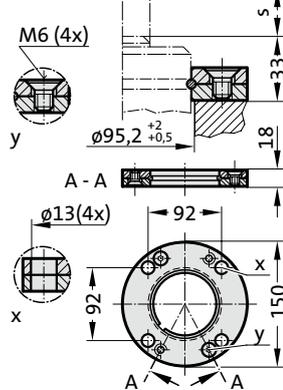
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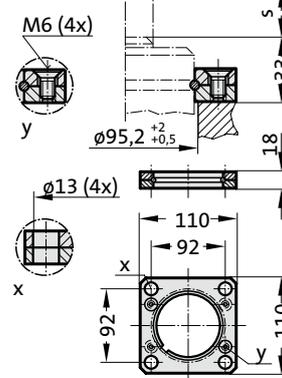
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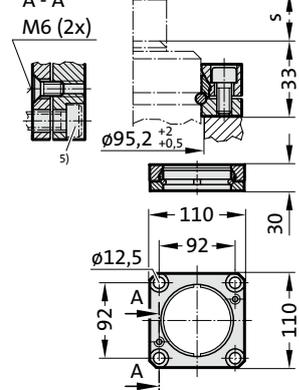
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING DS

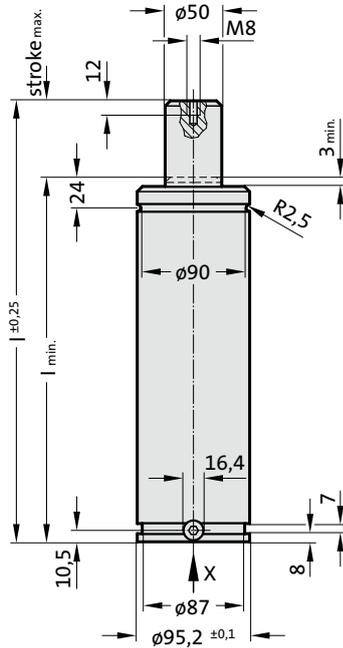
Note:

Initial spring force at 150 bar = 3000 daN

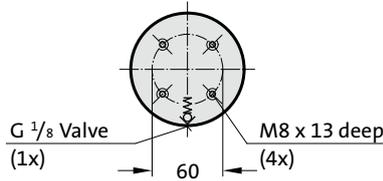
Order No. for spare parts kit: 2486.22.03000

- Pressure medium: Nitrogen - N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 25 bar
- Working temperature: 0°C bis +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 20 to 50 (at 20°C)
- Max. piston speed: 1.6 m/s
- Max. return stroke speed: 0.2 m/min

2486.22.03000.



View X - Gas spring

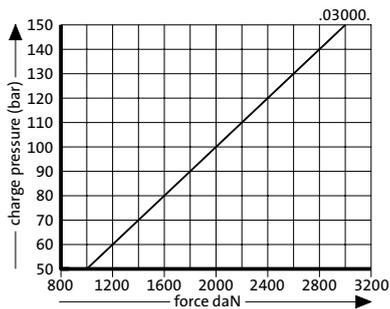


2486.22.03000.

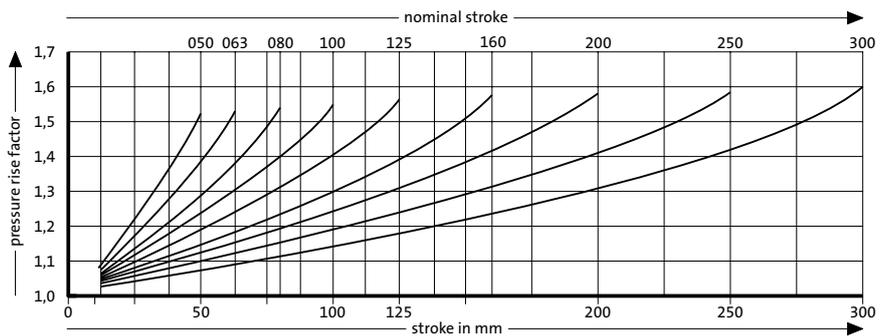
Gas spring DS

Order No	Stroke _{max.} (s)	l _{min.}	l
2486.22.03000.050	50	170	220
2486.22.03000.063	63.5	183.5	247
2486.22.03000.080	80	200	280
2486.22.03000.100	100	220	320
2486.22.03000.125	125	245	370
2486.22.03000.160	160	280	440
2486.22.03000.200	200	320	520
2486.22.03000.250	250	370	620
2486.22.03000.300	300	420	720

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING DS

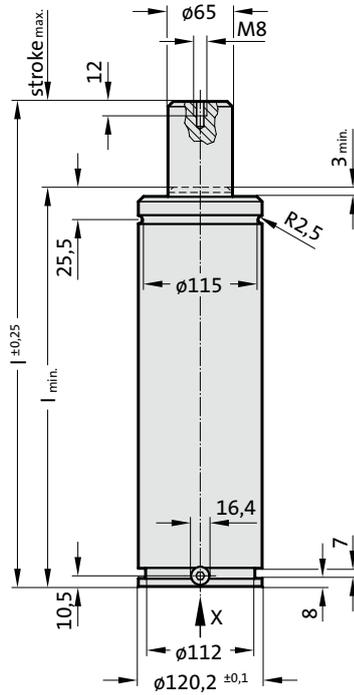
Note:

Initial spring force at 150 bar = 5000 daN

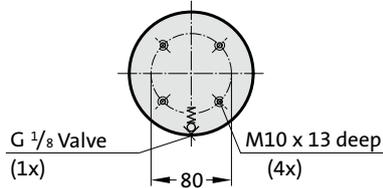
Order No. for spare parts kit: 2486.22.05000

- Pressure medium: Nitrogen - N₂
- Max. filling pressure: 150 bar
- Min. filling pressure: 25 bar
- Working temperature: 0°C bis +80°C
- Temperature related force increase: ± 0.3%/°C
- Max. recommended extensions per minute: approx. 20 to 50 (at 20°C)
- Max. piston speed: 1.6 m/s
- Max. return stroke speed: 0.2 m/min

2486.22.05000.



View X - Gas spring

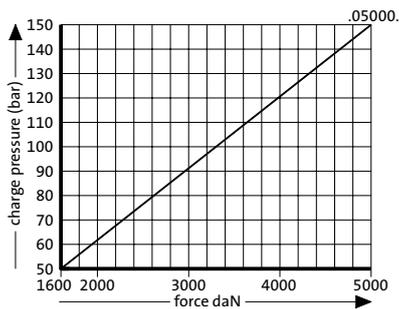


2486.22.05000.

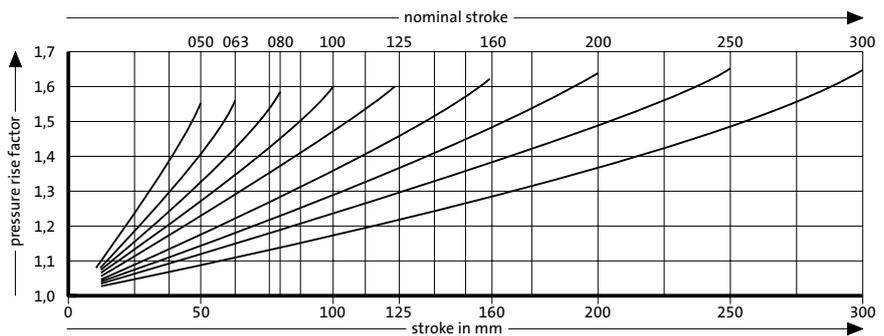
Gas spring DS

Order No	Stroke _{max.} (s)	l _{min.}	l
2486.22.05000.050	50	190	240
2486.22.05000.063	63.5	203.5	267
2486.22.05000.080	80	220	300
2486.22.05000.100	100	240	340
2486.22.05000.125	125	265	390
2486.22.05000.160	160	300	460
2486.22.05000.200	200	340	540
2486.22.05000.250	250	390	640
2486.22.05000.300	300	440	740

Initial spring force versus charge pressure



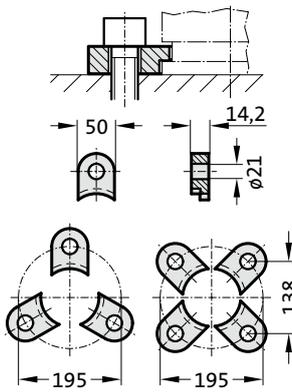
Spring force Diagram displacement versus stroke rise



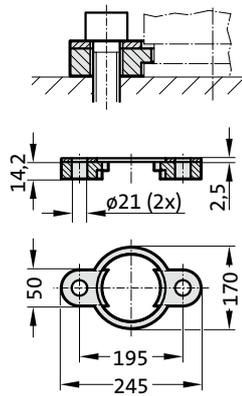
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING DS MOUNTING VARIATIONS

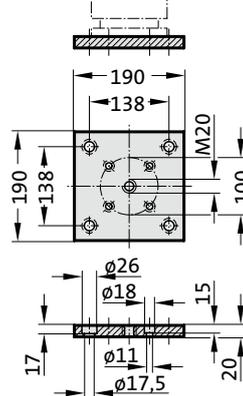
2480.007.07500



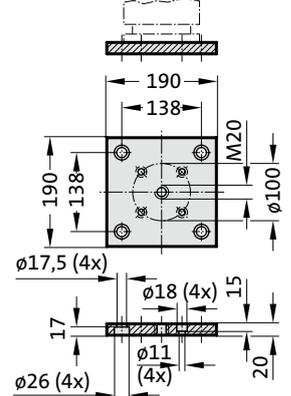
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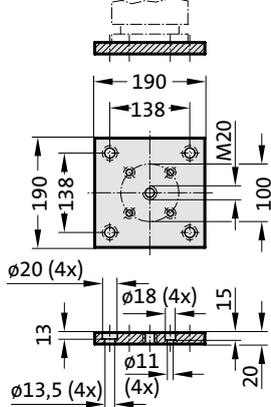
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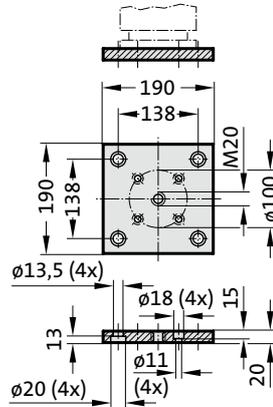
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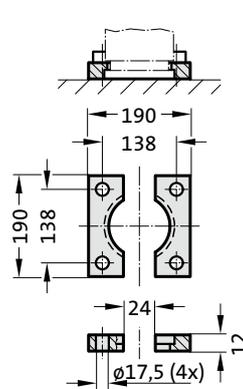
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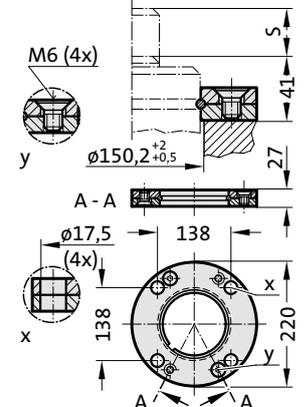
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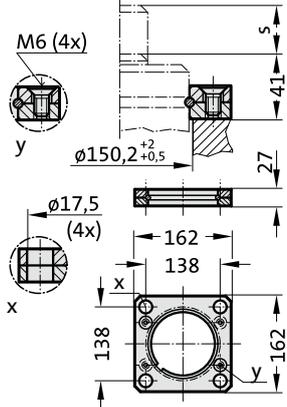
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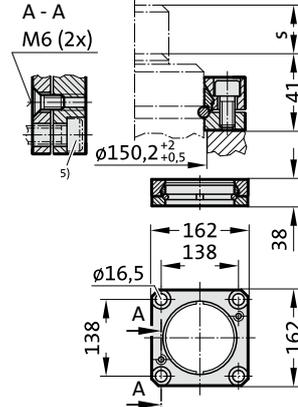
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



Note:

- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRINGS WITH FASTENING TO FORD STANDARD WDX

Please request your catalogue

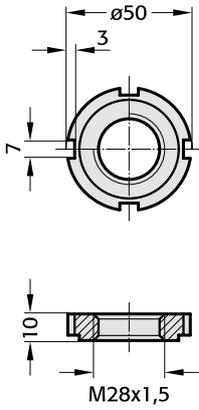


GAS SPRINGS WITH THREAD

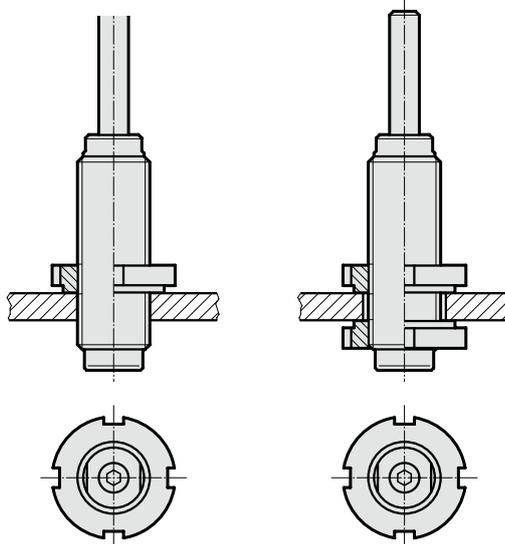


GAS SPRING WITH EXTERNAL THREAD MOUNTING VARIATIONS

2480.005.00200.
Slotted nut



Mounting examples:



GAS SPRING WITH EXTERNAL THREAD

Description:

The gas springs are colour-coded according to the spring force rating ranges 50–100–150–200 daN.

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures.

Do take into consideration the colour-coded pressure rating during repair work and recharging.

Note:

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

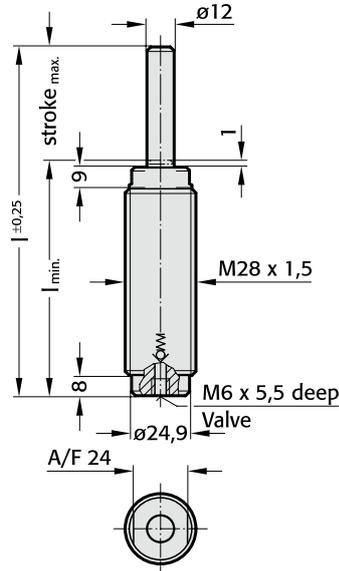
approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2482.32.00000....., Colour: black

2480.32.



2480.32. Gas spring with external thread

Order No*	Stroke _{max.}	l	l _{min.}
2480.32.□□□□□.010	10	62	52
2480.32.□□□□□.013	12.7	67.4	54.7
2480.32.□□□□□.016	16	74	58
2480.32.□□□□□.025	25	92	67
2480.32.□□□□□.038	38.1	118.2	80.1
2480.32.□□□□□.050	50	142	92
2480.32.□□□□□.063	63.5	169	105.5
2480.32.□□□□□.080	80	202	122
2480.32.□□□□□.100	100	242	142
2480.32.□□□□□.125	125	292	167

*complete with initial spring force

Spring force marking:

Initial spring force [daN] - Pressure [bar] - Colour:

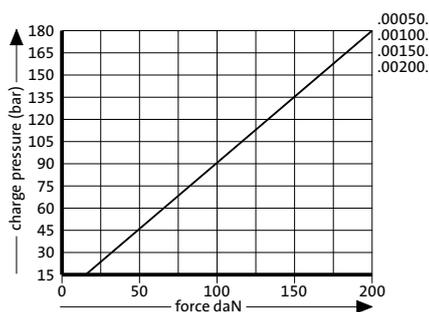
.00050. - 45 - green

.00100. - 90 - blue

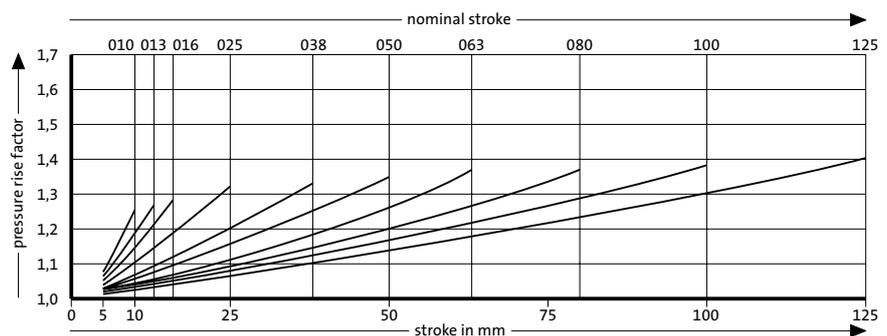
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



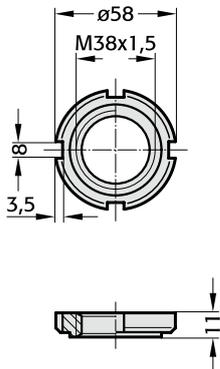
Spring force Diagram displacement versus stroke rise



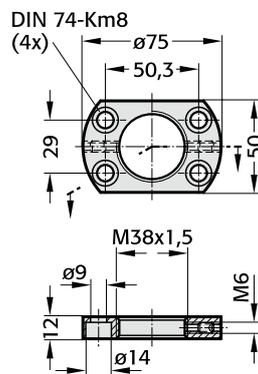
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH EXTERNAL THREAD MOUNTING VARIATIONS

2480.005.00250.
Slotted nut



2480.006.00250.
Clamped flange

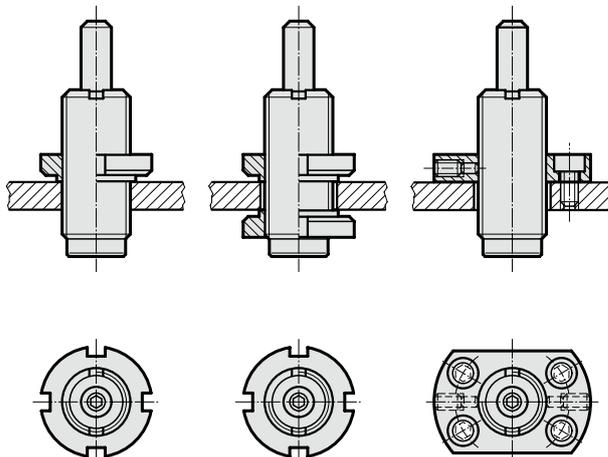


2480.00.51.01

Box spanner for assembling/disassembling
of gas springs



Mounting examples:



GAS SPRING WITH EXTERNAL THREAD

Note:

Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.12.00250

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 50 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

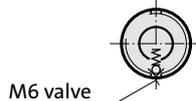
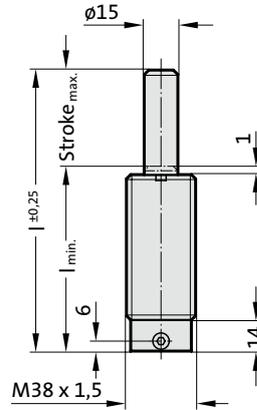
Fixing:

Installation with ring nut(s) 2480.005.00250 can be done with one or two ring nuts. If the hole in the bolster plate is not threaded, two ring nuts are needed. Holes threaded M 38 × 1,5 require one only ring nut for mounting of the gas springs.

Mounting with a threaded flange plate has the advantage of a degree of adjustability as far as the flange screws permit, moreover it is often found easier to make do with a clearance hole in the tool plate. Locking is by way of two lock screws with thrust plugs, provided in the threaded flange.

Diameter of through-hole in tool plate = 38 mm – plus four tapped holes M 8.

2480.32.00250.

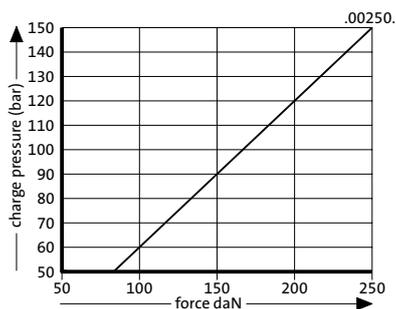


2480.32.00250.

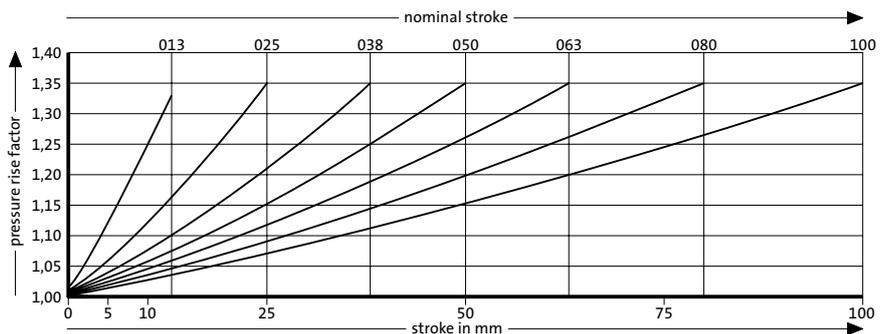
Gas spring with external thread

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.32.00250.013	12.7	62.7	75.4
2480.32.00250.025	25	75	100
2480.32.00250.038	38.1	88.1	126.2
2480.32.00250.050	50	100	150
2480.32.00250.063	63.5	113.5	177
2480.32.00250.080	80	130	210
2480.32.00250.100	100	150	250

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise

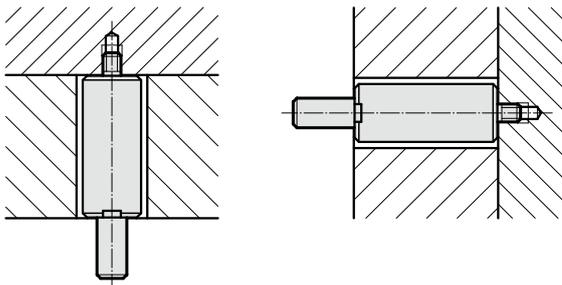


Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH MALE FIXING THREAD, SMALL MOUNTING HEIGHT MOUNTING VARIATIONS



Mounting examples:



GAS SPRING WITH MALE FIXING THREAD, SMALL MOUNTING HEIGHT

Note:

Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.12.00250

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 50 bar

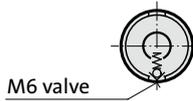
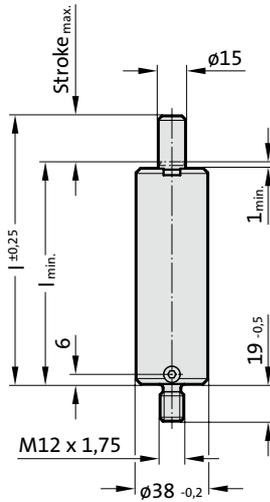
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2480.82.00250.

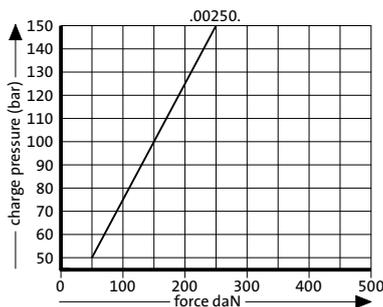


2480.82.00250.

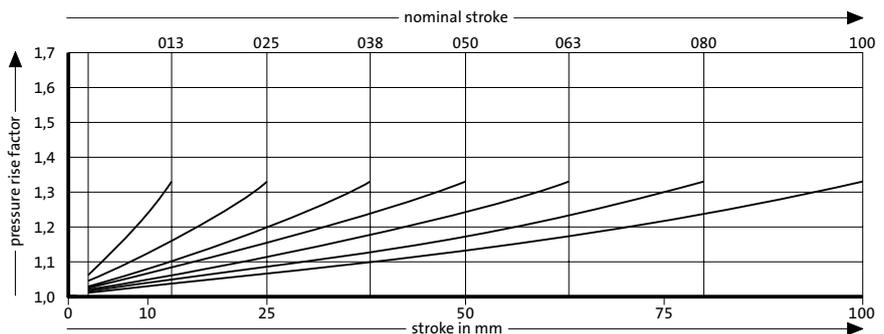
Gas spring with male fixing thread, small mounting height

Order No	Stroke _{max.} (s)	l _{min.}	l
2480.82.00250.013	12.7	62.7	75.4
2480.82.00250.025	25	75	100
2480.82.00250.038	38.1	88.1	126.2
2480.82.00250.050	50	100	150
2480.82.00250.063	63.5	113.5	177
2480.82.00250.080	80	130	210
2480.82.00250.100	100	150	250

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH MALE FIXING THREAD, POWERLINE MOUNTING VARIATIONS

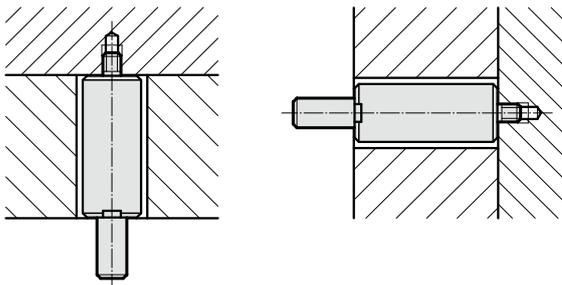
2480.00.51.05



Box spanner for assembling/disassembling of gas springs



Mounting examples:



GAS SPRING WITH MALE FIXING THREAD, POWERLINE

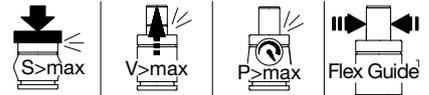
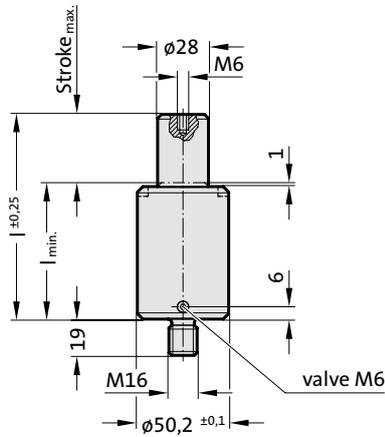
Note:

Initial spring force at 150 bar = 920 daN

Order No for spare parts kit: 2487.12.01000

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 50 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

2487.82.01000.

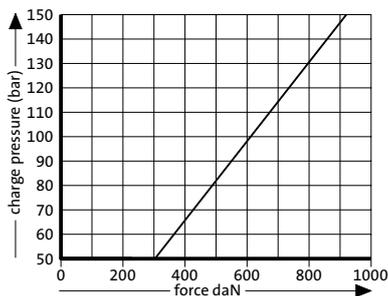


2487.82.01000.

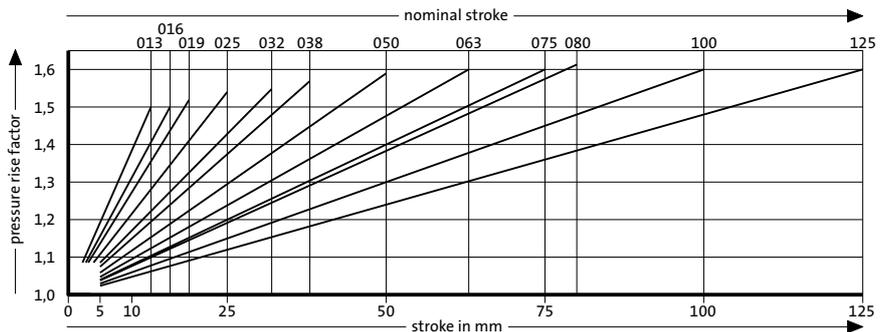
Gas spring with male fixing thread, POWERLINE

Order No	Stroke _{max.} (s)	I _{min.}	I
2487.82.01000.013	13	51	64
2487.82.01000.016	16	54	70
2487.82.01000.019	19	57	76
2487.82.01000.025	25	63	88
2487.82.01000.032	32	70	102
2487.82.01000.038	38	76	114
2487.82.01000.050	50	88	138
2487.82.01000.063	63	101	164
2487.82.01000.075	75	113	188
2487.82.01000.080	80	118	198
2487.82.01000.100	100	138	238
2487.82.01000.125	125	163	288

Initial spring force versus charge pressure

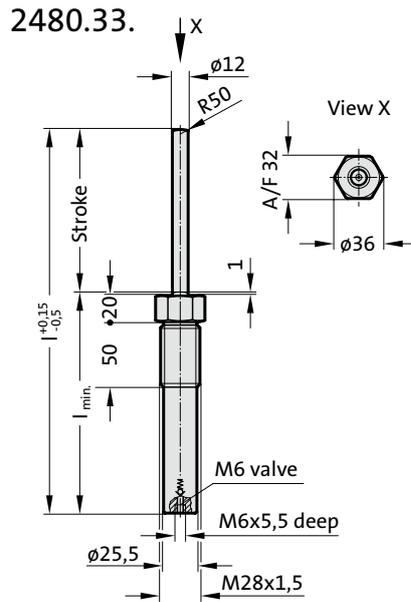


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH HEXAGONAL FLANGE



Description:

The gas springs are colour-coded according to the spring force rating ranges 15–50–100–150–200 daN.

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures.

Do take into consideration the colour-coded pressure rating during repair work and recharging.

Note:

Other stroke lengths avail on request! See gas spring 2480.32.

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N_2

Max. filling pressure: 180 bar

Min. filling pressure: 13 bar

Working temperature: $0^{\circ}C$ to $+80^{\circ}C$

Temperature related force increase: $\pm 0.3\%/^{\circ}C$

Max. recommended extensions per minute:

approx. 80 to 100 (at $20^{\circ}C$)

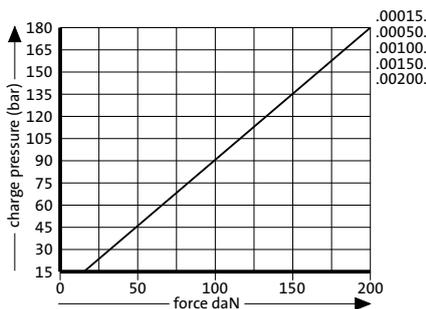
Max. piston speed: 1.6 m/s



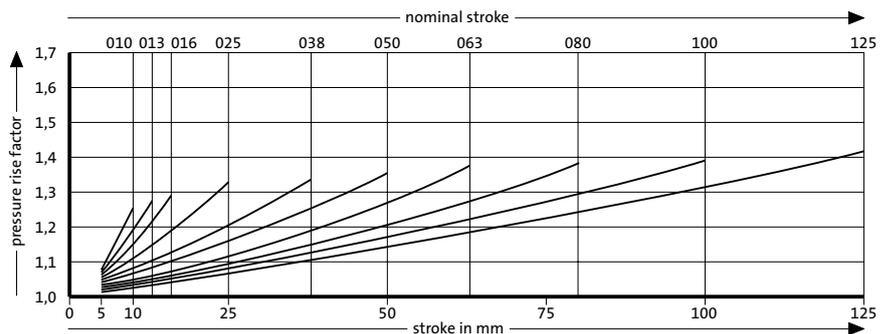
2480.33. Gas spring with hexagonal flange

Order No	Stroke _{max.} (s)	l _{min.}	l	Spring force [daN]		Colour
				initial		
2480.33.00015.125	125	167	292	15		black
2480.33.00050.125	125	167	292	50		green
2480.33.00100.125	125	167	292	100		blue
2480.33.00150.125	125	167	292	150		red
2480.33.00200.125	125	167	292	200		yellow

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS FOR WORKING TEMPERATURES UP TO 120 ° C



GAS SPRINGS *LCF, DAMPED



* LCF Force Manager is a warning sign of Associated Spring

GAS SPRINGS *LCF, DAMPED

Description:

The LCF series represents a whole new generation of nitrogen-filled gas springs developed to meet the needs of the machine tool and press-making industries.

Negative factors such as

- high impact stresses
- excessive noise
- extreme bounce off the pad

are all minimised by LCF springs.

Characteristics such as

- dimensions
- fixing methods
- filling with gas and purging
- working in interconnected systems

are identical to those for standard ISO or type 2480.13. gas springs.

The springs from the LCF series reduce impact stresses by 50% compared to conventional gas springs.

The force builds up gradually and acceleration is uniform, reducing wear on both tool and press. As a result, less maintenance is required.

LCF springs are at least 20% quieter than standard gas springs.

The reduced noise level is due to the lower impact force, making these springs a cost-effective alternative to soundproofing panels.

They are thus more economical and environmentally-friendly.

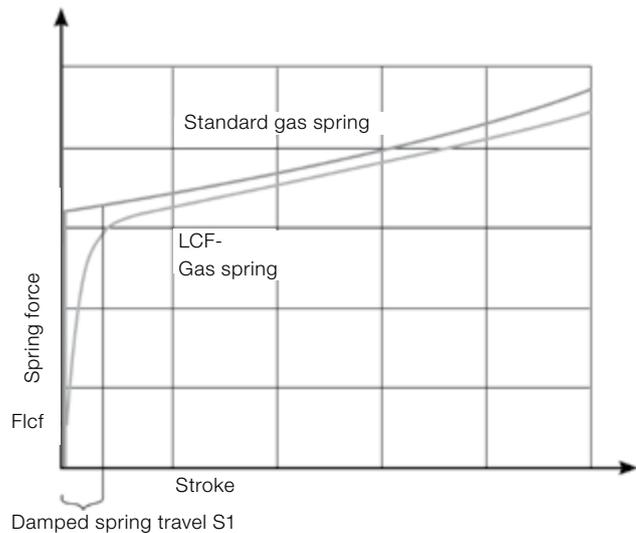
The LCF springs reduce the extreme bounce off the pad during the return stroke, thus lessening vibration on the workpiece and allowing the workpiece to be transported more effectively.

Since the spring travel is damped, the pad motion is more uniform, so in many cases the press stroke rate and thus productivity can be increased.

* LCF Force Manager is a warning sign of Associated Spring

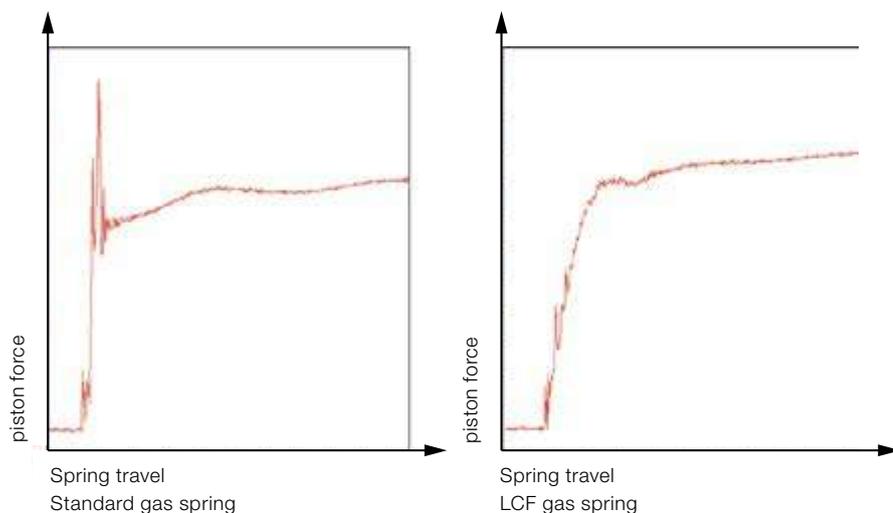
GAS SPRINGS *LCF, DAMPED

2484.13. Force diagram for gas springs LCF

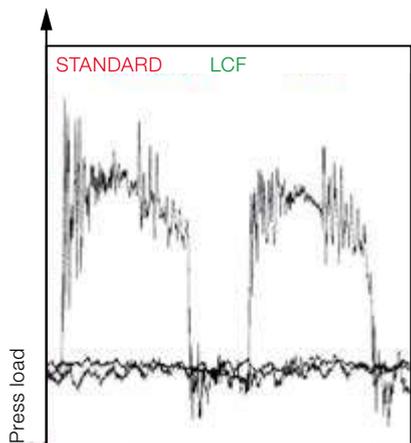


With the springs from the LCF series, the force builds up gradually and acceleration is uniform.

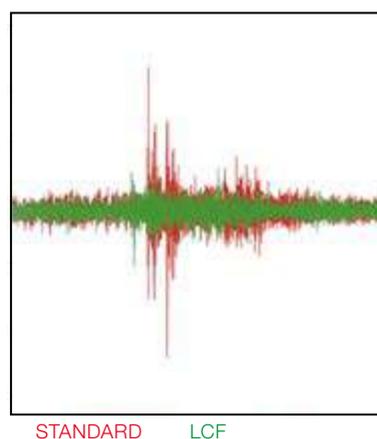
Measured dynamic piston force, Measured values for the 5000 series



Comparative press load diagram



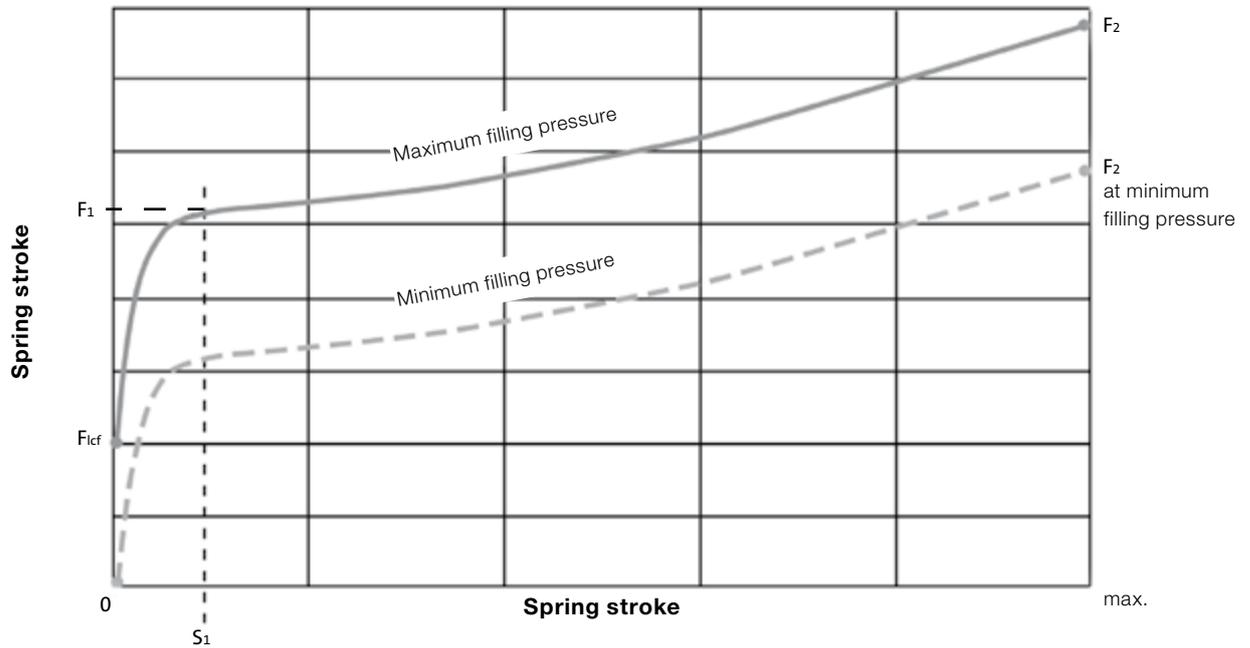
Noise reduction



The springs from the LCF series are quieter due to the reduced impact force.

GAS SPRINGS *LCF, DAMPED

2484.13. Force diagram for gas springs LCF



Note: Maximum pressure for LCF gas springs: 150 bar.
Observe the minimum filling pressure!

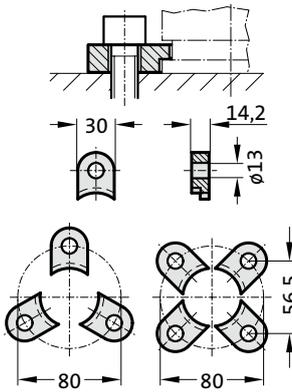
Guidelines for the use of LCF gas springs

1. After the damped spring travel (S_1) the LCF gas spring achieves the same initial spring force (F_1) and pressure build up as the standard gas spring (to ISO).
2. The spring force (F_{1cf}) should exceed the weight (e.g. the pad) by at least 15% so that it is held in the correct position (this does not apply in the case of minimum filling pressure).

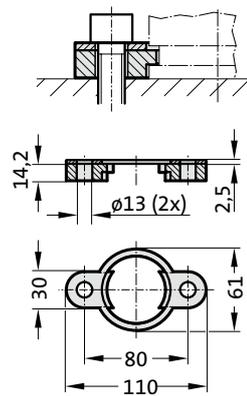
Spring size	F_{1cf} at 150 bar [daN]	Damped spring travel S_1	Minimum filling pressure [bar]
2484.13.00750.	470	3,1	70
2484.12.01500.	700	4,6	105
2484.13.03000.	1600	3,8	69
2484.13.05000.	2500	7,7	76
2484.13.07500.	3000	10,4	90

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

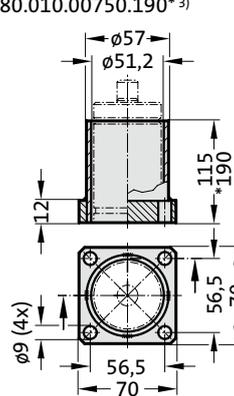
2480.007.00750



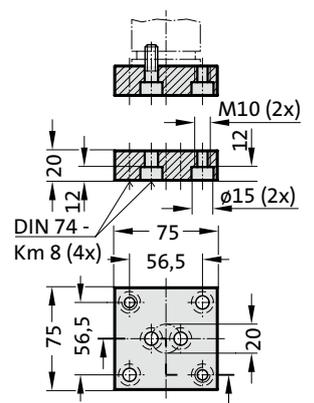
2480.008.00750³⁾



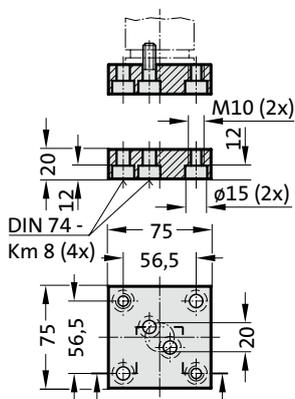
2480.010.00750.115³⁾
2480.010.00750.190*³⁾



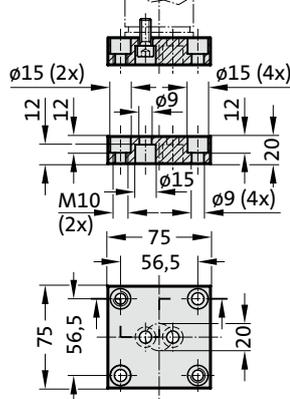
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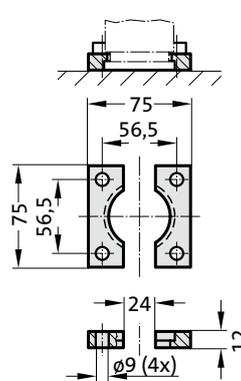
2480.011.00750.1



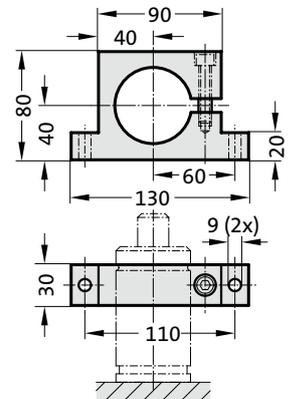
2480.011.00750.3



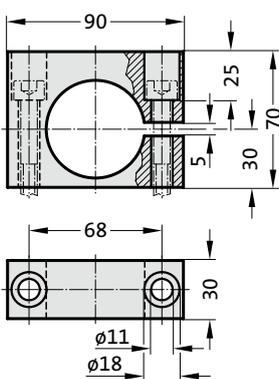
2480.022.00750



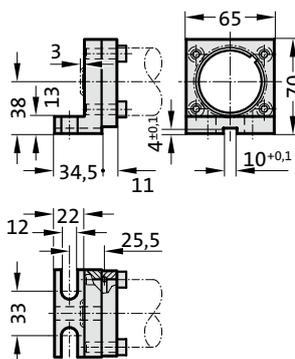
2480.044.00750²⁾



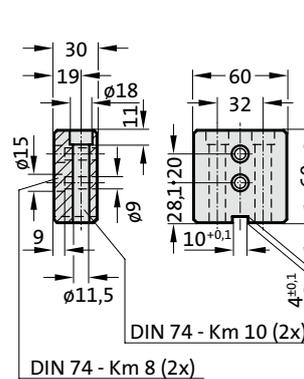
2480.044.03.00750²⁾



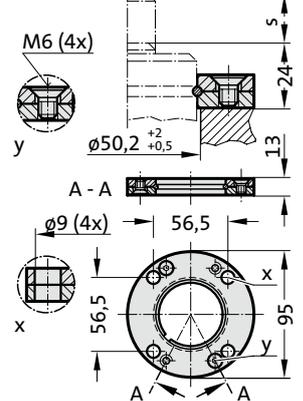
2480.045.00750²⁾



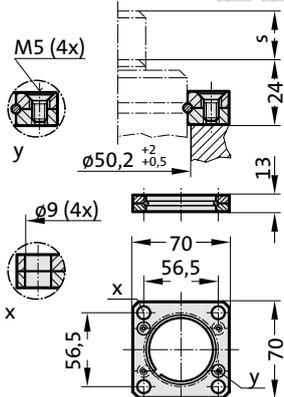
2480.047.00750²⁾



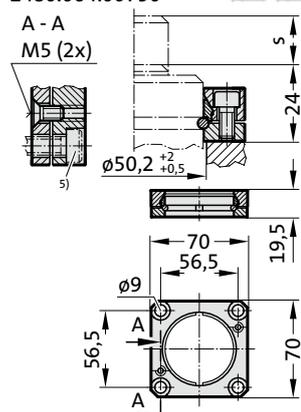
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

- 2) Attention:
The spring force must be absorbed by the stop Surface!
- 3) Not for use with composite connection.
- 4) Square collar flange, non-rotating, fixing for composite connection.
- 5) Machine screws with hexagonal socket (compact head recommended)

LCF GAS SPRING, DAMPED

Note:

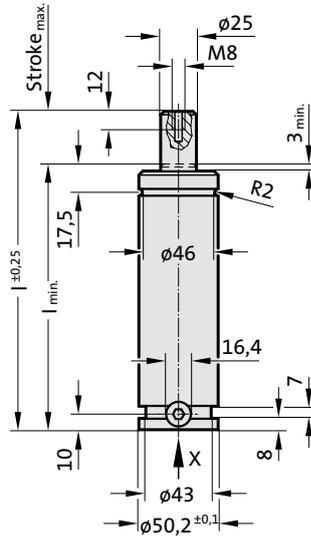
Initial spring force F_{lcf} at 150 bar = 470 daN
 Full spring force after 3.1 mm damped spring travel

Order No for spare parts kit: 2484.13.00750

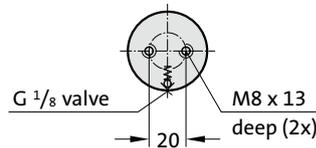
Gas spring without valve
 Order No (example): 2484.13.00750. .P

Pressure medium: Nitrogen N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 70 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}C$
 Max. recommended extensions per minute:
 approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s

2484.13.00750.



View X - Gas spring

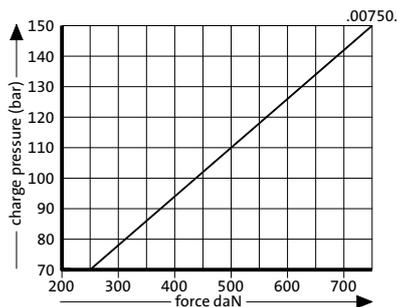


2484.13.00750.

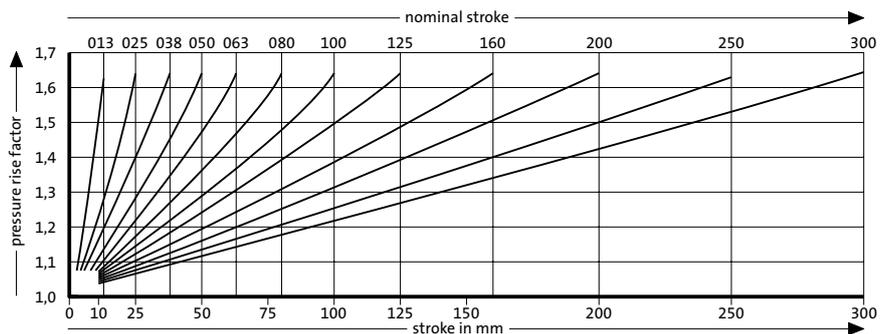
LCF Gas Spring, damped

Order No	Stroke _{max} (s)	l _{min}	l
2484.13.00750.013	12.7	107.7	120.4
2484.13.00750.025	25	120	145
2484.13.00750.038	38.1	133.1	171.2
2484.13.00750.050	50	145	195
2484.13.00750.063	63.5	158.5	222
2484.13.00750.080	80	175	255
2484.13.00750.100	100	195	295
2484.13.00750.125	125	220	345
2484.13.00750.160	160	255	415
2484.13.00750.200	200	295	495
2484.13.00750.250	250	345	595
2484.13.00750.300	300	395	695

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

LCF GAS SPRING, DAMPED

Note:

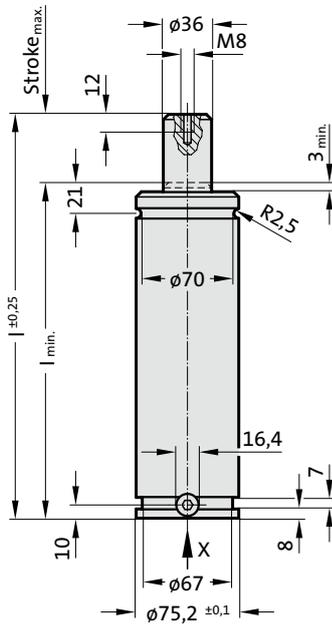
Initial spring force F_{ref} at 150 bar = 700 daN
 Full spring force after 4.6 mm damped spring travel

Order No for spare parts kit: 2484.12.01500

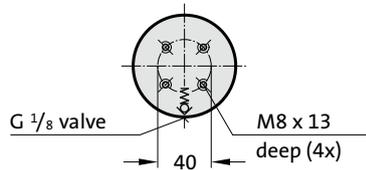
Gas spring without valve
 Order No (example): 2484.12.01500. .P

Pressure medium: Nitrogen N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 105 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$
 Max. recommended extensions per minute:
 approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s

2484.12.01500.



View X - Gas spring

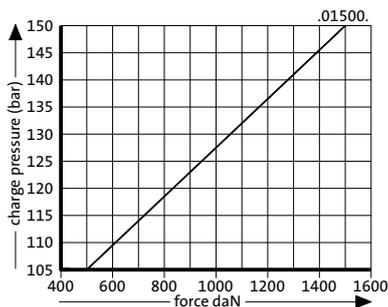


2484.12.01500.

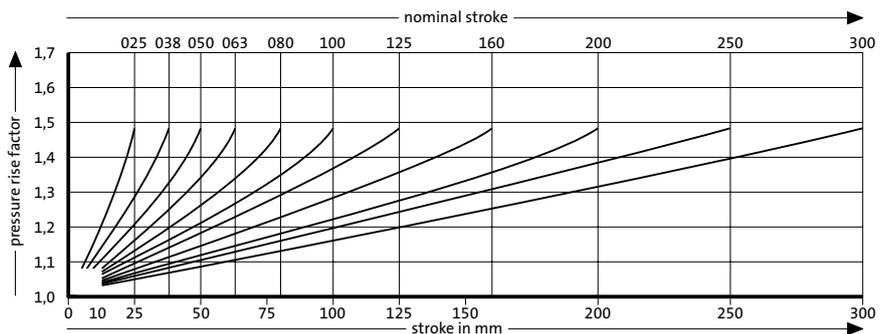
LCF Gas Spring, damped

Order No	Stroke _{max.} (s)	l _{min.}	l
2484.12.01500.025	25	135	160
2484.12.01500.038	38.1	148.1	186.2
2484.12.01500.050	50	160	210
2484.12.01500.063	63.5	173.5	237
2484.12.01500.080	80	190	270
2484.12.01500.100	100	210	310
2484.12.01500.125	125	235	360
2484.12.01500.160	160	270	430
2484.12.01500.200	200	310	510
2484.12.01500.250	250	360	610
2484.12.01500.300	300	410	710

Initial spring force versus charge pressure



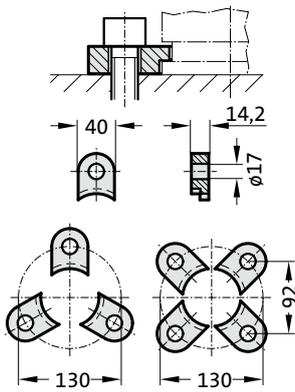
Spring force Diagram displacement versus stroke rise



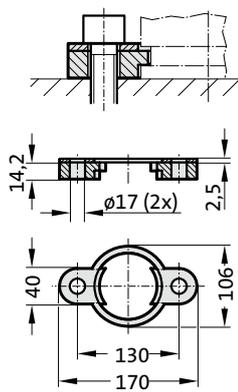
Pressure rise factor accounts for displacement but not external influences!

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

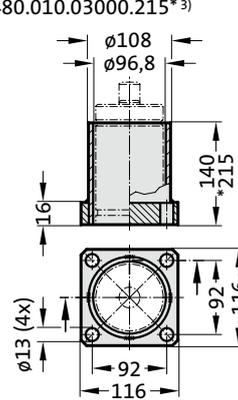
2480.007.03000



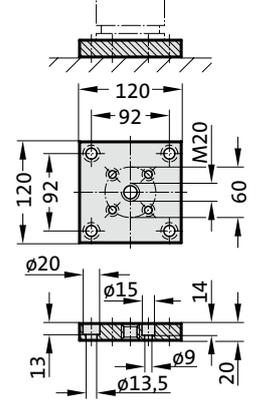
2480.008.03000³⁾



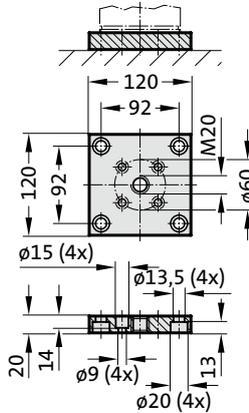
2480.010.03000.140³⁾
2480.010.03000.215*³⁾



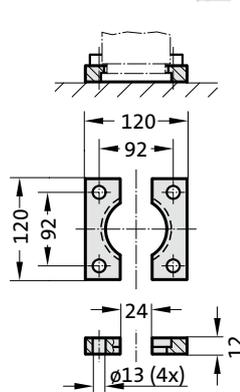
2480.011.03000



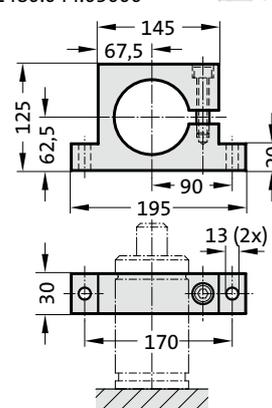
2480.011.03000.2



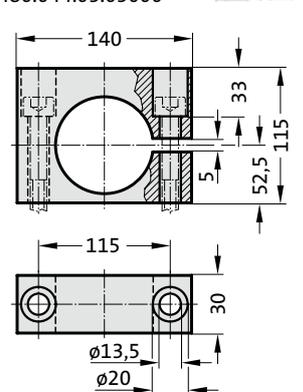
2480.022.03000



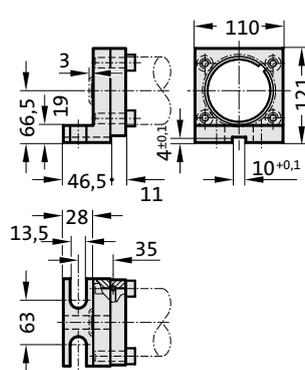
2480.044.03000²⁾



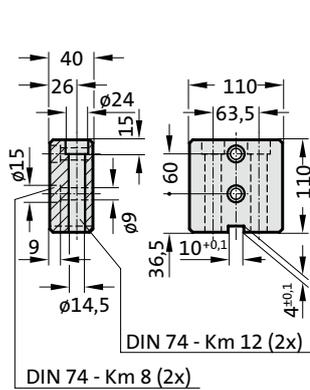
2480.044.03.03000²⁾



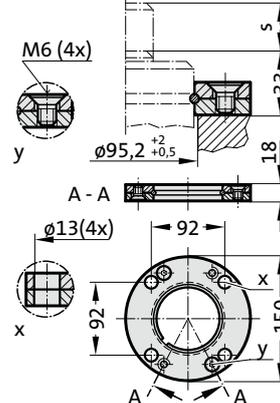
2480.045.03000²⁾



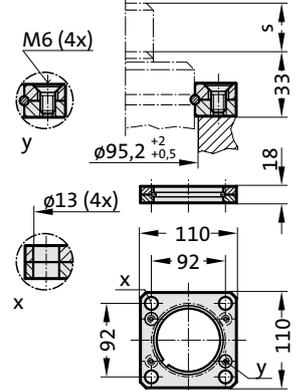
2480.047.03000²⁾



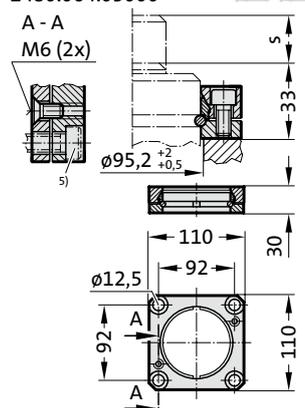
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

LCF GAS SPRING, DAMPED

Note:

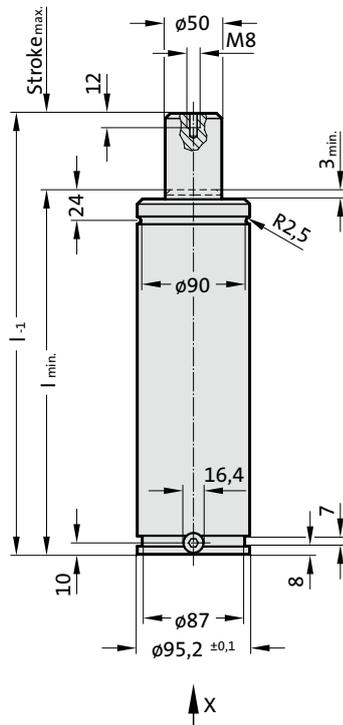
Initial spring force F_{lcf} at 150 bar = 1600 daN
 Full spring force after 3.8 mm damped spring travel

Order No for spare parts kit: 2484.13.03000

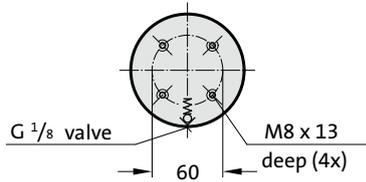
Gas spring without valve
 Order No (example): 2484.13.03000. .P

Pressure medium: Nitrogen N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 68 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}C$
 Max. recommended extensions per minute:
 approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s

2484.13.03000.



View X - Gas spring

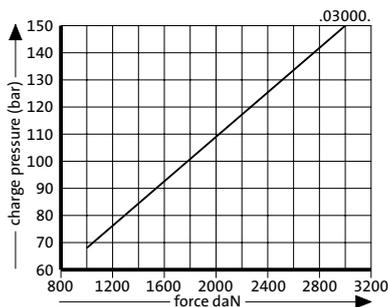


2484.13.03000.

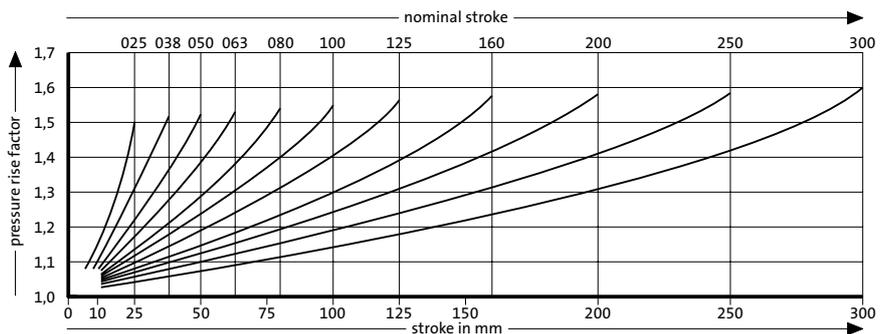
LCF Gas Spring, damped

Order No	Stroke _{max} (s)	l _{min}	l
2484.13.03000.025	25	145	170
2484.13.03000.038	38.1	158.1	196.2
2484.13.03000.050	50	170	220
2484.13.03000.063	63.5	183.5	247
2484.13.03000.080	80	200	280
2484.13.03000.100	100	220	320
2484.13.03000.125	125	245	370
2484.13.03000.160	160	280	440
2484.13.03000.200	200	320	520
2484.13.03000.250	250	370	620
2484.13.03000.300	300	420	720

Initial spring force versus charge pressure



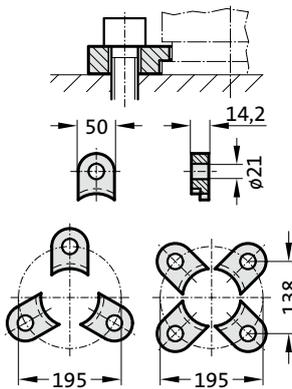
Spring force Diagram displacement versus stroke rise



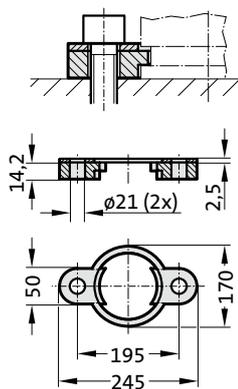
Pressure rise factor accounts for displacement but not external influences!

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

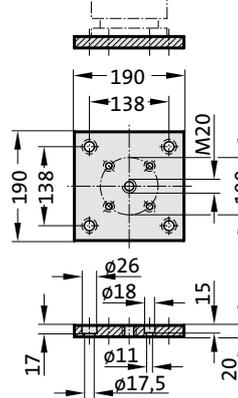
2480.007.07500



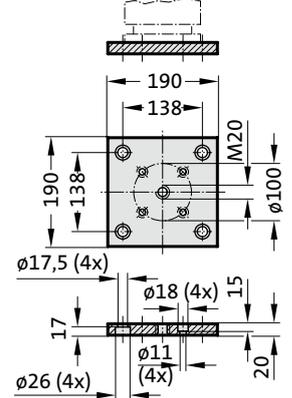
2480.008.07500³⁾



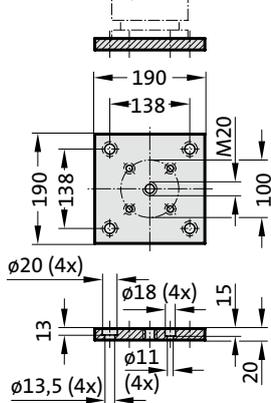
2480.011.07500



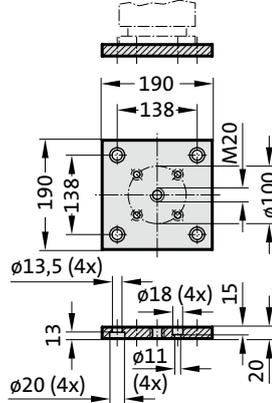
2480.011.07500.2



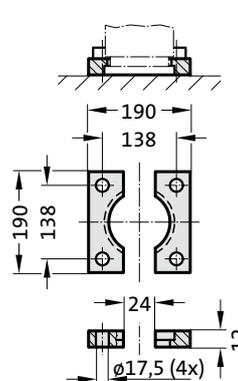
2480.011.03.07500



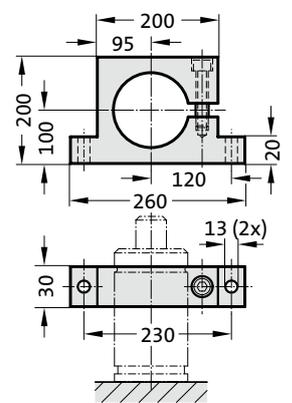
2480.011.03.07500.2



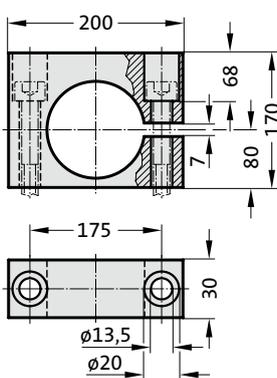
2480.022.07500



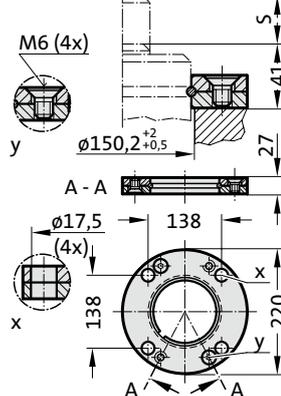
2480.044.07500²⁾



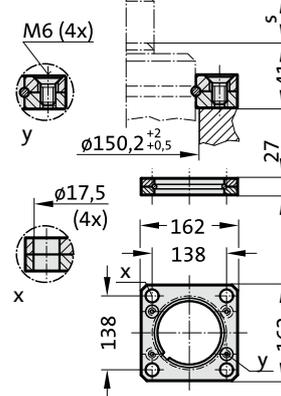
2480.044.03.07500²⁾



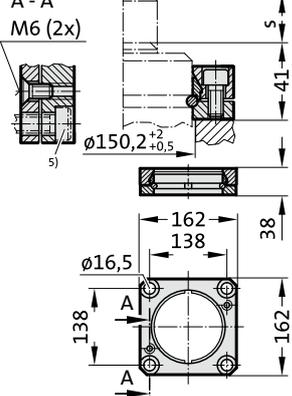
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



Note:

- 2) Attention:
The spring force must be absorbed by the stop Surface!
- 3) Not for use with composite connection.
- 4) Square collar flange, non-rotating, fixing for composite connection.
- 5) Machine screws with hexagonal socket (compact head recommended)

LCF GAS SPRING, DAMPED

Note:

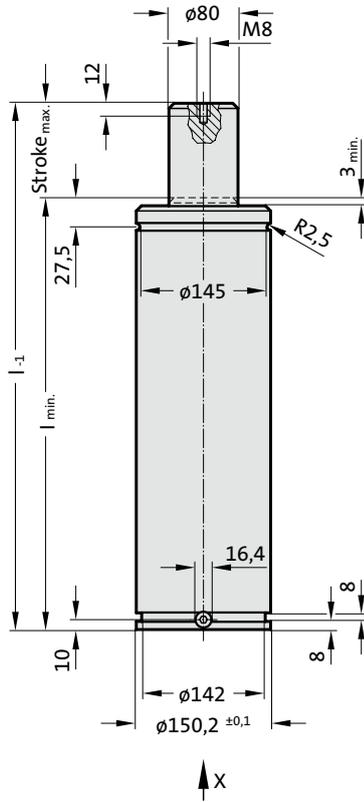
Initial spring force F_{lcf} at 150 bar = 3000 daN
 Full spring force after 10.4 mm damped spring travel

Order No for spare parts kit: 2484.13.07500

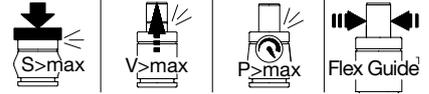
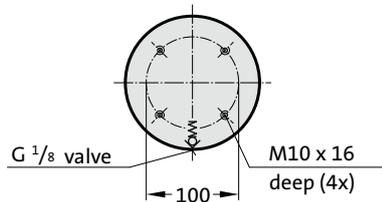
Gas spring without valve
 Order No (example): 2484.13.07500. .P

Pressure medium: Nitrogen N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 89 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}C$
 Max. recommended extensions per minute:
 approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s

2484.13.07500.



View X - Gas spring

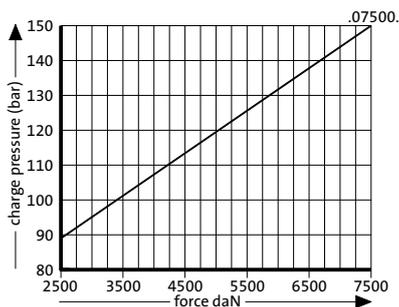


2484.13.07500.

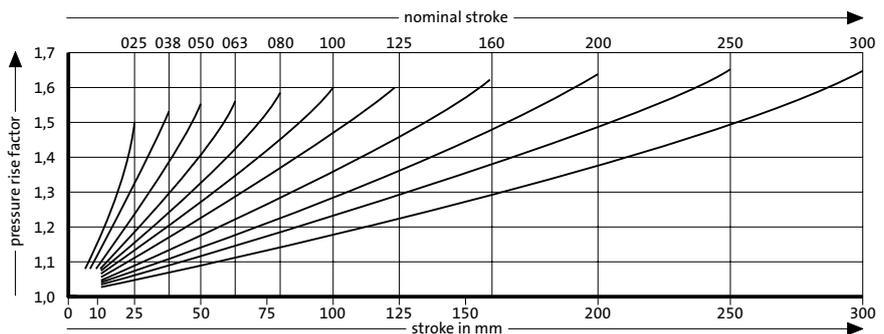
LCF Gas Spring, damped

Order No	Stroke _{max} (s)	l _{min}	l
2484.13.07500.025	25	180	205
2484.13.07500.038	38.1	193.1	231.2
2484.13.07500.050	50	205	255
2484.13.07500.063	63.5	218.5	282
2484.13.07500.080	80	235	315
2484.13.07500.100	100	255	355
2484.13.07500.125	125	280	405
2484.13.07500.160	160	315	475
2484.13.07500.200	200	355	555
2484.13.07500.250	250	405	655
2484.13.07500.300	300	455	755

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

CONTROLLABLE GAS SPRINGS

PATENTED



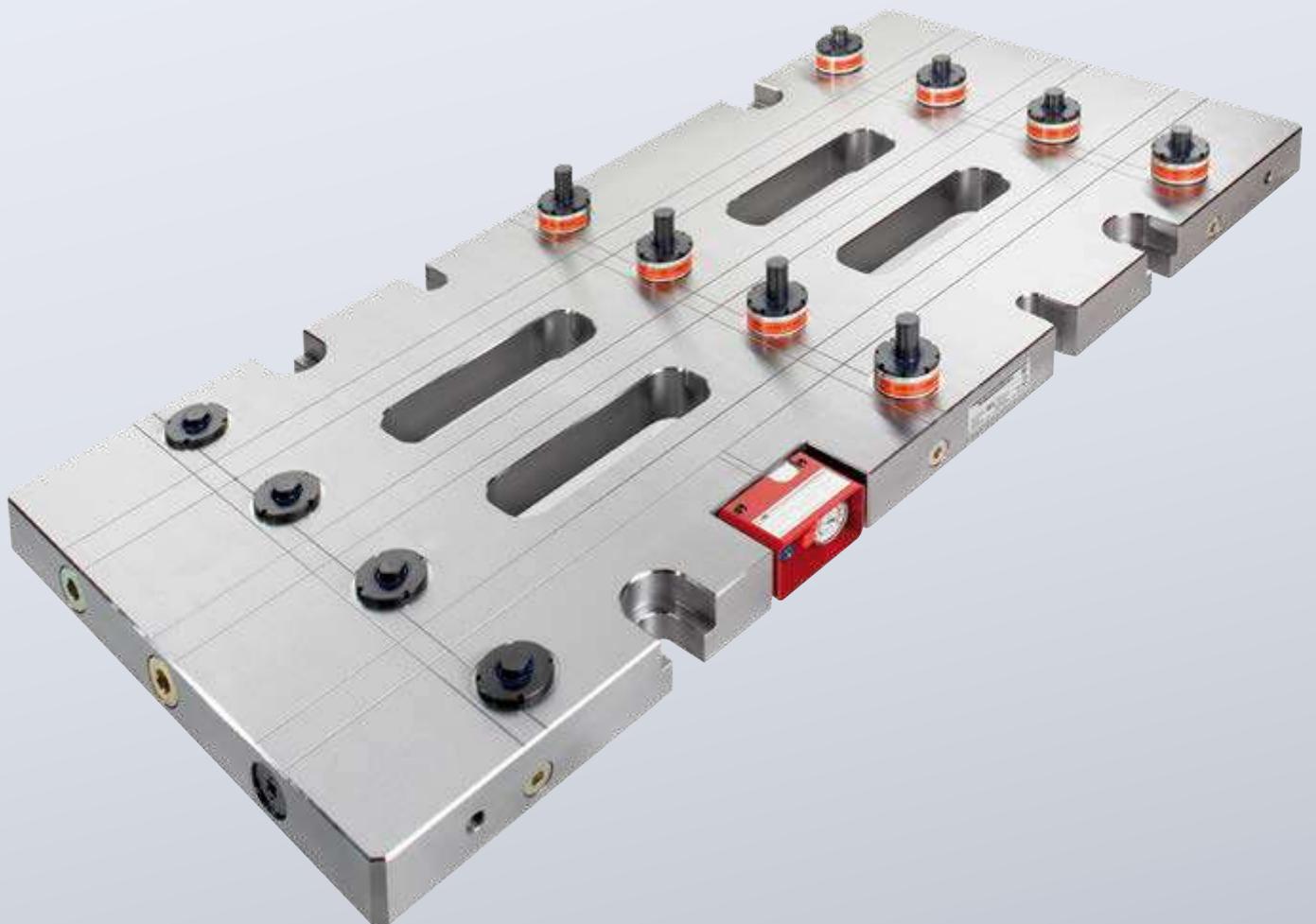
PLEASE REQUEST
YOUR CATALOGUE 



AIR SPRINGS TO VW STANDARD



MANIFOLDSYSTEMS



COMPOSITE PLATES

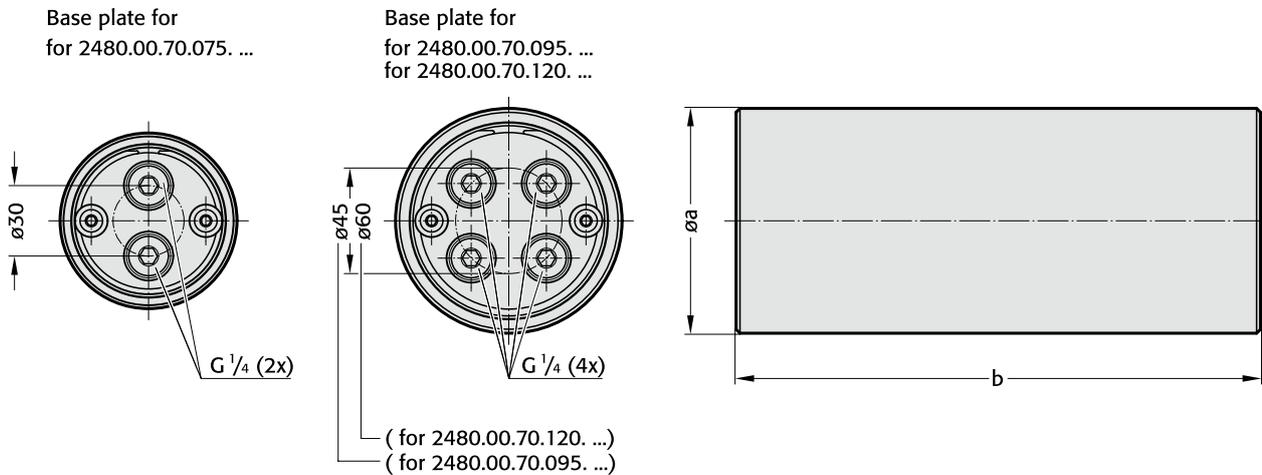


GAS SPRINGS - ACCESSORIES



PRESSURE RESERVOIR FOR REDUCED PRESSURE RISE

2480.00.70.



Description:

The pressure reservoir and its base plates are manufactured from the same high grade steel as FIBRO gas springs.

The advantage of including a pressure reservoir in the system is that in operation the gas pressure rises to a lesser extent. Apart from the purely technical pressure factors, a reduced pressure rise is beneficial to the service life of the system.

Function:

The pressure reservoir has two or four mounting holes with G¹/₄" at both sides, which are designed for connection to the control fitting or gas spring.

Note:

If a pressure reservoir is to be installed, we recommend the 24°-cone-system, which ensures that the gas flow is not inhibited.

Mounting clamps should be ordered separately. At least 2 are required for each pressure reservoir, see following pages.

2480.00.70. Pressure accumulator

Order No.	Volume in l [litres]	Ø a	b
2480.00.70.075.0170	0,25	75	170
2480.00.70.075.0250	0,50	75	250
2480.00.70.075.0410	1,0	75	410
2480.00.70.095.0300	1,0	95	300
2480.00.70.095.0500	2,0	95	500
2480.00.70.095.0700	3,0	95	700
2480.00.70.095.0900	4,0	95	900
2480.00.70.120.0360	2,0	120	360
2480.00.70.120.0615	4,0	120	615
2480.00.70.120.1125	8,0	120	1125

Ordering Code (example):

Pressure accumulator	=	2480.00.70.
Øa = 75 mm	=	075.
b = 170 mm	=	0170
Order No.	=	2480.00.70.075.0170

Gas spring size/daN	Piston rod surface/dm ²
.00500	0,031
.00750	0,049
.01500	0,102
.03000	0,196
.05000	0,332
.07500	0,503
.10000	0,709

Calculating the isothermic increase in pressure*

(*by approximation)

$$\text{Pressure build-up} = \frac{V_a + (n \times V_g^{1})}{V_a + (n \times (V_g^{1}) - \text{Hub} \times A)}$$

V _a	[l]	Volume of pressure reservoir, see table
V _g ¹⁾	[l]	Gas volume of gas springs, corresponding spring type
		1) Note: For the design, gas volume of the spring type, please contact FIBRO!
Stroke	[dm]	Stroke length of gas springs, corresponding to spring type
A	[dm ²]	Piston surface of gas springs, see table
n		Number of gas springs

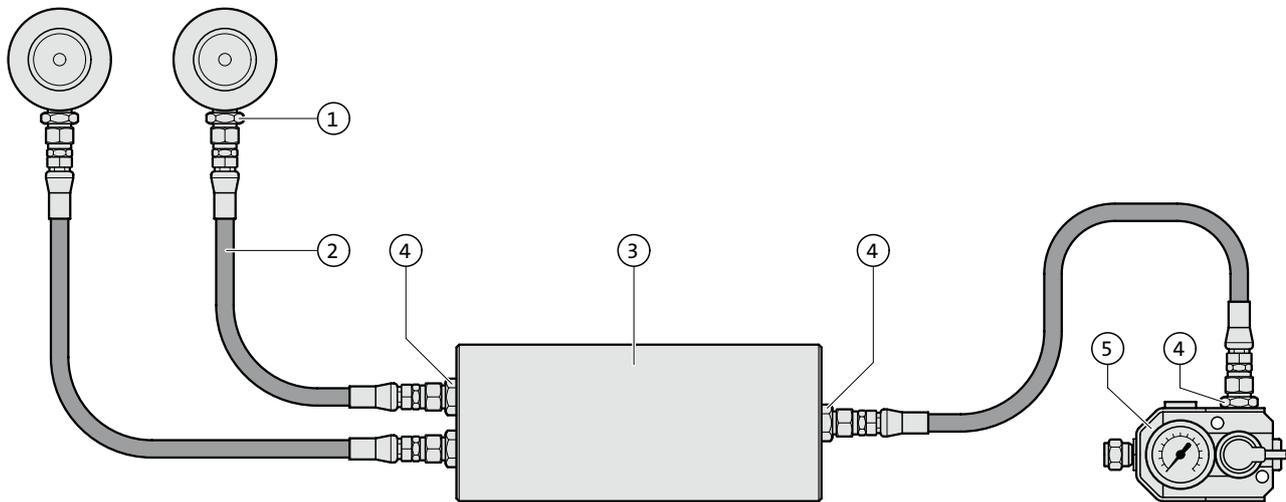
Calculation example:

10 gas springs, type 2480.13.05000.050 with a travel of 50 mm (0,5 dm) are connected to a system with an 8 litres pressure reservoir.

$$\text{Pressure build-up} = \frac{8 \text{ l} + (10 \times 0,51 \text{ l})}{8 \text{ l} + (10 \times (0,51 \text{ l} - 0,5 \text{ dm} \times 0,332 \text{ dm}^2))} = 1,145$$

PRESSURE RESERVOIR FOR REDUCED PRESSURE RISE

2480.00.70. Installation example: 24° cone hose system

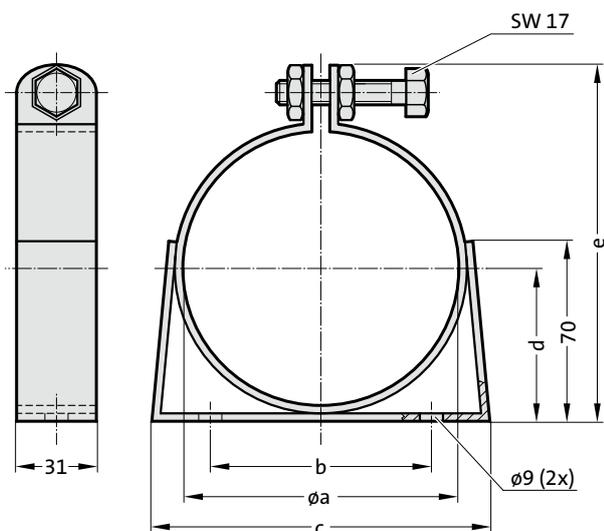


Item No.	Quantity	Description	Order No.
1	2	Screw connection G1/8 G1/8	2480.00.26.03
2	3	24°-cone-hose	2480.00.25.01.□ □ □ □
3	1	Pressure accumulator	2480.00.70. □ □ □ □ □ □ □ □
4	4	Screw connection G1/4	2480.00.26.04
5	1	Control fitting	2480.00.31.01



MOUNTING CLAMP FOR PRESSURE RESERVOIR

2480.00.70.



Description:

The mounting clamp is a rubber coated galvanised sheet steel ring and is used for mounting the FIBRO pressure reservoir.

Attention:

At least 2 fixing clamps are required per pressure reservoir.
If the pressure tank is to be mounted vertically, it should be seated on a robust base.

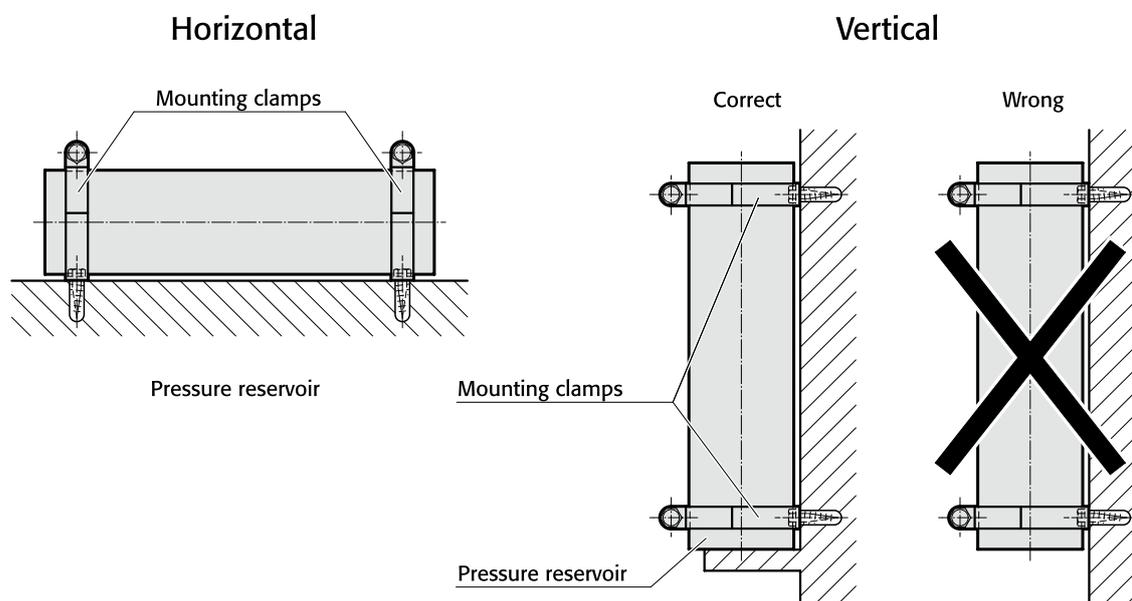
Ordering Code (example):

Mounting clamp for pressure reservoir (1 Stück)	=	2480.00.70.
$\varnothing a = 75 \text{ mm}$	=	075
Order No.	=	2480.00.70.075

2480.00.70. Mounting clamp for pressure reservoir

Order No.	$\varnothing a$	b	c	d	e
2480.00.70.075	75	80	105	41,5	102
2480.00.70.095	95	100	145	51,5	122
2480.00.70.120	120	100	145	64	147

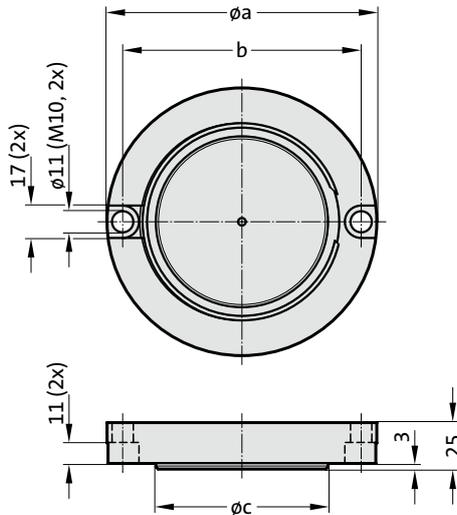
Installation options:





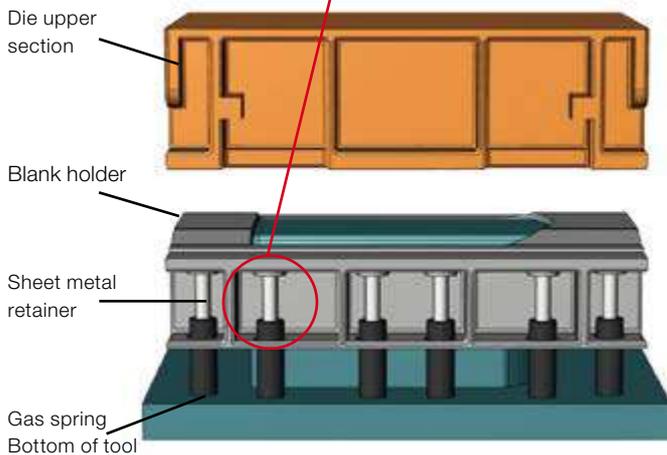
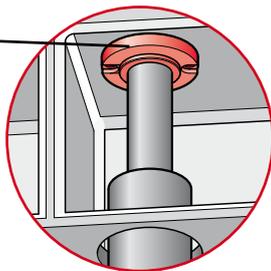
PRESSURE PLATES, SHOCK ABSORBING

2480.015.



Mounting example

Pressure plate, shock absorbing 2480.015.



2480.015. Pressure Plates, shock absorbing

Order No.	Gas spring strength	a	b	c
2480.015.01500	750 – 1500	108	91	58
2480.015.05000	> 1500 – 6600	143	126	92
2480.015.10000	> 6600 – 10600	167	150	112

Description:

The shock absorbing pressure plate is designed to minimise the main problems in the metal forming industry.

Factors such as

- extreme shock load
- this means high press maintenance costs
- high noise level
- reduced parts quality

are reduced by a specially developed damping element.

Guidelines for using shock absorbing pressure plates with gas springs:

1. After the maximum shock absorbing travel of 3 mm the gas spring will reach the same initial spring force as it would without the shock absorbing pressure plate.
2. The shock absorbing pressure plate is mounted between the tool and the piston rod of the gas spring.

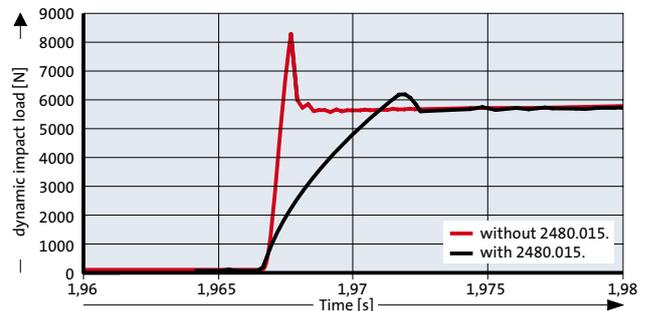
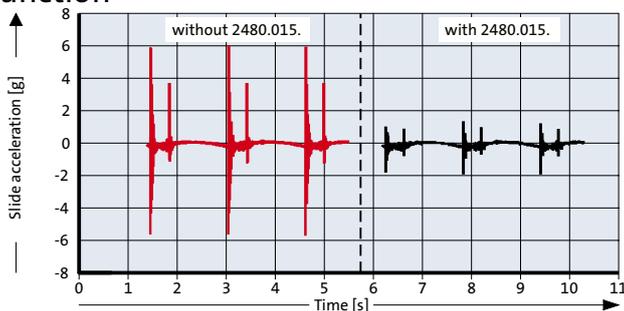
Material:

Steel, nitride
Polyurethane

Note:

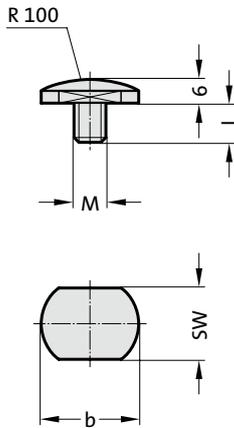
Working temperature: 0 °C to 80 °C
recommended max. strokes/min.: 20
max. pressing speed: 1.6 m/s
max. shock absorbing travel: 3 mm

Function



THRUST PAD PRESSURE PLATE

2480.004.



2480.004. Thrust Pad

Order No	Socket cap screw		b	l
	DIN EN ISO 4762	SW		
2480.004.06	6	17	20	6
2480.004.08	8	19	22.5	11

Description:

Thrust pad for gas springs with M6 and M8 thread in the piston rod, not for 2480.13.00500.□□□.

Material:

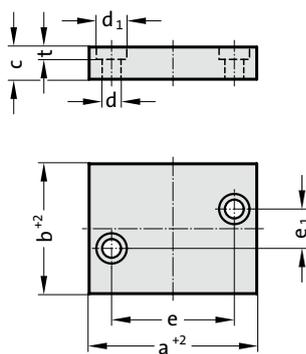
No 1.7131, case-hardened

Attention:

Can only be used for gas springs, standard 2480.12./13.!



2480.009.



2480.009. Pressure plate

Order No*	max. piston rod diameter										
		a	b	c	d	d ₁	e	e ₁	t		
2480.009.00250	15	50	25	12	7	11	32	8	7		
2480.009.00500	20	55	30	12	7	11	40	14	7		
2480.009.00500.1	20	55	32	16	9	15	37	0	9		
2480.009.00750	25	70	35	15	9	15	48	14	9		
2480.009.00750.1	36	65	50	16	9	15	47	0	9		
2480.009.01500	36	75	50	15	9	15	56	30	9		
2480.009.03000	50	85	60	15	9	15	66	40	9		
2480.009.03000.1	50	80	60	16	9	15	62	0	9		
2480.009.05000	65	100	80	20	11	18	72	56	11		
2480.009.05000.2	65	102	80	20	11	18	80	0	11		
2480.009.07500	80	110	100	20	11	18	85	75	11		
2480.009.07500.2	80	117	100	20	11	18	95	0	11		
2480.009.10000.1	90	132	100	20	11	18	110	0	11		

*Execution .1/.2 to Volvo standard

Material:

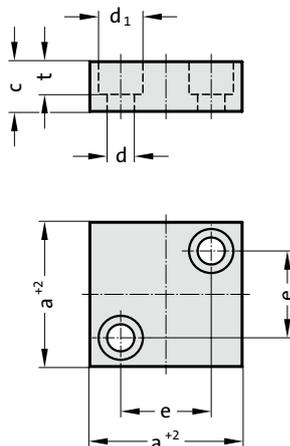
No 1.2842, hardened

or

No 1.2379, hardened



2480.018.



2480.018. Pressure plate

Order No	max. piston rod diameter						
		a	c	d	d ₁	e	t
2480.018.01500	65	90	12	9	15	64	9

Material:

No 1.2842, hardened



PRESSURE PLATE

PRESSURE PLATE TO RENAULT STANDARD

2480.019. Pressure plate

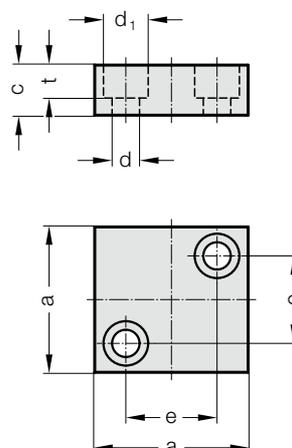
Order No*	max. piston rod diameter	a	c	d	d ₁	e	t
2480.019.00100	15	40	15	9	15	21	10
2480.019.00100.2	20	40	15	7	11	24	7
2480.019.03.00500.12	20	40	12	7	11	24	7
2480.019.00750	25	56	20	11	18	32	13
2480.019.03.01500.12	36	60	12	9	15	38	9
2480.019.03.01500.15	36	60	15	9	15	40	9
2480.019.03000	50	70	20	11	18	48	13
2480.019.03.03000.15	50	70	15	9	15	50	9
2480.019.03000.1	80	90	20	11	18	67	13
2480.019.07500.2	80	90	15	9	15	70	9
2480.019.03.07500.12	80	90	12	9	15	70	9
2480.019.03.07500.20	80	100	20	11	18	74	11
2480.019.07500	95	140	20	11	18	110	13
2480.019.03.10000.12	95	100	12	9	15	81	9
2480.019.03.10000.20	95	110	20	11	18	84	11

*Execution .03 to VDI 3003

Material:

No 1.2842, hardened
or
No 1.2379, hardened

2480.019.



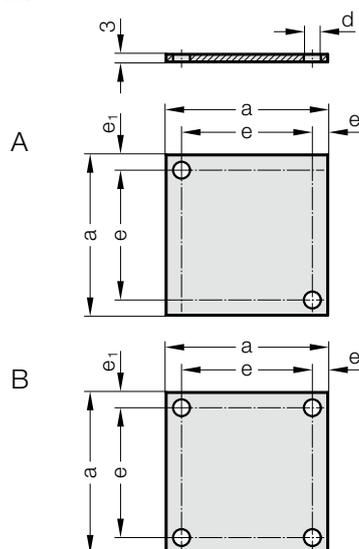
2480.019.45. Pressure plate to Renault standard

Order No	Shape	max. piston rod diameter	a	e	d
2480.019.45.00750	A	50	70	50	11
2480.019.45.01500	A	80	90	70	11
2480.019.45.03000	B	95	105	85	11
2480.019.45.05000	B	95	125	105	11
2480.019.45.07500	B	95	150	125	13
2480.019.45.10000	B	95	190	165	13

Material:

No 1.2842, hardened
or
No 1.2379, hardened

2480.019.45.



Description:

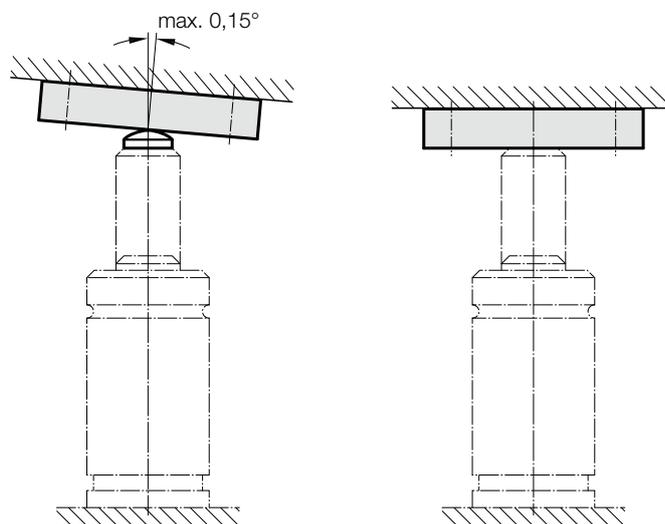
The hardened thrust pad 2480.004. reduces side forces in cases of skew thrust vaces or lateral displacement component.

In conjunction with the thrust pads, the hardened thrust plates 2480.009., 2480.018. and 2480.019. further helps to protect the gas spring from lateral forces, through reduction of friction – even when used without the thrust pad.

Note:

Especially with gas springs of large stroking capacity we recommend the use of the pad plate combination!

Mounting example





CONCERTINA SHROUD FOR GAS SPRINGS

Description:

The concertina shroud protects the piston rod of the gas spring against negative influences, such as e.g.:

- Dirt penetration
- Damage to the surface of the piston rod
- Adhesion of dirt particles
- Drawing in of oil and/or emulsion

The fastening of the folding bellows is internal (on the cylinder tube side) and does not have an interference contour, for example, due to externally attached pipe clamps. In this way, the gas spring can be attached and installed in the tool without limitations.

The concertina shroud for gas springs prolongs the lifetime of the gas springs under rough operating conditions.

Technical data

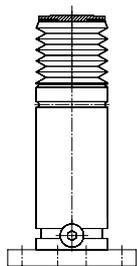
Material :	Concertina shroud:	CSM-Rubber 65 ±3 Shore A
	Washer:	Steel burnished
	Ring:	stainless Steel
Temperature range:		0-90 °C
Chemical resistance	Acids:	very good
	Alkalines:	very good
	Solvent:	adequate
Weather resistance	Sun light (UV):	good
	Ozone:	very good
	Water:	adequate
Oil resistance:	mineral:	good
	synthetic:	adequate

Delivery:

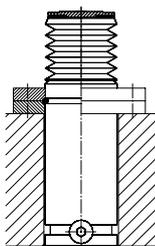
Concertina shroud incl. rotatable disk and countersunk screw.
Custom dimensions/materials available on request.



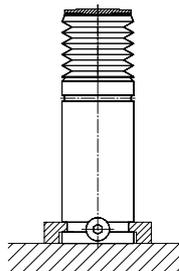
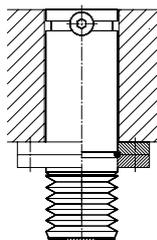
Mounting examples:



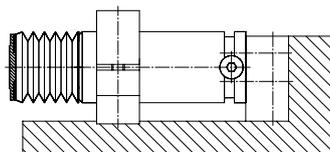
Screw mounted at the base with 2480.011.



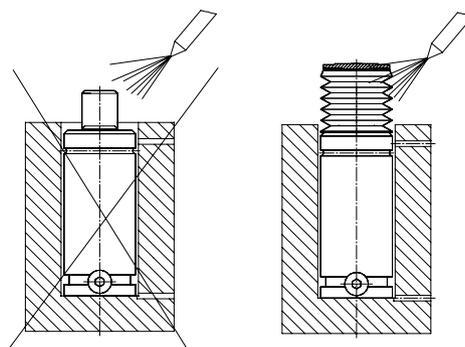
fastened with 2480.055./057./064.



fastened with 2480.007./008.



fastened with 2480.044./045./047.



installed loose in the bore

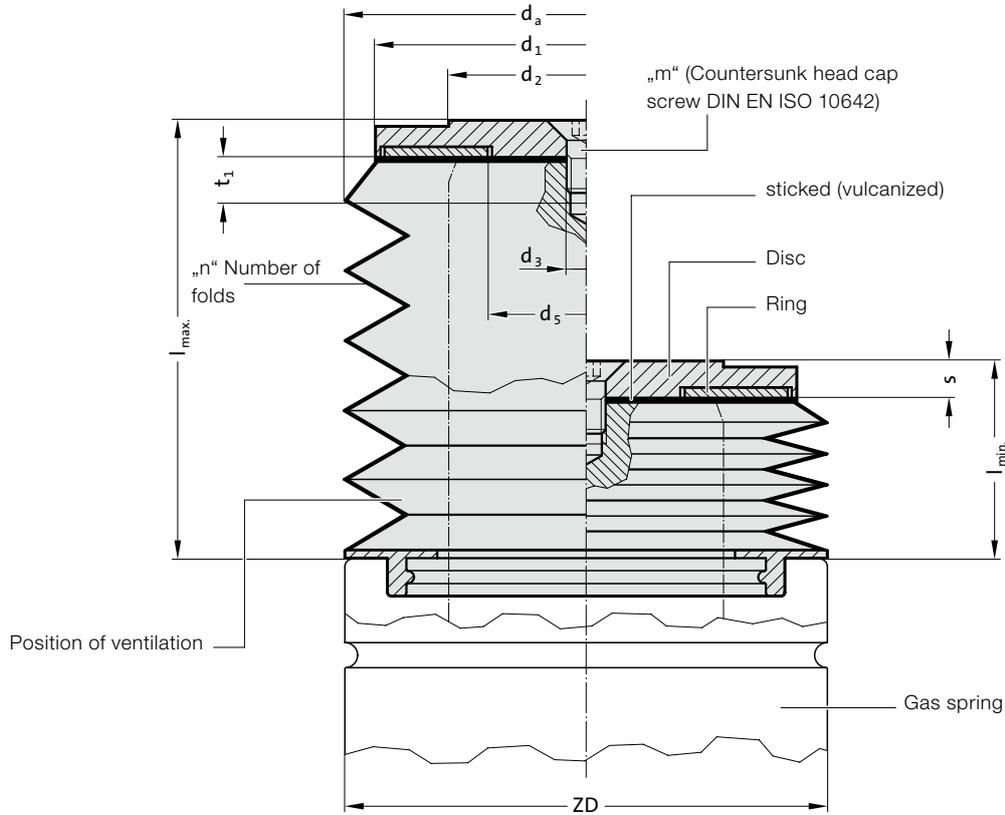


More mounting examples for gas springs see page „Mounting directions for gas springs“



CONCERTINA SHROUD FOR GAS SPRINGS

2480.080.



2480.080. Concertina shroud for gas springs

Type of gas spring	2487.12.00350.	2487.12.00350.	2487.12.00500.	2487.12.00500.	2480.13.00500.	2487.12.00750.1	2487.12.00750.	2488.13.00750.	2480.13.00750.	2487.12.01000.1	2487.12.01000.1	2488.13.01000.	2487.12.01500.	2487.12.01500.	2488.13.01500.	2480.12.01500.	2487.12.02400.	2487.12.02400.	2488.13.02400.	2480.13.03000.	2487.12.04200.	2487.12.04200.	2488.13.04200.	2480.13.05000.	2487.12.06600.	2487.12.06600.	2488.13.06600.	2480.13.07500.	2487.12.09500.	2488.13.09500.	
ZD	32	38	45	45	50	45	50	50	63	63	75	75	75	75	95	95	95	95	95	120	120	120	120	120	120	150	150	150	150	150	150
d _a	45	50	50	55	55	65	65	65	75	75	75	75	75	75	95	95	95	95	95	120	120	120	120	120	150	150	150	150	150	150	
d ₁	32	38	45	45	50	50	63	63	75	75	75	75	75	95	95	95	95	95	95	120	120	120	120	120	150	150	150	150	150	150	
d ₂ / KD	16	20	20	25	25	28	36	36	36	45	45	50	50	50	60	60	65	65	65	75	75	75	75	75	80	80	80	90	90	90	
s	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
d ₃	6,6	6,6	6,6	6,6	9	6,6	6,6	6,6	9	6,6	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
d ₅	10	14	14	17	17	20	28	28	28	28	28	28	28	28	37	42	51	57	66	71	81	81	81	81	81	81	81	81	81	81	81
t ₁	5	5	10	5	10	5	5	5	10	5	10	5	10	5	10	5,5	10	5,5	10	5,5	20	5,5	5,5	20	5,5	20	5,5	20	5,5	20	5,5
m	M6×8	M6×8	M6×12	M6×8	M8×12	M6×10	M6×10	M6×10	M8×12	M6×10	M8×12	M6×10	M8×12	M6×10	M8×12	M8×12	M8×12	M8×12	M8×12	M8×12	M8×12	M8×12	M8×12	M8×12	M16×25	M8×12	M8×12	M8×12	M8×12	M8×12	
Stroke	125 (Stroke ≤ 125)																300 (Stroke > 125), not for 2487.12.*														
l _{min}	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	23	24	21	23	23	24	21	23	23	24	21	21	21	
l _{max}	133	133	133	133	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	137	134	134	134	134	134	
n	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	8	6	6	5	5	6	6	5	5	6	6	5	5	5	5	
Stroke	125 (Stroke ≤ 125), not for 2487.12.*																300 (Stroke > 125), not for 2487.12.*														
l _{min}	-	-	-	-	52	--*/52	--*/52	52	--*/52	52	--*/52	54	--*/54	41	--*/41	37	--*/34	-	-	-	-	-	-	-	-	-	-	-	-	-	
l _{max}	-	-	-	-	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	309	
n	-	-	-	-	22	--*/22	--*/22	22	--*/22	22	--*/22	19	--*/19	14	--*/14	11	--*/11	-	-	-	-	-	-	-	-	-	-	-	-	-	

Ordering Code (example):

Concertina shroud	= 2480.080.	Concertina shroud	= 2480.080.
ZD = 120 mm	= 120.	ZD = 120 mm	= 120.
d ₂ /KD = 65 mm	= 065.	d ₂ /KD = 65 mm	= 065.
Stroke = 125 (Stroke ≤ 125 mm)	= 125	Stroke = 300 (Stroke > 125 mm)	= 300
Order No.	= 2480.080.120.065.125	Order No.	= 2480.080.120.065.300



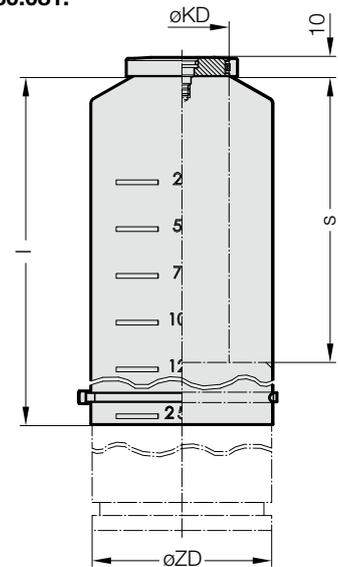
PISTON ROD PROTECTION, FIBRO-TEX®



Mounting example



2480.081.



Description:

The FIBRO-TEX® protects the piston rod of the gas spring against negative influences, such as:

- drawing in dirt
- damage to the surface of the piston rod
- adhesion of dirt particles
- drawing in oil and/or emulsion

The FIBRO-TEX® breathable material doesn't require additional ventilation.

Due to the piston rod protection, FIBRO-TEX®, increases the lifetime of the gas spring under rough operating conditions.

Note:

Included with this part number is the piston rod protection FIBRO-TEX®, with the necessary washer with screw and o-ring, preassembled with cable ties (to piston rod), cable tie (for gas spring housing) is added separately. The piston rod protection has a length of 250 mm. The length of the piston rod protection is shortened individually to the stroke length of the gas spring.

Technical data:

Material:	Piston rod protection:	Polytetrafluoroethylene (ePTFE)
	Washer:	Steel, burnished
	Cable tie (piston rod side):	Polyamide
	Cable tie (cylinder tube side):	Polyamide
Working temperature:		0°C - 80°C
Temperature resistance:		-35°C - 200°C
Chemical resistance:	Acids:	very good
	Alkalines:	very good
	Solvent:	very good
Weather-resistance:	Sunlight (UV):	very good
	Ozone:	very good
	Water:	very good
Oil resistance:	mineral:	very good
	synthetic:	very good

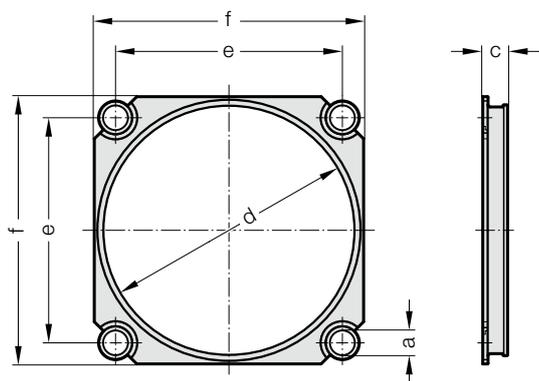
2480.081. Piston rod protection, FIBRO-TEX®

Type of gas spring	2480.13.03000.	2489.14.01500.	2484.13.03000.	2488.13.04200.	2487.12.04200.	2487.12.33.04200.	2480.13.05000.	2489.14.03000.	2484.13.05000.	2488.13.06600.	2487.12.06600.	2487.12.33.06600.	2480.13.07500.	2484.13.07500.	2488.13.09500.	2487.12.09500.	2489.14.05000.
Order No	øKD	øZD	s	l													
2480.081.095.050.250	50	95	10 - 250	250	•	•	•										
2480.081.095.060.250	60	95	10 - 250	250				•	•	•							
2480.081.120.065.250	65	120	10 - 250	250					•	•	•						
2480.081.120.075.250	75	120	10 - 250	250						•	•	•					
2480.081.150.065.250	65	150	10 - 250	250													•
2480.081.150.075.250	75	150	10 - 250	250									•	•			
2480.081.150.090.250	90	150	10 - 250	250											•	•	

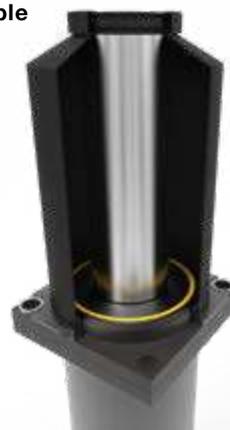
RETAINING PLATE FOR SADDLE FLANGE CABLE TIE PLIERS



2480.081.00.057.



Mounting example



2480.081.00.057. Retaining plate for saddle flange

Order No	Tube- ϕ	a	c	d	e	f
2480.081.00.057.095	95	12	12	96.2	92	110
2480.081.00.057.120	120	12	12	121.2	109.5	130
2480.081.00.057.150	150	16	11	151.2	138	162

Description:

When the gas spring is mounted with a saddle flange, an additional retainer plate can be used. The retainer plate is mounted on the upper side of the saddle flange with fastening screws.

Material:

Retainer plate: Plastic Discs: Steel

Attention:

The retainer plate is determined by the cylinder tube diameter of the gas spring.

2480.081.00.007 Cable tie pliers



Description:

We recommend to use a cable tie plier (tong) to mount the cable ties

Note:

Order Number for spare part cable ties
2480.081.00.006.1 (piston rod)
2480.081.00.006.2 (gas spring housing)

Minimum tensile strength:	220 up to 540 N
Cable tie width:	4,8 up to 7,6 mm
Stroke length:	25,4 mm

GAS SPRINGS - CONNECTOR SYSTEMS

GENERAL

Connecting gas springs in one more systems enables the user to monitor gas spring pressure from outside the tool, to adjust it if necessary, to fill it and to drain it. The connector system has many advantages including ease of maintenance, reliability and improvement in the quality of gas spring use in the tool. FIBRO offers four different systems for hose connections for gas springs: Minimes system, Compression fitting system, JIC system (24° flare) and Micro connector system.

The hoses, screwed connectors and other components are selected to meet the most stringent standards and undergo a series of tests including service life, static steel and robustness after repeated assembly and disassembly..

Minimes-system 2480.00.23./24.

- + Small external hose diameter Ø5 mm
- + Small bending radius Rmin = 20
- + High pressure resistance
- + Vibration-proof measurement couplings
- + Connector with valve
- + No tools needed for connecting hose to adapter, and disconnecting
- ± Swaged non-detachable hose fitting
- Not for use with a pressure reservoir

Technical data:

Hose:	Polyamide, black, dimpled
Hose fittings:	Free cutting steel, zinc-plated
Measuring couplings:	Free cutting steel, zinc-plated
Adapter:	Steel, burnished
Max. permi. pressure:	630 bar
Temperature range:	0–100°C

Recommended application:

Most commonly used system for all gas springs with G¹/₈ gas connection.
Not suitable for use with a pressure reservoir due to small internal diameter (reduced flow volume).

Cutting ring system 2480.00.10.

- + Assemble on-site system
- + Reusable hose fitting
- + High pressure resistance
- ± Suitable for connecting to a pressure reservoir under certain conditions
- Larger bending radius Rmin = 40
- Not suitable for gas springs with M6 connection thread
- Extra time required for preparing hose and fitting it

Technical data:

Hose:	Polyurethane/polyamide, black, dimpled
Hose fittings:	Steel, zinc-plated
Adapter:	Steel, zinc-plated
Max. permi. pressure:	380 bar
Temperature range:	0–100°C

Recommended application:

For all gas springs with G¹/₈ gas connection.
Mainly used for self-assembly in small numbers.

24°-cone-system 2480.00.25./26.

- + Suitable for connecting to a pressure reservoir
- + Wide range of connection adapters
- + Vibration-proof (O-ring seal)
- + High pressure resistance
- ± Swaged non-detachable hose fitting
- Larger bending radius Rmin = 40
- Not suitable for gas springs with M6 connection thread

Technical data:

Hose:	Polyurethane/polyamide, black, dimpled
Hose fittings:	Steel, zinc-plated
Adapter:	Steel, zinc-plated
Max. permi. pressure:	315 bar
Temperature range:	0–100°C

Recommended application:

For all gas springs with G¹/₈ gas connection.
Mainly used for connection to pressure reservoir.

Connector system, 24° conus micro 2480.00.27./28.

- + small external hose diameter Ø5 mm
- + flexible pipe: small bending radius Rmin = 20 mm
- + pipe: Min. bending radius = 12 mm (3x da)
- + high pressure resistance
- + small connection fitting
- + vibration-proof due to O-ring seal
- + swaged non-detachable hose fitting
- not for use with a pressure reservoir
- limited suitability for gas springs with thread connection G¹/₈

Technical data:

Hose:	Polyamide, black, dimpled
Hose adapter:	Free cutting steel, zinc-plated
Adapter:	Steel, zinc-plated
Max. permi. pressure:	475 bar
Temperature range:	0 to +80°C
Conduit:	Steel
External conduit diameter (da):	Ø4 mm
Internal conduit diameter (di):	Ø2 mm
max. dynamic pressure:	430 bar
Temperature range:	0 to +100°C

Recommended application:

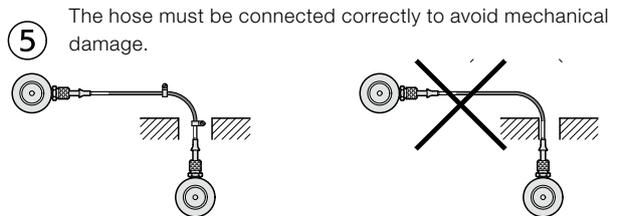
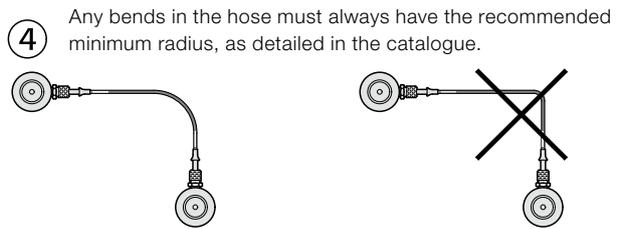
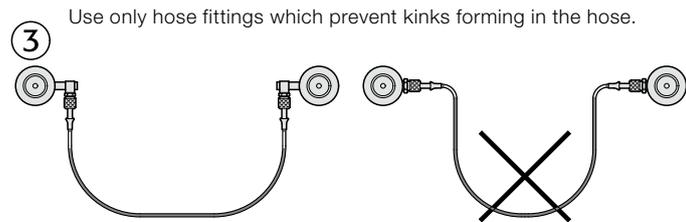
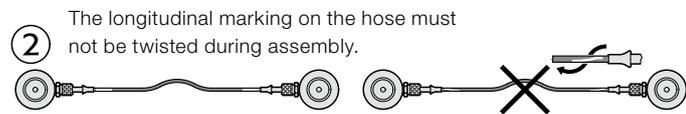
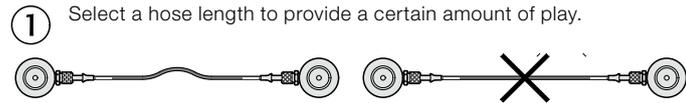
For gas springs with M6 gas connection.
Not suitable for use with a pressure reservoir due to small internal diameter (reduced flow volume).

Note: Pipe system, 24° conus micro for higher temps on request.

INSTRUCTIONS FOR HOSE ASSEMBLY

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

Never exceed the maximum pressures and temperatures for the hoses. Ensure that all hoses and adaptors are perfectly clean prior to assembly. The sheathing of the hoses must be perforated so that they can be used for pressurised gas. We recommend the use of the 24° cone hose system if pressure vessels are used to avoid restricting gas flow. Follow the instructions below to ensure functionality and maximum service life for the hose connection:



Refer to DIN 20066 for further details on installing hose connections.

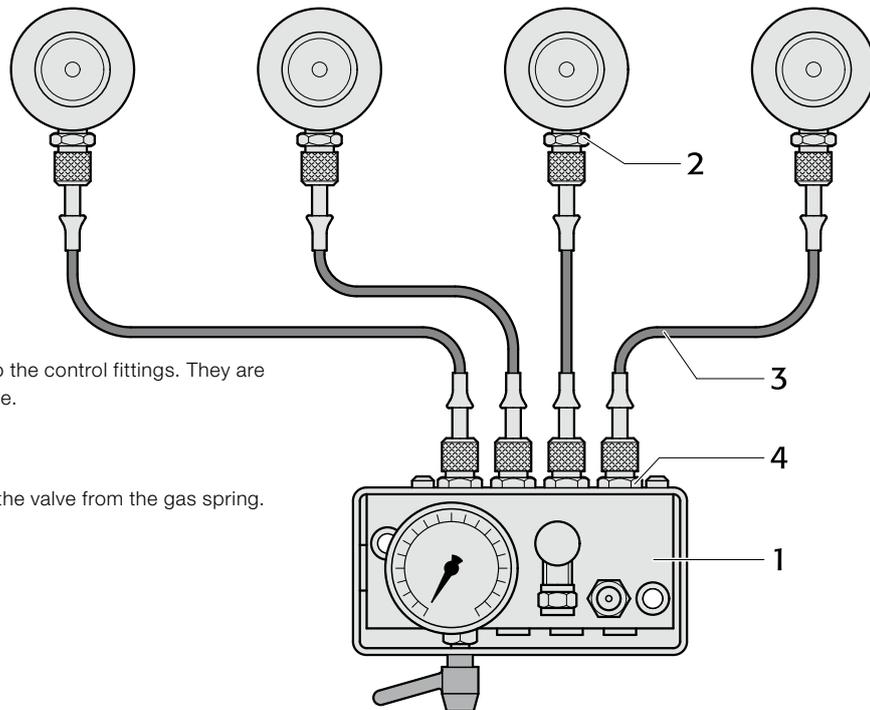
Attention!

Any modifications whatsoever to the product are prohibited.

For further information refer to the FIBRO Gas Spring Catalogue, visit www.fibro.com or contact your FIBRO agent.

2480. Connection 1:

Direct connection for group



Function:

Each spring is connected via a direct wire to the control fittings. They are not interconnected and form a pressure zone. See control fittings 2480.00.30.

Note:

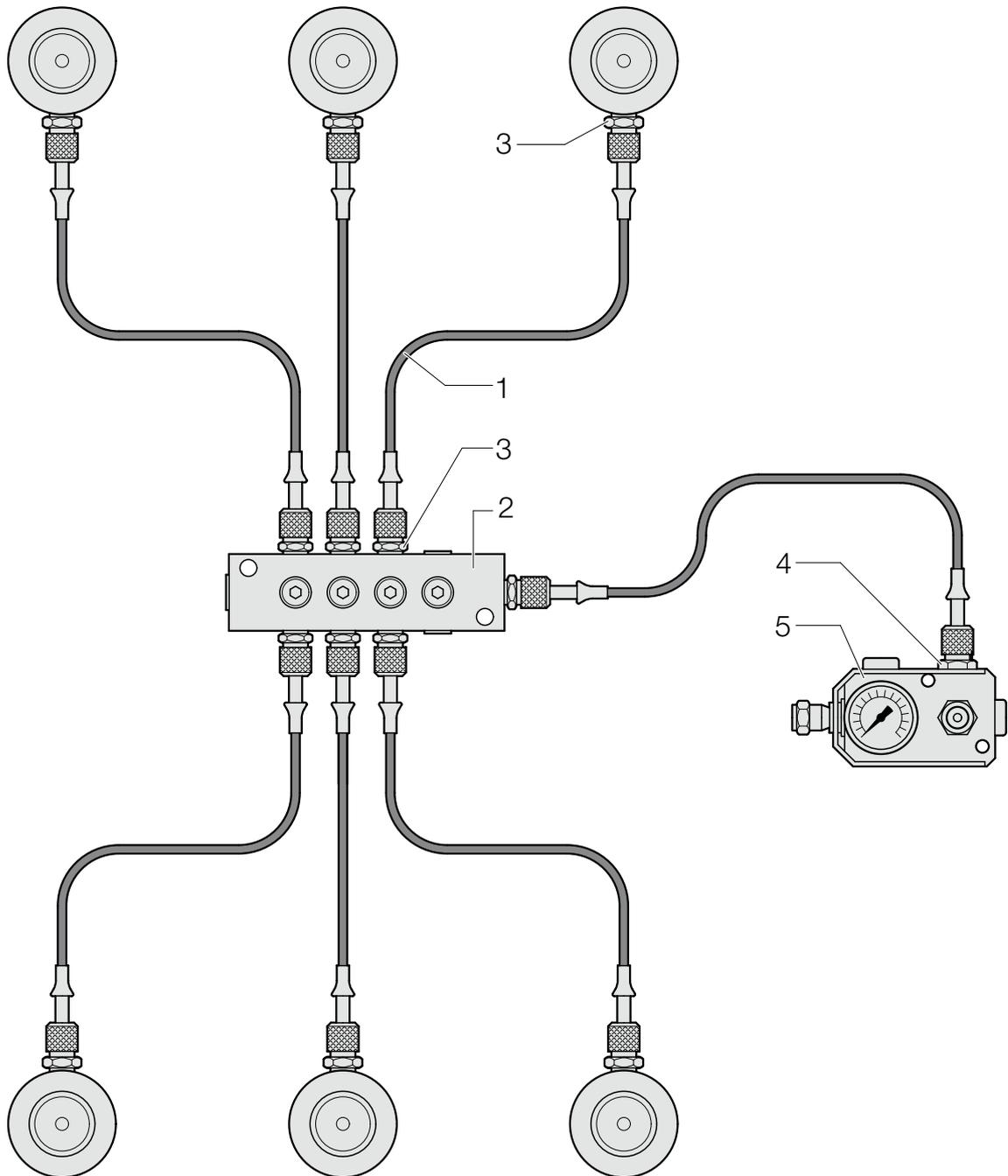
When installing gas springs always remove the valve from the gas spring.

Item No.	Term	Quantity	Order No.	Note
1	Control fitting	1	2480.00.30.01.1	Optionally with diaphragm pressure switch 2480.00.30.02
2	Gauging coupling	4	2480.00.24.01	
3	Gauging hose	4	2480.00.23.□□.□□□	Type of connection and length as required
4	Gauging coupling	4	2480.00.24.02	

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 2:

Group series connection



Function:

The springs are interconnected and there is just one test line to the control fitting.

Note:

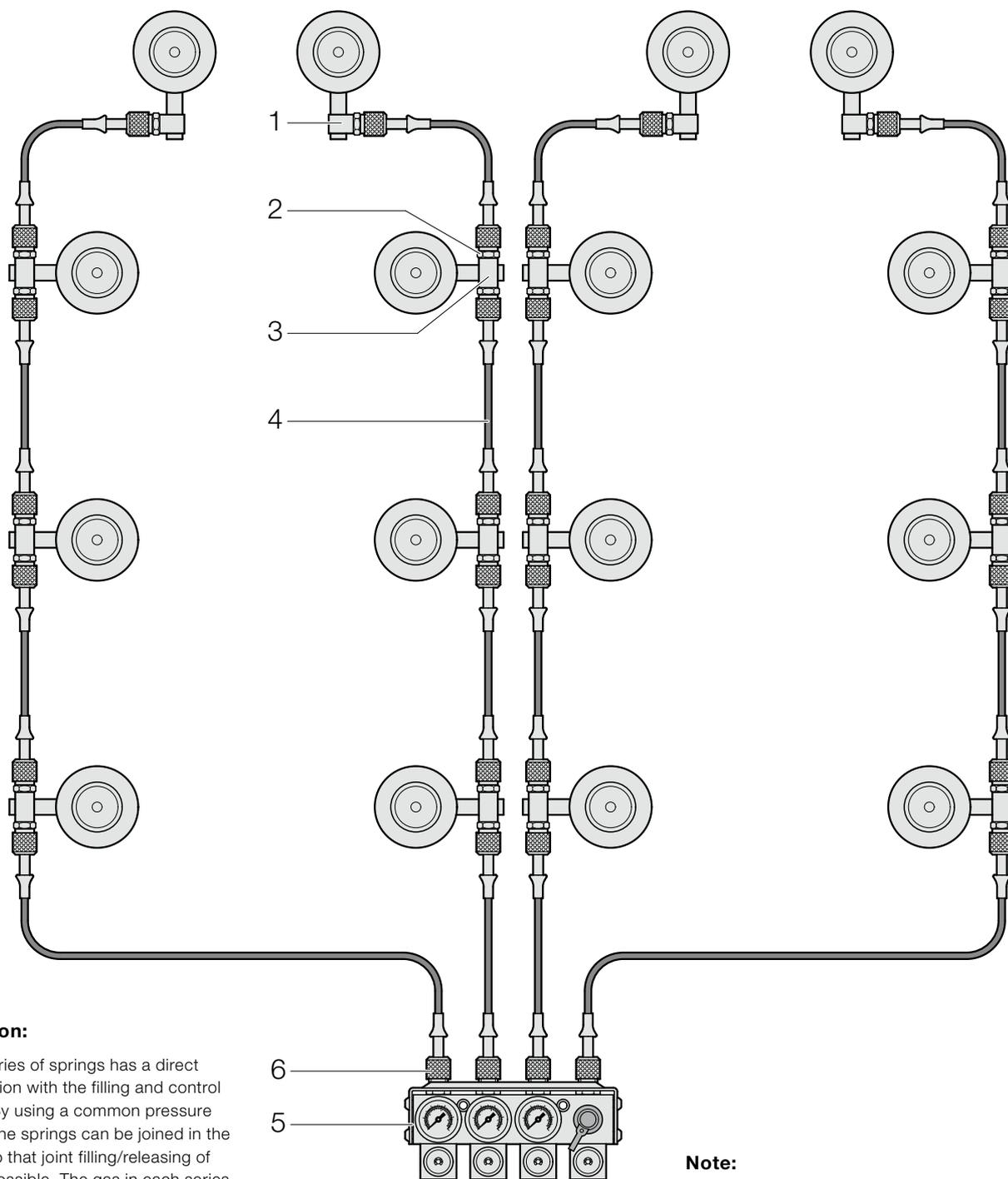
When installing gas springs always remove the valve from the gas spring.

Item No.	Term	Quantity	Order No.	Note
1	Gauging hose	7	2480.00.23.□□.□□□	Type of connection and length as required
2	Distributor	1	2480.00.24.33	
3	Gauging coupling	13	2480.00.24.01	
4	Gauging coupling	1	2480.00.24.02	
5	Control fitting	1	2480.00.31.01.1	

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 3:

Multiple connections with independent functioning



Function:

Each series of springs has a direct connection with the filling and control fitting. By using a common pressure supply the springs can be joined in the fitting so that joint filling/releasing of gas is possible. The gas in each series of springs can also be filled/released or monitored individually.

See multi-way control fitting
2480.00.39.06.04

Note:

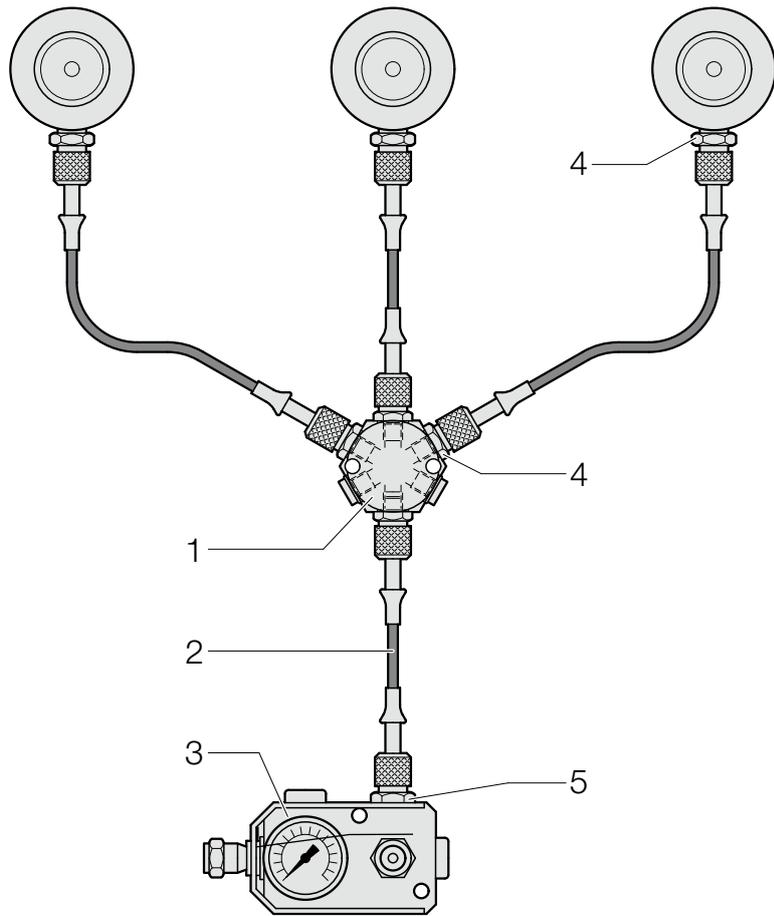
When installing gas springs always remove the valve from the gas spring.

Item No.	Term	Quantity	Order No.	Note
1	Simple adaptor, short	4	2480.00.24.17	Choice of "long" or "very long" depending on the specific mounting arrangements.
2	Gauging coupling	28	2480.00.24.01	
3	Dual adapter	12	2480.00.24.14	Choice of "long" or "very long" depending on the specific mounting arrangements.
4	Gauging hose	16	2480.00.23.□□.□□□	Type of connection and length as required
5	Multiple control fitting	1	2480.00.39.06.04	
6	Gauging coupling	4	2480.00.24.01	

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 4.1:

Group series connection



Function:

The springs are interconnected and there is just one test line to the control fitting.

Note:

When installing gas springs always remove the valve from the gas spring.

Item No.	Term	Quantity	Order No.	Note
1	Coupling	1	2480.00.24.31	
2	Gauging hose	4	2480.00.23.□□.□□□	Type of connection and length as required
3	Control fitting	1	2480.00.31.01.1	
4	Gauging coupling	7	2480.00.24.01	
5	Gauging coupling	1	2480.00.24.02	

2480. Connection 4.2:

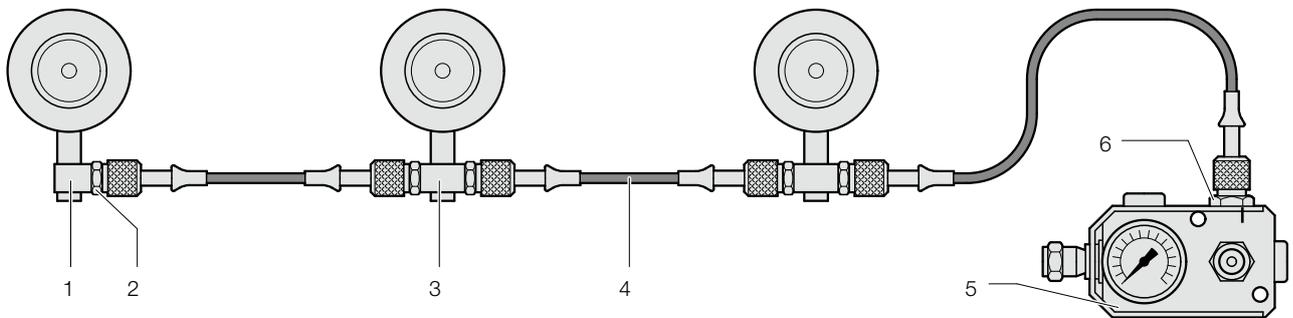
Group series connection

Function:

The springs are interconnected and there is just one test line to the control fitting.

Note:

When installing gas springs always remove the valve from the gas spring.

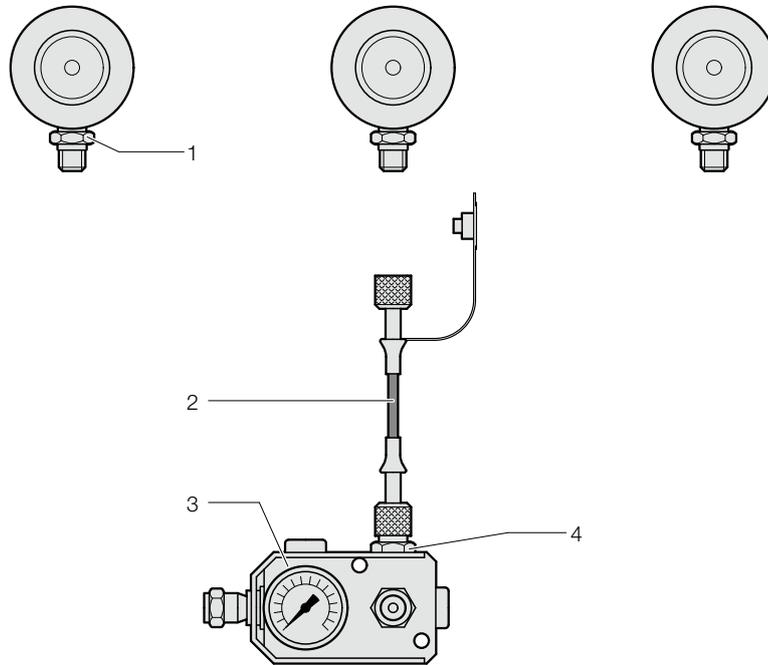


Item No.	Term	Quantity	Order No.	Note
1	Simple adaptor, short	1	2480.00.24.17	Choice of "long" or "very long" depending on the specific mounting arrangements.
2	Gauging coupling	5	2480.00.24.01	
3	Dual adaptor	2	2480.00.24.14	Choice of "long" or "very long" depending on the specific mounting arrangements.
4	Gauging hose	3	2480.00.23.□□.□□□	Type of connection and length as required
5	Control fitting	1	2480.00.31.01.1	
6	Gauging coupling	1	2480.00.24.02	

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 5:

Independent test connection



Function:

The springs work independently and have a gauging coupling (2480.00.24.01) with valve. If required the springs can be tested and pressure adjusted individually. A control fitting (2480.00.31.01.1) is used for the purpose.

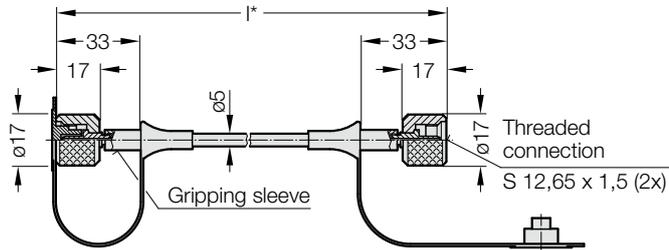
Item No.	Term	Quantity	Order No.	Note
1	Gauging coupling	3	2480.00.24.01	
2	Gauging hose	1	2480.00.23.□□□□	Type of connection and length as required
3	Control fitting	1	2480.00.31.01.1	
4	Gauging coupling	1	2480.00.24.02	

GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

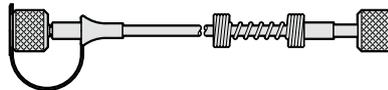
2480.00.23.01.

Gauging hose -
both ends straight



2480.00.23.01.-----1

Antikink spiral, at one end



2480.00.23.01.-----2

Antikink spiral, at both ends



2480.00.23.01.

Gauging hose Mini, both ends straight

Order example:

Shortest factory length:

- 90 mm excl. bend protection
- 150 mm bend protection on one side
- 300 mm bend protection on both sides
- Minimum bending radius: R20 mm

*Measuring hose available in the following lengths:

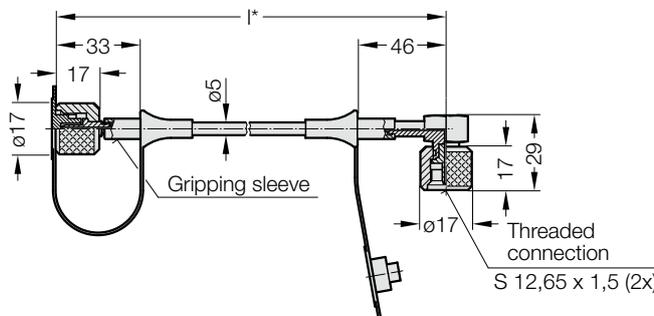
- 5 mm step range ≤ 1000 mm
- 10 mm step range > 1000 mm
- 100 mm step range > 4000 mm
- 500 mm step range > 6000 mm

Ordering Code (example):

Gauging hose Mini, both ends straight	= 2480.00.23.01.	Gauging hose Mini, both ends straight	= 2480.00.23.01.
l = 90 mm	= 0090	l = 150 mm	= 0150.
Order No	= 2480.00.23.01.0090	Bend protection on one side	= 1
		Order No	= 2480.00.23.01.0150. 1

2480.00.23.02.

Gauging hose -
one end straight
90°-angle



2480.00.23.02.-----1

Antikink spiral, at one end, straight



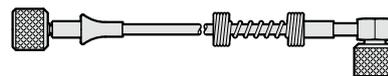
2480.00.23.02.-----2

Antikink spiral, at both ends



2480.00.23.02.-----3

Antikink spiral, at one end, 90°



2480.00.23.02.

Gauging hose Mini, one end straight / 90°-angle

Order example:

Shortest factory length:

- 90 mm excl. bend protection
- 150 mm bend protection on one side
- 300 mm bend protection on both sides
- Minimum bending radius: R20 mm

*Measuring hose available in the following lengths:

- 5 mm step range ≤ 1000 mm
- 10 mm step range > 1000 mm
- 100 mm step range > 4000 mm
- 500 mm step range > 6000 mm

Ordering Code (example):

Gauging hose Mini, one end straight / 90°-angle	= 2480.00.23.02.	Gauging hose Mini, one end straight / 90°-angle	= 2480.00.23.02.
l = 90 mm	= 0090	l = 150 mm	= 0150.
Order No	= 2480.00.23.02.0090	Bend protection on one side	= 1
		Order No	= 2480.00.23.02.0150. 1

GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

2480.00.23.03.

**Gauging hose Mini, both ends
90°-angle**

Order example:

Shortest factory length:

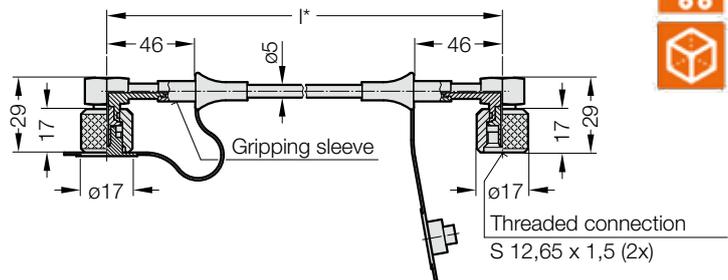
- 90 mm excl. bend protection
- 150 mm bend protection on one side
- 300 mm bend protection on both sides
- Minimum bending radius: R20 mm

*Measuring hose available in the following lengths:

- 5 mm step range ≤ 1000 mm
- 10 mm step range > 1000 mm
- 100 mm step range > 4000 mm
- 500 mm step range > 6000 mm

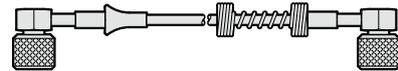
2480.00.23.03.

Gauging hose -
both ends
90°-angle



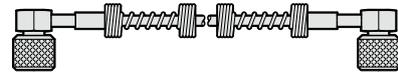
2480.00.23.03.-----3

Antikink spiral, at one end



2480.00.23.03.-----2

Antikink spiral, at both ends

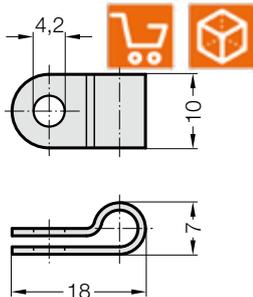


Ordering Code (example):

Gauging hose Mini, both ends 90°-angle	= 2480.00.23.03.	Gauging hose Mini, both ends 90°-angle	= 2480.00.23.03.
l = 90 mm	= 0090	l = 150 mm	= 0150.
Order No	= 2480.00.23.03.0090	Bend protection on one side	= 3
		Order No	= 2480.00.23.03.0150.3

2480.00.23.12.01

Hose clamp
for gauging hose DN2 (Ø5 mm)



Material:

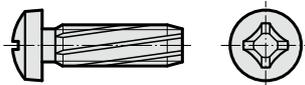
Polyamide

Note:

Supplied without screws

2192.50.04.012

Self-tapping screw DIN 7516
M4x12



Note:

self-tapping
Diameter of hole for self-tapping
screw = 3.6 mm

2480.00.23.13.

Anti-scurf spiral
for subsequent installation over hoses and tubing



Order No.	l [m]
2480.00.23.13.0001	1
2480.00.23.13.0002	2
2480.00.23.13.0005	5
2480.00.23.13.0010	10

Inner ø 7 mm
For hose external ø max. 5-11 mm
Temperature range -30°C up to +100°C

Description:

The anti-scurf spiral is used to protect against abrasion, is resistant to air, water, oil, hydraulic fluids petrol and other liquids.

Material:

Polyamide

GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

Gauging coupling

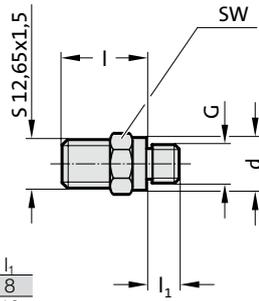
2480.00.24.01 with valve

**2480.00.24.03 without valve
for connection to gas springs**

Gauging coupling

2480.00.24.02 with valve

**2480.00.24.04 without valve
for connection to control fitting**

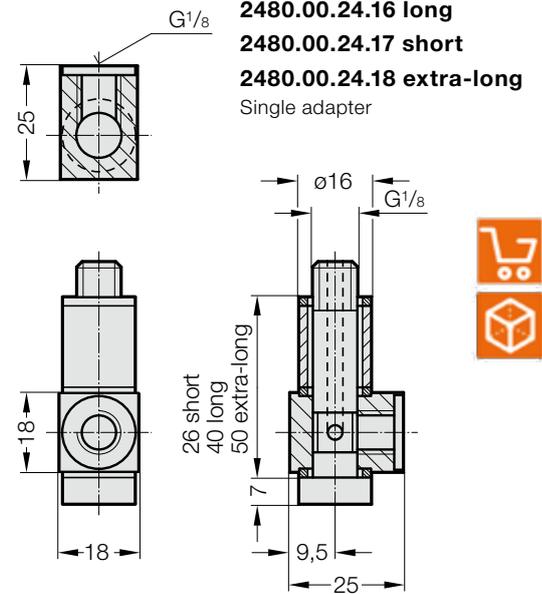


Order No.	G	d	SW	l	l ₁
2480.00.24.01	G 1/8	14	14	22	8
2480.00.24.02	G 1/4	19	19	21	10
2480.00.24.03	G 1/8	14	14	22	8
2480.00.24.04	G 1/4	19	19	21	10

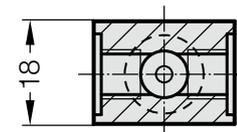
*SW = Width across flats

Note:

The measuring coupling with valve is used for standard assembly layouts. Where the system requires frequent filling pressure changes (e.g. die drawing cushions), the measuring coupling is used without a valve.



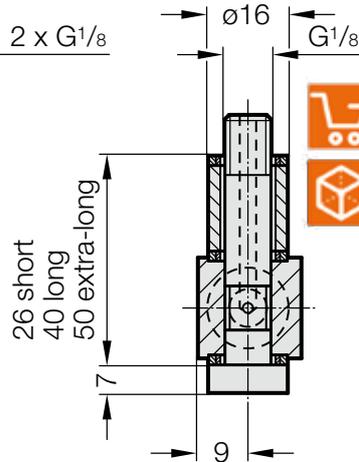
2480.00.24.13 long



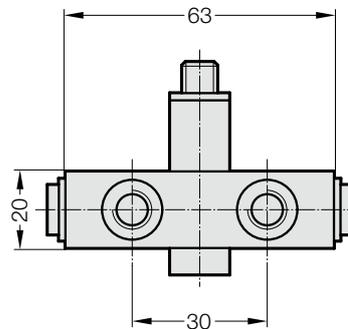
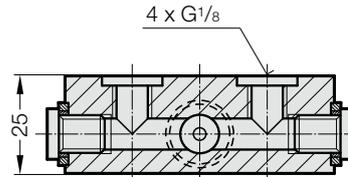
2480.00.24.14 short

2480.00.24.15 extra-long

Double adapter



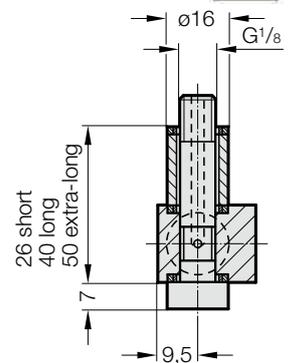
2480.00.24.10 long



2480.00.24.11 short

2480.00.24.12 extra-long

Multiple adapter

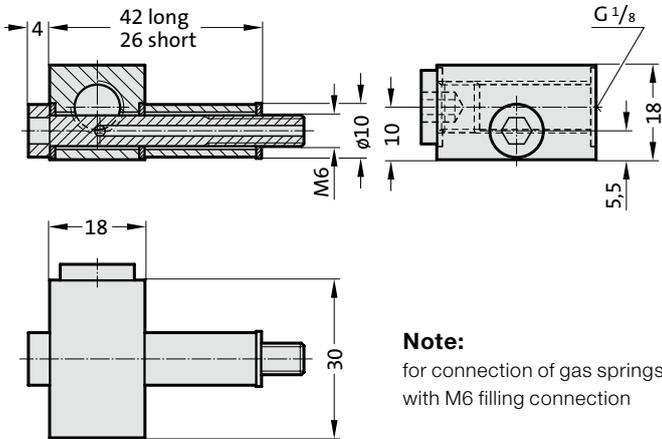


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

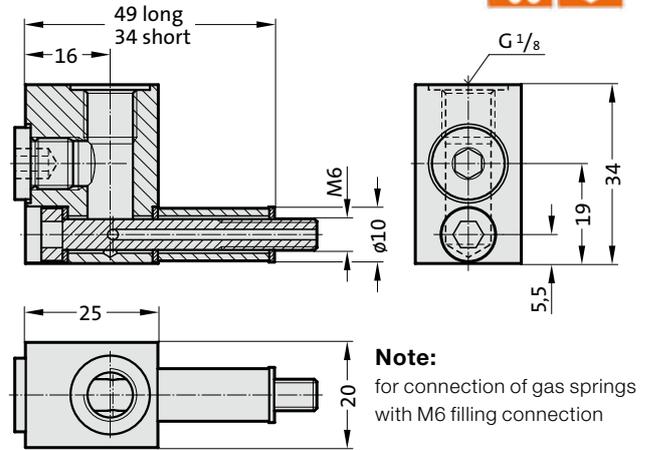
2480.00.24.53 horizontal, long
2480.00.24.54 horizontal, short

Double adapter



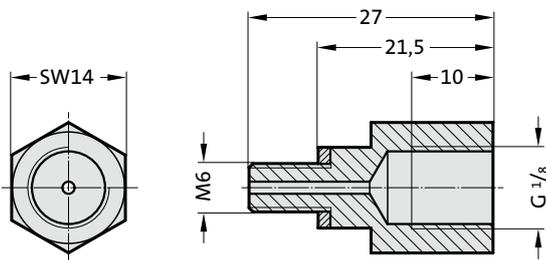
2480.00.24.56 vertical, long
2480.00.24.57 vertical, short

Double adapter

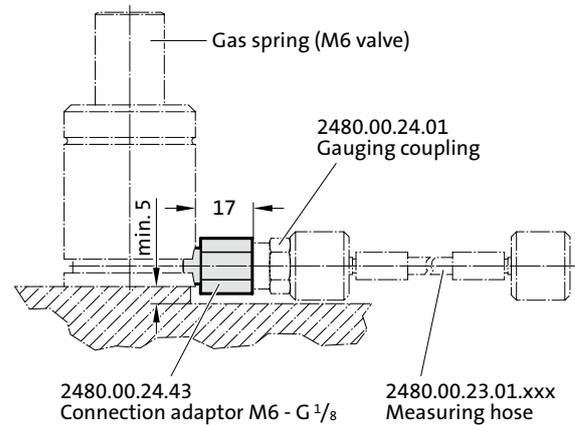


2480.00.24.43

Connection fitting M6-G1/8



Mounting example:

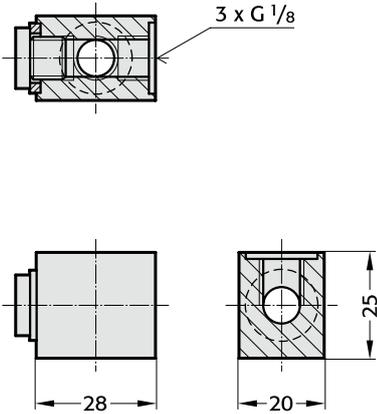


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

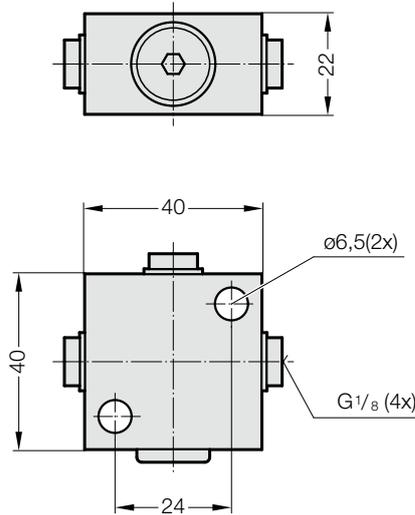
2480.00.24.30

Distributor block G1/8, 3 ports



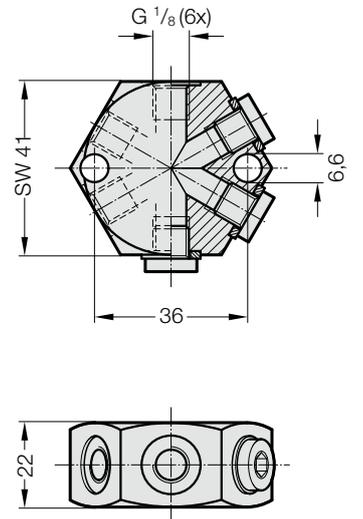
2480.00.24.34

Distributor block G1/8, 4 ports



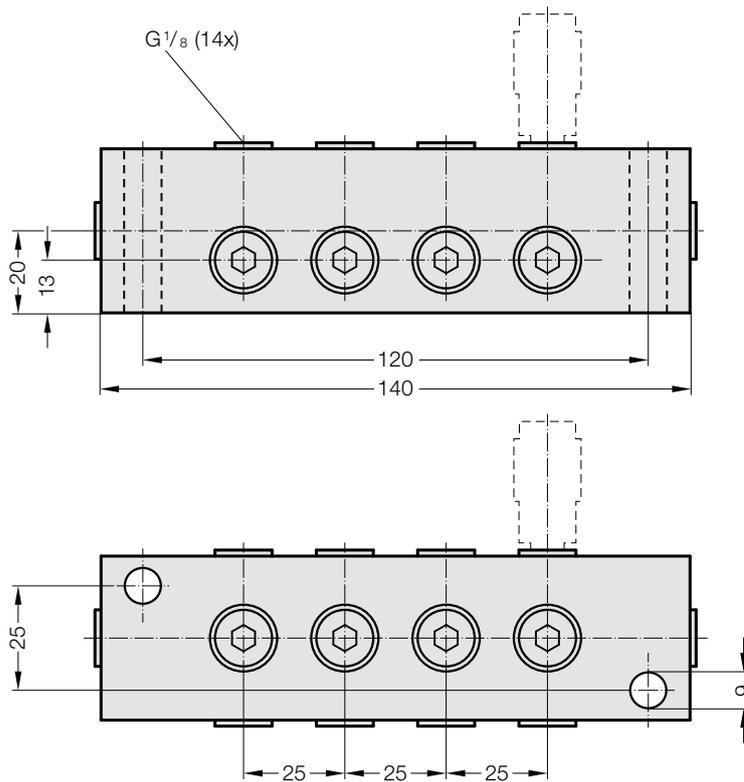
2480.00.24.31

Distributor block G1/8, 6 ports



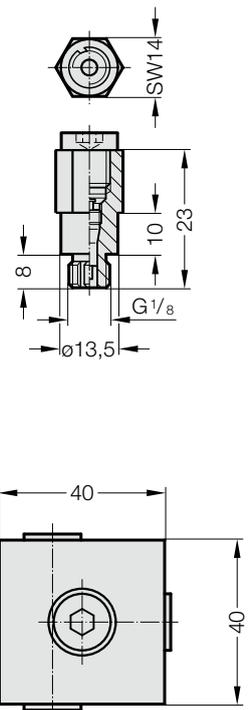
2480.00.24.33

Distributor G1/8, 14 ports



2480.00.40

Filling adapter

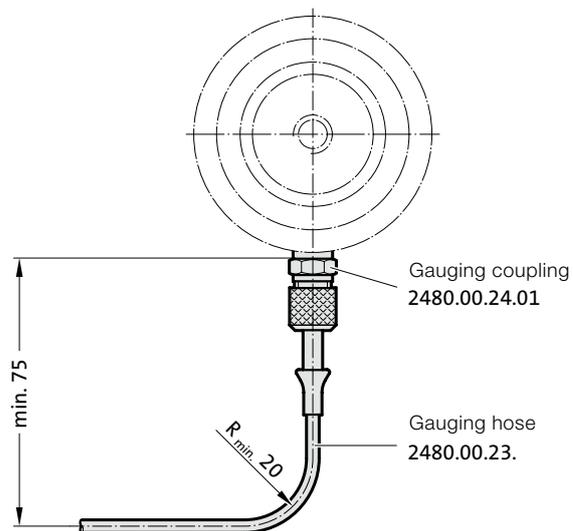
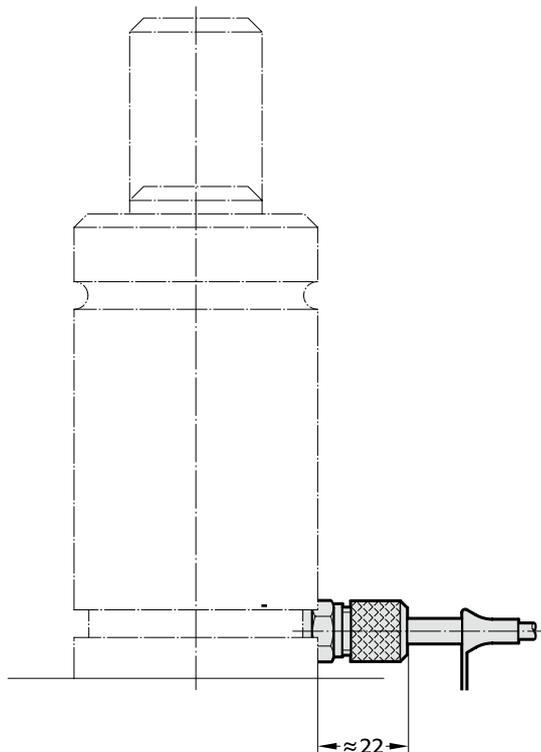


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

2480.00.24.01

Gauging coupling with valve



2480.00.24.10 long

11 short

12 extra-long



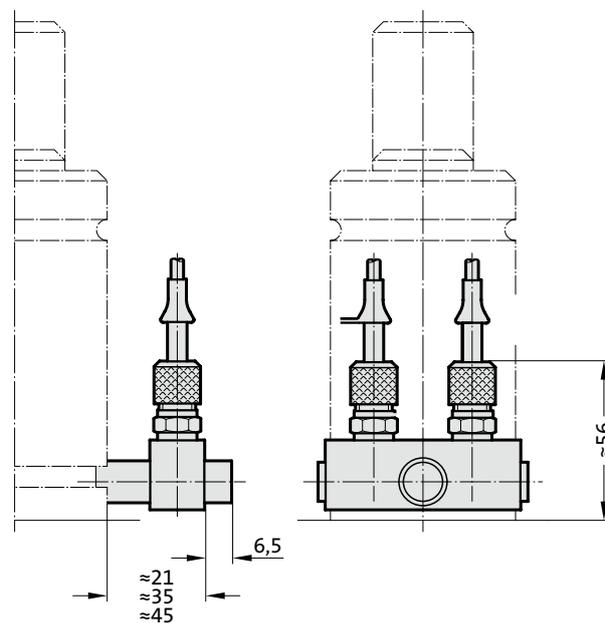
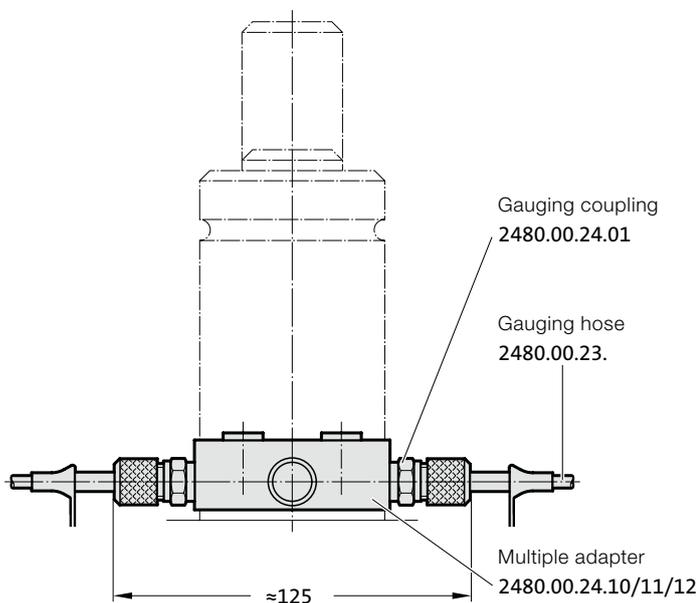
Multiple adapter with two gauging couplings

Note:

When installing or fitting a gauging coupling the valve must be removed from the gas spring.

Execution: Horizontal connection

Execution: Vertical connection

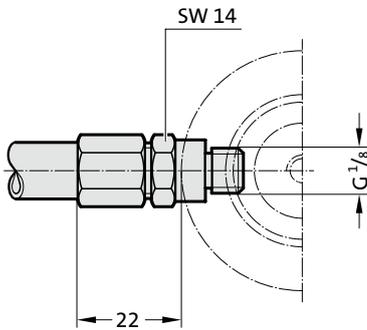


GAS SPRING ACCESSORIES

COMPRESSION FITTING – COMPOUND THREADED JOINTS

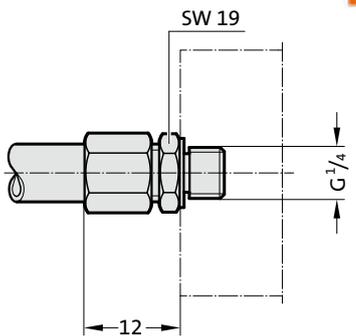
2480.00.10.01

Direct test connection to gas spring



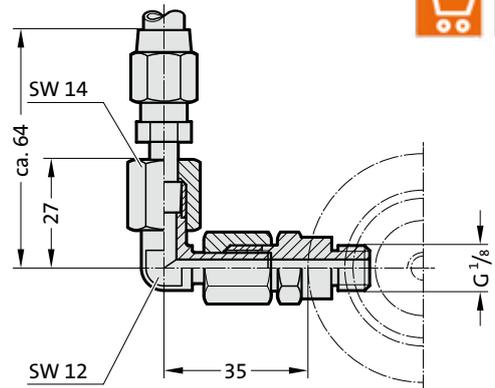
2480.00.10.03

Direct test connection to control fitting



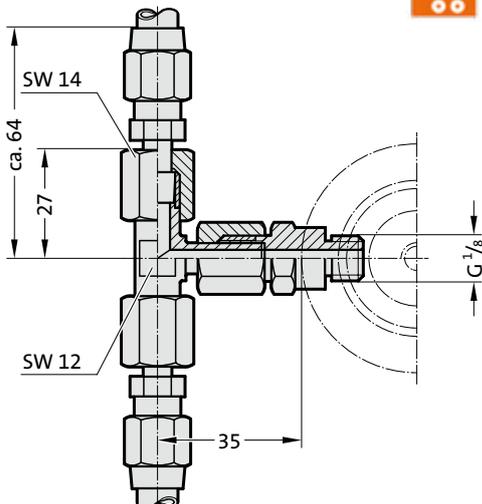
2480.00.10.10

Adjustable angular coupling



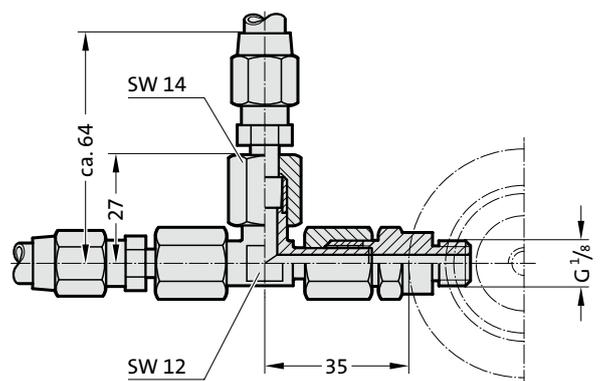
2480.00.10.11

Adjustable T-Coupling



2480.00.10.12

Adjustable L-Coupling

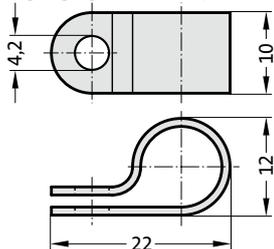


GAS SPRING ACCESSORIES

COMPRESSION FITTING – COMPOUND THREADED JOINTS

2480.00.10.20.12.01

Hose clamp
for gauging hose DN4 (Ø 9 mm)



Material:

Polyamide

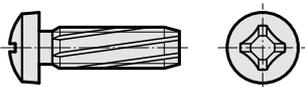
Note:

Supplied without screws



2192.50.04.012

Self-tapping screw DIN 7516
M4x12



Note:

self-tapping

Diameter of hole for self-tapping
screw = 3.6 mm



2480.00.23.13.

Anti-scuff spiral
for subsequent installation over hoses and tubing



Order No. l [m]

2480.00.23.13.0001	1
2480.00.23.13.0002	2
2480.00.23.13.0005	5
2480.00.23.13.0010	10

Inner ø 7 mm
For hose external ø max. 5-11 mm
-30°C up to
Temperature range +100°C

Description:

The anti-scuff spiral is used to protect against abrasion, is resistant to air, water, oil, hydraulic fluids petrol and other liquids.

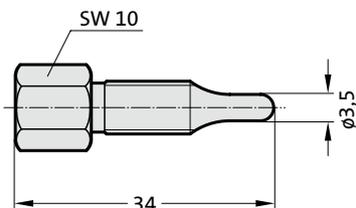
Material:

Polyamide



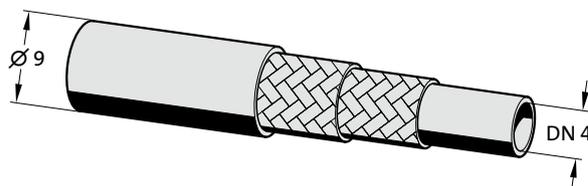
2480.00.54.01

Expansion punch for hosing



2480.00.10.20.

High-pressure hose

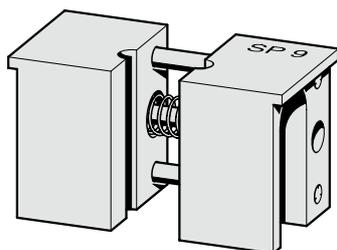


Ordering Code (example):

High-pressure hose = 2480.00.10.20.
Length 10 m = 0010
Order No. = 2480.00.10.20.0010

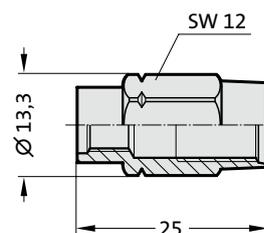
2480.00.54.02

Vice jaws
for holding high-pressure hose



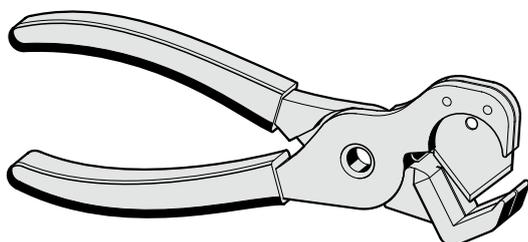
2480.00.10.21

Hose screw fitting (female)



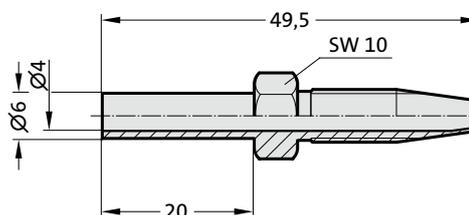
2480.00.54.03

Hose shears

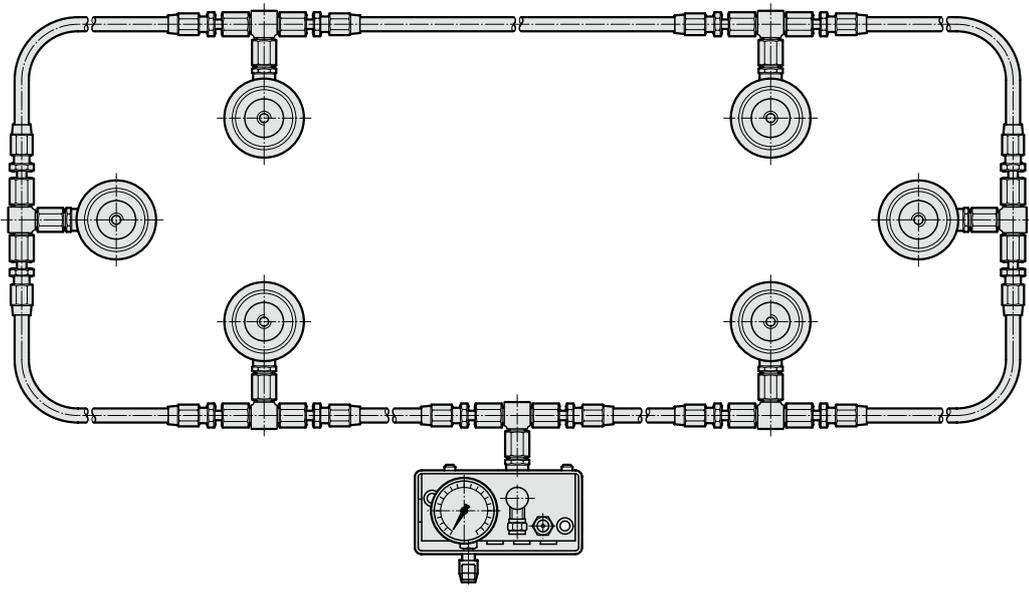
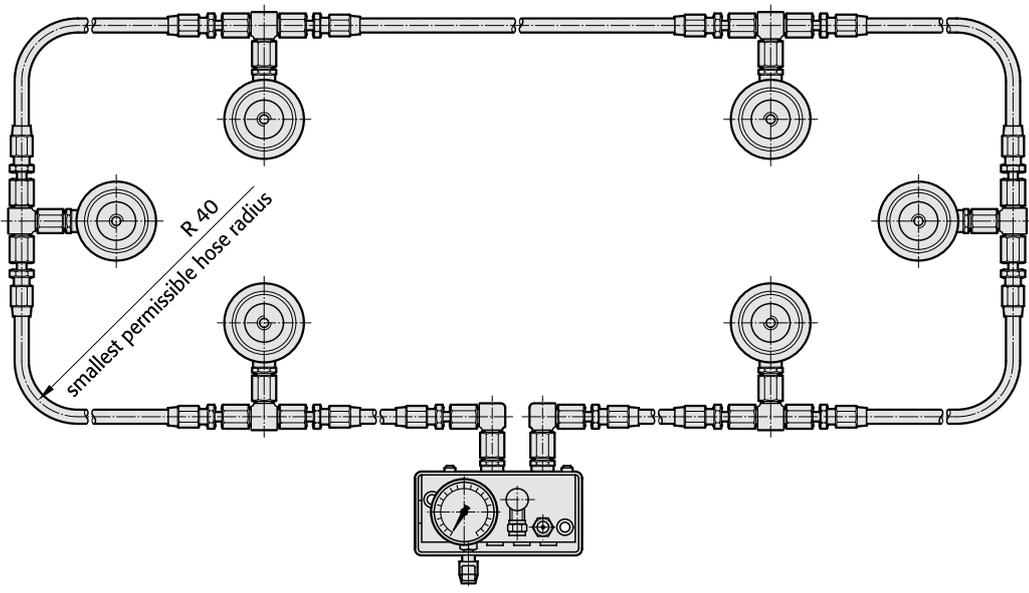
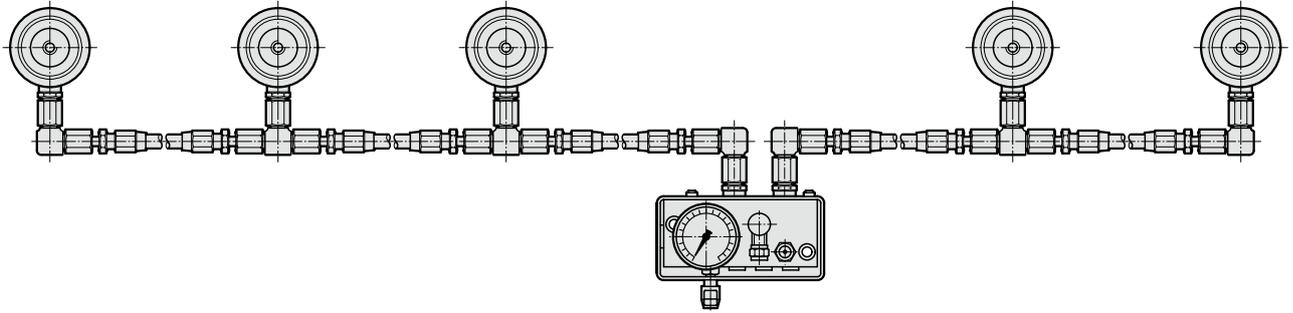


2480.00.10.22

Hose screw fitting (male)



ASSEMBLY ARRANGEMENT OF GAS SPRINGS IN SERIAL CONNECTION COMPRESSION FITTING



Note: When installing gas springs always remove the valve from the gas spring.

GAS SPRING ACCESSORIES

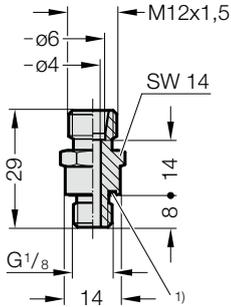
24°-CONE THREADED JOINTS

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.26.03



Screw connection GE-24° conus,
DN5 - G $\frac{1}{8}$

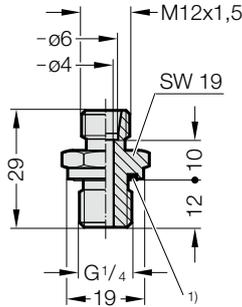


1) Eolastic-Seal ED

2480.00.26.04



Screw connection GE-24° conus,
DN5 - G $\frac{1}{4}$

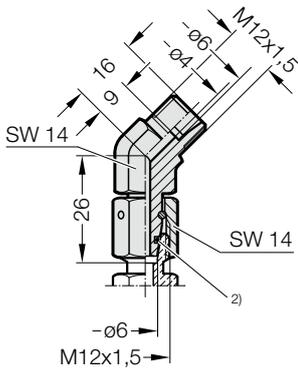


1) Eolastic-Seal ED

2480.00.26.21



Screw connection 45°-24° conus,
DN5, adjustable

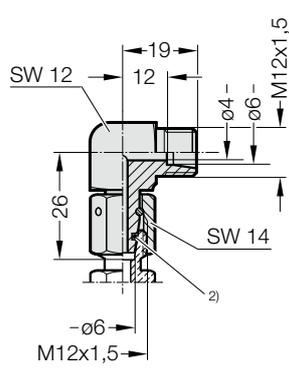


2) O-ring

2480.00.26.22



Screw connection 90°-24° conus,
DN5, adjustable

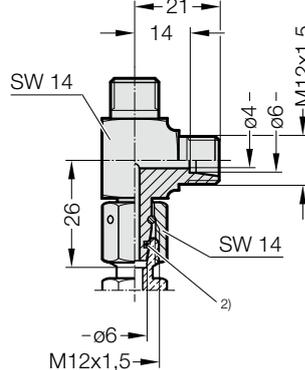


2) O-ring

2480.00.26.23



Screw connection L-24° conus,
DN5, adjustable

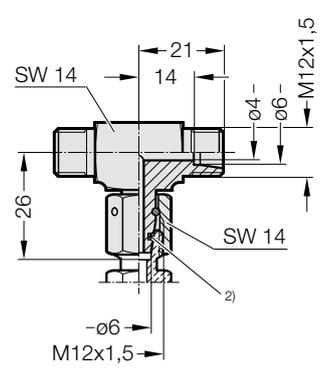


2) O-ring

2480.00.26.24



Screw connection T-24° conus,
DN5, adjustable

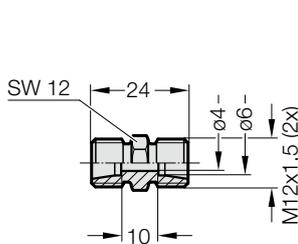


2) O-ring

2480.00.26.25



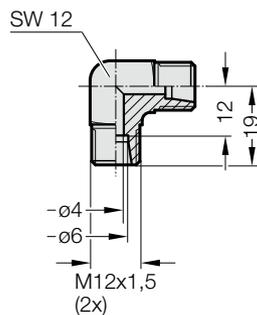
Adapter GE-24° conus,
hose - hose, DN5



2480.00.26.26



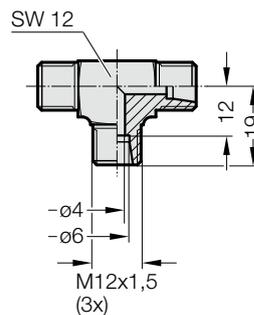
Adapter 90°-24° conus,
hose - hose, DN5



2480.00.26.27



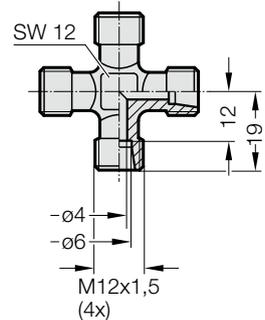
Adapter T-24° conus,
hose - hose, DN5



2480.00.26.28



Adapter K-24° conus,
hose - hose, DN5



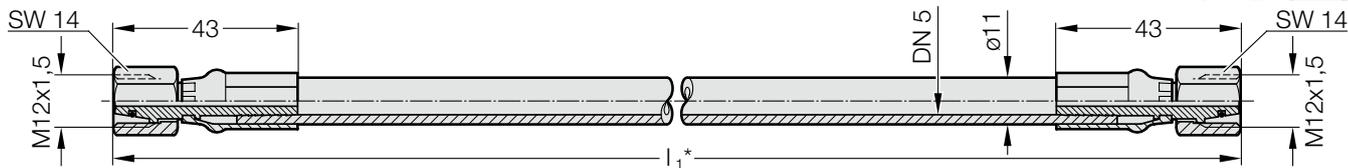
GAS SPRING ACCESSORIES

24°-CONE CONNECTION HOSES

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.01.

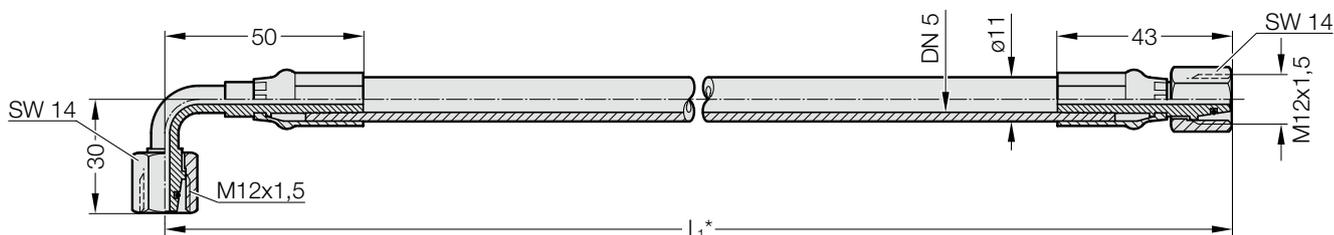
Hose – conical seals with union nuts and O-Ring (straight/straight)



Dimension l_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.01.0765

2480.00.25.02.

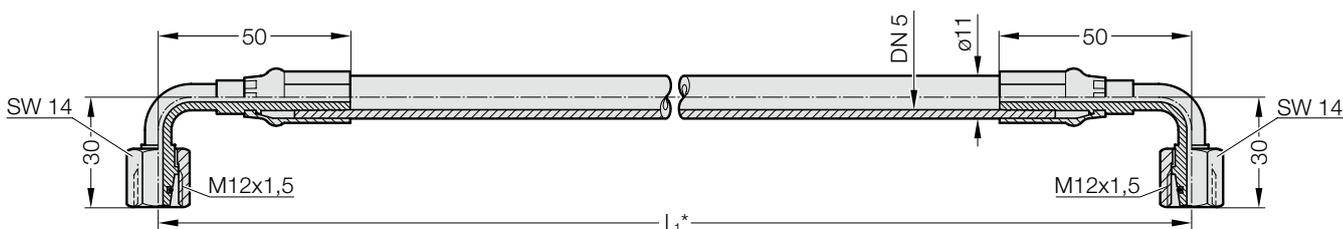
Hose – conical seals with union nuts and O-Ring (90° bend/straight)



Dimension l_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.02.0765

2480.00.25.03.

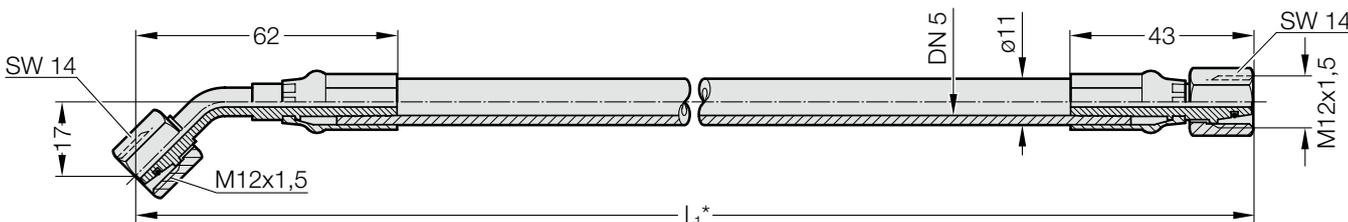
Hose – conical seals with union nuts and O-Ring (90° bend/both ends)



Dimension l_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.03.0765

2480.00.25.04.

Hose – conical seals with union nuts and O-Ring (45° bend/straight)



Dimension l_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.04.0765

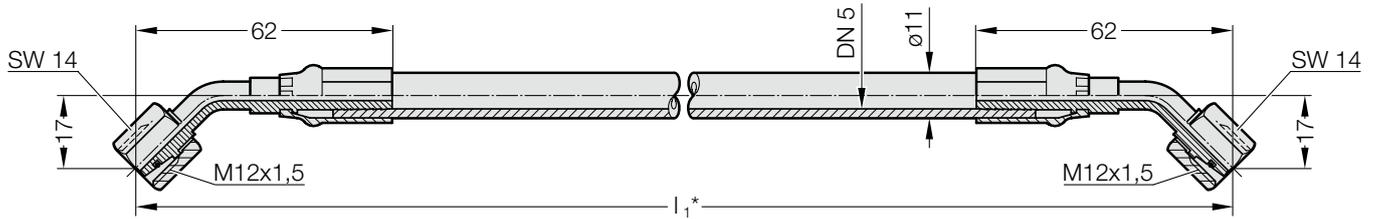
GAS SPRING ACCESSORIES

24°-CONE CONNECTION HOSES

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.05.

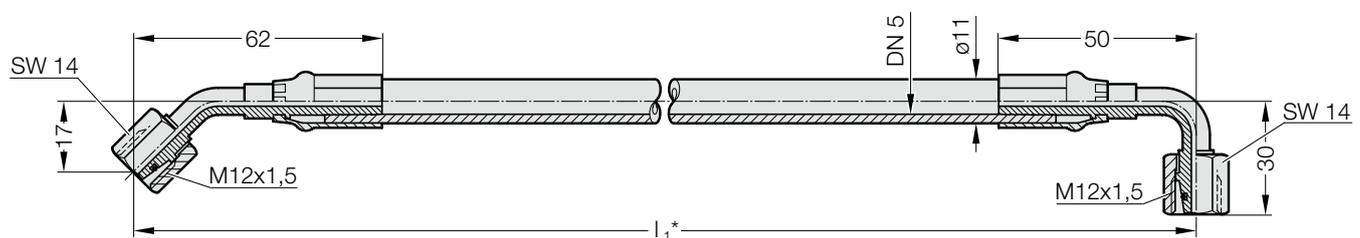
Hose – conical seals with union nuts and O-Ring (45° bend/both ends)



Dimension l_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.05.0765

2480.00.25.06.

Hose – conical seals with union nuts and O-Ring (45° bend/ 90° bend)



Dimension l_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.06.0765

Order example:

Shortest factory length: 140 mm
Minimum bending radius: R40

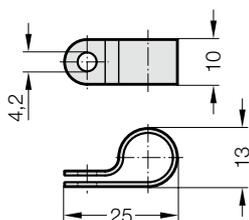
*24°-cone connection hoses available in the following lengths:

- 5 mm step range \leq 1000 mm
- 10 mm step range $>$ 1000 mm
- 100 mm step range $>$ 4000 mm
- 500 mm step range $>$ 6000 mm

2480.00.25.12.01



Hose clamp
for gauging hose DN5 (\varnothing 11 mm)



Material:

Polyamide

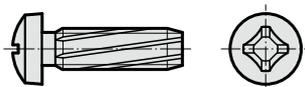
Note:

Supplied without screws

2192.50.04.012



Self-tapping screw DIN 7516
M4x12



Note:

self-tapping
Diameter of hole for self-tapping
screw = 3.6 mm

2480.00.23.13.

Anti-scuff spiral
for subsequent installation over hoses and tubing



Order No.	l [m]
2480.00.23.13.0001	1
2480.00.23.13.0002	2
2480.00.23.13.0005	5
2480.00.23.13.0010	10

Inner \varnothing	7 mm max.
For hose external \varnothing	5-11 mm
Temperature range	-30°C up to +100°C

Description:

The anti-scuff spiral is used to protect against abrasion, is resistant to air, water, oil, hydraulic fluids petrol and other liquids.

Material:

Polyamide

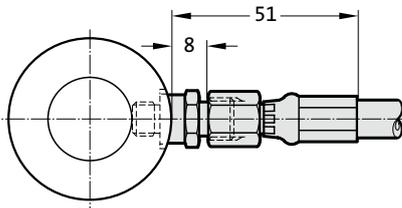
GAS SPRING ACCESSORIES

DIRECT CONNECTION DIMENSIONS

24°-CONE THREADED JOINTS (DIN 2353 / DIN EN ISO 8434-1)

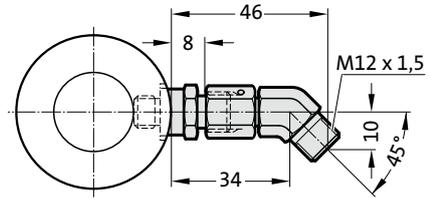
Direct connection

hose straight with adaptor 2480.00.26.03



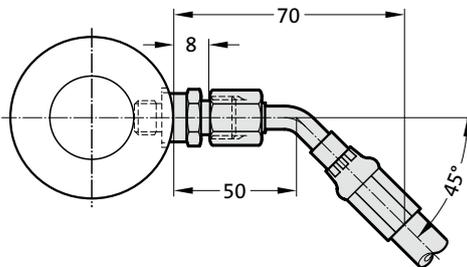
Direct connection

with elbow adaptor 45° 2480.00.26.21



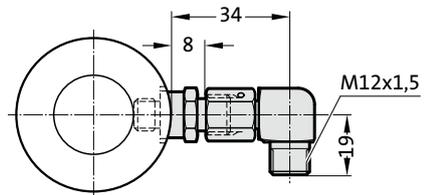
Direct connection

45° hose with adaptor 2480.00.26.03



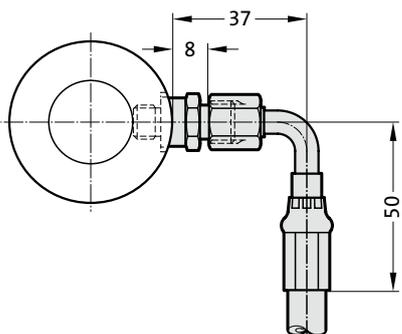
Direct connection

with elbow adaptor 90° 2480.00.26.22



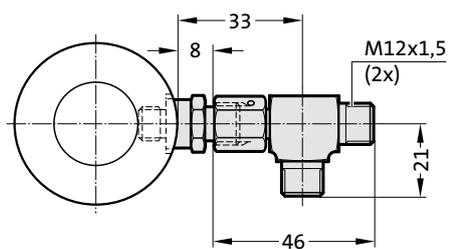
Direct connection

90° hose with adaptor 2480.00.26.03



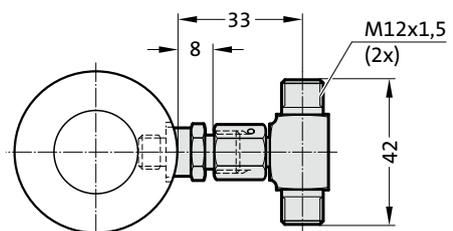
Direct connection

with L-coupling 2480.00.26.23



Direct connection

with T-coupling 2480.00.26.24



GAS SPRING ACCESSORIES

CONNECTOR SYSTEM, 24° CONUS MICRO

2480.00.27.01

M8x1 hose connector

Order example:

Shortest factory length:

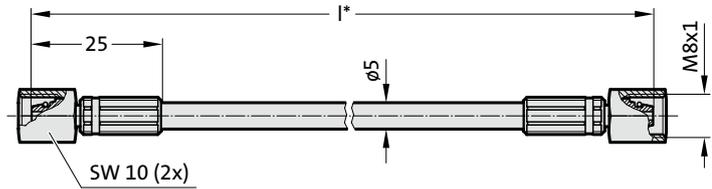
- 90 mm excl. bend protection
- 150 mm bend protection on one side
- 300 mm bend protection on both sides
- Minimum bending radius: R20 mm

*Measuring hose available in the following lengths:

- 5 mm step range ≤ 1000 mm
- 10 mm step range > 1000 mm
- 100 mm step range > 4000 mm
- 500 mm step range > 6000 mm

2480.00.27.01.

Connection hose, 24° conus micro, straight on both sides (connection hose, sealing cone with union nut and O ring)



2480.00.27.01.....1

Antikink spiral, at one end



2480.00.27.01.....2

Antikink spiral, at both ends

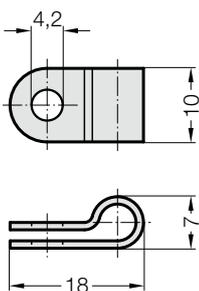


Ordering Code (example):

M8x1 hose connector	= 2480.00.27.01.	M8x1 hose connector	= 2480.00.27.01.
l = 90 mm	= 0090	l = 90 mm	= 0090.
Order No	= 2480.00.27.01. 0090	Bend protection on one side	= 1
		Order No	= 2480.00.27.01. 0090. 1

2480.00.23.12.01

Hose clamp
for gauging hose DN2 (Ø5 mm)



Material:

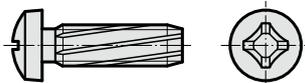
Polyamide

Note:

Supplied without screws

2192.50.04.012

Self-tapping screw DIN 7516
M4x12



Note:

self-tapping
Diameter of hole for self-tapping screw = 3.6 mm



2480.00.23.13.

Anti-scuff spiral
for subsequent installation over hoses and tubing



Order No.	l [m]
2480.00.23.13.0001	1
2480.00.23.13.0002	2
2480.00.23.13.0005	5
2480.00.23.13.0010	10

Inner ø 7 mm
For hose external ø max. 5-11 mm
Temperature range -30°C up to +100°C

Description:

The anti-scuff spiral is used to protect against abrasion, is resistant to air, water, oil, hydraulic fluids petrol and other liquids.

Material:

Polyamide

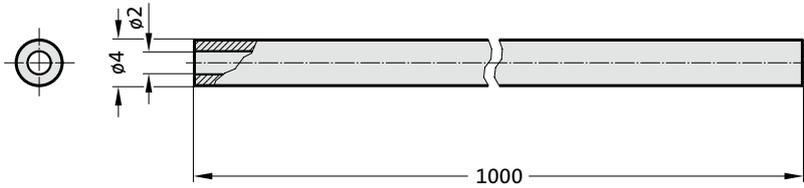
GAS SPRING ACCESSORIES

PIPE -24° CONUS MICRO

2480.00.27.11

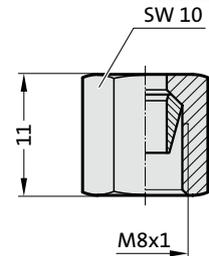
Pipe -24° conus micro
Delivered length: 1 m

Min. bending radius R12 mm (3 x external diameter)



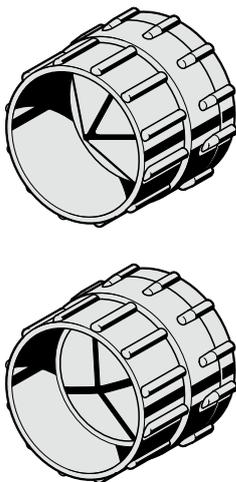
2480.00.27.11.01

Cutting ring screw connection - pipe 24° conus micro



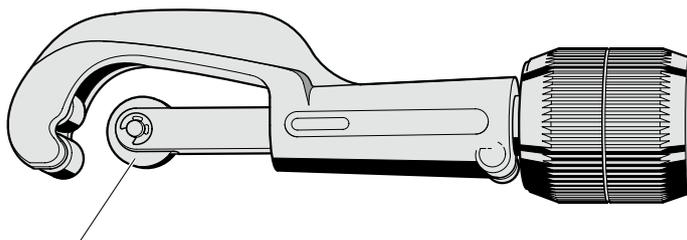
2480.00.27.00.01

Deburring tool for 24° conus micro



2480.00.27.00.02

Pipe cutter for 24° conus micro



2480.00.27.00.02.1

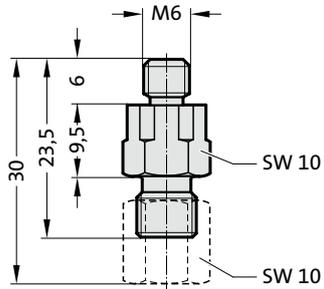
Replacement cutting wheel for pipe cutter

GAS SPRING ACCESSORIES

CONNECTOR SYSTEM, 24° CONUS MICRO

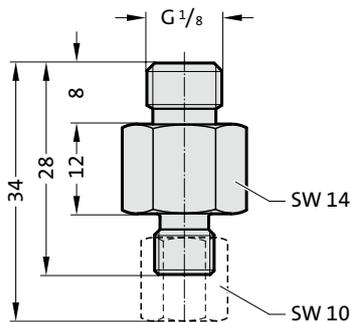
2480.00.28.01

Screw connection
GE-M6-24° cone micro



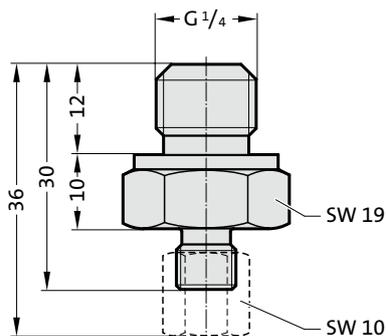
2480.00.28.02

Screw connection
GE-G¹/₈-24° cone micro



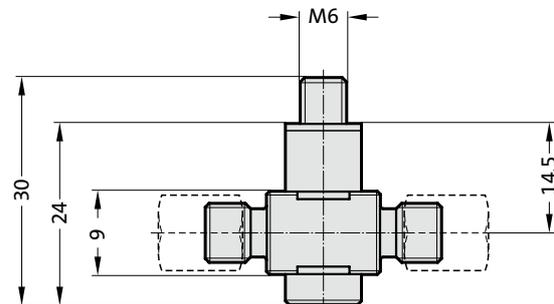
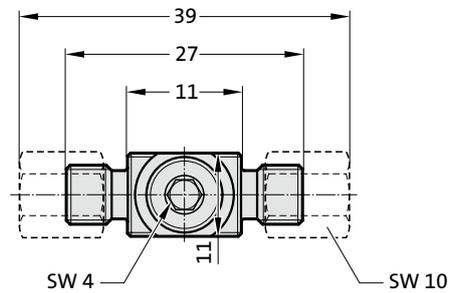
2480.00.28.03

Screw connection
GE-G¹/₄-24° cone micro



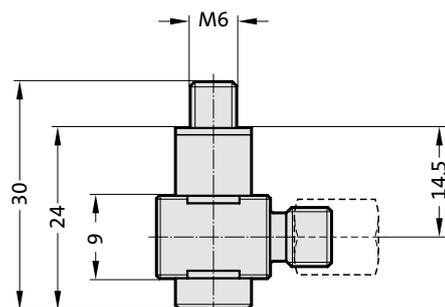
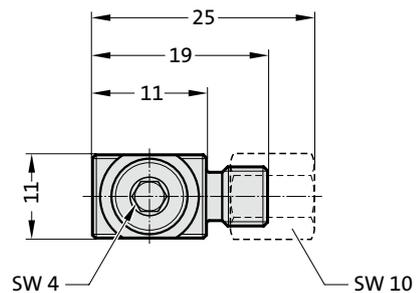
2480.00.28.14

Screw connection, T-24° conus micro



2480.00.28.17

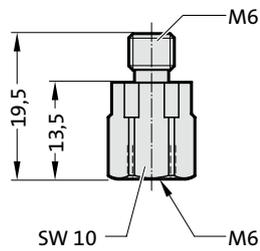
Screw connection, W-24° conus micro



GAS SPRING ACCESSORIES CONNECTOR SYSTEM, MICRO

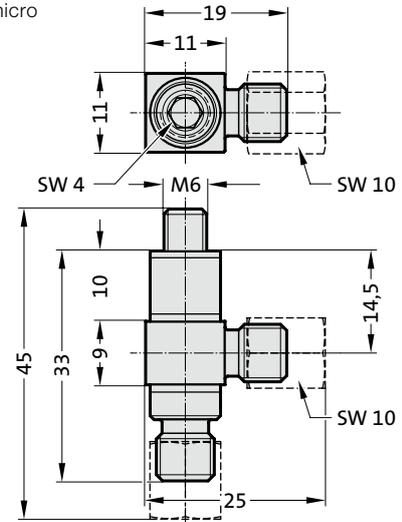
2480.00.22.06.06

Screw connection, GE-M6-M6 micro for connection to gas spring with split clamping flange 2480.022.



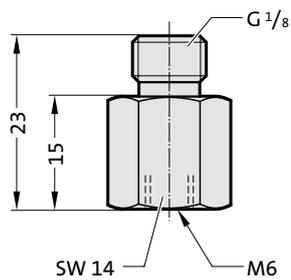
2480.00.28.15

Screw connection, L-24° conus micro



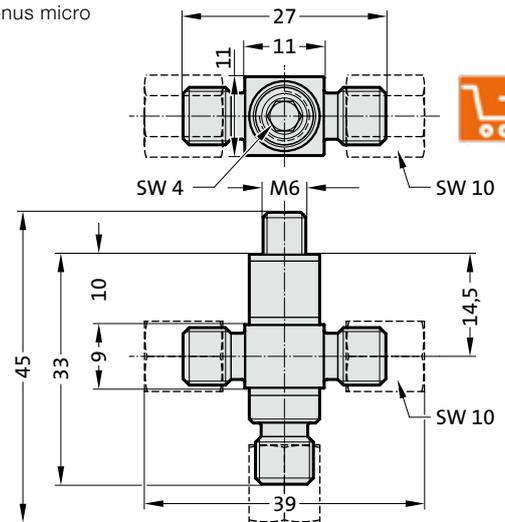
2480.00.22.18.06

Screw connection, GE-G^{1/8}-M6 micro for 2480.00.28.14 / 2480.00.28.17



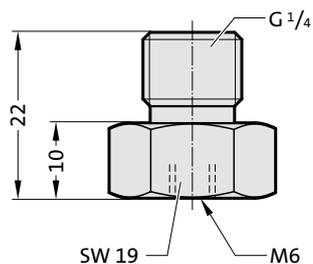
2480.00.28.16

Screw connection, K-24° conus micro



2480.00.22.14.06

Screw connection, GE-G^{1/4}-M6 micro for 2480.00.28.14 / 2480.00.28.17

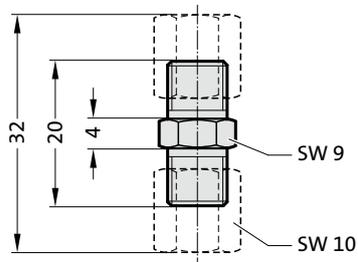


GAS SPRING ACCESSORIES

CONNECTOR SYSTEM 24° CONE MICRO

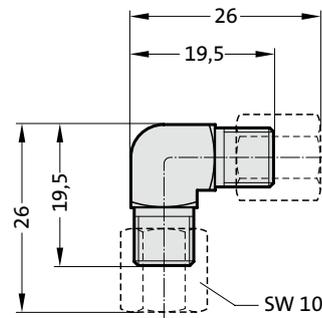
2480.00.28.25

Adapter, GE-24° cone micro
hose – hose



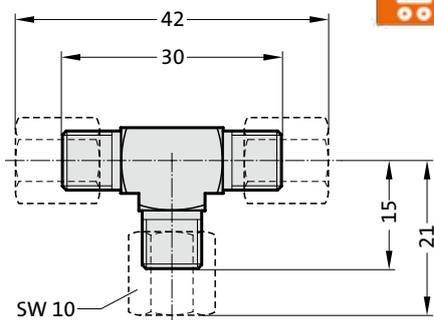
2480.00.28.26

Adapter, W-24° cone micro
hose – hose



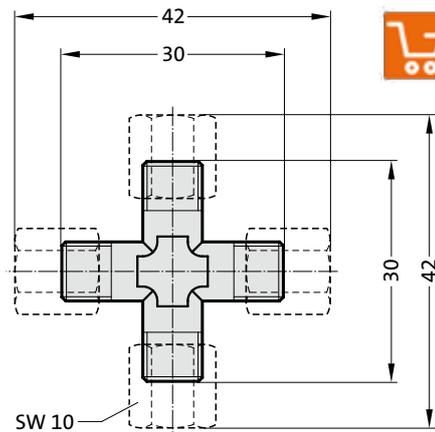
2480.00.28.27

Adapter, T-24° cone micro
hose – hose



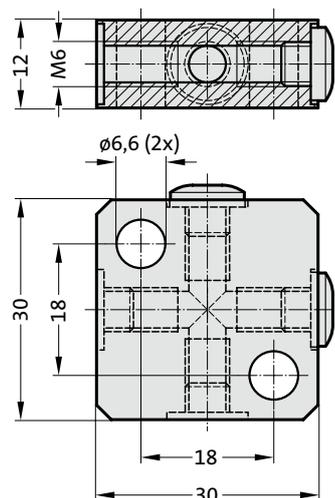
2480.00.28.28

Adapter, K-24° cone micro
hose – hose



2480.00.28.34

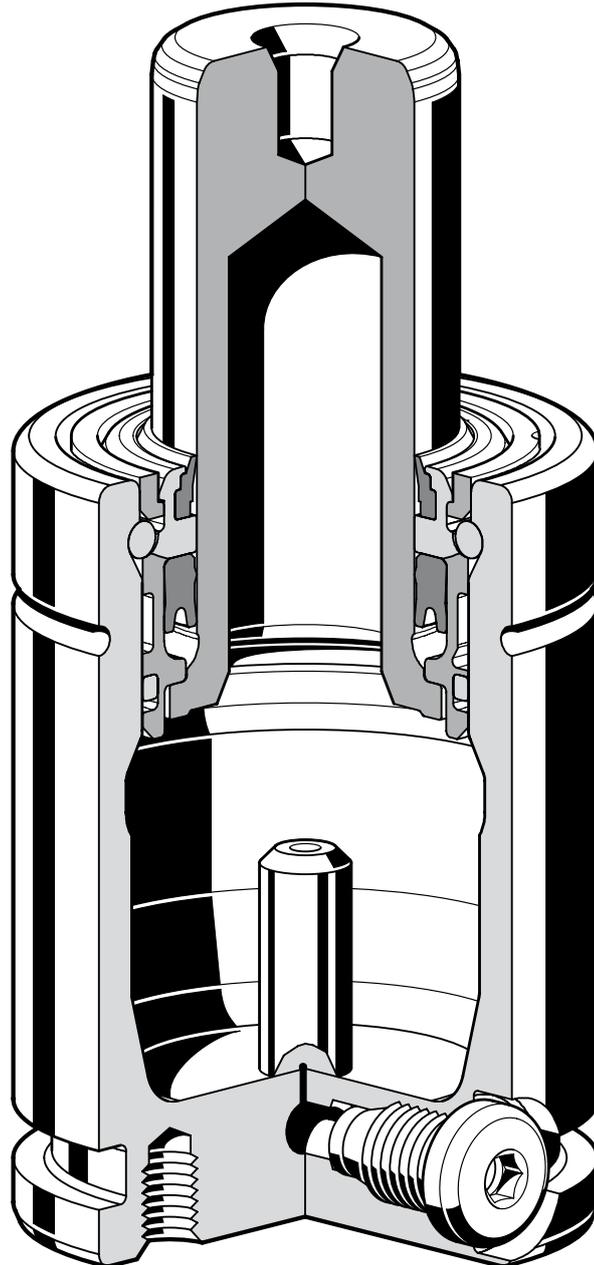
Distributor block M6, 4 ports



SPRING ELEMENTS



MOULD LINE GAS SPRING - DESCRIPTION



MOULD LINE GAS SPRING - DESCRIPTION

MOULD LINE gas springs

Gas springs MOULD LINE are an ideal supplement to and expansion of the traditional FIBRO product lines of helical, disc and elastomer springs for manufacturing tools, devices, moulds and machines.

Gas springs can be used for all applications where lift movements are required in parallel to mould opening.

Gas springs MOULD LINE, which were specially developed for mould making, are characterised by their high force, small size, long service life and a constant operating temperature of 120°C.

Of course, gas springs MOULD LINE are approved as per European Pressure Equipment Directive 2014/68/EU (14th GSGV ordinance on pressure vessels). Gas springs MOULD LINE are filled with nitrogen and do not require any pressure space that is positioned externally or in tool plates. They also require no gas supply lines.

In certain special cases, however, monitoring of charge pressure in the installed state is required. These may be found in the list of accessory products if needed. As long as all mounting details are laid out with due circumspection, it is no problem at all to remove and install gas springs MOULD LINE.

Operating instructions are included with every delivery of gas springs MOULD LINE. Application examples are shown on the following pages.

Functioning

The pressure medium is a commercially available, environment-friendly nitrogen. MOULD LINE gas springs have a standard charge pressure of max. 150 bar.

Pressure build-up

In operation the piston rod enters the spring space whose volume is progressively reduced. With an increasing stroke length, the volume of the pressure chamber is reduced. The resulting increase in pressure can be read from the diagram of the spring size as a factor. The final force is therefore the initial spring force x pressure build-up factor.

Operating temp.

The spring temperature should not exceed +120 °C..

Charge pressure

Modification of charge pressure allows variation of the force rating and can be predetermined from the spring diagram.

Installation recommendations

MOULD LINE gas springs can be used in any installation position. Whether or not external forces act on them when at rest is of no consequence and can therefore be calculated easily.

ALL FIBRO GAS SPRINGS MEET THE REQUIREMENTS OF THE PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU

The Pressure Equipment Directive (2014/68/EU) was ratified by the European parliament and the Council of Europe in May 1997. The requirements of the pressure equipment directive came into force throughout the EU on 29 May 2002.

The directive defines pressure equipment as vessels, pipework, safety devices and pressure accessories. In terms of the directive a vessel is a casing which is designed and manufactured to contain fluids under pressure.

It follows from this definition that nitrogen gas springs of all sizes are deemed to be pressure vessels and must in this respect comply with the pressure equipment directive (2014/68/EU) from 29 May 2002.

MOULD LINE GAS SPRING - DESCRIPTION

Maintenance

MOULD LINE gas springs are designed for long-term maintenance-free operation. We recommend lightly oiling the piston rod before using. Sealing and guide elements can be replaced easily in very little time. They are available in a spare parts kit. Each spare parts kit comes with detailed instructions for maintenance of gas springs.

Caution

Gas springs may only be charged with commercial grade 5.0 nitrogen gas.

Accessories

The range of accessories for gas springs includes fastening devices, charging and control units, screw connections and lines for setting up compound systems.

Advantages of the FIBRO MOULD LINE range:

- Very little calibration work required in the tool
- No lubrication required
- No maintenance required for up to 1.000.000 strokes¹⁾
- Variably adjustable forces
- for mould temperatures of up to 120°C
- Approved as per the European Pressure Equipment Directive 2014/68/EU (14th GSGV regulation for pressure vessels)
- Standard safety features (FIBRO Safer Choice)²⁾
- Safety piston rod
- Excess pressure protection
- Overstroke protection
- A pressure monitoring system makes it possible to recognise an impending failure at an early point (prevention)
- No tool breakage if the 2nd separation level is locked (the plate comes to a standstill; after the jam is removed, production can be resumed)
- Used worldwide in one million FIBRO gas springs
- Cost savings: approximately 60-70%
- (e.g. compared to a latch-locking unit)

1) At 80°C to 120°C/ 500.000 strokes 2) Depending on type of spring

Warning signs

The signs should be affixed near the springs in as prominent a position as possible.

WARNING

This tool is equipped with
___ Gas Springs with a max. pressure of
150 or 180 bar, depending on spring type.
Working pressure ___ bar.

**Read maintenance instructions
before working on gas springs.**

FIBRO

Business Area Standard Parts
D-74851 Hassmersheim · Postfach 1120
T +49 (0) 6266-73-0* · F +49 (0) 6266-73-237

Size 35 x 50 mm

Language	Order No.
German	2480.00.035.050.1
English	2480.00.035.050.2
French	2480.00.035.050.3
Italian	2480.00.035.050.4
Spanish	2480.00.035.050.5
Polish	2480.00.035.050.PL
Czech	2480.00.035.050.CZ
Turkish	2480.00.035.050.TR
Chinese	2480.00.035.050.CN

WARNING

This tool is equipped with ___ Gas Springs with a
max. pressure of 150 or 180 bar, depending on spring type.

No. pcs.	spring type	fill.press./bar	force/daN
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
5	_____	_____	_____

Read maintenance instructions **before** working on gas springs.

FIBRO

Business Area Standard Parts
D-74851 Hassmersheim · Postfach 1120
T +49 (0) 6266-73-0* · F +49 (0) 6266-73-237

Size 75 x 105 mm

Language	Order No.
German	2480.00.075.105.1
English	2480.00.075.105.2
French	2480.00.075.105.3
Italian	2480.00.075.105.4
Spanish	2480.00.075.105.5
Polish	2480.00.075.105.PL
Czech	2480.00.075.105.CZ
Turkish	2480.00.075.105.TR
Chinese	2480.00.075.105.CN

Size 110 x 150 mm

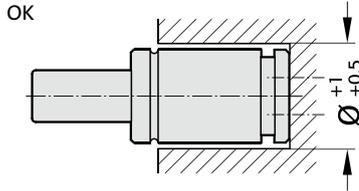
Language	Order No.
German	2480.00.110.150.1
English	2480.00.110.150.2
French	2480.00.110.150.3
Italian	2480.00.110.150.4
Spanish	2480.00.110.150.5
Polish	2480.00.110.150.PL
Czech	2480.00.110.150.CZ
Turkish	2480.00.110.150.TR
Chinese	2480.00.110.150.CN

MOULD LINE GAS SPRING - INSTALLATION GUIDELINES

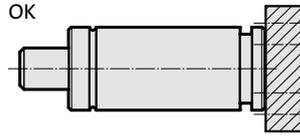
Mounting examples

Mounting possibilities for gas springs are listed below.

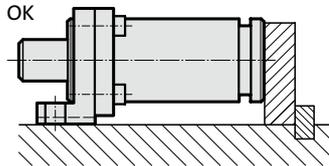
For additional information on mounting, see the corresponding pages in the catalogue.



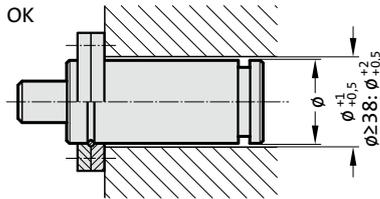
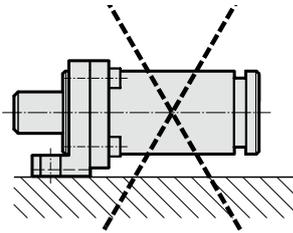
Screw mounted at the base



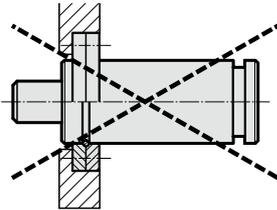
Screw mounted at the base with 2480.011.



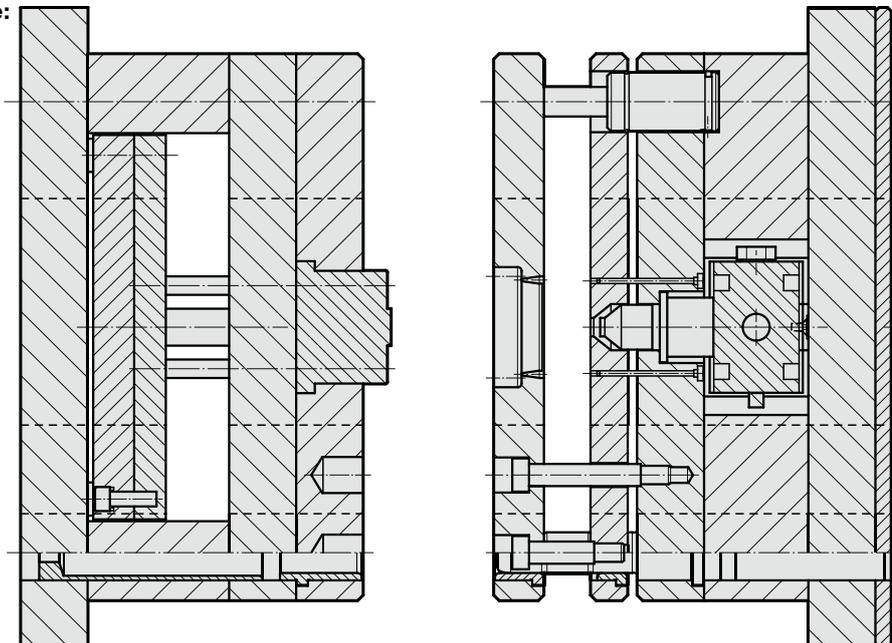
fastened with 2480.044./045./047.



fastened with 2480.055./057./064.



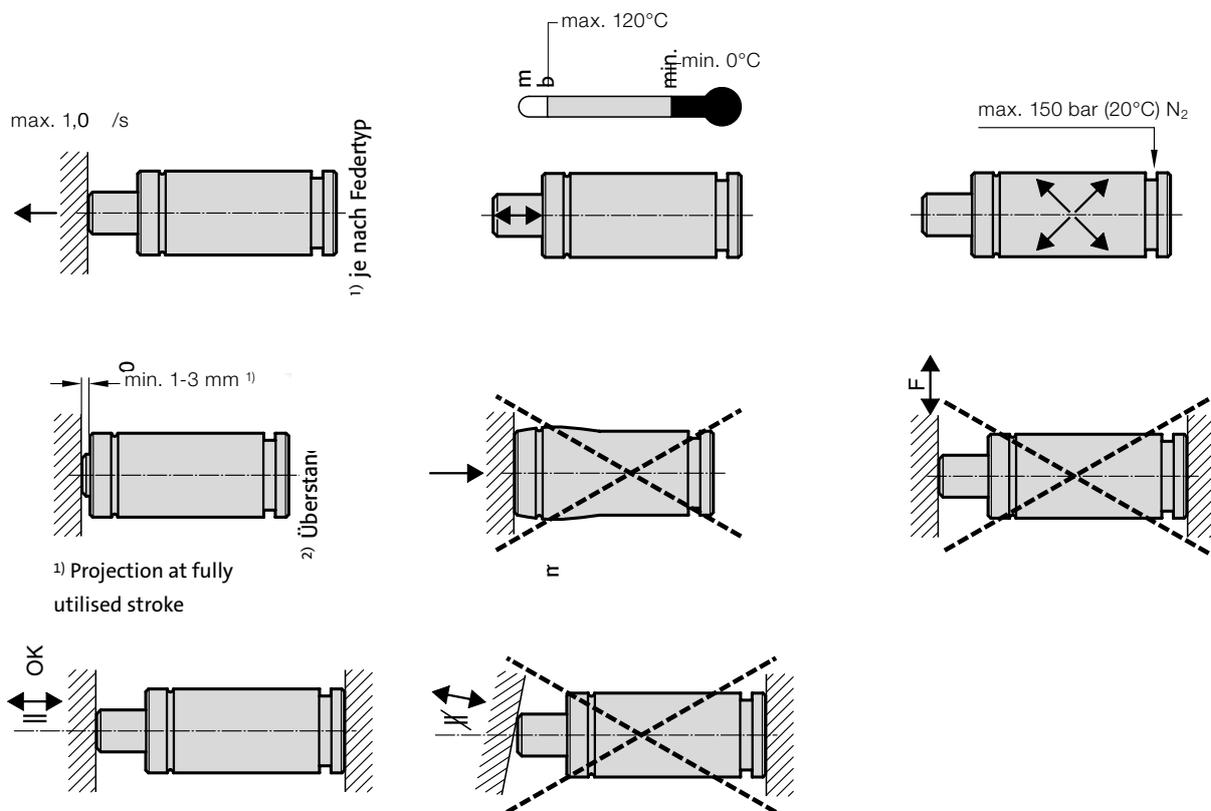
Installation principle:



MOULD LINE GAS SPRING - INSTALLATION GUIDELINES

To achieve the best possible service-life and safety from the gas spring, the directions below must be followed.

MOUNTING INSTRUCTIONS



- Before inserting the gas springs, check the corresponding filling pressure.
- Secure the gas spring to the tool/machine whenever possible, using the threaded hole(s) in the base of the gas spring or a suitable flange.
 Never exceed the maximum torque values for the threads in the base of the gas spring: (M6 = 10 Nm; M8 = 24 Nm; M10 = 45 Nm; M12 = 80 Nm)
- The threaded hole in the piston rod top should not be used for mounting purposes. It is only to be used when carrying and servicing the gas spring.
- Do not use the gas spring in such a way that the piston rod is realised freely from its compressed position, as this could cause internal damage to the gas spring.
- Make sure the gas spring is mounted parallel to the direction of the compression stroke.
- Ensure the contact surface of the piston rod top is perpendicular to the direction of the compression stroke and is sufficiently hardened.
- The gas spring should not be subjected to the side loads.
- Protect the piston rod against mechanical damage and contact with fluids.
- We recommend providing a stroke reserve of 10% of the nominal stroke length or 5 mm.
- The maximum charging pressure as a function of the working temperature must not be exceeded as it may affect the safety of the product.
- Exceeding the gas spring's recommended operating temperature will shorten the service-life of the gas spring.
- The entire contact surface of the piston rod / piston should be used.



FIBRO GAS SPRINGS – THE SAFER CHOICE

OPTIMUM SAFETY FOR TOOLS AND OPERATORS

At FIBRO, safety and reliability are paramount. Particularly when it comes to our gas springs. With their unique range of safety features, FIBRO gas springs are one of the safest on the market.

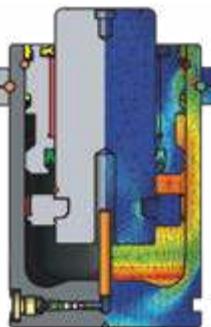
FIBRO safety features 1)



PED approval for 2 million strokes

FIBRO gas springs are developed, manufactured and tested for a minimum of 2 million* full strokes in accordance with PED 2014/68/EU. The springs deliver their full performance at the maximum permissible limits in terms of filling pressure and operating temperature – even when combined with any of the various mounting types available.

* Calculation value for durability



Normellen - Standard Parts - DE-74855 Hassmersheim FIBRO
 T +49(0)6296-73-0* F +49(0)6296-73-237

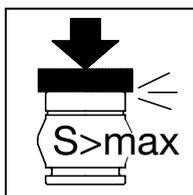
Bestell-Nr. **2480.13.05000.050**
 Order-No. **2480.13.05000.050**
 Fülldruck Federkraft
 Filling pressure: **150 bar** Spring Force: **5000 daN**

PED-zugelassen für 2.000.000 Hübe bei voller Hubauslastung.
 PED-approved for 2.000.000 strokes at full stroke load.

Gasdruckfeder – Warnung! Nicht öffnen - hoher Druck; Fülldruck max. 150 bar, Bitte Bedienungsanleitung beachten!
Gas Spring – Warning! Do not open-high pressure; filling pressure max. 150 bar. Please follow instructions for use!
Ressort à gaz – Attention! Ne pas ouvrir - haute pression; pression de remplissage max. 15 MPa. Veuillez observer les instructions d'emploi!
Molle a gas – Attenzione! Non aprire - pressione alta massima; pressione di riempimento max. 150 bar. Si prega di osservare le istruzioni per l'uso!
¡Muelle de gas – Atención! No abrir - alta presión; cargado a máx. 150 bar. ¡Por favor observar las instrucciones!

The benefit for you: **Guaranteed safety and reliability for the entire service life of the spring**

Repair kits and qualified training sessions available through FIBRO Service offer increased effectiveness and process reliability.

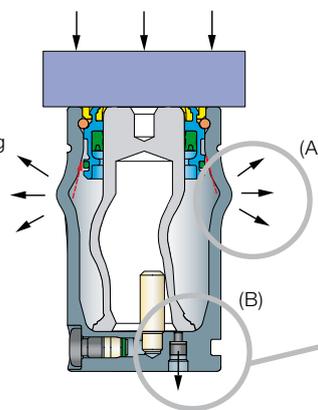


Overstroke protection

Conventional gas springs may burst in the event of an over-extended stroke. Components may come loose and be ejected.

FIBRO gas springs are different:

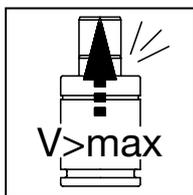
in the event of an overstroke and depending on the spring type the patented protection system will ensure that either the cylinder wall of the gas spring is deformed in a predefined manner (A) or the piston rod destroys a rupture bolt in the floor of the cylinder (B), thereby allowing the gas to escape into the atmosphere.



The benefit for you: **No risk of parts flying around in the event of an overstroke**

Possible causes of triggering:

Lack of stroke limitations in the tool/machine and placing the piston rods under a load (e.g. sheet-metal holder, slide reset, etc.), double sheet, incorrect installation position, etc.

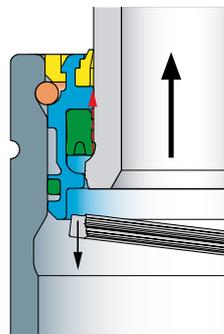


Return stroke protection

If, for any reason, tool components should get stuck and the piston rod should be freely released from its compressed position, conventional gas springs may pose a safety risk as the piston may not be retained in the gas spring.

FIBRO gas springs are different:

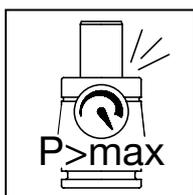
special guides and a patented safety stop in the piston rods ensure your safety. If the speed is too high during the return stroke, the collar on the piston rod will automatically break. The integrated safety stop then destroys the seal, which allows the gas to escape into the atmosphere and the gas spring to become depressurised.



The benefit for you: **No risk of a piston rod firing out if the return stroke is too fast**

Possible causes of triggering:

Sudden loosening of jammed components, such as sheet-metal holder, slide, ejector, scraper function, etc.

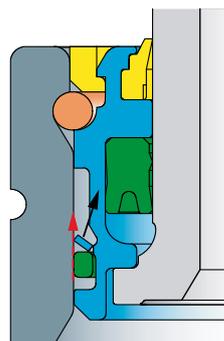


Overpressure protection

Conventional gas springs can burst if the internal pressure rises above a maximum permitted value. If this happens, parts flying around can become dangerous projectiles.

FIBRO gas springs are different:

if the pressure rises above the maximum permitted value, the safety collar on the sealing set is automatically destroyed. The gas then escapes into the atmosphere and the gas spring is depressurised.



The benefit for you: **No risk of bursting parts in the event of overpressure**

Possible causes of triggering:

Incorrect filling (max. filling pressure 150 or 180 bar, nitrogen), infeed of liquid operating material, etc.

After a protection function is triggered, the spring cannot be repaired and can no longer be used. It must be replaced completely.

1) The safety features mentioned here have been implemented – with few exceptions – on all FIBRO gas springs.

Please refer to the relevant data sheets to check the current safety equipment which is provided with the gas spring you are interested in, or contact FIBRO GmbH directly for more information. For the safe handling of gas springs and other nitrogen products, the safety regulations must be observed. Maintenance work on the product may only be done, if nitrogen gas is no longer contained in the gas spring.

FIBRO GAS SPRINGS – THE SAFER CHOICE

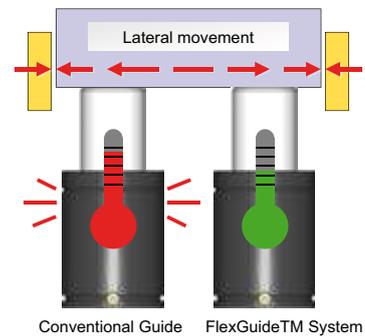
OPTIMUM SAFETY FOR TOOLS AND OPERATORS

FIBRO reliability features



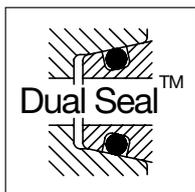
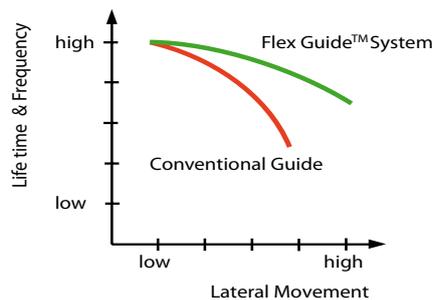
Flexible guides: The Flex Guide™ System

The Flex Guide™ System is a flexible guide in the gas spring which absorbs lateral movements of the piston rod. It minimises friction and lowers the operating temperature.



The benefits for you:

- ▶ **Extended service life**
- ▶ **Increased stroke frequency, i.e. more strokes per minute**



Safe hose connections: The Dual Seal™ System

The FIBRO Dual Seal™ System combines a metal seal with a soft elastomer seal. On hose connection systems, the system provides two leak-tight connections and prevents rotation.



The benefits for you:

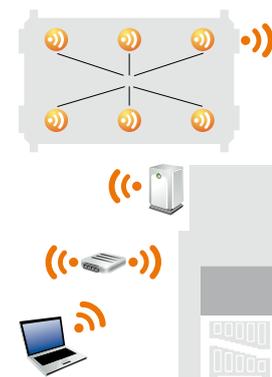
- ▶ **Leak-tight connection, even under vibrations**
- ▶ **High process reliability**
- ▶ **Minimised tool down time**
- ▶ **Simple installation thanks to anti-rotation function**



Wireless monitoring:

The Wireless Pressure Monitoring (WPM) System

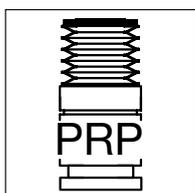
The optional Wireless Pressure Monitoring System (WPM) (patent pending) wirelessly monitors the pressure and temperature of FIBRO gas springs. Before a defective part is produced, the press operator receives a message from the WPM and can take appropriate action.



The benefits for you:

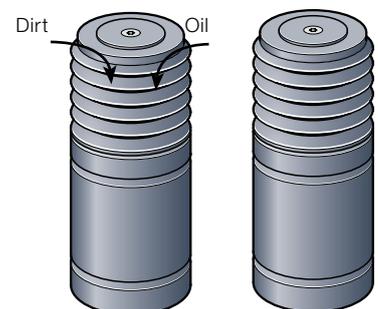
- ▶ **Preventative quality assurance**
- ▶ **High process reliability**
- ▶ **Minimised tool down time**
- ▶ **Reduced maintenance and costs**

Potential faults are individually displayed. As a result, service intervals can be extended. Maintenance and repair costs are reduced.



Protected piston rods: FIBRO Concertina Shrouds

The FIBRO Piston Rod Protection (patented) reliably protects the piston rods in gas springs against dirt, oil and emulsion. In this way, the system prevents damage to the piston rod surface and leaks at internal seals.



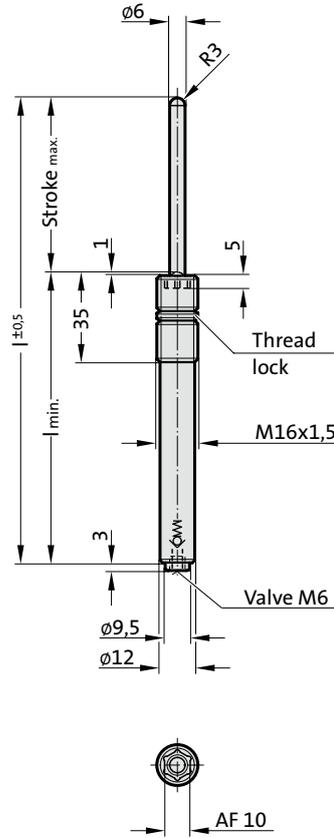
The benefit for you:

- ▶ **Significantly longer service life for gas springs under harsh operating conditions**

GAS SPRING (SPRING PLUNGER) MOULD LINE, WITH HEXAGON SOCKET



3479.030.



Description:

Spring plungers are used as ejectors, damper pins, fixing and retaining pins in many sectors of the tool-, jig- and fixture-making industries. Assembly requires the use of special FIBRO insertion tool (2470.12.010.017).

Note:

Worn gas springs cannot be repaired, they have to be replaced completely.

Pressure medium: Nitrogen - N₂

Max. filling pressure depends on working temperature:

150 bar (20°C) at 0°C-80°C

125 bar (20°C) at 80°C-100°C

115 bar (20°C) at 100°C-120°C

Min. filling pressure: 25 bar (20°C)

Working temperature: 0°C to +120°C

Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

20 (at 0°C-80°C)

15 (at 80°C-100°C)

10 (at 100°C-120°C)

Max. piston speed: 1.0 m/s

2) Hexagon nut order supplementary:

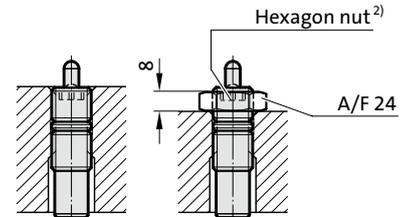
2480.004.00040.1 (M16 x 1,5)



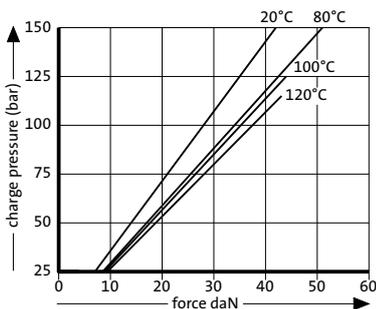
3479.030.

Gas spring (Spring plunger) MOULD LINE, with hexagon socket

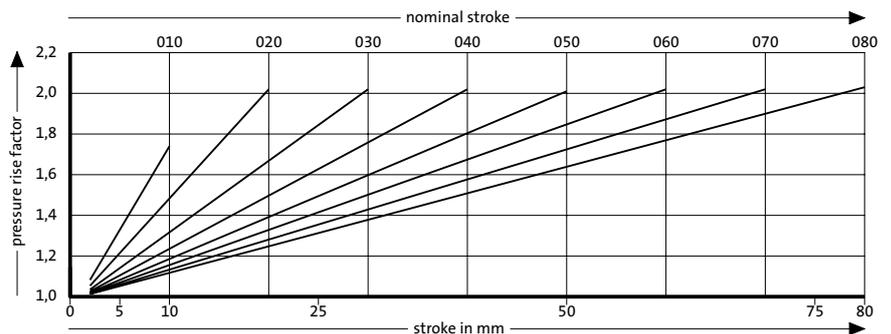
Order No	Stroke _{max.} (s)	l _{min.}	l
3479.030.00040.010	10	55	65
3479.030.00040.020	20	65	85
3479.030.00040.030	30	75	105
3479.030.00040.040	40	85	125
3479.030.00040.050	50	95	145
3479.030.00040.060	60	105	165
3479.030.00040.070	70	115	185
3479.030.00040.080	80	125	205



Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING (SPRING PLUNGER) MOULD LINE, WITH HEXAGON SOCKET

Description:

Spring plungers are used as ejectors, damper pins, fixing and retaining pins in many sectors of the tool-, jig- and fixture-making industries. Assembly requires the use of special FIBRO insertion tool (2470.12.010.017).

Note:

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Max. filling pressure depends on working temperature:

150 bar (20°C) at 0°C-80°C

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115 bar (20°C) at 100°C-120°C

Min. filling pressure: 25 bar (20°C)

Working temperature: 0°C to +120°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

20 (at 0°C-80°C)

15 (at 80°C-100°C)

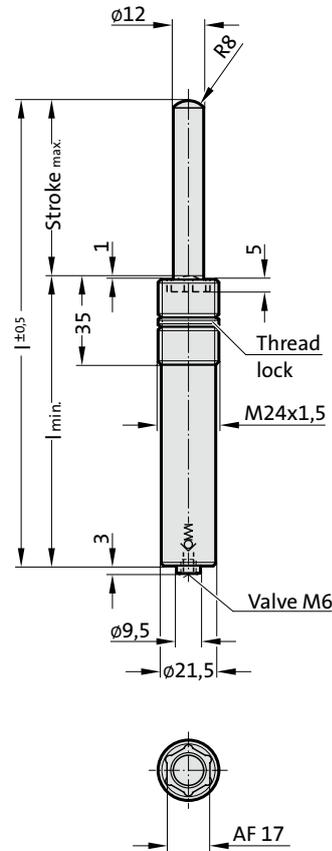
10 (at 100°C-120°C)

Max. piston speed: 1.0 m/s

2) Hexagon nut order supplementary:

2480.004.00170

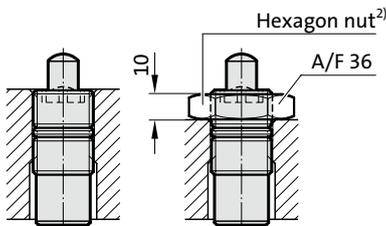
3479.032.



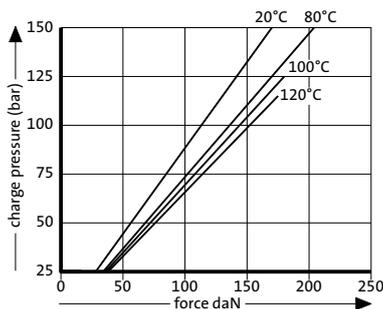
3479.032.

Gas spring (Spring plunger) MOULD LINE, with hexagon socket

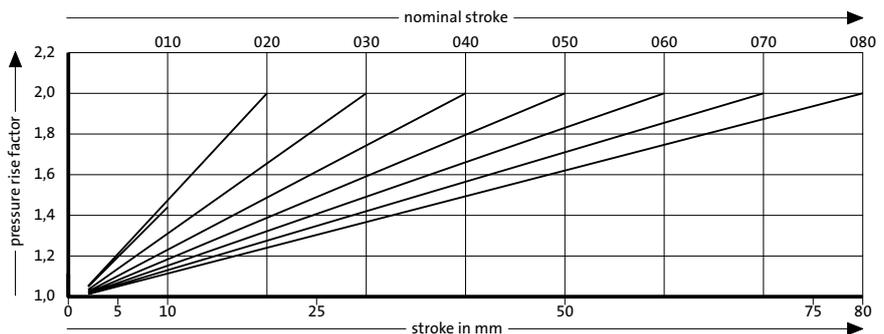
Order No	Stroke _{max} (s)	l _{min}	l
3479.032.00170.010	10	55	65
3479.032.00170.020	20	65	85
3479.032.00170.030	30	75	105
3479.032.00170.040	40	85	125
3479.032.00170.050	50	95	145
3479.032.00170.060	60	105	165
3479.032.00170.070	70	115	185
3479.032.00170.080	80	125	205



Initial spring force versus charge pressure



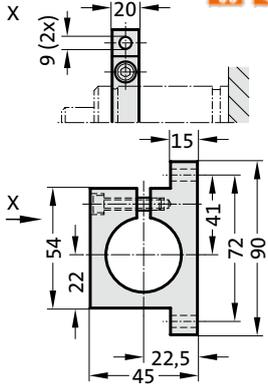
Spring force Diagram displacement versus stroke rise



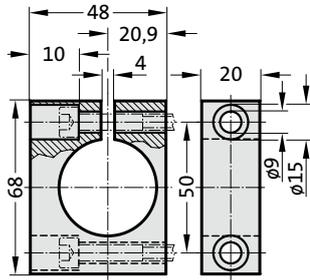
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING MOUNTING VARIATIONS

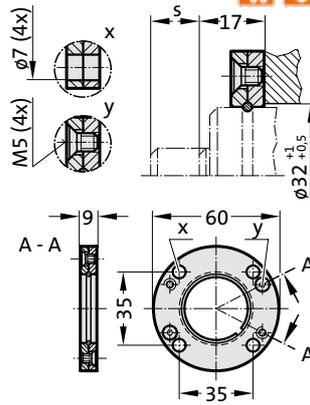
2480.044.00150²⁾



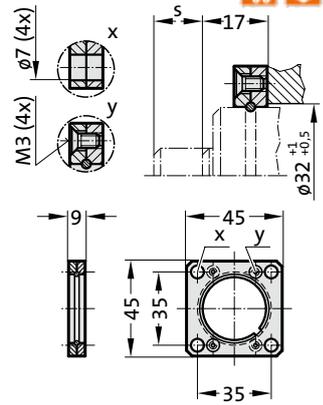
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2480.055.00150



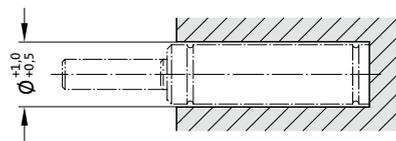
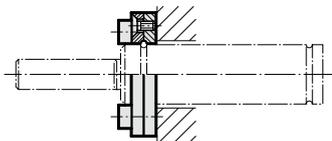
2480.057.00150



Note:

²⁾ Attention:
The spring force must be absorbed
by the stop Surface!

Mounting examples:



GAS SPRING MOULD LINE

Note:

Initial spring force at 150 bar/20°C is 300 daN

Order No. for spare parts kit: 3487.12.00300

Pressure medium: Nitrogen - N₂

Max. filling pressure depends on working temperature:

150 bar (20°C) at 0°C-80°C

125 bar (20°C) at 80°C-100°C

115 bar (20°C) at 100°C-120°C

Min. filling pressure: 25 bar (20°C)

Working temperature: 0°C to +120°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

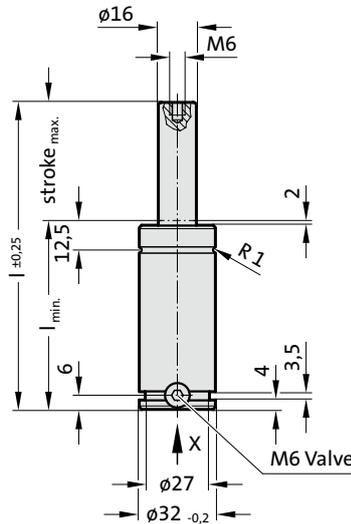
20 (at 0°C-80°C)

15 (at 80°C-100°C)

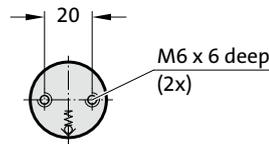
10 (at 100°C-120°C)

Max. piston speed: 1.0 m/s

3487.12.00300.



„X”

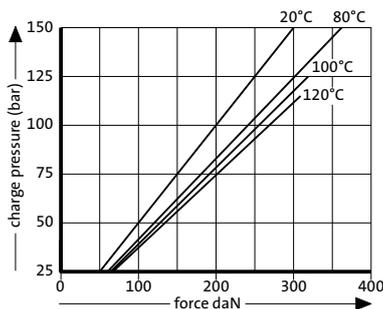


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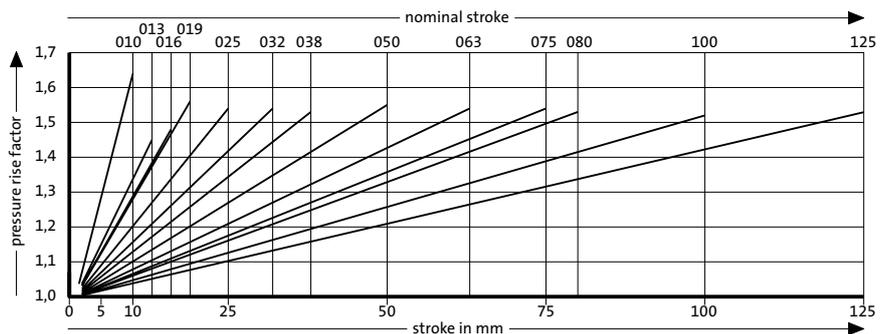
Gas spring MOULD LINE

Order No	Stroke _{max.} (s)	l _{min.}	l
3487.12.00300.010	10	40	50
3487.12.00300.013	13	43	56
3487.12.00300.016	16	46	62
3487.12.00300.019	19	49	68
3487.12.00300.025	25	55	80
3487.12.00300.032	32	62	94
3487.12.00300.038	38	68	106
3487.12.00300.050	50	80	130
3487.12.00300.063	63	93	156
3487.12.00300.075	75	105	180
3487.12.00300.080	80	110	190
3487.12.00300.100	100	130	230
3487.12.00300.125	125	155	280

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING MOULD LINE

Note:

Initial spring force at 150 bar/20°C is 500 daN

Order No. for spare parts kit: 3487.12.00500

Pressure medium: Nitrogen - N₂

Max. filling pressure depends on working temperature:

150 bar (20°C) at 0°C-80°C

125 bar (20°C) at 80°C-100°C

115 bar (20°C) at 100°C-120°C

Min. filling pressure: 25 bar (20°C)

Working temperature: 0°C to +120°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

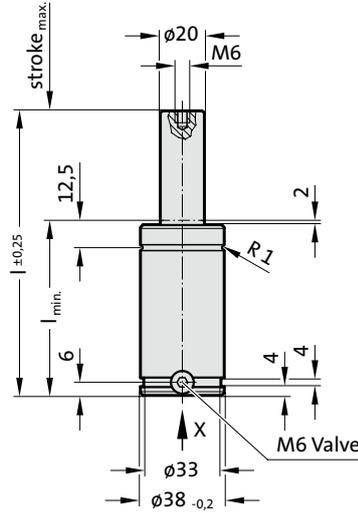
20 (at 0°C-80°C)

15 (at 80°C-100°C)

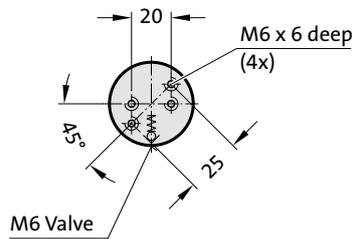
10 (at 100°C-120°C)

Max. piston speed: 1.0 m/s

3487.12.00500.



„X”

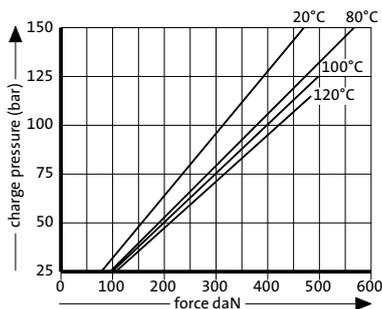


3487.12.00500.

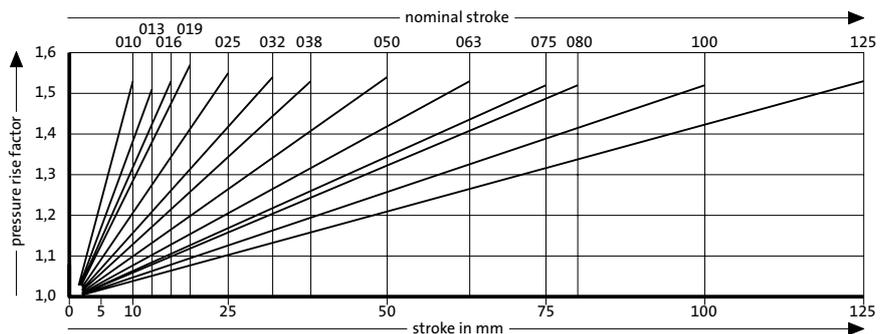
Gas spring MOULD LINE

Order No	Stroke _{max.} (s)	l _{min.}	l
3487.12.00500.010	10	40	50
3487.12.00500.013	13	43	56
3487.12.00500.016	16	46	62
3487.12.00500.019	19	49	68
3487.12.00500.025	25	55	80
3487.12.00500.032	32	62	94
3487.12.00500.038	38	68	106
3487.12.00500.050	50	80	130
3487.12.00500.063	63	93	156
3487.12.00500.075	75	105	180
3487.12.00500.080	80	110	190
3487.12.00500.100	100	130	230
3487.12.00500.125	125	155	280

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING ACCESSORIES

see registry F:

Gas spring accessories

