

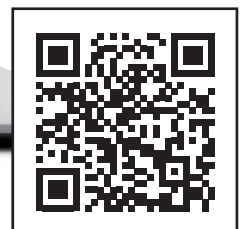
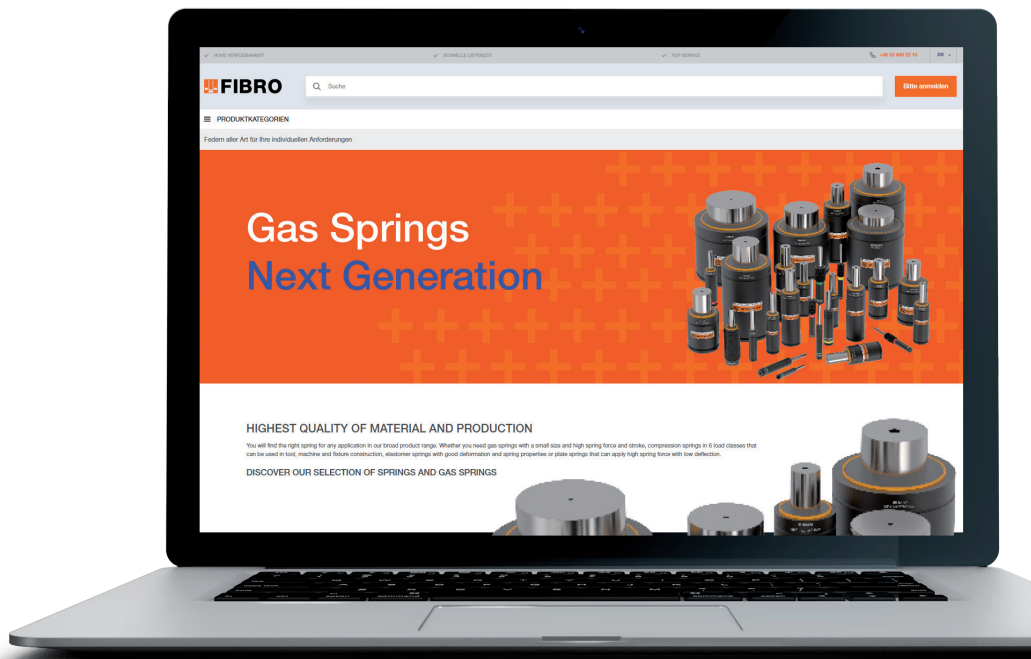
Gas springs

New generation



All products can be found at FIBRO Webshop

www.us.shop.fibro.com 



as well as at on our
FIBRO website
www.fibro.com



and in CAD catalogue 2D/3D
fibro.partcommunity.com

GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in length in mm	Standard	Order No.	Page
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Gas springs - Spring plungers

15 - 18

5	M16x1,5	10 - 125	65 - 295	VDI	2479.040.00005.	16
10	M16x1,5	10 - 125	65 - 295	VDI	2479.040.00010.	16
20	M16x1,5	10 - 125	65 - 295	VDI	2479.040.00020.	16
40	M16x1,5	10 - 125	65 - 295	VDI	2479.040.00040.	16
4	M16x2	10 - 125	65 - 295	VDI	2479.041.00004.	17
5	M16x2	10 - 125	65 - 295	VDI	2479.041.00005.	17
10	M16x2	10 - 125	65 - 295	VDI	2479.041.00010.	17
20	M16x2	10 - 125	65 - 295	VDI	2479.041.00020.	17
40	M16x2	10 - 125	65 - 295	VDI	2479.041.00040.	17
20	M24x1,5	10 - 125	65 - 295	VDI	2479.042.00020.	18
40	M24x1,5	10 - 125	65 - 295	VDI	2479.042.00040.	18
80	M24x1,5	10 - 125	65 - 295	VDI	2479.042.00080.	18
170	M24x1,5	10 - 125	65 - 295	VDI	2479.042.00170.	18

Gas springs - small dimensions, low forces

19 - 29

13	12	7 - 125	56 - 295		2482.75.00013.	21
25	12	7 - 125	56 - 295		2482.75.00025.	21
38	12	7 - 125	56 - 295		2482.75.00038.	21
50	12	7 - 125	56 - 295		2482.75.00050.	21
18	15	7 - 125	56 - 295		2482.76.00018.	23
35	15	7 - 125	56 - 295		2482.76.00035.	23
50	15	7 - 125	56 - 295		2482.76.00050.	23
70	15	7 - 125	56 - 295		2482.76.00070.	23
30	19	7 - 125	56 - 295	VDI, ISO	2482.77.00030.	25
50	19	7 - 125	56 - 295	VDI, ISO	2482.77.00050.	25
70	19	7 - 125	56 - 295	VDI, ISO	2482.77.00070.	25
90	19	7 - 125	56 - 295	VDI, ISO	2482.77.00090.	25
50	25	10 - 125	62 - 295	VDI, ISO	2480.24.00050.	27
100	25	10 - 125	62 - 295	VDI, ISO	2480.24.00100.	27
150	25	10 - 125	62 - 295	VDI, ISO	2480.24.00150.	27
200	25	10 - 125	62 - 295	VDI, ISO	2480.24.00200.	27
50	32	10 - 125	70 - 300	VDI, ISO	2480.25.00050.	29
100	32	10 - 125	70 - 300	VDI, ISO	2480.25.00100.	29
150	32	10 - 125	70 - 300	VDI, ISO	2480.25.00150.	29
200	32	10 - 125	70 - 300	VDI, ISO	2480.25.00200.	29

Gas springs - Standard

31 - 51

150	32	10 - 125	70 - 300	VDI, ISO	2480.15.00150.	33
250	38	10 - 125	70 - 300	VDI, ISO	2480.15.00250.	35
250	M38x1,5	13 - 100	75 - 250		2480.35.00250.	37
500	45	10 - 160	105 - 405	VDI, ISO	2480.15.00500.	39
750	50	13 - 300	120 - 695	VDI, ISO	2480.15.00750.	41
1500	75	13 - 300	135 - 710	VDI, ISO	2480.15.01500.	43
3000	95	13 - 300	145 - 720	VDI, ISO	2480.15.03000.	45
5000	120	25 - 300	190 - 740	VDI, ISO	2480.15.05000.	47
7500	150	25 - 300	205 - 755	VDI, ISO	2480.15.07500.	49
10000	195	25 - 300	210 - 760	VDI, ISO	2480.15.10000.	51

Gas springs - HEAVY DUTY

53 - 69

750	45	13 - 200	111 - 485		2488.15.00750.	55
1000	50	13 - 300	121 - 695	VDI, ISO	2488.15.01000.	57
1500	63	13 - 300	121 - 695		2488.15.01500.	59
2400	75	25 - 300	160 - 710	VDI, ISO	2488.15.02400.	61
4200	95	25 - 300	170 - 720	VDI, ISO	2488.15.04200.	63
6600	120	25 - 300	190 - 740	VDI, ISO	2488.15.06600.	65
9500	150	25 - 300	205 - 755	VDI, ISO	2488.15.09500.	67
20000	195	25 - 300	210 - 760		2488.15.20000.	69

GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in length in mm	Standard	Order No.	Page
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Gas springs - POWERLINE

71 - 95

170	19	7 - 125	44 - 285	VDI, ISO	2487.15.00170.	73
320	25	7 - 125	44 - 285	ISO	2487.15.00320.	75
350	32	10 - 125	50 - 280	VDI, ISO	2487.15.00350.	77
500	38	10 - 125	50 - 280	VDI, ISO	2487.15.00500.	79
750	45	10 - 125	52 - 282	VDI, ISO	2487.15.00750.	81
1000	50	13 - 125	64 - 288	VDI, ISO	2487.15.01000.	83
1500	63	13 - 125	70 - 294	VDI, ISO	2487.15.01500.	85
2400	75	16 - 125	77 - 295	VDI, ISO	2487.15.02400.	87
4200	95	16 - 125	90 - 308	VDI, ISO	2487.15.04200.	89
6600	120	16 - 125	100 - 318	VDI, ISO	2487.15.06600.	91
9500	150	19 - 125	116 - 328	VDI, ISO	2487.15.09500.	93
20000	195	19 - 125	148 - 360		2487.15.20000.	95

Gas springs - POWERLINE, with reinforced spring base

97 - 113

350	32	10 - 125	60 - 290		2487.15.33.00350.	99
500	38	10 - 125	60 - 290		2487.15.33.00500.	101
750	45	10 - 125	67 - 297		2487.15.33.00750.	103
1000	50	13 - 125	78 - 302		2487.15.33.01000.	105
1500	63	13 - 125	78 - 302		2487.15.33.01500.	107
2400	75	16 - 125	91 - 309		2487.15.33.02400.	109
4200	95	16 - 125	94 - 312		2487.15.33.04200.	111
6600	120	16 - 125	104 - 322		2487.15.33.06600.	113

Gas springs - MAXFORCE

115 - 121

500	32	10 - 80	75 - 225		2497.15.00500.	117
1000	38	10 - 80	75 - 240		2497.15.01000.	119
1900	50	15 - 80	95 - 245		2497.15.01900.	121

Gas springs - Compact

123 - 141

420	24,9	6 - 50	56 - 195		2490.15.00420.	125
750	32	6 - 50	63 - 195		2490.15.00750.	127
1000	38	6 - 50	61 - 230		2490.15.01000.	129
1800	50	6 - 65	66 - 271		2490.15.01800.	131
3000	63	10 - 65	85 - 256		2490.15.03000.	133
4700	75	10 - 65	80 - 273		2490.15.04700.	135
7500	95	10 - 65	90 - 279		2490.15.07500.	137
11800	120	10 - 65	100 - 320		2490.15.11800.	139
18300	150	10 - 65	110 - 323		2490.15.18300.	141

Gas springs - low build height

143 - 149

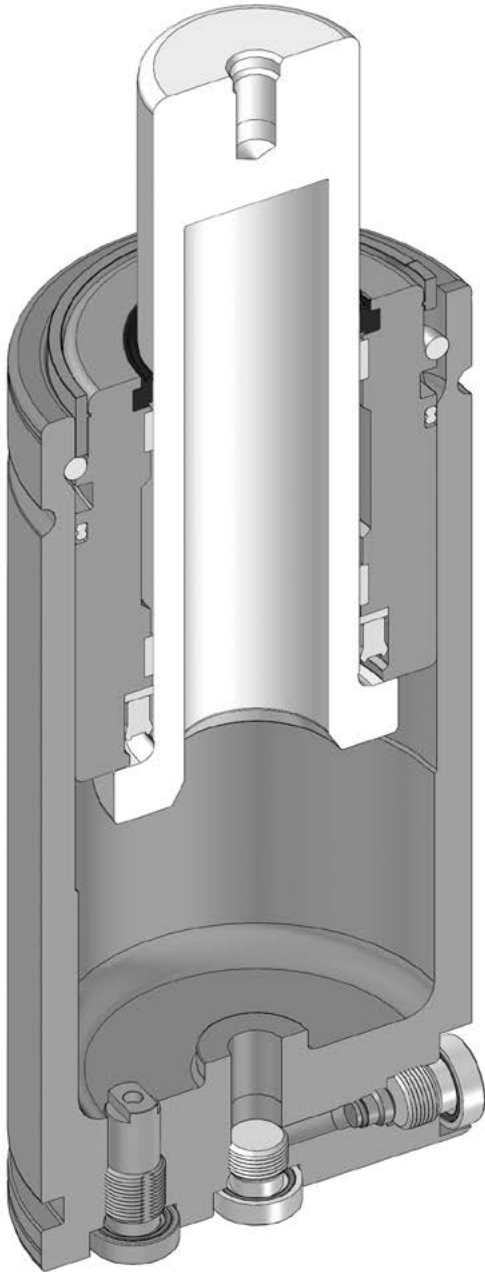
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750	50	6 - 125	62 - 300		2485.15.00750.	147
1500	75	25 - 100	110 - 260		2485.15.01500.	149

Gas springs - Accessories

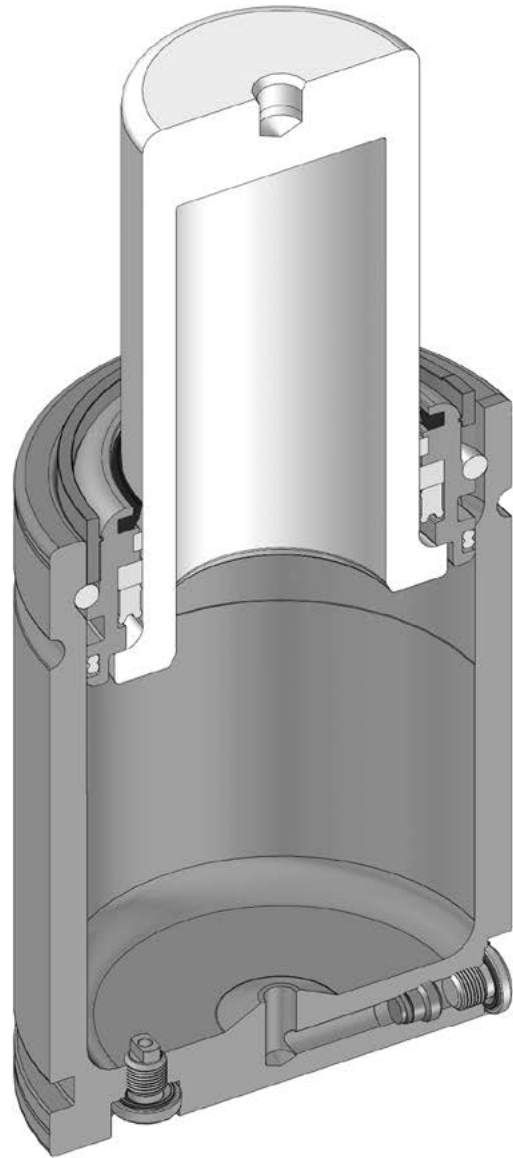
151 - 199

Application examples

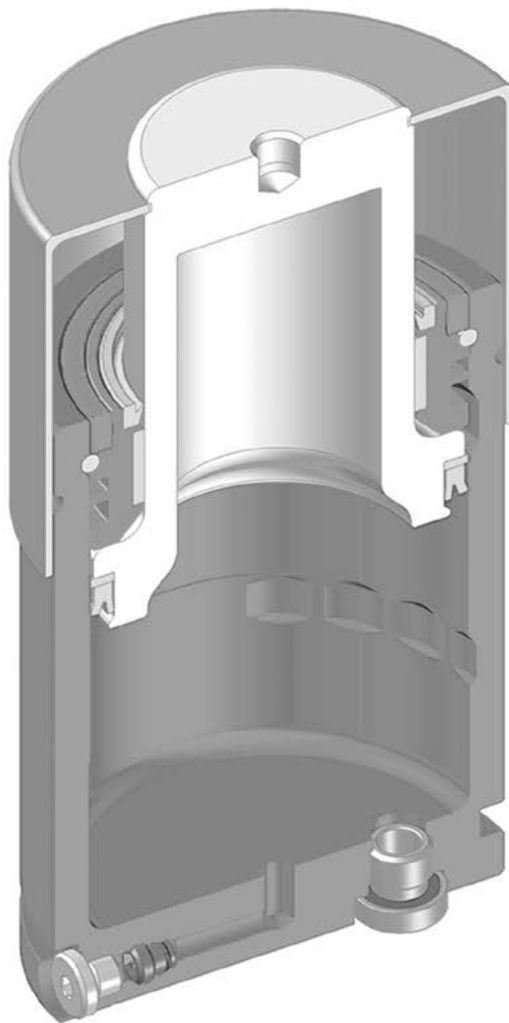
201 - 208



2480.15.



2487.15.



2490.15.

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 can be downloaded from the FIBRO homepage or accessed directly via the QR code on the gas spring.

Application examples see at the end of chapter F.

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 or 200 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.</p> <p>Read maintenance instructions before working on gas springs.</p> <p>FIBRO</p> <p><small>Business Area Standard Parts D-74851 Hassmersheim · Postfach 1120 T +49 (0) 6266-73-0* · F +49 (0) 6266-73-237</small></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><small>Business Area Standard Parts D-74851 Hassmersheim · Postfach 1120 T +49 (0) 6266-73-0* · F +49 (0) 6266-73-237</small></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

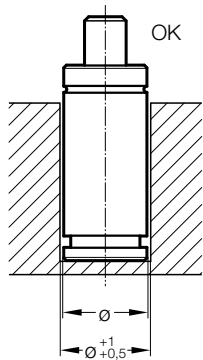
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French	2480.00.110.150.3
Italian	2480.00.110.150.4
Spanish	2480.00.110.150.5
Polish	2480.00.110.150.PL
Czech	2480.00.110.150.CZ
Turkish	2480.00.110.150.TR
Chinese	2480.00.110.150.CN

GAS SPRINGS - INSTALLATION GUIDELINES

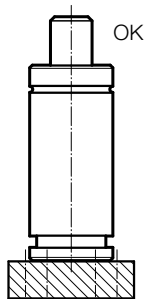
Mounting examples

Mounting possibilities for gas springs are listed below.

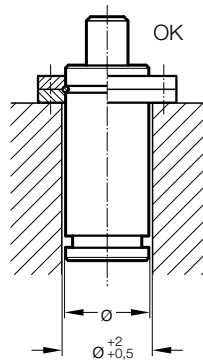
For additional information on mounting, see the corresponding pages in the catalogue.



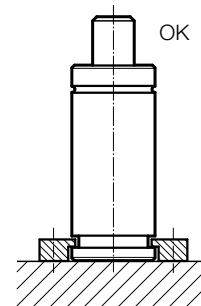
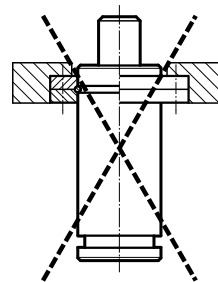
Installed loos in the bore.



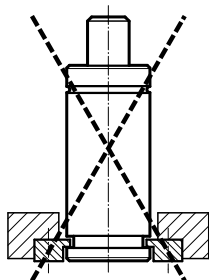
Screw mounted at the base with 2480.011.



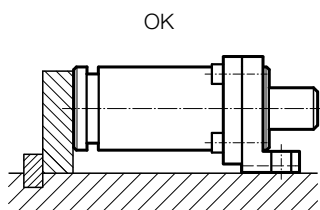
Fixed with 2480.055./057./058./064.



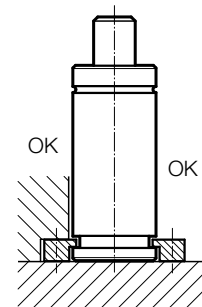
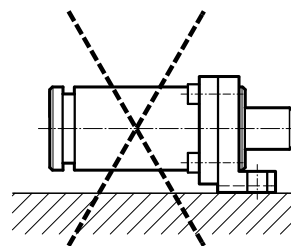
Fixed with 2480.007./008.



Fixed with 2480.007./008.



Fixed with 2480.044./045./047.

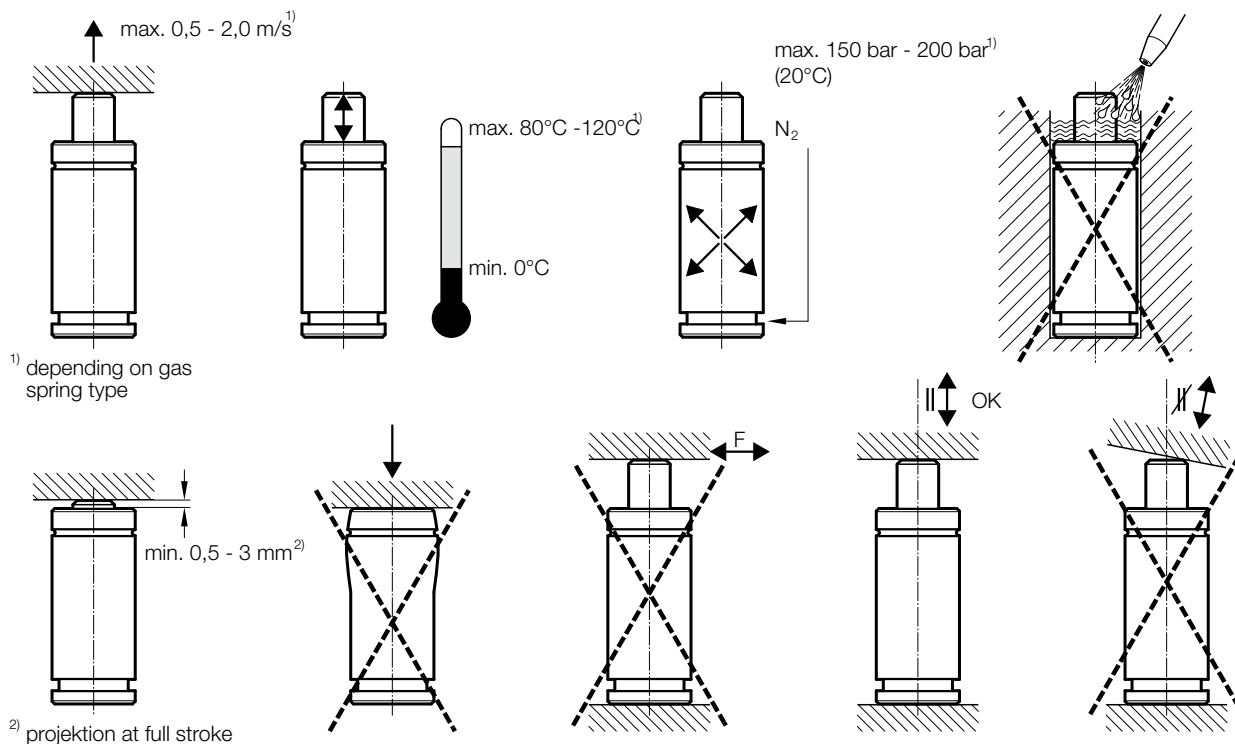


Fixed with 2480.022.

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 charging 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 2479.040./041.).
- Do not remove bottom 2480./2497.00.20. from spring until all gas pressure has been discharged.

FIBRO GAS SPRINGS – FOR YOUR SAFETY

MAXIMUM SAFETY FOR PERSONS AND TOOLS

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

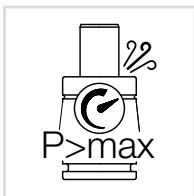
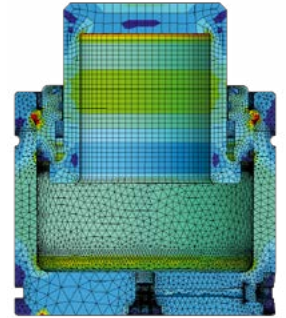
The benefit for you:

- **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.

Manuals

All current operating instructions are available under the link www.gassprings.fibro.com or can now also be scanned from the QR code of the label.



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:

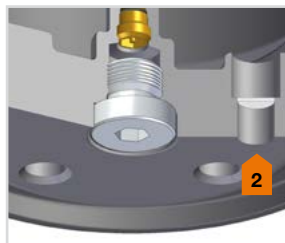
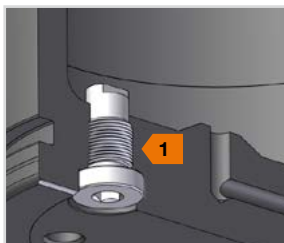
if the pressure rises above the maximum permitted value, the safety collar on the sealing set is automatically destroyed. The gas then escapes into the atmosphere and the gas spring is depressurised.

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), infed of liquid operating material, etc.



- 1** Bursting screw
- 2** Overpressure membrane
- 3** Evacuation groove

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 – FOR YOUR SAFETY

MAXIMUM SAFETY FOR PERSONS AND TOOLS



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:

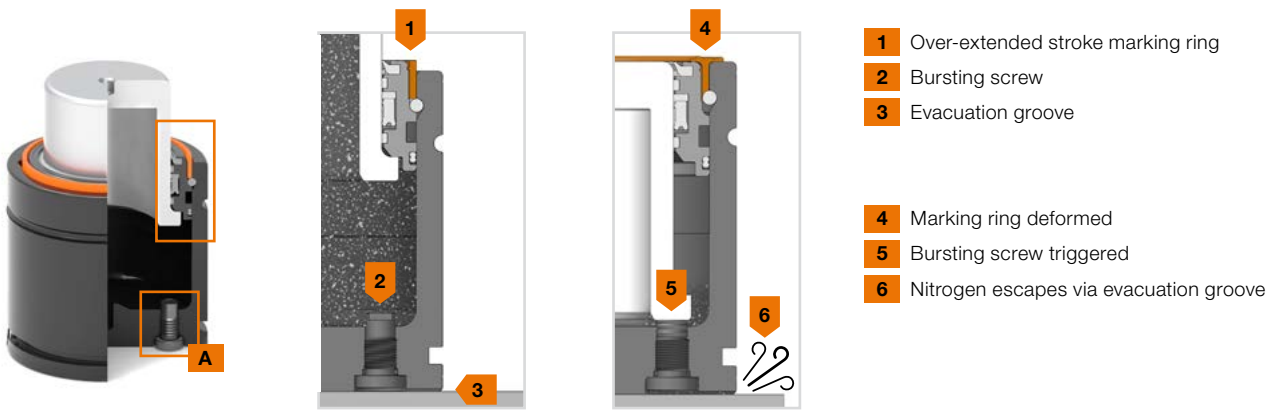
In the event of an over-extended stroke, the patented protection system (depending on the spring type) ensures that either the piston rod destroys a bursting screw in the base of the cylinder (A) or the seal on the cylinder wall of the gas spring loses its sealing function in a specific way (B).

The benefit for you:

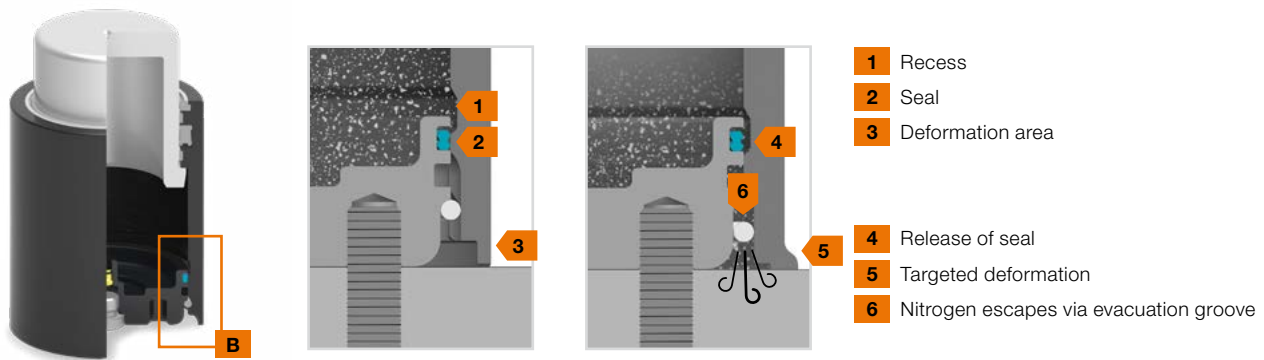
- ▶ **No risk of parts flying around in the event of an overstroke**

Possible causes of triggering:

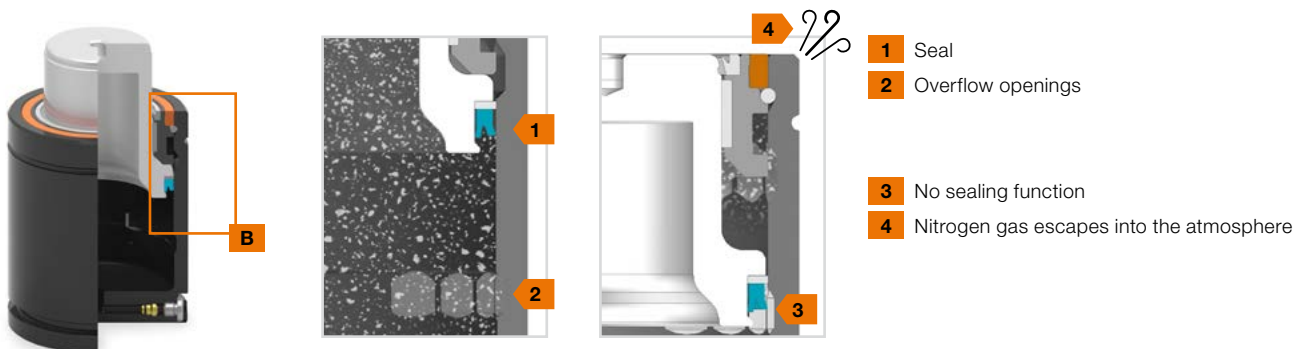
Lack of stroke limitations in the tool/machine and placing the piston rods under a load (e.g. sheet-metal holder, slide reset, etc.), double sheet, incorrect installation position, etc.



- 1 Over-extended stroke marking ring
- 2 Bursting screw
- 3 Evacuation groove
- 4 Marking ring deformed
- 5 Bursting screw triggered
- 6 Nitrogen escapes via evacuation groove



- 1 Recess
- 2 Seal
- 3 Deformation area
- 4 Release of seal
- 5 Targeted deformation
- 6 Nitrogen escapes via evacuation groove



- 1 Seal
- 2 Overflow openings
- 3 No sealing function
- 4 Nitrogen gas escapes into the atmosphere

FIBRO GAS SPRINGS – FOR YOUR SAFETY

MAXIMUM SAFETY FOR PERSONS AND TOOLS

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)



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:

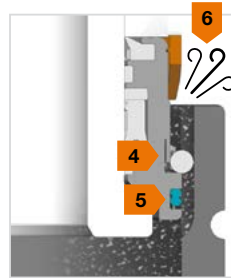
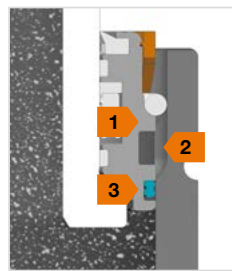
Special sealing inserts in combination with evacuation grooves ensure safety. If the speed is too high during the return stroke, the collar in the sealing insert will automatically break. The integrated evacuation grooves in the cylinder tube allow the gas to escape into the atmosphere and the gas spring becomes depressurised.

The benefit for you:

► **No risk of a piston rod firing out if the return stroke is too fast**

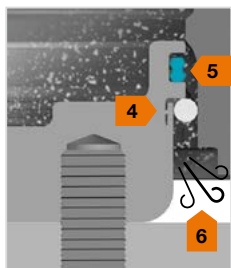
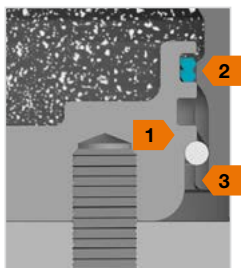
Possible causes of triggering:

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



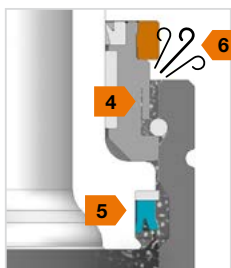
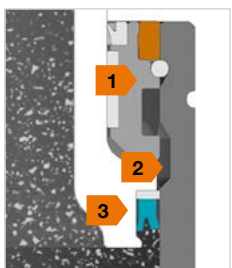
- 1 Sicherheitsbund
- 2 Evacuation groove
- 3 Seal

- 4 Deformation of the safety collar
- 5 Release of seal
- 6 Nitrogen gas escapes into the atmosphere



- 1 Safety collar
- 2 Seal
- 3 Evacuation groove

- 4 Deformation of the safety collar
- 5 Release of seal
- 6 Nitrogen gas escapes into the atmosphere



- 1 Safety collar
- 2 Evacuation groove
- 3 Seal

- 4 Deformation of the safety collar
- 5 Release of seal
- 6 Nitrogen gas escapes into the atmosphere

FIBRO GAS SPRINGS – FOR YOUR SAFETY

MAXIMUM SAFETY FOR PERSONS AND TOOLS

FIBRO reliability features



Wireless monitoring:

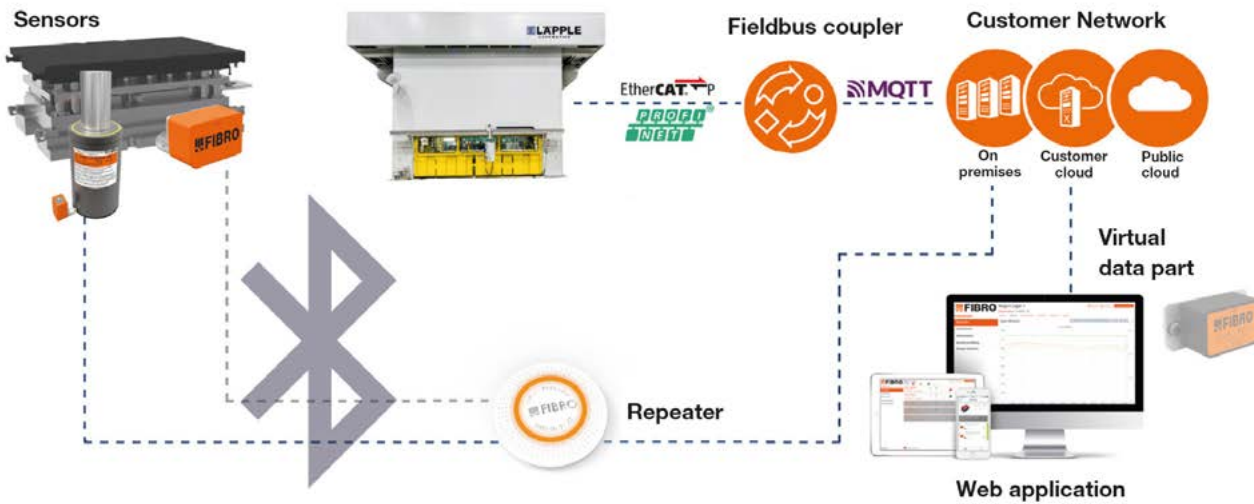
The Wireless Pressure Monitoring (WPM) System

The 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: The FIBRO-TEX

The FIBRO piston rod protection, FIBRO-TEX reliably protects the piston rod of the gas spring against dirt, oil, and emulsion. This prevents damage to the surface of the piston rod and leakage at the inner seals.

The benefit for you:

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



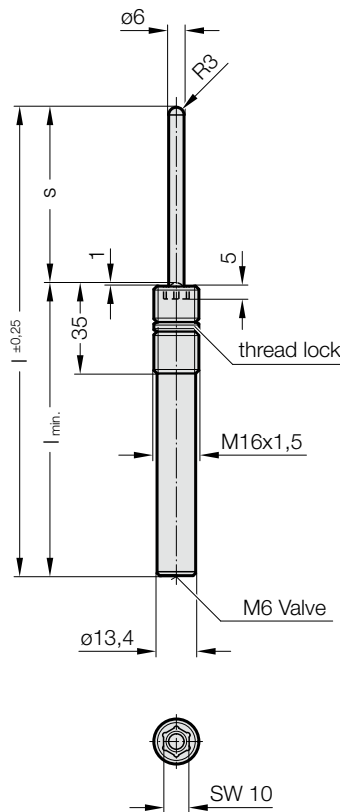
GAS SPRINGS NEW GENERATION (SPRING PLUNGERS)



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



2479.040.



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: 10 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. 50 - 100 (at $20^\circ C$)
 Max. piston rod speed: 1.8 m/s

Upon customers request, also available unfilled, Order No 2479.040.00000....., Colour: black

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



2479.040. Gas spring (Spring plunger), with hexagon socket, VDI 3004

Spring type:

Order No*	s (Stroke max.)	l	l _{min.}	.00005.		.00010.		.00020.		.00040.		Weight [kg]
				F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	
2479.040.□□□□□.010	10	65	55	6	9.4	11	17.3	21	33	42	65.9	0.05
2479.040.□□□□□.020	20	85	65	6	9.4	11	17.3	21	33	42	65.9	0.06
2479.040.□□□□□.030	30	105	75	6	9.4	11	17.3	21	33	42	65.9	0.07
2479.040.□□□□□.040	40	125	85	6	9.4	11	17.3	21	33	42	65.9	0.07
2479.040.□□□□□.050	50	145	95	6	9.4	11	17.3	21	33	42	65.9	0.08
2479.040.□□□□□.060	60	165	105	6	9.4	11	17.3	21	33	42	65.9	0.08
2479.040.□□□□□.070	70	185	115	6	9.4	11	17.3	21	33	42	65.9	0.09
2479.040.□□□□□.080	80	205	125	6	9.4	11	17.3	21	33	42	65.9	0.1
2479.040.□□□□□.100	100	245	145	6	9.4	11	17.3	21	33	42	65.9	0.11
2479.040.□□□□□.125	125	295	170	6	9.4	11	17.3	21	33	42	65.9	0.12

complete with spring type

Spring force marking:

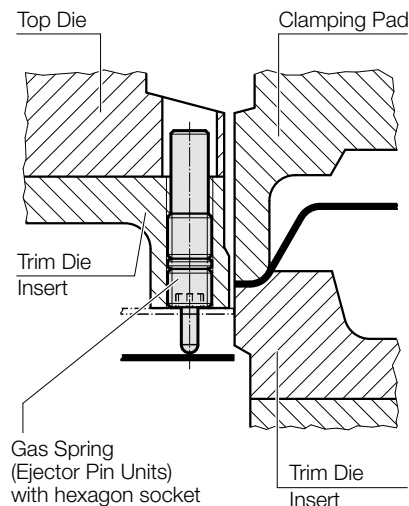
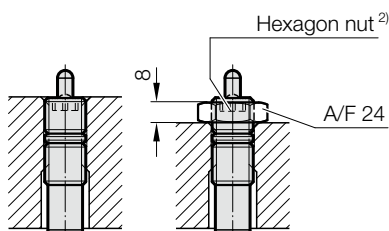
Spring type - Pressure [bar] - Colour:

.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:

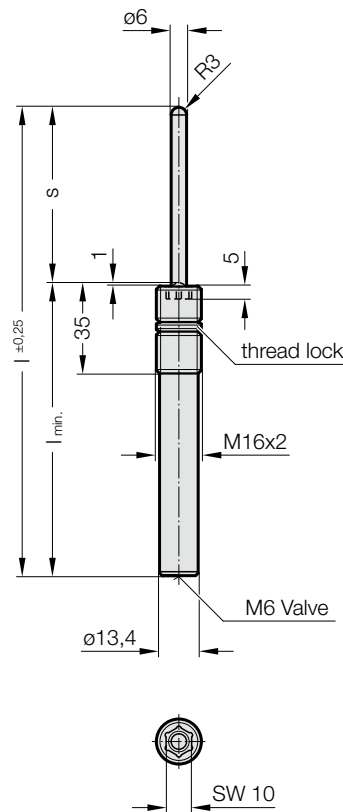
Worn gas springs cannot be repaired, they have to be replaced completely.

Pressure medium: Nitrogen - N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 10 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 50 - 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

Upon customers request, also available unfilled, Order No 2479.041.00000....., Colour: black

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

2479.041.



2479.041. Gas spring (Spring plunger), with hexagon socket, VDI 3004

Spring type:

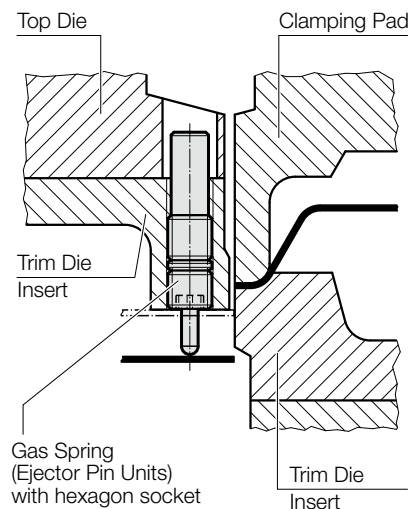
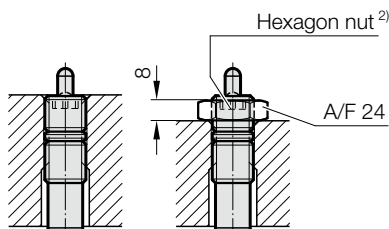
Order No*	s (Stroke _{max})	l	l _{min}	.00004.		.00005.		.00010.		.00020.		.00040.		Weight [kg]
				F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	
2479.041.□□□□□.010	10	65	55	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.05
2479.041.□□□□□.020	20	85	65	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.06
2479.041.□□□□□.030	30	105	75	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.07
2479.041.□□□□□.040	40	125	85	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.07
2479.041.□□□□□.050	50	145	95	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.08
2479.041.□□□□□.060	60	165	105	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.08
2479.041.□□□□□.070	70	185	115	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.09
2479.041.□□□□□.080	80	205	125	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.1
2479.041.□□□□□.100	100	245	145	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.11
2479.041.□□□□□.125	125	295	170	4	6.3	6	9.4	11	17.3	21	33	42	65.9	0.12

*complete with spring type

Spring force marking:

Spring type - Pressure [bar] - Colour:

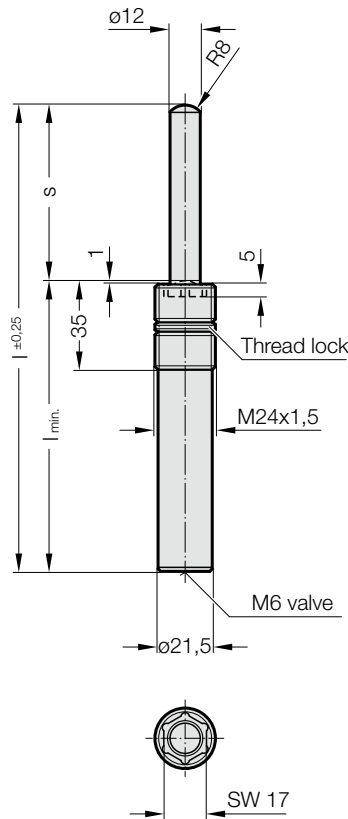
- .00004. - 12 - violet
- .00005. - 20 - green
- .00010. - 40 - blue
- .00020. - 75 - red
- .00040. - 150 - yellow



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



2479.042.



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).

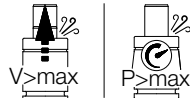
Note:

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

Pressure medium: Nitrogen - N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 10 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 50 - 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

Upon customers request, also available unfilled, Order No 2479.042.00000....., Colour: black

²⁾ Hexagon nut order supplementary: 2479.004.024.15 (M24 x 1,5)



2479.042. Gas spring (Spring plunger), with hexagon socket, VDI 3004

Order No*	s (Stroke _{max.})	l	l _{min.}	.00020.		.00040.		.00080.		.00170.		Weight [kg]
				F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	
2479.042.□□□□□.010	10	65	55	23	42.8	45	83.7	85	158.1	170	316.2	0.16
2479.042.□□□□□.020	20	85	65	23	42.8	45	83.7	85	158.1	170	316.2	0.18
2479.042.□□□□□.030	30	105	75	23	42.8	45	83.7	85	158.1	170	316.2	0.2
2479.042.□□□□□.040	40	125	85	23	42.8	45	83.7	85	158.1	170	316.2	0.23
2479.042.□□□□□.050	50	145	95	23	42.8	45	83.7	85	158.1	170	316.2	0.25
2479.042.□□□□□.060	60	165	105	23	42.8	45	83.7	85	158.1	170	316.2	0.27
2479.042.□□□□□.070	70	185	115	23	42.8	45	83.7	85	158.1	170	316.2	0.29
2479.042.□□□□□.080	80	205	125	23	42.8	45	83.7	85	158.1	170	316.2	0.3
2479.042.□□□□□.100	100	245	145	23	42.8	45	83.7	85	158.1	170	316.2	0.33
2479.042.□□□□□.125	125	295	170	23	42.8	45	83.7	85	158.1	170	316.2	0.35

*complete with spring type

Spring force marking:

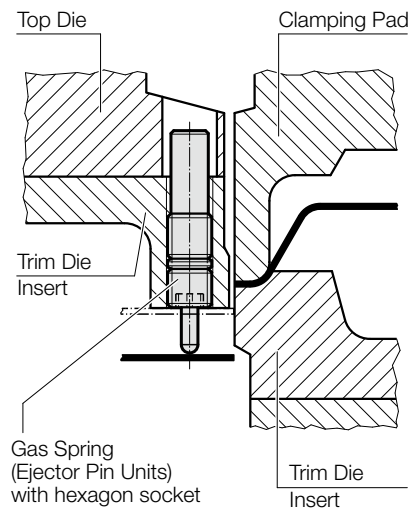
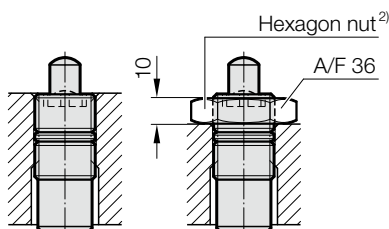
Spring type - Pressure [bar] - Colour:

.00020. - 20 - green

.00040. - 40 - blue

.00080. - 75 - red

.00170. - 150 - yellow

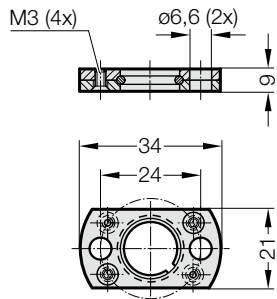


GAS SPRINGS NEW GENERATION SMALL DIMENSIONS, LOW FORCES



GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

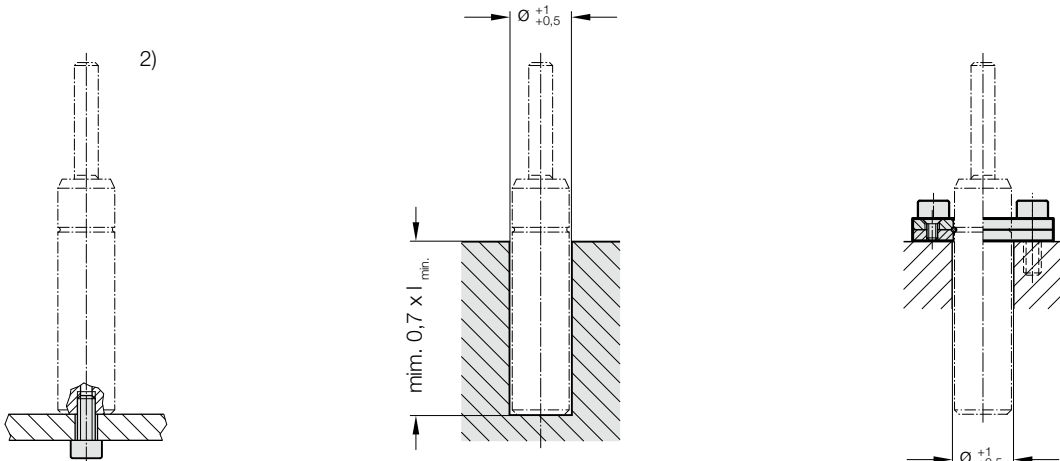
2480.051.00013



Note:

²⁾ 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 13-25-38-50 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: 20 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 100 - 150 (at 20°C)

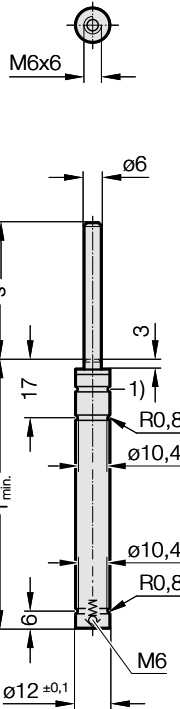
Max. piston rod speed: 1.8 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2482.75.00000....., Colour: black

1) For spring force labelling and mounting additional wipers

2482.75.



PED
2014/68/EU

2482.75. Gas spring, small dimension and low force

Order No*	s (Stroke _{max})	l	l _{min}	Weight [kg]	Gas volume [l]
2482.75.□□□□.007	7	56	49	0.03	0.001
2482.75.□□□□.010	10	62	52	0.03	0.001
2482.75.□□□□.013	12.7	67.4	54.7	0.03	0.002
2482.75.□□□□.015	15	72	57	0.03	0.002
2482.75.□□□□.019	19	80	61	0.03	0.002
2482.75.□□□□.025	25	92	67	0.03	0.002
2482.75.□□□□.038	38	118	80	0.04	0.004
2482.75.□□□□.050	50	142	92	0.05	0.004
2482.75.□□□□.063	63.5	172	108.5	0.06	0.006
2482.75.□□□□.075	75	195	120	0.06	0.006
2482.75.□□□□.080	80	205	125	0.07	0.007
2482.75.□□□□.100	100	245	145	0.08	0.008
2482.75.□□□□.125	125	295	170	0.09	0.01

*complete with initial spring force

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

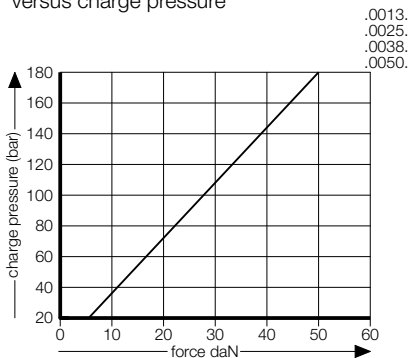
.00013. - 45 - green

.00025. - 90 - blue

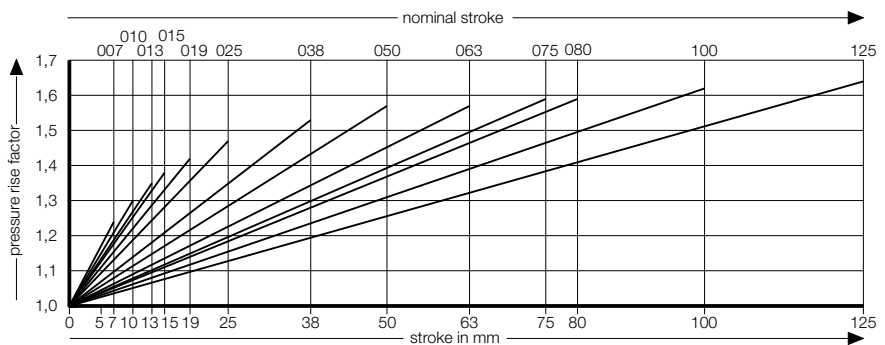
.00038. - 135 - red

.00050. - 180 - yellow

Initial spring force versus charge pressure



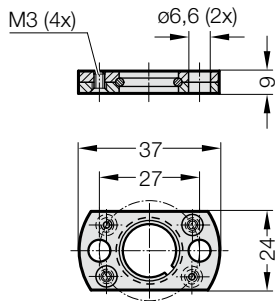
Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

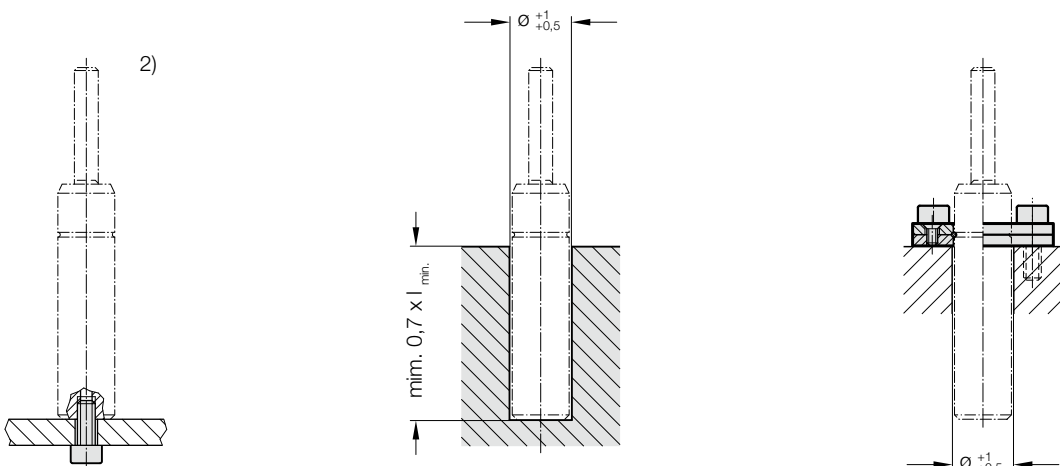
2480.051.00018



Note:

²⁾ 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 18-35-50-70 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: 20 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)

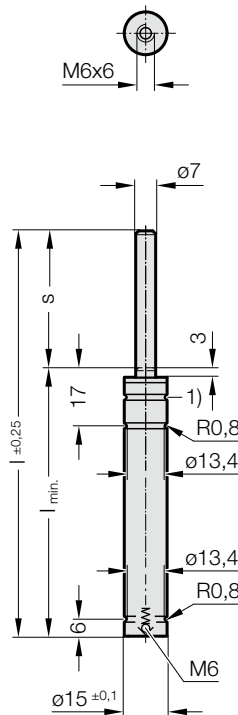
Max. piston rod speed: 1.8 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2482.76.00000. ..., Colour: black

1) For spring force labelling and mounting additional wipers

2482.76.



PED
2014/68/EU

2482.76. Gas spring, small dimension and low force

Order No*	s (Stroke max.)	l	l _{min.}	Weight [kg]	Gas volume [l]
2482.76.□□□□.007	7	56	49	0.04	0.002
2482.76.□□□□.010	10	62	52	0.05	0.002
2482.76.□□□□.013	12.7	67.4	54.7	0.05	0.003
2482.76.□□□□.015	15	72	57	0.05	0.003
2482.76.□□□□.019	19	80	61	0.05	0.003
2482.76.□□□□.025	25	92	67	0.06	0.004
2482.76.□□□□.038	38	118	80	0.07	0.005
2482.76.□□□□.050	50	142	92	0.08	0.007
2482.76.□□□□.063	63.5	172	108.5	0.09	0.008
2482.76.□□□□.075	75	195	120	0.1	0.01
2482.76.□□□□.080	80	205	125	0.1	0.01
2482.76.□□□□.100	100	245	145	0.12	0.012
2482.76.□□□□.125	125	295	170	0.14	0.015

*complete with initial spring force

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

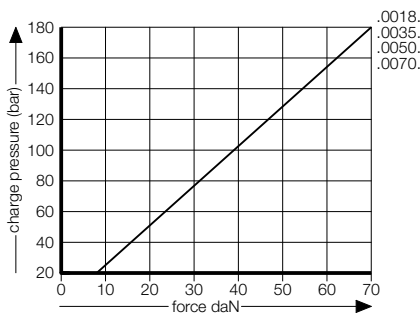
.00018. - 45 - green

.00035. - 90 - blue

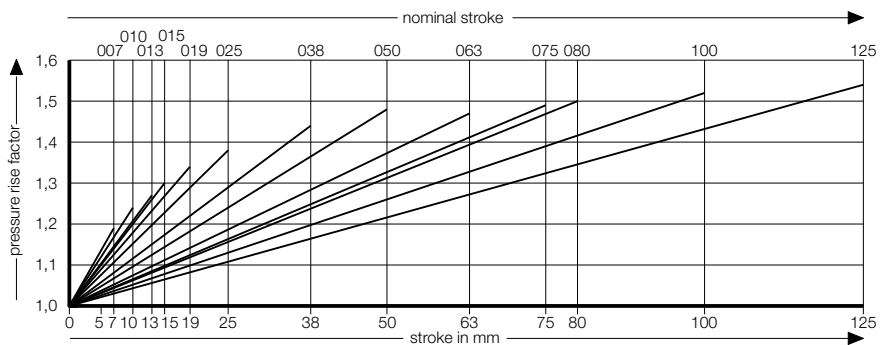
.00050. - 135 - red

.00070. - 180 - yellow

Initial spring force versus charge pressure



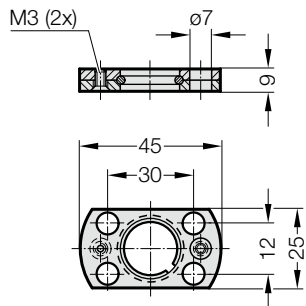
Spring force Diagram displacement versus stroke rise



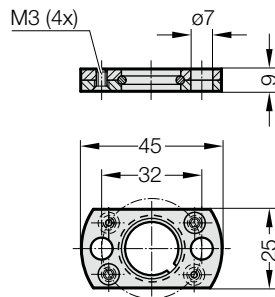
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

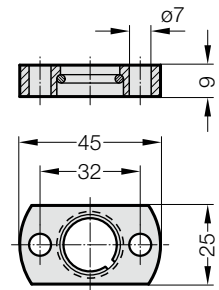
2480.051.01.00030



2480.051.03.00030



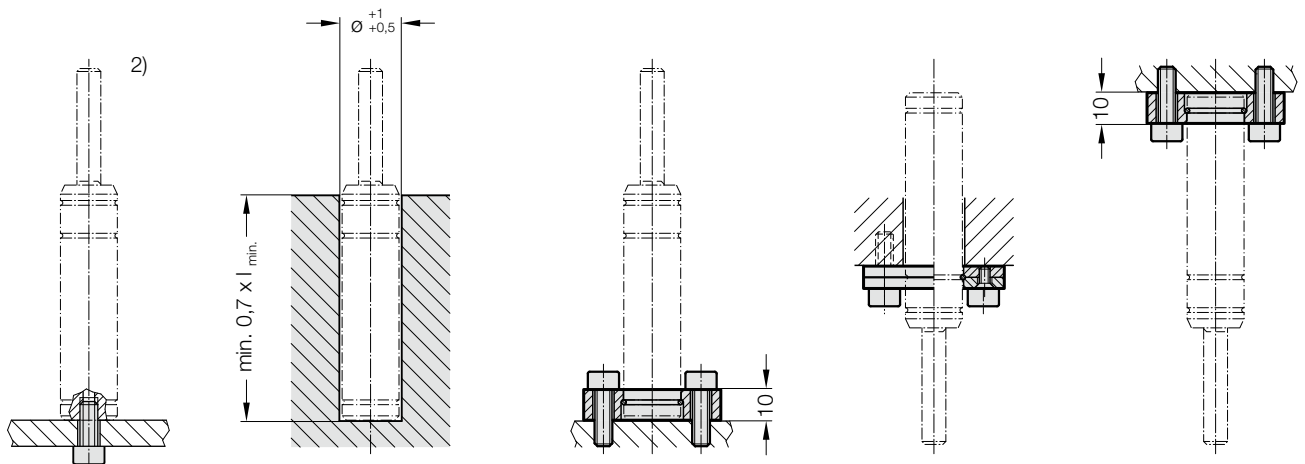
2480.052.019.10.05



Note:

²⁾ 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: 10 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)

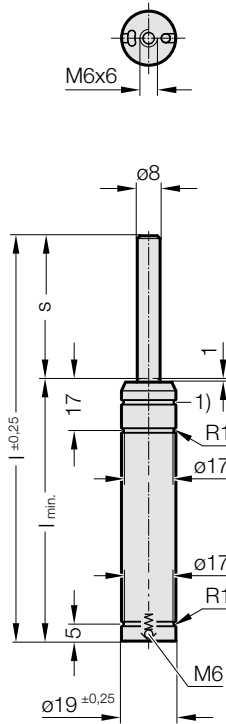
Max. piston rod speed: 1.8 m/s

Spring forces as per spring diagram.

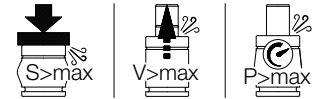
Upon customers request, also available unfilled, Order No 2482.77.00000. ..., Colour: black

1) For spring force labelling and mounting additional wipers

2482.77.



PED 2014/68/EU VDI ISO



2482.77. Gas spring, small dimension and low force

Order No*	s (Stroke max.)	l	l _{min.}	Weight [kg]	Gas volume [l]
2482.77.□□□□□.007	7	56	49	0.07	0.002
2482.77.□□□□□.010	10	62	52	0.07	0.003
2482.77.□□□□□.015	15	72	57	0.08	0.004
2482.77.□□□□□.025	25	92	67	0.09	0.006
2482.77.□□□□□.038	38.1	118.2	80.1	0.11	0.008
2482.77.□□□□□.050	50	142	92	0.12	0.011
2482.77.□□□□□.063	63.5	172	108.5	0.14	0.014
2482.77.□□□□□.080	80	205	125	0.15	0.017
2482.77.□□□□□.100	100	245	145	0.17	0.021
2482.77.□□□□□.125	125	295	170	0.2	0.026

*complete with initial spring force

Spring force marking:

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

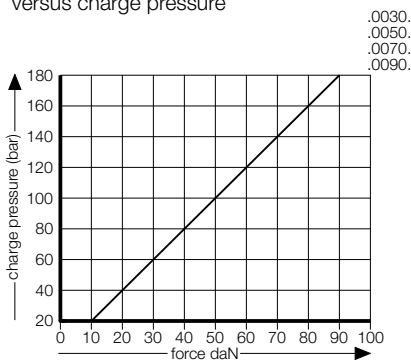
.00030. - 60 - green

.00050. - 100 - blue

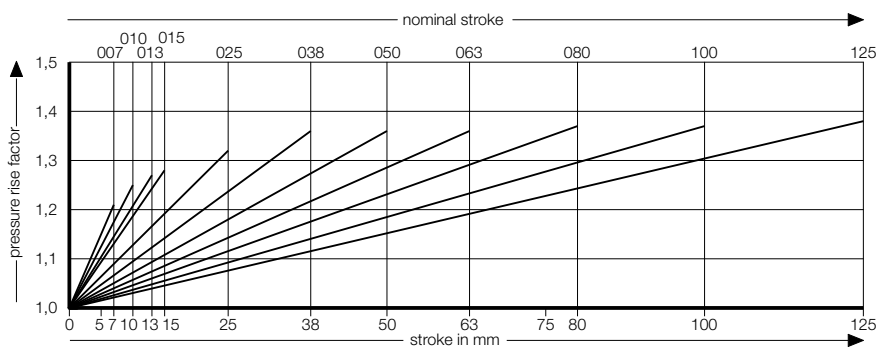
.00070. - 140 - red

.00090. - 180 - yellow

Initial spring force versus charge pressure



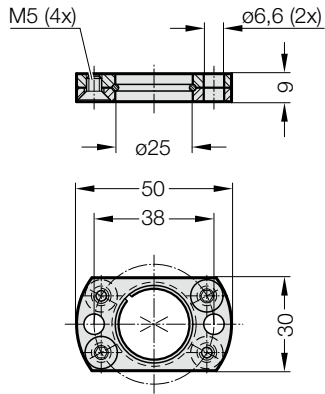
Spring force Diagram displacement versus stroke rise



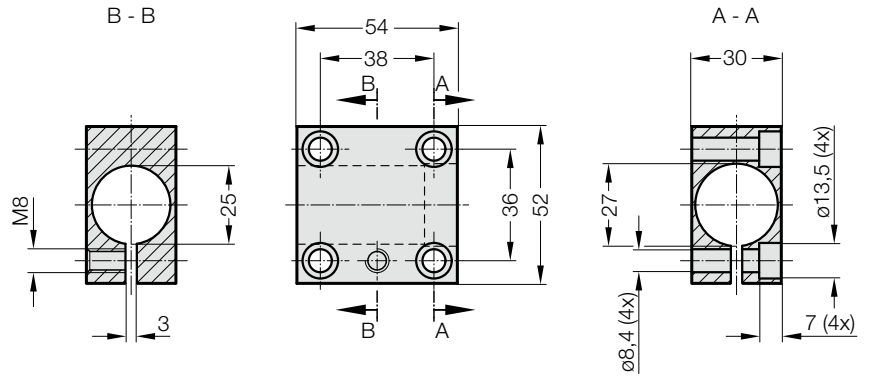
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

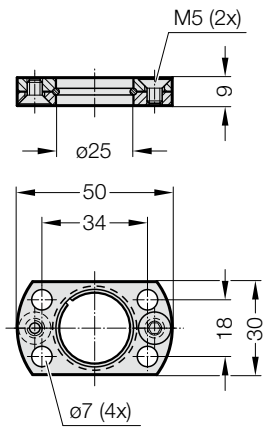
2480.051.00150



2480.053.00150



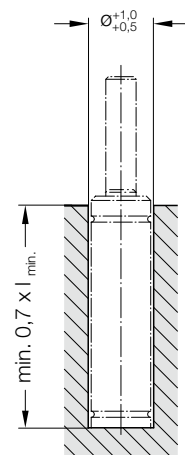
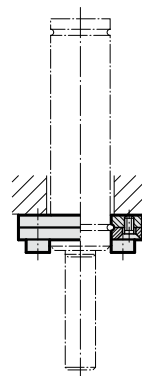
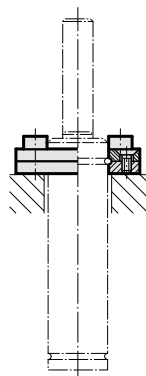
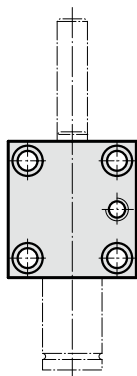
2480.054.00150



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: 2480.24.00150 not repairable

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 10 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 50 - 80 (at 20°C)

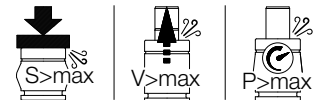
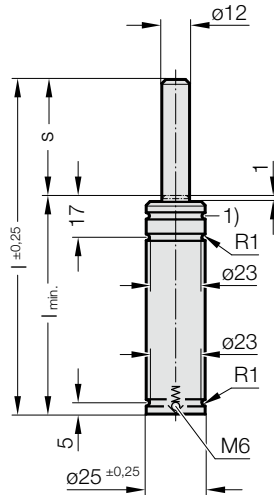
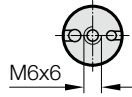
Max. piston rod speed: 1.8 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2480.24.00000....., Colour: black

1) For spring force labelling and mounting additional wipers

2480.24.



2480.24. Gas spring, small dimension and low force

Order No*	s (Stroke _{max})	l	l _{min}	Weight [kg]	Gas volume [l]
2480.24.□□□□.010	10	62	52	0.13	0.005
2480.24.□□□□.013	12.7	67.4	54.7	0.13	0.006
2480.24.□□□□.015	15	72	57	0.14	0.007
2480.24.□□□□.016	16	74	58	0.14	0.007
2480.24.□□□□.025	25	92	67	0.16	0.011
2480.24.□□□□.038	38.1	118.2	80.1	0.19	0.016
2480.24.□□□□.050	50	142	92	0.2	0.02
2480.24.□□□□.063	63.5	172	108.5	0.23	0.025
2480.24.□□□□.080	80	205	125	0.26	0.031
2480.24.□□□□.100	100	245	145	0.3	0.039
2480.24.□□□□.125	125	295	170	0.34	0.048
2480.24.□□□□.150	150	353	203	0.42	0.059
2480.24.□□□□.175	175	403	228	0.47	0.068
2480.24.□□□□.200	200	453	253	0.52	0.078

*complete with initial spring force

Spring force marking:

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

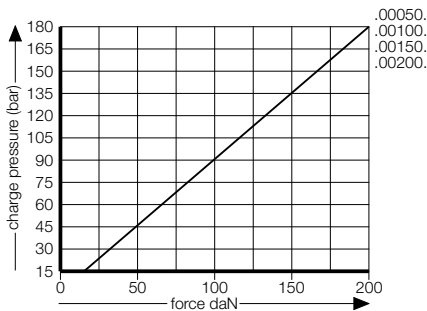
.00050. - 45 - green

.00100. - 90 - blue

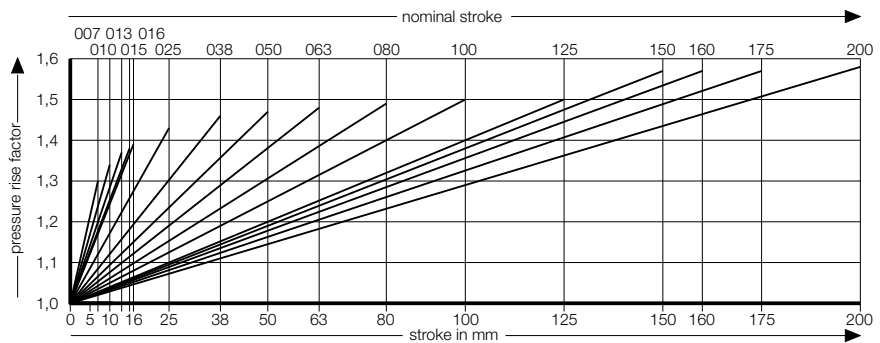
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



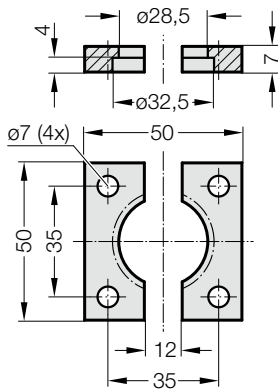
Spring force Diagram displacement versus stroke rise



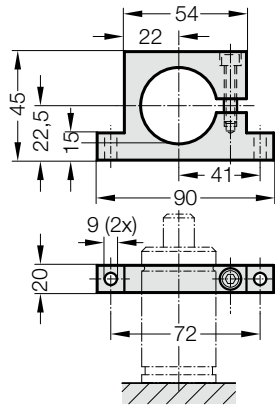
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

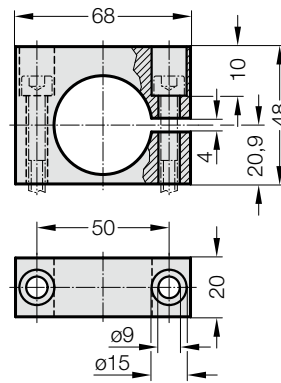
2480.022.00150



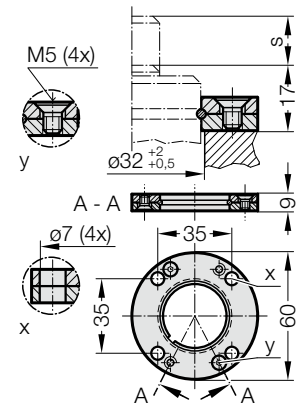
2480.044.00150²⁾



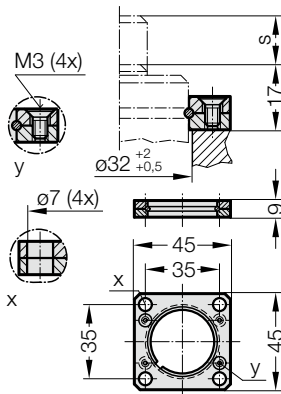
2480.044.03.00150²⁾



2480.055.00150



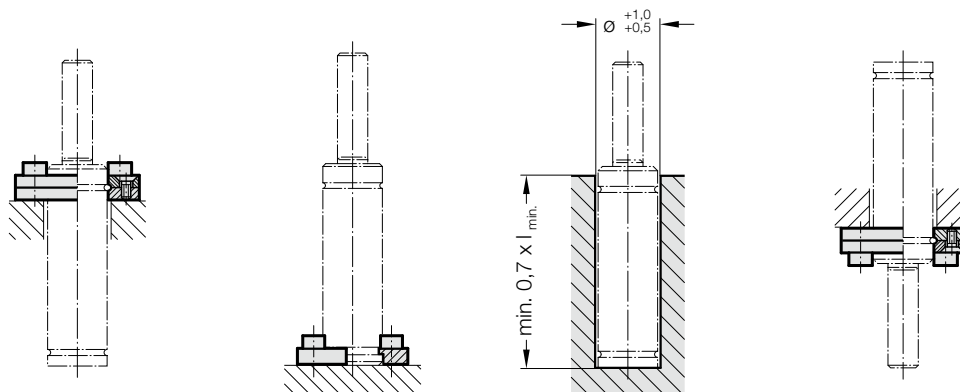
2480.057.00150



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:

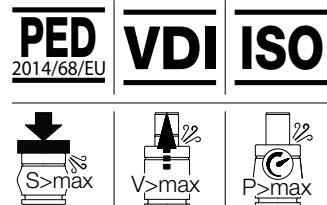
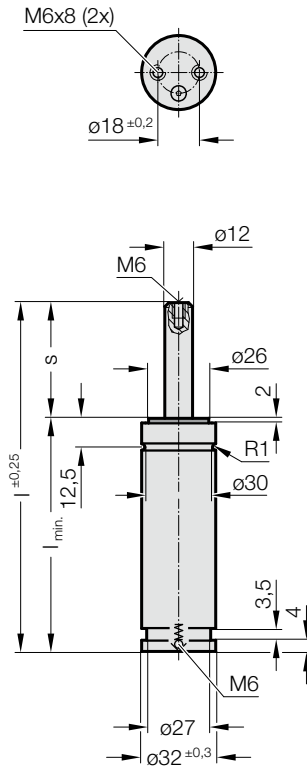
Order No for spare parts kit: 2480.15.00150 (Stroke length 10 and 13 not repairable)

Pressure medium: Nitrogen N₂
 Max. filling pressure: 180 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. 80 to 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2480.25.000000....., Colour: black

2480.25.



2480.25. Gas spring, small dimension and low force

Order No*	s (Stroke _{max})	l	l _{min}	Weight [kg]	Gas volume [l]
2480.25.□□□□□.010	10	70	60	0.26	0.01
2480.25.□□□□□.013	12.7	75.4	62.7	0.26	0.011
2480.25.□□□□□.016	16	82	66	0.27	0.013
2480.25.□□□□□.025	25	100	75	0.3	0.018
2480.25.□□□□□.038	38	126	88	0.33	0.025
2480.25.□□□□□.050	50	150	100	0.37	0.032
2480.25.□□□□□.063	63.5	177	113.5	0.41	0.04
2480.25.□□□□□.080	80	210	130	0.45	0.049
2480.25.□□□□□.100	100	250	150	0.51	0.06
2480.25.□□□□□.125	125	300	175	0.59	0.073

*complete with initial spring force

Spring force marking:

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

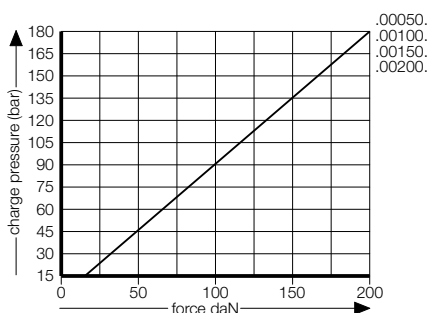
.00050. - 45 - green

.00100. - 90 - blue

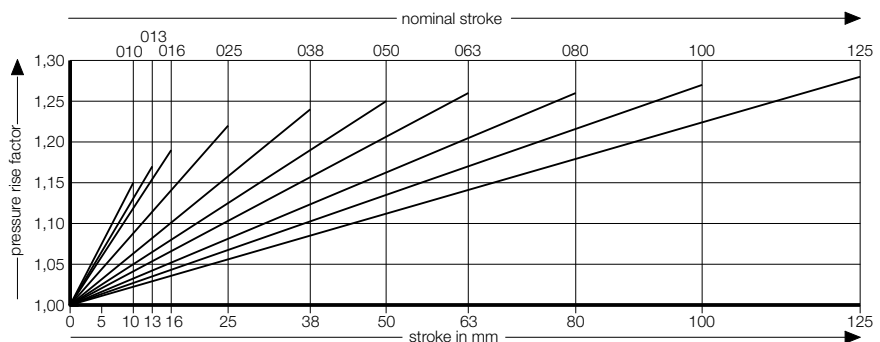
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



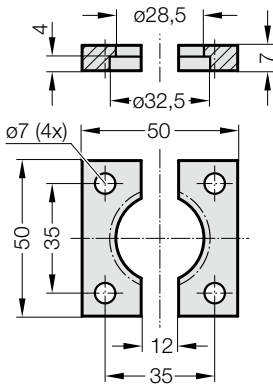
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS NEW GENERATION STANDARD

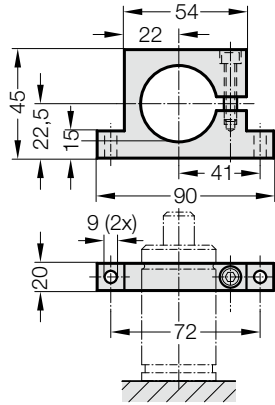


GAS SPRING, STANDARD MOUNTING VARIATIONS

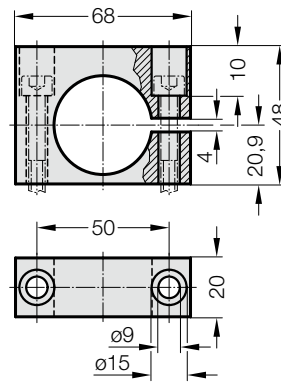
2480.022.00150



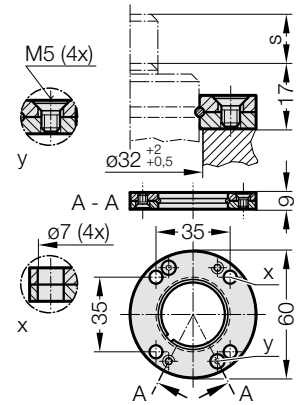
2480.044.00150²⁾



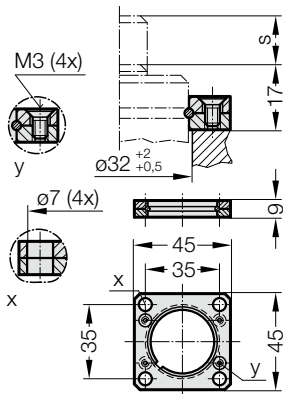
2480.044.03.00150²⁾



2480.055.00150



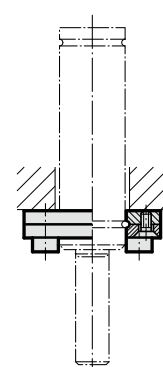
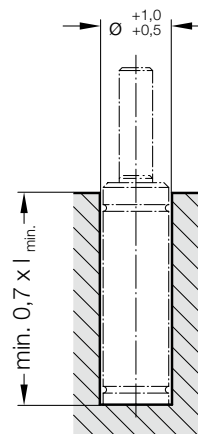
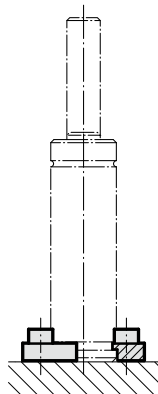
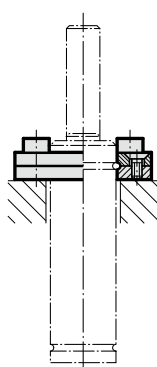
2480.057.00150



Note:

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

Mounting examples:



GAS SPRING, STANDARD

Note:

Initial spring force at 150 bar = 170 daN

Order No for spare parts kit: 2480.15.00150

Gas spring without valve

Order No (example): 2480.15.00150. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

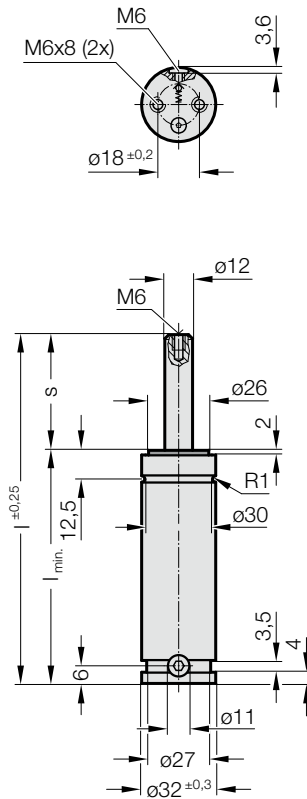
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 80 - 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

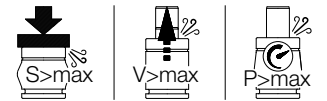
2480.15.00150.



PED
2014/68/EU

VDI

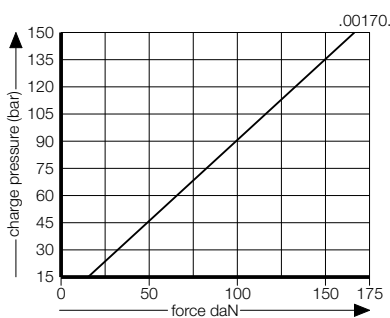
ISO



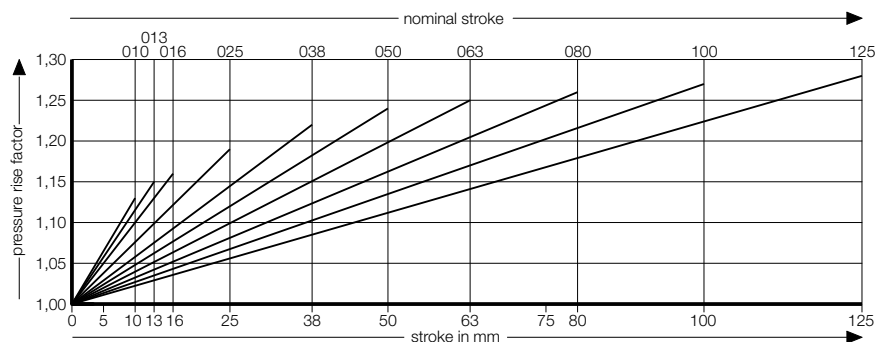
2480.15.00150. Gas spring, Standard

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2480.15.00150.010	10	60	70	0.012	0.28
2480.15.00150.013	12.7	62.7	75.4	0.013	0.29
2480.15.00150.016	16	66	82	0.015	0.3
2480.15.00150.025	25	75	100	0.02	0.33
2480.15.00150.038	38	88	126	0.027	0.36
2480.15.00150.050	50	100	150	0.034	0.4
2480.15.00150.063	63.5	113.5	177	0.042	0.44
2480.15.00150.080	80	130	210	0.051	0.49
2480.15.00150.100	100	150	250	0.016	0.55
2480.15.00150.125	125	175	300	0.075	0.64

Initial spring force versus charge pressure



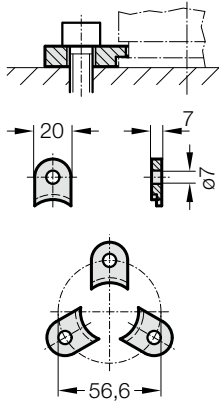
Spring force Diagram displacement versus stroke rise



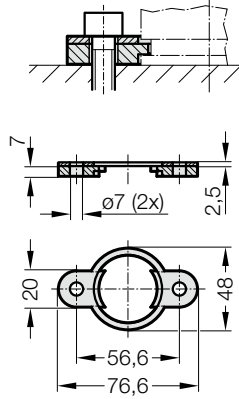
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

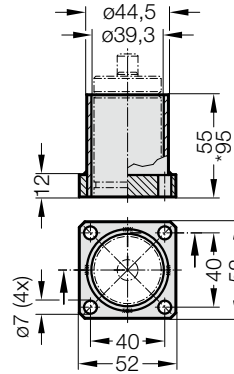
2480.007.00250



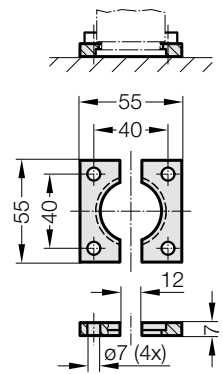
2480.008.00250³⁾



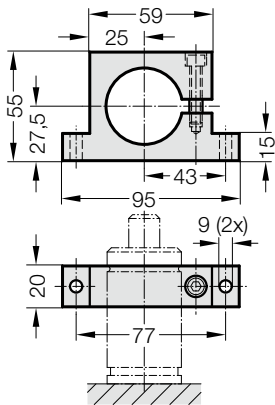
2480.010.00250.055³⁾
2480.010.00250.095³⁾



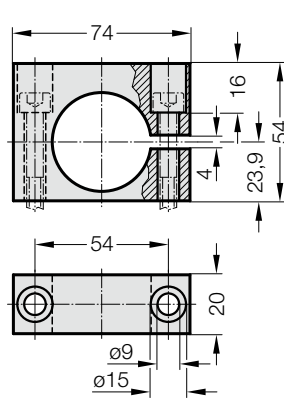
2480.022.00250



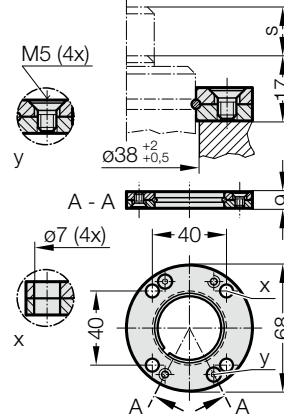
2480.044.00250²⁾



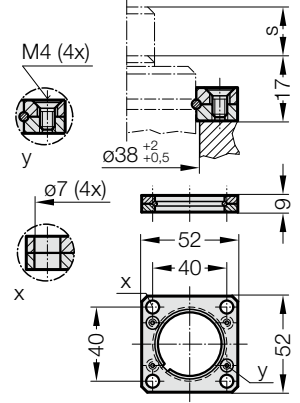
2480.044.03.00250²⁾



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:

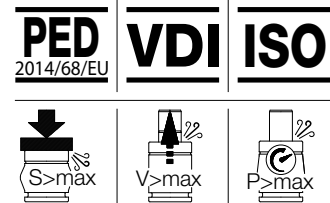
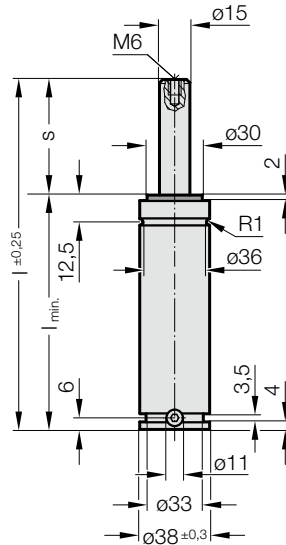
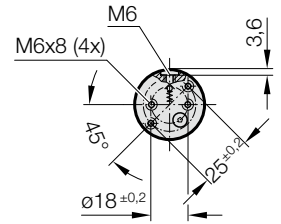
Initial spring force at 150 bar = 170 daN

Order No for spare parts kit: 2480.15.00250
(Stroke length 10 and 13 not repairable)

Gas spring without valve
Order No (example): 2480.15.00250..P

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. 80 - 100 (at 20°C)
Max. piston rod speed: 1.8 m/s

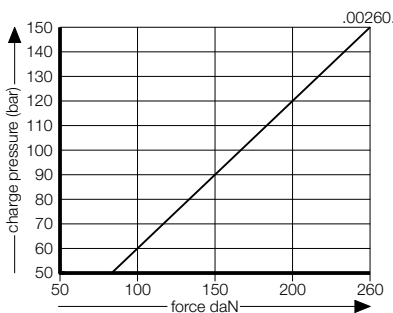
2480.15.00250.



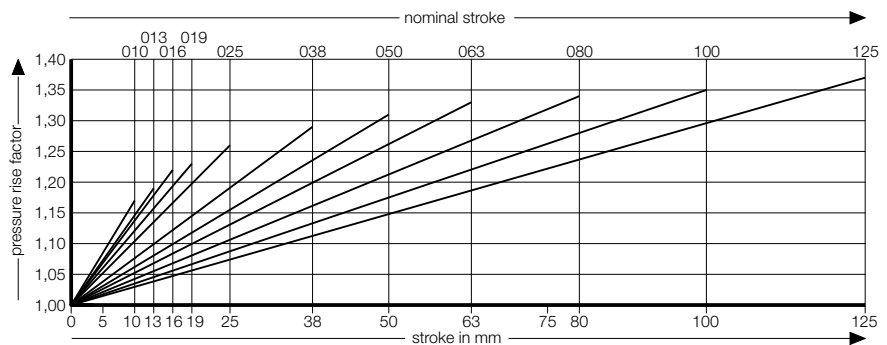
2480.15.00250. Gas spring, Standard

Order No	s (Stroke max.)	l _{min.}	l	Gas volume [l]	Weight [kg]
2480.15.00250.010	10	60	70	0.016	0.4
2480.15.00250.013	12.7	62.7	75.4	0.018	0.41
2480.15.00250.016	16	66	82	0.021	0.43
2480.15.00250.019	19	69	88	0.023	0.45
2480.15.00250.025	25	75	100	0.027	0.48
2480.15.00250.038	38	88	126	0.037	0.54
2480.15.00250.050	50	100	150	0.046	0.6
2480.15.00250.063	63.5	113.5	177	0.057	0.66
2480.15.00250.080	80	130	210	0.069	0.74
2480.15.00250.100	100	150	250	0.084	0.81
2480.15.00250.125	125	175	300	0.102	0.98

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise

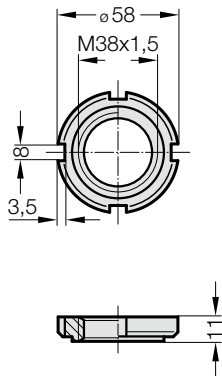


Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD, WITH EXTERNAL THREAD MOUNTING VARIATIONS

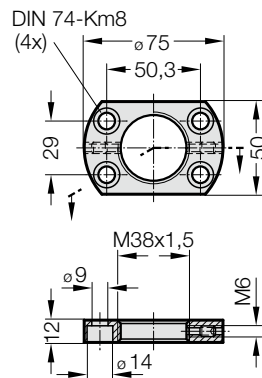
2480.005.00250

Slotted nut



2480.006.00250

Clamped flange

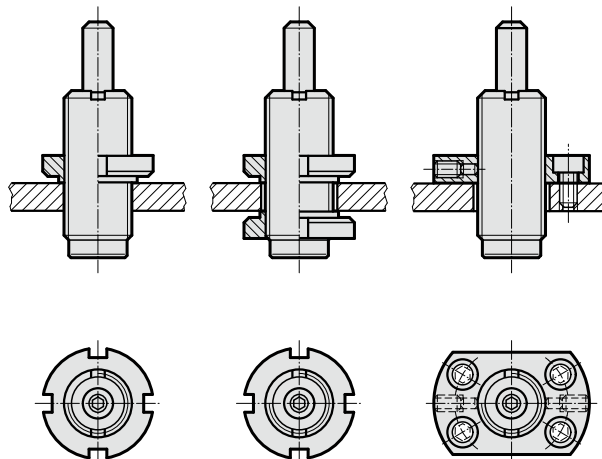


2480.00.51.01

Box spanner for assembling/disassembling
of gas springs



Mounting examples:



GAS SPRING, STANDARD, WITH EXTERNAL THREAD

Note:

Initial spring force at 150 bar = 260 daN

Order No for spare parts kit: 2480.15.00250
(Stroke length 10 and 13 not repairable)

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. 80 to 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

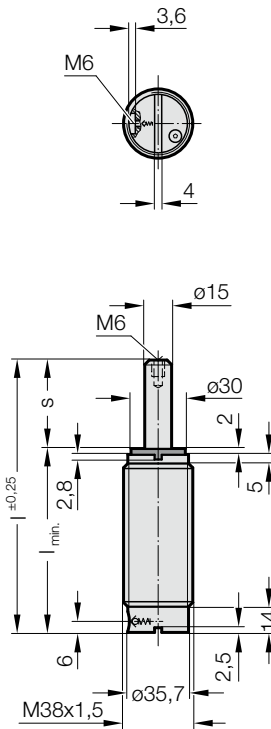
Fixing:

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.

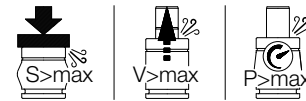
Mounting with a threaded flange plate has the advantage of a degree of adjustability as far as the flange screws permit, moreover it is often found easier to make do with a clearance hole in the tool plate. Locking is by way of two lock screws with thrust plugs, provided in the threaded flange.

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

2480.35.00250.



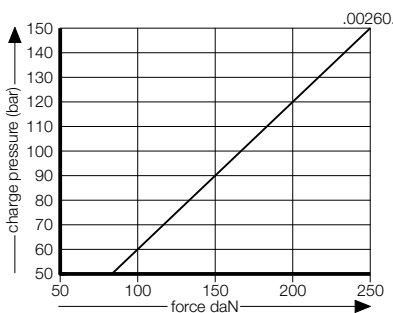
PED
2014/68/EU



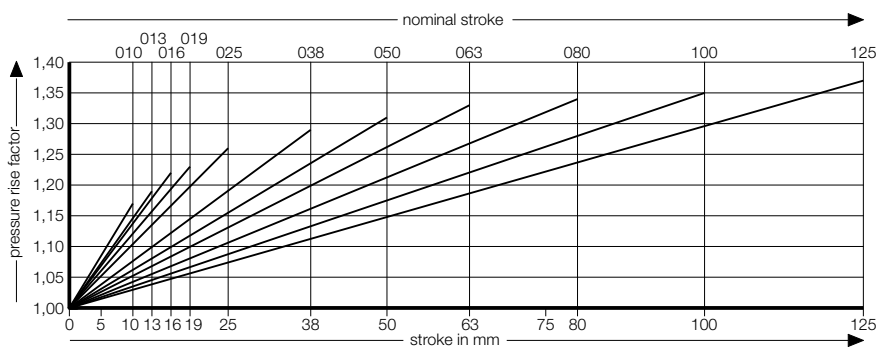
2480.35.00250. Gas spring, Standard, with external thread

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2480.35.00250.013	12.7	62.7	75.4	0.018	0.38
2480.35.00250.025	25	75	100	0.027	0.44
2480.35.00250.038	38	88	126	0.037	0.5
2480.35.00250.050	50	100	150	0.046	0.55
2480.35.00250.063	63.5	113.5	177	0.057	0.63
2480.35.00250.080	80	130	210	0.069	0.7
2480.35.00250.100	100	150	250	0.102	0.93

Initial spring force versus charge pressure



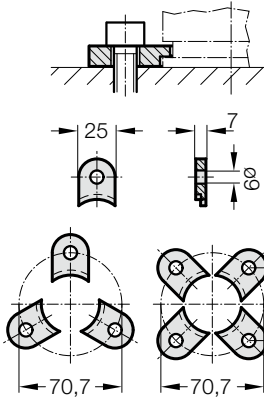
Spring force Diagram displacement versus stroke rise



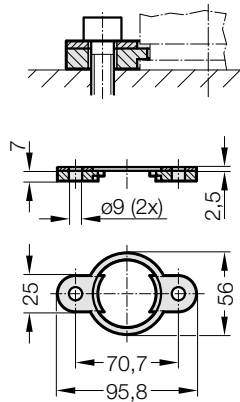
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

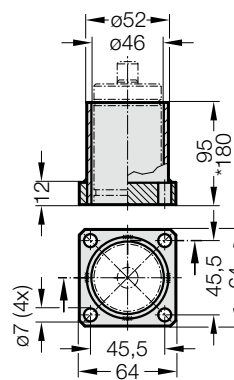
2480.007.00500



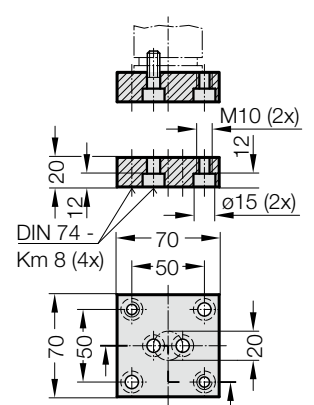
2480.008.00500 ³⁾



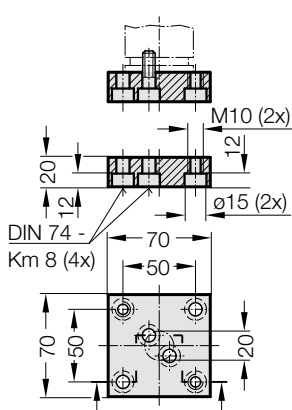
2480.010.00500.095 ³⁾
2480.010.00500.180* ³⁾



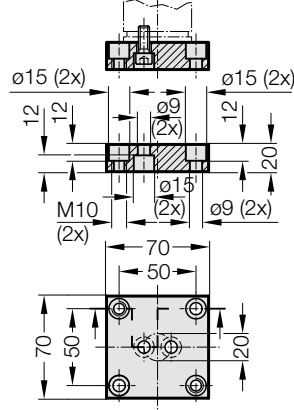
2480.011.00500



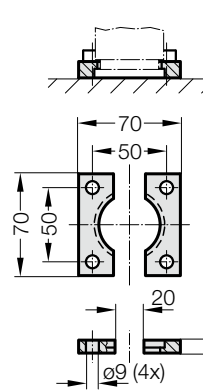
2480.011.00500.1



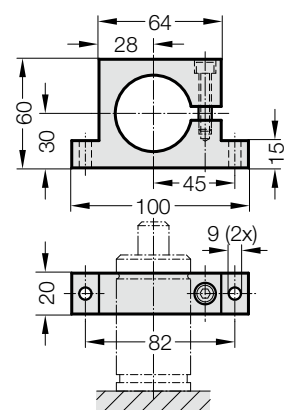
2480.011.00500.2



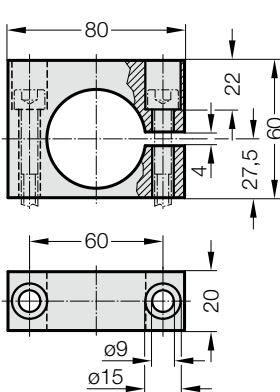
2480.022.00500



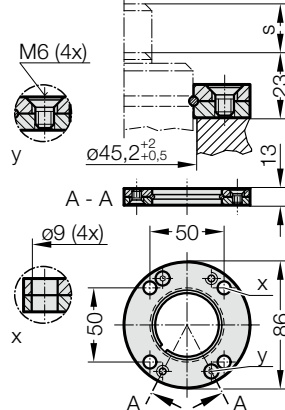
2480.044.00500 ²⁾



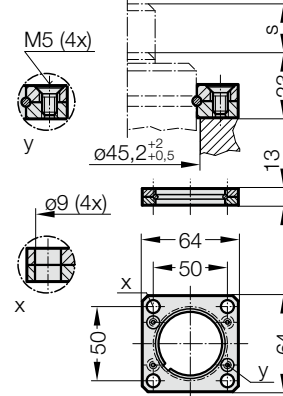
2480.044.03.00500 ²⁾



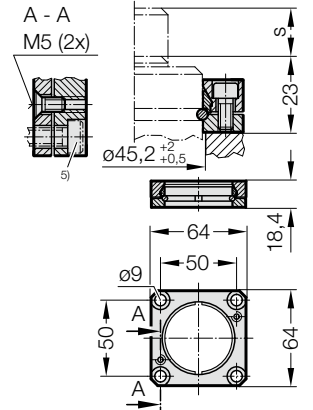
2480.055.00500



2480.057.00500



2480.064.00500 ⁴⁾



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:

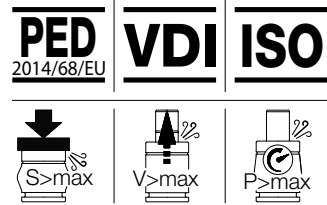
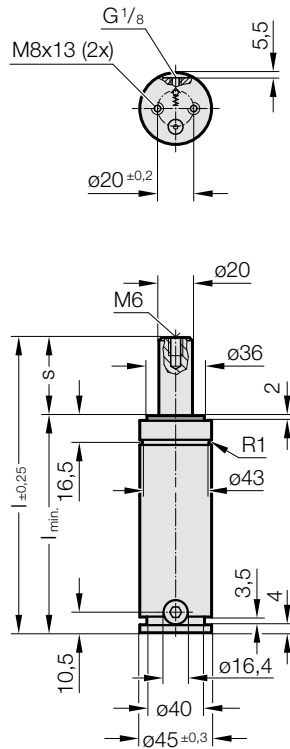
Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2480.15.00500
(Stroke length 10 and 13 not repairable)

Gas spring without valve
Order No (example): 2480.15.00500. .P

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. 40 - 80 (at 20°C)
Max. piston rod speed: 1.8 m/s

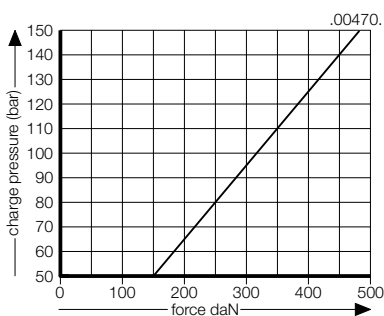
2480.15.00500.



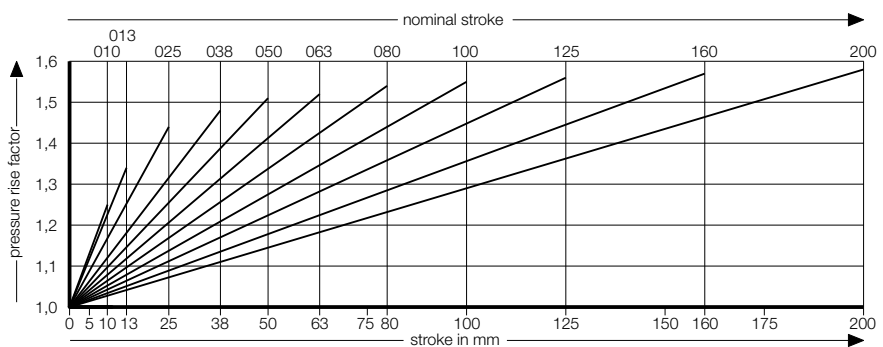
2480.15.00500. Gas spring, Standard

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2480.15.00500.010	10	95	105	0.016	0.9
2480.15.00500.013	12.7	97.7	110.4	0.018	1
2480.15.00500.025	25	110	135	0.03	1.09
2480.15.00500.038	38	123	161	0.043	1.2
2480.15.00500.050	50	135	185	0.054	1.29
2480.15.00500.063	63.5	148.5	212	0.067	1.38
2480.15.00500.080	80	165	245	0.083	1.5
2480.15.00500.100	100	185	285	0.102	1.64
2480.15.00500.125	125	210	335	0.126	1.85
2480.15.00500.160	160	245	405	0.16	2.1

Initial spring force versus charge pressure



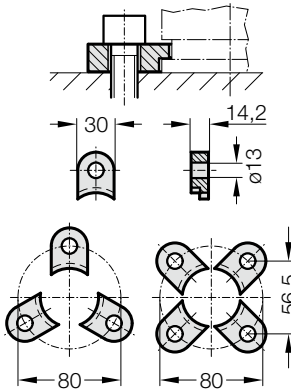
Spring force Diagram displacement versus stroke rise



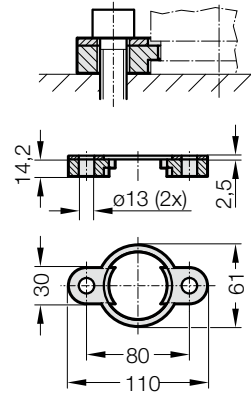
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

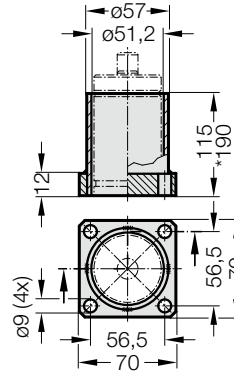
2480.007.00750



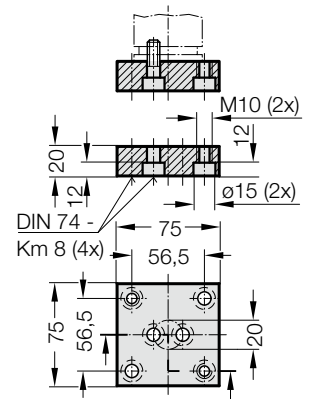
2480.008.00750 ³⁾



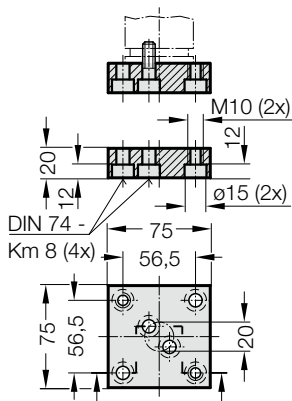
2480.010.00750.115 ³⁾
2480.010.00750.190* ³⁾



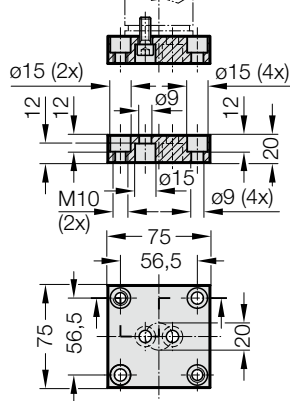
2480.011.00750



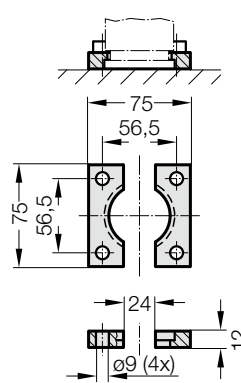
2480.011.00750.1



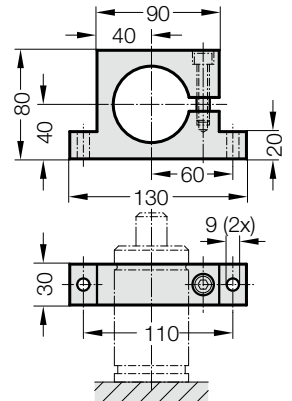
2480.011.00750.3



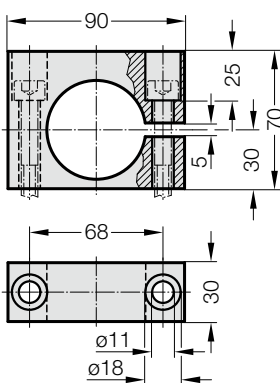
2480.022.00750



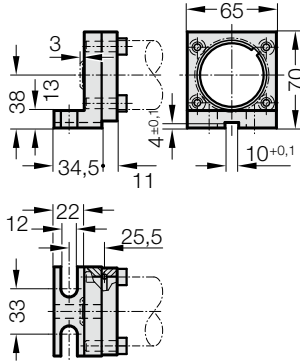
2480.044.00750 ²⁾



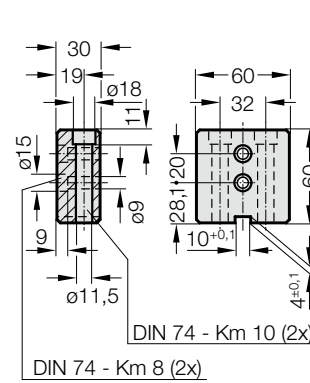
2480.044.03.00750 ²⁾



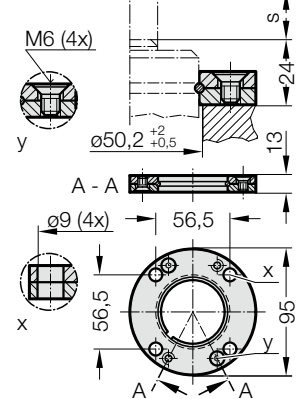
2480.045.00750 ²⁾



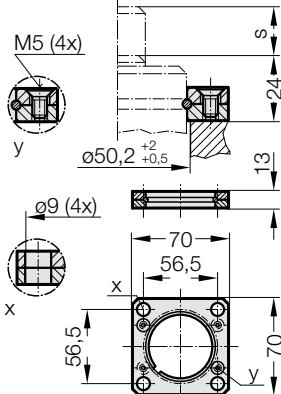
2480.047.00750 ²⁾



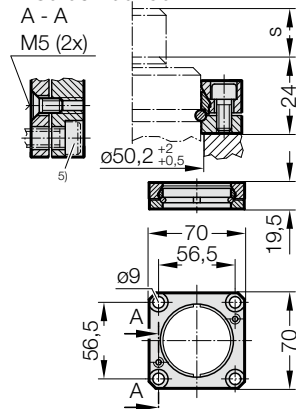
2480.055.00750



2480.057.00750



2480.064.00750 ⁴⁾



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 = 740 daN

Order No for spare parts kit: 2480.15.00750
(Stroke length 13 not repairable)

Gas spring without valve

Order No (example): 2480.15.00750. .P

1) Special stroke lengths

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

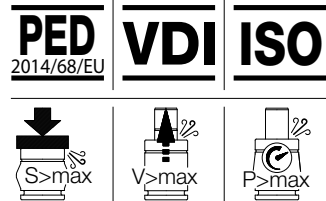
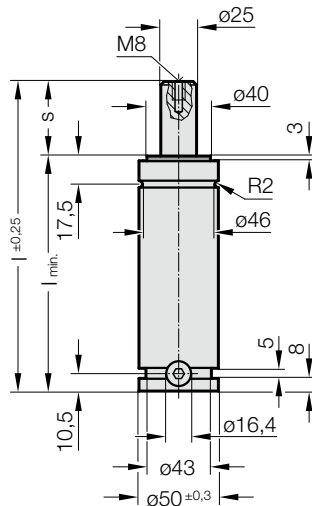
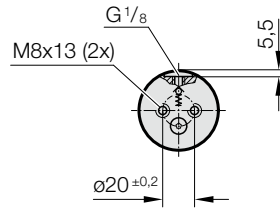
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 - 50 (at 20°C)

Max. piston rod speed: 1.8 m/s

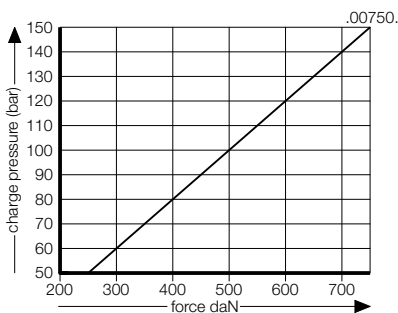
2480.15.00750.



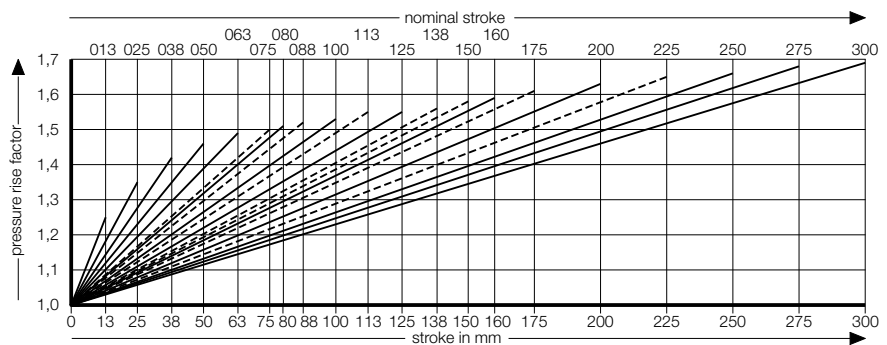
2480.15.00750. Gas spring, Standard

Order No	s (Stroke _{max})	l	l _{min.}	Gas volume [l]	Weight [kg]
2480.15.00750.013	12.7	120.4	107.7	0.036	1.24
2480.15.00750.025	25	145	120	0.054	1.34
2480.15.00750.038	38	171	133	0.073	1.45
2480.15.00750.050	50	195	145	0.09	1.54
2480.15.00750.063	63.5	222	158.5	0.109	1.65
2480.15.00750.075	75	245	170	0.126	1.75
2480.15.00750.080	80	255	175	0.133	1.79
2480.15.00750.088	87.5	270	182.5	0.144	1.85
2480.15.00750.100	100	295	195	0.161	1.96
2480.15.00750.113	112.5	320	207.5	0.179	2.06
2480.15.00750.125	125	345	220	0.197	2.016
2480.15.00750.138	137.5	370	232.5	0.214	2.227
2480.15.00750.150	150	395	245	0.229	2.39
2480.15.00750.160	160	415	255	0.241	2.49
2480.15.00750.175	175	445	270	0.259	2.64
2480.15.00750.200	200	495	295	0.289	2.89
2480.15.00750.225	225	545	320	0.32	3.13
2480.15.00750.250	250	595	345	0.35	3.32
2480.15.00750.275	275	645	370	0.38	3.63
2480.15.00750.300	300	695	395	0.41	3.88

Initial spring force versus charge pressure



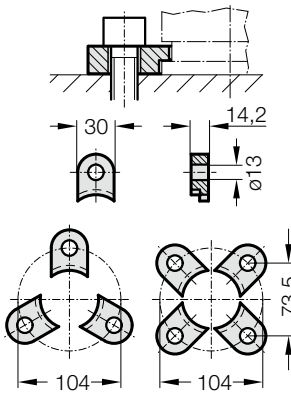
Spring force Diagram displacement versus stroke rise



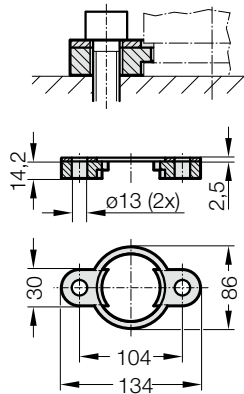
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

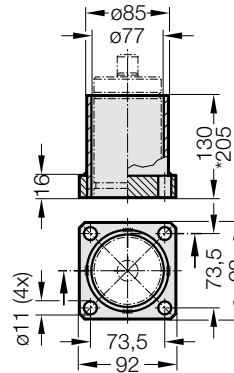
2480.007.01500



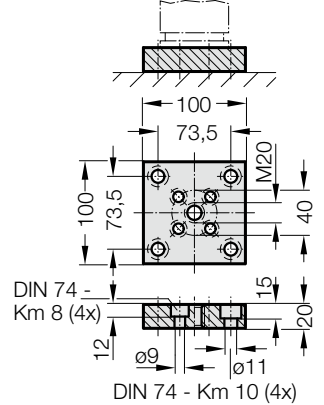
2480.008.01500³⁾



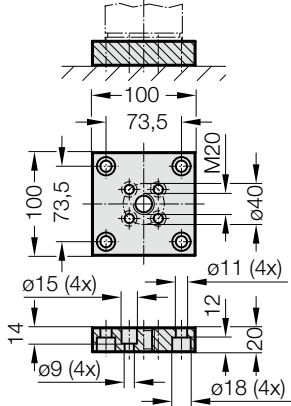
2480.010.01500.130³⁾
2480.010.01500.205³⁾



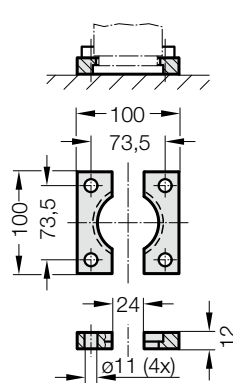
2480.011.01500



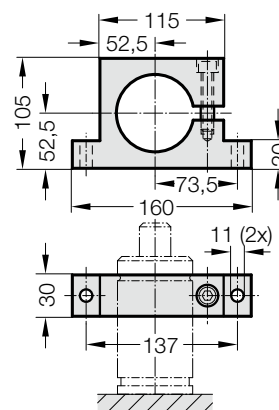
2480.011.01500.2



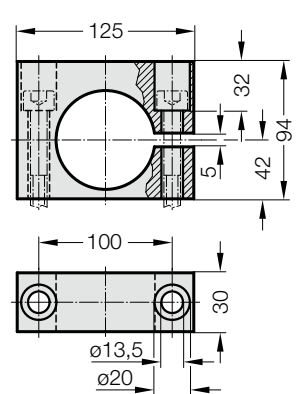
2480.022.01500



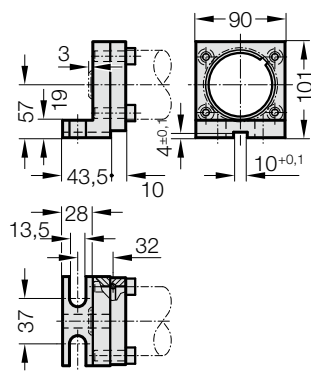
2480.044.01500²⁾



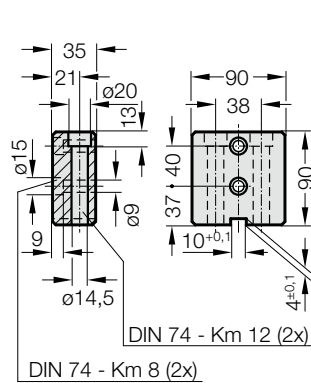
2480.044.03.01500²⁾



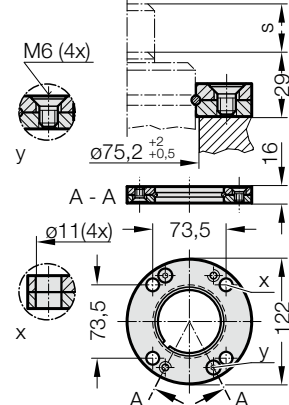
2480.045.01500²⁾



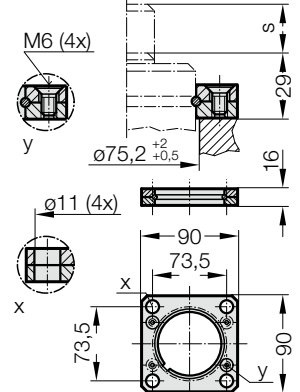
2480.047.01500²⁾



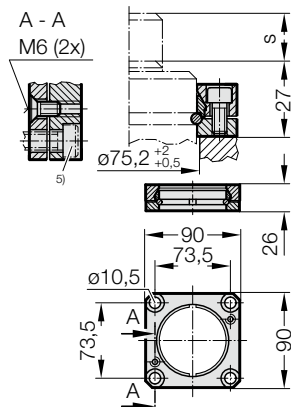
2480.055.01500



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 = 1530 daN

Order No for spare parts kit: 2480.15.01500
(Stroke length 13 not repairable)

Gas spring without valve

Order No (example): 2480.15.01500. .P

1) Special stroke lengths

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

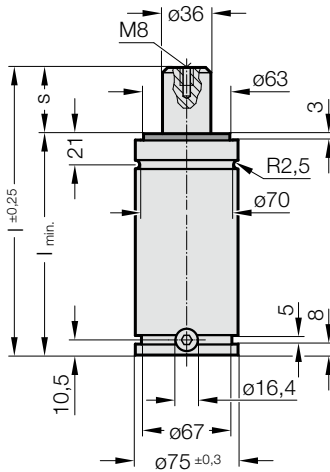
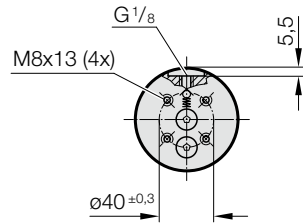
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 to 50 (at 20°C)

Max. piston rod speed: 1.8 m/s

2480.15.01500.



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VDI

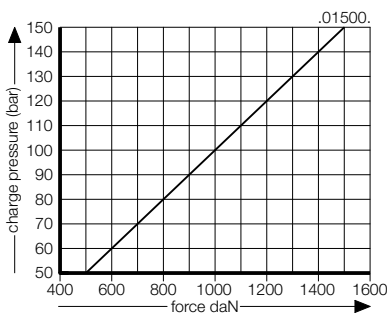
ISO



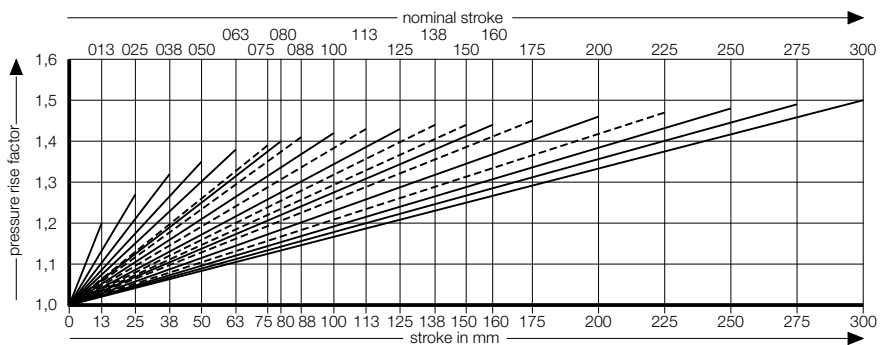
2480.15.01500. Gas spring, Standard

Order No	s (Stroke max.)	l	l _{min.}	Gas volume [l]	Weight [kg]
2480.15.01500.013	13	135	122	0.093	3.26
2480.15.01500.025	25	160	135	0.137	3.47
2480.15.01500.038	38	186	148	0.183	3.67
2480.15.01500.050	50	210	160	0.225	3.85
2480.15.01500.063	63.5	237	173.5	0.272	4.05
2480.15.01500.075	75	260	185	0.313	4.23
2480.15.01500.080	80	270	190	0.33	4.3
2480.15.01500.088	87.5	285	197.5	0.356	4.42
2480.15.01500.100	100	310	210	0.4	4.6
2480.15.01500.113	112.5	335	222.5	0.444	4.78
2480.15.01500.125	125	360	235	0.488	4.97
2480.15.01500.138	137.5	385	247.5	0.532	5.16
2480.15.01500.150	150	410	260	0.576	5.35
2480.15.01500.160	160	430	270	0.611	5.5
2480.15.01500.175	175	460	285	0.664	5.73
2480.15.01500.200	200	510	310	0.748	6.13
2480.15.01500.225	225	560	335	0.824	6.6
2480.15.01500.250	250	610	360	0.899	7.08
2480.15.01500.275	275	660	385	0.975	7.55
2480.15.01500.300	300	710	410	1.05	8.02

Initial spring force versus charge pressure



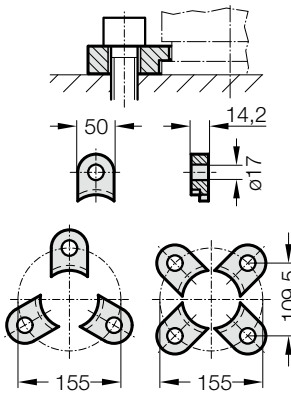
Spring force Diagram displacement versus stroke rise



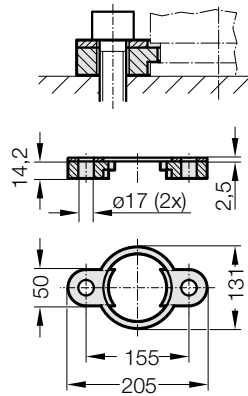
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

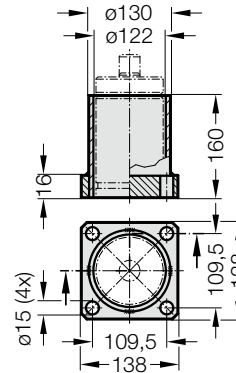
2480.007.05000



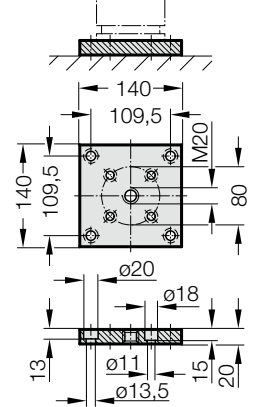
2480.008.05000³⁾



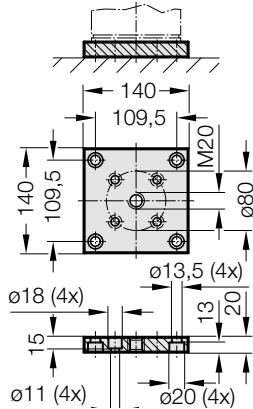
2480.010.05000.160³⁾



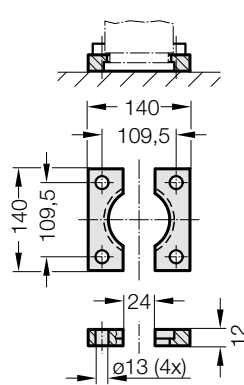
2480.011.05000



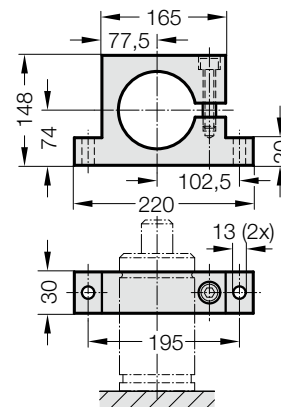
2480.011.05000.2



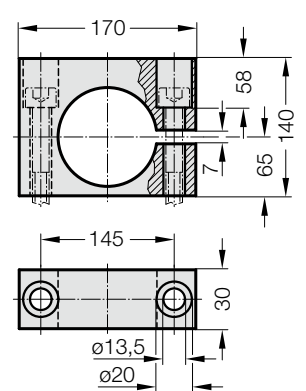
2480.022.05000



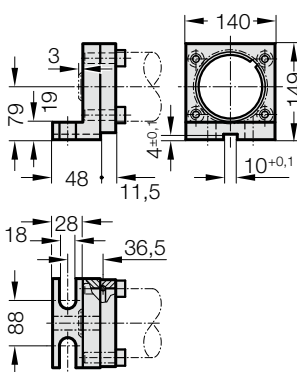
2480.044.05000²⁾



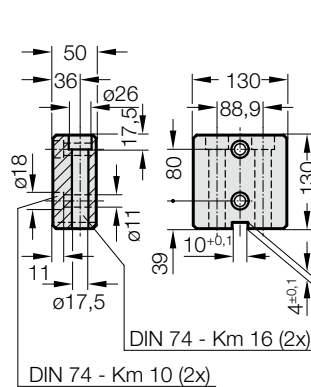
2480.044.03.05000²⁾



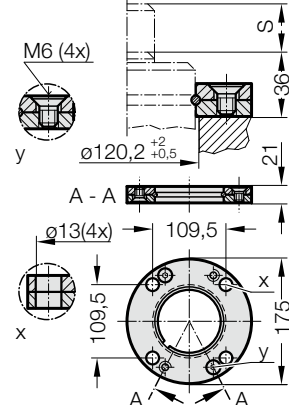
2480.045.05000²⁾



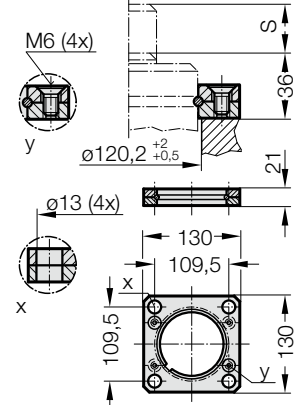
2480.047.05000²⁾



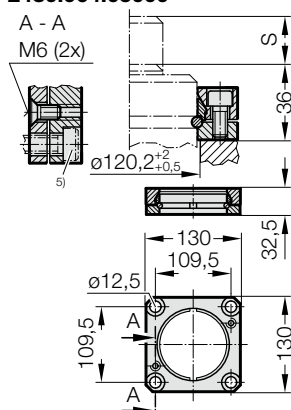
2480.055.05000



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, STANDARD

Note:

Initial spring force at 150 bar = 4980 daN

Order No for spare parts kit: 2480.15.05000

Gas spring without valve

Order No (example): 2480.15.05000..P

1) Special stroke lengths

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

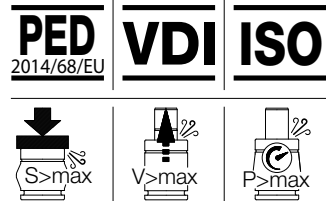
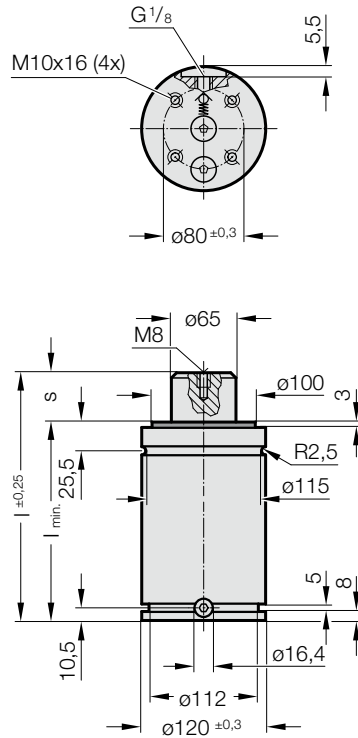
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 to 50 (at 20°C)

Max. piston rod speed: 1.8 m/s

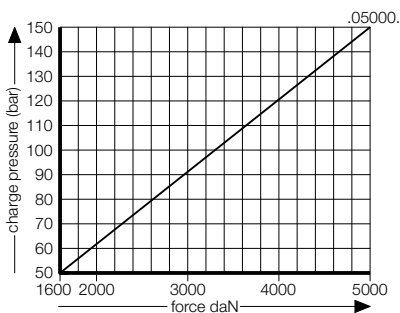
2480.15.05000.



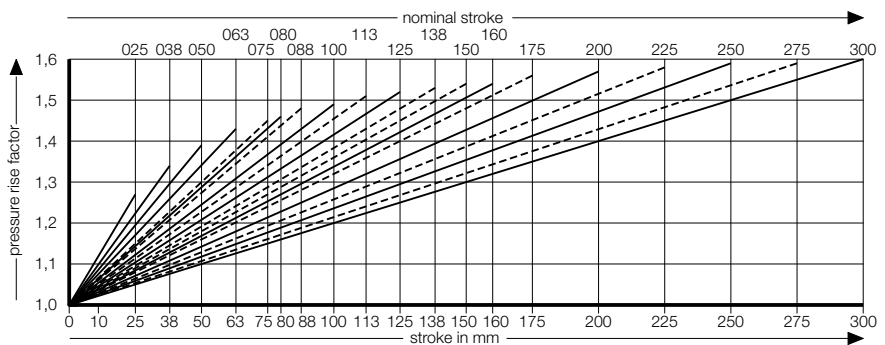
2480.15.05000. Gas spring, Standard

Order No	s (Stroke _{max})	l	l _{min}	Gas volume [l]	Weight [kg]
2480.15.05000.025	25	190	165	0.45	10.94
2480.15.05000.038	38	216	178	0.57	11.46
2480.15.05000.050	50	240	190	0.688	11.94
2480.15.05000.063	63.5	267	203.5	0.816	12.56
2480.15.05000.075	75	290	215	0.925	12.94
2480.15.05000.080	80	300	220	0.973	13.15
2480.15.05000.088	87.5	315	227.5	1.044	13.39
2480.15.05000.100	100	340	240	1.163	13.89
2480.15.05000.113	113	365	252	1.282	14.4
2480.15.05000.125	125	390	265	1.401	14.9
2480.15.05000.138	138	415	277	1.52	15.4
2480.15.05000.150	150	440	290	1.638	15.9
2480.15.05000.160	160	460	300	1.733	16.3
2480.15.05000.175	175	490	315	1.869	16.9
2480.15.05000.200	200	540	340	2.107	17.91
2480.15.05000.225	225	590	365	2.344	18.91
2480.15.05000.250	250	640	390	2.582	19.91
2480.15.05000.275	275	690	415	2.82	20.92
2480.15.05000.300	300	740	440	3.057	21.92

Initial spring force versus charge pressure



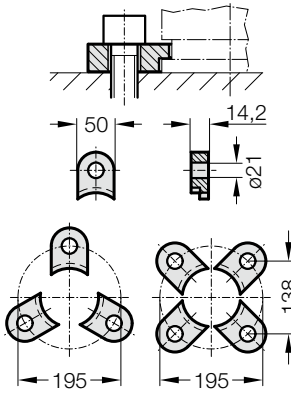
Spring force Diagram displacement versus stroke rise



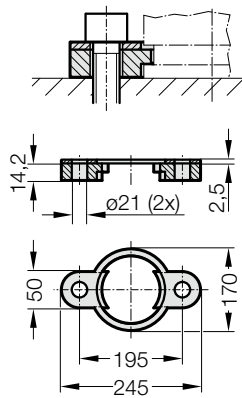
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

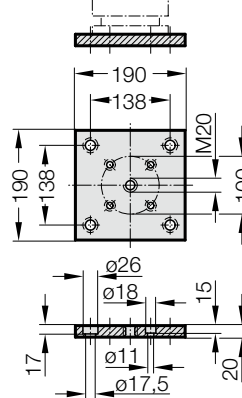
2480.007.07500



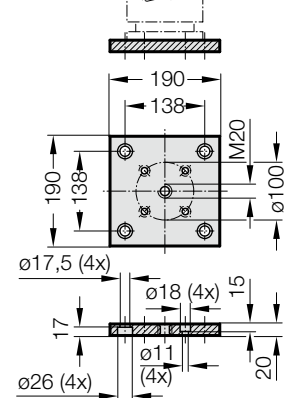
2480.008.07500³⁾



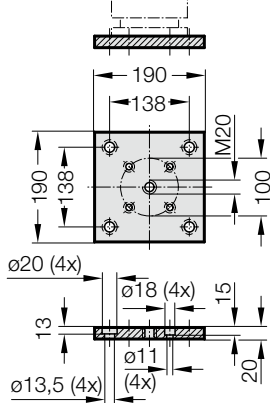
2480.011.07500



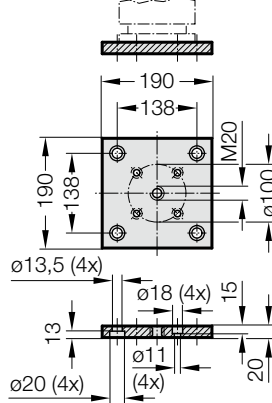
2480.011.07500.2



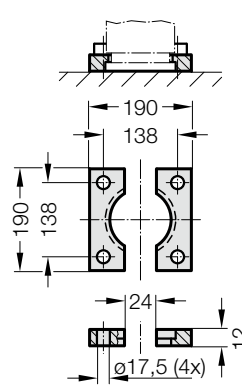
2480.011.03.07500



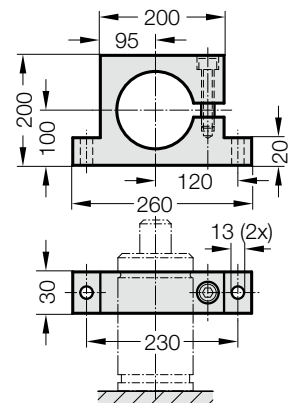
2480.011.03.07500.2



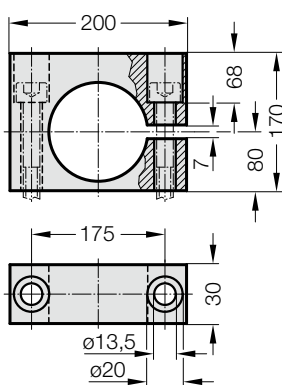
2480.022.07500



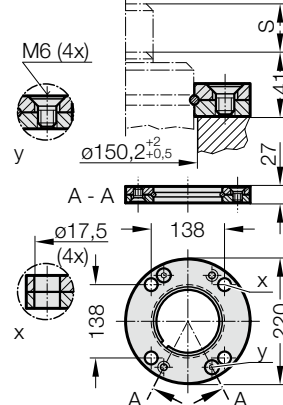
2480.044.07500²⁾



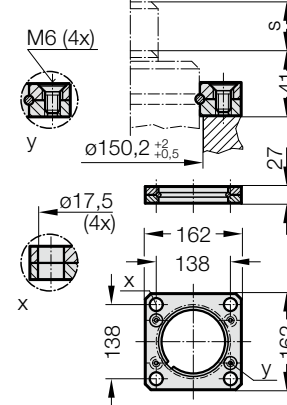
2480.044.03.07500²⁾



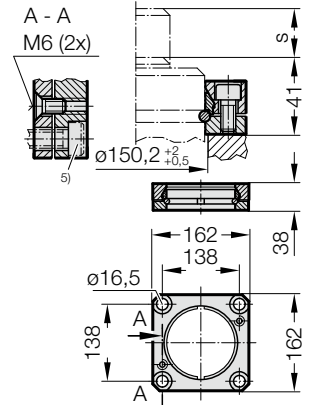
2480.055.07500



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, STANDARD

Note:

Initial spring force at 150 bar = 7540 daN

Order No for spare parts kit: 2480.15.07500

Gas spring without valve

Order No (example): 2480.15.07500 . P

1) Special stroke lengths

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

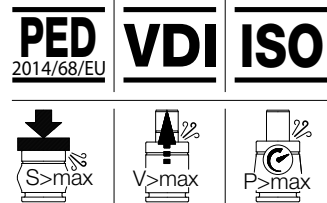
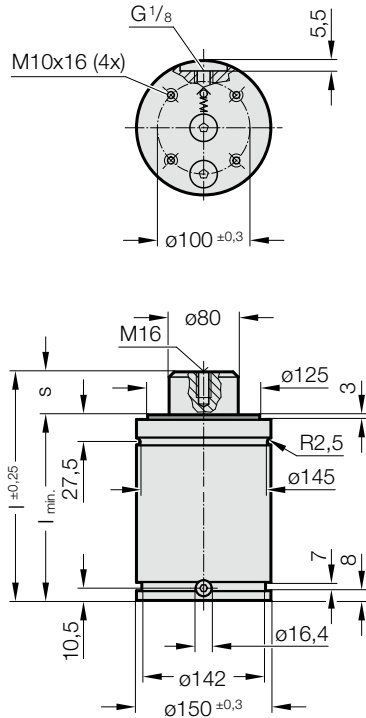
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 - 50 (at 20°C)

Max. piston rod speed: 1.8 m/s

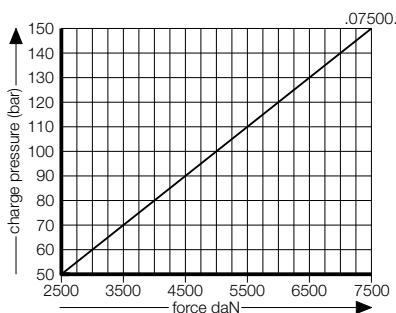
2480.15.07500.



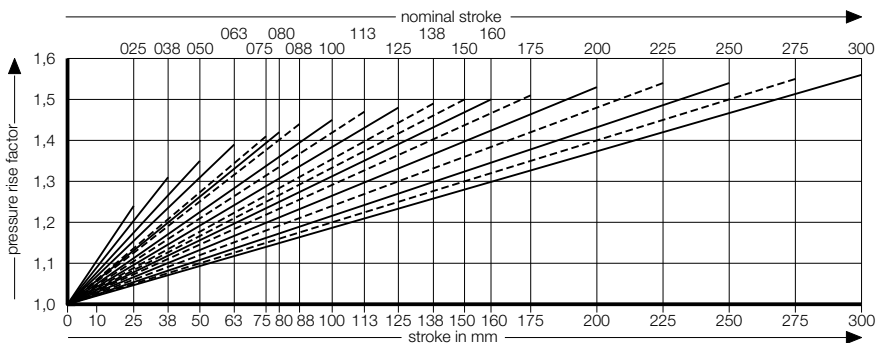
2480.15.07500. Gas spring, Standard

Order No	s (Stroke _{max})	l	l _{min.}	Gas volume [l]	Weight [kg]
2480.15.07500.025	25	205	180	0.757	18.71
2480.15.07500.038	38	231	193	0.951	19.5
2480.15.07500.050	50	255	205	1.13	20.24
2480.15.07500.063	63.5	282	218.5	1.331	21.06
2480.15.07500.075	75	305	230	1.503	21.76
2480.15.07500.080	80	315	235	1.577	22.07
2480.15.07500.088	87.5	330	242.5	1.689	22.45
2480.15.07500.100	100	355	255	1.875	23.23
2480.15.07500.113	113	380	267	2.057	23.98
2480.15.07500.125	125	405	280	2.248	24.76
2480.15.07500.138	138	430	292	2.43	25.51
2480.15.07500.150	150	455	305	2.62	26.28
2480.15.07500.160	160	475	315	2.769	26.9
2480.15.07500.175	175	505	330	2.993	27.81
2480.15.07500.200	200	555	355	3.366	29.34
2480.15.07500.225	225	605	380	3.738	30.87
2480.15.07500.250	250	655	405	4.711	32.39
2480.15.07500.275	275	705	430	4.483	33.92
2480.15.07500.300	300	755	455	4.856	35.45

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 = 10600 daN

Order No for spare parts kit: 2480.15.10000
(Stroke length 25 not repairable)

Gas spring without valve

Order No (example): 2480.15.10000. .P

1) Special stroke lengths

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

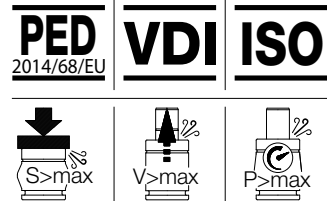
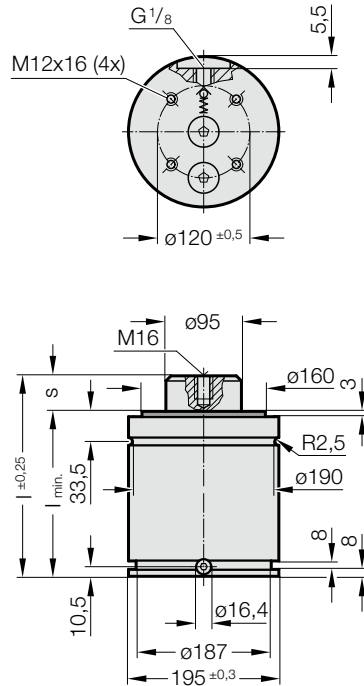
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 - 50 (at 20°C)

Max. piston rod speed: 1.8 m/s

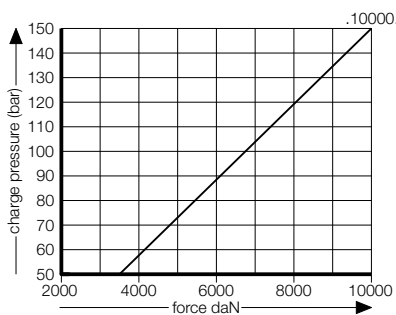
2480.15.10000.



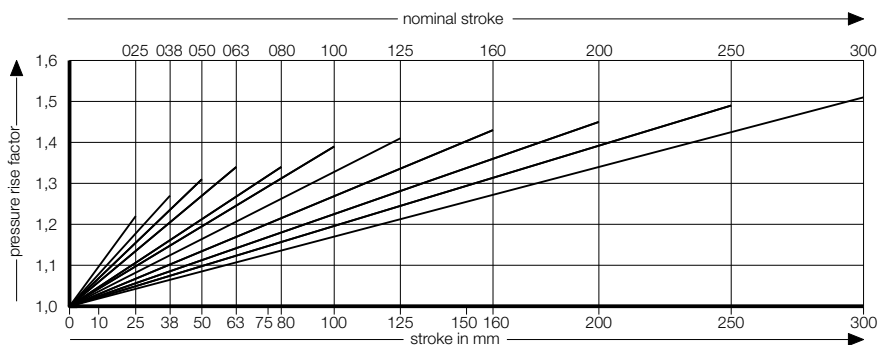
2480.15.10000. Gas spring, Standard

Order No	s (Stroke _{max})	l	l _{min}	Gas volume [l]	Weight [kg]
2480.15.10000.025	25	210	185	1.174	33.73
2480.15.10000.038	38	236	198	1.482	35.08
2480.15.10000.050	50	260	210	1.767	36.32
2480.15.10000.063	63.5	287	223.5	2.087	37.72
2480.15.10000.080	80	320	240	2.478	39.44
2480.15.10000.100	100	360	260	2.952	41.51
2480.15.10000.125	125	410	285	3.545	44.11
2480.15.10000.160	160	480	320	4.374	47.74
2480.15.10000.200	200	560	360	5.288	52.17
2480.15.10000.250	250	660	410	6.281	58.87
2480.15.10000.300	300	760	460	7.273	65.57

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



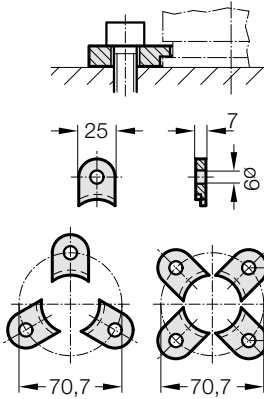
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS NEW GENERATION HEAVY DUTY

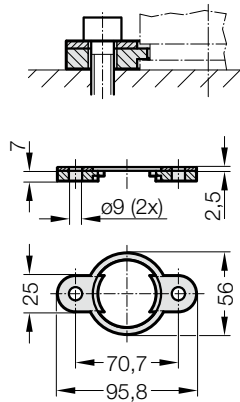


GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

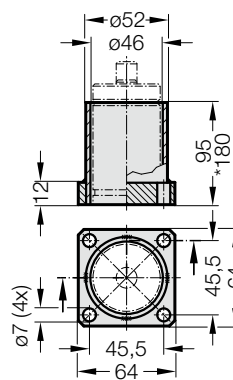
2480.007.00500



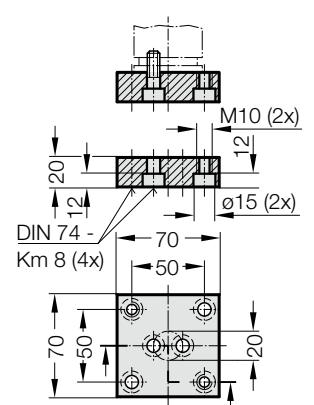
2480.008.00500 ³⁾



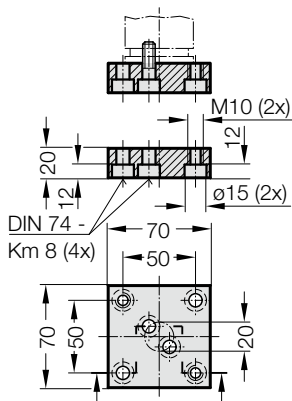
2480.010.00500.095 ³⁾
2480.010.00500.180* ³⁾



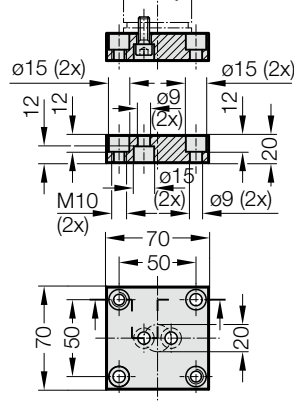
2480.011.00500



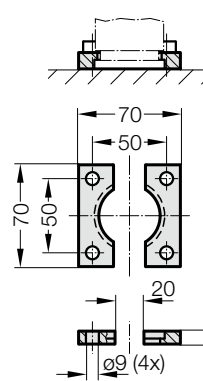
2480.011.00500.1



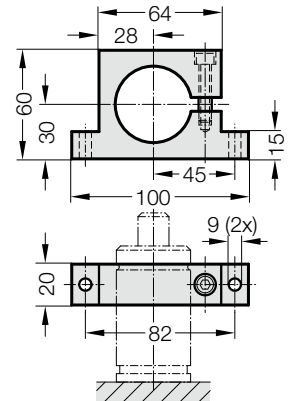
2480.011.00500.2



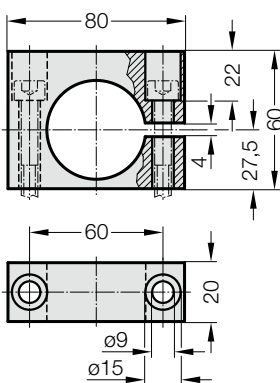
2480.022.00500



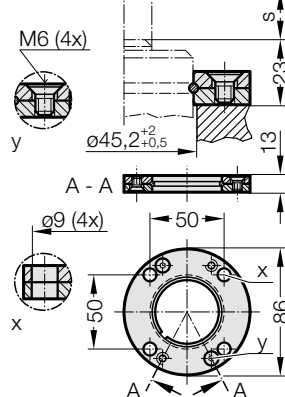
2480.044.00500 ²⁾



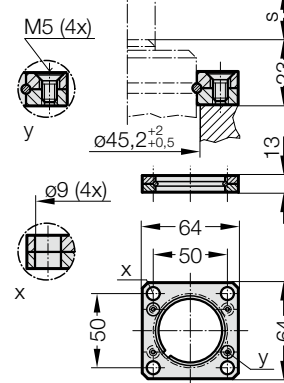
2480.044.03.00500 ²⁾



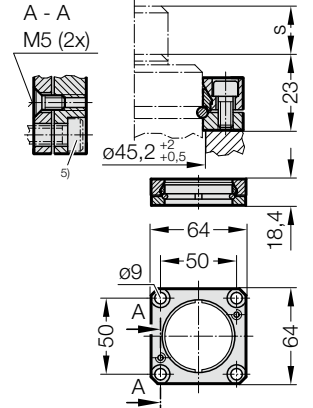
2480.055.00500



2480.057.00500



2480.064.00500 ⁴⁾



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: 2488.15.00750

Gas spring without valve

Order No (example): 2488.15.00750. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

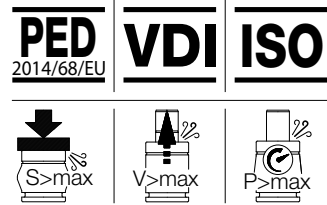
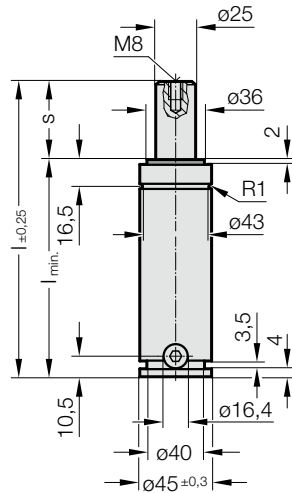
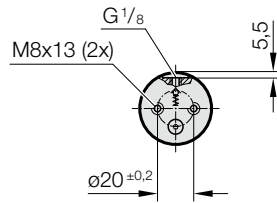
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 20 - 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

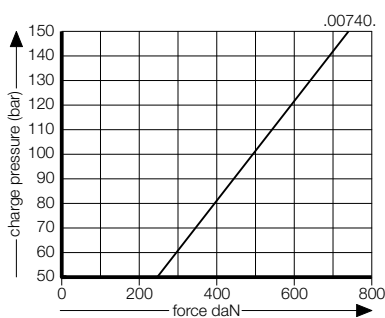
2488.15.00750.



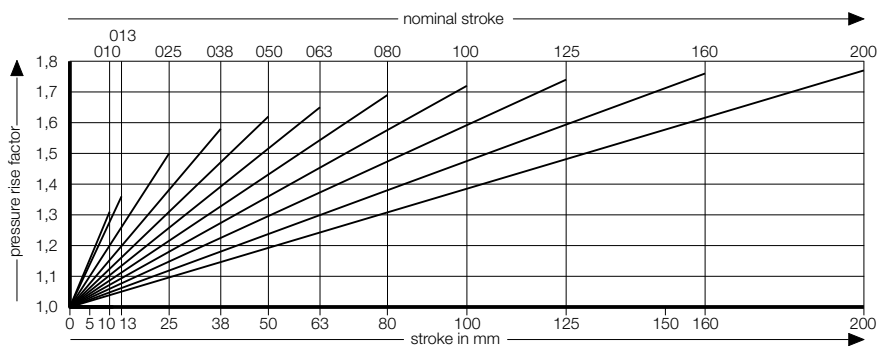
2488.15.00750. Gas spring HEAVY DUTY

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2488.15.00750.013	13	97.7	110.7	0.027	0.9
2488.15.00750.025	25	110	135	0.042	0.91
2488.15.00750.038	38	123	161	0.058	1
2488.15.00750.050	50	135	185	0.073	1.09
2488.15.00750.063	63	148.5	211.5	0.089	1.17
2488.15.00750.080	80	165	245	0.109	1.37
2488.15.00750.100	100	185	285	0.134	1.51
2488.15.00750.125	125	210	335	0.164	1.67
2488.15.00750.160	160	245	405	0.206	1.91
2488.15.00750.200	200	285	485	0.255	2.2

Initial spring force versus charge pressure



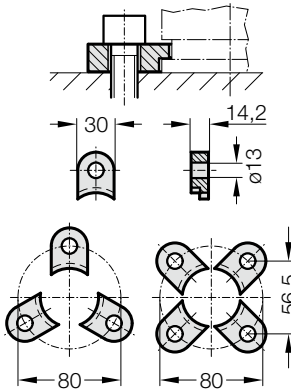
Spring force Diagram displacement versus stroke rise



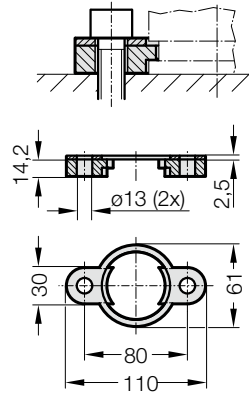
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

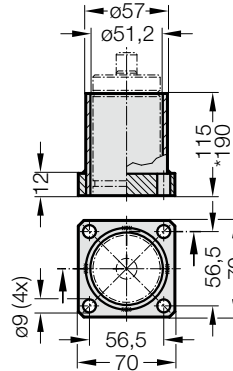
2480.007.00750



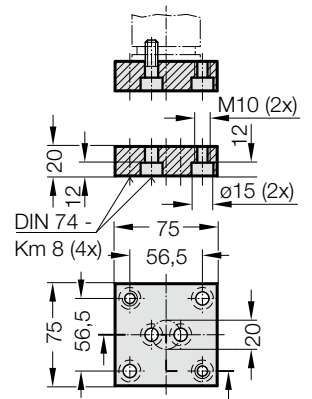
2480.008.00750 ³⁾



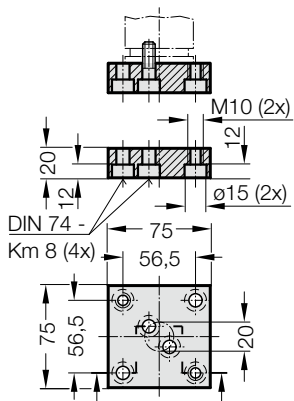
2480.010.00750.115 ³⁾
2480.010.00750.190* ³⁾



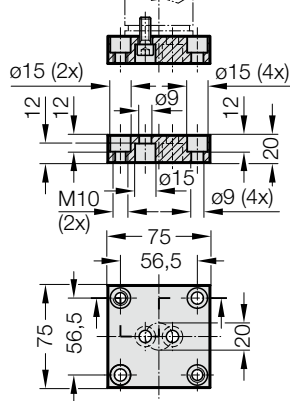
2480.011.00750



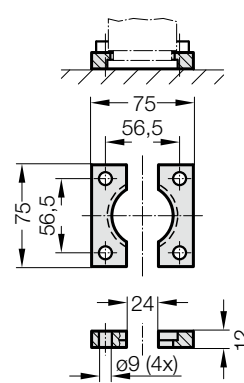
2480.011.00750.1



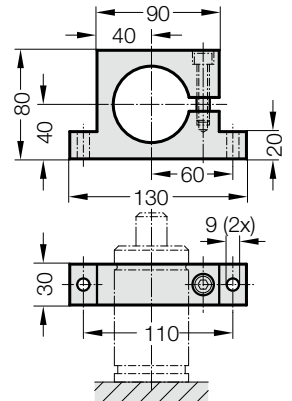
2480.011.00750.3



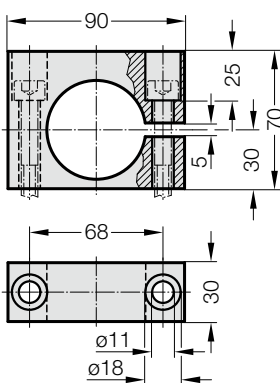
2480.022.00750



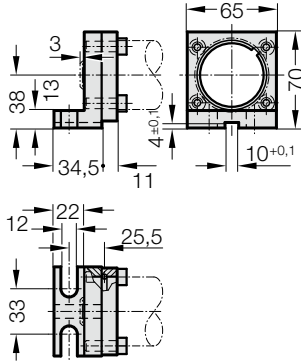
2480.044.00750 ²⁾



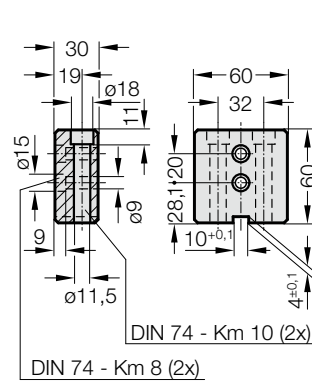
2480.044.03.00750 ²⁾



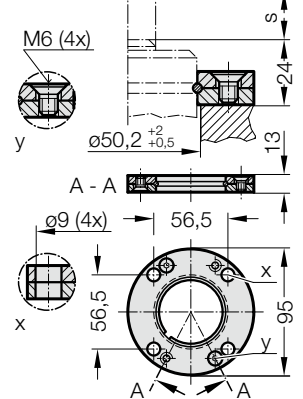
2480.045.00750 ²⁾



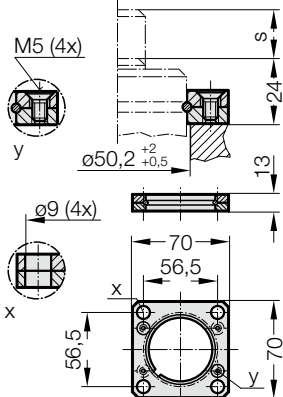
2480.047.00750 ²⁾



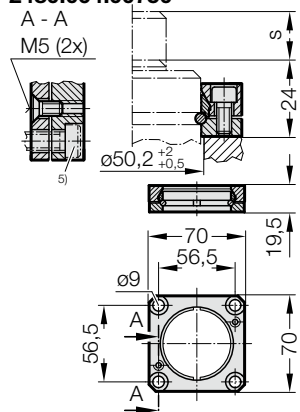
2480.055.00750



2480.057.00750



2480.064.00750 ⁴⁾



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: 2488.15.01000
(Stroke length 13 not repairable)

Gas spring without valve

Order No (example): 2488.15.01000. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

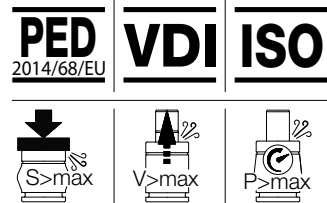
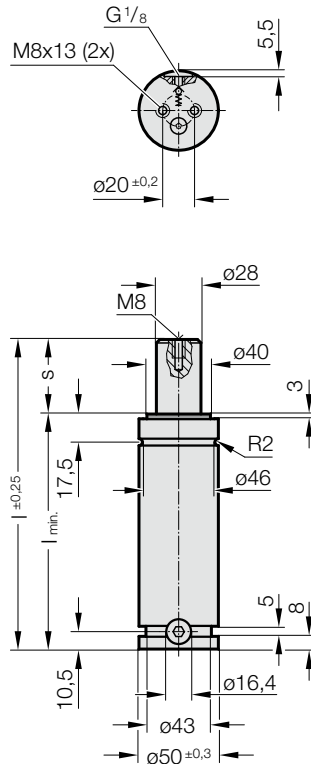
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

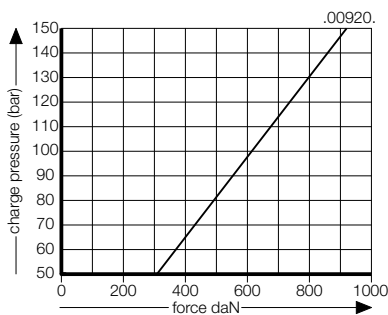
2488.15.01000.



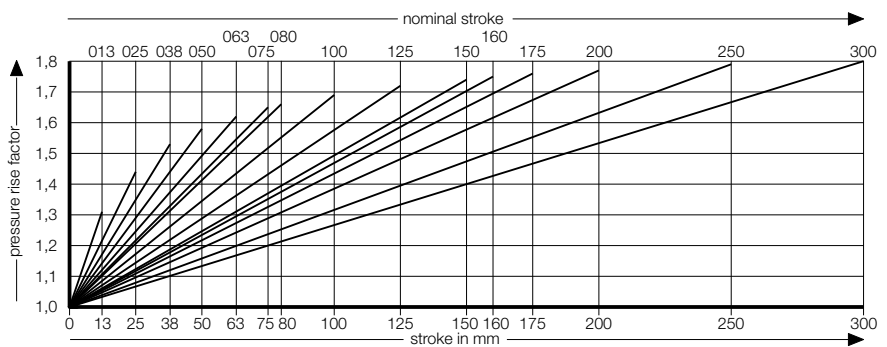
2488.15.01000. Gas spring HEAVY DUTY

Order No	s (Stroke _{max})	l	l _{min.}	Gas volume [l]	Weight [kg]
2488.15.01000.013	13	120.7	107.7	0.04	1.21
2488.15.01000.025	25	145	120	0.059	1.32
2488.15.01000.038	38	171	133	0.079	1.43
2488.15.01000.050	50	195	145	0.097	1.53
2488.15.01000.063	63	221	158	0.117	1.64
2488.15.01000.075	75	245	170	0.135	1.74
2488.15.01000.080	80	255	175	0.143	1.78
2488.15.01000.100	100	295	195	0.173	1.96
2488.15.01000.125	125	345	220	0.211	2.17
2488.15.01000.150	150	395	245	0.249	2.38
2488.15.01000.160	160	415	255	0.264	2.46
2488.15.01000.175	175	445	270	0.287	2.59
2488.15.01000.200	200	495	295	0.325	2.79
2488.15.01000.250	250	595	345	0.401	3.21
2488.15.01000.300	300	695	395	0.477	3.63

Initial spring force versus charge pressure



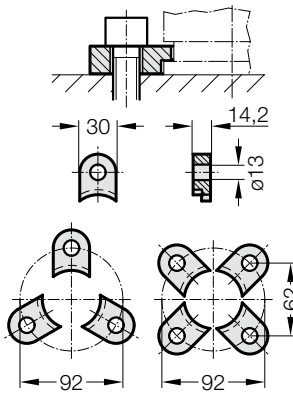
Spring force Diagram displacement versus stroke rise



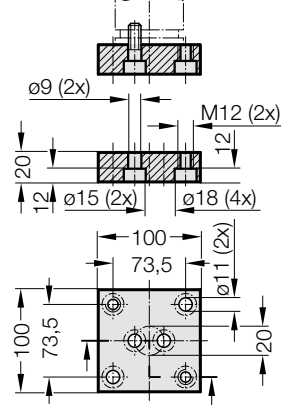
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

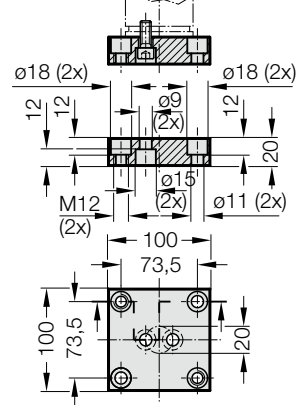
2480.007.01000



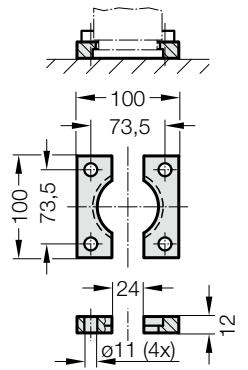
2480.011.01000



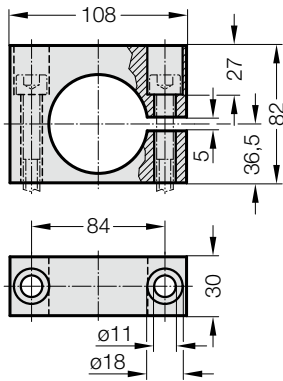
2480.011.01000.2



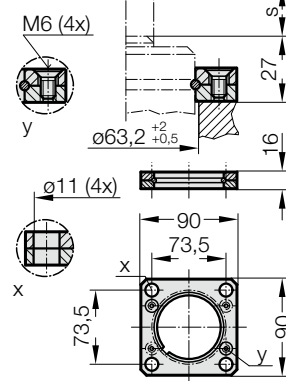
2480.022.01000



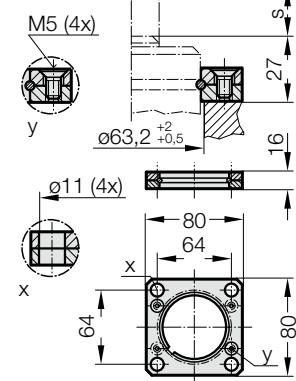
2480.044.03.01000²⁾



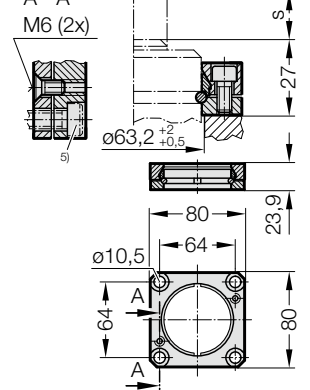
2480.057.01000



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 HEAVY DUTY

Note:

Initial spring force at 150 bar = 15300 daN

Order No for spare parts kit: 2488.15.01500
(Stroke length 13 not repairable)

Gas spring without valve

Order No (example): 2488.15.01500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

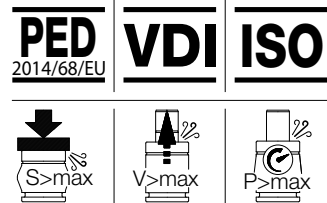
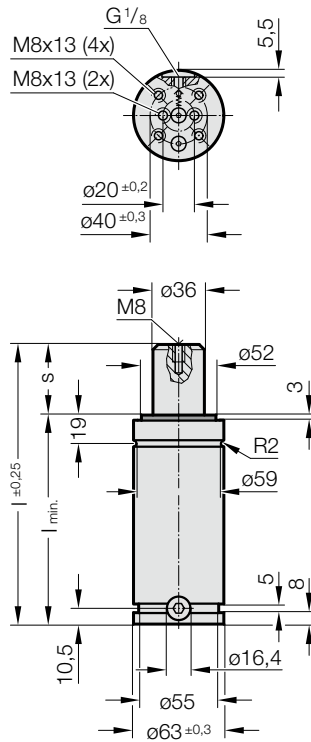
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:
approx. 15 - 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

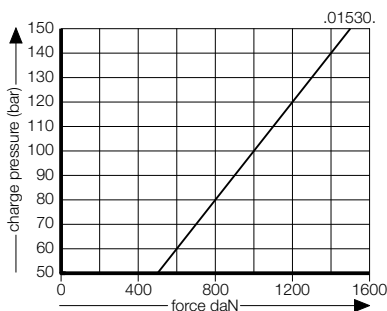
2488.15.01500.



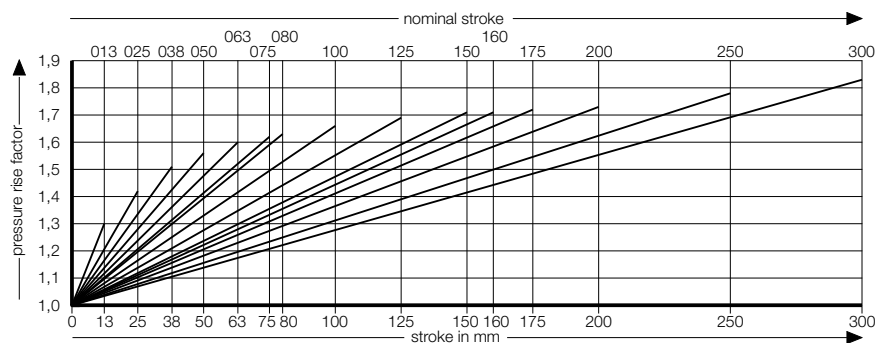
2488.15.01500. Gas spring HEAVY DUTY

Order No	s (Stroke max.)	l _{min.}	l	Gas volume [l]	Weight [kg]
2488.15.01500.013	13	107.7	120.7	0.067	1.98
2488.15.01500.025	25	120	145	0.099	2.13
2488.15.01500.038	38	133	171	0.132	2.29
2488.15.01500.050	50	145	195	0.163	2.44
2488.15.01500.063	63	158	221	0.197	2.6
2488.15.01500.075	75	170	245	0.227	2.75
2488.15.01500.080	80	175	255	0.24	2.81
2488.15.01500.100	100	195	295	0.292	3.03
2488.15.01500.125	125	220	345	0.356	3.34
2488.15.01500.150	150	245	395	0.42	3.64
2488.15.01500.160	160	255	415	0.446	3.77
2488.15.01500.175	175	270	445	0.485	3.95
2488.15.01500.200	200	295	495	0.549	4.26
2488.15.01500.250	250	345	595	0.661	4.99
2488.15.01500.300	300	395	695	0.764	5.61

Initial spring force versus charge pressure



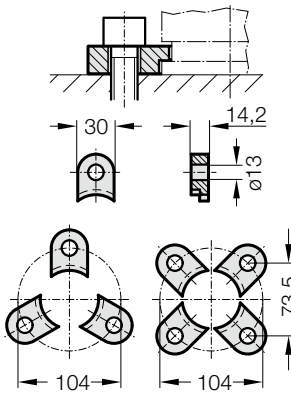
Spring force Diagram displacement versus stroke rise



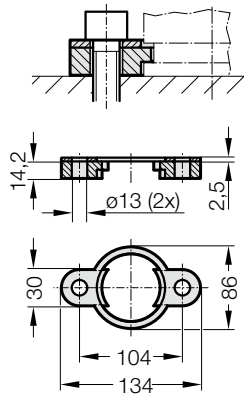
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

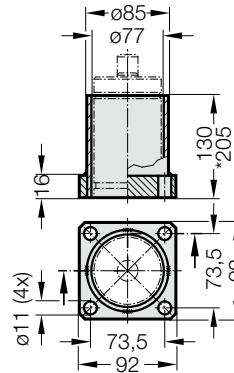
2480.007.01500



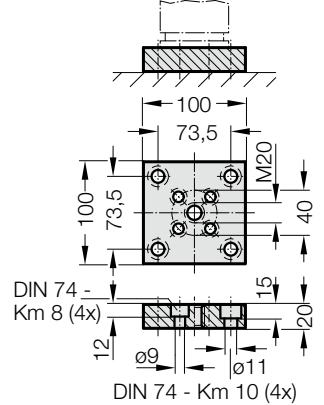
2480.008.01500³⁾



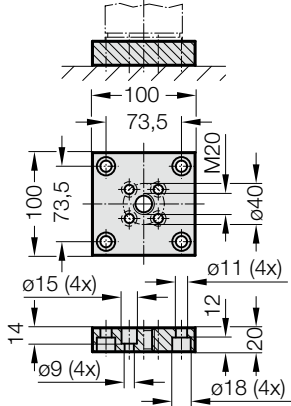
2480.010.01500.130³⁾
2480.010.01500.205³⁾



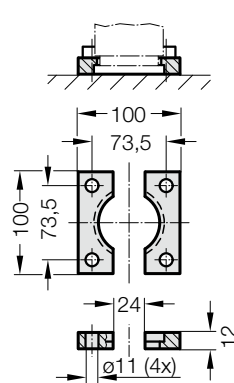
2480.011.01500



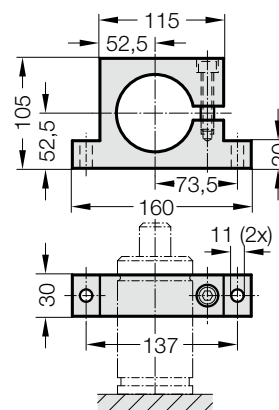
2480.011.01500.2



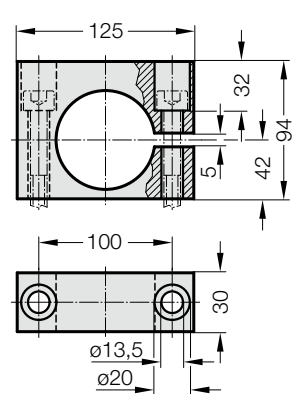
2480.022.01500



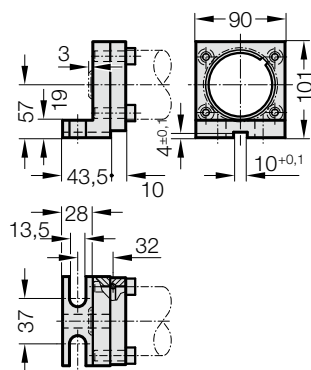
2480.044.01500²⁾



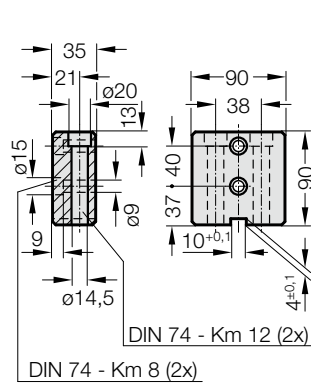
2480.044.03.01500²⁾



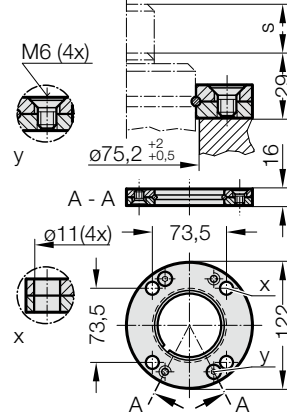
2480.045.01500²⁾



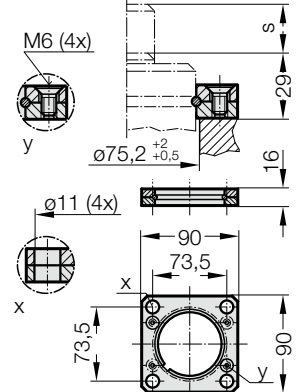
2480.047.01500²⁾



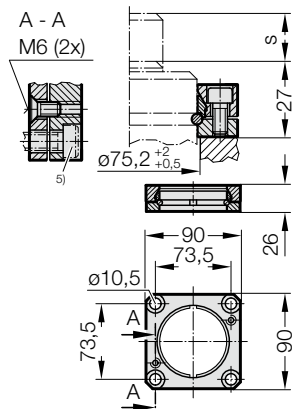
2480.055.01500



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 HEAVY DUTY

Note:

Initial spring force at 150 bar = 2385 daN

Order No for spare parts kit: 2488.15.02400

Gas spring without valve

Order No (example): 2488.15.02400..P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

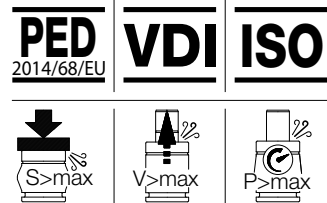
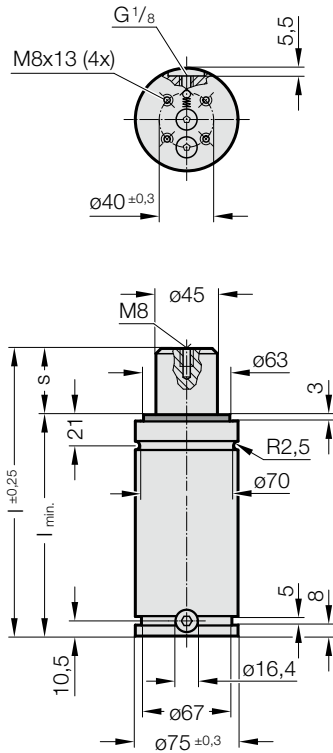
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

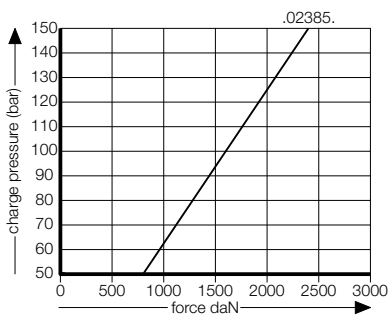
2488.15.02400.



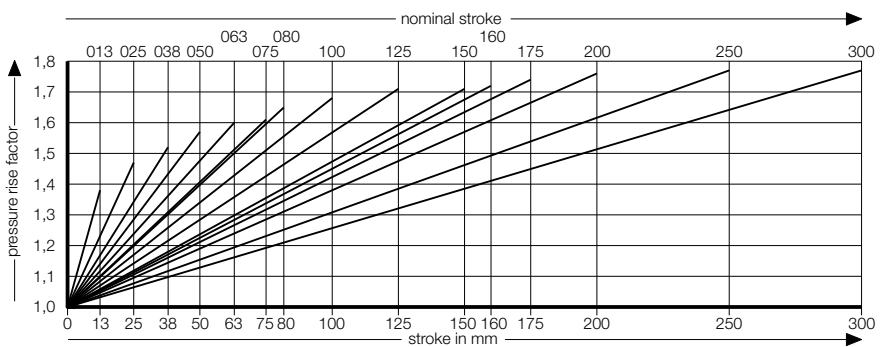
2488.15.02400. Gas spring HEAVY DUTY

Order No	s (Stroke _{max.})	l	l _{min.}	Gas volume [l]	Weight [kg]
2488.15.02400.025	25	160	135	0.169	3.34
2488.15.02400.038	38	186	148	0.22	3.55
2488.15.02400.050	50	210	160	0.267	3.75
2488.15.02400.063	63	236	173	0.318	3.96
2488.15.02400.075	75	260	185	0.366	4.15
2488.15.02400.080	80	270	190	0.385	4.23
2488.15.02400.100	100	310	210	0.464	4.51
2488.15.02400.125	125	360	235	0.562	4.91
2488.15.02400.150	150	410	260	0.66	5.32
2488.15.02400.160	160	430	270	0.699	5.49
2488.15.02400.175	175	460	285	0.758	5.73
2488.15.02400.200	200	510	310	0.856	6.14
2488.15.02400.250	250	610	360	1.053	6.85
2488.15.02400.300	300	710	410	1.249	7.77

Initial spring force versus charge pressure



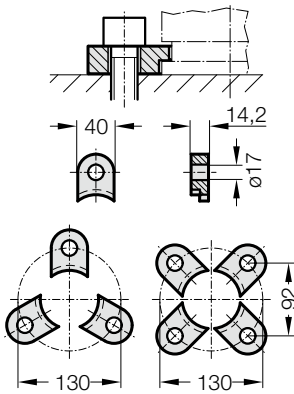
Spring force Diagram displacement versus stroke rise



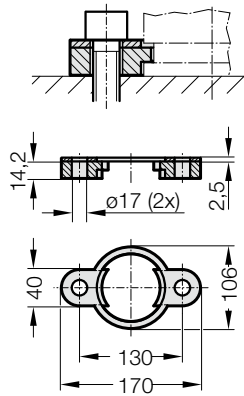
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

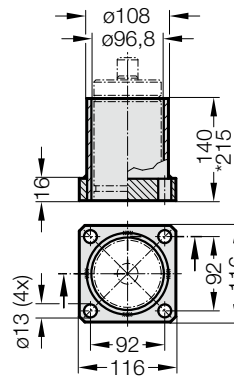
2480.007.03000



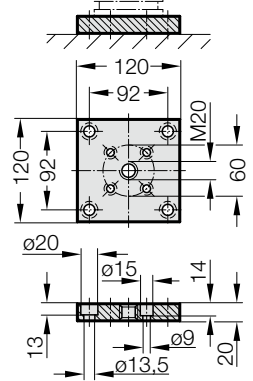
2480.008.03000³⁾



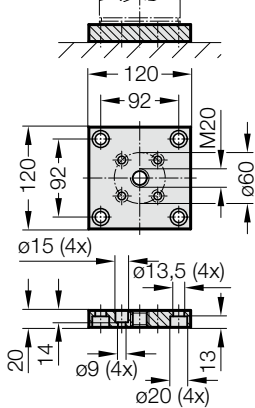
2480.010.03000.140³⁾
2480.010.03000.215*³⁾



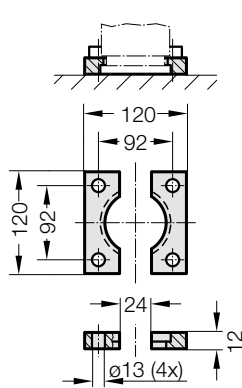
2480.011.03000



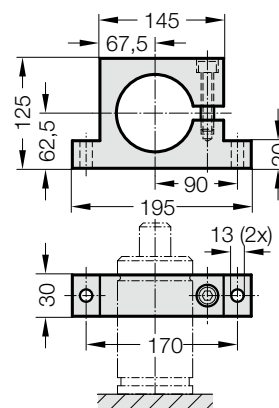
2480.011.03000.2



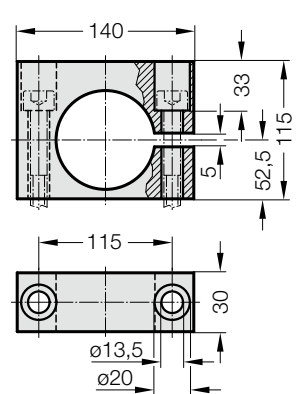
2480.022.03000



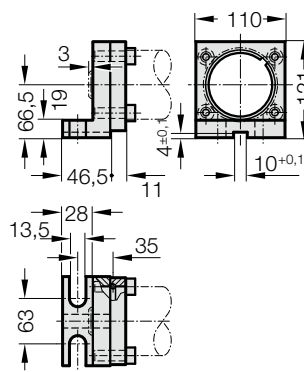
2480.044.03000²⁾



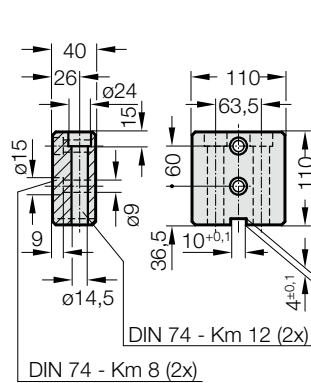
2480.044.03.03000²⁾



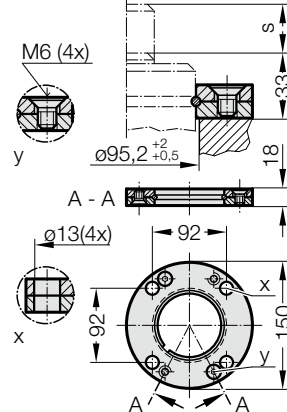
2480.045.03000²⁾



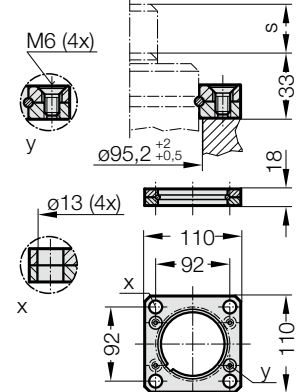
2480.047.03000²⁾



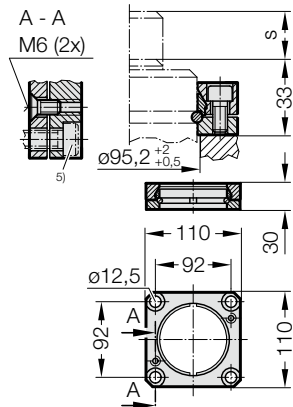
2480.055.03000



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)

GAS SPRING HEAVY DUTY

Note:

Initial spring force at 150 bar = 4240 daN

Order No for spare parts kit: 2488.15.04200

Gas spring without valve

Order No (example): 2488.15.04200..P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

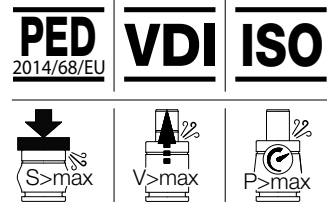
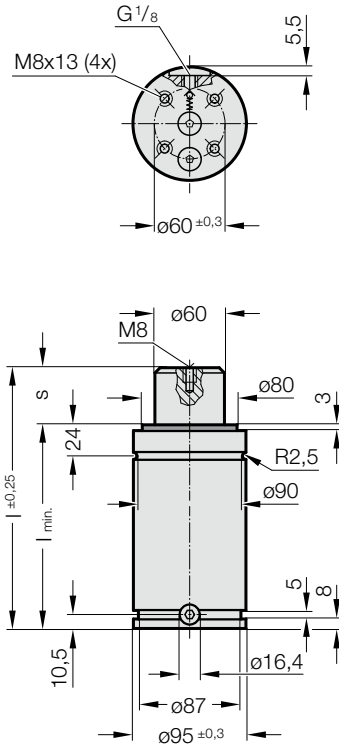
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

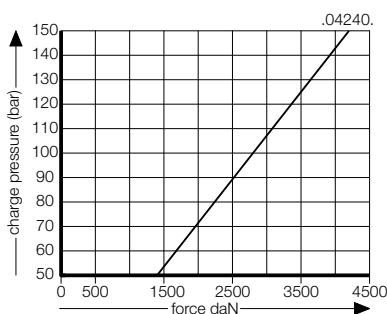
2488.15.04200.



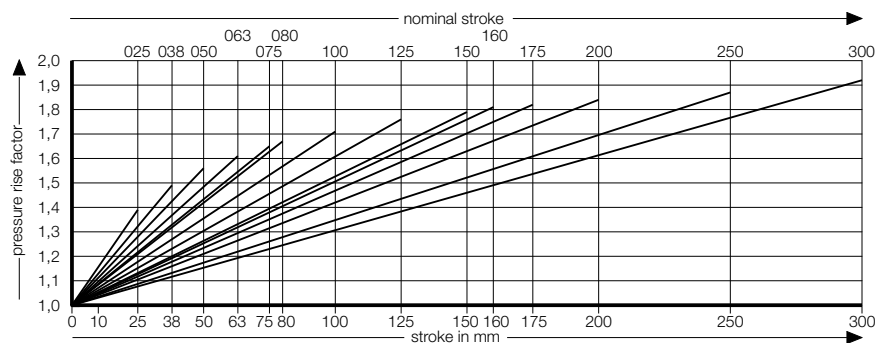
2488.15.04200. Gas spring HEAVY DUTY

Order No	s (Stroke _{max.})	l	l _{min.}	Gas volume [l]	Weight [kg]
2488.15.04200.025	25	170	145	0.295	5.76
2488.15.04200.038	38	196	158	0.378	6.12
2488.15.04200.050	50	220	170	0.455	6.45
2488.15.04200.063	63	246	183	0.539	6.8
2488.15.04200.075	75	270	195	0.616	7.13
2488.15.04200.080	80	280	200	0.648	7.27
2488.15.04200.100	100	320	220	0.777	7.76
2488.15.04200.125	125	370	245	0.938	8.45
2488.15.04200.150	150	420	270	1.098	9.13
2488.15.04200.160	160	440	280	1.156	9.4
2488.15.04200.175	175	470	295	1.253	9.82
2488.15.04200.200	200	520	320	1.413	10.5
2488.15.04200.250	250	620	370	1.734	11.87
2488.15.04200.300	300	720	420	2.016	13.24

Initial spring force versus charge pressure



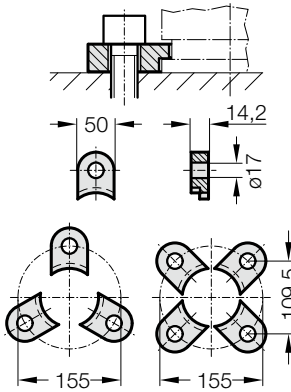
Spring force Diagram displacement versus stroke rise



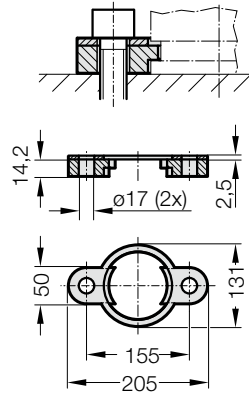
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

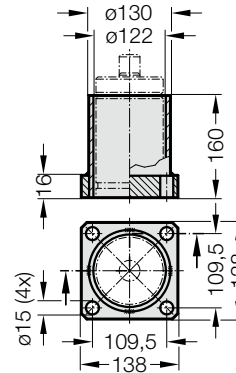
2480.007.05000



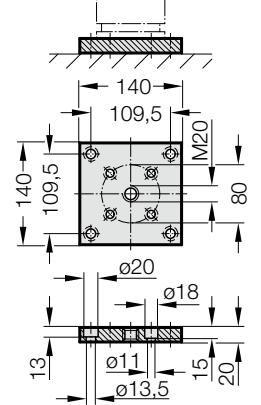
2480.008.05000³⁾



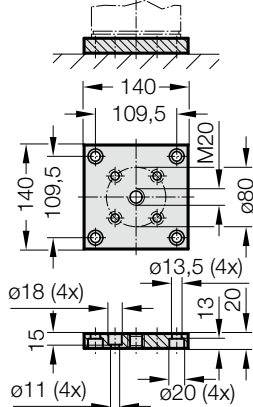
2480.010.05000.160³⁾



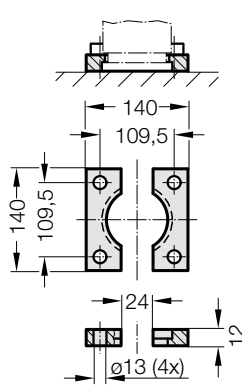
2480.011.05000



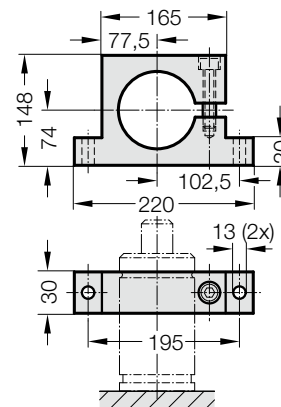
2480.011.05000.2



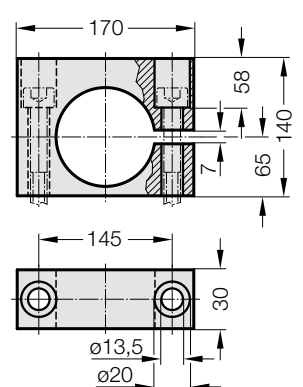
2480.022.05000



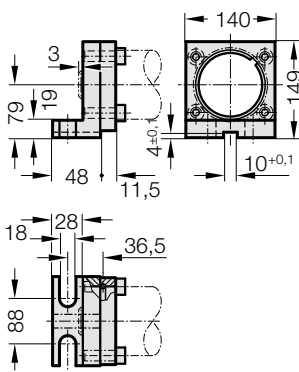
2480.044.05000²⁾



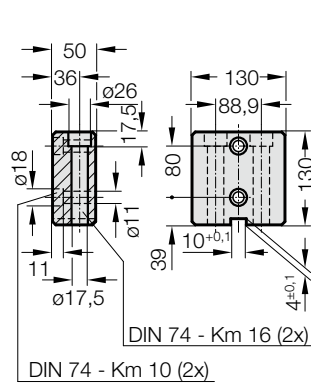
2480.044.03.05000²⁾



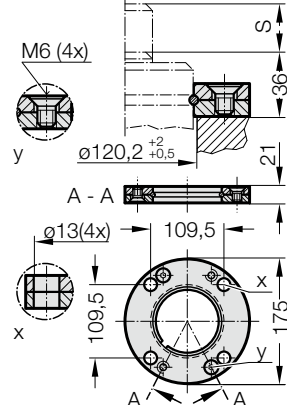
2480.045.05000²⁾



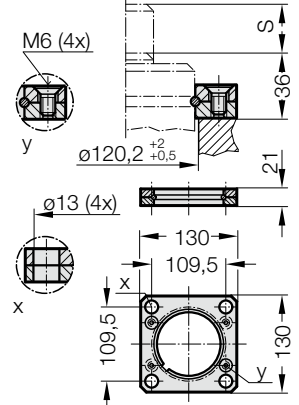
2480.047.05000²⁾



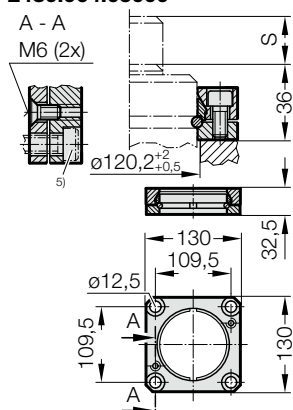
2480.055.05000



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 = 6630 daN

Order No for spare parts kit: 2488.15.06600

Gas spring without valve

Order No (example): 2488.15.06600. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

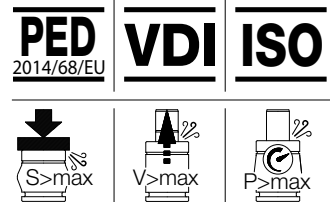
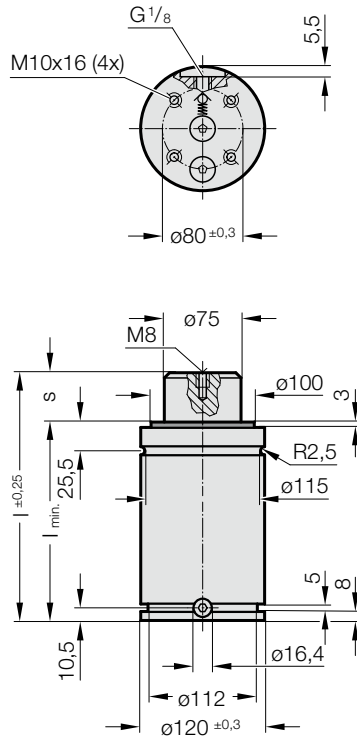
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 - 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

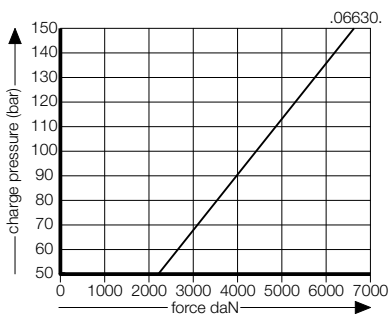
2488.15.06600.



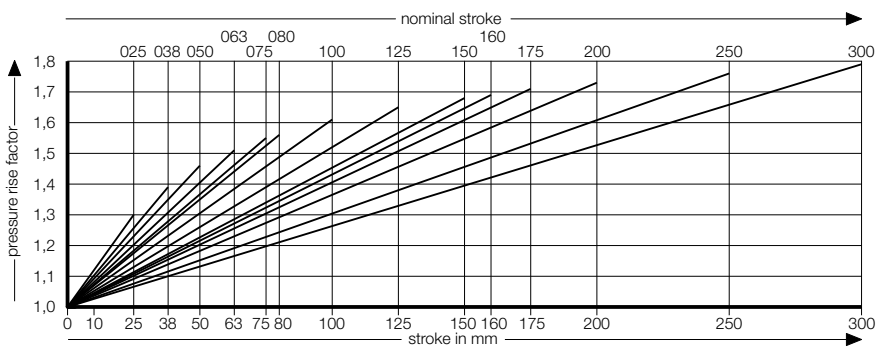
2488.15.06600. Gas spring HEAVY DUTY

Order No	s (Stroke max.)	l	l _{min.}	Gas volume [l]	Weight [kg]
2488.15.06600.025	25	190	165	0.551	10.35
2488.15.06600.038	38	216	178	0.688	10.89
2488.15.06600.050	50	240	190	0.815	11.37
2488.15.06600.063	63	266	203	0.951	11.93
2488.15.06600.075	75	290	215	1.078	12.39
2488.15.06600.080	80	300	220	1.13	12.6
2488.15.06600.100	100	340	240	1.341	13.3
2488.15.06600.125	125	390	265	1.604	14.33
2488.15.06600.150	150	440	290	1.867	15.35
2488.15.06600.160	160	460	300	1.972	15.75
2488.15.06600.175	175	490	315	2.13	16.36
2488.15.06600.200	200	540	340	2.393	17.38
2488.15.06600.250	250	640	390	2.92	19.42
2488.15.06600.300	300	740	440	3.432	21.57

Initial spring force versus charge pressure



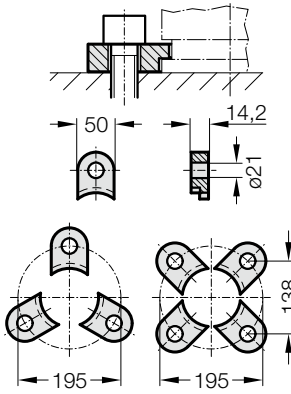
Spring force Diagram displacement versus stroke rise



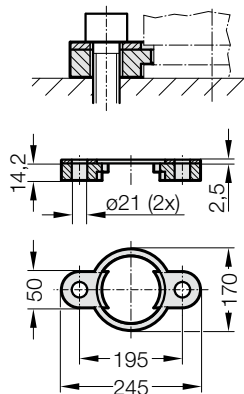
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

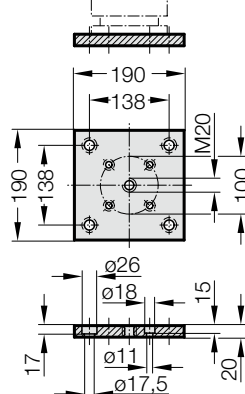
2480.007.07500



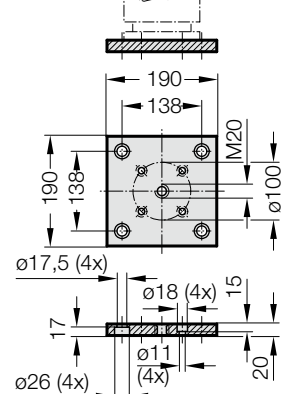
2480.008.07500³⁾



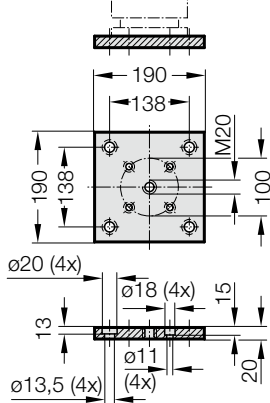
2480.011.07500



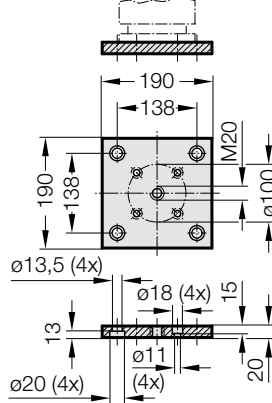
2480.011.07500.2



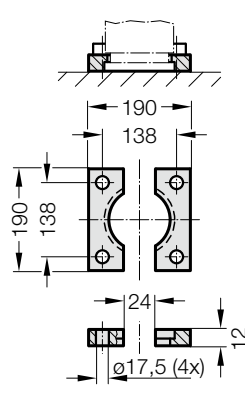
2480.011.03.07500



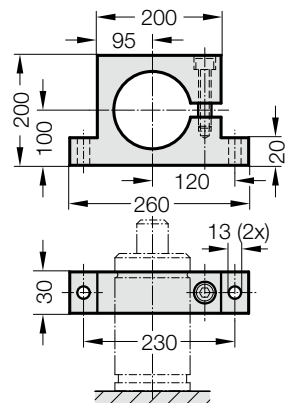
2480.011.03.07500.2



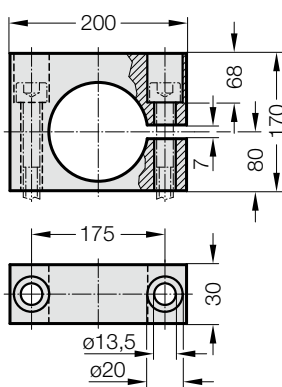
2480.022.07500



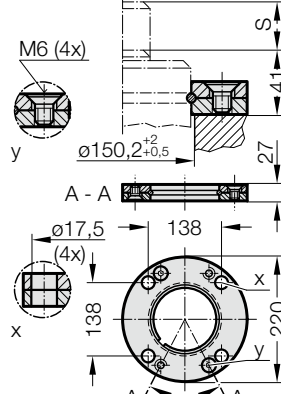
2480.044.07500²⁾



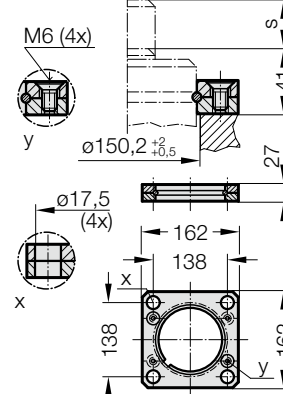
2480.044.03.07500²⁾



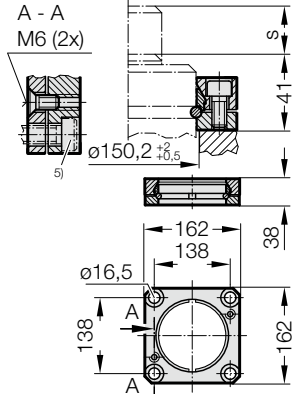
2480.055.07500



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 = 9540 daN

Order No for spare parts kit: 2488.15.09500

Gas spring without valve

Order No (example): 2488.15.09500 .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

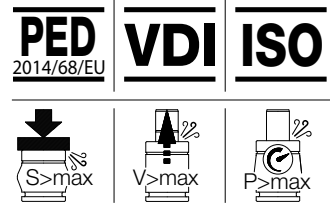
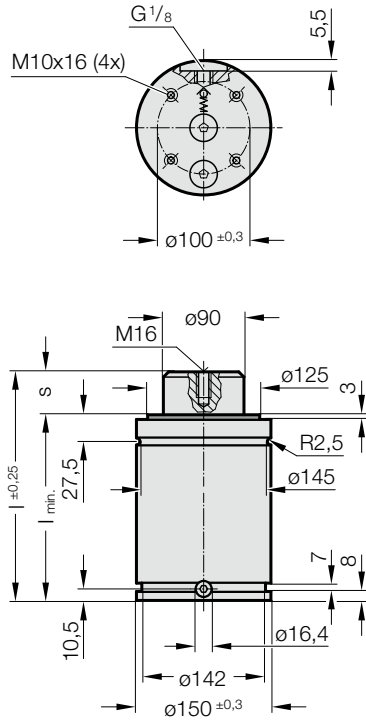
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 15 - 80 (at 20°C)

Max. piston rod speed: 1.8 m/s

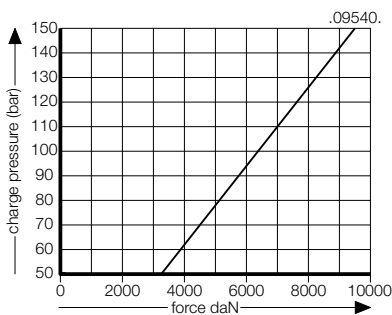
2488.15.09500.



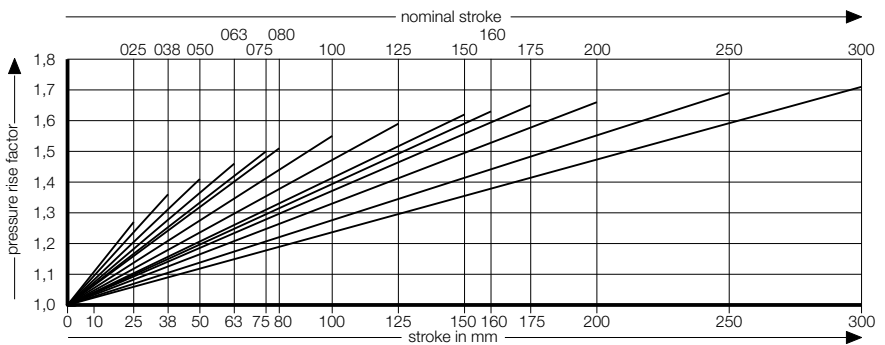
2488.15.09500. Gas spring HEAVY DUTY

Order No	s (Stroke _{max.})	l	l _{min.}	Gas volume [l]	Weight [kg]
2488.15.09500.025	25	205	180	0.867	18
2488.15.09500.038	38	231	193	1.074	18.82
2488.15.09500.050	50	255	205	1.265	19.58
2488.15.09500.063	63	281	218	1.472	20.41
2488.15.09500.075	75	305	230	1.663	21.17
2488.15.09500.080	80	315	235	1.743	21.49
2488.15.09500.100	100	355	255	2.061	22.76
2488.15.09500.125	125	405	280	2.459	24.35
2488.15.09500.150	150	455	305	2.857	25.94
2488.15.09500.160	160	475	315	3.017	26.58
2488.15.09500.175	175	505	330	3.255	27.53
2488.15.09500.200	200	555	355	3.654	29.12
2488.15.09500.250	250	655	405	4.45	32.3
2488.15.09500.300	300	755	455	5.246	35.47

Initial spring force versus charge pressure



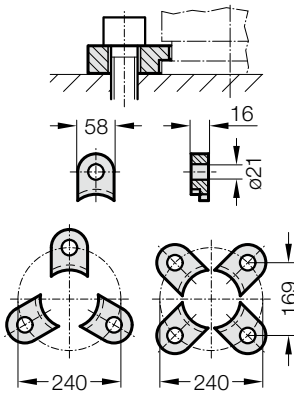
Spring force Diagram displacement versus stroke rise



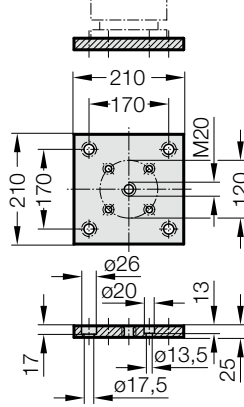
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

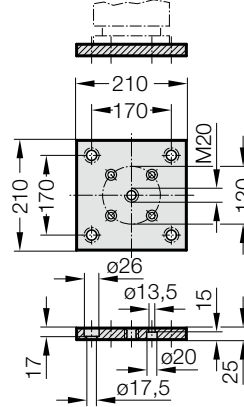
2480.007.10000



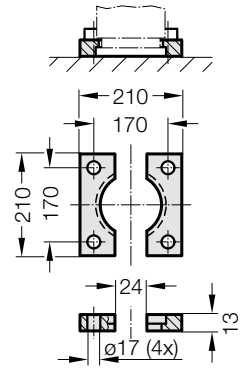
2480.011.10000



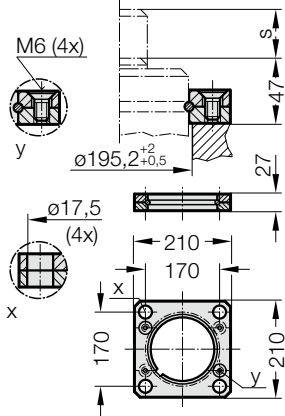
2480.011.10000.2



2480.022.10000



2480.057.10000



GAS SPRING HEAVY DUTY

Note:

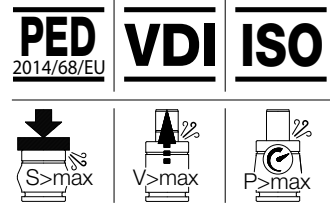
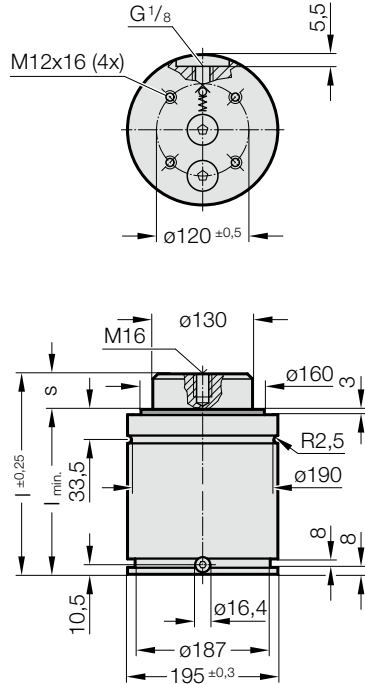
Initial spring force at 150 bar = 19910 daN

Order No for spare parts kit: 2488.15.20000
(Stroke length 25 not repairable)

Gas spring without valve
Order No (example): 2488.15.20000. .P

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. 10 - 70 (at 20°C)
Max. piston rod speed: 1.8 m/s

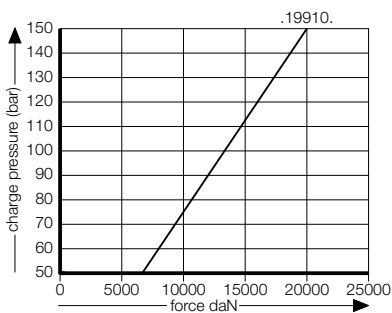
2488.15.20000.



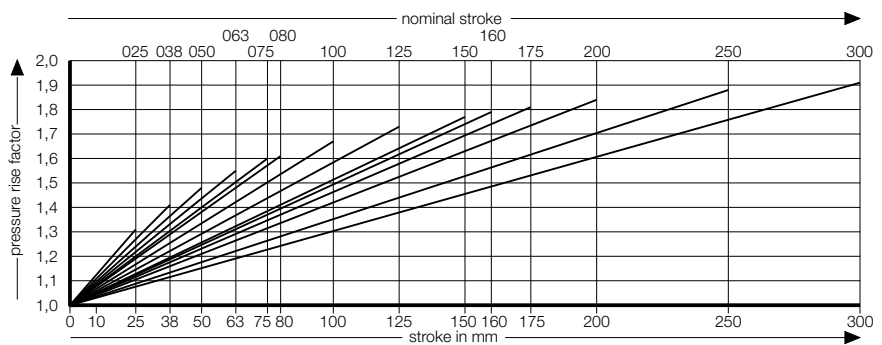
2488.15.20000. Gas spring HEAVY DUTY

Order No	s (Stroke max.)	l _{min.}	l	Gas volume [l]	Weight [kg]
2488.15.20000.025	25	185	210	1.64	30.74
2488.15.20000.038	38	198	236	2.011	32.26
2488.15.20000.050	50	210	260	2.353	33.64
2488.15.20000.063	63	223	286	2.24	35.13
2488.15.20000.075	75	235	310	3.086	36.5
2488.15.20000.080	80	240	320	3.209	37.08
2488.15.20000.100	100	260	360	3.779	39.37
2488.15.20000.125	125	285	410	4.492	42.23
2488.15.20000.150	150	310	460	5.205	45.1
2488.15.20000.160	160	320	480	5.49	46.25
2488.15.20000.175	175	335	510	5.918	47.97
2488.15.20000.200	200	360	560	6.63	50.83
2488.15.20000.250	250	410	660	8.056	56.56
2488.15.20000.300	300	460	760	9.482	62.29

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



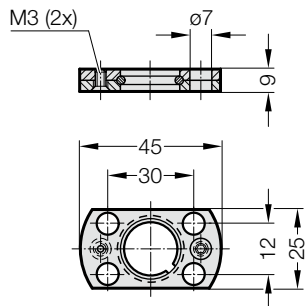
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS NEW GENERATION POWERLINE

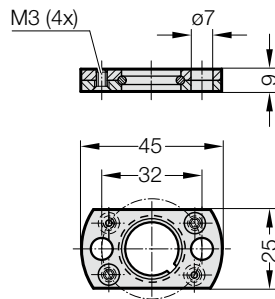


GAS SPRING POWERLINE MOUNTING VARIATIONS

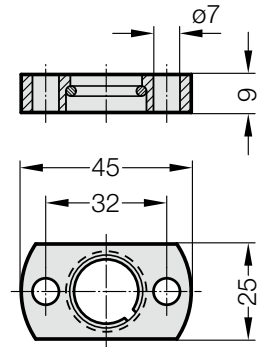
2480.051.01.00030



2480.051.03.00030



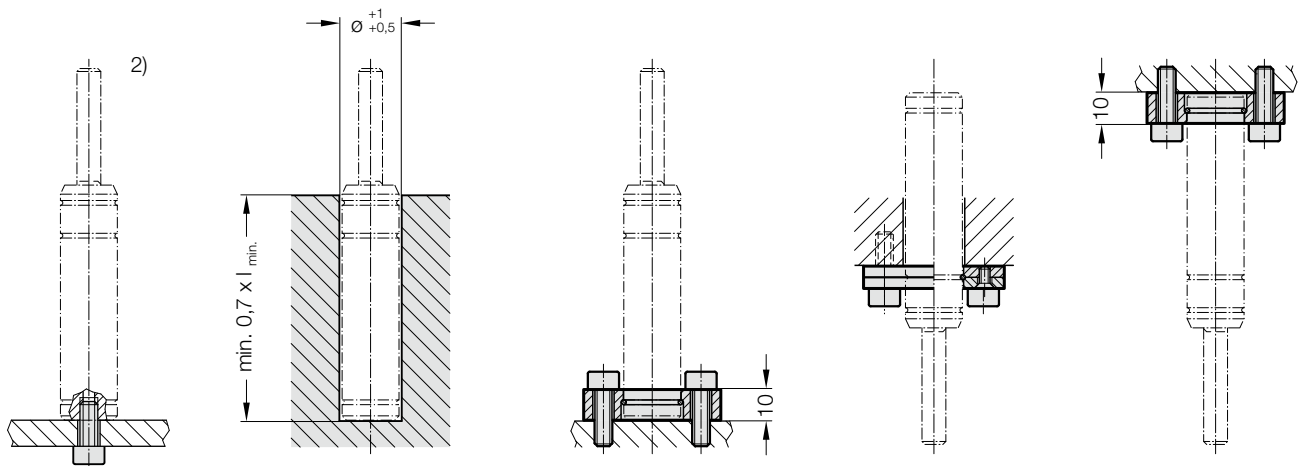
2480.052.00030



Note:

²⁾ Fixing at bottom thread only recommended for stroke length up to 25 mm.

Mounting examples:



GAS SPRING POWERLINE

Note:

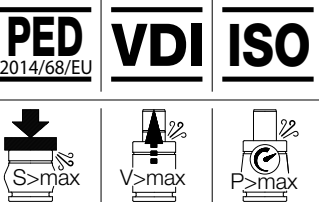
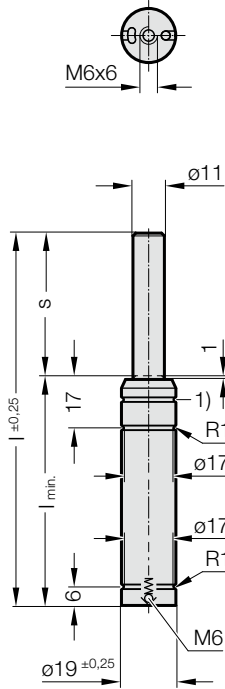
Initial spring force at 180 bar = 170 daN

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

Pressure medium: Nitrogen N₂
 Max. filling pressure: 180 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. 40 - 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

1) Not for fastening

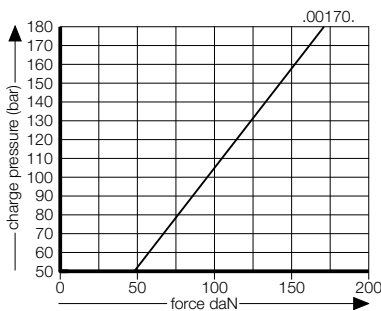
2487.15.00170.



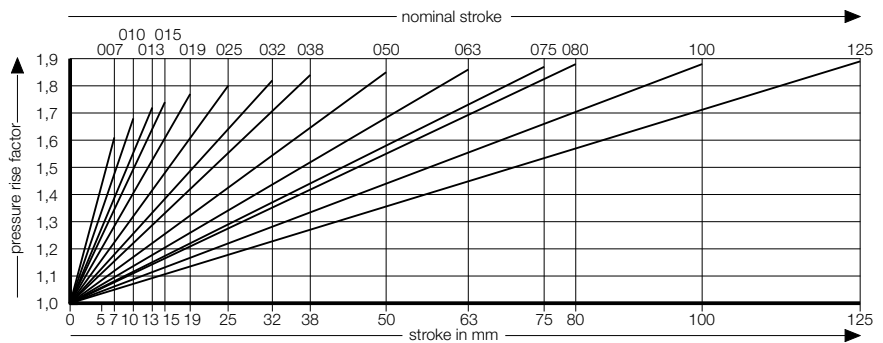
2487.15.00170. Gas spring POWERLINE

Order No	s (Stroke max.)	l _{min.}	l	Gas volume [l]	Weight
2487.15.00170.007	7	37	44	0.002	0.06
2487.15.00170.010	10	40	50	0.003	0.06
2487.15.00170.015	15	45	60	0.004	0.07
2487.15.00170.019	19	49	68	0.005	0.07
2487.15.00170.025	25	55	80	0.006	0.08
2487.15.00170.038	38	68	106	0.01	0.09
2487.15.00170.050	50	80	130	0.012	0.11
2487.15.00170.063	63	93	156	0.016	0.12
2487.15.00170.075	75	110	185	0.013	0.14
2487.15.00170.080	80	115	195	0.02	0.14
2487.15.00170.100	100	135	235	0.024	0.16
2487.15.00170.125	125	160	285	0.03	0.19

Initial spring force versus charge pressure



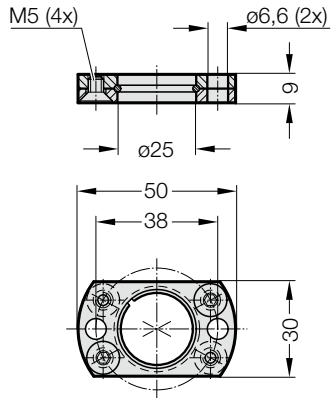
Spring force Diagram displacement versus stroke rise



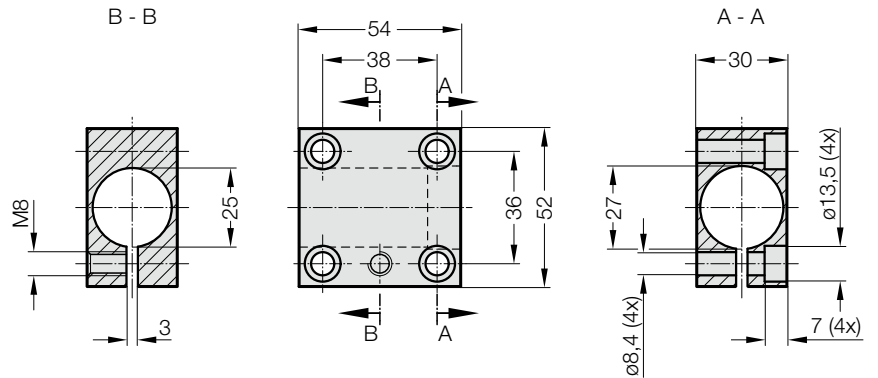
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

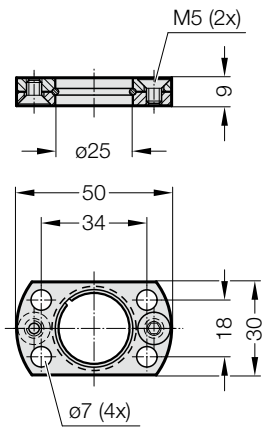
2480.051.00150



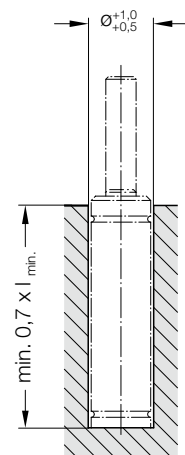
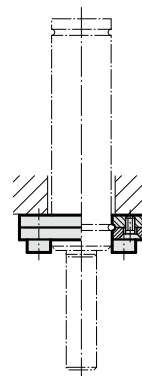
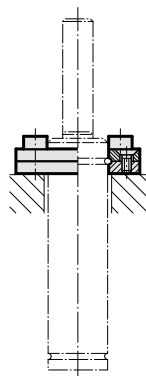
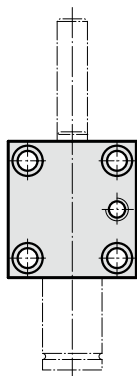
2480.053.00150



2480.054.00150



Mounting examples:



GAS SPRING POWERLINE

Note:

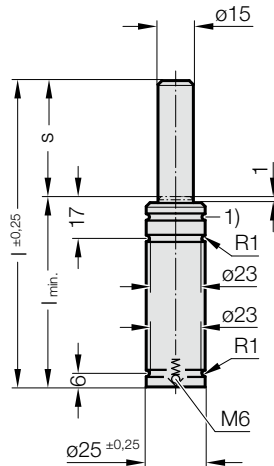
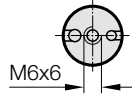
Initial spring force at 180 bar = 320 daN

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

- Pressure medium: Nitrogen N₂
- Max. filling pressure: 180 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. 40 - 100 (at 20°C)
- Max. piston rod speed: 1.8 m/s

1) Not for fastening

2487.15.00320.

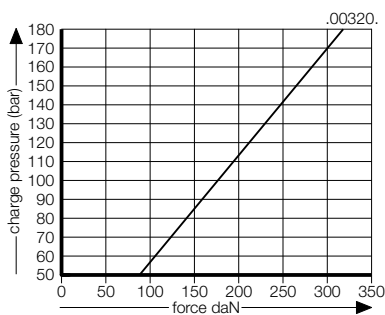


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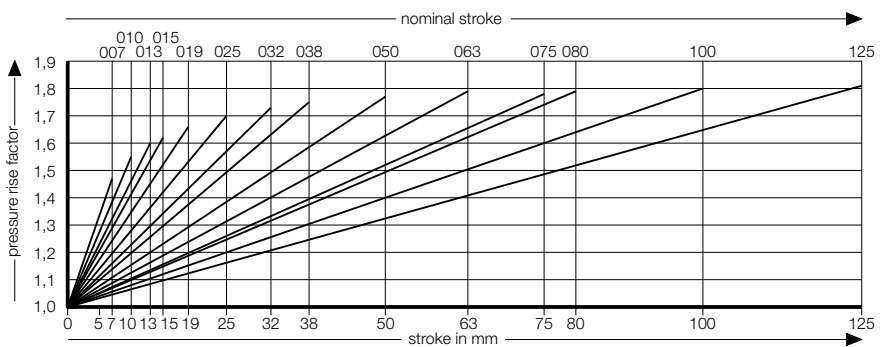
2487.15.00320. Gas spring POWERLINE

Order No	S _{max.}	l _{min.}	L	Gas volume [l]	Weight [kg]
2487.15.00320.007	7	37	44	0.005	0.1
2487.15.00320.010	10	40	50	0.006	0.1
2487.15.00320.015	15	45	60	0.008	0.11
2487.15.00320.019	19	49	68	0.01	0.12
2487.15.00320.025	25	55	80	0.013	0.13
2487.15.00320.038	38	68	106	0.019	0.15
2487.15.00320.050	50	80	130	0.024	0.17
2487.15.00320.063	63	93	156	0.03	0.19
2487.15.00320.075	75	110	185	0.036	0.22
2487.15.00320.080	80	115	195	0.038	0.23
2487.15.00320.100	100	135	235	0.047	0.26
2487.15.00320.125	125	160	285	0.058	0.3

Initial spring force versus charge pressure



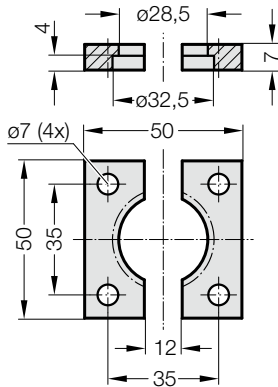
Spring force Diagram displacement versus stroke rise



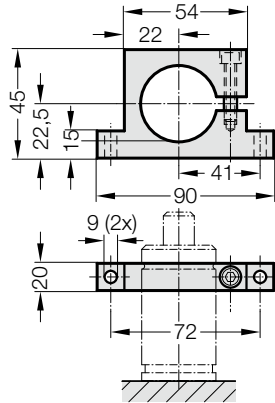
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

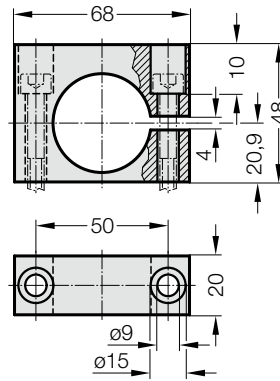
2480.022.00150



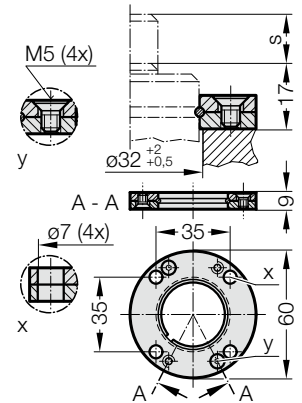
2480.044.00150²⁾



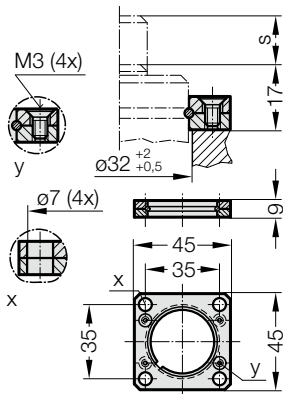
2480.044.03.00150²⁾



2480.055.00150



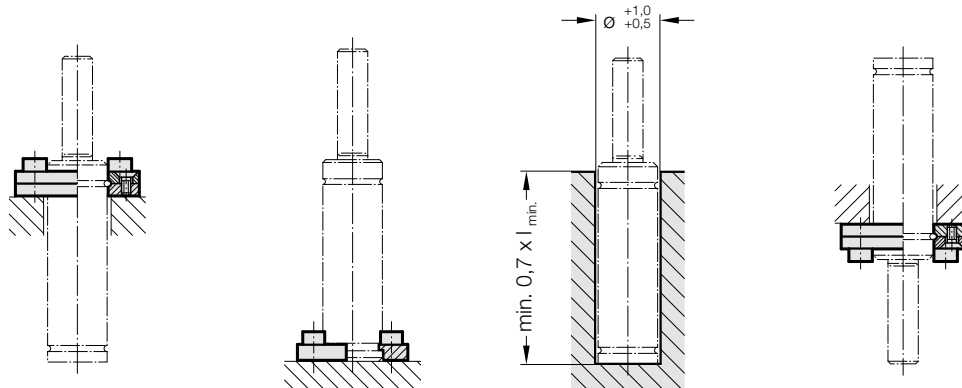
2480.057.00150



Note:

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

Mounting examples:



GAS SPRING POWERLINE

Note:

Initial spring force at 180 bar = 360 daN

Order No for spare parts kit: 2487.15.00350
(Stroke length 10 not repairable)

Gas spring without valve

Order No (example): 2487.15.00350. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 20 bar

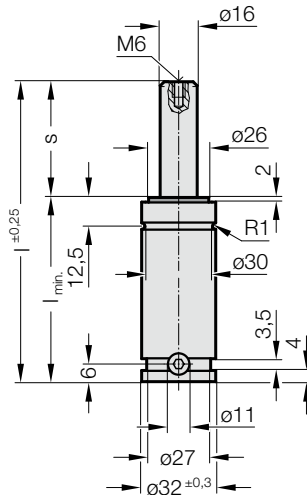
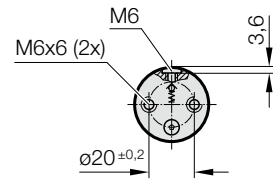
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

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

Max. piston rod speed: 1.8 m/s

2487.15.00350.



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VDI

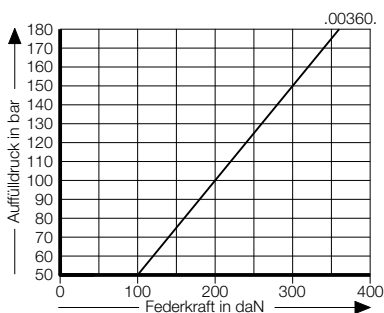
ISO



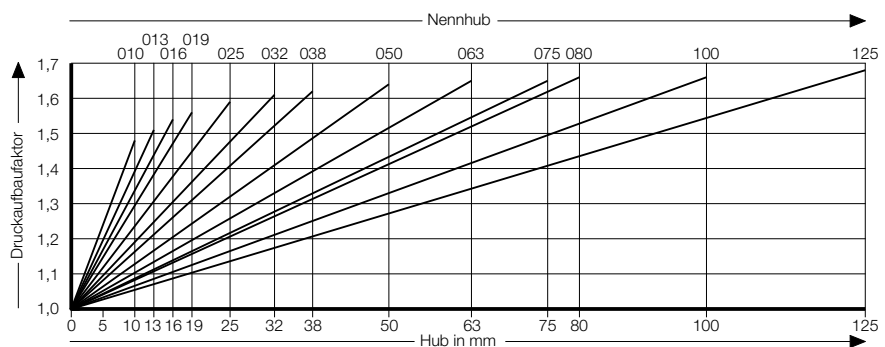
2487.15.00350. Gas spring POWERLINE

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.00350.010	10	40	50	0.008	0.17
2487.15.00350.013	13	43	56	0.01	0.18
2487.15.00350.016	16	46	62	0.011	0.19
2487.15.00350.019	19	49	68	0.013	0.19
2487.15.00350.025	25	55	80	0.017	0.21
2487.15.00350.032	32	62	94	0.021	0.24
2487.15.00350.038	38	68	106	0.024	0.26
2487.15.00350.050	50	80	130	0.031	0.3
2487.15.00350.063	63	93	156	0.039	0.34
2487.15.00350.075	75	105	180	0.046	0.38
2487.15.00350.080	80	110	190	0.049	0.39
2487.15.00350.100	100	130	230	0.061	0.46
2487.15.00350.125	125	155	280	0.075	0.54

Anfangsfederkraft in
Abhängigkeit vom Auffülldruck



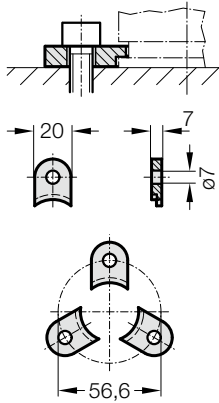
Hubabhängiges Druckaufbaudiagramm



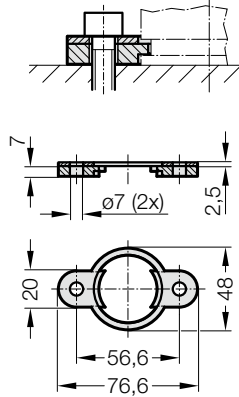
Druckaufbaufaktor gilt für hubabhängige Gasvolumenverdrängung ohne Einflussgrößen!

GAS SPRING POWERLINE MOUNTING VARIATIONS

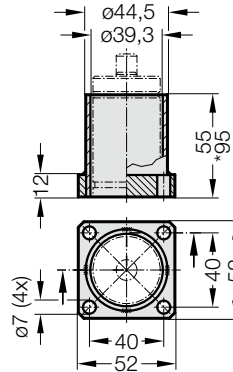
2480.007.00250



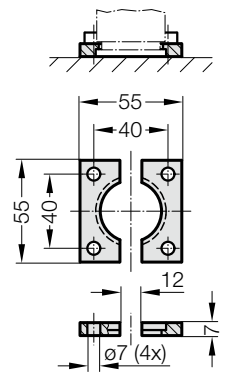
2480.008.00250³⁾



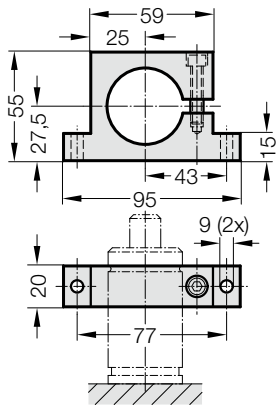
2480.010.00250.055³⁾
2480.010.00250.095*³⁾



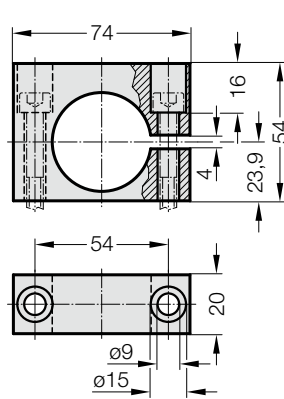
2480.022.00250



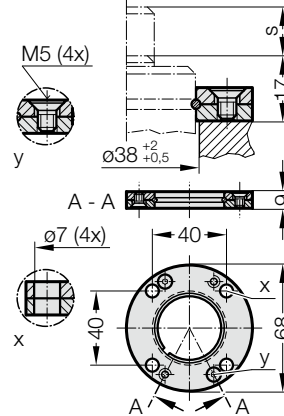
2480.044.00250²⁾



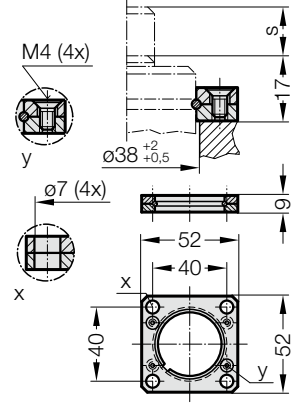
2480.044.03.00250²⁾



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:

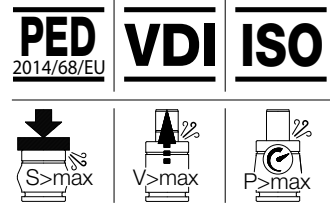
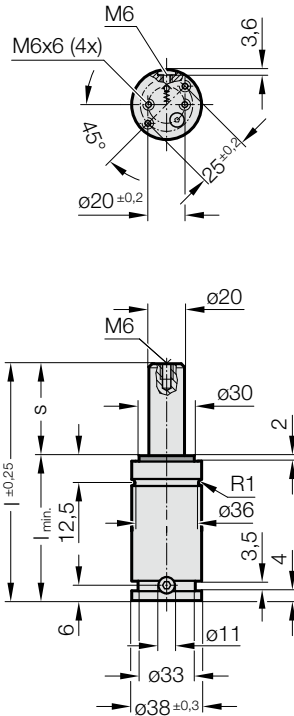
Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2487.15.00500
(Stroke length 10 not repairable)

Gas spring without valve
Order No (example): 2487.15.00500. .P

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. 20 to 100 (at 20°C)
Max. piston rod speed: 1.8 m/s

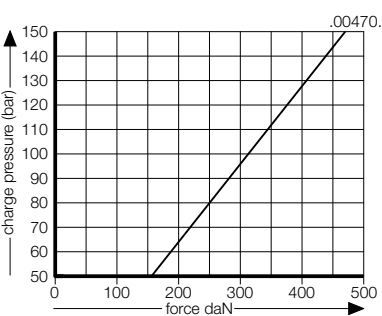
2487.15.00500.



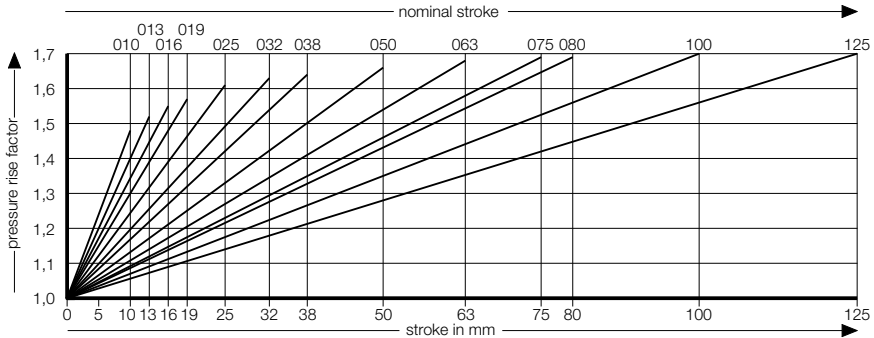
2487.15.00500. Gas spring POWERLINE

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.00500.010	10	40	50	0.011	0.27
2487.15.00500.013	13	43	56	0.014	0.25
2487.15.00500.016	16	46	62	0.016	0.26
2487.15.00500.019	19	49	68	0.019	0.28
2487.15.00500.025	25	55	80	0.024	0.31
2487.15.00500.032	32	62	94	0.03	0.34
2487.15.00500.038	38	68	106	0.035	0.37
2487.15.00500.050	50	80	130	0.045	0.43
2487.15.00500.063	63	93	156	0.056	0.49
2487.15.00500.075	75	105	180	0.067	0.54
2487.15.00500.080	80	110	190	0.071	0.57
2487.15.00500.100	100	130	230	0.088	0.66
2487.15.00500.125	125	155	280	0.109	0.78

Initial spring force versus charge pressure



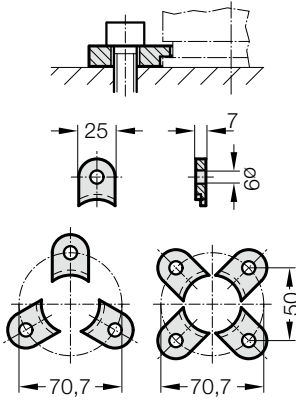
Spring force Diagram displacement versus stroke rise



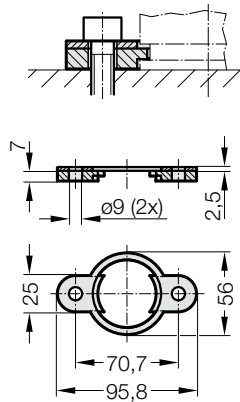
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

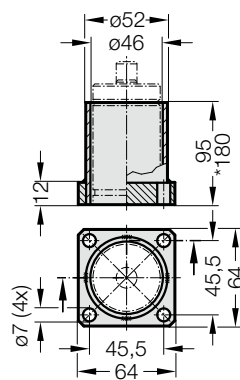
2480.007.00500



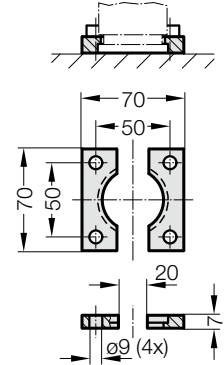
2480.008.00500 ³⁾



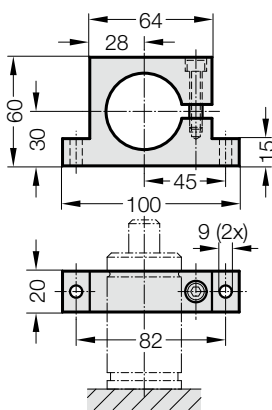
2480.010.00500.095 ³⁾
2480.010.00500.180* ³⁾



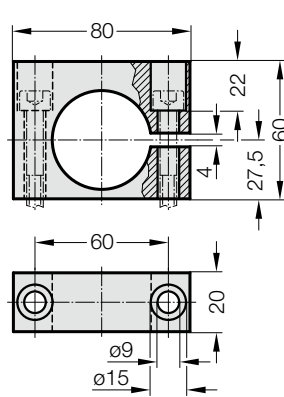
2480.022.00500



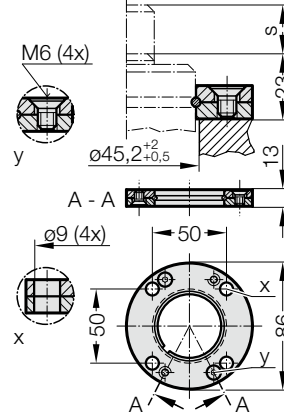
2480.044.00500 ²⁾



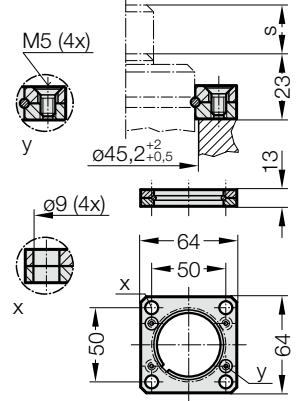
2480.044.03.00500 ²⁾



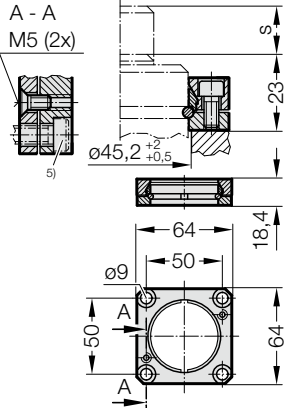
2480.055.00500



2480.057.00500



2480.064.00500 ⁴⁾



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 = 740 daN

Order No for spare parts kit: 2487.15.00750
(Stroke length 10 not repairable)

Gas spring without valve

Order No (example): 2487.15.00750. .1.P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

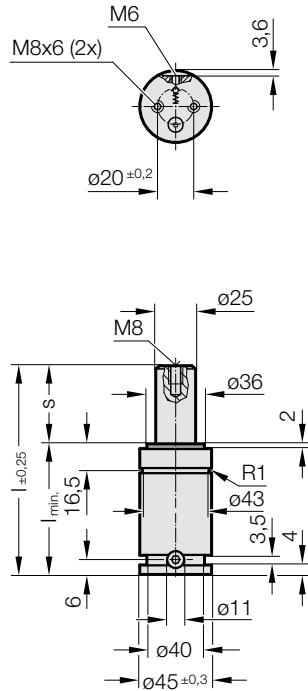
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

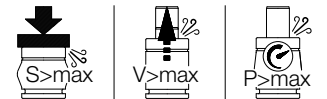
approx. 20 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.00750.



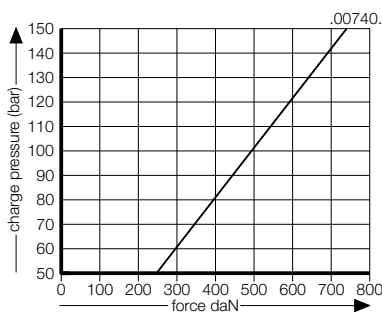
PED 2014/68/EU | **VDI** | **ISO**



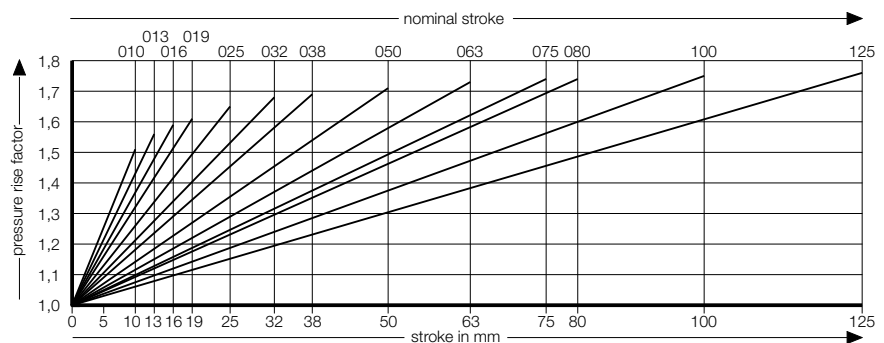
2487.15.00750. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.00750.010	10	42	52	0.017	0.36
2487.15.00750.013	13	45	58	0.204	0.38
2487.15.00750.016	16	48	64	0.024	0.4
2487.15.00750.019	19	51	70	0.028	0.42
2487.15.00750.025	25	57	82	0.036	0.45
2487.15.00750.032	32	64	96	0.044	0.5
2487.15.00750.038	38	70	108	0.052	0.54
2487.15.00750.050	50	82	132	0.067	0.61
2487.15.00750.063	63	95	158	0.083	0.7
2487.15.00750.075	75	107	182	0.098	0.78
2487.15.00750.080	80	112	192	0.105	0.81
2487.15.00750.100	100	132	232	0.13	0.94
2487.15.00750.125	125	157	282	0.162	1.1

Initial spring force versus charge pressure



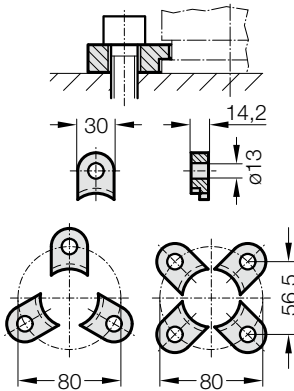
Spring force Diagram displacement versus stroke rise



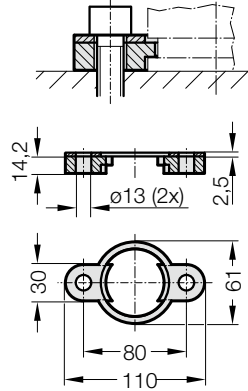
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

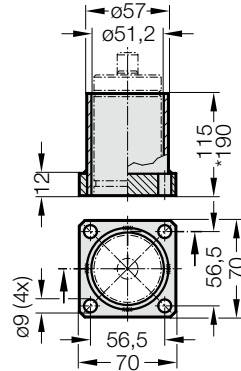
2480.007.00750



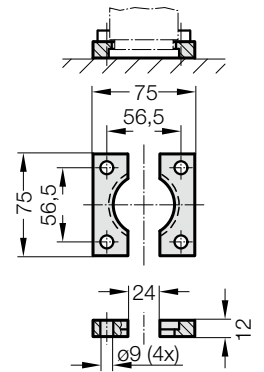
2480.008.00750 ³⁾



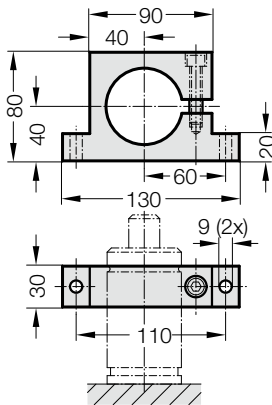
2480.010.00750.115 ³⁾
2480.010.00750.190* ³⁾



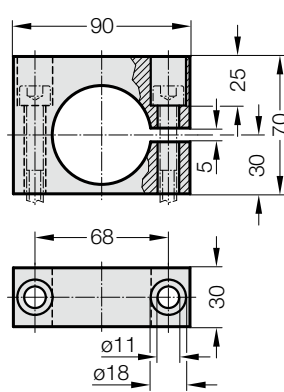
2480.022.00750



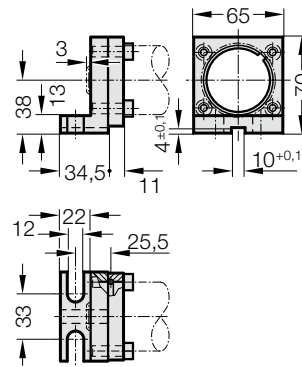
2480.044.00750 ²⁾



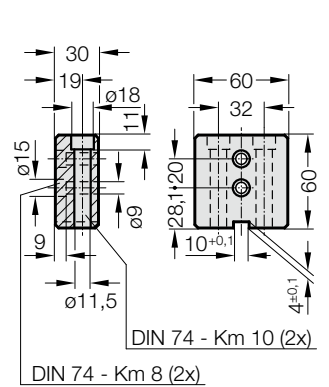
2480.044.03.00750 ²⁾



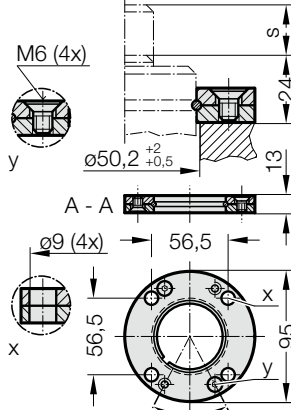
2480.045.00750 ²⁾



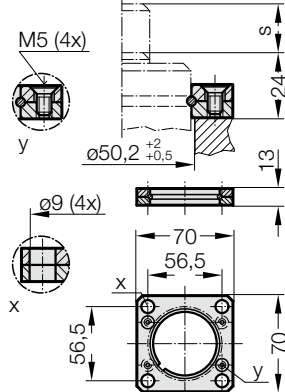
2480.047.00750 ²⁾



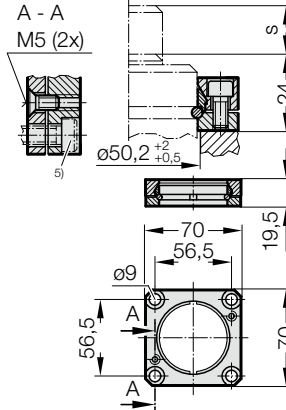
2480.055.00750



2480.057.00750



2480.064.00750 ⁴⁾



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:

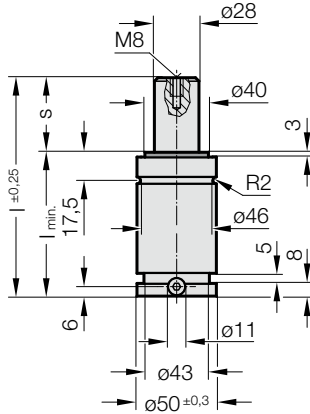
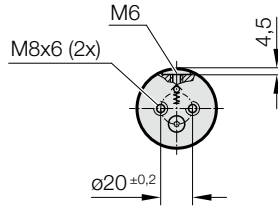
Initial spring force at 150 bar = 920 daN

Order No for spare parts kit: 2487.15.01000
(Stroke length 13 not repairable)

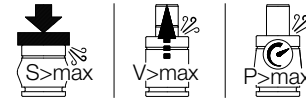
Gas spring without valve
Order No (example): 2487.15.01000. .1.P

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. 20 to 100 (at 20°C)
Max. piston rod speed: 1.8 m/s

2487.15.01000.



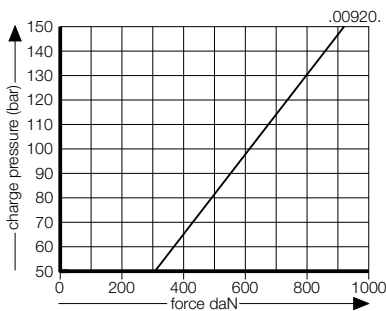
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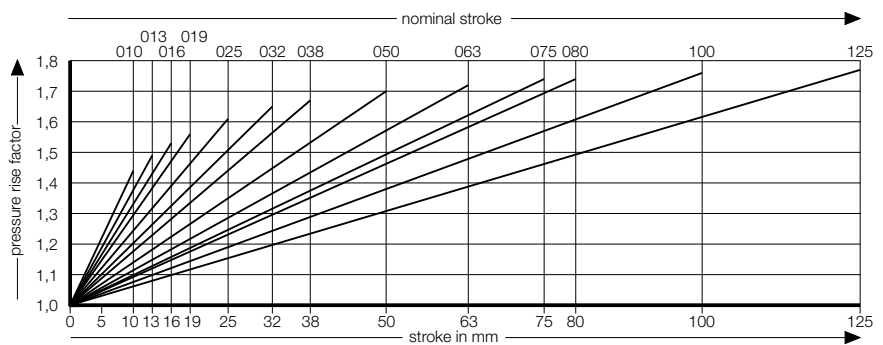
2487.15.01000. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min}	l	Gas volume [l]	Weight [kg]
2487.15.01000.013	13	51	64	0.028	0.51
2487.15.01000.016	16	54	70	0.033	0.54
2487.15.01000.019	19	57	76	0.038	0.56
2487.15.01000.025	25	63	88	0.047	0.61
2487.15.01000.032	32	70	102	0.058	0.67
2487.15.01000.038	38	76	114	0.067	0.72
2487.15.01000.050	50	88	138	0.086	0.81
2487.15.01000.063	63	101	164	0.106	0.92
2487.15.01000.075	75	113	188	0.125	1.011
2487.15.01000.080	80	118	198	0.133	1.05
2487.15.01000.100	100	138	238	0.164	1.21
2487.15.01000.125	125	163	288	0.203	1.41

Initial spring force versus charge pressure



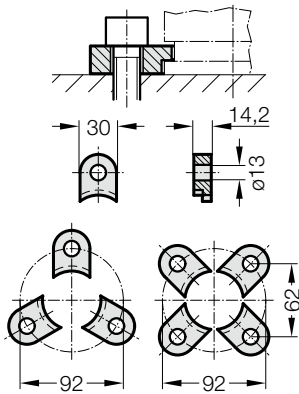
Spring force Diagram displacement versus stroke rise



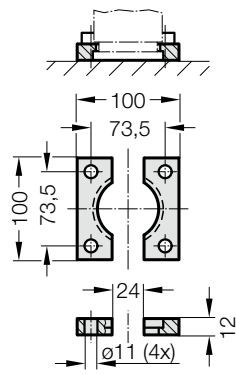
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

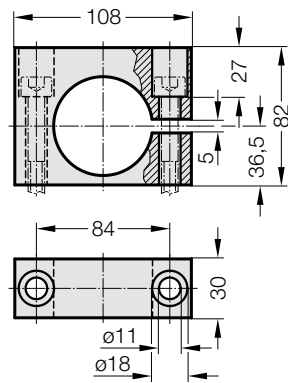
2480.007.01000



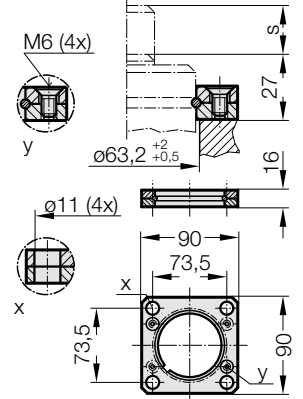
2480.022.01000



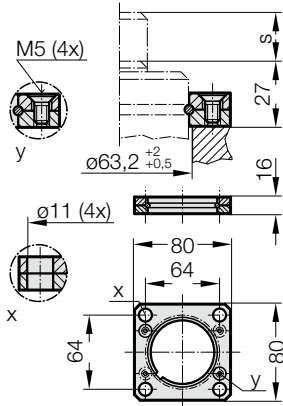
2480.044.03.01000²⁾



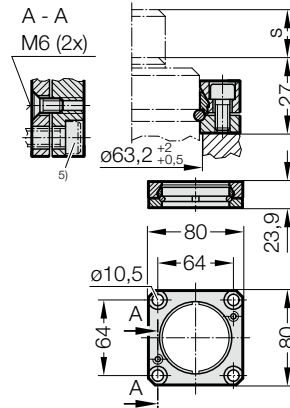
2480.057.01000



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 = 1530 daN

Order No for spare parts kit: 2487.15.01500
(Stroke length 13 not repairable)

Gas spring without valve

Order No (example): 2487.15.01500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

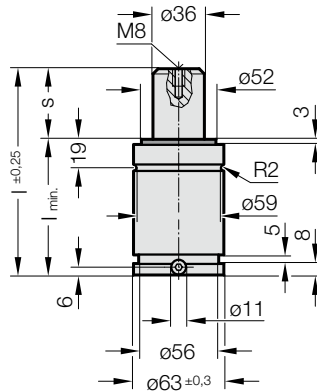
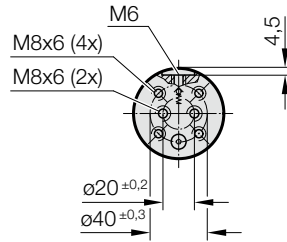
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

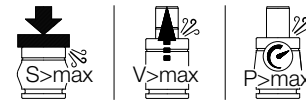
approx. 20 - 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.01500.



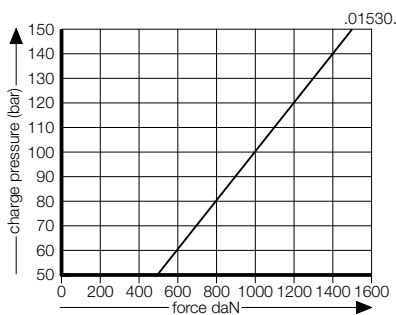
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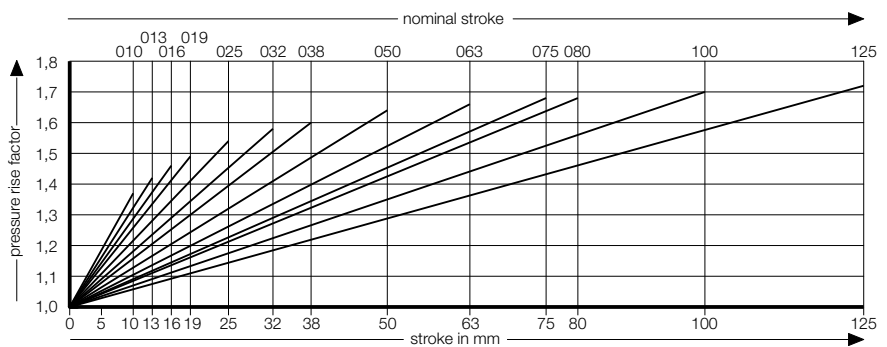
2487.15.01500. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.01500.013	13	57	70	0.052	0.91
2487.15.01500.016	16	60	76	0.06	0.96
2487.15.01500.019	19	63	82	0.068	0.99
2487.15.01500.025	25	69	94	0.084	1.06
2487.15.01500.032	32	76	108	0.102	1.14
2487.15.01500.038	38	82	120	0.118	1.21
2487.15.01500.050	50	94	144	0.149	1.36
2487.15.01500.063	63	107	170	0.184	1.52
2487.15.01500.075	75	119	194	0.215	1.66
2487.15.01500.080	80	124	204	0.229	1.72
2487.15.01500.100	100	144	244	0.281	1.95
2487.15.01500.125	125	169	294	0.347	2.24

Initial spring force versus charge pressure



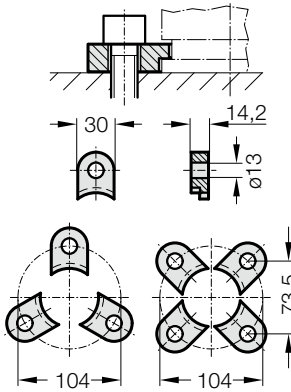
Spring force Diagram displacement versus stroke rise



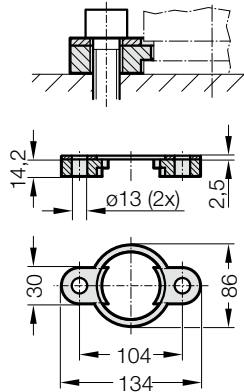
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

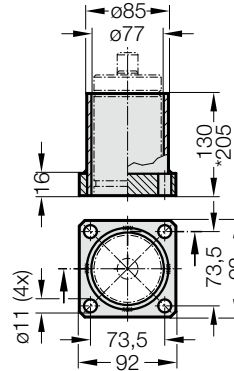
2480.007.01500



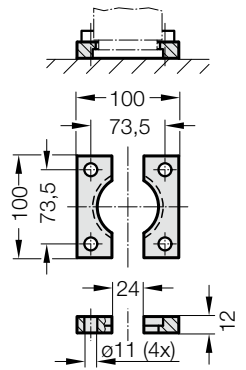
2480.008.01500 ³⁾



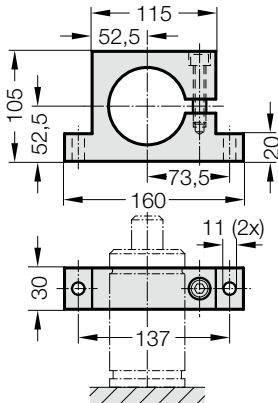
2480.010.01500.130 ³⁾
2480.010.01500.205* ³⁾



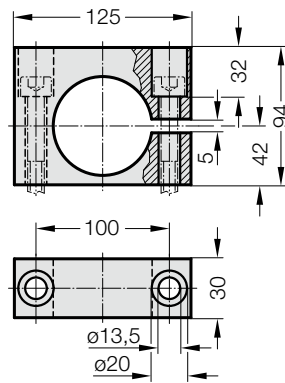
2480.022.01500



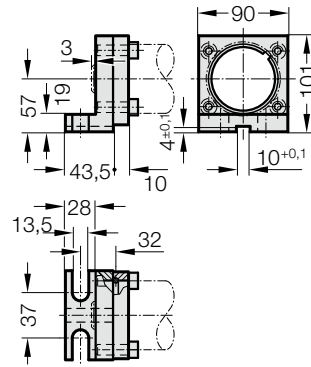
2480.044.01500 ²⁾



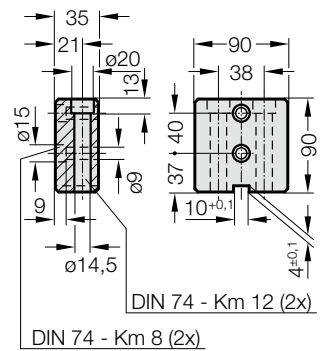
2480.044.03.01500 ²⁾



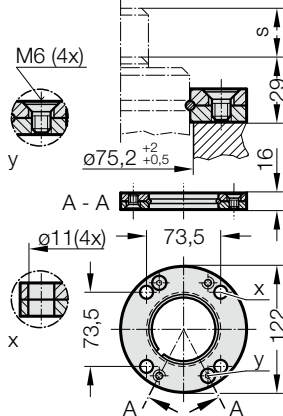
2480.045.01500 ²⁾



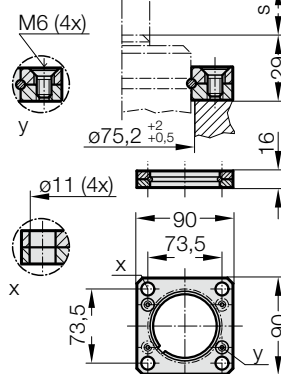
2480.047.01500 ²⁾



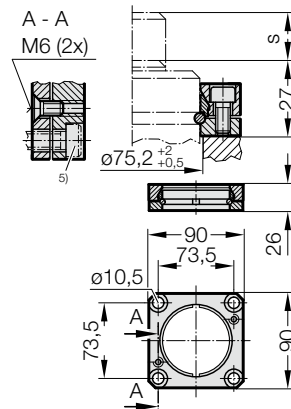
2480.055.01500



2480.057.01500



2480.064.01500 ⁴⁾



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 = 2385 daN

Order No for spare parts kit: 2487.15.02400
(Stroke length 16 and 19 not repairable)

Gas spring without valve

Order No (example): 2487.15.02400 .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

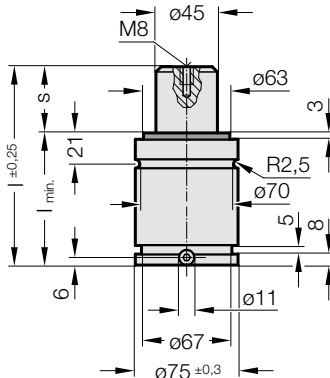
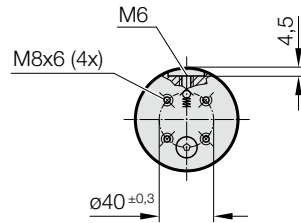
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

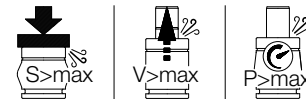
approx. 20 - 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.02400.



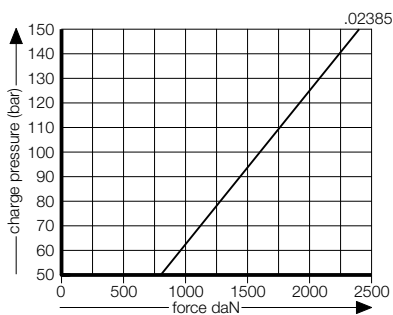
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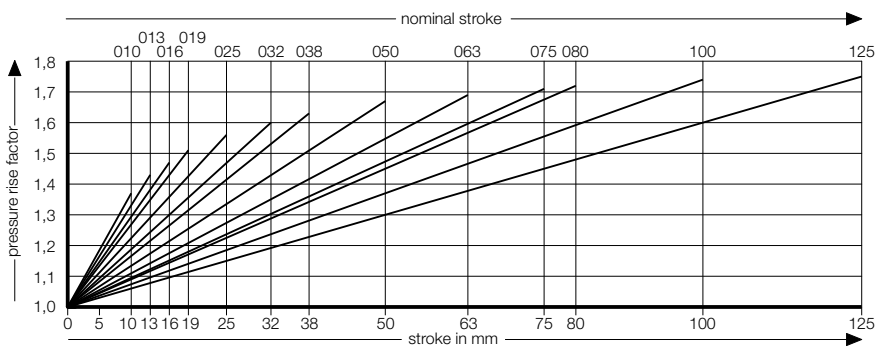
2487.15.02400. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.02400.016	16	61	77	0.092	1.35
2487.15.02400.019	19	64	83	0.104	1.4
2487.15.02400.025	25	70	95	0.128	1.5
2487.15.02400.032	32	77	109	0.156	1.61
2487.15.02400.038	38	83	121	0.18	1.7
2487.15.02400.050	50	95	145	0.228	1.89
2487.15.02400.063	63	108	171	0.28	2.1
2487.15.02400.075	75	120	195	0.328	2.229
2487.15.02400.080	80	125	205	0.348	2.37
2487.15.02400.100	100	145	245	0.428	2.68
2487.15.02400.125	125	170	295	0.528	3.07

Initial spring force versus charge pressure



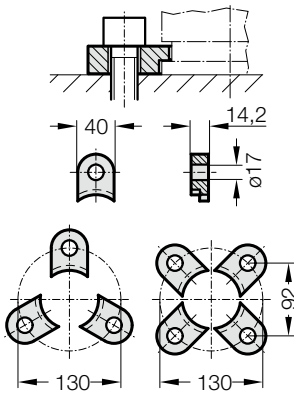
Spring force Diagram displacement versus stroke rise



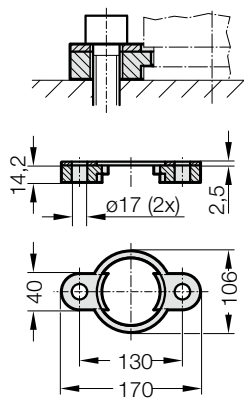
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

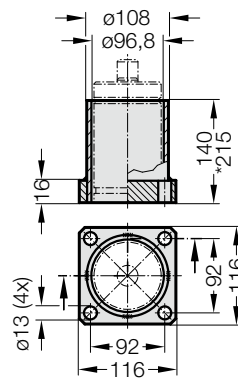
2480.007.03000



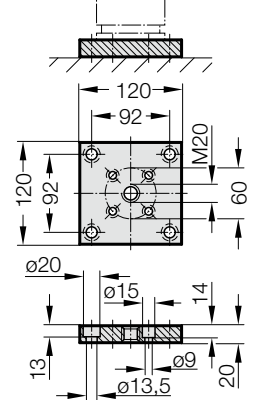
2480.008.03000³⁾



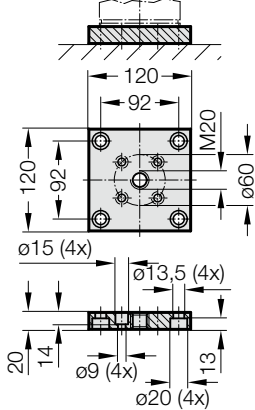
2480.010.03000.140³⁾
2480.010.03000.215³⁾



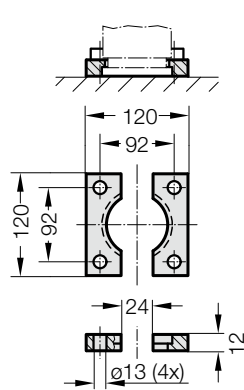
2480.011.03000



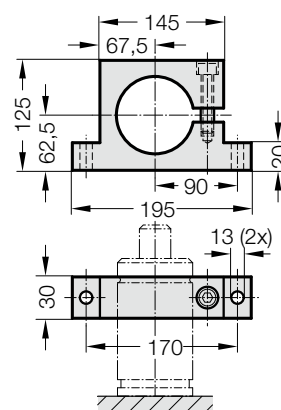
2480.011.03000.2



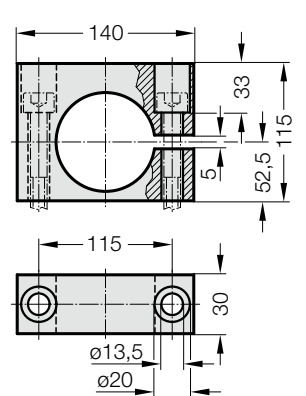
2480.022.03000



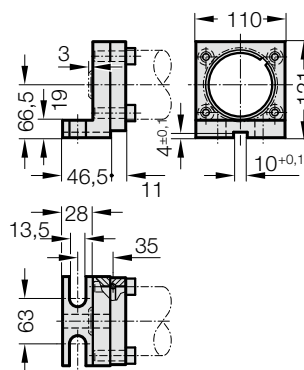
2480.044.03000²⁾



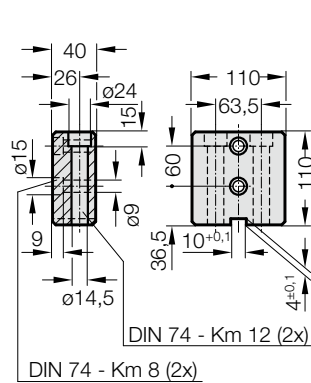
2480.044.03.03000²⁾



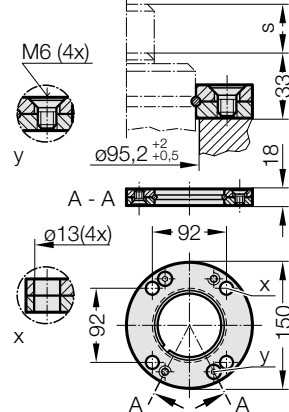
2480.045.03000²⁾



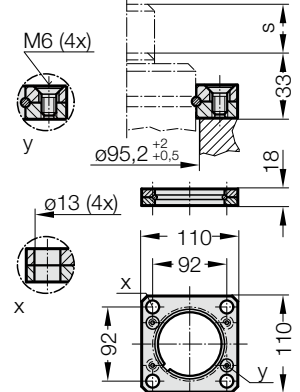
2480.047.03000²⁾



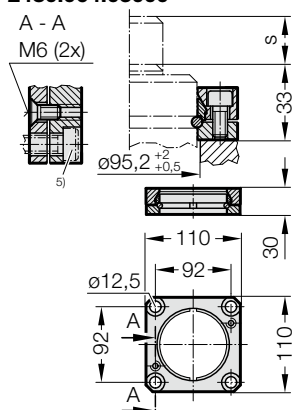
2480.055.03000



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)

GAS SPRING POWERLINE

Note:

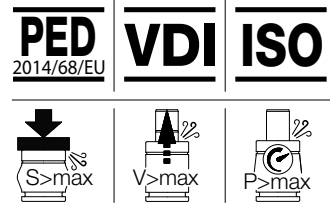
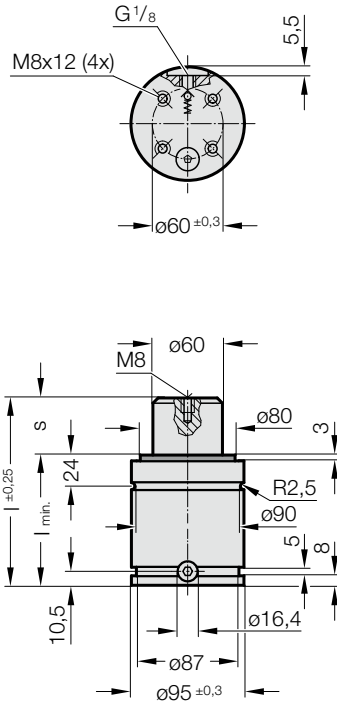
Initial spring force at 150 bar = 4240 daN

Order No for spare parts kit: 2487.15.04200
(Stroke length 16 and 19 not repairable)

Gas spring without valve
Order No (example): 2487.15.04200. .P

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. 20 to 100 (at 20°C)
Max. piston rod speed: 1.8 m/s

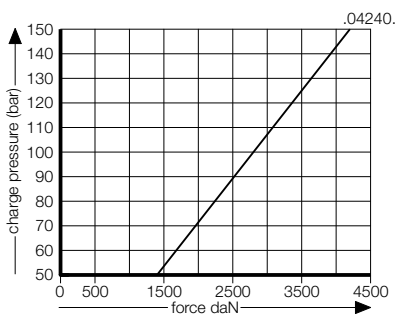
2487.15.04200.



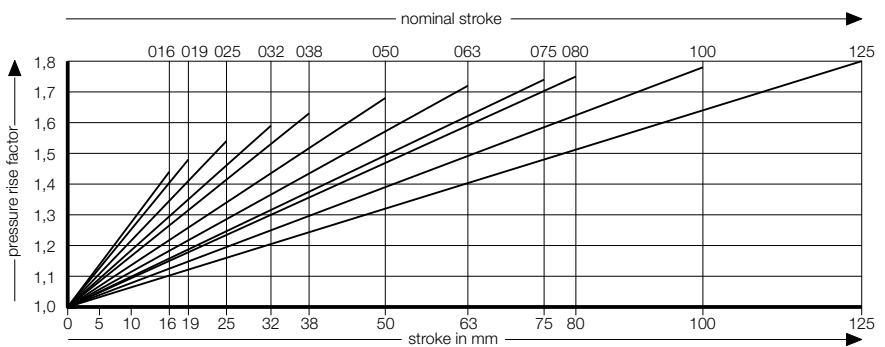
2487.15.04200. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.04200.016	16	74	90	0.172	2.76
2487.15.04200.019	19	77	96	0.192	2.84
2487.15.04200.025	25	83	108	0.232	2.99
2487.15.04200.032	32	90	122	0.279	3.16
2487.15.04200.038	38	96	134	0.32	3.31
2487.15.04200.050	50	108	158	0.401	3.61
2487.15.04200.063	63	121	184	0.488	3.94
2487.15.04200.075	75	133	208	0.569	4.24
2487.15.04200.080	80	138	218	0.603	4.36
2487.15.04200.100	100	158	258	0.738	4.86
2487.15.04200.125	125	183	308	0.906	5.48

Initial spring force versus charge pressure



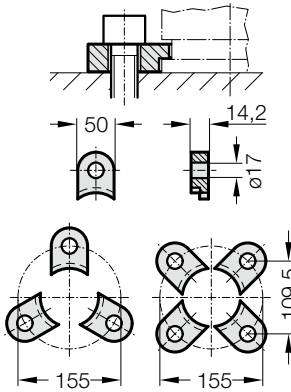
Spring force Diagram displacement versus stroke rise



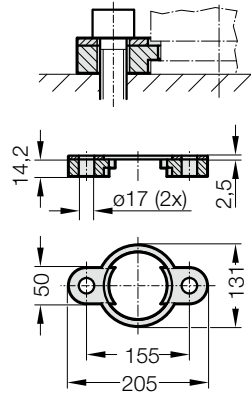
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

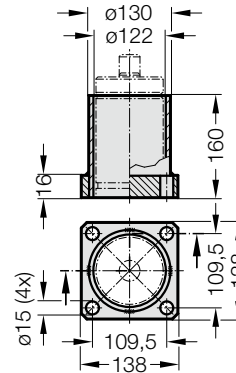
2480.007.05000



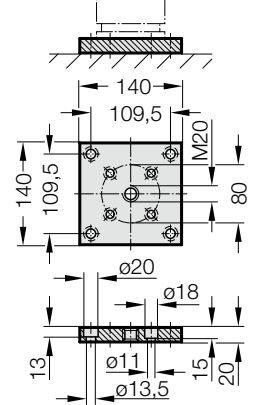
2480.008.05000³⁾



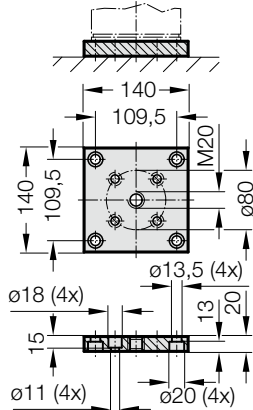
2480.010.05000.160³⁾



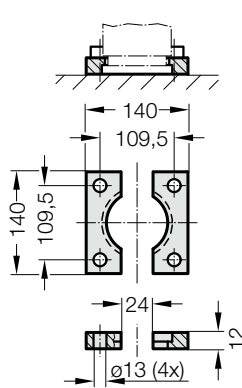
2480.011.05000



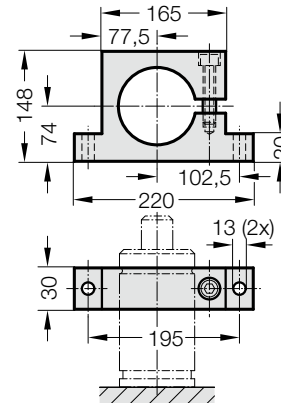
2480.011.05000.2



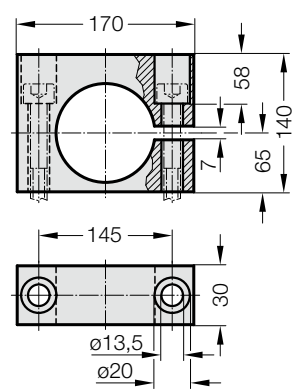
2480.022.05000



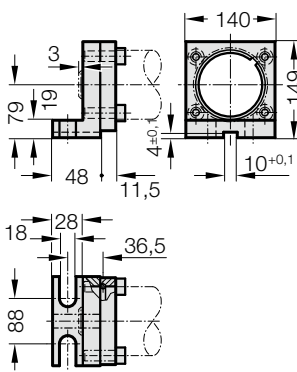
2480.044.05000²⁾



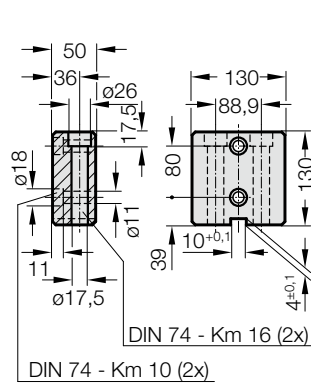
2480.044.03.05000²⁾



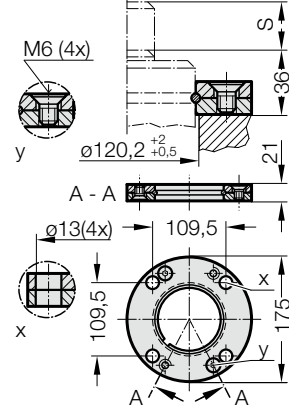
2480.045.05000²⁾



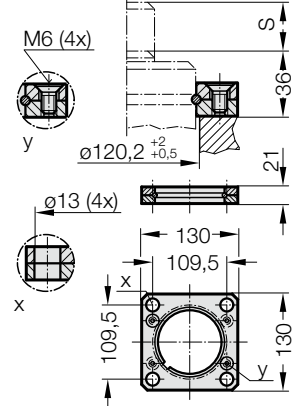
2480.047.05000²⁾



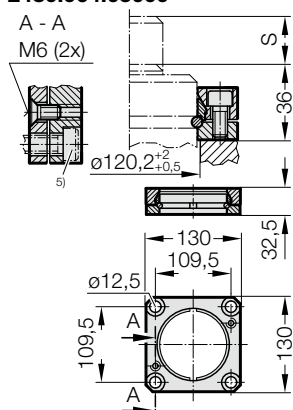
2480.055.05000



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:

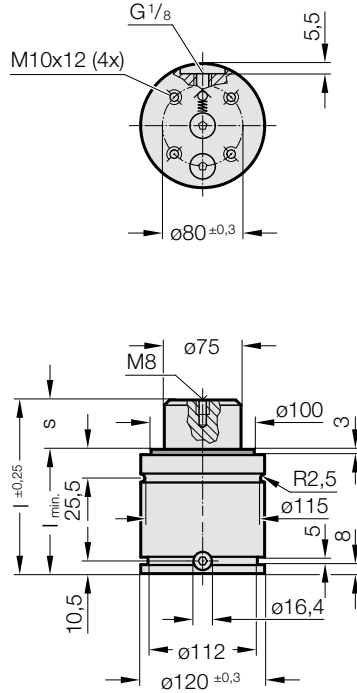
Initial spring force at 150 bar = 6630 daN

Order No for spare parts kit: 2487.15.06600
(Stroke length 16 and 19 not repairable)

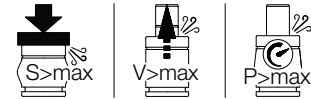
Gas spring without valve
Order No (example): 2487.15.06600. .P

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. 20 to 100 (at 20°C)
Max. piston rod speed: 1.8 m/s

2487.15.06600.



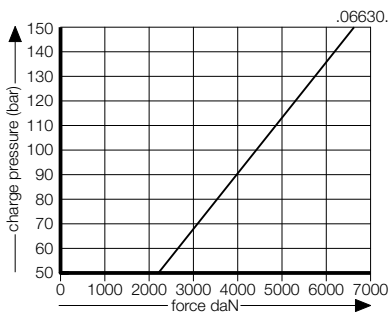
PED 2014/68/EU | **VDI** | **ISO**



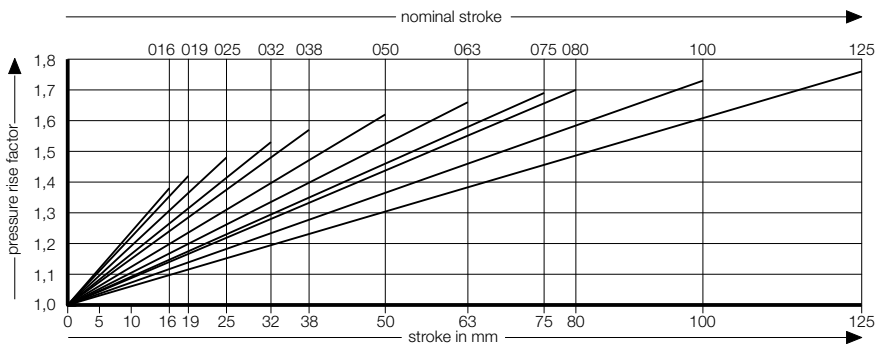
2487.15.06600. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.06600.016	16	84	100	0.298	5.12
2487.15.06600.019	19	87	106	0.33	5.23
2487.15.06600.025	25	93	118	0.394	5.47
2487.15.06600.032	32	100	132	0.469	5.75
2487.15.06600.038	38	106	144	0.533	5.99
2487.15.06600.050	50	118	168	0.661	6.47
2487.15.06600.063	63	131	194	0.799	6.99
2487.15.06600.075	75	143	218	0.927	7.47
2487.15.06600.080	80	148	228	0.98	7.67
2487.15.06600.100	100	168	268	1.193	8.46
2487.15.06600.125	125	193	318	1.459	9.46

Initial spring force versus charge pressure



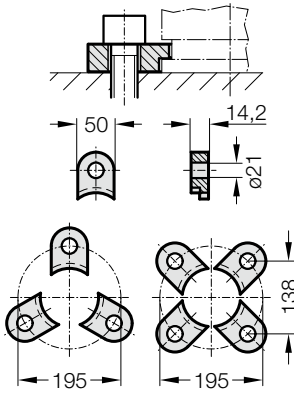
Spring force Diagram displacement versus stroke rise



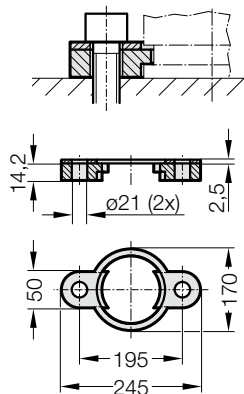
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

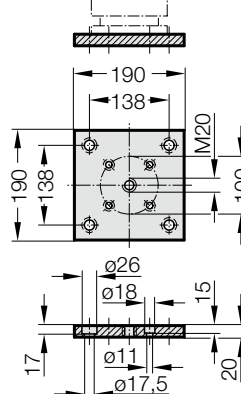
2480.007.07500



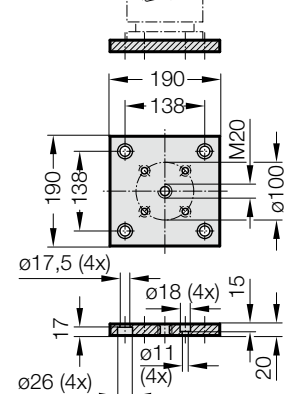
2480.008.07500³⁾



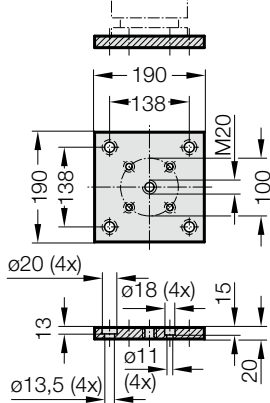
2480.011.07500



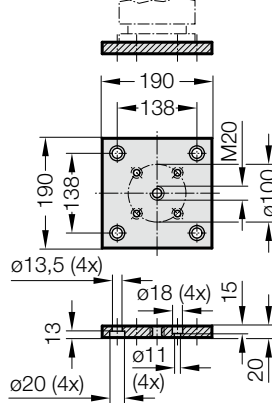
2480.011.07500.2



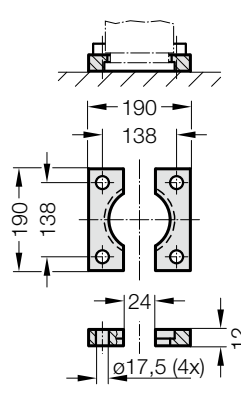
2480.011.03.07500



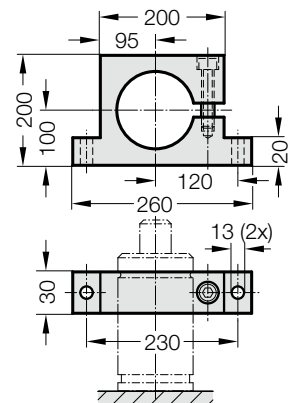
2480.011.03.07500.2



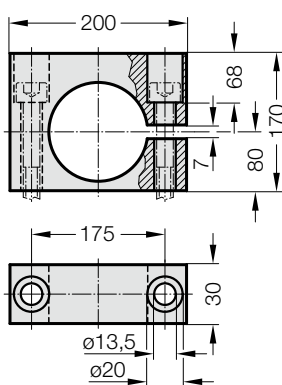
2480.022.07500



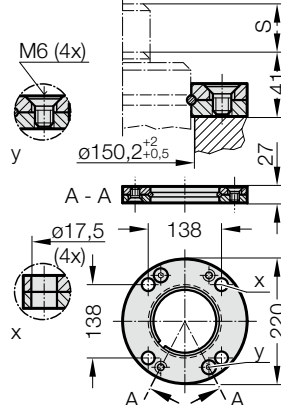
2480.044.07500²⁾



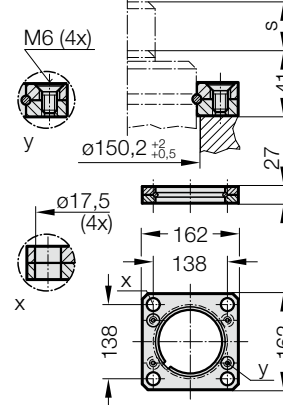
2480.044.03.07500²⁾



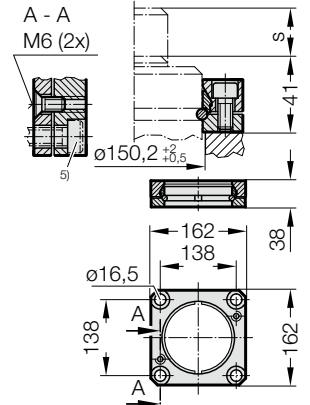
2480.055.07500



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 POWERLINE

Note:

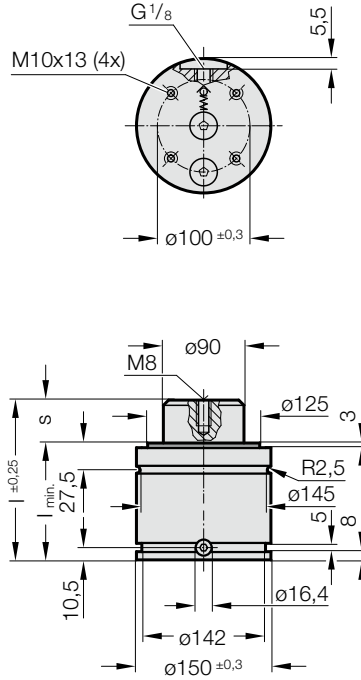
Initial spring force at 150 bar = 9540 daN

Order No for spare parts kit: 2487.15.09500
(Stroke length 19 not repairable)

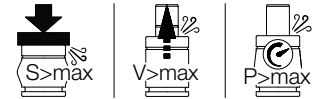
Gas spring without valve
Order No (example): 2487.15.09500. .P

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. 20 to 80 (at 20°C)
Max. piston rod speed: 1.8 m/s

2487.15.09500.



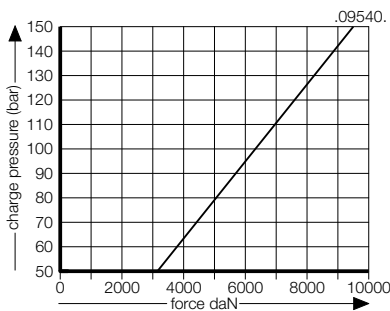
PED 2014/68/EU | **VDI** | **ISO**



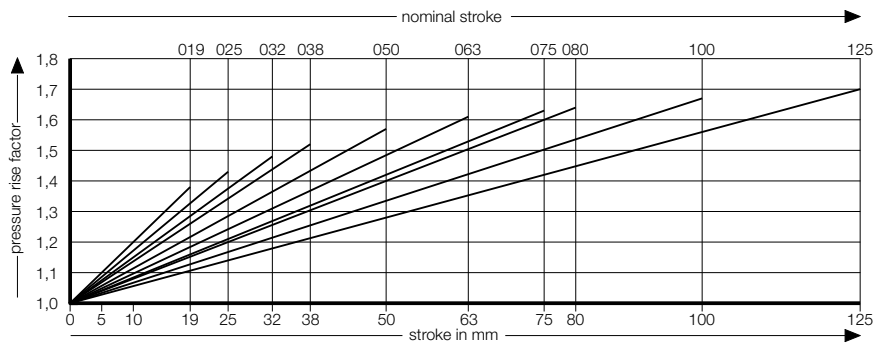
2487.15.09500. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.09500.019	19	97	116	0.513	9.56
2487.15.09500.025	25	103	128	0.609	9.93
2487.15.09500.032	32	110	142	0.722	10.37
2487.15.09500.038	38	116	154	0.818	10.74
2487.15.09500.050	50	128	178	1.01	11.49
2487.15.09500.063	63	141	204	1.218	12.3
2487.15.09500.075	75	153	228	1.411	13.05
2487.15.09500.080	80	158	238	1.491	13.37
2487.15.09500.100	100	178	278	1.811	14.61
2487.15.09500.125	125	203	328	2.212	16.18

Initial spring force versus charge pressure



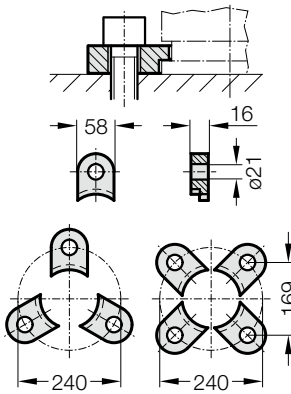
Spring force Diagram displacement versus stroke rise



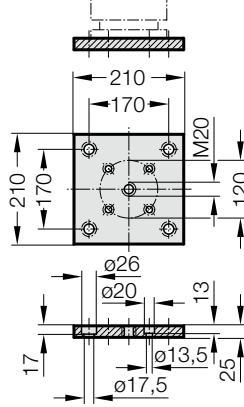
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

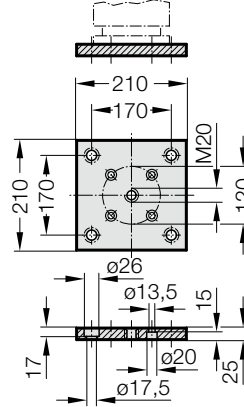
2480.007.10000



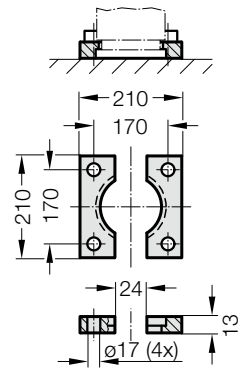
2480.011.10000



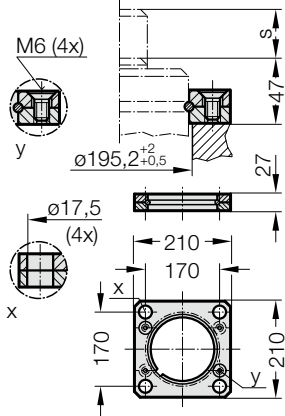
2480.011.10000.2



2480.022.10000



2480.057.10000



GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 19910 daN

Order No for spare parts kit: 2487.15.20000
(Stroke length 19 and 25 not repairable)

Gas spring without valve

Order No (example): 2487.15.20000. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

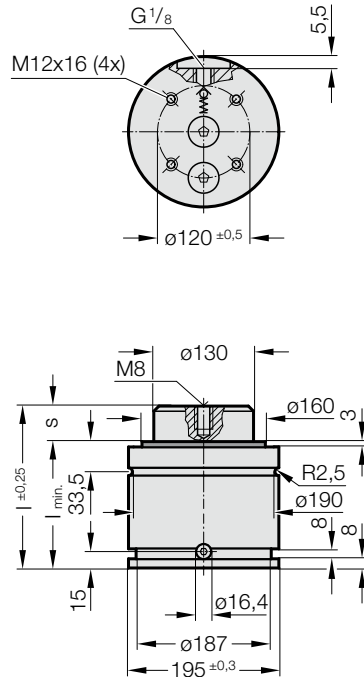
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

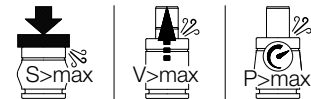
Max. recommended extensions per minute:
approx. 20 to 80 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.20000.



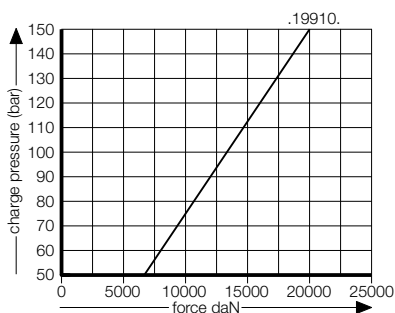
PED
2014/68/EU



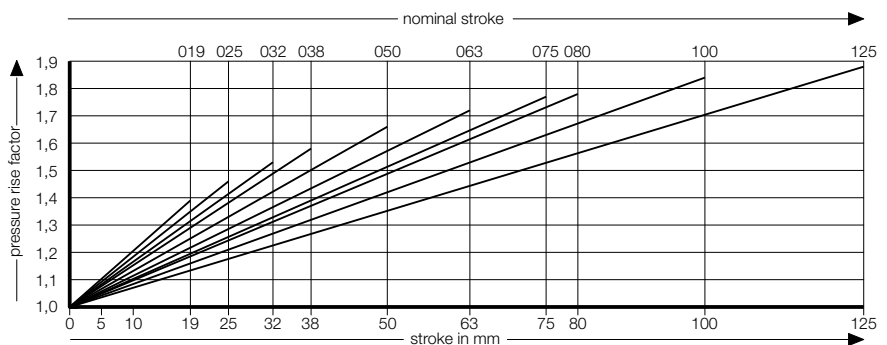
2487.15.20000. Gas spring POWERLINE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.20000.019	19	129	148	1.047	21.58
2487.15.20000.025	25	135	160	1.215	22.29
2487.15.20000.032	32	142	174	1.411	23.12
2487.15.20000.038	38	148	186	1.58	23.84
2487.15.20000.050	50	160	210	1.916	25.26
2487.15.20000.063	63	173	236	2.28	26.8
2487.15.20000.075	75	185	260	2.617	28.22
2487.15.20000.080	80	190	270	2.757	28.81
2487.15.20000.100	100	210	310	3.317	31.19
2487.15.20000.125	125	235	360	4.018	34.16

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



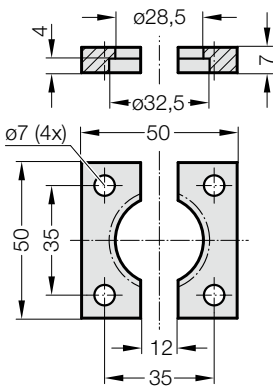
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS NEW GENERATION POWERLINE, WITH REINFORCED SPRING BASE

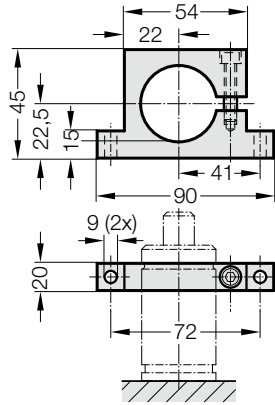


GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

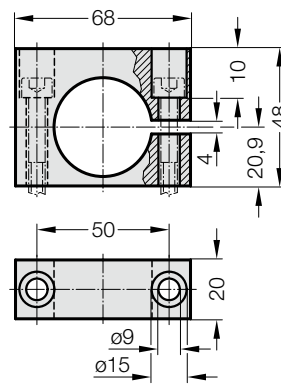
2480.022.00150



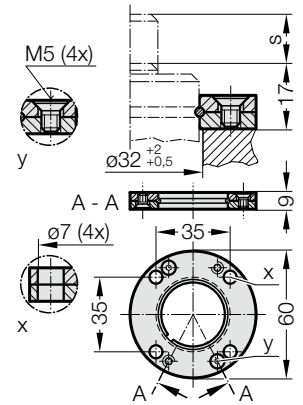
2480.044.00150²⁾



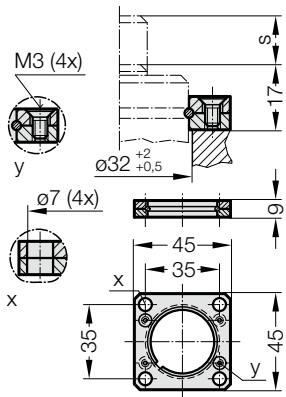
2480.044.03.00150²⁾



2480.055.00150



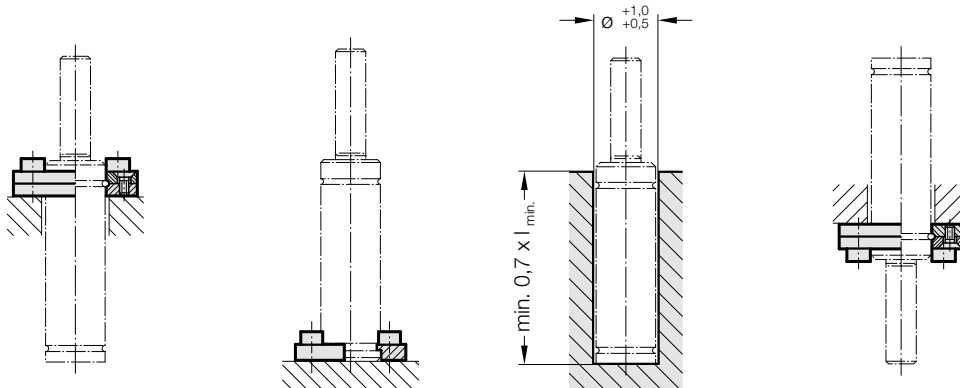
2480.057.00150



Note:

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

Mounting examples:



GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

Note:

Initial spring force at 180 bar = 360 daN

Order No for spare parts kit: 2487.15.00350
(Stroke length 10 and 13 not repairable)

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

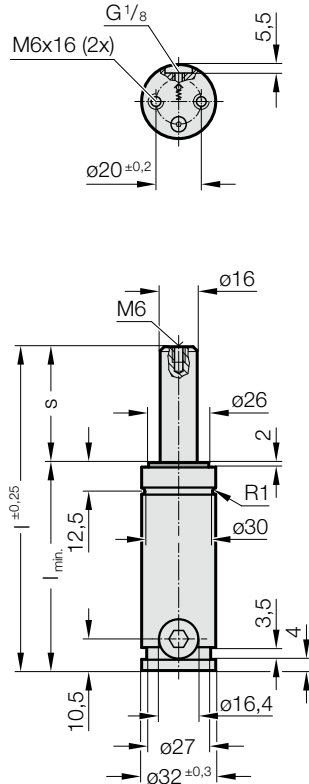
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

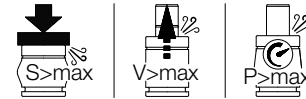
approx. 20 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.33.00350.



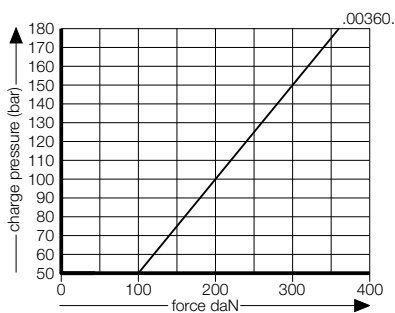
PED
2014/68/EU



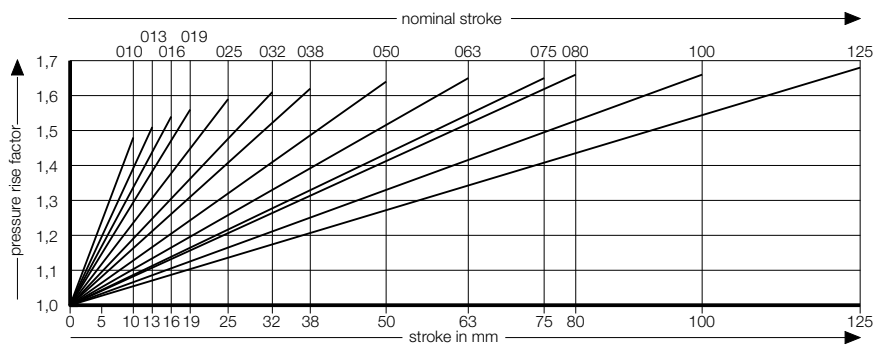
2487.15.33.00350. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max})	l _{min}	l	Gas volume [l]	Weight [kg]
2487.15.33.00350.010	10	50	60	0.008	0.22
2487.15.33.00350.013	13	53	66	0.01	0.23
2487.15.33.00350.016	16	56	72	0.011	0.24
2487.15.33.00350.019	19	59	78	0.013	0.25
2487.15.33.00350.025	25	65	90	0.017	0.27
2487.15.33.00350.032	32	72	104	0.021	0.29
2487.15.33.00350.038	38	78	116	0.024	0.31
2487.15.33.00350.050	50	90	140	0.031	0.35
2487.15.33.00350.063	63	103	166	0.039	0.39
2487.15.33.00350.075	75	115	190	0.046	0.43
2487.15.33.00350.080	80	120	200	0.049	0.45
2487.15.33.00350.100	100	140	240	0.061	0.51
2487.15.33.00350.125	125	165	290	0.075	0.59

Initial spring force versus charge pressure



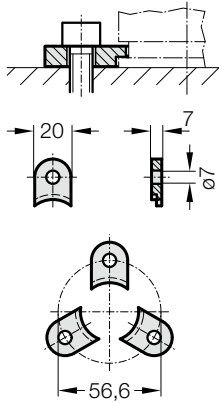
Spring force Diagram displacement versus stroke rise



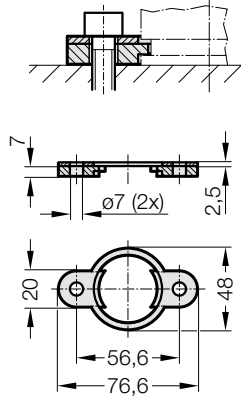
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

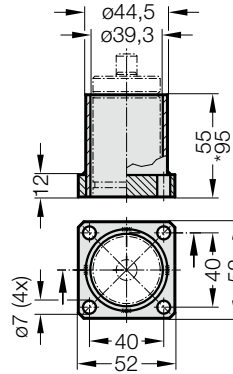
2480.007.00250



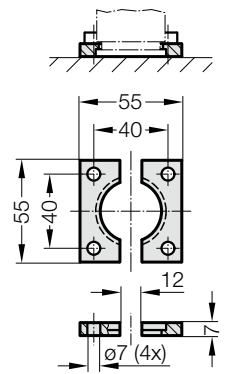
2480.008.00250³⁾



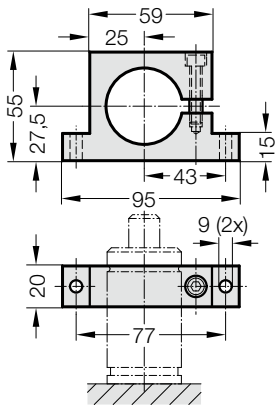
2480.010.00250.055³⁾
2480.010.00250.095³⁾



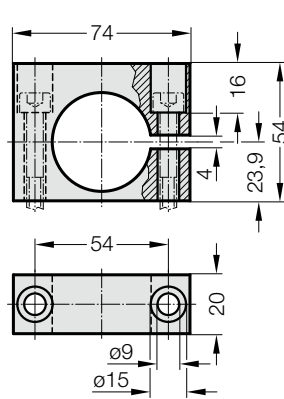
2480.022.00250



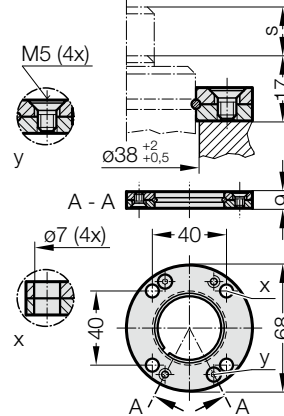
2480.044.00250²⁾



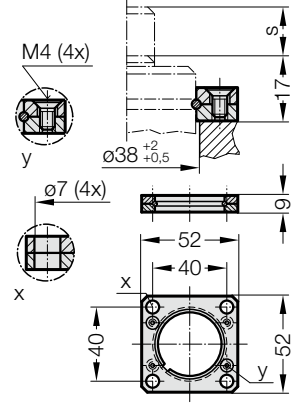
2480.044.03.00250²⁾



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

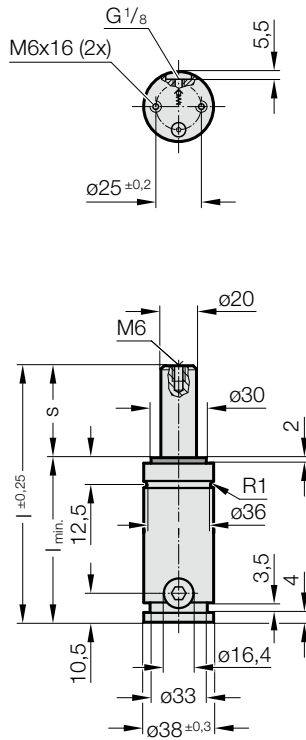
Note:

Initial spring force at 150 bar = 470 daN

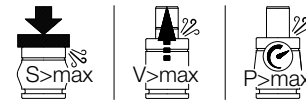
Order No for spare parts kit: 2487.15.00500
(Stroke length 10 and 13 not repairable)

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. 20 to 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

2487.15.33.00500.



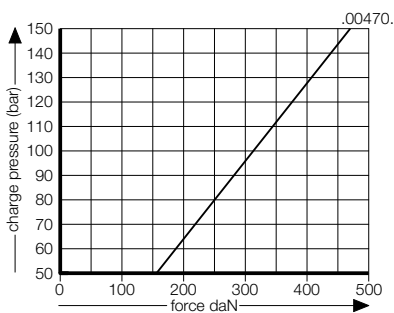
PED
2014/68/EU



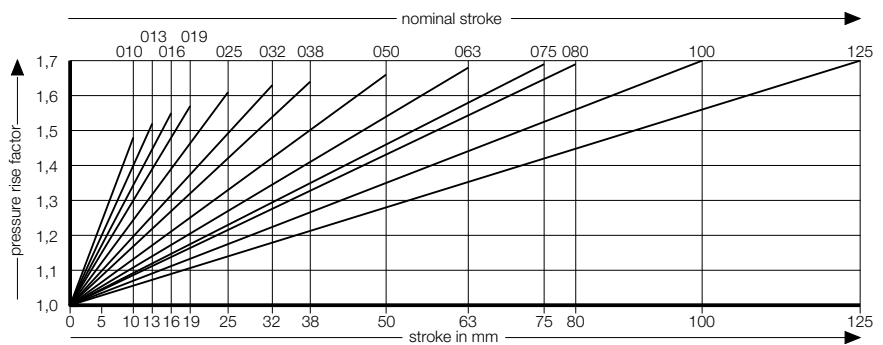
2487.15.33.00500. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.00500.010	10	50	60	0.011	0.32
2487.15.33.00500.013	13	53	66	0.014	0.34
2487.15.33.00500.016	16	56	72	0.016	0.36
2487.15.33.00500.019	19	59	78	0.019	0.37
2487.15.33.00500.025	25	65	90	0.024	0.4
2487.15.33.00500.032	32	72	104	0.03	0.43
2487.15.33.00500.038	38	78	116	0.035	0.46
2487.15.33.00500.050	50	90	140	0.045	0.52
2487.15.33.00500.063	63	103	166	0.056	0.58
2487.15.33.00500.075	75	115	190	0.067	0.63
2487.15.33.00500.080	80	120	200	0.071	0.66
2487.15.33.00500.100	100	140	240	0.088	0.75
2487.15.33.00500.125	125	165	290	0.109	0.87

Initial spring force versus charge pressure



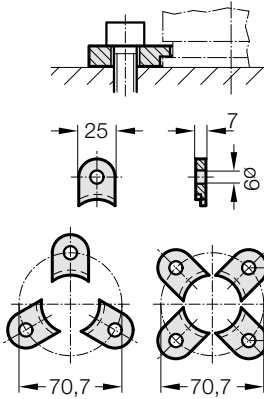
Spring force Diagram displacement versus stroke rise



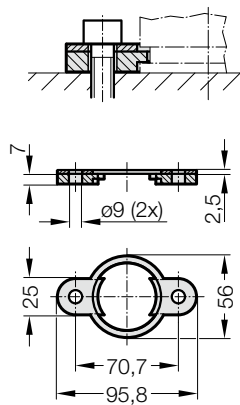
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

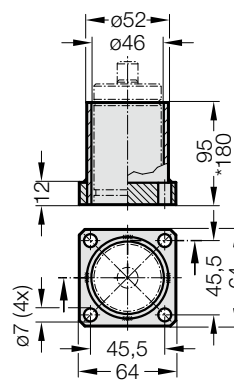
2480.007.00500



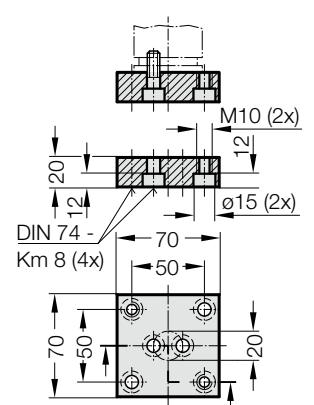
2480.008.00500 ³⁾



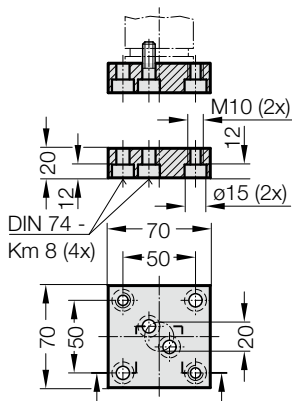
2480.010.00500.095 ³⁾
2480.010.00500.180* ³⁾



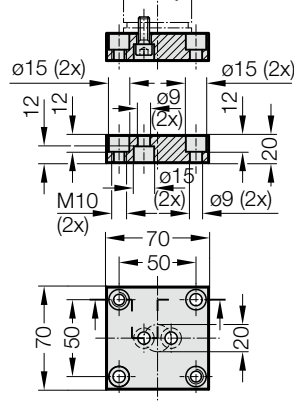
2480.011.00500



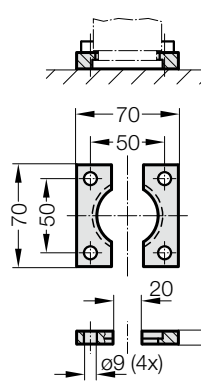
2480.011.00500.1



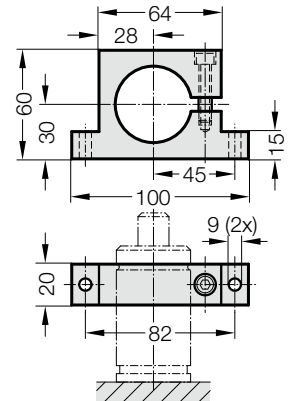
2480.011.00500.2



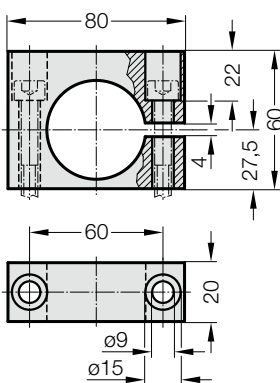
2480.022.00500



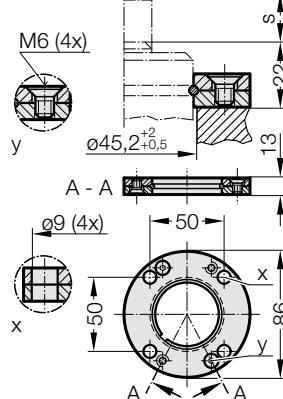
2480.044.00500 ²⁾



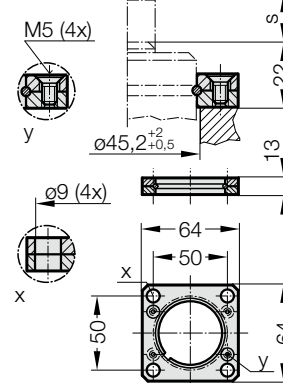
2480.044.03.00500 ²⁾



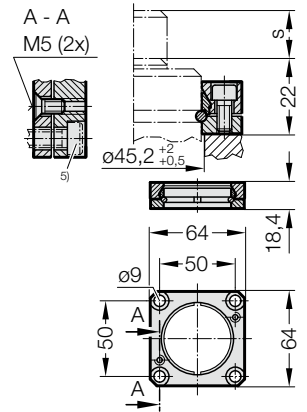
2480.055.00500



2480.057.00500



2480.064.00500 ⁴⁾



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 = 740 daN

Order No for spare parts kit: 2487.15.00750
(Stroke length 10 and 13 not repairable)

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

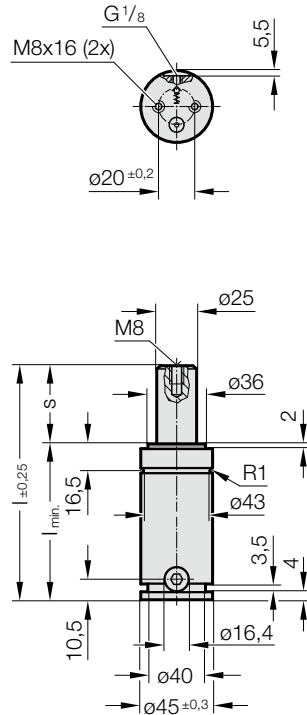
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

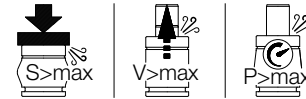
Max. recommended extensions per minute:
approx. 20 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.33.00750.



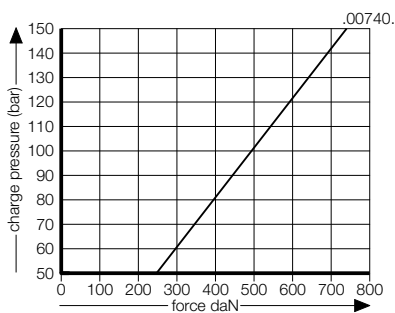
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2014/68/EU



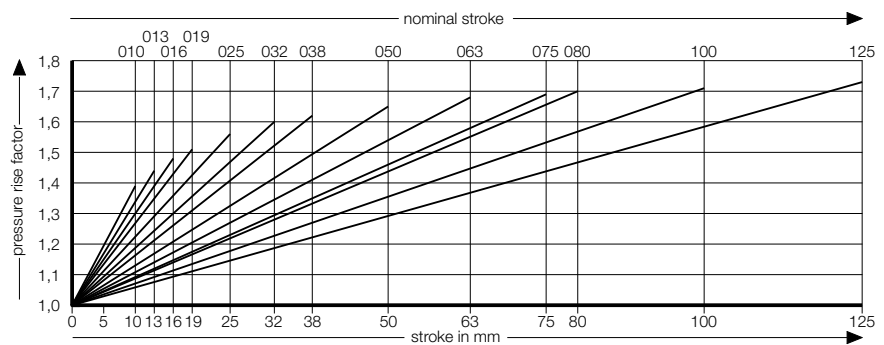
2487.15.33.00750. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.00750.010	10	57	67	0.02	0.5
2487.15.33.00750.013	13	60	73	0.024	0.52
2487.15.33.00750.016	16	63	79	0.028	0.54
2487.15.33.00750.019	19	66	85	0.032	0.56
2487.15.33.00750.025	25	72	97	0.039	0.6
2487.15.33.00750.032	32	79	111	0.048	0.64
2487.15.33.00750.038	38	85	123	0.056	0.68
2487.15.33.00750.050	50	97	147	0.071	0.76
2487.15.33.00750.063	63	110	173	0.087	0.84
2487.15.33.00750.075	75	122	197	0.102	0.92
2487.15.33.00750.080	80	127	207	0.108	0.95
2487.15.33.00750.100	100	147	247	0.134	1.08
2487.15.33.00750.125	125	172	297	0.165	1.24

Initial spring force versus charge pressure



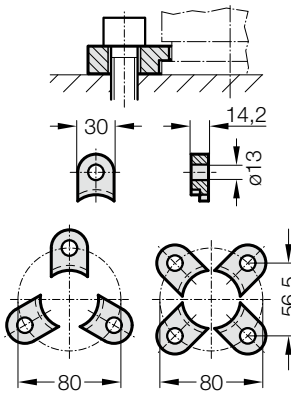
Spring force Diagram displacement versus stroke rise



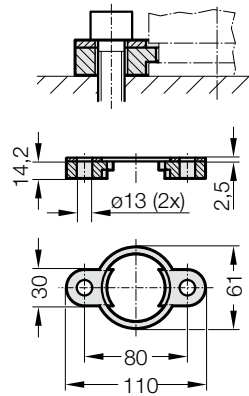
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

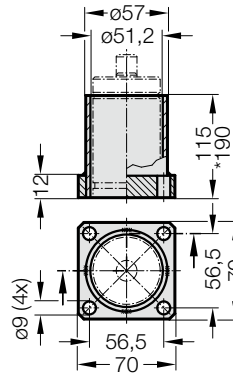
2480.007.00750



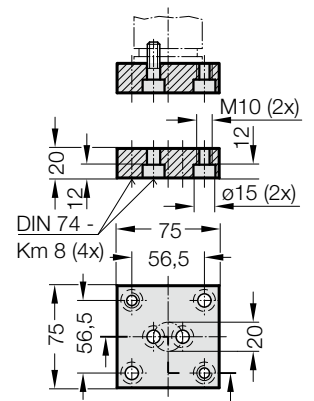
2480.008.00750 ³⁾



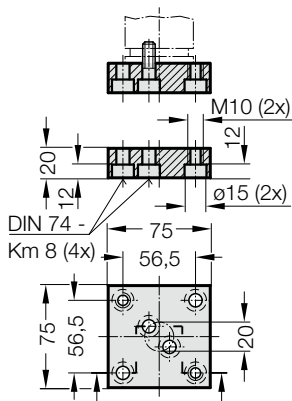
2480.010.00750.115 ³⁾
2480.010.00750.190* ³⁾



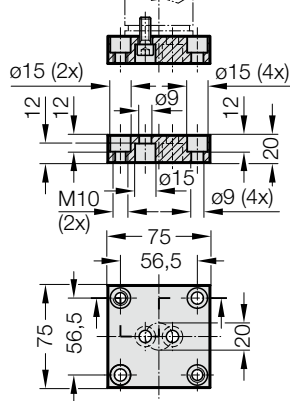
2480.011.00750



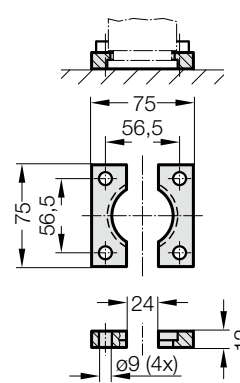
2480.011.00750.1



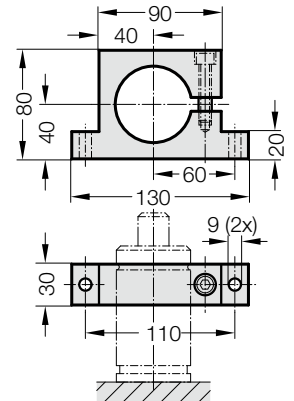
2480.011.00750.3



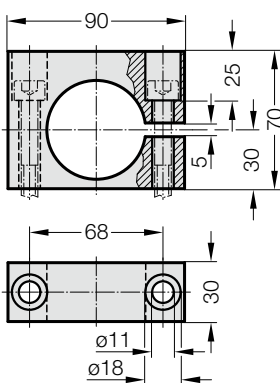
2480.022.00750



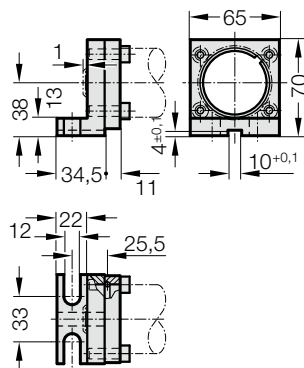
2480.044.00750 ²⁾



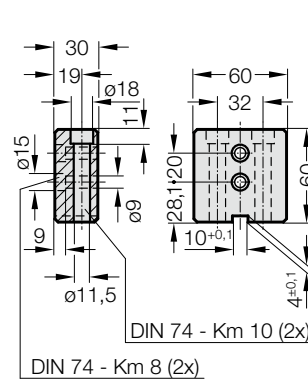
2480.044.03.00750 ²⁾



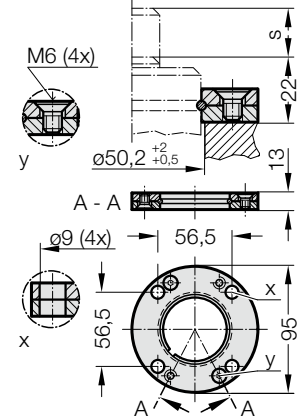
2480.045.00750 ²⁾



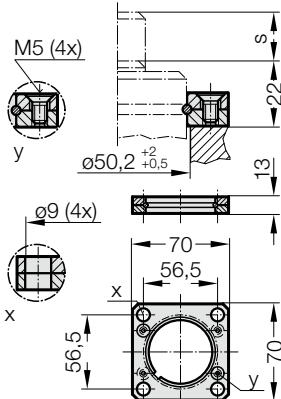
2480.047.00750 ²⁾



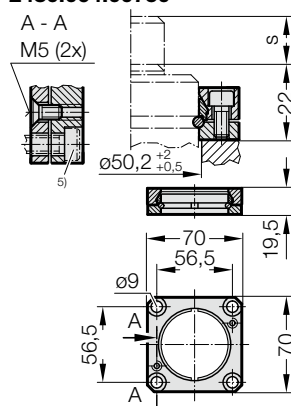
2480.055.00750



2480.057.00750



2480.064.00750 ⁴⁾



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 = 920 daN

Order No for spare parts kit: 2487.15.01000
(Stroke length 13 not repairable)

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

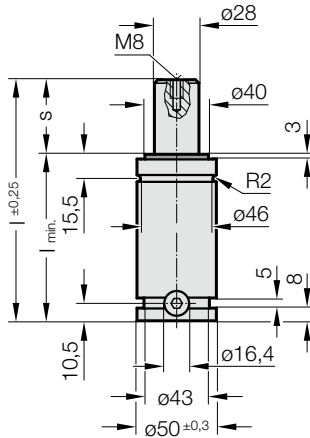
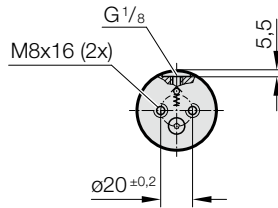
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

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

Max. piston rod speed: 1.8 m/s

2487.15.33.01000.



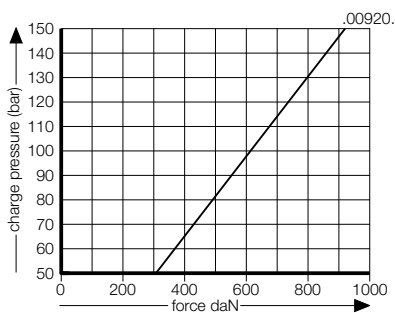
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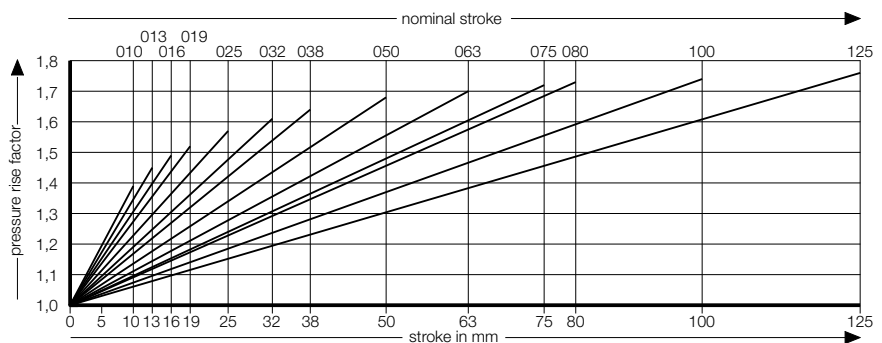
2487.15.33.01000. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.01000.013	13	65	78	0.03	0.7
2487.15.33.01000.016	16	68	84	0.035	0.72
2487.15.33.01000.019	19	71	90	0.04	0.75
2487.15.33.01000.025	25	77	102	0.049	0.79
2487.15.33.01000.032	32	84	116	0.06	0.85
2487.15.33.01000.038	38	90	128	0.069	0.9
2487.15.33.01000.050	50	102	152	0.088	0.99
2487.15.33.01000.063	63	115	178	0.108	1.1
2487.15.33.01000.075	75	127	202	0.127	1.19
2487.15.33.01000.080	80	132	212	0.135	1.23
2487.15.33.01000.100	100	152	252	0.166	1.39
2487.15.33.01000.125	125	177	302	0.205	1.6

Initial spring force versus charge pressure



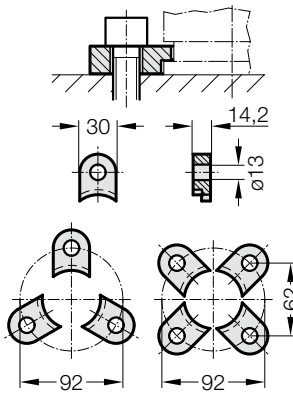
Spring force Diagram displacement versus stroke rise



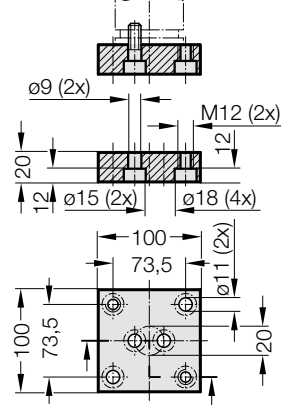
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

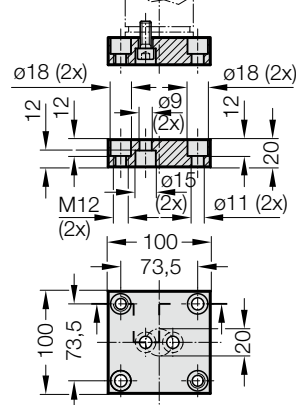
2480.007.01000



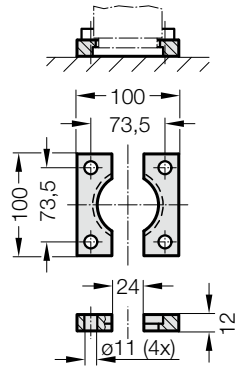
2480.011.01000



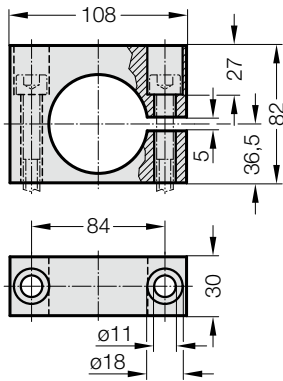
2480.011.01000.2



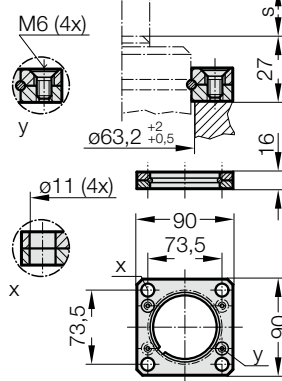
2480.022.01000



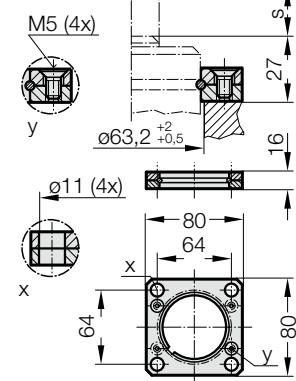
2480.044.03.01000 2)



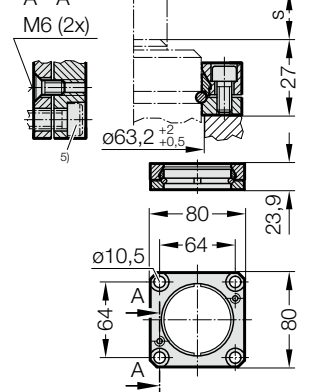
2480.057.01000



2480.057.03.01000



2480.064.01000 4)



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 WITH REINFORCED SPRING BASE

Note:

Initial spring force at 150 bar = 1530 daN

Order No for spare parts kit: 2487.15.01500
(Stroke length 16 not repairable)

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

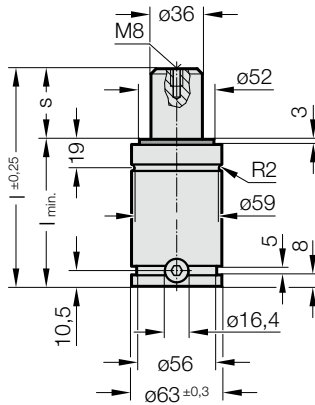
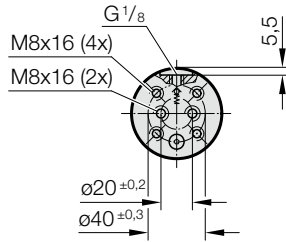
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

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

Max. piston rod speed: 1.8 m/s

2487.15.33.01500.



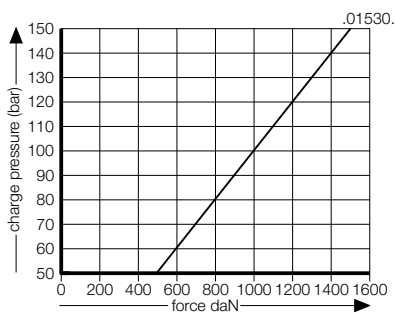
PED
2014/68/EU



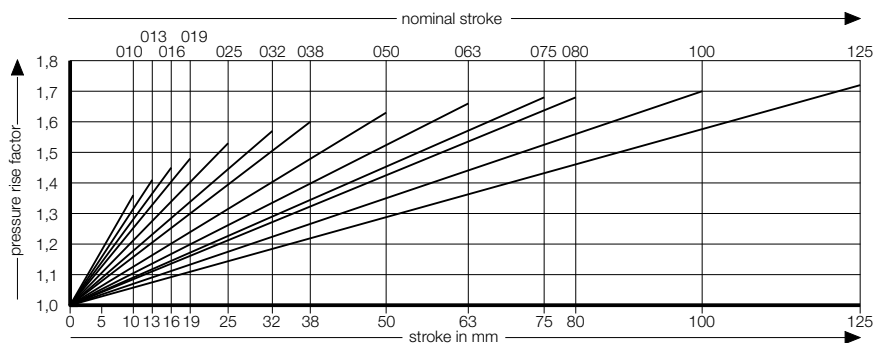
2487.15.33.01500. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.01500.013	13	65	78	0.053	1.08
2487.15.33.01500.016	16	68	84	0.031	1.11
2487.15.33.01500.019	19	71	90	0.068	1.15
2487.15.33.01500.025	25	77	102	0.084	1.22
2487.15.33.01500.032	32	84	116	0.103	1.3
2487.15.33.01500.038	38	90	128	0.119	1.37
2487.15.33.01500.050	50	102	152	0.15	1.51
2487.15.33.01500.063	63	115	178	0.185	1.67
2487.15.33.01500.075	75	127	202	0.216	1.81
2487.15.33.01500.080	80	132	212	0.229	1.87
2487.15.33.01500.100	100	152	252	0.282	2.11
2487.15.33.01500.125	125	177	302	0.348	2.4

Initial spring force versus charge pressure



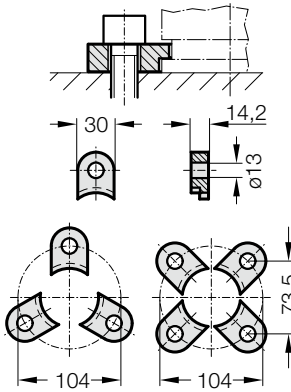
Spring force Diagram displacement versus stroke rise



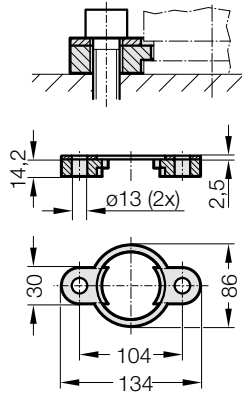
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

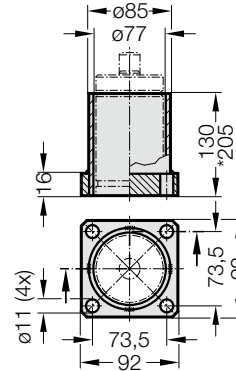
2480.007.01500



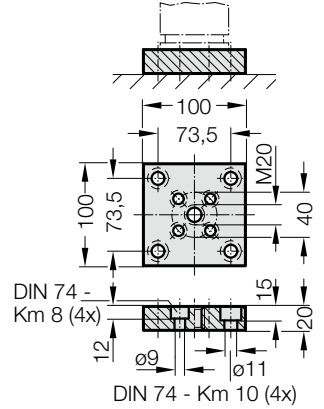
2480.008.01500 ³⁾



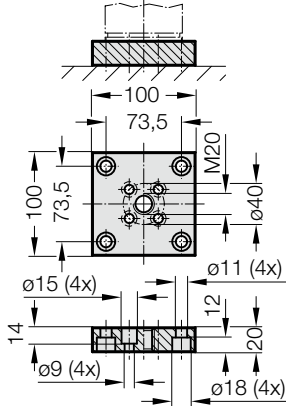
2480.010.01500.130 ³⁾
2480.010.01500.205 ³⁾



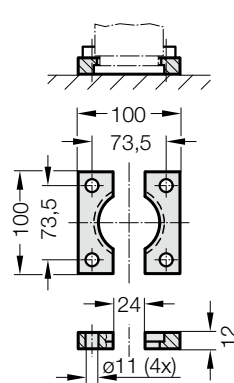
2480.011.01500



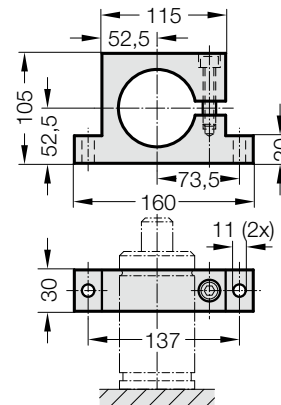
2480.011.01500.2



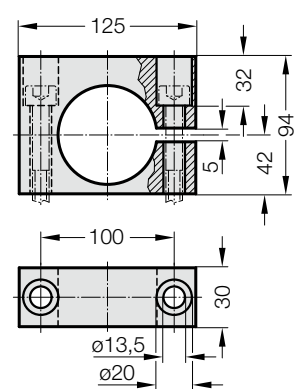
2480.022.01500



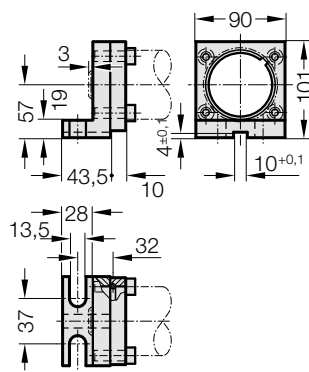
2480.044.01500 ²⁾



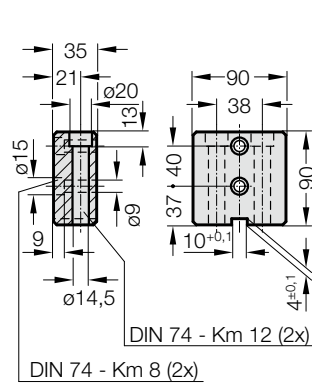
2480.044.03.01500 ²⁾



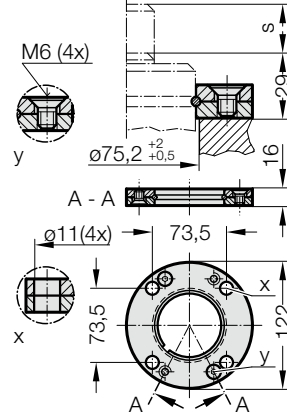
2480.045.01500 ²⁾



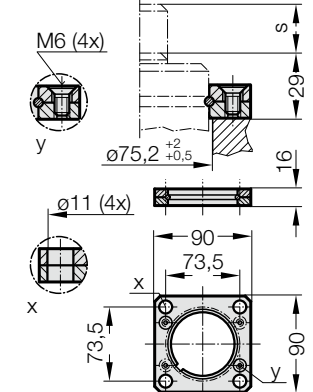
2480.047.01500 ²⁾



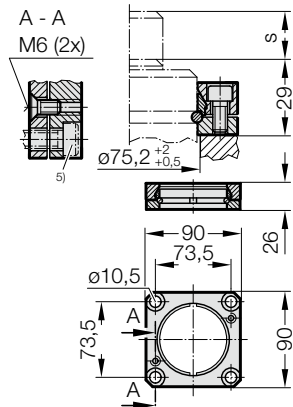
2480.055.01500



2480.057.01500



2480.064.01500 ⁴⁾



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 = 2385 daN

Order No for spare parts kit: 2487.15.02400
(Stroke length 16 and 19 not repairable)

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

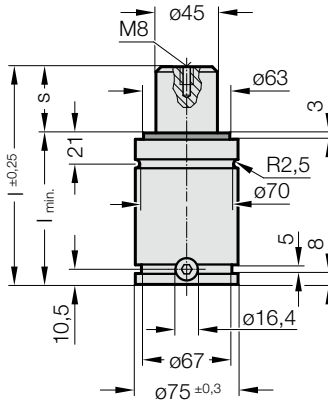
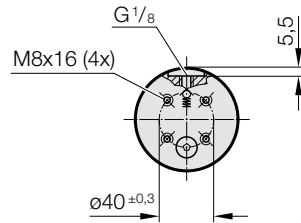
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 20 to 100 (at 20°C)

Max. piston rod speed: 1.8 m/s

2487.15.33.02400.



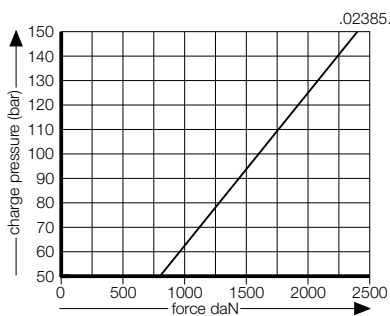
PED
2014/68/EU



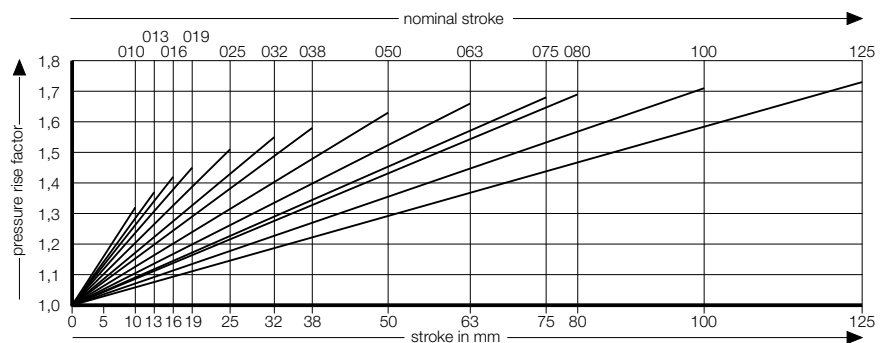
2487.15.33.02400. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.02400.016	16	75	91	0.101	1.75
2487.15.33.02400.019	19	79	98	0.113	1.79
2487.15.33.02400.025	25	84	109	0.137	1.89
2487.15.33.02400.032	32	91	123	0.165	1.99
2487.15.33.02400.038	38	97	135	0.189	2.09
2487.15.33.02400.050	50	109	159	0.237	2.28
2487.15.33.02400.063	63	122	185	0.289	2.49
2487.15.33.02400.075	75	134	209	0.337	2.68
2487.15.33.02400.080	80	139	219	0.357	2.75
2487.15.33.02400.100	100	159	259	0.437	3.07
2487.15.33.02400.125	125	184	309	0.537	3.46

Initial spring force versus charge pressure



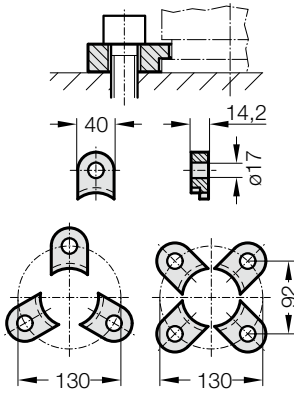
Spring force Diagram displacement versus stroke rise



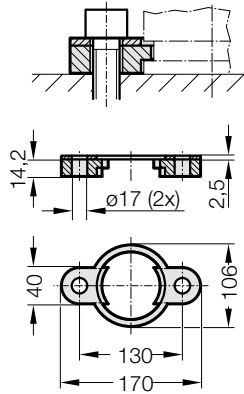
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

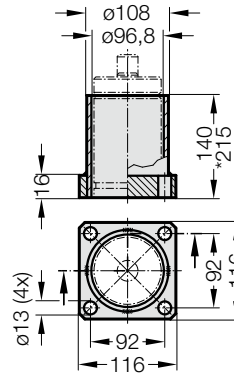
2480.007.03000



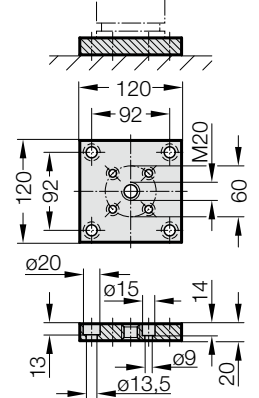
2480.008.03000³⁾



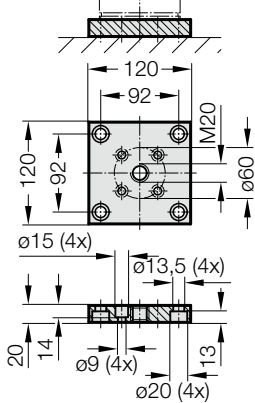
2480.010.03000.140³⁾
2480.010.03000.215*³⁾



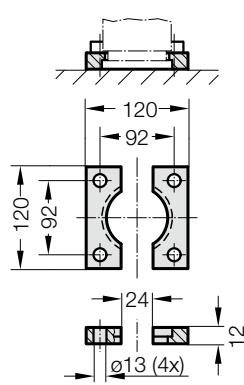
2480.011.03000



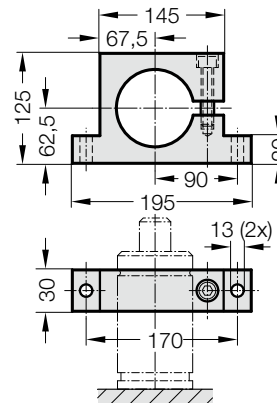
2480.011.03000.2



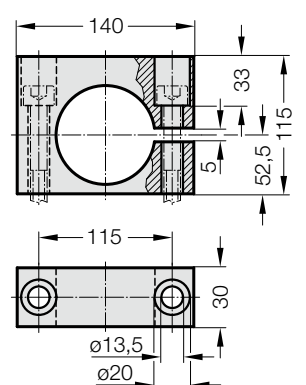
2480.022.03000



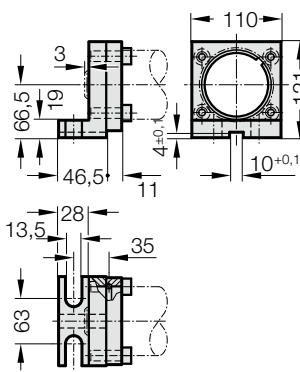
2480.044.03000²⁾



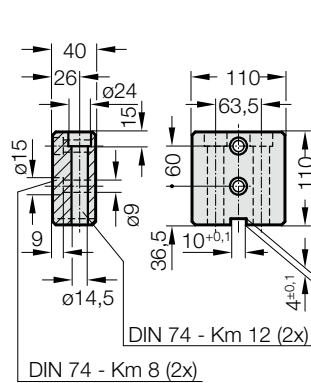
2480.044.03.03000²⁾



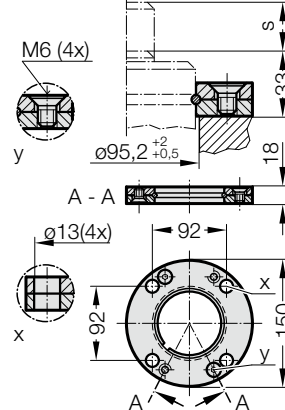
2480.045.03000²⁾



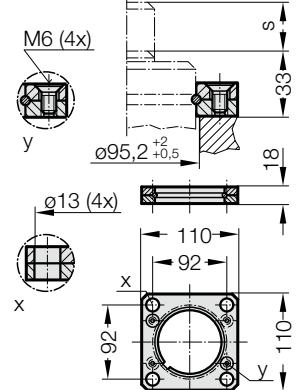
2480.047.03000²⁾



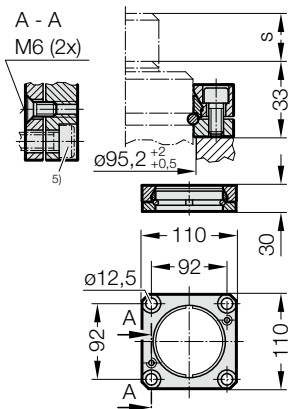
2480.055.03000



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)

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

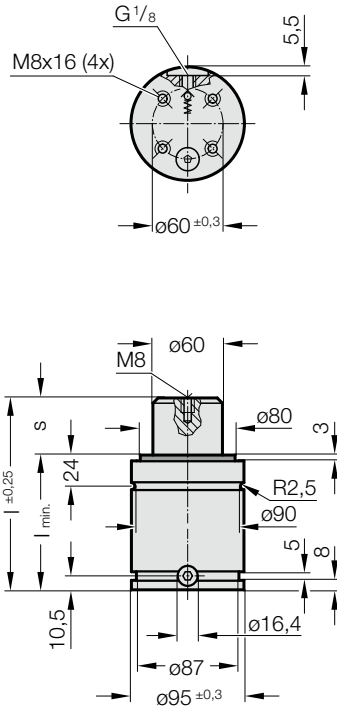
Note:

Initial spring force at 150 bar = 4240 daN

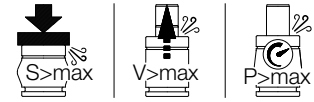
Order No for spare parts kit: 2487.15.04200
(Stroke length 16 and 19 not repairable)

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. 20 to 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

2487.15.33.04200.



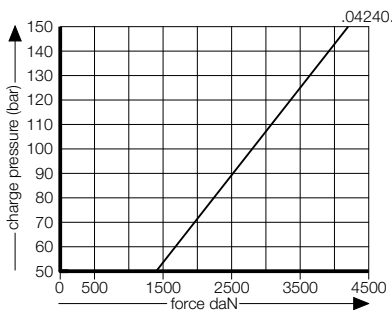
PED
2014/68/EU



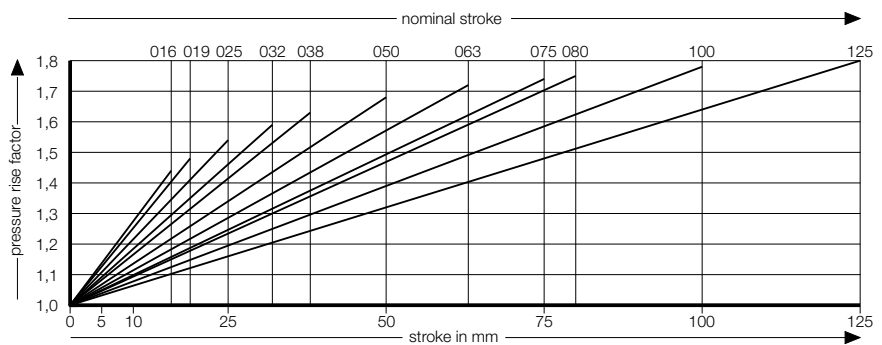
2487.15.33.04200. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.04200.016	16	78	94	0.172	2.98
2487.15.33.04200.019	19	81	100	0.192	3.05
2487.15.33.04200.025	25	87	112	0.232	3.2
2487.15.33.04200.032	32	94	126	0.28	3.38
2487.15.33.04200.038	38	100	138	0.32	3.52
2487.15.33.04200.050	50	112	162	0.401	3.82
2487.15.33.04200.063	63	125	188	0.488	4.15
2487.15.33.04200.075	75	137	212	0.569	4.45
2487.15.33.04200.080	80	142	222	0.603	4.57
2487.15.33.04200.100	100	162	262	0.738	5.07
2487.15.33.04200.125	125	187	312	0.906	5.69

Initial spring force versus charge pressure



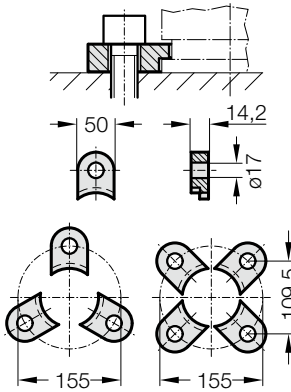
Spring force Diagram displacement versus stroke rise



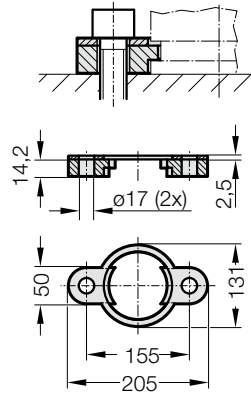
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

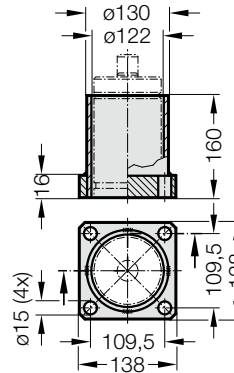
2480.007.05000



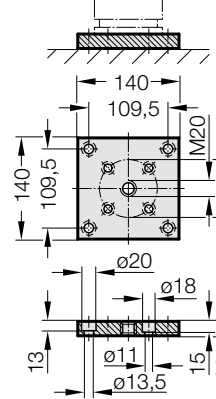
2480.008.05000³⁾



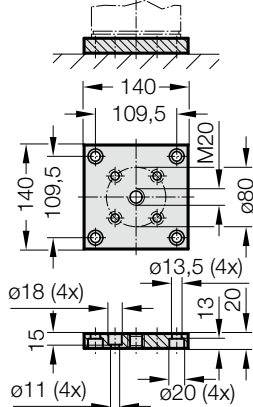
2480.010.05000.160³⁾



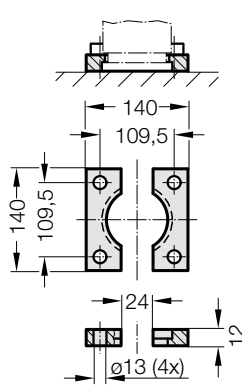
2480.011.05000



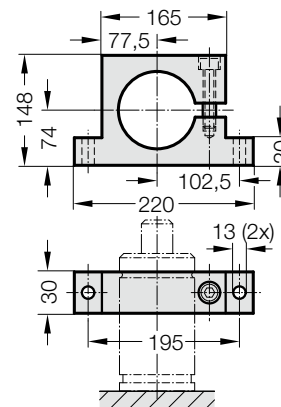
2480.011.05000.2



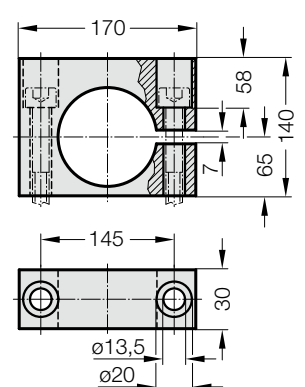
2480.022.05000



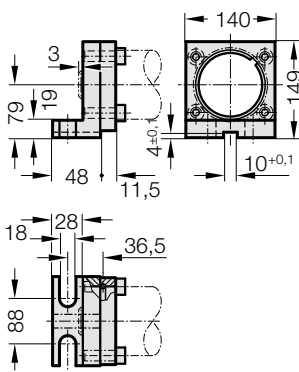
2480.044.05000²⁾



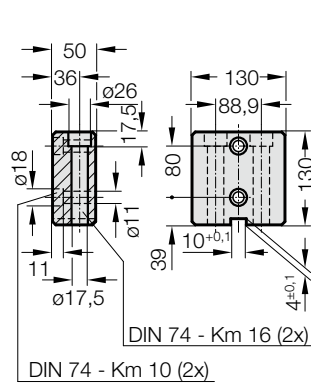
2480.044.03.05000²⁾



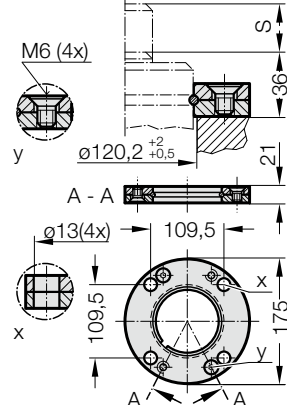
2480.045.05000²⁾



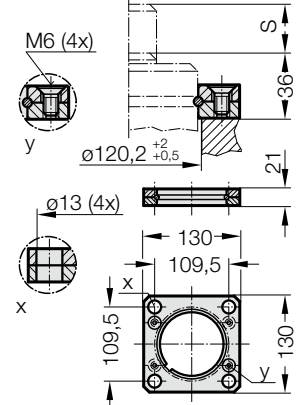
2480.047.05000²⁾



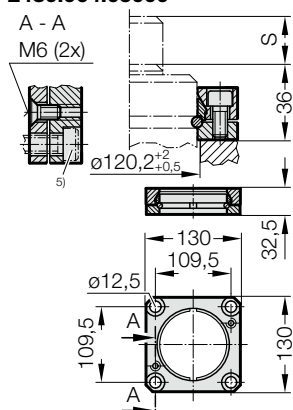
2480.055.05000



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 WITH REINFORCED SPRING BASE

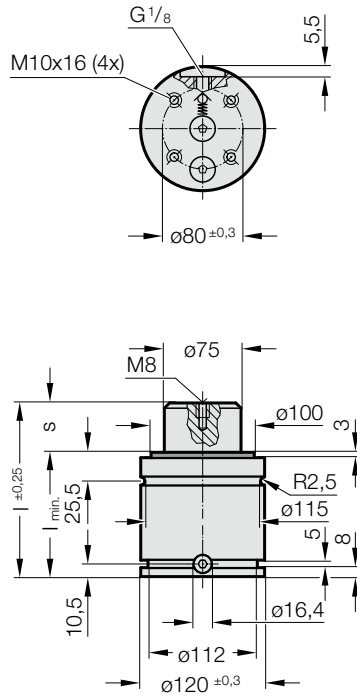
Note:

Initial spring force at 150 bar = 6630 daN

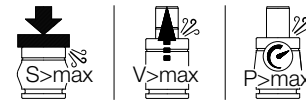
Order No for spare parts kit: 2487.15.06600
(Stroke length 16 and 19 not repairable)

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. 20 to 100 (at 20°C)
 Max. piston rod speed: 1.8 m/s

2487.15.33.06600.



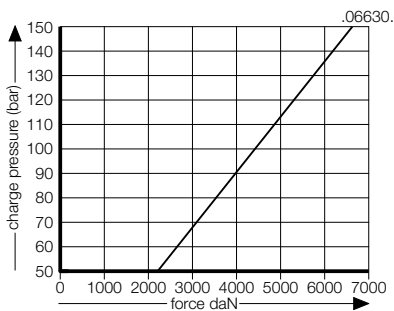
PED
2014/68/EU



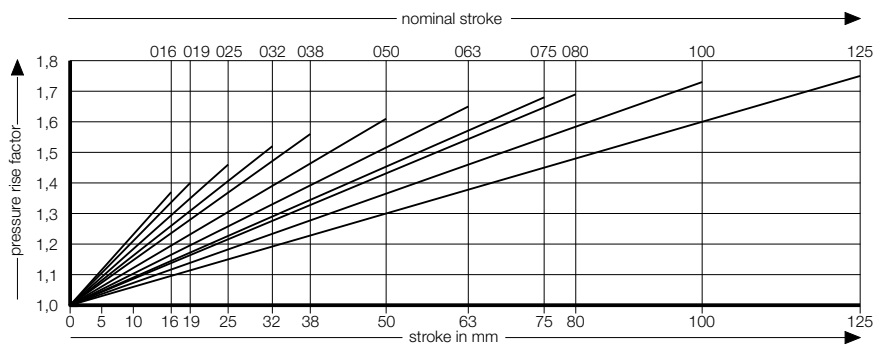
2487.15.33.06600. Gas spring POWERLINE with reinforced spring base

Order No	s (Stroke max.)	l _{min.}	l	Gas volume [l]	Weight [kg]
2487.15.33.06600.016	16	88	104	0.306	5.4
2487.15.33.06600.019	19	91	110	0.338	5.52
2487.15.33.06600.025	25	97	122	0.402	5.76
2487.15.33.06600.032	32	104	136	0.477	6.04
2487.15.33.06600.038	38	110	148	0.541	6.28
2487.15.33.06600.050	50	122	172	0.668	6.76
2487.15.33.06600.063	63	135	198	0.807	7.28
2487.15.33.06600.075	75	147	222	0.935	7.75
2487.15.33.06600.080	80	152	232	0.988	7.95
2487.15.33.06600.100	100	172	272	1.201	8.75
2487.15.33.06600.125	125	197	322	1.467	9.75

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



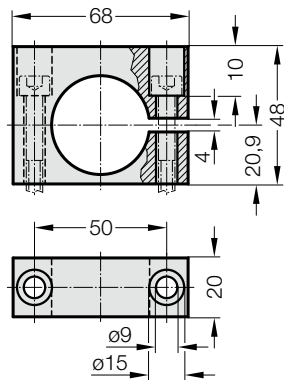
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS NEW GENERATION MAXFORCE



GAS SPRING MAXFORCE MOUNTING VARIATIONS

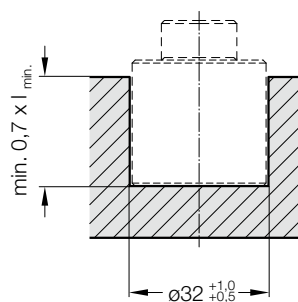
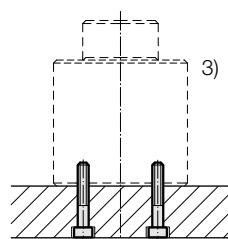
2480.044.03.00150²⁾



Note:

- 2) Attention:
The spring force must be absorbed by the stop Surface!
- 3) 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!
If vibration occurs, tighten the fixing screws accordingly

Mounting examples:



see Note!

GAS SPRING MAXFORCE

Note:

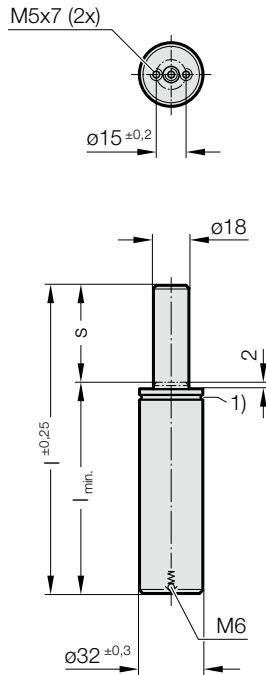
Initial spring force at 200 bar = 510 daN

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

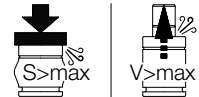
Pressure medium: Nitrogen N₂
 Max. filling pressure: 200 bar
 Min. filling pressure: 20 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute: approx. 40 to 80 (at 20°C)
 Max. piston rod speed: 1.6 m/s

1) Only for mounting additional wipers

2497.15.00500.



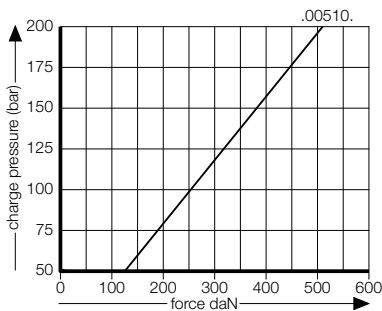
PED
2014/68/EU



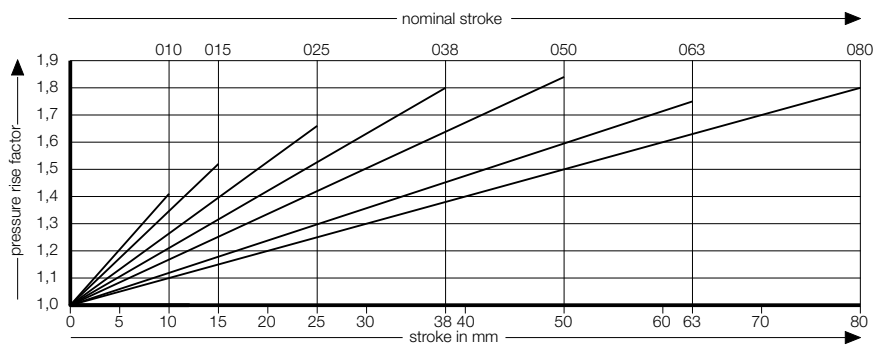
2497.15.00500. Gas spring MAXFORCE

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2497.15.00500.010	10	65	75	0.011	0.28
2497.15.00500.015	15	70	85	0.014	0.3
2497.15.00500.025	25	80	105	0.02	0.34
2497.15.00500.038	38	92	130	0.027	0.39
2497.15.00500.050	50	105	155	0.034	0.43
2497.15.00500.063	63	127	190	0.046	0.51
2497.15.00500.080	80	145	225	0.056	0.57

Initial spring force versus charge pressure



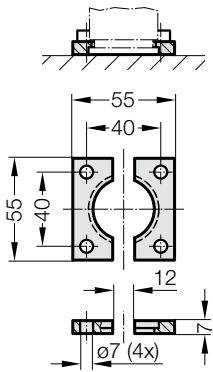
Spring force Diagram displacement versus stroke rise



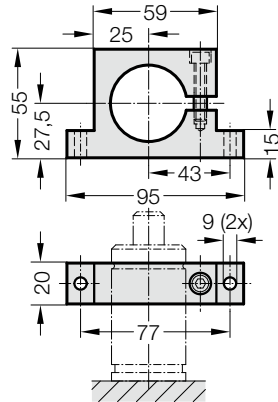
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING MAXFORCE MOUNTING VARIATIONS

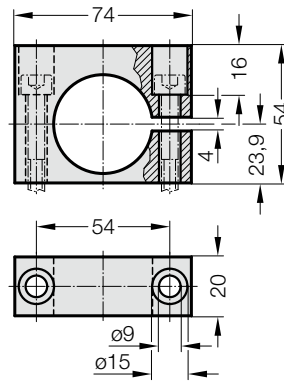
2480.022.00250



2480.044.00250 ²⁾



2480.044.03.00250 ²⁾



Note:

²⁾ Attention:

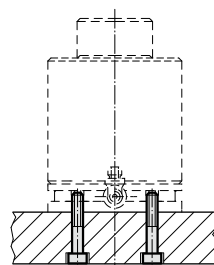
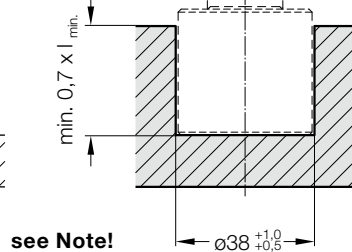
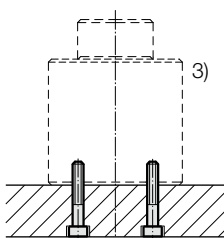
The spring force must be absorbed by the stop Surface!

³⁾ For stroke lengths over 25 mm, the gas pressure springs in the tool should be attached to the base through the threaded holes.

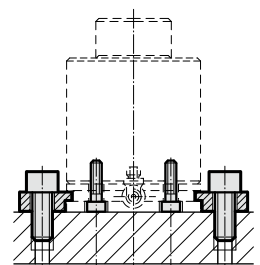
When mounting to floor, contact over the entire floor of the cylinder tube must be ensured!

If vibration occurs, tighten the fixing screws accordingly

Mounting examples:



with Adapter Baseplate



GAS SPRING MAXFORCE

Note:

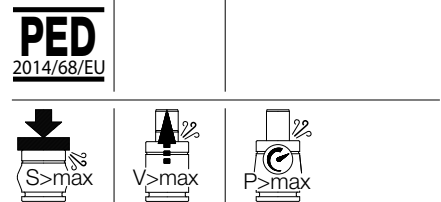
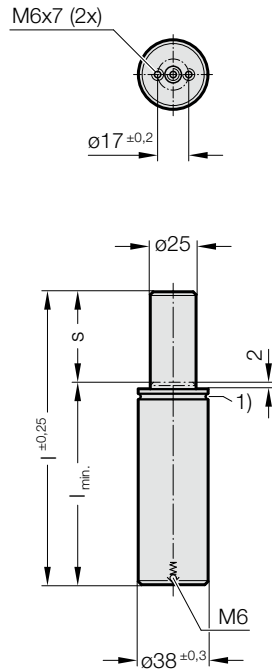
Initial spring force at 200 bar = 980 daN

Order No for spare parts kit: 2497.15.01000

Pressure medium: Nitrogen N₂
 Max. filling pressure: 200 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. 40 to 80 (at 20°C)
 Max. piston rod speed: 1.6 m/s

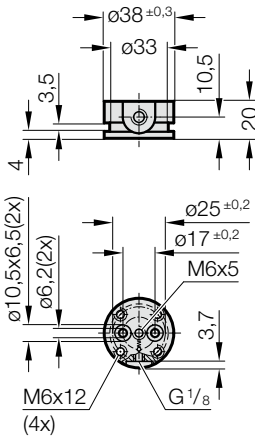
1) Only for mounting additional wipers

2497.15.01000.



2497.00.15.20.01000

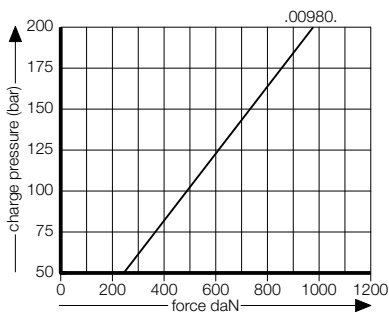
Adapter base plate with valve, flat-sealing



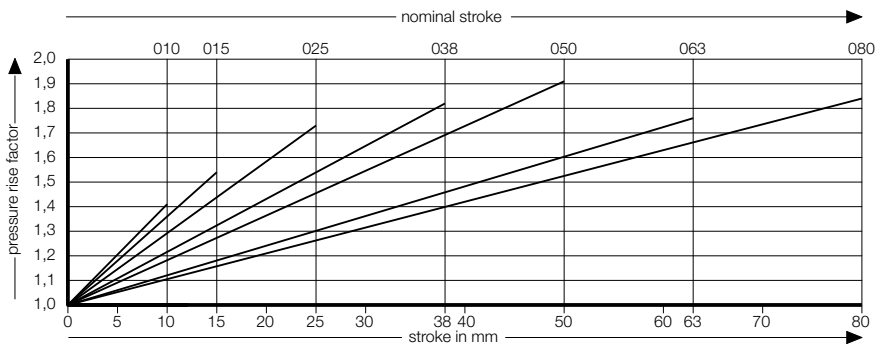
2497.15.01000. Gas spring MAXFORCE

Order No	s (Stroke max.)	l _{min.}	l	Gas volume [l]	Weight [kg]
2497.15.01000.010	10	65	75	0.022	0.37
2497.15.01000.015	15	70	85	0.026	0.39
2497.15.01000.025	25	80	105	0.036	0.45
2497.15.01000.038	38	97	135	0.051	0.53
2497.15.01000.050	50	110	160	0.063	0.6
2497.15.01000.063	63	142	205	0.089	0.73
2497.15.01000.080	80	160	240	0.106	0.82

Initial spring force versus charge pressure



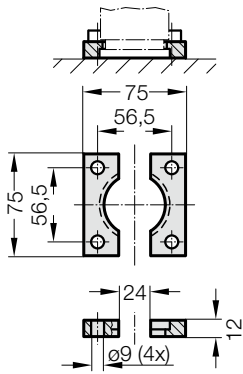
Spring force Diagram displacement versus stroke rise



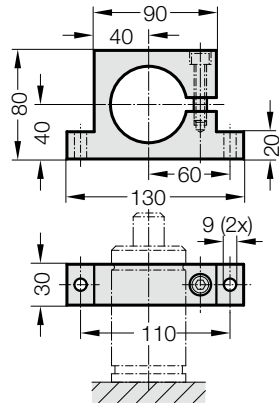
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING MAXFORCE MOUNTING VARIATIONS

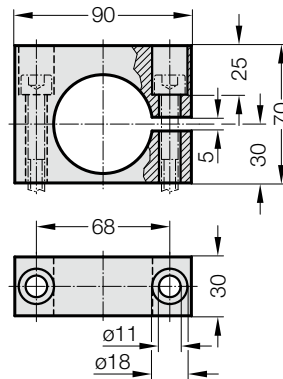
2480.022.00750



2480.044.00750 ²⁾



2480.044.03.00750 ²⁾



Note:

²⁾ Attention:

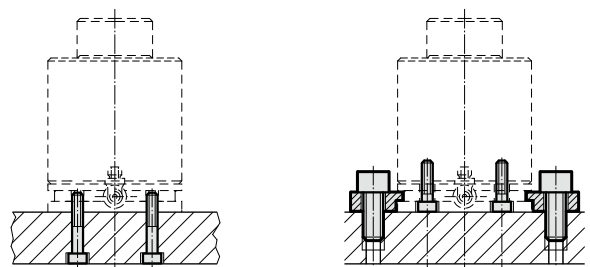
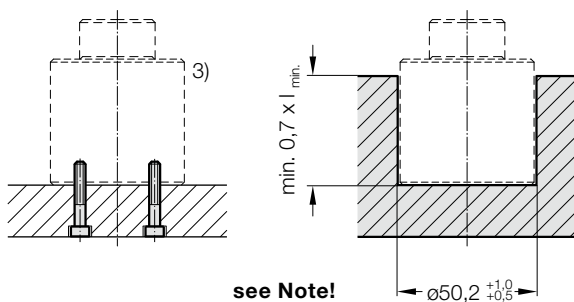
The spring force must be absorbed by the stop Surface!

³⁾ 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!

If vibration occurs, tighten the fixing screws accordingly

Mounting examples:



with Adapter Baseplate

GAS SPRING MAXFORCE

Note:

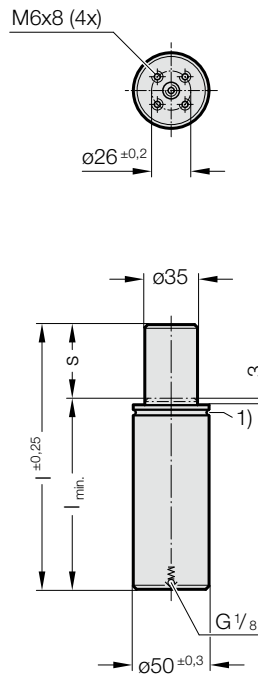
Initial spring force at 200 bar = 1925 daN

Order No for spare parts kit: 2497.15.01900

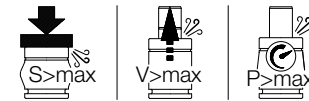
Pressure medium: Nitrogen N₂
 Max. filling pressure: 200 bar
 Min. filling pressure: 20 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute:
 approx. 40 to 80 (at 20°C)
 Max. piston rod speed: 1.6 m/s

1) Only for mounting additional wipers

2497.15.01900.

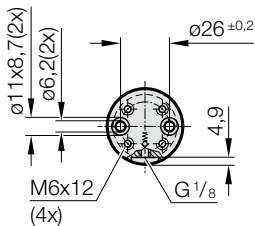
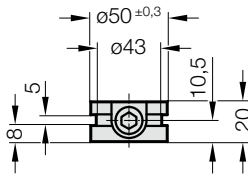


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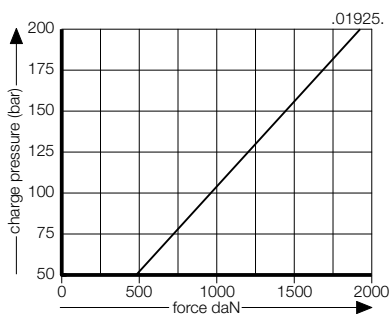


2497.00.15.20.01900

Adapter base plate with valve, flat-sealing



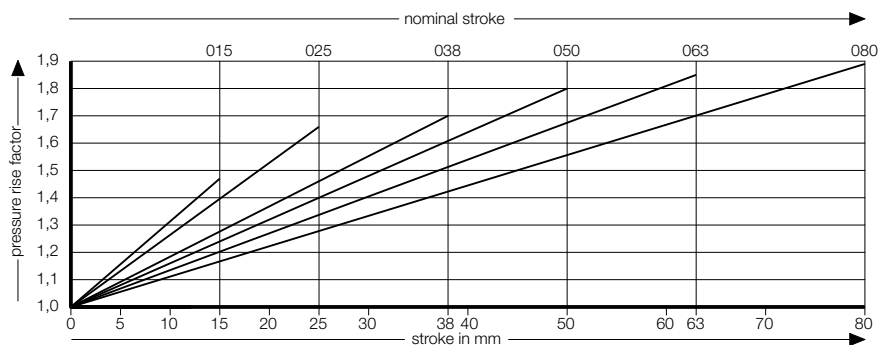
Initial spring force versus charge pressure



2497.15.01900. Gas spring MAXFORCE

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2497.15.01900.015	15	80	95	0.057	0.76
2497.15.01900.025	25	90	115	0.075	0.85
2497.15.01900.038	38	112	150	0.11	1.01
2497.15.01900.050	50	125	175	0.133	1.12
2497.15.01900.063	63	142	205	0.161	1.26
2497.15.01900.080	80	165	245	0.2	1.44

Spring force Diagram displacement versus stroke rise



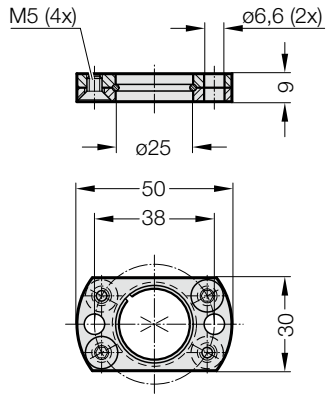
Pressure rise factor accounts for displacement but not external influences!

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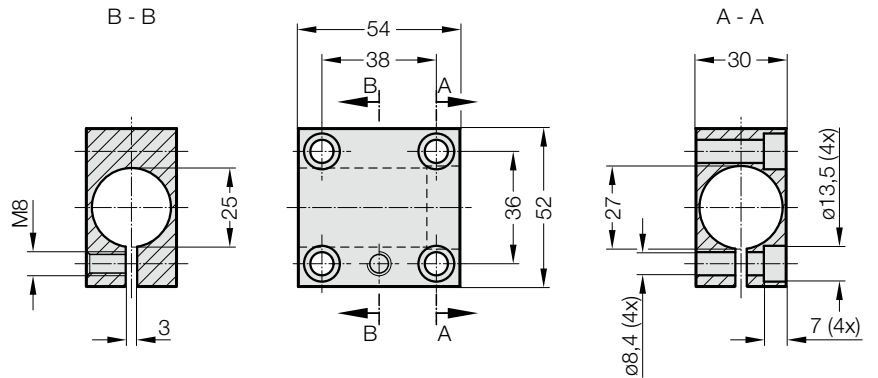


COMPACT GAS SPRING MOUNTING VARIATIONS

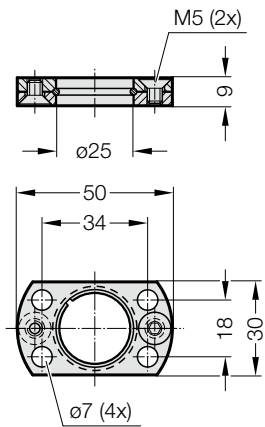
2480.051.00150



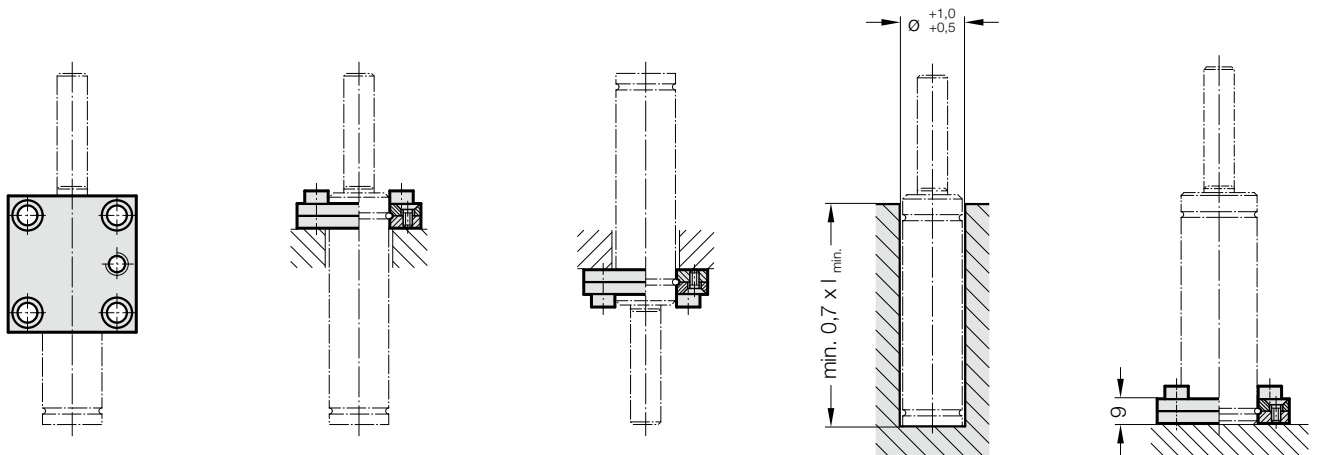
2480.053.00150



2480.054.00150



Mounting examples:



COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 425 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: 20 bar

Working temperature: 0°C to +80°C

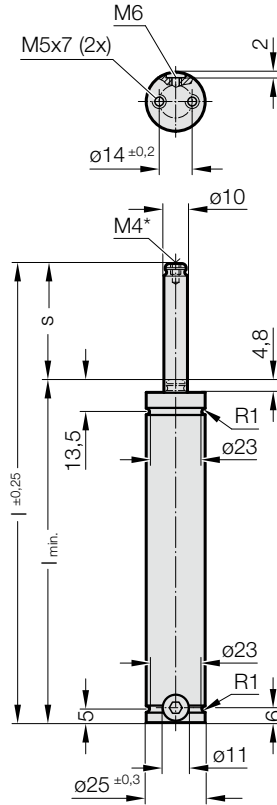
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute: approx. 50 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

* not for stroke 10

2490.15.00420.

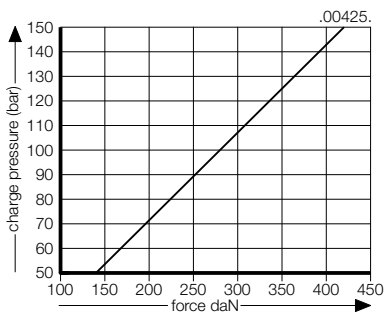


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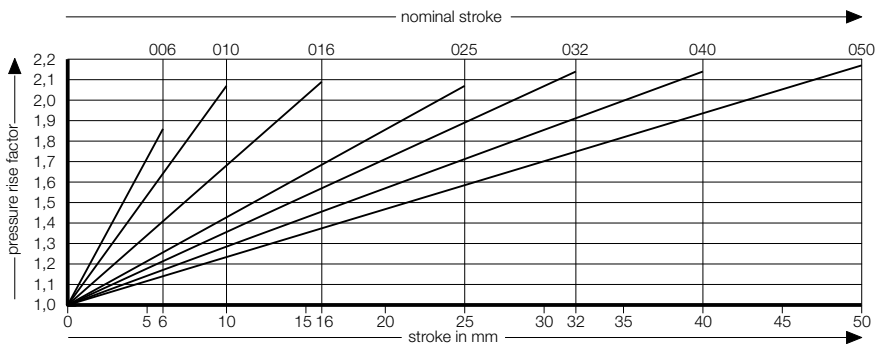
2490.15.00420. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.00420.006	6	50	56	0.004	0.13
2490.15.00420.010	10	60	70	0.006	0.16
2490.15.00420.016	16	75	91	0.01	0.18
2490.15.00420.025	25	95	120	0.016	0.23
2490.15.00420.032	32	108	140	0.019	0.24
2490.15.00420.040	40	125	165	0.024	0.28
2490.15.00420.050	50	145	195	0.03	0.31

Initial spring force versus charge pressure



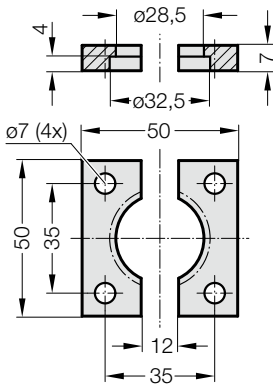
Spring force Diagram displacement versus stroke rise



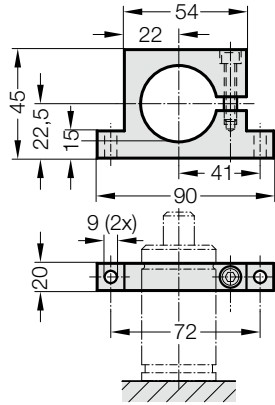
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

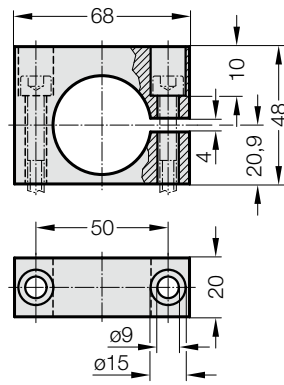
2480.022.00150



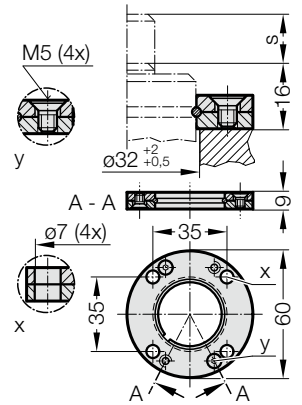
2480.044.00150²⁾



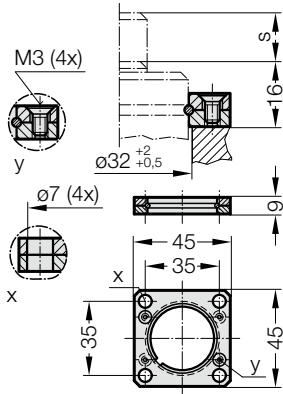
2480.044.03.00150²⁾



2480.055.00150



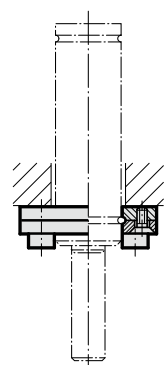
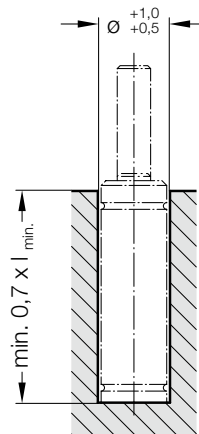
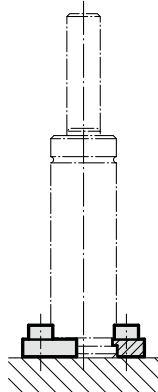
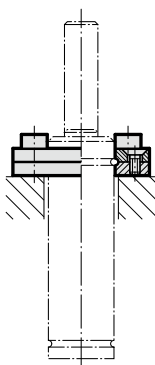
2480.057.00150



Note:

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

Mounting examples:



COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 740 daN

Order No for spare parts kit: 2490.15.00750

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

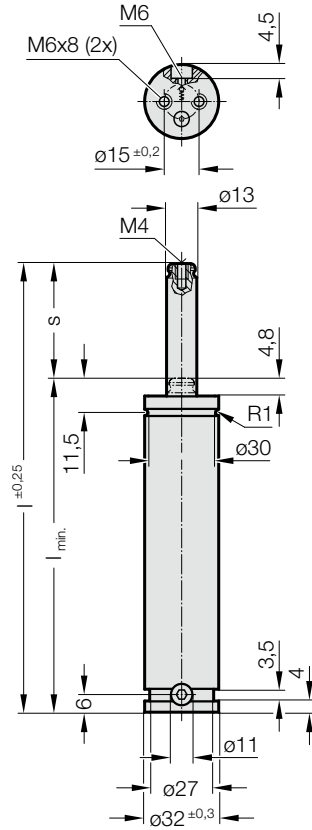
Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

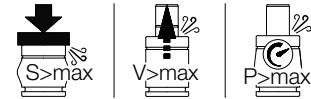
Max. recommended extensions per minute:
approx. 50 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.00750.



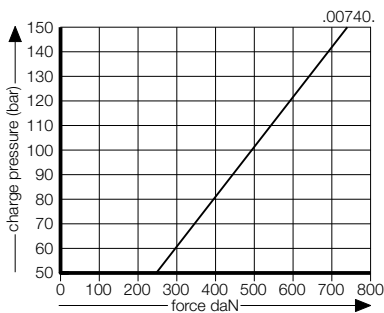
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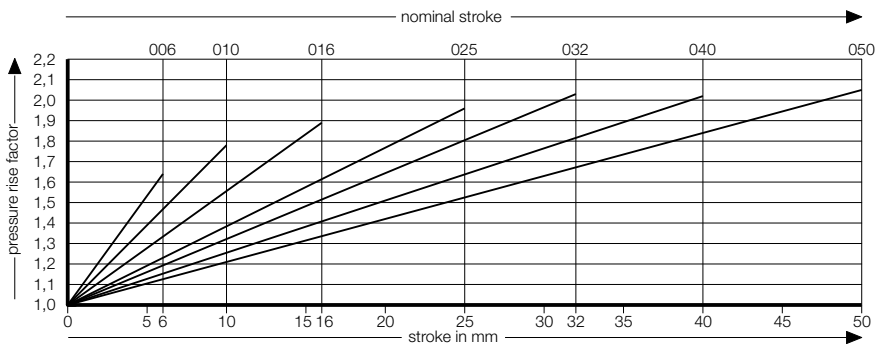
2490.15.00750. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.00750.006	6	57	63	0.009	0.23
2490.15.00750.010	10	65	75	0.013	0.25
2490.15.00750.016	16	77	93	0.019	0.29
2490.15.00750.025	25	95	120	0.028	0.33
2490.15.00750.032	32	108	140	0.035	0.37
2490.15.00750.040	40	125	165	0.044	0.42
2490.15.00750.050	50	145	195	0.054	0.47

Initial spring force versus charge pressure



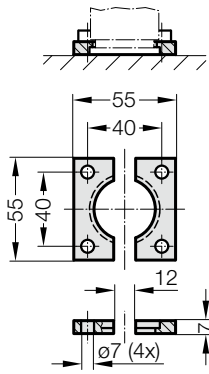
Spring force Diagram displacement versus stroke rise



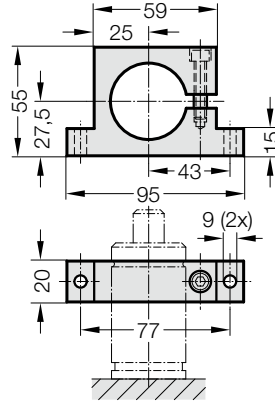
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

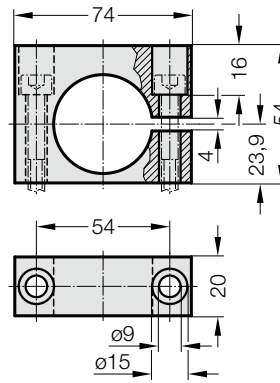
2480.022.00250



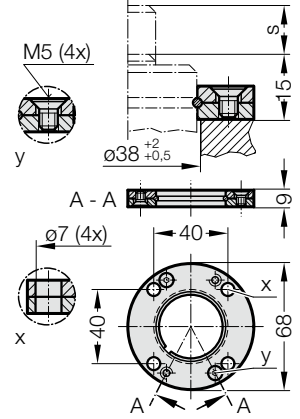
2480.044.00250 ²⁾



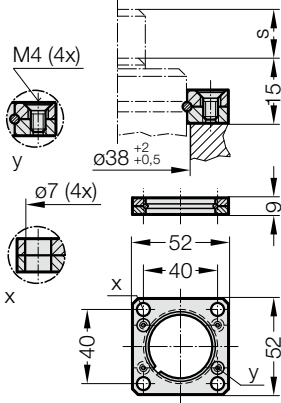
2480.044.03.00250 ²⁾



2480.055.00250



2480.057.00250



Note:

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

COMPACT GAS SPRING

Note:

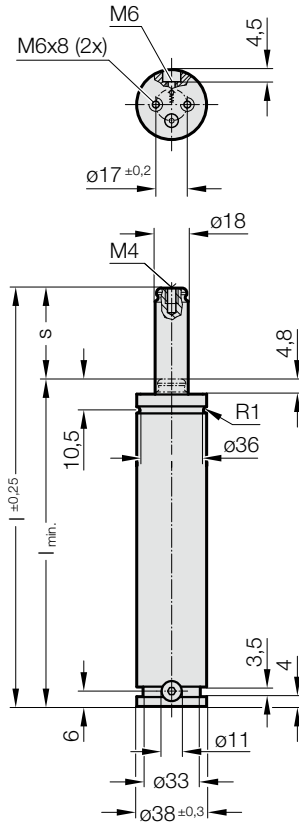
Initial spring force at 150 bar = 1060 daN

Order No for spare parts kit: 2490.15.01000
(Stroke length 6 not repairable)

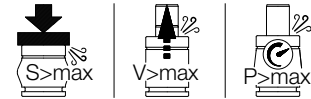
Gas spring without valve
Order No (example): 2490.15.01000. .P

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. 50 to 100 (at 20°C)
Max. piston rod speed: 0.8 m/s

2490.15.01000.



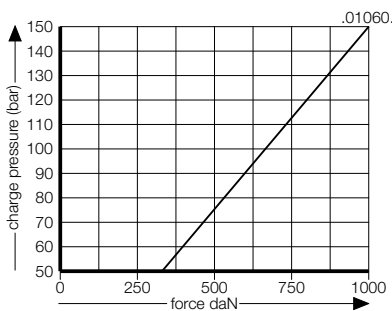
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2014/68/EU



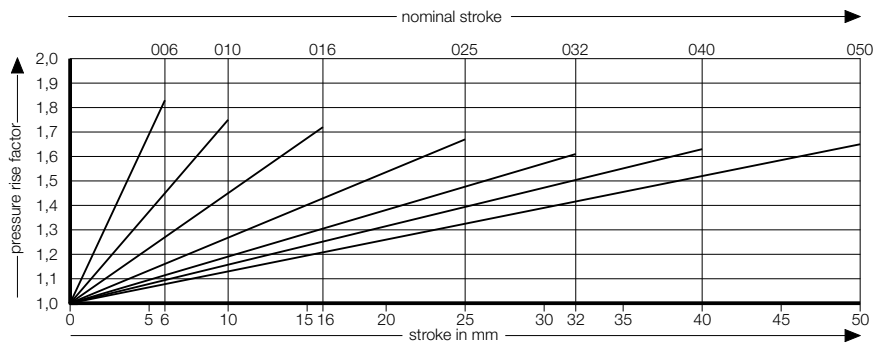
2490.15.01000. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.01000.006	6	55	61	0.011	0.33
2490.15.01000.010	10	68	78	0.019	0.38
2490.15.01000.016	16	84	100	0.031	0.44
2490.15.01000.025	25	110	135	0.05	0.53
2490.15.01000.032	32	135	167	0.069	0.63
2490.15.01000.040	40	155	195	0.084	0.7
2490.15.01000.050	50	180	230	0.103	0.79

Initial spring force versus charge pressure



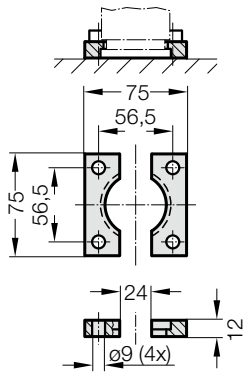
Spring force Diagram displacement versus stroke rise



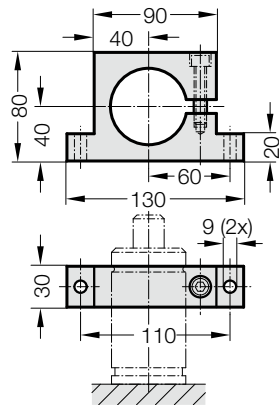
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

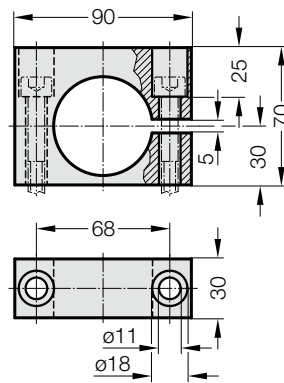
2480.022.00750



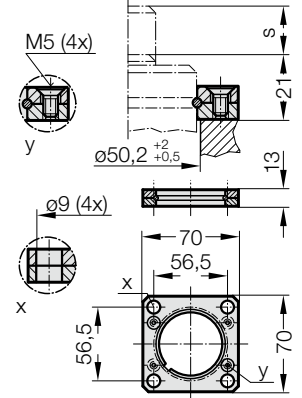
2480.044.00750 ²⁾



2480.044.03.00750 ²⁾



2480.057.050.10



Note:

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

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 1885 daN

Order No for spare parts kit: 2490.15.01800

Gas spring without valve

Order No (example): 2490.15.01800. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

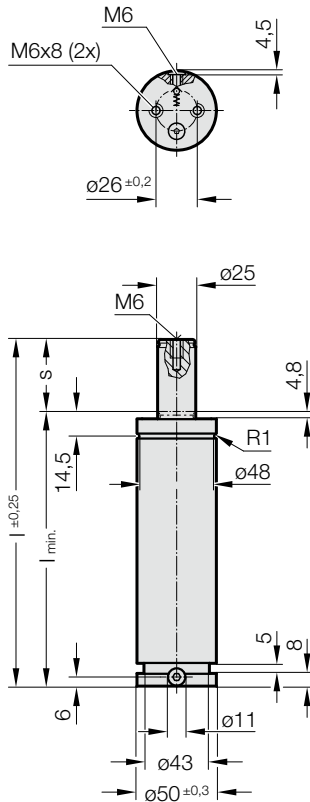
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

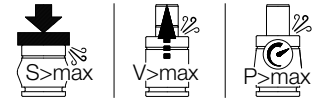
approx. 50 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.01800.



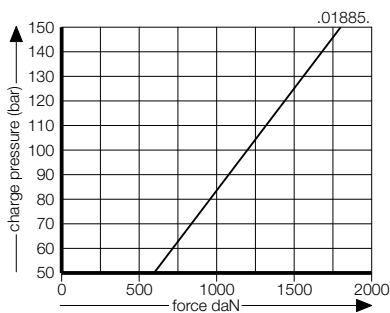
PED
2014/68/EU



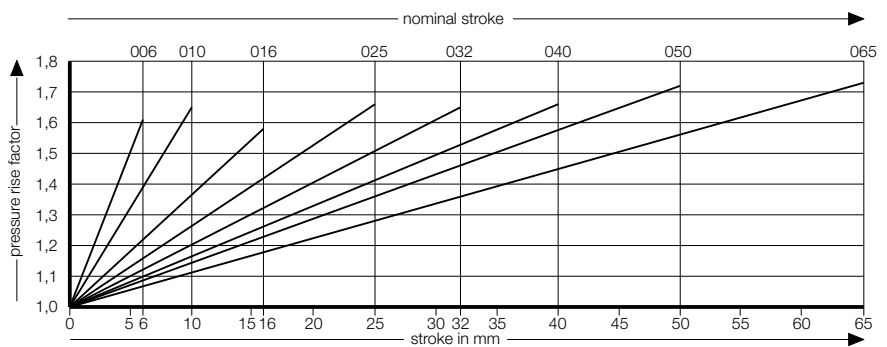
2490.15.01800. Compact gas spring

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.01800.006	6	60	66	0.023	0.63
2490.15.01800.010	10	70	80	0.037	0.69
2490.15.01800.016	16	90	106	0.063	0.81
2490.15.01800.025	25	110	135	0.091	0.94
2490.15.01800.032	32	130	162	0.118	1.06
2490.15.01800.040	40	150	190	0.145	1.19
2490.15.01800.050	50	170	220	0.172	1.31
2490.15.01800.065	65	206	271	0.222	1.53

Initial spring force versus charge pressure



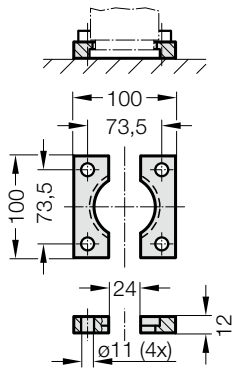
Spring force Diagram displacement versus stroke rise



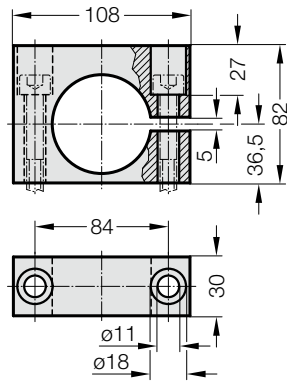
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

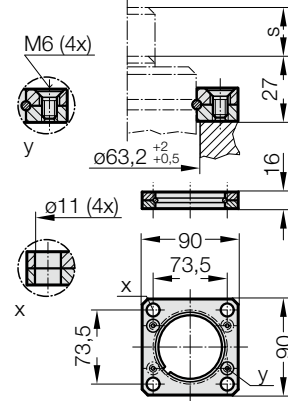
2480.022.01000



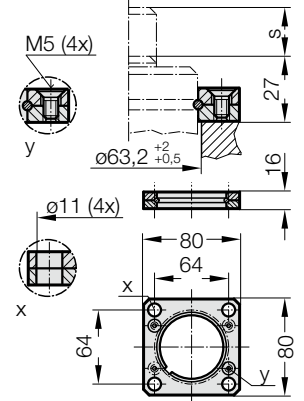
2480.044.03.01000²⁾



2480.057.063.15



2480.057.03.063.15



Note:

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

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 2945 daN

Order No for spare parts kit: 2490.15.03000

Gas spring without valve

Order No (example): 2490.15.03000..P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

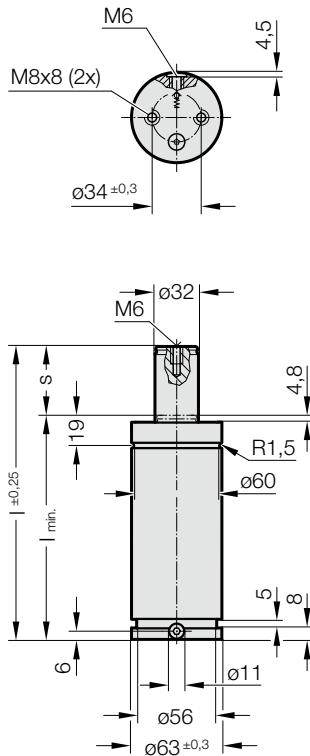
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 80 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.03000.



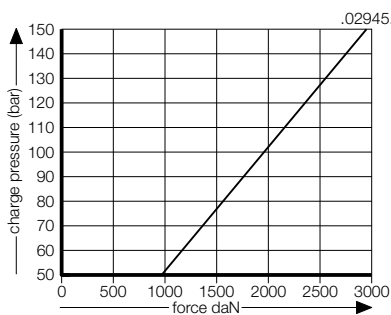
PED
2014/68/EU



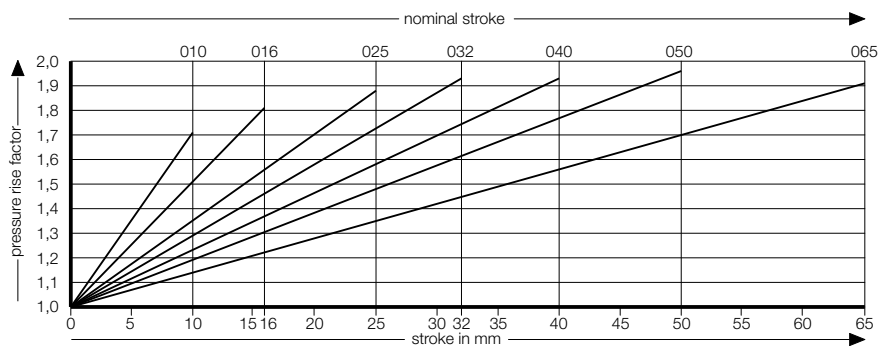
2490.15.03000. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.03000.010	10	75	85	0.054	1.23
2490.15.03000.016	16	87	103	0.08	1.36
2490.15.03000.025	25	105	130	0.119	1.55
2490.15.03000.032	32	118	150	0.148	1.69
2490.15.03000.040	40	135	175	0.185	1.86
2490.15.03000.050	50	155	205	0.228	2.07
2490.15.03000.065	65	191	256	0.305	2.44

Initial spring force versus charge pressure



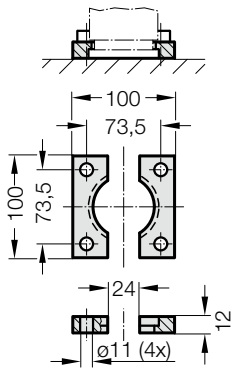
Spring force Diagram displacement versus stroke rise



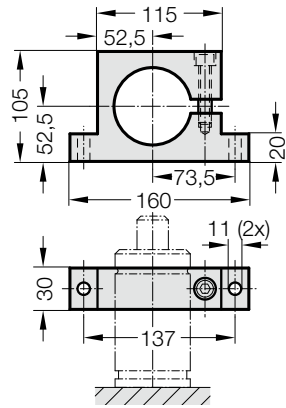
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

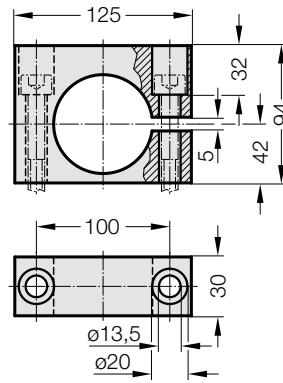
2480.022.01500



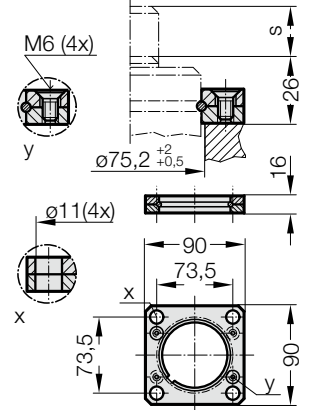
2480.044.01500²⁾



2480.044.03.01500²⁾



2480.058.01500



Note:

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

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 4675 daN

Order No for spare parts kit: 2490.15.04700

Gas spring without valve

Order No (example): 2490.15.04700. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

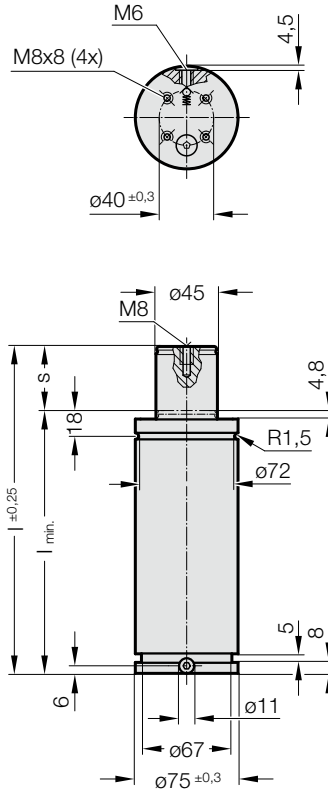
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

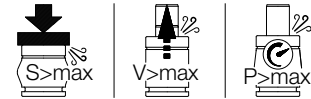
approx. 80 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.04700.



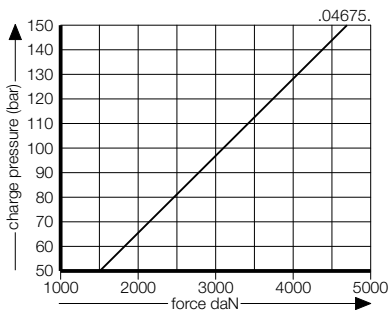
PED
2014/68/EU



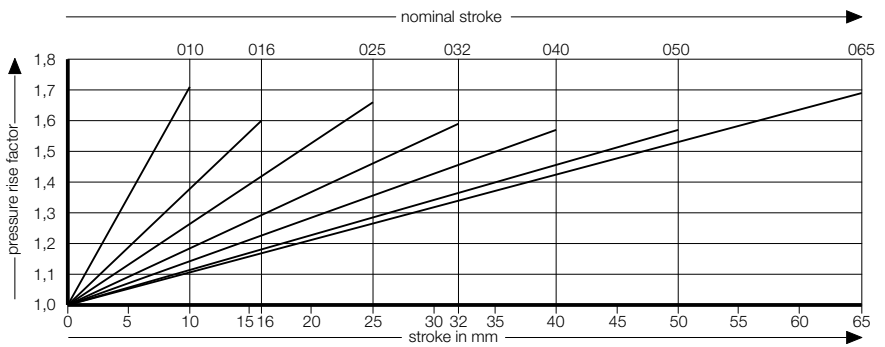
2490.15.04700. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.04700.010	10	70	80	0.086	1.62
2490.15.04700.016	16	90	106	0.154	1.85
2490.15.04700.025	25	110	135	0.224	2.1
2490.15.04700.032	32	135	167	0.3	2.39
2490.15.04700.040	40	160	200	0.394	2.68
2490.15.04700.050	50	190	240	0.496	3.03
2490.15.04700.065	65	208	273	0.566	3.3

Initial spring force versus charge pressure



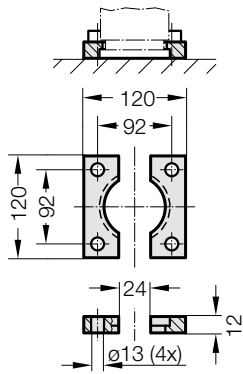
Spring force Diagram displacement versus stroke rise



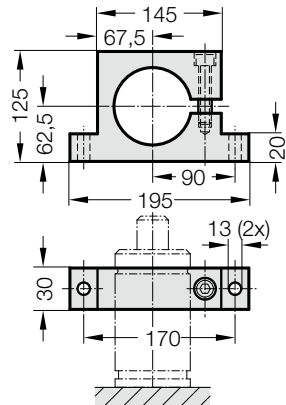
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

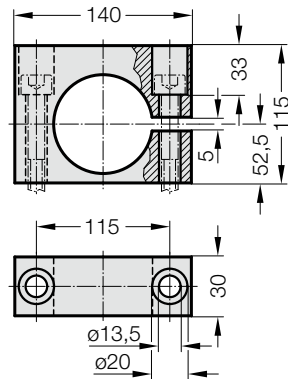
2480.022.03000



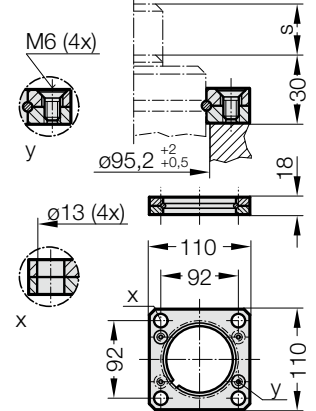
2480.044.03000 ²⁾



2480.044.03.03000 ²⁾



2480.058.03000



Note:

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

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 7540 daN

Order No for spare parts kit: 2490.15.07500

Gas spring without valve

Order No (example): 2490.15.07500 . P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

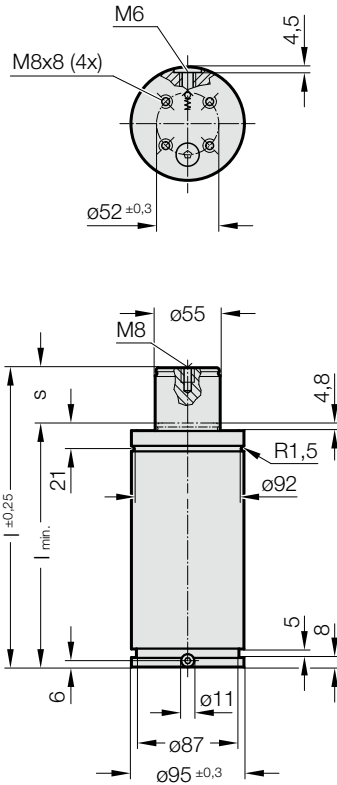
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

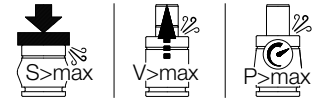
approx. 80 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.07500.



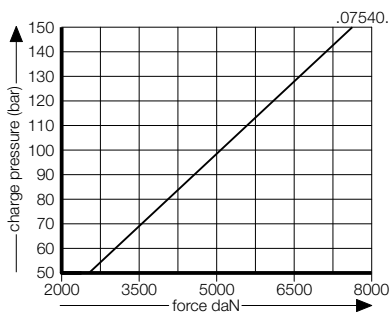
PED
2014/68/EU



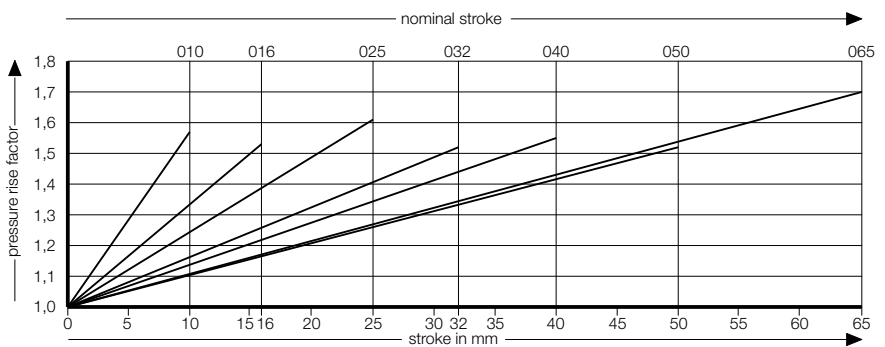
2490.15.07500. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.07500.010	10	80	90	0.16	2.89
2490.15.07500.016	16	100	116	0.269	3.26
2490.15.07500.025	25	120	145	0.382	3.64
2490.15.07500.032	32	150	182	0.542	4.18
2490.15.07500.040	40	170	210	0.654	4.56
2490.15.07500.050	50	205	255	0.844	5.19
2490.15.07500.065	65	214	279	0.91	5.46

Initial spring force versus charge pressure



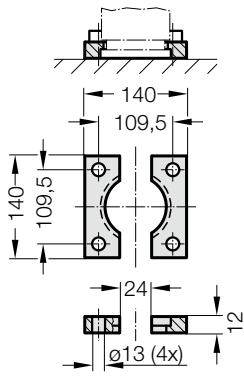
Spring force Diagram displacement versus stroke rise



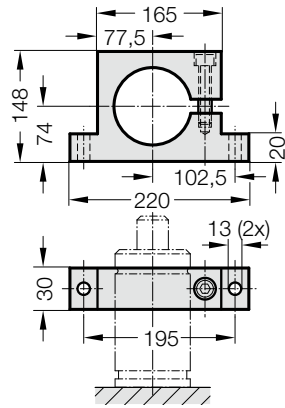
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

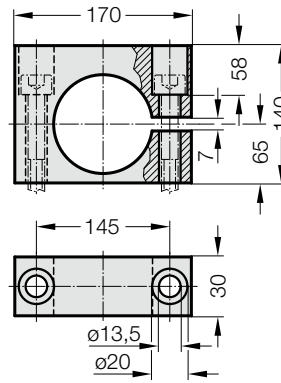
2480.022.05000



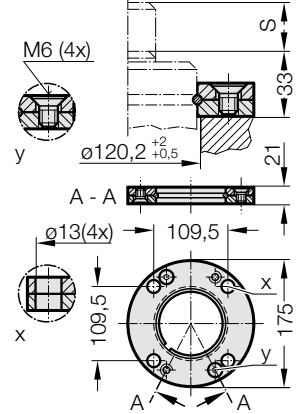
2480.044.05000 ²⁾



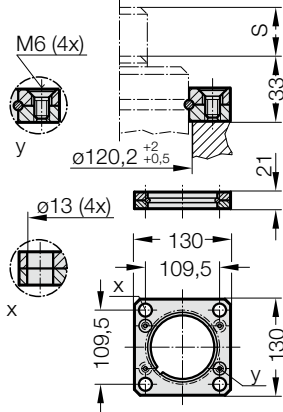
2480.044.03.05000 ²⁾



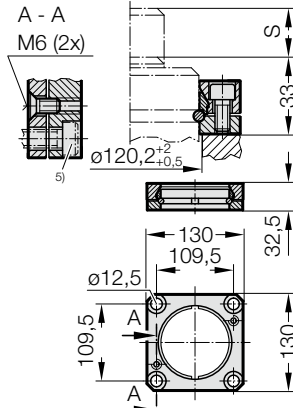
2480.055.05000



2480.057.05000



2480.064.05000 ⁴⁾



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)

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 11780 daN

Order No for spare parts kit: 2490.15.11800

Gas spring without valve

Order No (example): 2490.15.11800. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

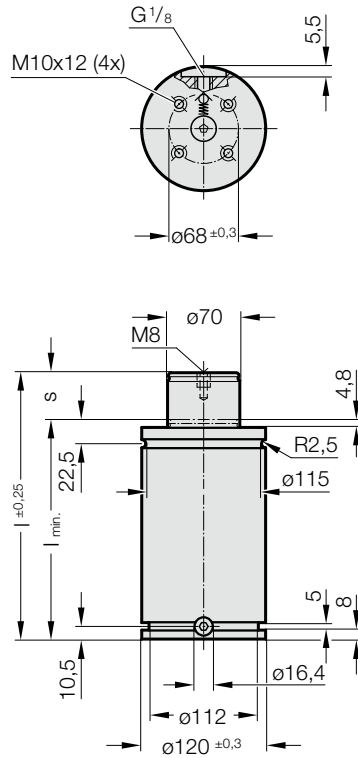
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 50 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.11800.



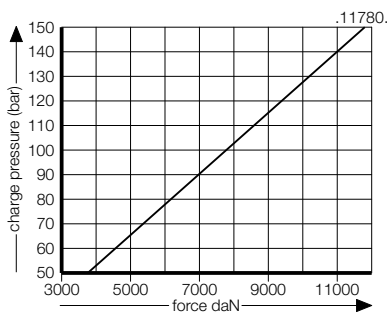
PED
2014/68/EU



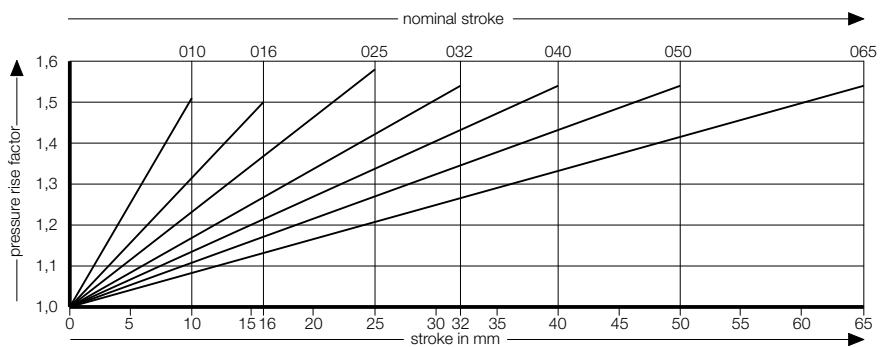
2490.15.11800. Compact gas spring

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.11800.010	10	90	100	0.267	5.49
2490.15.11800.016	16	110	126	0.437	6.11
2490.15.11800.025	25	130	155	0.613	6.76
2490.15.11800.032	32	155	187	0.824	7.54
2490.15.11800.040	40	180	220	1.037	8.31
2490.15.11800.050	50	210	260	1.294	9.25
2490.15.11800.065	65	255	320	1.679	10.66

Initial spring force versus charge pressure



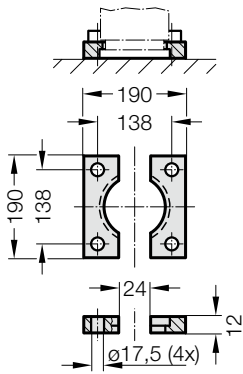
Spring force Diagram displacement versus stroke rise



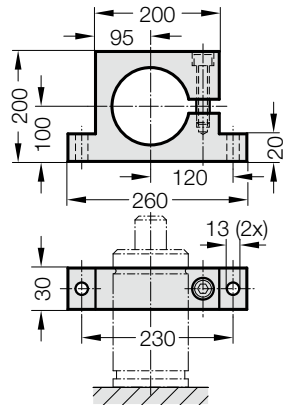
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

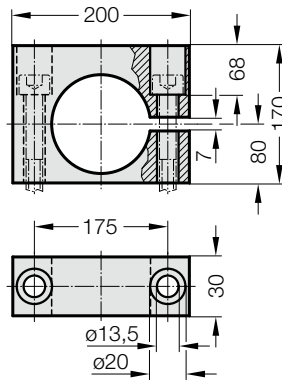
2480.022.07500



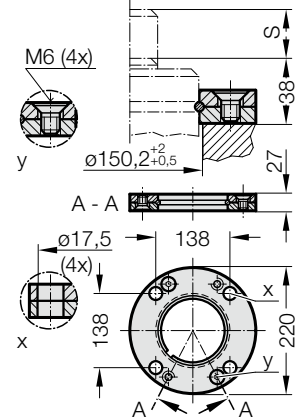
2480.044.07500²⁾



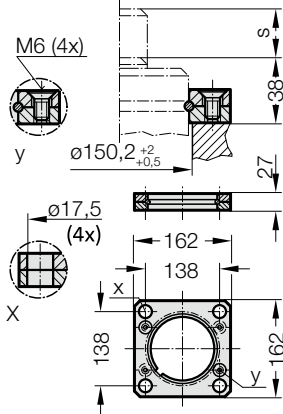
2480.044.03.07500²⁾



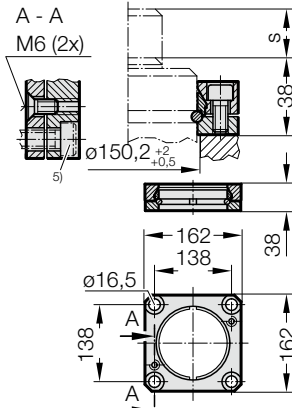
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



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)

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 18410 daN

Order No for spare parts kit: 2490.15.18300

Gas spring without valve

Order No (example): 2490.15.18300. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

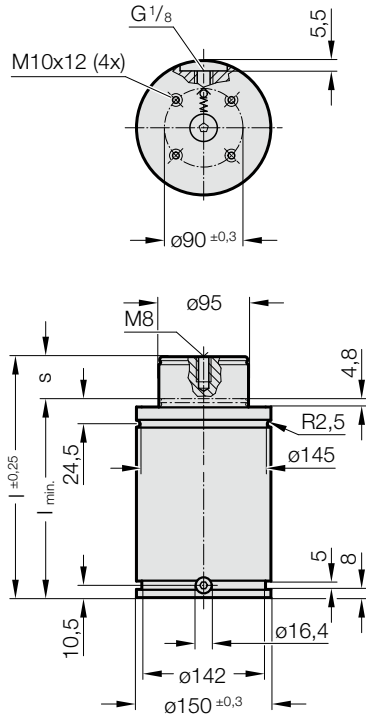
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

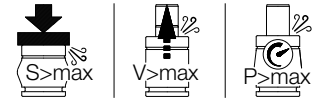
approx. 50 to 100 (at 20°C)

Max. piston rod speed: 0.8 m/s

2490.15.18300.



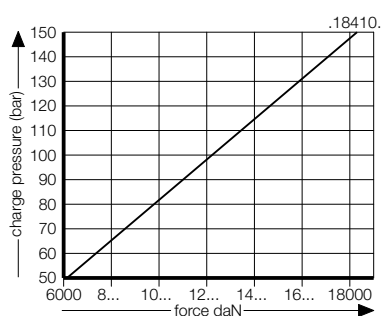
PED
2014/68/EU



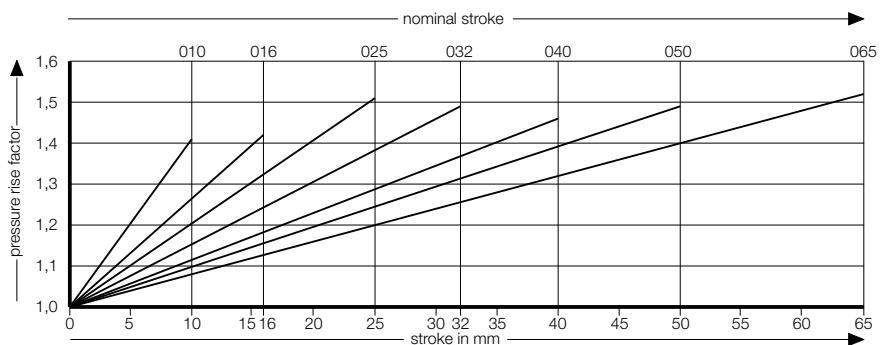
2490.15.18300. Compact gas spring

Order No	s (Stroke _{max})	l _{min.}	l	Gas volume [l]	Weight [kg]
2490.15.18300.010	10	100	110	0.493	9.31
2490.15.18300.016	16	120	136	0.765	10.28
2490.15.18300.025	25	140	165	1.05	11.3
2490.15.18300.032	32	165	197	1.388	12.51
2490.15.18300.040	40	195	235	1.791	13.93
2490.15.18300.050	50	220	270	2.142	15.19
2490.15.18300.065	65	258	323	2.675	17.1

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



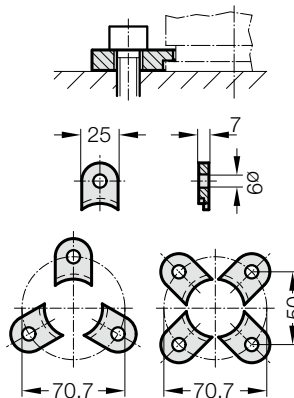
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS NEW GENERATION LOW BUILD HEIGHT

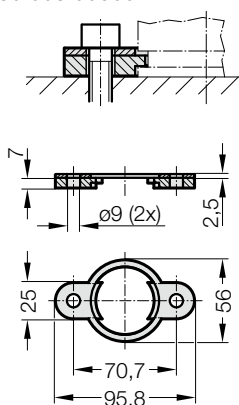


GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

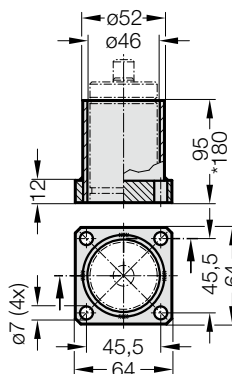
2480.007.00500



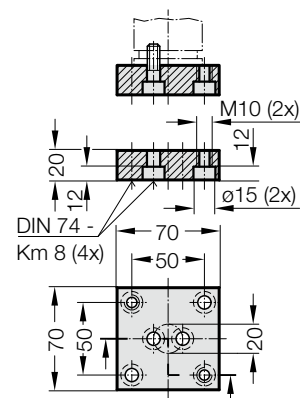
2480.008.00500³⁾



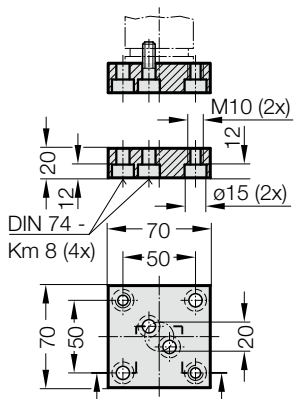
2480.010.00500.095³⁾
2480.010.00500.180*³⁾



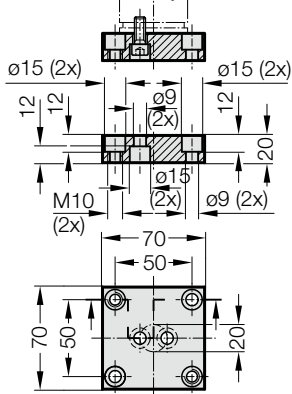
2480.011.00500



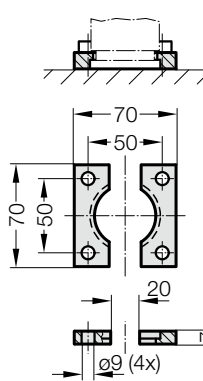
2480.011.00500.1



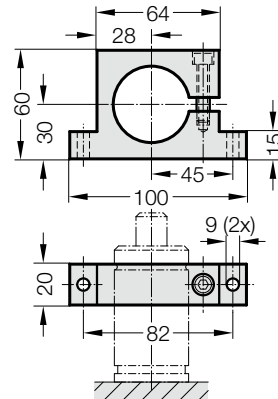
2480.011.00500.2



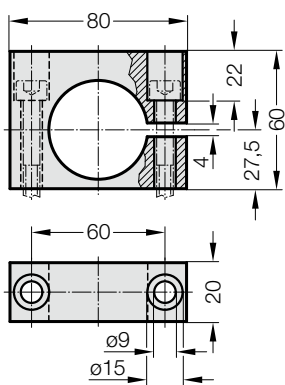
2480.022.00500



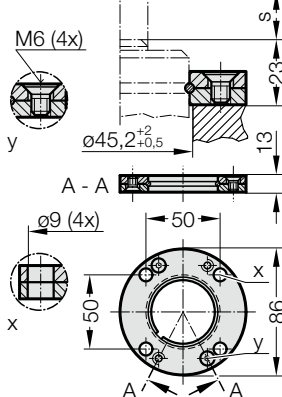
2480.044.00500²⁾



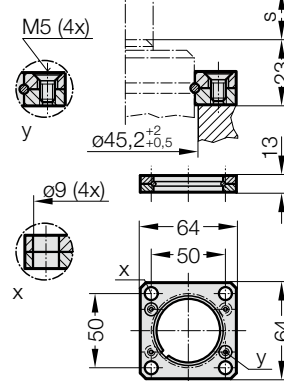
2480.044.03.00500²⁾



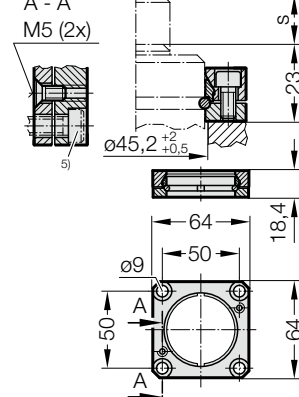
2480.055.00500



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, WITH LOW BUILD HEIGHT

Note:

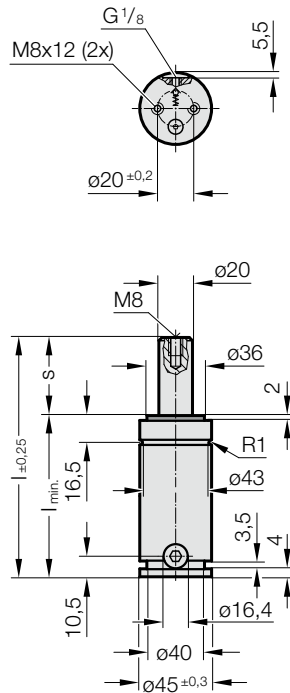
Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2485.15.00500
(Stroke length 6 and 13 not repairable)

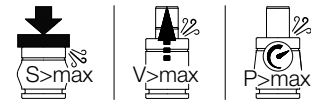
Gas spring without valve
Order No (example): 2485.15.00500. .P

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. 40 to 100 (at 20°C)
Max. piston rod speed: 1.8 m/s

2485.15.00500.



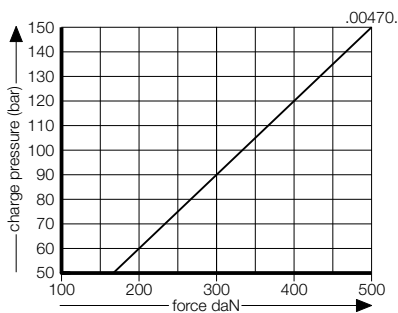
PED
2014/68/EU



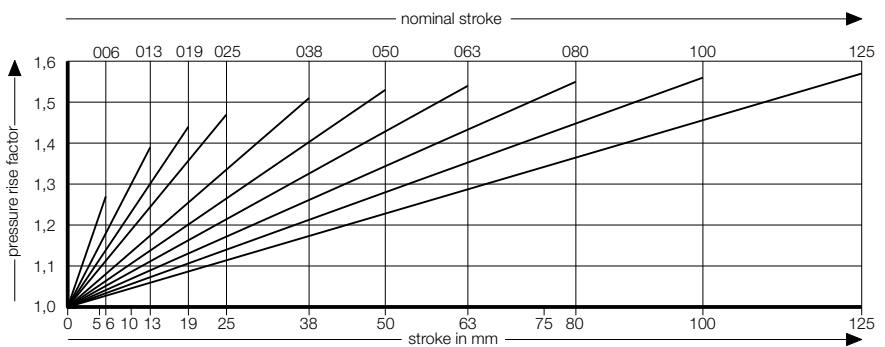
2485.15.00500. Gas spring, with low build height

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2485.15.00500.006	6	56	62	0.01	0.54
2485.15.00500.013	13	63	76	0.017	0.58
2485.15.00500.019	19	69	88	0.023	0.62
2485.15.00500.025	25	75	100	0.029	0.67
2485.15.00500.038	38	88	126	0.041	0.77
2485.15.00500.050	50	100	150	0.053	0.85
2485.15.00500.063	63	113	176	0.065	0.9
2485.15.00500.080	80	130	210	0.082	1.01
2485.15.00500.100	100	150	250	0.101	1.16
2485.15.00500.125	125	175	300	0.125	1.35

Initial spring force versus charge pressure



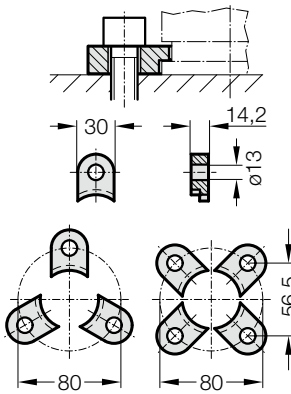
Spring force Diagram displacement versus stroke rise



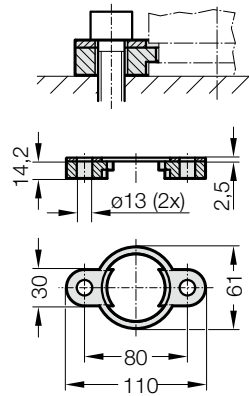
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

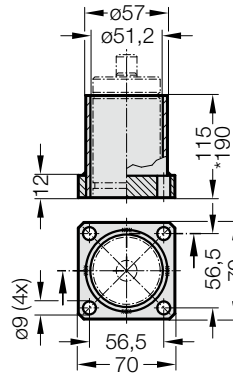
2480.007.00750



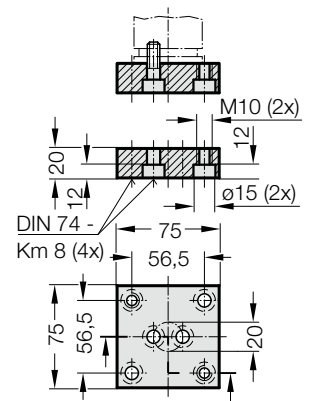
2480.008.00750 ³⁾



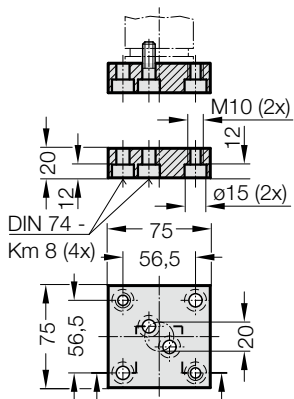
2480.010.00750.115 ³⁾
2480.010.00750.190* ³⁾



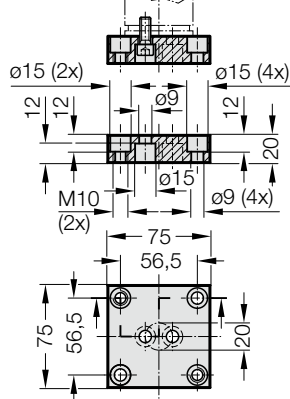
2480.011.00750



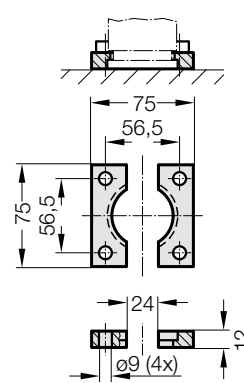
2480.011.00750.1



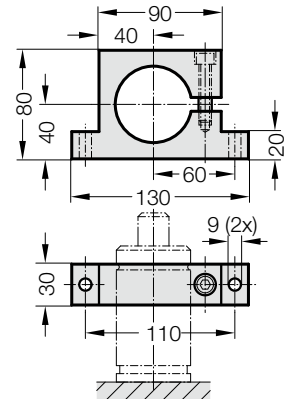
2480.011.00750.3



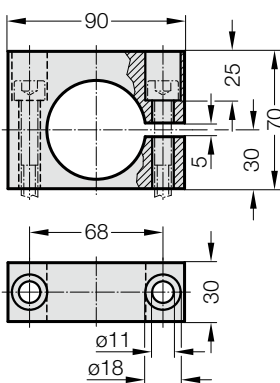
2480.022.00750



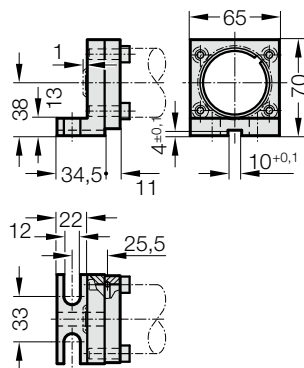
2480.044.00750 ²⁾



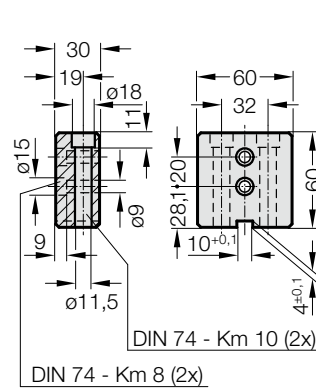
2480.044.03.00750 ²⁾



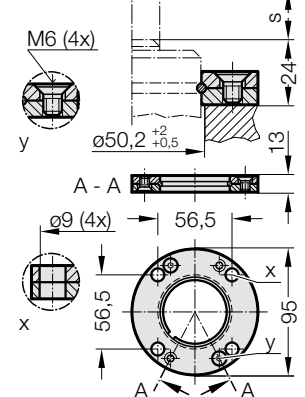
2480.045.00750 ²⁾



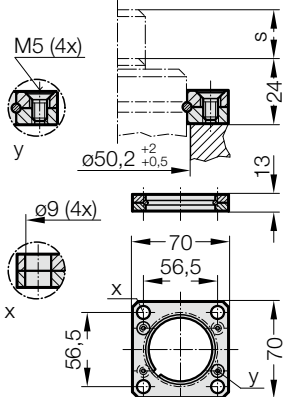
2480.047.00750 ²⁾



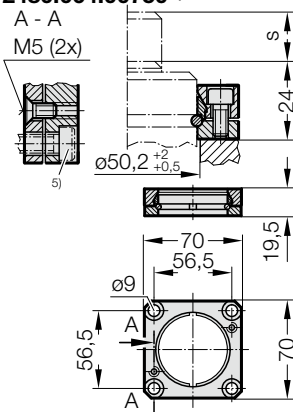
2480.055.00750



2480.057.00750



2480.064.00750 ⁴⁾



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:

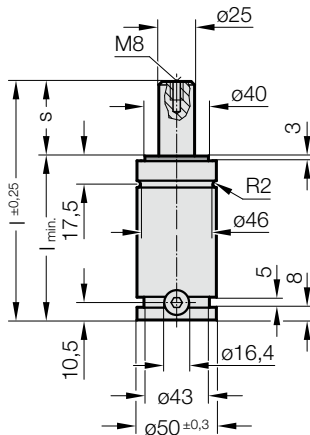
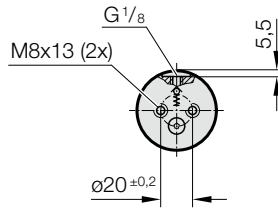
Initial spring force at 150 bar = 740 daN

Order No for spare parts kit: 2485.15.00750
(Stroke length 6 and 13 not repairable)

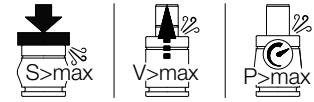
Gas spring without valve
Order No (example): 2485.15.00750. .P

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 rod speed: 1.8 m/s

2485.15.00750.



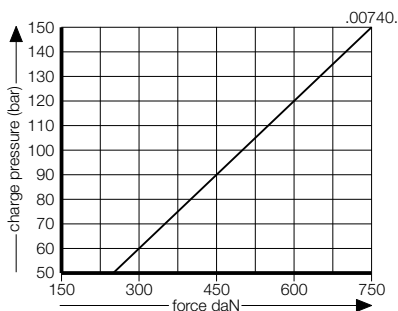
PED
2014/68/EU



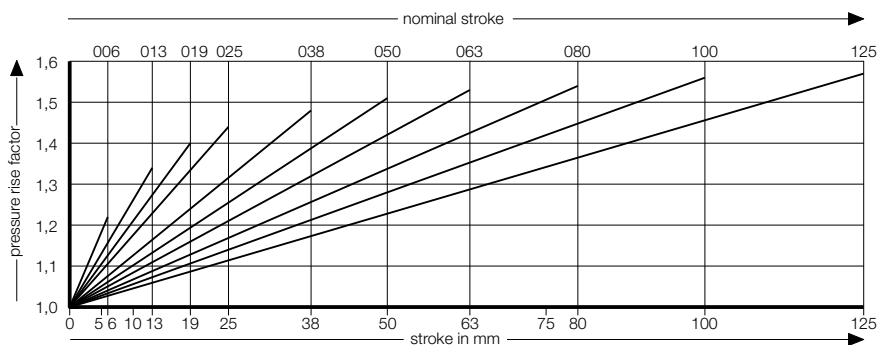
2485.15.00750. Gas spring, with low build height

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2485.15.00750.006	6	56	62	0.018	0.6
2485.15.00750.013	13	63	76	0.029	0.66
2485.15.00750.019	19	69	88	0.038	0.71
2485.15.00750.025	25	75	100	0.046	0.75
2485.15.00750.038	38	88	126	0.066	0.85
2485.15.00750.050	50	100	150	0.083	0.95
2485.15.00750.063	63	113	176	0.102	1.05
2485.15.00750.080	80	130	210	0.127	1.18
2485.15.00750.100	100	150	250	0.157	1.33
2485.15.00750.125	125	175	300	0.193	1.52

Initial spring force versus charge pressure



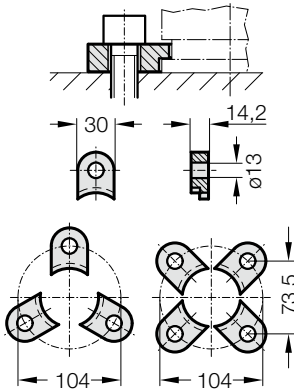
Spring force Diagram displacement versus stroke rise



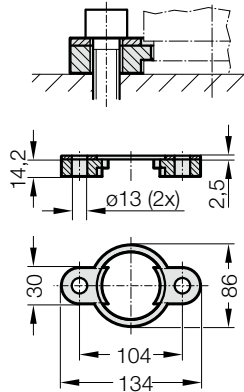
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

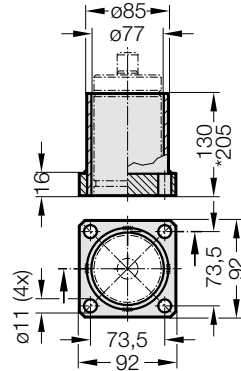
2480.007.01500



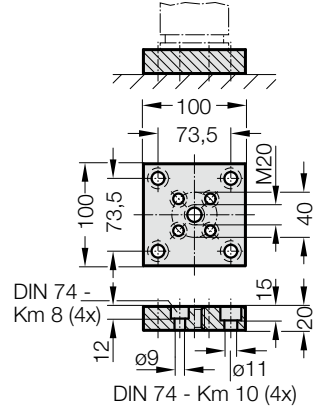
2480.008.01500 ³⁾



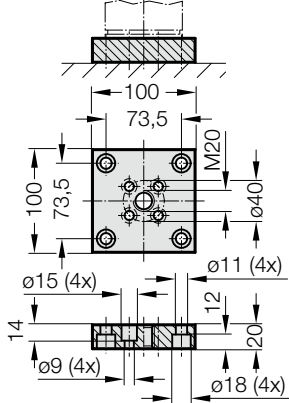
2480.010.01500.130 ³⁾
2480.010.01500.205 ³⁾



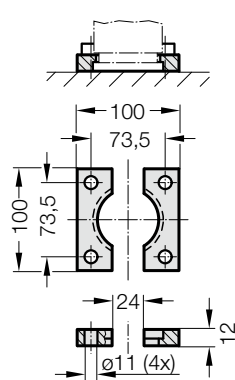
2480.011.01500



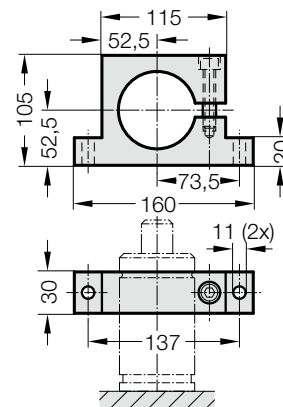
2480.011.01500.2



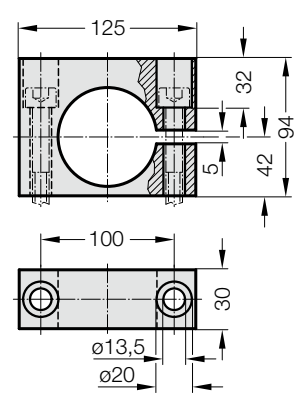
2480.022.01500



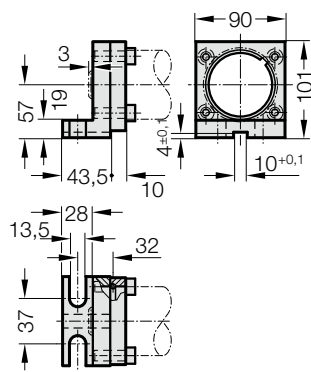
2480.044.01500 ²⁾



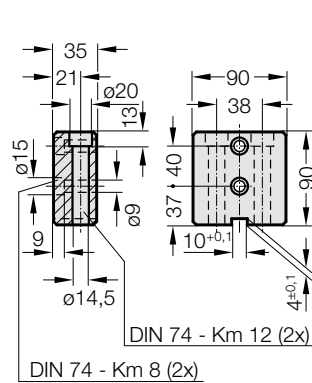
2480.044.03.01500 ²⁾



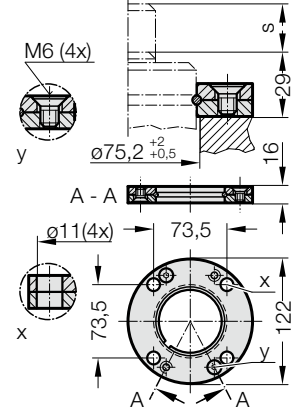
2480.045.01500 ²⁾



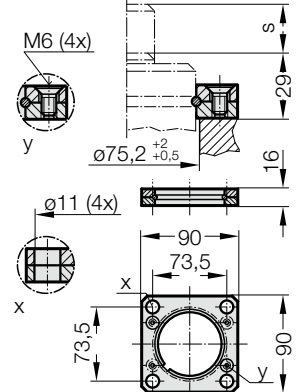
2480.047.01500 ²⁾



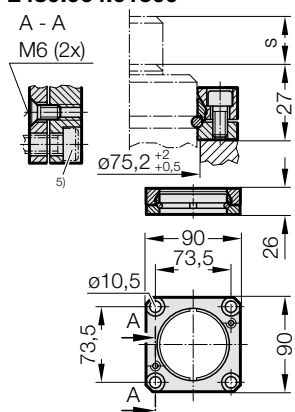
2480.055.01500



2480.057.01500



2480.064.01500 ⁴⁾



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 = 1530 daN

Order No for spare parts kit: 2485.15.01500

Gas spring without valve

Order No (example): 2485.15.01500. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

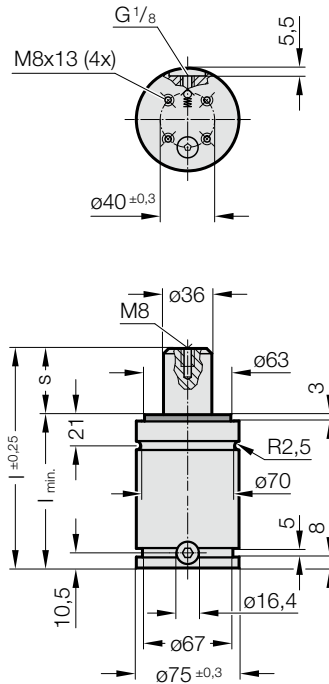
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

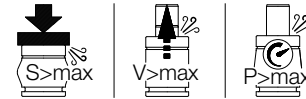
approx. 20 to 80 (at 20°C)

Max. piston rod speed: 1.8 m/s

2485.15.01500.



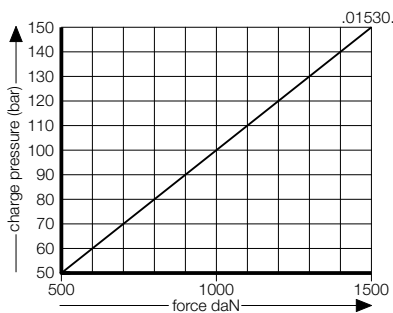
PED
2014/68/EU



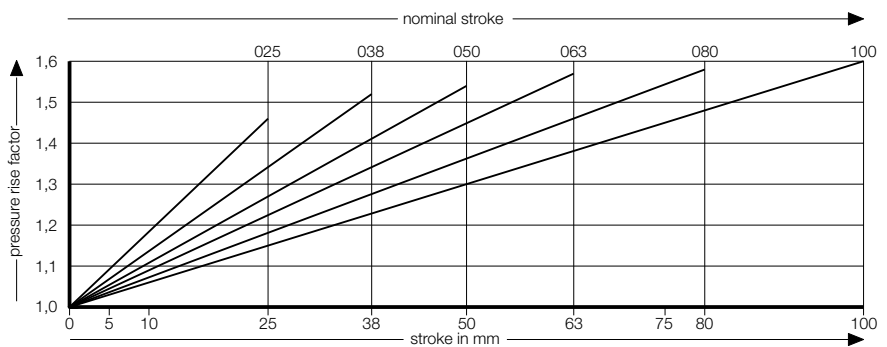
2485.15.01500. Gas spring, with low build height

Order No	s (Stroke _{max.})	l _{min.}	l	Gas volume [l]	Weight [kg]
2485.15.01500.025	25	85	110	0.093	2.25
2485.15.01500.038	38	98	136	0.131	2.53
2485.15.01500.050	50	110	160	0.166	2.78
2485.15.01500.063	63	123	186	0.204	3.06
2485.15.01500.080	80	140	220	0.253	3.42
2485.15.01500.100	100	160	260	0.312	3.84

Initial spring force versus charge pressure

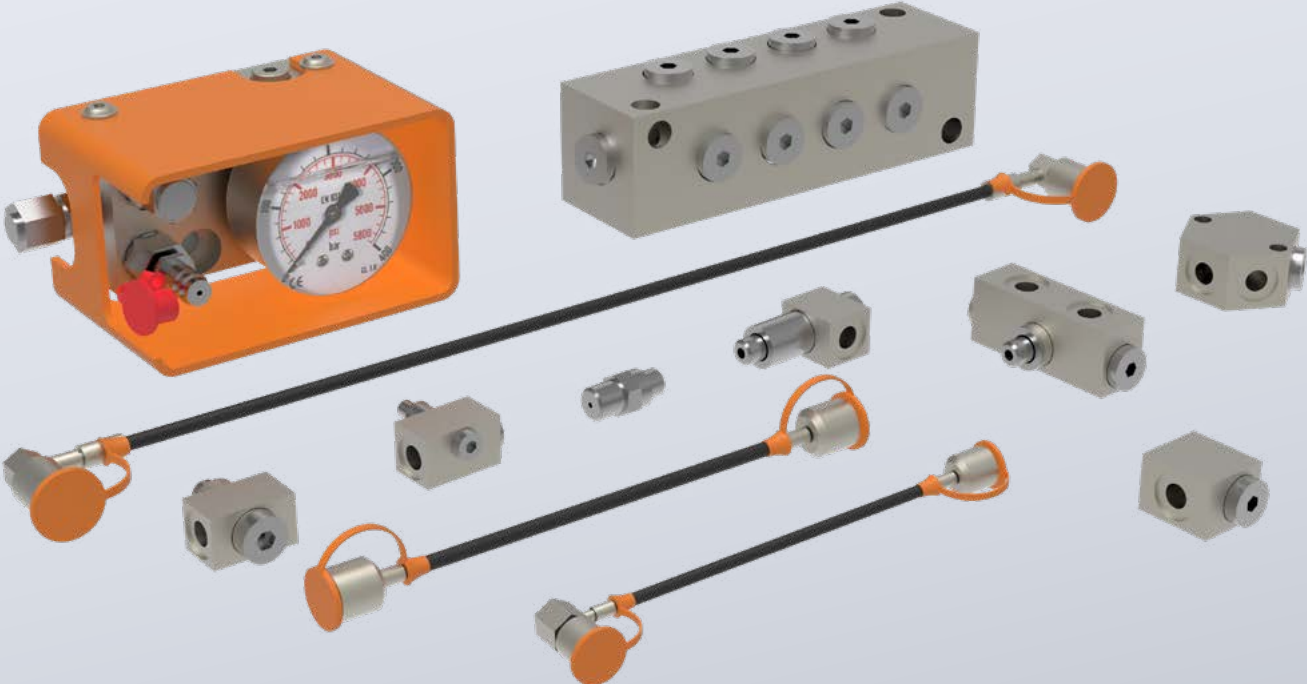


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS - ACCESSORIES



PRESSURE RESERVOIR INCLUDING MOUNTING CLAMPS FOR REDUCED PRESSURE RISE

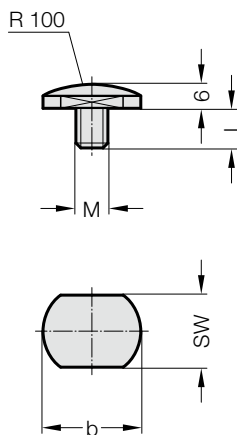


**PRESSURE RESERVOIR INCLUDING MOUNTING CLAMPS
FOR REDUCED PRESSURE RISE**



THRUST PAD PRESSURE PLATE

2480.004.



2480.004. Thrust Pad

Order No	M	SW	b	l
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.

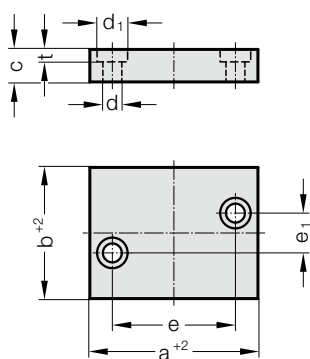
Material:

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

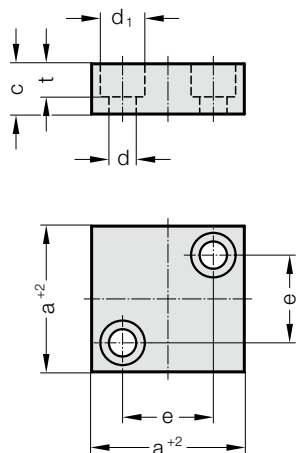
Material:

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

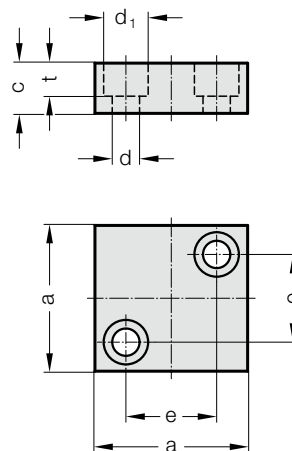
Order No*	max. piston rod diameter	a	c	d	d ₁	e	t
2480.019.00100	15	40	15	9	15	21	10
2480.019.00100.2	20	40	15	7	11	24	7
2480.019.03.00500.12	20	40	12	7	11	24	7
2480.019.00750	25	56	20	11	18	32	13
2480.019.03.01500.12	36	60	12	9	15	38	9
2480.019.03.01500.15	36	60	15	9	15	40	9
2480.019.03000	50	70	20	11	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.



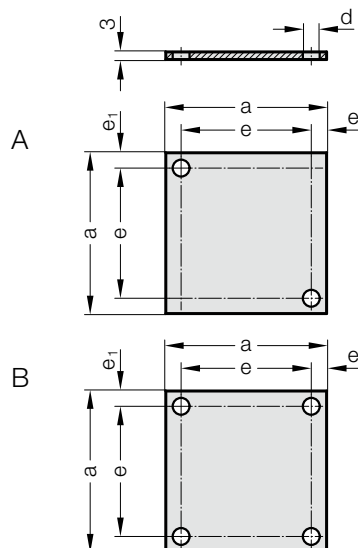
2480.019.45. Pressure plate to Renault standard

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:

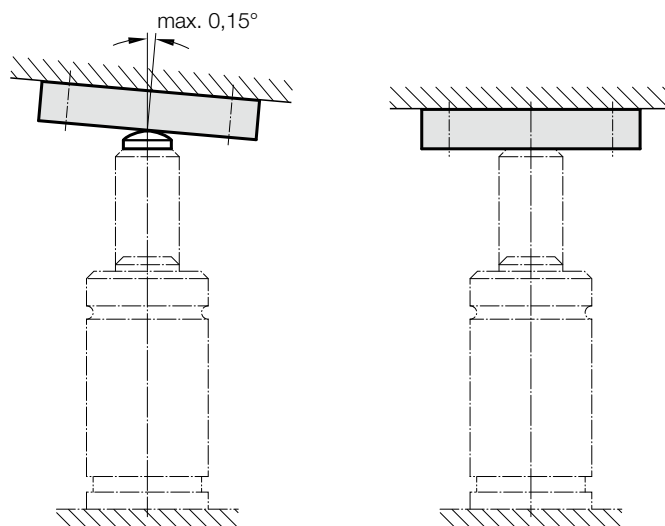
The hardened thrust pad 2480.004. reduces side forces in cases of skew thrust vaces or lateral displacement component.

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



PISTON ROD PROTECTION, FIBRO-TEX®



**RETAINING PLATE FOR CLAMPING FLANGE
CABLE TIE PLIERS**



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

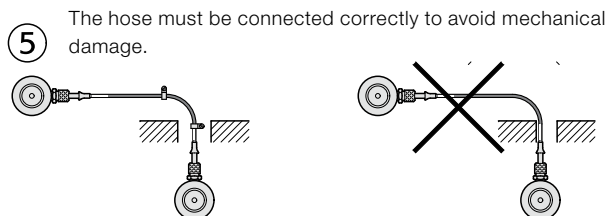
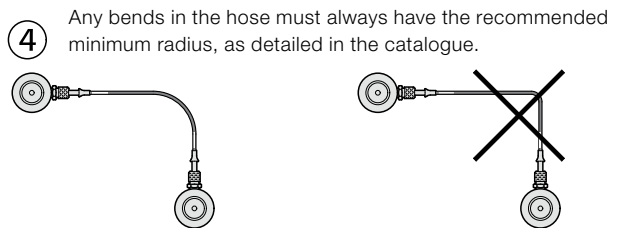
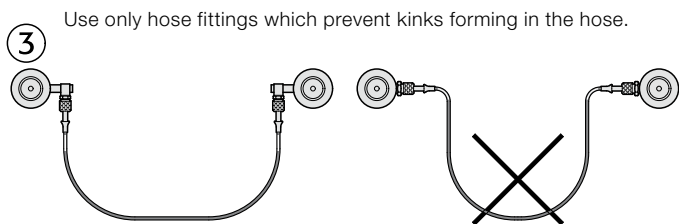
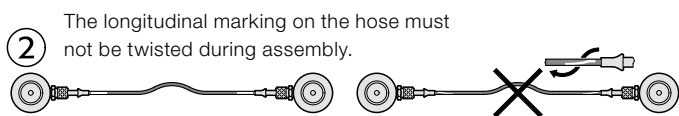
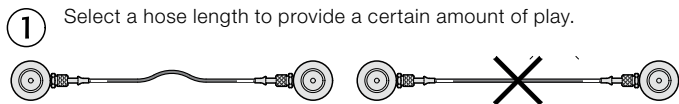
Recommended application:For gas springs with M6 gas connection. Not suitable for use with a pressure reservoir due to small internal diameter (reduced flow volume).

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.

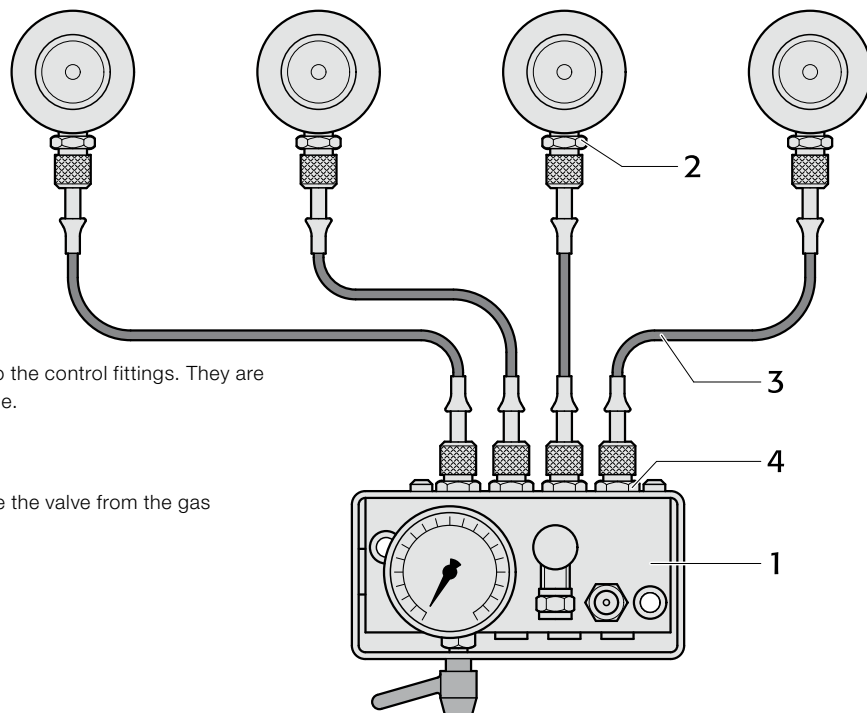
Attention!

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:

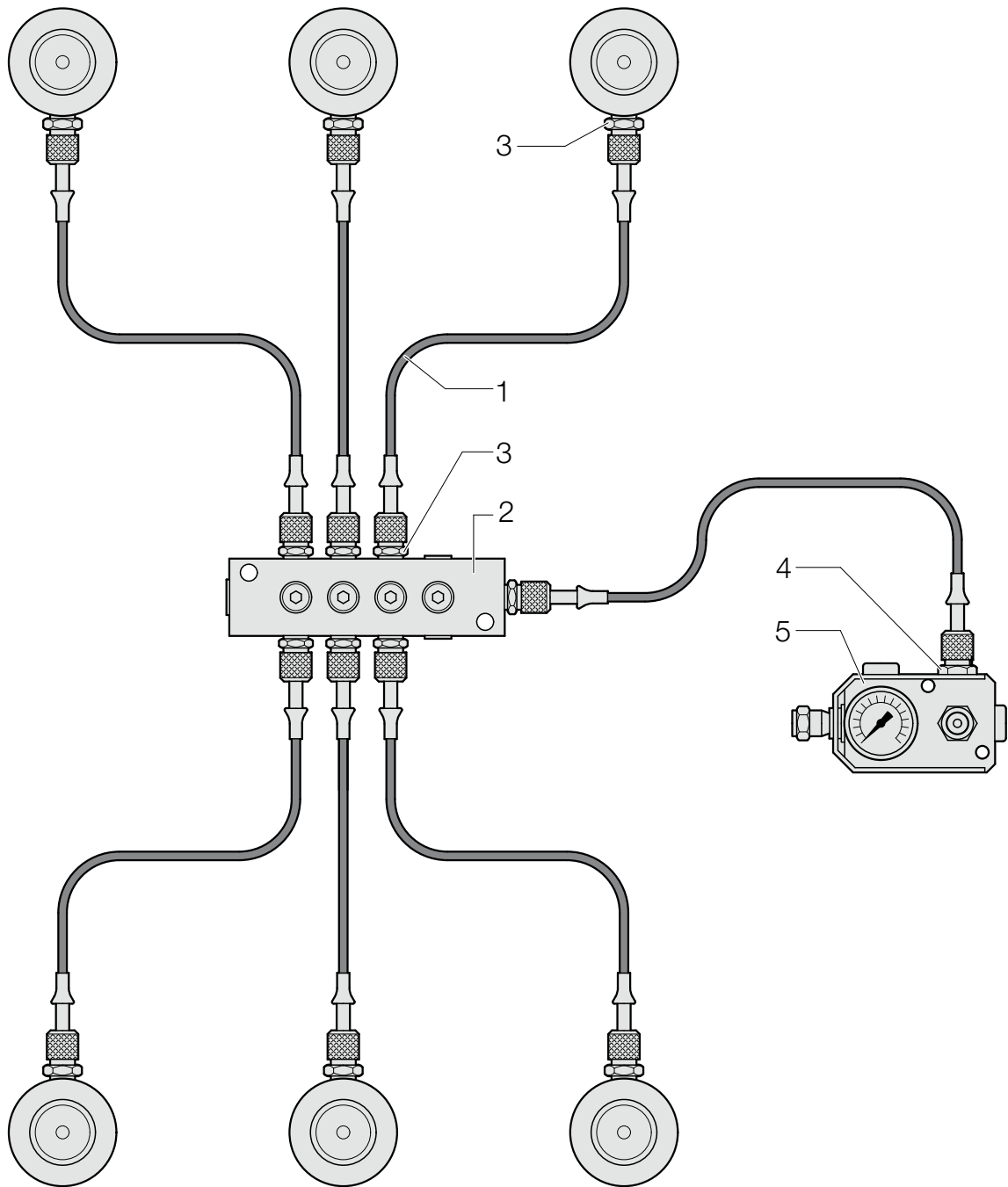
When installing in the system always remove the valve from the gas springs.

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:

Battery series connection



Function:

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

Note:

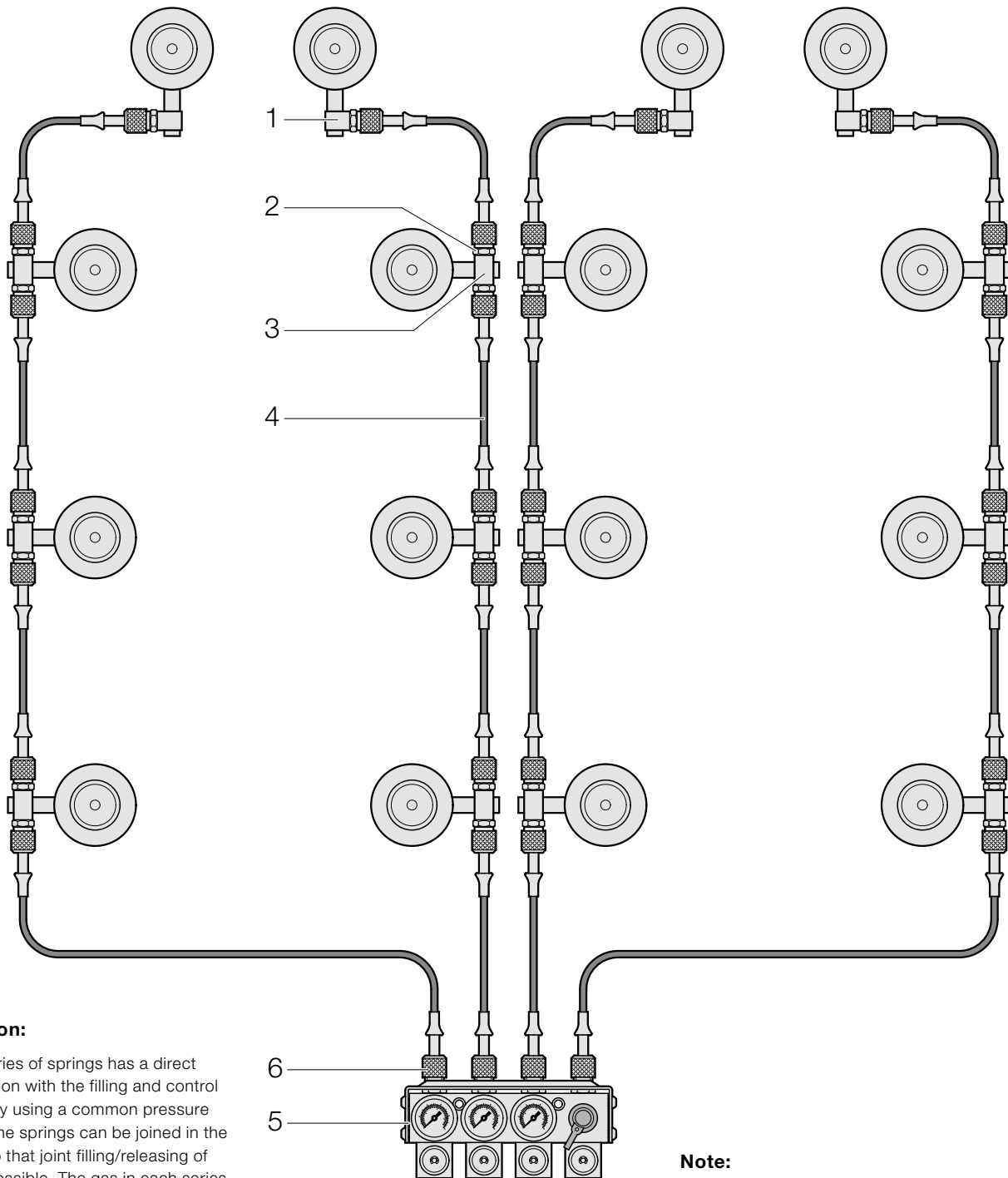
When installing in the system always remove the valve from the gas springs.

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:

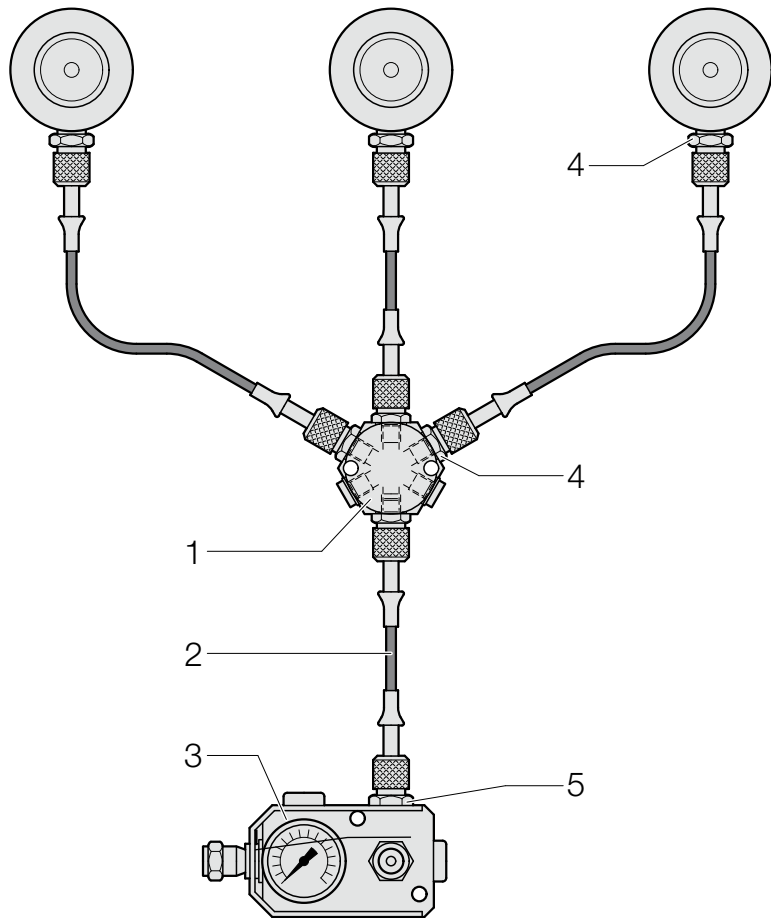
When installing in the system always remove the valve from the gas springs.

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:

Battery series connection



Function:

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

Note:

When installing in the system always remove the valve from the gas springs.

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:

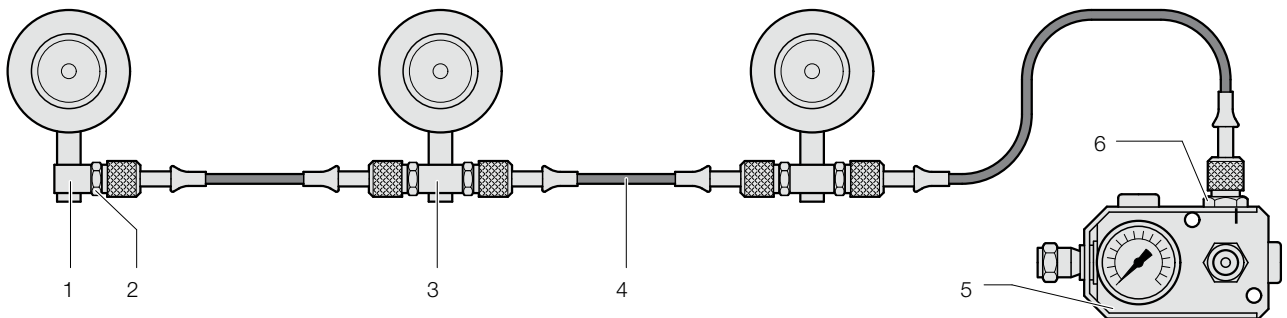
Battery series connection

Function:

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

Note:

When installing in the system always remove the valve from the gas springs.

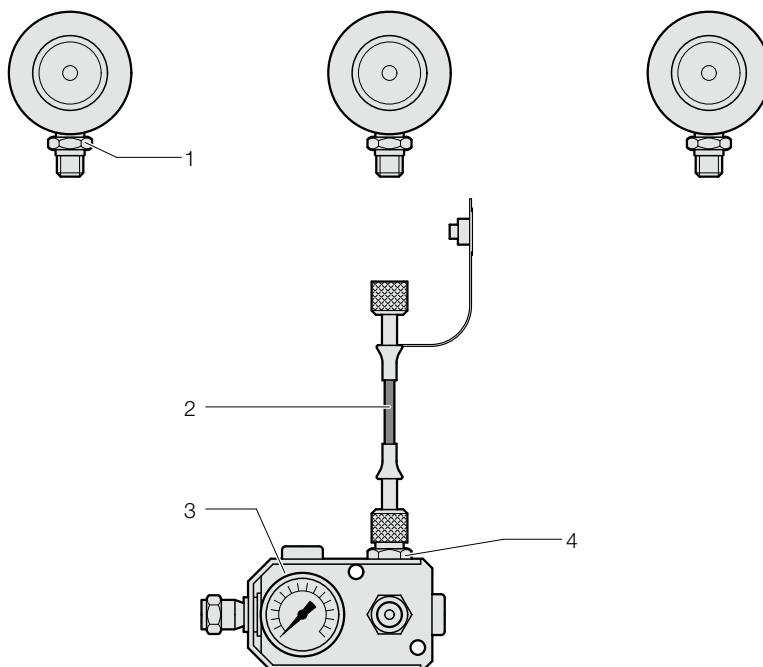


Item No.	Term	Quantity	Order No.	Note
1	Simple adaptor, short	1	2480.00.24.17	Choice of "long" or "very long" depending on the specific mounting arrangements.
2	Gauging coupling	5	2480.00.24.01	
3	Dual adapter	2	2480.00.24.14	Choice of "long" or "very long" depending on the specific mounting arrangements.
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.

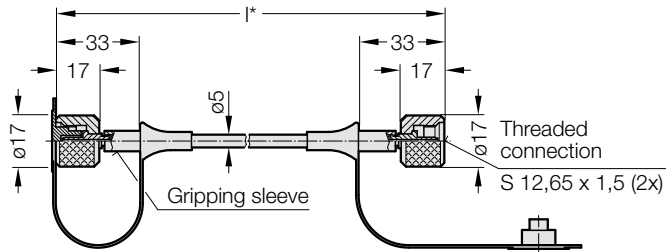
Item No.	Term	Quantity	Order No.	Note
1	Gauging coupling	3	2480.00.24.01	
2	Gauging hose	1	2480.00.23.□□□□	Type of connection and length as required
3	Control fitting	1	2480.00.31.01.1	
4	Gauging coupling	1	2480.00.24.02	

GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

2480.00.23.01.

Gauging hose - both ends straight



2480.00.23.01.

Gauging hose Mini, both ends straight

Order example:

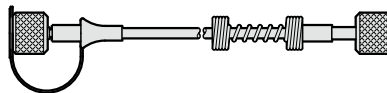
Shortest factory length:
 90 mm excl. bend protection
 150 mm bend protection on one side
 300 mm bend protection on both sides
 Minimum bending radius: R20 mm

*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

2480.00.23.01.----.1

Antikink spiral, at one end



2480.00.23.01.----.2

Antikink spiral, at both ends

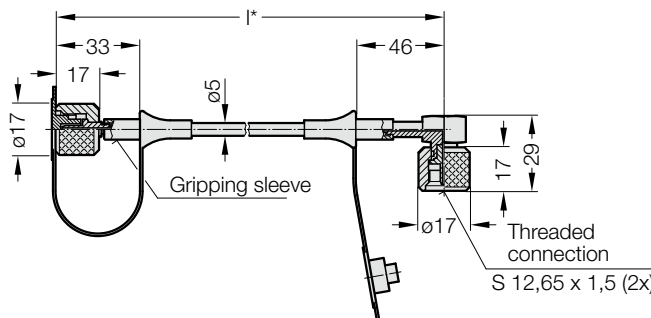


Ordering Code (example):

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.

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

Order example:

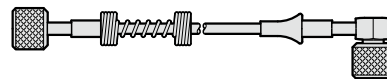
Shortest factory length:
 90 mm excl. bend protection
 150 mm bend protection on one side
 300 mm bend protection on both sides
 Minimum bending radius: R20 mm

*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

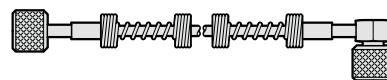
2480.00.23.02.----.1

Antikink spiral, at one end, straight



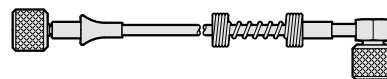
2480.00.23.02.----.2

Antikink spiral, at both ends



2480.00.23.02.----.3

Antikink spiral, at one end, 90°



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:

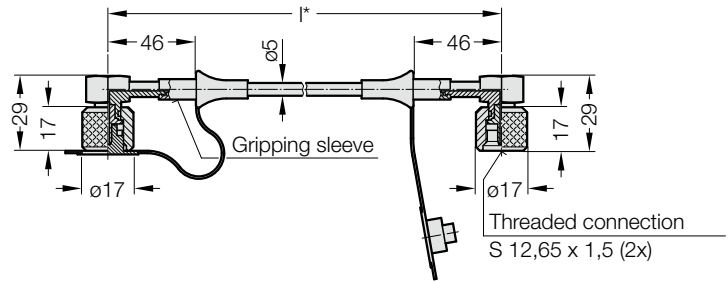
- 90 mm excl. bend protection
- 150 mm bend protection on one side
- 300 mm bend protection on both sides
- Minimum bending radius: R20 mm

*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

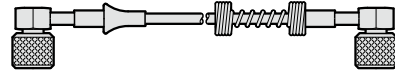
2480.00.23.03.

Gauging hose - both ends 90°-angle



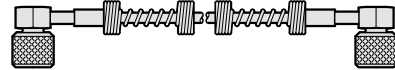
2480.00.23.03.-----3

Antikink spiral, at one end



2480.00.23.03.-----2

Antikink spiral, at both ends

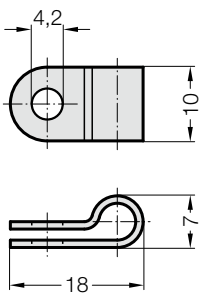


Ordering Code (example):

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:

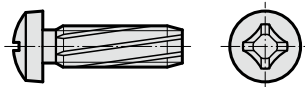
Polyamide

Note:

Screws are not included.

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 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:

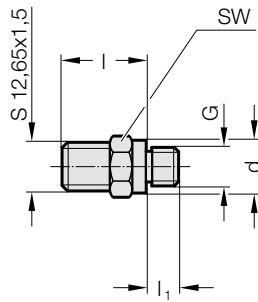
Polyamide

GAS SPRING ACCESSORIES

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

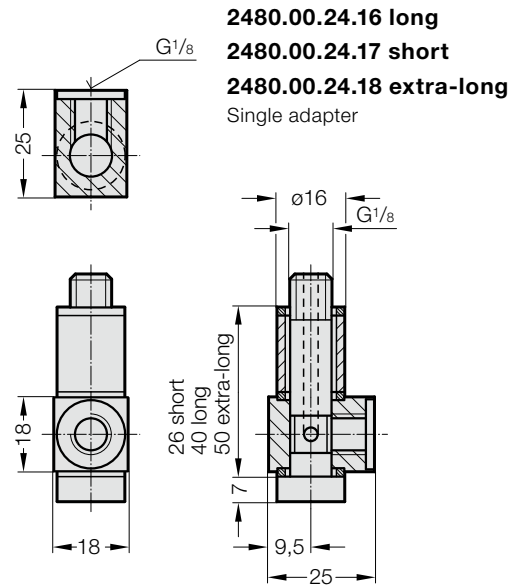


Order No.	G	d	SW	l	l ₁
2480.00.24.01	G 1/8	14	14	22	8
2480.00.24.02	G 1/4	19	19	21	10
2480.00.24.03	G 1/8	14	14	22	8
2480.00.24.04	G 1/4	19	19	21	10

*SW = Width across flats

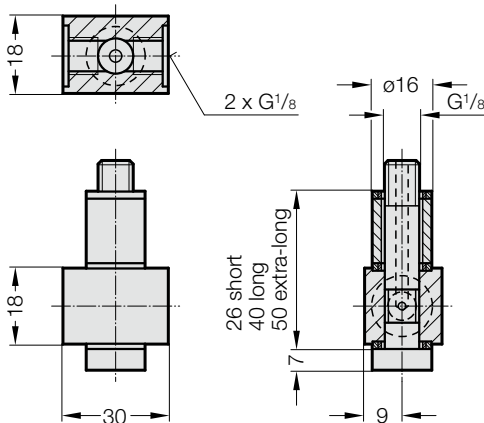
Note:

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.



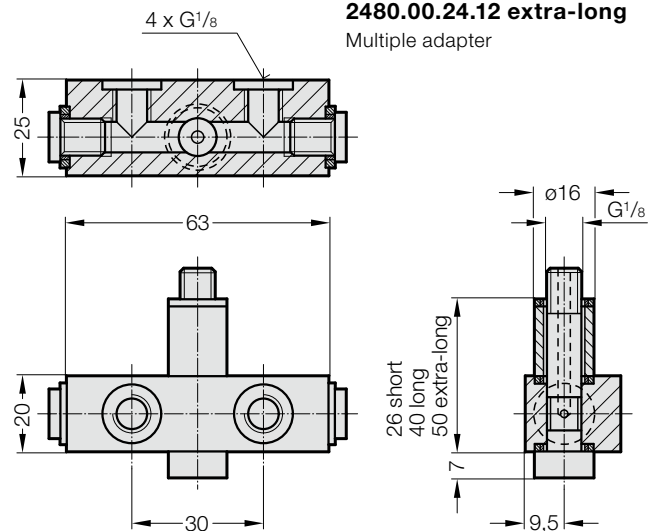
2480.00.24.13 long

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



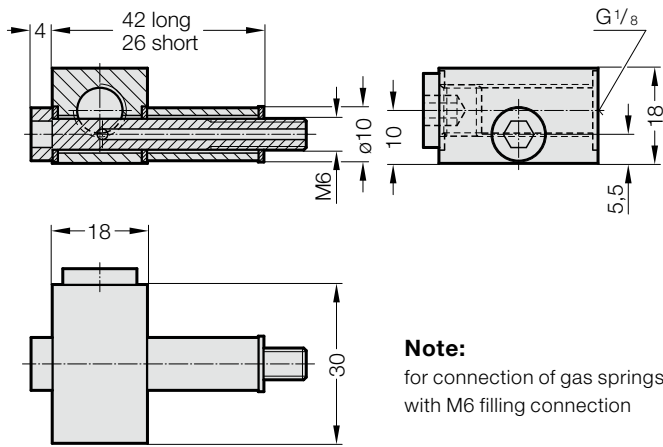
GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

2480.00.24.53 horizontal, long

2480.00.24.54 horizontal, short

Double adapter

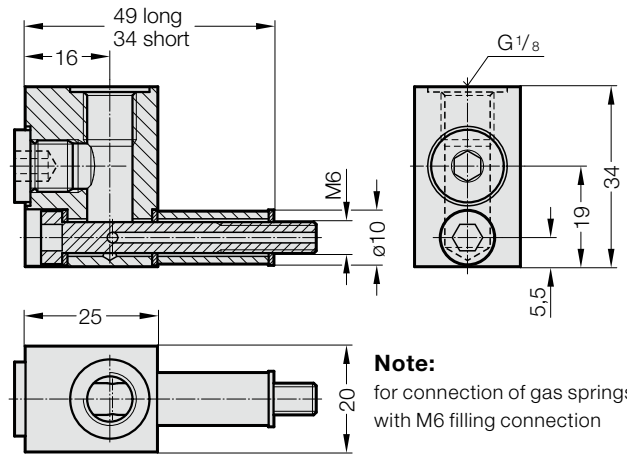


Note:
for connection of gas springs
with M6 filling connection

2480.00.24.56 vertical, long

2480.00.24.57 vertical, short

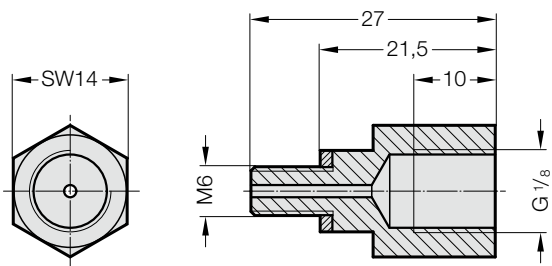
Double adapter



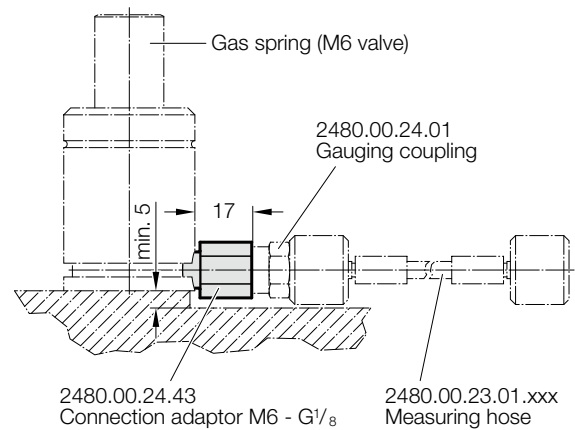
Note:
for connection of gas springs
with M6 filling connection

2480.00.24.43

Connection fitting M6-G1/8



Mounting example:

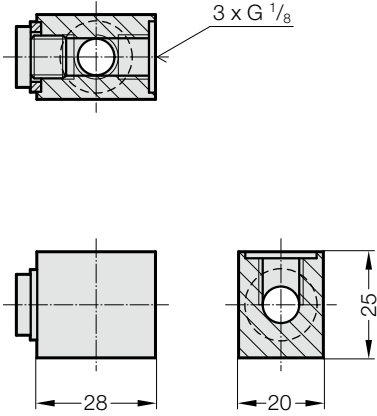


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

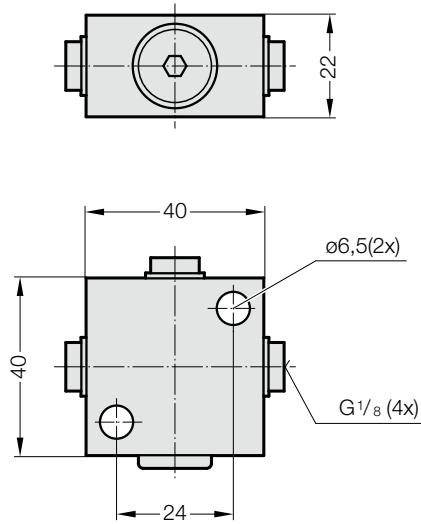
2480.00.24.30

Distributor block G1/8, 3 ports



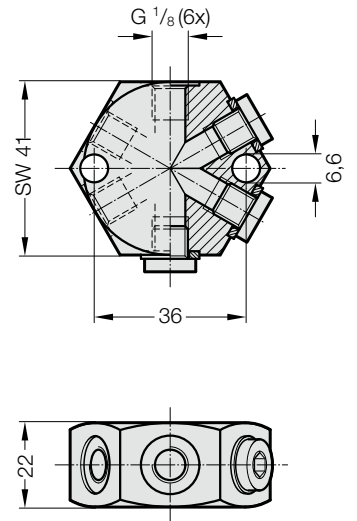
2480.00.24.34

Distributor block G1/8, 4 ports



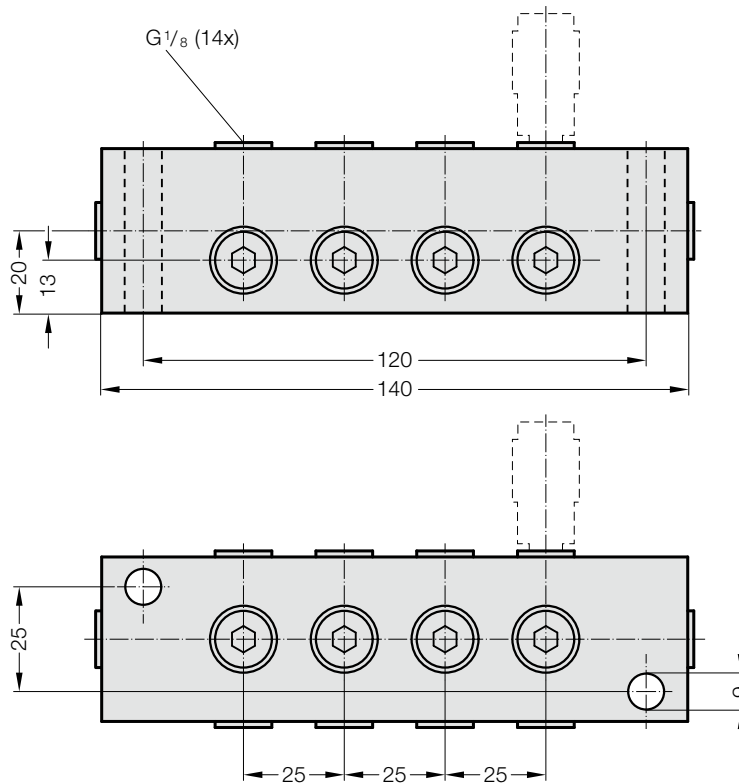
2480.00.24.31

Distributor block G1/8, 6 ports



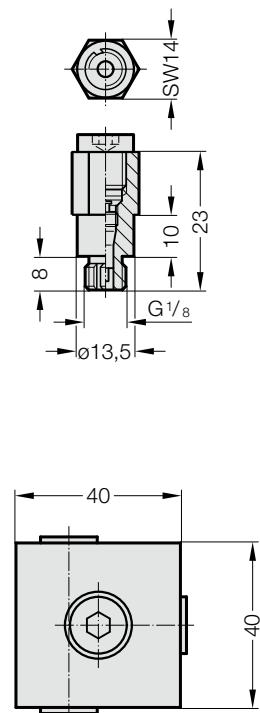
2480.00.24.33

Distributor G1/8, 14 ports



2480.00.40

Filling adapter

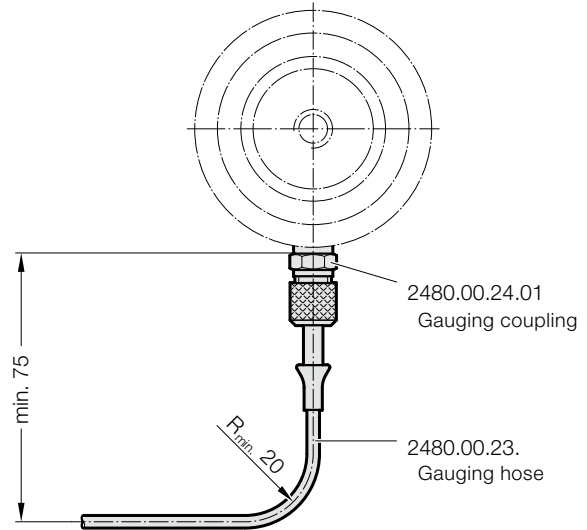
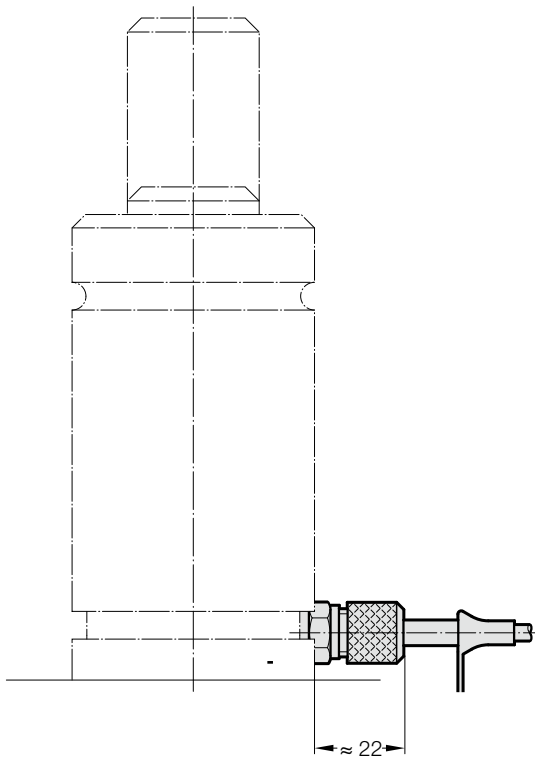


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

2480.00.24.01

Gauging coupling with valve



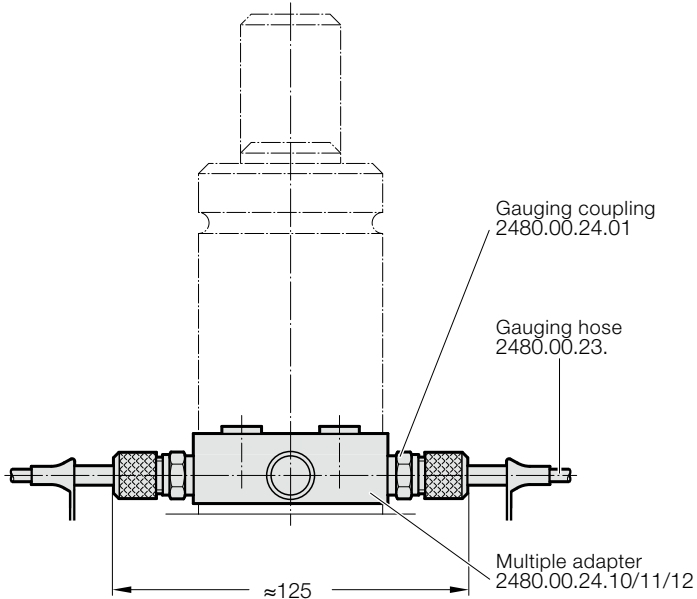
2480.00.24.10 long

11 short

12 extra-long

Multiple adapter with two gauging couplings

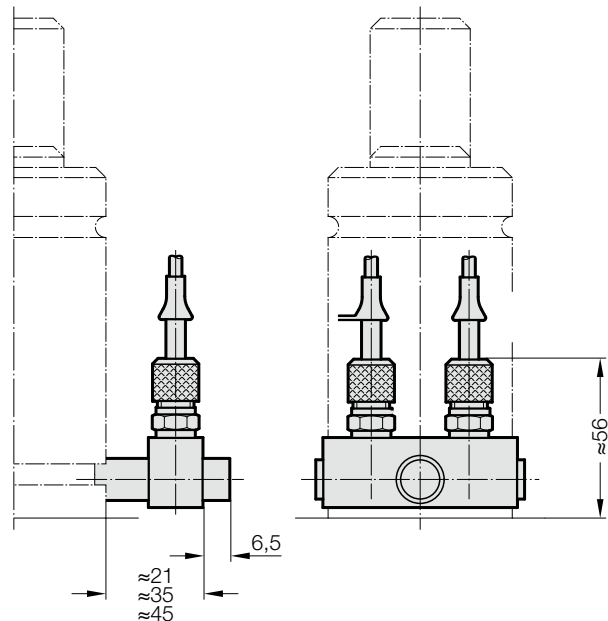
Execution: Horizontal connection



Note:

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

Execution: Vertical connection

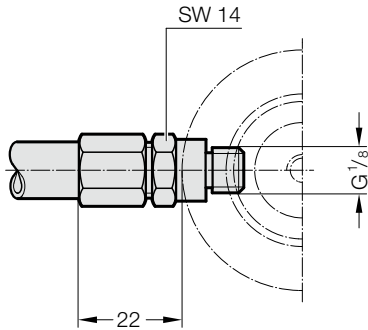


GAS SPRING ACCESSORIES

COMPRESSION FITTING - COMPOUND THREADED JOINTS

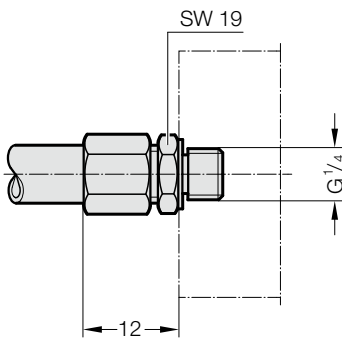
2480.00.10.01

Direct test connection to gas spring



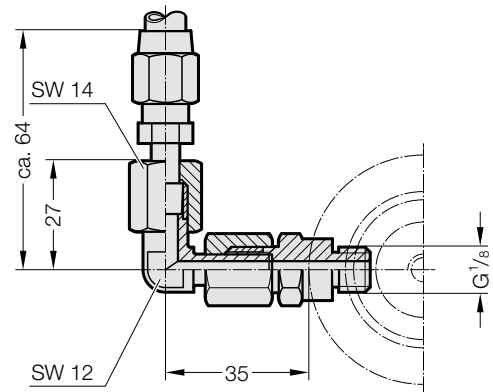
2480.00.10.03

Direct test connection to control fitting



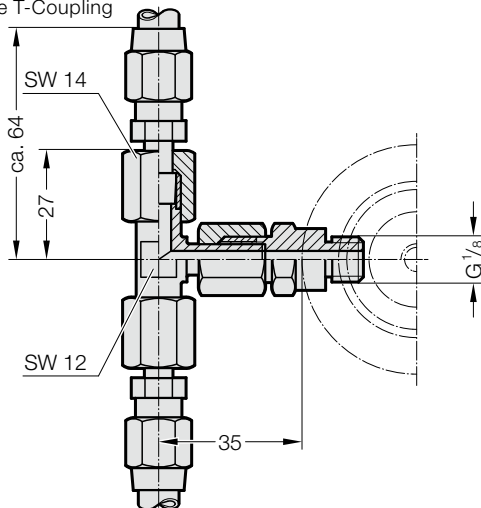
2480.00.10.10

Adjustable angular coupling



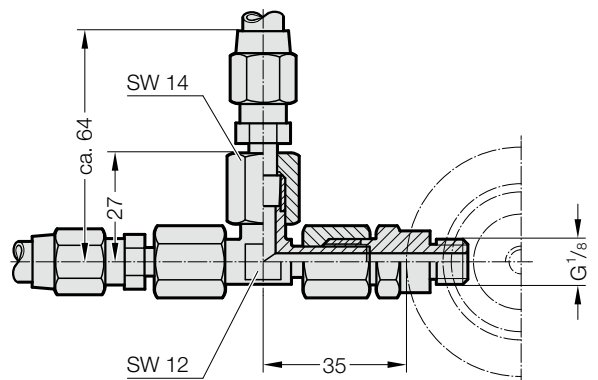
2480.00.10.11

Adjustable T-Coupling



2480.00.10.12

Adjustable L-Coupling

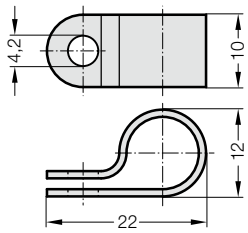


GAS SPRING ACCESSORIES

COMPRESSION FITTING – COMPOUND THREADED JOINTS

2480.00.10.20.12.01

Hose clamp
for gauging hose DN4 (Ø 9 mm)



Material:

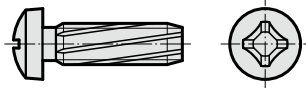
Polyamide

Note:

Screws are not included.

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-scoff 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

Description:

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

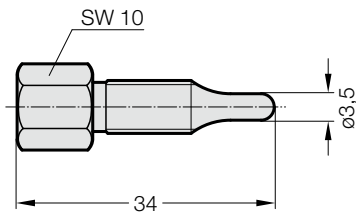
Material:

Polyamide

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

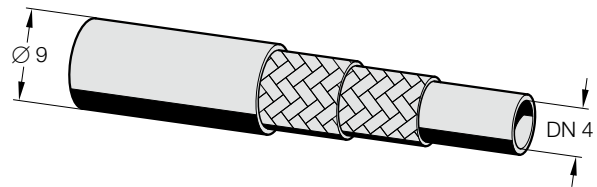
2480.00.54.01

Expansion punch for hosing



2480.00.10.20.

High-pressure hose

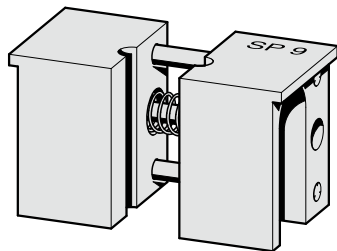


Ordering Code (example):

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

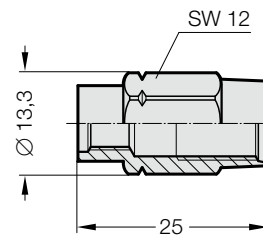
2480.00.54.02

Vice jaws
for holding high-pressure hose



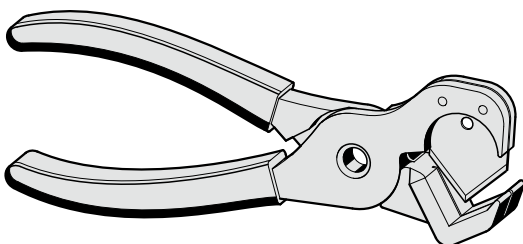
2480.00.10.21

Hose screw fitting (female)



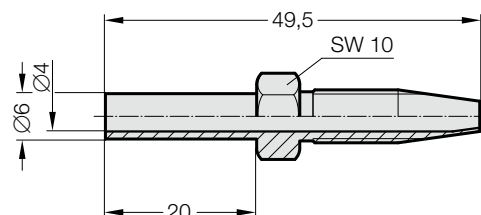
2480.00.54.03

Hose shears

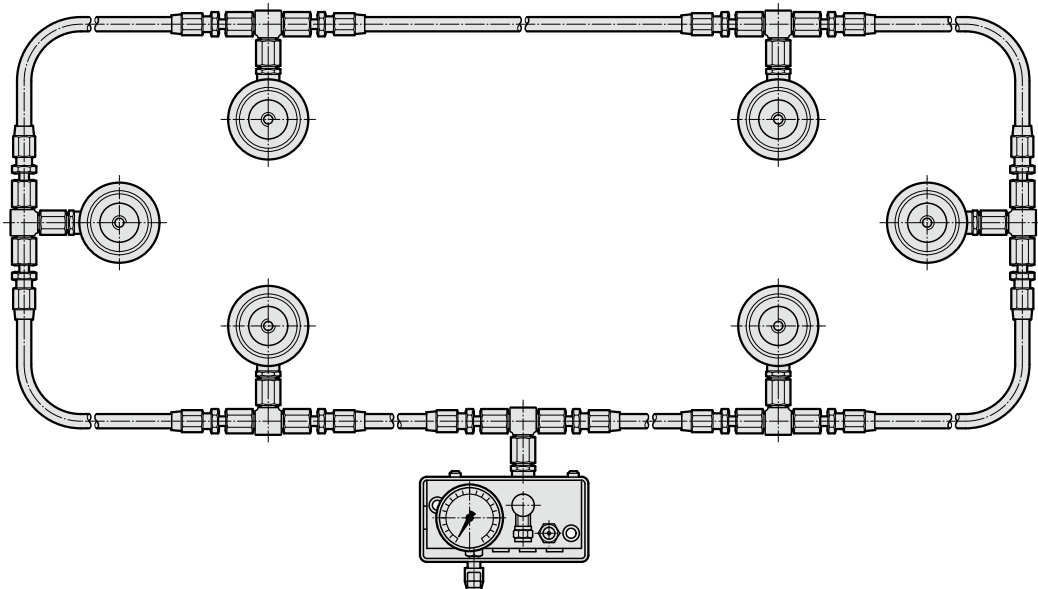
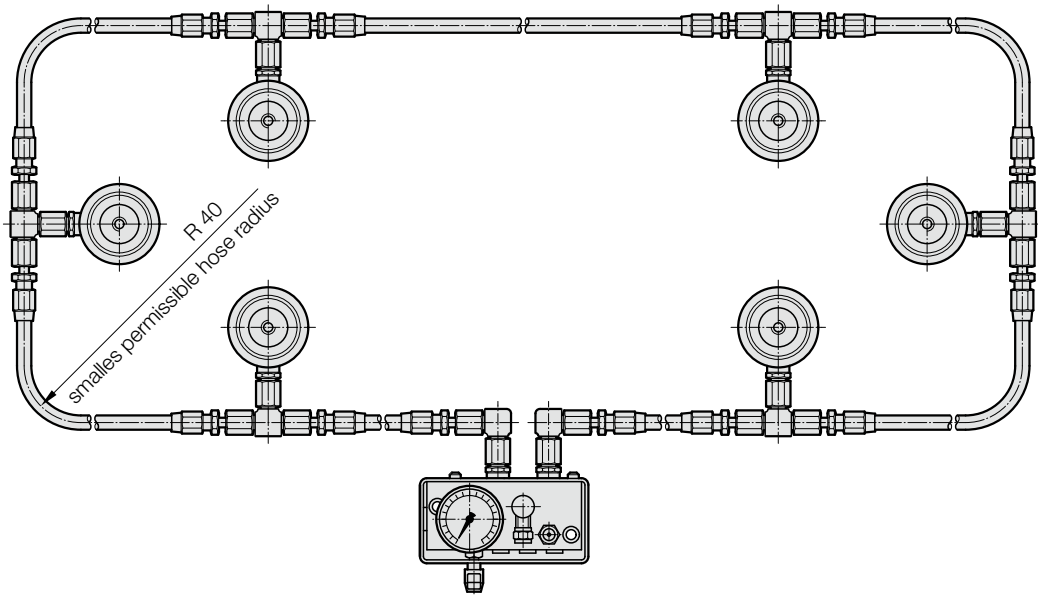
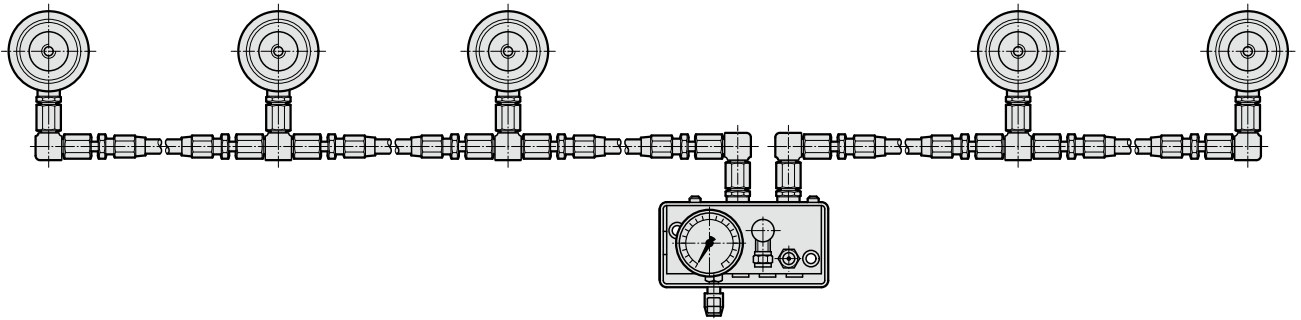


2480.00.10.22

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.

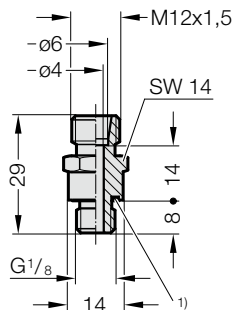
GAS SPRING ACCESSORIES

24°-CONE THREADED JOINTS

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.26.03

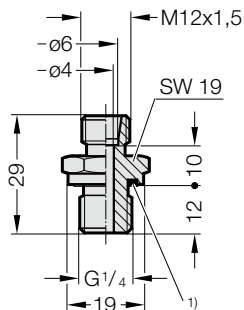
Screw connection GE-24° conus, DN5 - G $\frac{1}{8}$



1) Eolastic-Seal ED

2480.00.26.04

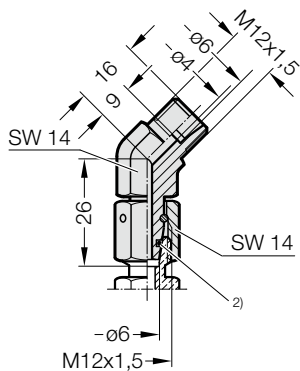
Screw connection GE-24° conus, DN5 - G $\frac{1}{4}$



1) Eolastic-Seal ED

2480.00.26.21

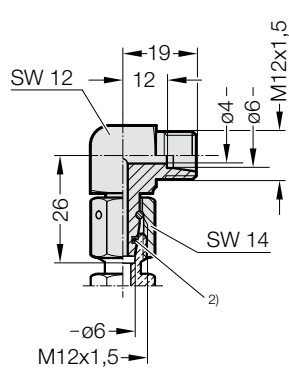
Screw connection 45°-24° conus, DN5, adjustable



2) O-ring

2480.00.26.22

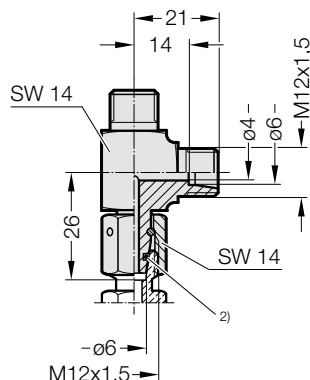
Screw connection 90°-24° conus, DN5, adjustable



2) O-ring

2480.00.26.23

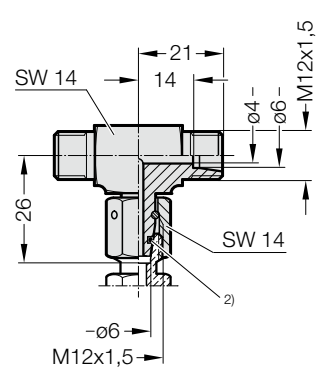
Screw connection L-24° conus, DN5, adjustable



2) O-ring

2480.00.26.24

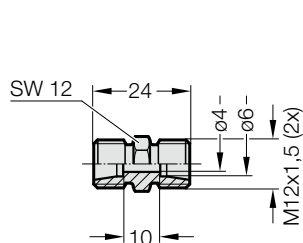
Screw connection T-24° conus, DN5, adjustable



2) O-ring

2480.00.26.25

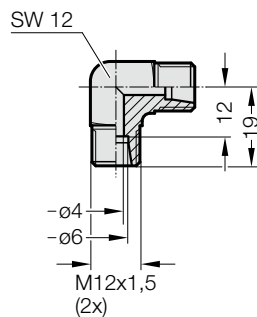
Adapter GE-24° conus, hose - hose, DN5



subject to alterations

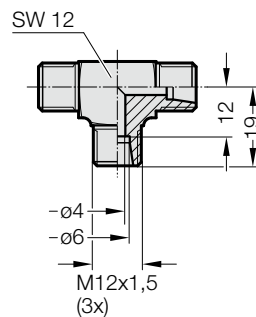
2480.00.26.26

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



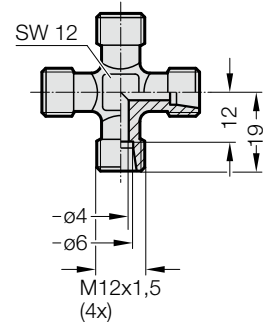
2480.00.26.27

Adapter T-24° conus, hose - hose, DN5



2480.00.26.28

Adapter K-24° conus, hose - hose, DN5



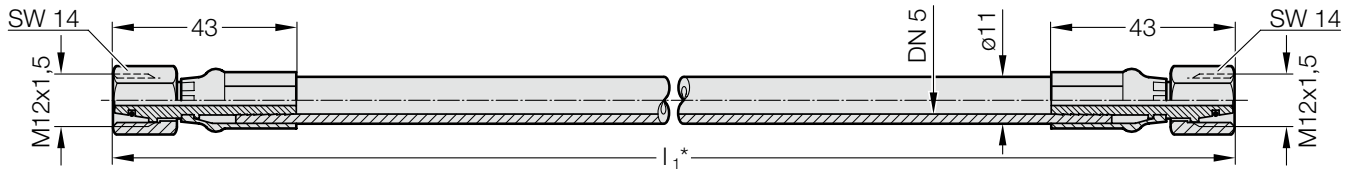
GAS SPRING ACCESSORIES

24°-CONE CONNECTION HOSES

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.01.

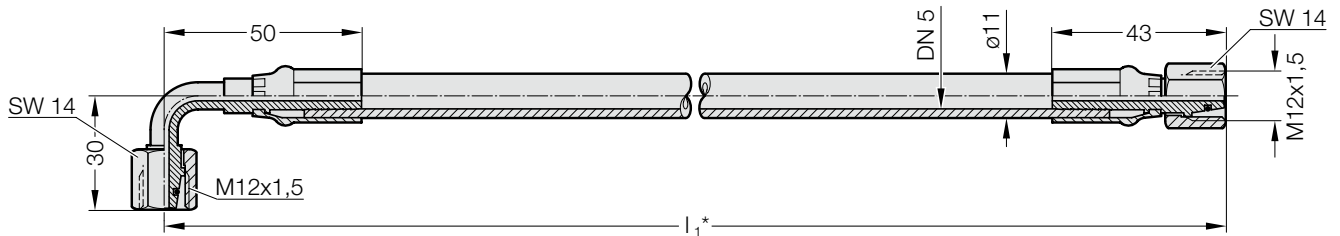
Hose – conical seals with union nuts and O-Ring (straight/straight)



Dimension I_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.01.0765

2480.00.25.02.

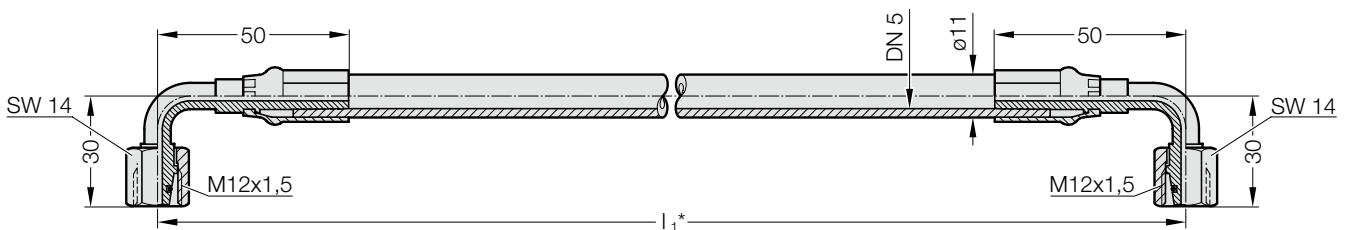
Hose – conical seals with union nuts and O-Ring (90° bend/straight)



Dimension I_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.02.0765

2480.00.25.03.

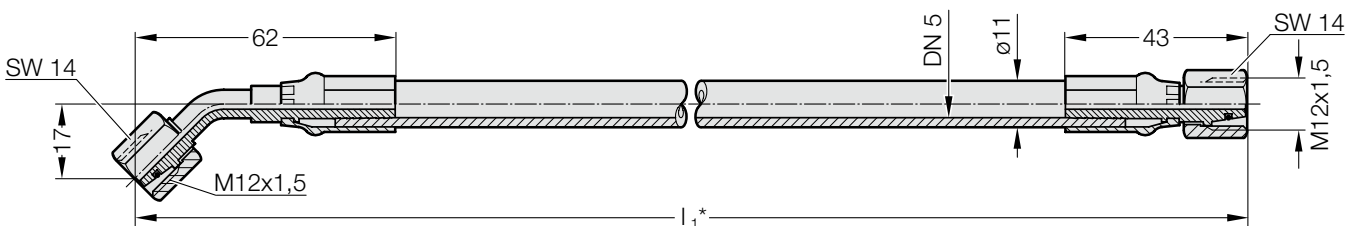
Hose – conical seals with union nuts and O-Ring (90° bend/both ends)



Dimension I_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 I_1 specified in the order, e.g. 765 mm gives order no. 2480.00.25.04.0765

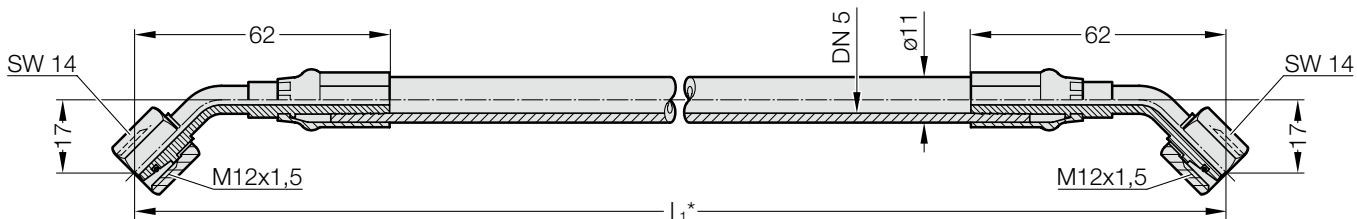
GAS SPRING ACCESSORIES

24°-CONE CONNECTION HOSES

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.05.

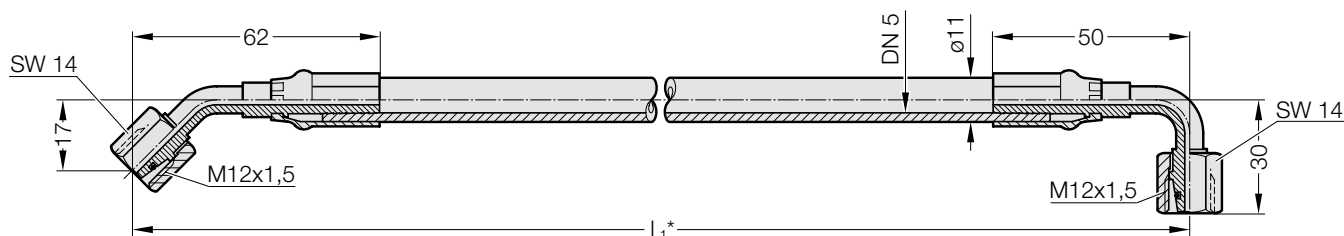
Hose – conical seals with union nuts and O-Ring (45° bend/both ends)



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

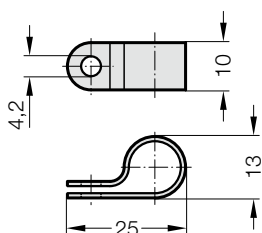
10 mm step range $>$ 1000 mm

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:

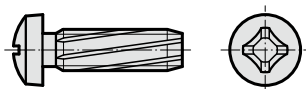
Polyamide

Note:

Screws are not included.

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 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

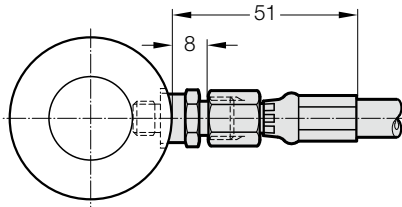
GAS SPRING ACCESSORIES

DIRECT CONNECTION DIMENSIONS

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

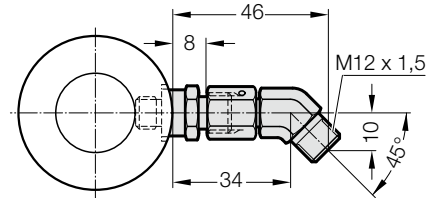
Direct connection

hose straight with adaptor 2480.00.26.03



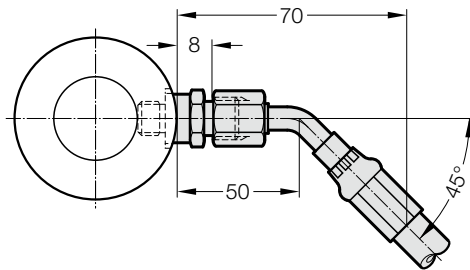
Direct connection

with elbow adaptor 45° 2480.00.26.21



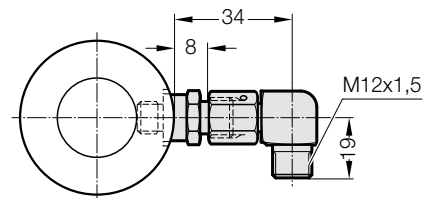
Direct connection

45° hose with adaptor 2480.00.26.03



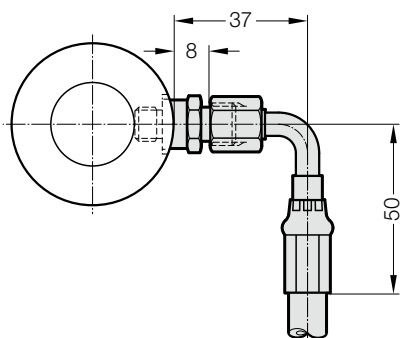
Direct connection

with elbow adaptor 90° 2480.00.26.22



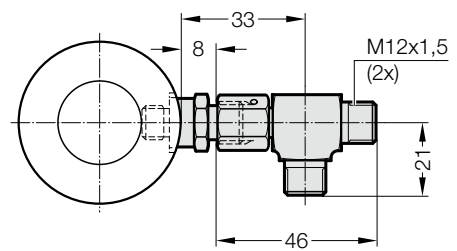
Direct connection

90° hose with adaptor 2480.00.26.03



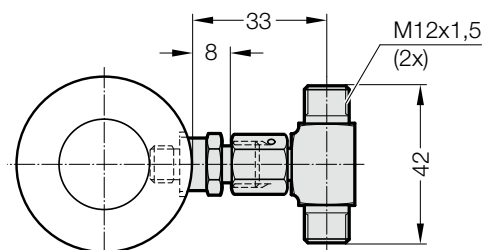
Direct connection

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:

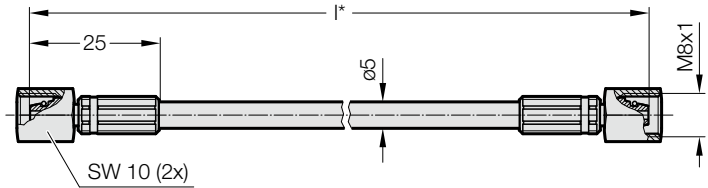
- 90 mm excl. bend protection
- 150 mm bend protection on one side
- 300 mm bend protection on both sides
- Minimum bending radius: R20 mm

*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

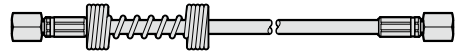
2480.00.27.01.

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



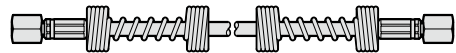
2480.00.27.01.....1

Antikink spiral, at one end



2480.00.27.01.....2

Antikink spiral, at both ends

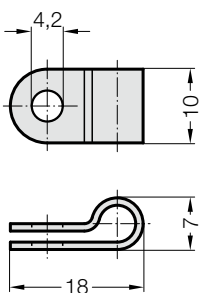


Ordering Code (example):

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:

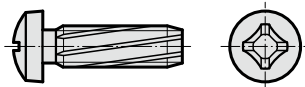
Polyamide

Note:

Screws are not included.

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 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

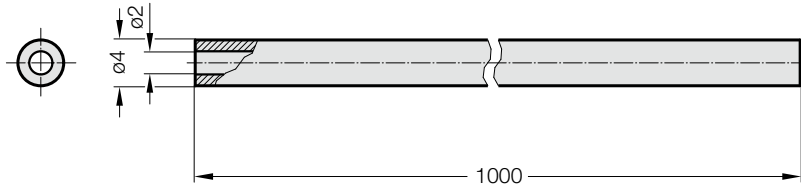
GAS SPRING ACCESSORIES

PIPE -24° CONUS MICRO

2480.00.27.11

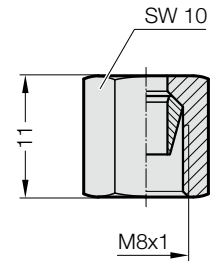
Pipe -24° conus micro
Delivered length: 1 m

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



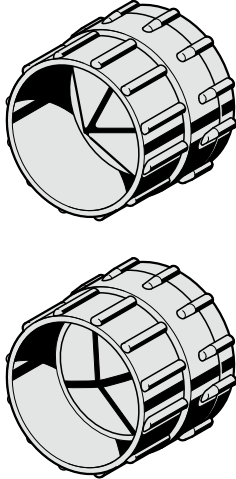
2480.00.27.11.01

Cutting ring screw connection - pipe 24° conus micro



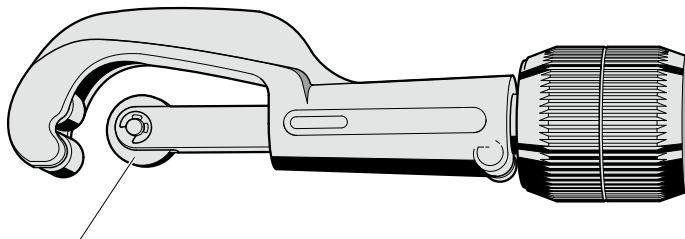
2480.00.27.00.01

Deburring tool for 24° conus micro



2480.00.27.00.02

Pipe cutter for 24° conus micro



2480.00.27.00.02.1

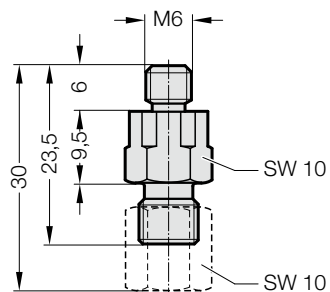
Replacement cutting wheel for pipe cutter

GAS SPRING ACCESSORIES

CONNECTOR SYSTEM, 24° CONUS MICRO

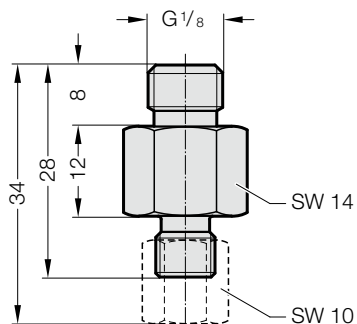
2480.00.28.01

Screw connection
GE-M6-24° cone micro



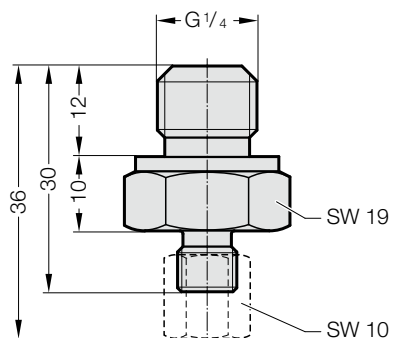
2480.00.28.02

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



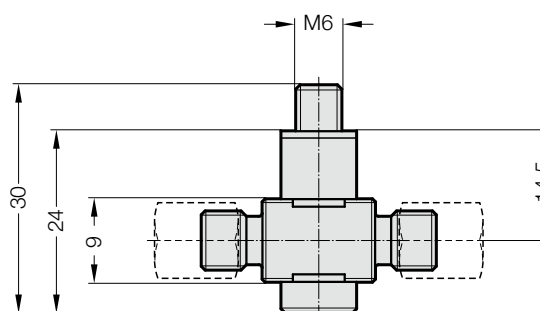
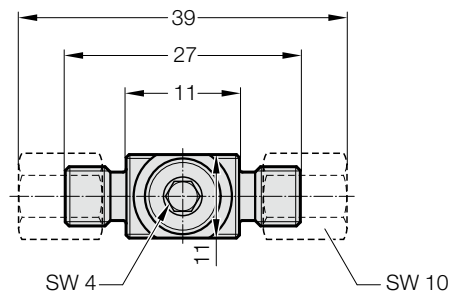
2480.00.28.03

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



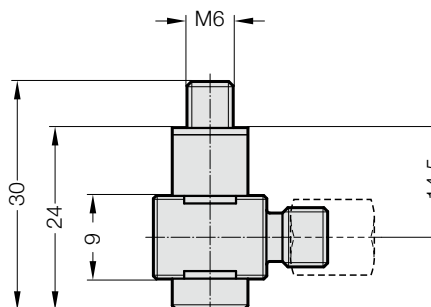
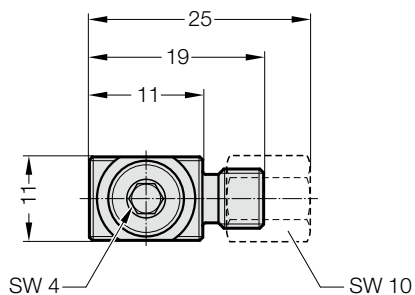
2480.00.28.14

Screw connection, T-24° conus micro



2480.00.28.17

Screw connection, W-24° conus micro

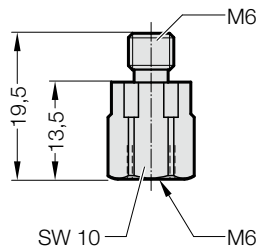


GAS SPRING ACCESSORIES

CONNECTOR SYSTEM, MICRO

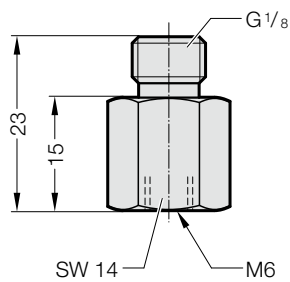
2480.00.22.06.06

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



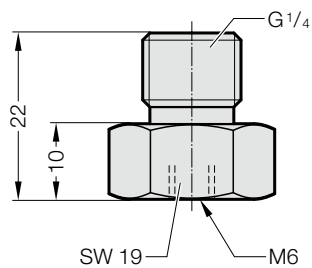
2480.00.22.18.06

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



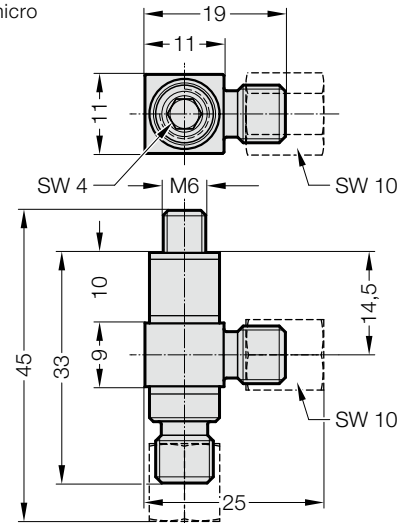
2480.00.22.14.06

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



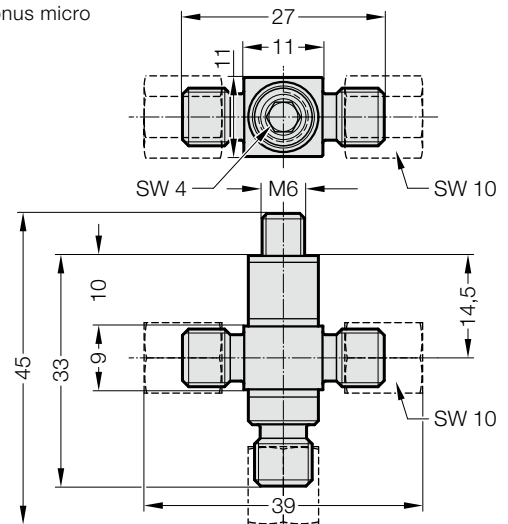
2480.00.28.15

Screw connection, L-24° conus micro



2480.00.28.16

Screw connection, K-24° conus micro

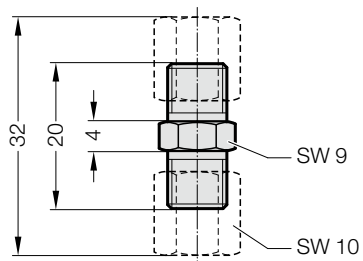


GAS SPRING ACCESSORIES

CONNECTOR SYSTEM 24° CONE MICRO

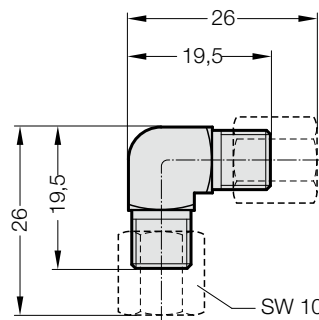
2480.00.28.25

Adapter, GE-24° cone micro
hose – hose



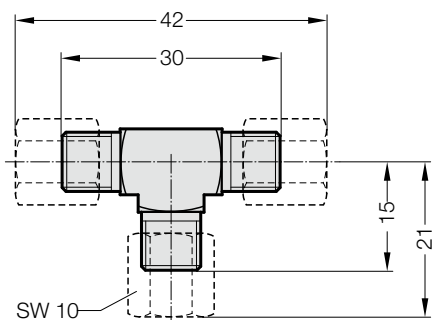
2480.00.28.26

Adapter, W-24° cone micro
hose – hose



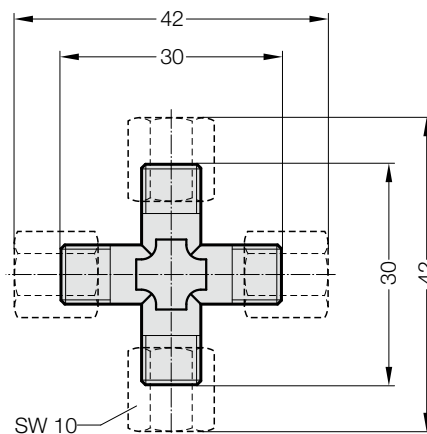
2480.00.28.27

Adapter, T-24° cone micro
hose – hose



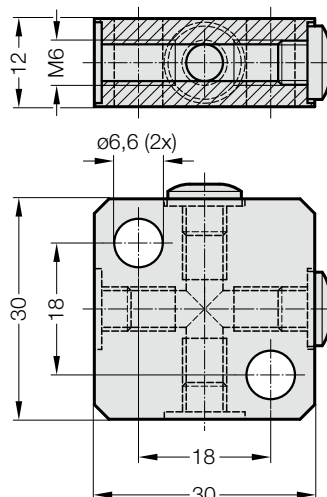
2480.00.28.28

Adapter, K-24° cone micro
hose – hose



2480.00.28.34

Distributor block M6, 4 ports



CONTROL FITTING WITHOUT PRESSURE RELIEF WITH PRESSURE RELIEF

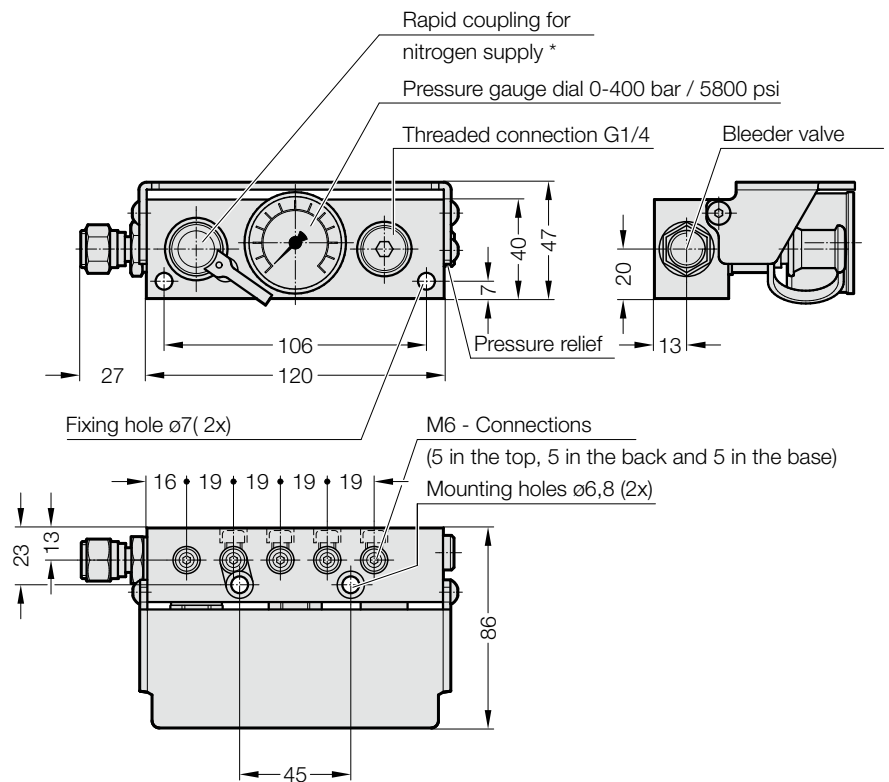
Description:

The micro control valve 2480.00.34.11.1/13.1 is used for continuous monitoring of the filling pressure of one or more gas springs (2 x 5 M6 connections, top, bottom and x 4 rear).

Note:

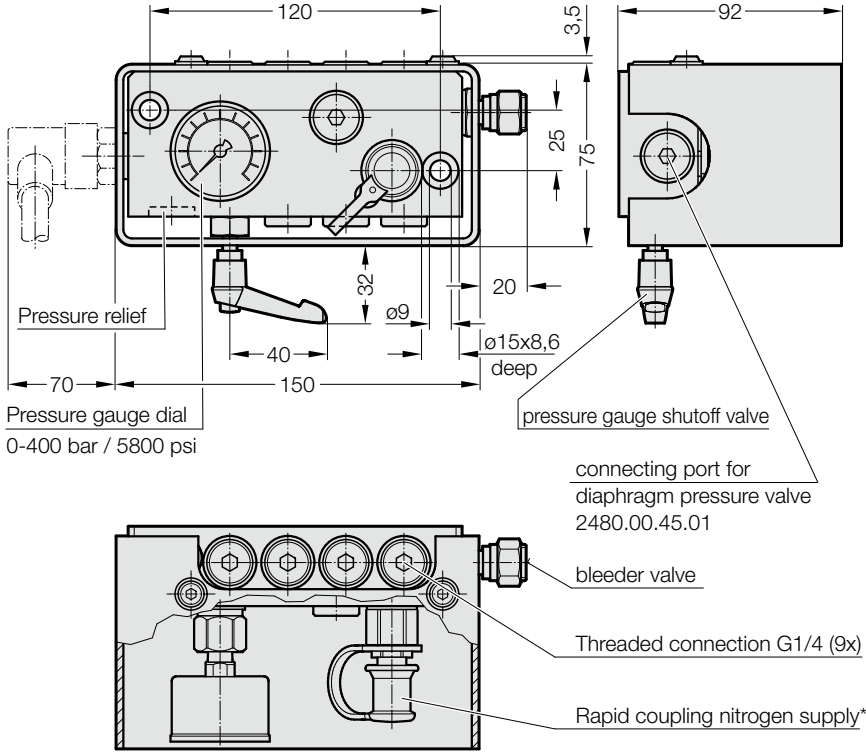
* 2 m long filling hose
Order no. 2480.00.31.02
order separately

2480.00.34.11.1 without pressure relief
2480.00.34.13.1 with pressure relief



CONTROL FITTING

- 2480.00.30.01.1** without pressure switch, without pressure relief
- 2480.00.30.02.1** with pressure switch, without pressure relief
- 2480.00.30.03.1** without pressure switch, with pressure relief
- 2480.00.30.04.1** with pressure switch, with pressure relief



Description:

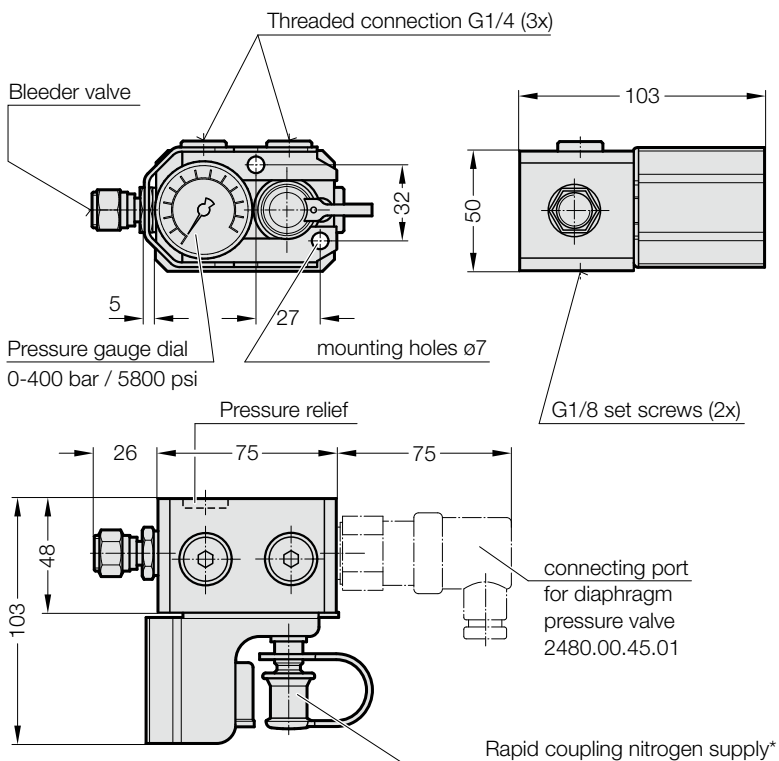
The control fitting 2480.00.30.01.1/02.1/03.1/04.1 serves to control the charge pressure of up to eight connected gas springs. Pressure checks during operation can be effected in two ways:

- a) via optical monitoring of the pressure gauge dial.
- b) via automatic monitoring with a diaphragm pressure switch. The switch will shut down the machine or trigger a signal.

Note:

The shut-off valve can be either open or closed during operation. Closing the pressure gauge shut-off valve ensures that no pressure pulsations from the gas springs act on the pressure gauge. * 2 m long filling hose Order no. 2480.00.31.02 to be ordered separately

- 2480.00.31.01.1** without pressure switch
- 2480.00.31.06.1** with pressure switch
- 2480.00.31.07.1** without pressure switch and with pressure relief
- 2480.00.31.08.1** with pressure switch, with pressure relief

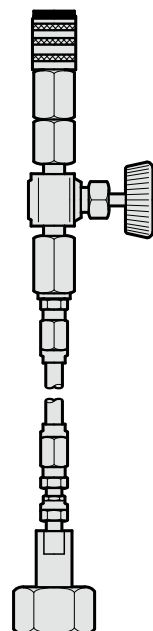


Description:

The control fitting 2480.00.31.01.1 performs the same function as the control armature 2480.00.30.01.1

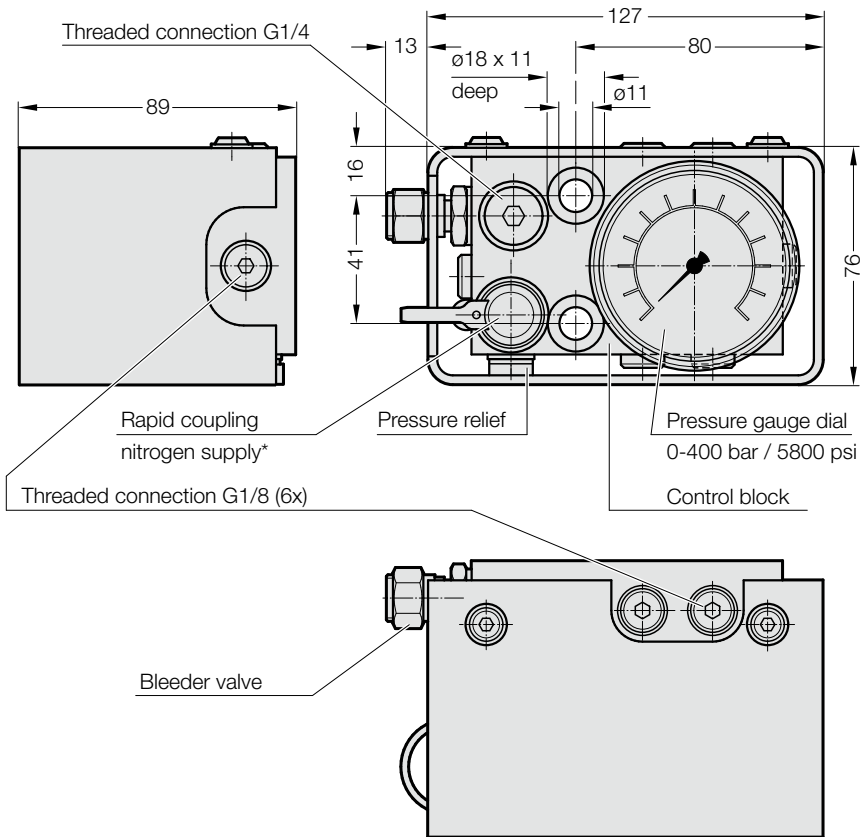
Note:

* 2 m long filling hose Order no. 2480.00.31.02 order separately



CONTROL FITTING

2480.00.30.13.1 without pressure switch, with pressure relief



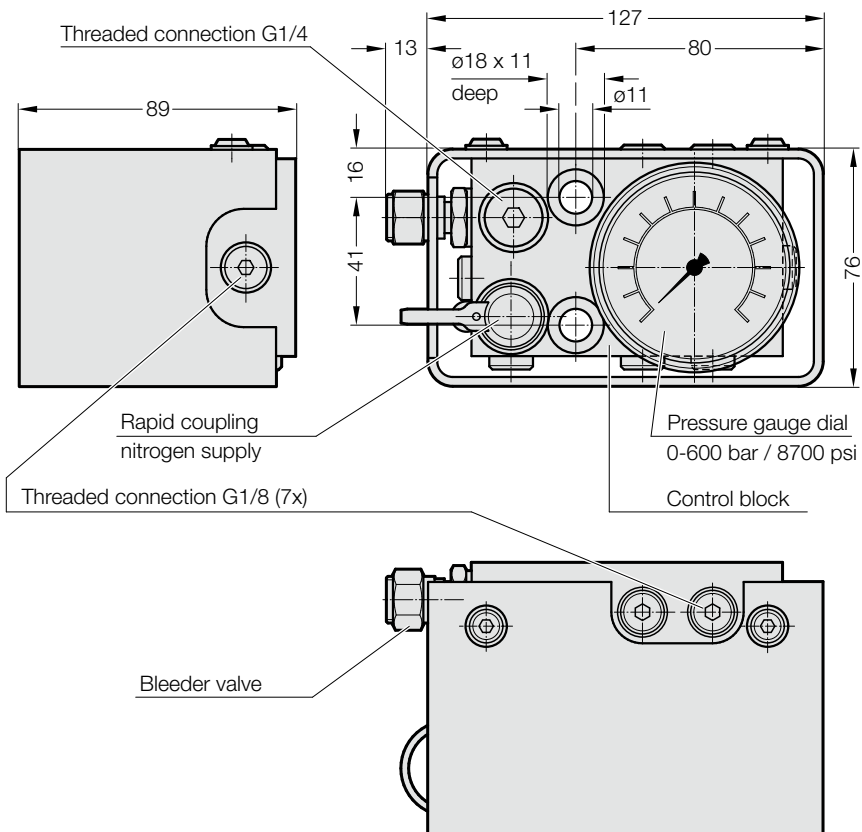
Description:

The control fitting 2480.00.30.13.1 is used to constantly monitor the filling pressure of one or more gas springs. The control fitting is equipped with rapid coupling for nitrogen supply and a bleeder valve. There are three G1/8 ports for simultaneous pressure checking at the control fitting. Measuring range from 0 - 400 bar / 5800 psi.

Note:

* 2 m long filling hose
Order no. 2480.00.31.02
order separately

2480.00.30.14.1 (600 bar) without pressure switch, without pressure relief



Description:

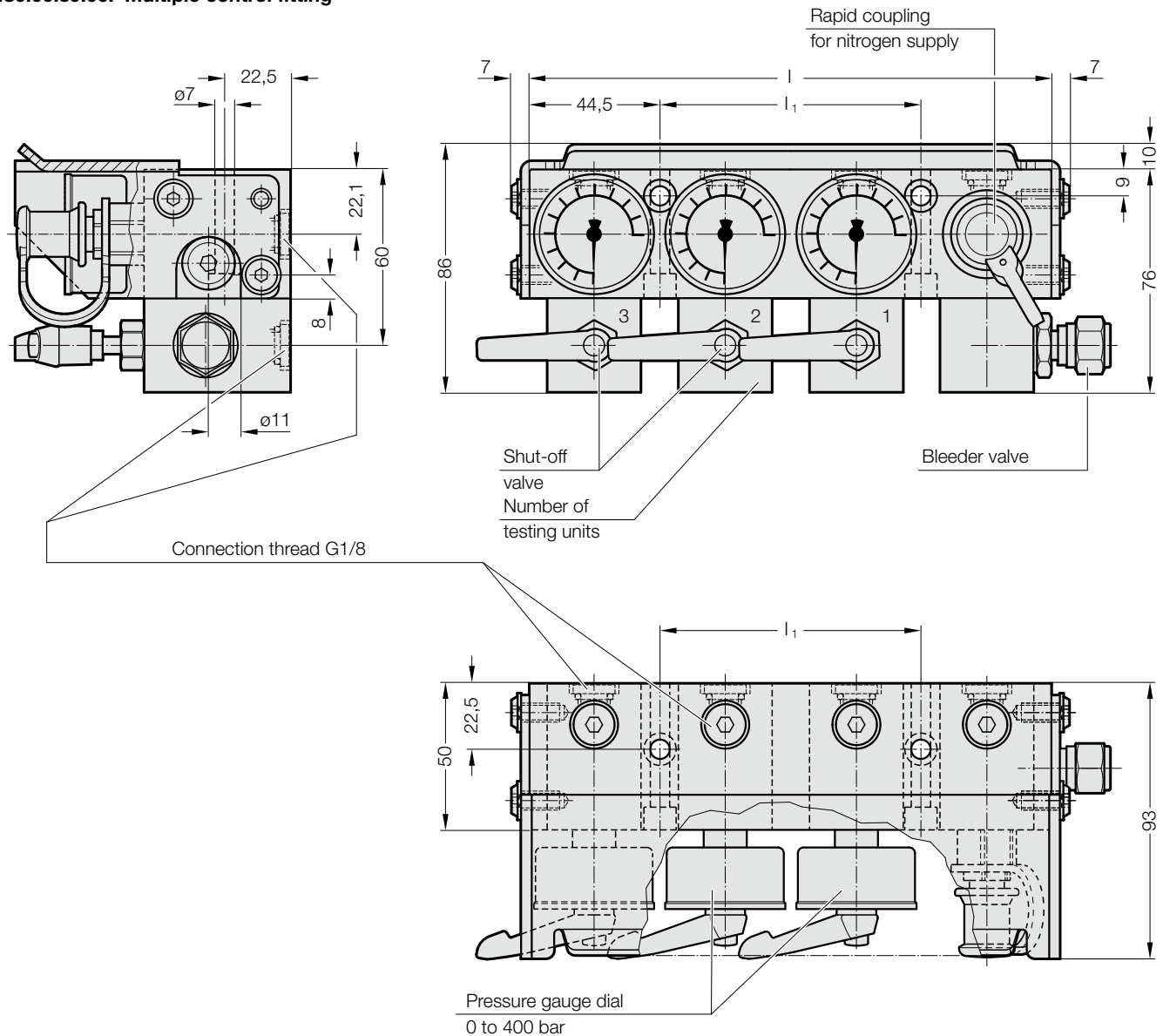
The control fitting 2480.00.30.14.1 is used for the constant monitoring of filling pressures > 150 bar of one or more gas springs. The control fitting is equipped with rapid coupling for nitrogen supply and a bleeder valve. There are three G1/8 ports for simultaneous pressure checking at the control fitting. Measuring range from 0-600 bar (8700 psi).

Note:

* 2 m long filling hose
Order no. 2480.00.31.02
order separately

MULTIPLE CONTROL FITTING

2480.00.39.06. Multiple control fitting



Description:

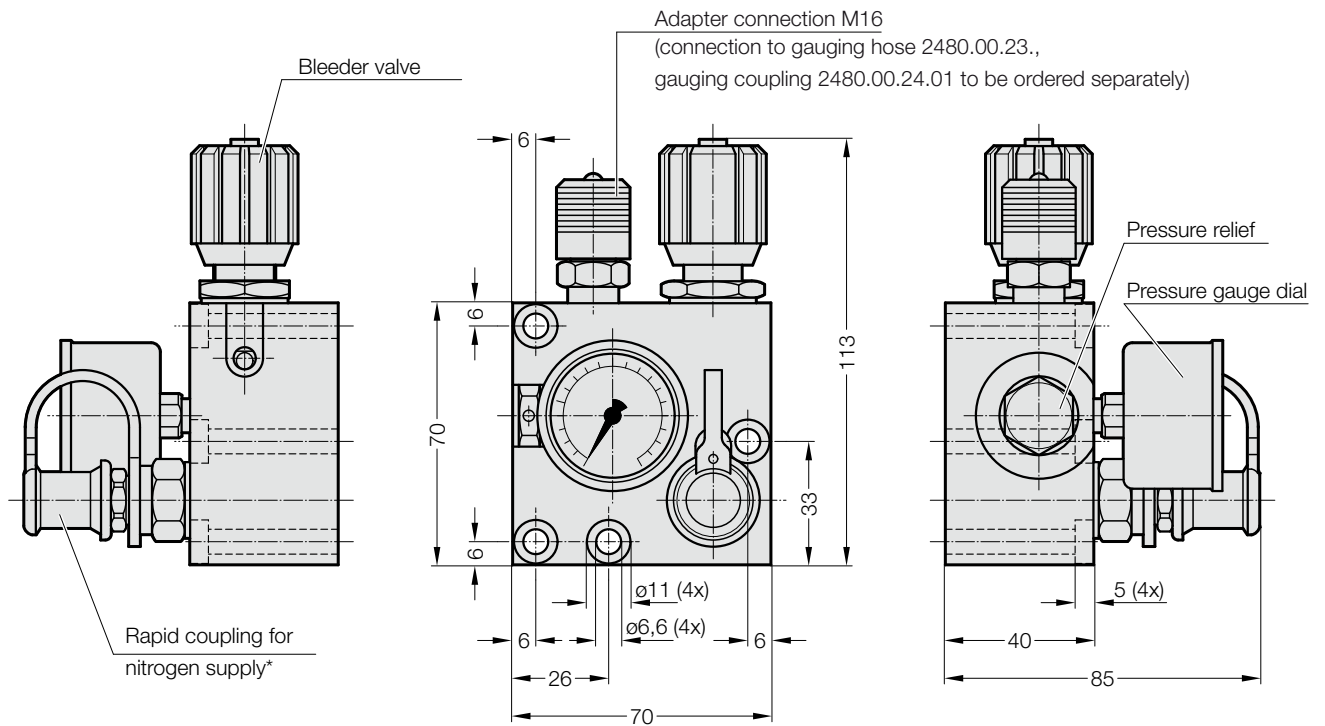
The multiple control fitting is required if it is necessary to check or set the filling pressure of each spring or spring assembly individually. The filling of the springs is done at a central position using the rapid coupling for nitrogen supply. Each testing unit is provided with three threaded connections for the optional hose connection. The cover protects against mechanical damages.

2480.00.39.06. Multiple control fitting

Order No	Number of testing units	l	l ₁
2480.00.39.06.04.2	4	228.5	
2480.00.39.06.02.s	2	133.5	
2480.00.39.06.0001			
2480.00.39.06.0002			
2480.00.39.06.0003			
2480.00.39.06.0003.1.s		35	
2480.00.39.06.03.s	3	178	
2480.00.39.06.02.1	2	133.5	44.5
2480.00.39.06.04.s	4	222.5	
2480.00.39.06.03.1	3	178	89
2480.00.39.06.04.1	4	222.5	133.5
2480.00.39.06.02.2	2	139.5	
2480.00.39.06.03.2	3	184	
2480.00.39.06.02	2	133.5	44.5
2480.00.39.06.03	3	178	89
2480.00.39.06.04	4	222.5	133.5

CONTROL FITTING

2480.00.31.11.1



Description:

The control fitting with pressure relief 2480.00.31.11.1 (Faure) is used for the continuous monitoring of the filling pressure of one or more gas pressure springs (one connection G1/8–M16). The pressure check during operation can be carried out by optical monitoring of the manometer display.

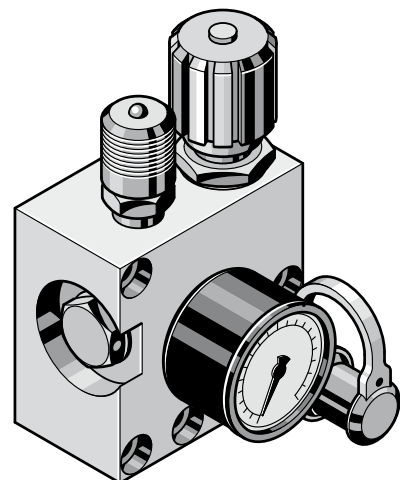
Note:

To connect measuring hose system 2480.00.23., remove M16 connection adapter and screw in the measuring coupling with valve 2480.00.24.01 (to be ordered separately).

With a composite arrangement of the gas springs, always remove the valve from the gas spring.

* 2 m long filling hose

Order no. 2480.00.31.02 to be ordered separately



DIAPHRAGM PRESSURE SWITCH ADAPTER BLOCK SCREW CONNECTION GE-G1/4-G1/8

Technical data

2480.00.45.01

Diaphragm pressure switch

2480.00.45.02

2480.00.45.01

Setting range 20-250 bar

Tolerance ± 5.0 bar

Overpressure protection 350 bar

max. voltage 250 V

2480.00.45.02

Setting range 10-80 bar

Tolerance ± 1.6 bar

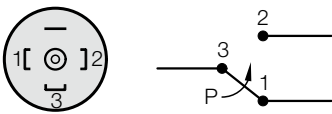
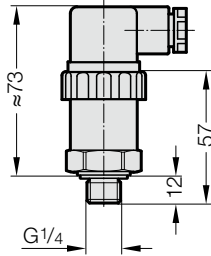
Overpressure protection 350 bar

max. voltage 250 V Note:

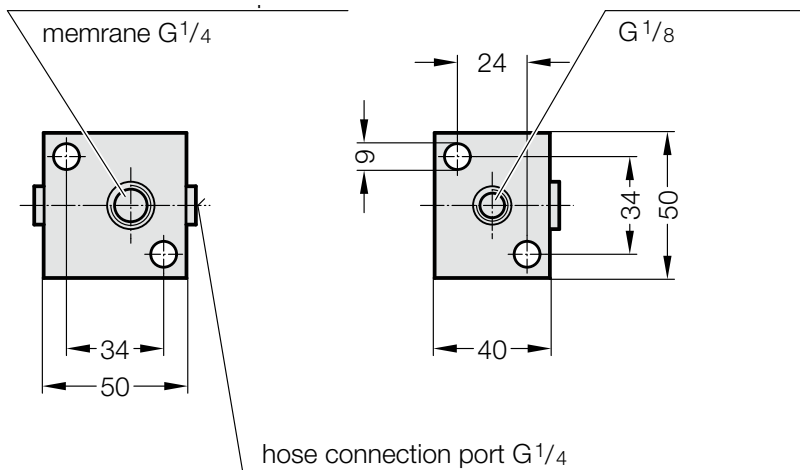
For individual monitoring of springs

see adapter 2480.00.45.10

Wiring diagram for diaphragm pressure switch

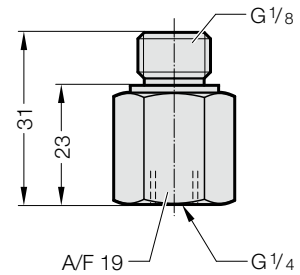


2480.00.45.10

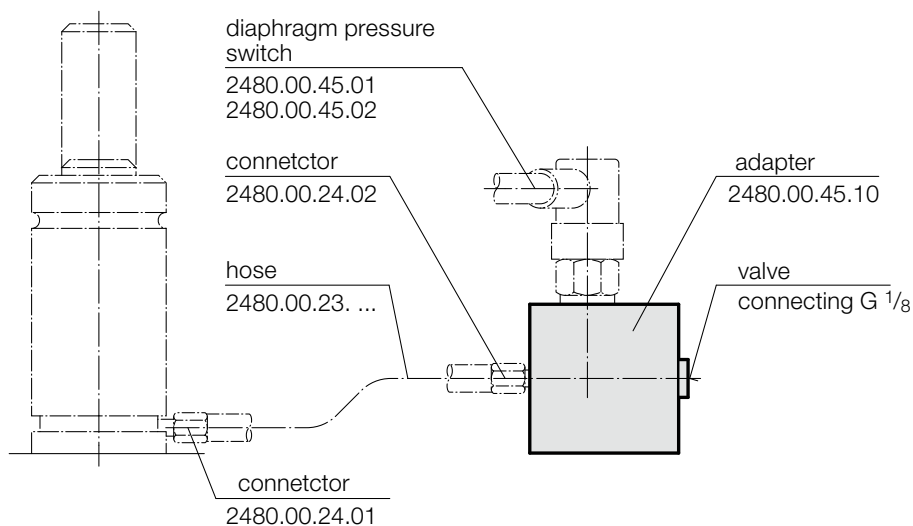


2480.00.45.00.01.18.14

Screw connection GE - G 1/8 - G 1/4 for control valve with screw connection G 1/8



Mounting example:



Description:

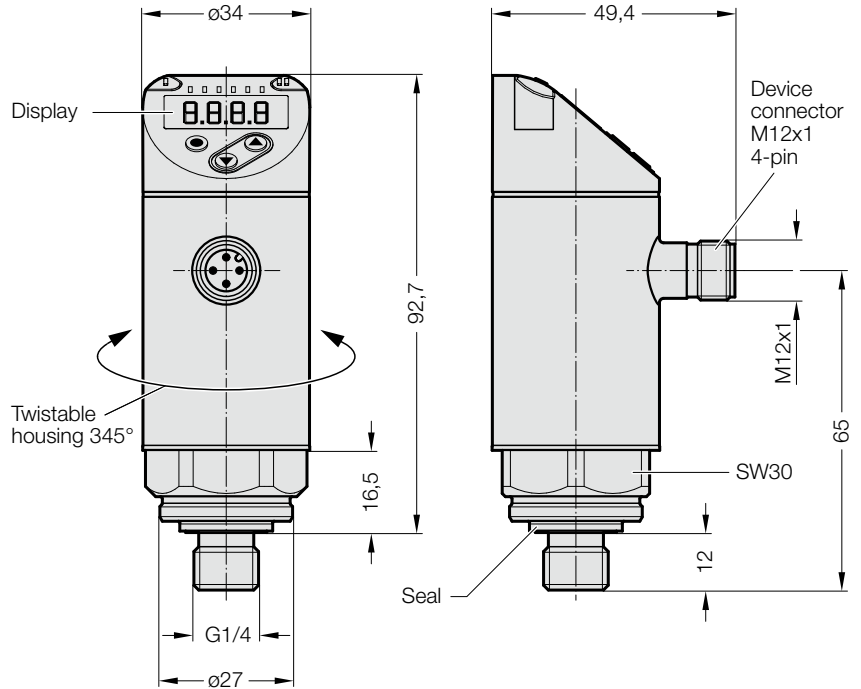
The adapter 2480.00.45.10, in combination with the diaphragm pressure switch 2480.00.45.01 or 2480.00.45.02, permits filling pressure monitoring similar to the control fittings 2480.00.30.02.

When the filling pressure falls below a certain level, the diaphragm pressure switch issues a signal or switches the machine off.

DIAPHRAGM PRESSURE SWITCH, DIGITAL

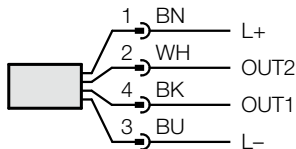
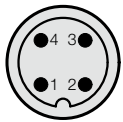


2480.00.45.04



Pin assignment:

M12x1, 4-pin



OUT1 - Switch output, IO-LINK
 OUT2 - Switch output, color coding in accordance with DIN EN 60047 5 2

Note:

2191.00.12.04.030 connecting cable, straight
 3 m long, to be ordered separately.



Description:

The membrane pressure switch, digital 2480.00.45.04, has a 4 digit alphanumeric display and two programmable switch outputs. The membrane pressure switch works in a pressure range of up to 400 bar and is impressive with a high overload resistance. With a high protection class IP65/IP67 and requiring no service, it guarantees interference-free and safe operation. The membrane pressure switch, digital with G 1/4 A nitrogen connection and M12 plug connection, is the optimal solution for hydraulic and pneumatic applications.

Advantages:

- Two switch outlets, one of which with IO link communication interface
- Red-Green alternating display for clear designation of Good ranges
- 4-digit digital display
- Optimal line up due to adjustability of the housing by 345°
- Switching direction of the switch outputs adjustable (opening or closing function)
- Value display in bar, psi or MPa or freely scalable, for example, force
- Easy handling via button programming
- Robust design for use in rough industrial environment

Technical data:

Product features:

Output signal	Switch signal; IO-LINK; (configurable)
Measuring range	400 bar
Threaded connection	G1/4

Number of digital outputs	2
output function	Closer/Opener; (parameterizable)
Max. voltage drop	
Switch output DC	2,5 V
Short circuit protection	yes

Area of application:

Media	liquid and gaseous media
Medium temperature	-25 ... 80°C
Min. burst pressure	1700 bar
Compressive strength	800 bar

Ambient conditions:

Protection type IP 65; IP 67

Approvals/Tests:

EMW DIN EN 61000-6-2
 DIN EN 61000-6-3

Electrical data:

Operating voltage	18 ... 30 V DC; (according to EN 50178 SELV/PELV)
Current consumption	< 35 mA
Protection class	III
Reverse polarity protection	yes
Readiness delay	0,3 s

Mechanical data:

Materials	1.4542 (Stainless steel)
Tightening torque	25 ... 35 Nm

Outputs:

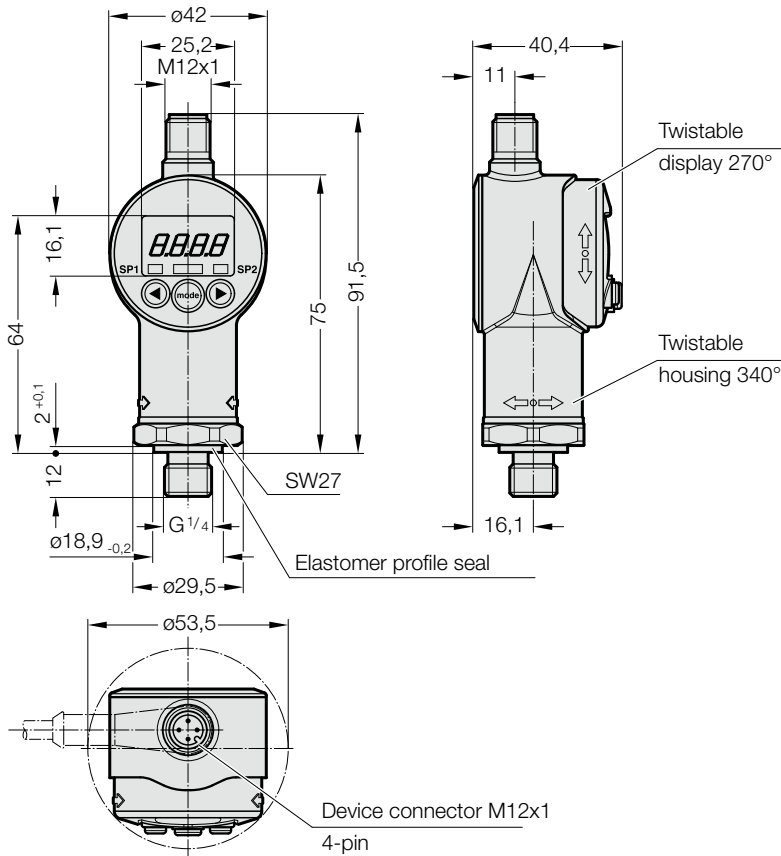
Output signal	Switch signal; IO-LINK; (configurable)
Electrical design	PNP/NPN

Displays/Control elements:

Display	Display unit	3x LED, green (bar, psi, MPa)
	Switch state	2x LED, yellow
	Measured values	alphanumeric display, red / green 4-digit

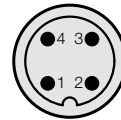
DIAPHRAGM PRESSURE SWITCH, DIGITAL

2480.00.45.05



Pin assignment:

M12x1, 4-pin



Pin

1	+UB
2	Analogue
3	0 V
4	SP1

Note:

2191.00.12.04.030 connecting cable, straight 3 m long, to be ordered separately.

Description:

The diaphragm pressure switch, digital 2480.00.45.05 is a compact, electronic pressure switch with integrated digital display for relative pressure measurement in the high pressure range.

For this purpose, it has a stainless steel measuring cell with thin film strain gauge (DMS).

The device offers a switching output and a switchable analogue output signal (4 ... 20 mA resp. 0 ... 10 V).

Advantages:

- 1 PNP transistor output, loadable up to 1.2 A
- Precision $\leq \pm 1\%$ FS
- Switchable analogue output (4 ... 20 mA / 0 ... 10 V)
- 4-digit digital display
- Optimal alignment by twisting in two axes

- Switching direction of the switch outputs adjustable (opening or closing function)
- Value display in bar, psi or MPa or freely scalable, for example, force
- Easy handling via button programming
- Switching points and reset hysteresis independently adjustable

Technical data:

Input characteristics:

Measuring range	400 bar
Overload range	800 bar
Burst pressure	2000 bar
Mechanical connection	G1/4
Tightening torque	20 Nm
Media-contacting parts	Connection piece: Stainless steel Seal: FPM (G1/4 A DIN 3852)

Output parameters:

Precision according to DIN 16086,	$\leq \pm 0,5\%$ FS typical.
Limit point adjustment (Display, Analogue output)	$\leq \pm 1\%$ FS max.
Reproducibility	$\leq \pm 0,25\%$ FS max.
Temperature drift	$\leq \pm 0,025\%$ FS / °C max. Zero point $\leq \pm 0,025\%$ FS / °C max. range

output:

Signal selectable:	4 ... 20 mA load max. 500 Ω 0 ... 10 V load min. 1 k Ω
--------------------	---

Switching outputs:

Execution	PNP transistor switching output
Switching current	max. 1,2 A
Operating temperature range	0° - 80°C
CE mark	EN 61000-6-1 / 2 / 3 / 4
Protection class according to DIN 40050	IP67

Setting ranges for the switching outputs:

Switching function			
Measuring range	Switching point	Hysteresis	Increment*
in bar	in bar	in bar	in bar
0 ... 400	6,0 ... 400	2,0 ... 396	1

Window function

Measuring range	Lower Switching value	Upper Switching value	Increment*
in bar	in bar	in bar	in bar
0 ... 400	6,0 ... 392	9,0 ... 396	1

* All areas specified in the table are adjustable in the grid of the step width.

WIRELESS PRESSURE MONITORING 2.1 (WPM)
WIRELESS MONITORING OF GAS SPRINGS

Coming soon



FILLING AND CONTROL FITTING

FILLING HOSE

CYLINDER PRESSURE REGULATOR

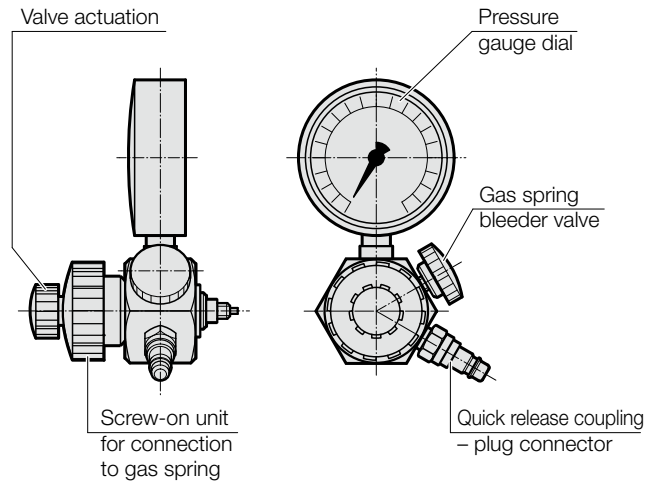
Description:

The filling and control fitting 2480.00.32.21 is used to fill, vary the pressure setting (e.g. when testing tools) and measure the gas pressure. The coupling enables the filling hose 2480.00.31.02 to be connected directly to the gas cylinder valve or the pressure regulator. If the fitting is used solely for checking purposes, a simplified arrangement without the filling hose 2480.00.31.02 is also possible. The fitting is equipped with an additional adapter 2480.00.32.10/11 for connecting to gas springs with G 1/8 valve connection as standard.

Note:

2 m long filling hose with quick release coupling, shut-off valve and gas bottle connector, order no. 2480.00.31.02 (order separately). Other filling hose lengths to order.

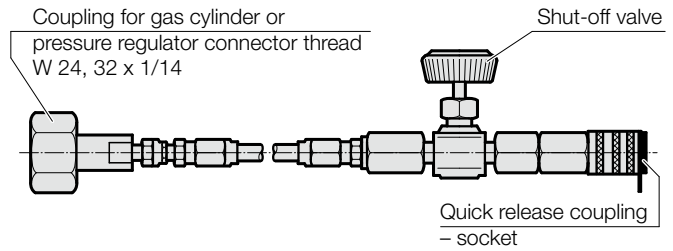
2480.00.32.21 Filling and control fitting



Connecting adapter for cylinder connector

Order No.	Country	For cylinder connector
2480.00.31.02.00.10	France	AFNOR C, W21,8x1/14
2480.00.31.02.00.11	China	G 5/8-ISO228
2480.00.31.02.00.12	Great Britain	G 5/8
2480.00.31.02.00.13	Korea	W24,32x1/4 Type 40f
2480.00.31.02.00.14	Russia	W24,32xG3/4 Type 40n
2480.00.31.02.00.15	USA	W24,32x1/4 Type 40c
2480.00.31.02.00.16	Italy	W24,32xW21,7x1/4 Type 40d

2480.00.31.02 Filling hose



Description:

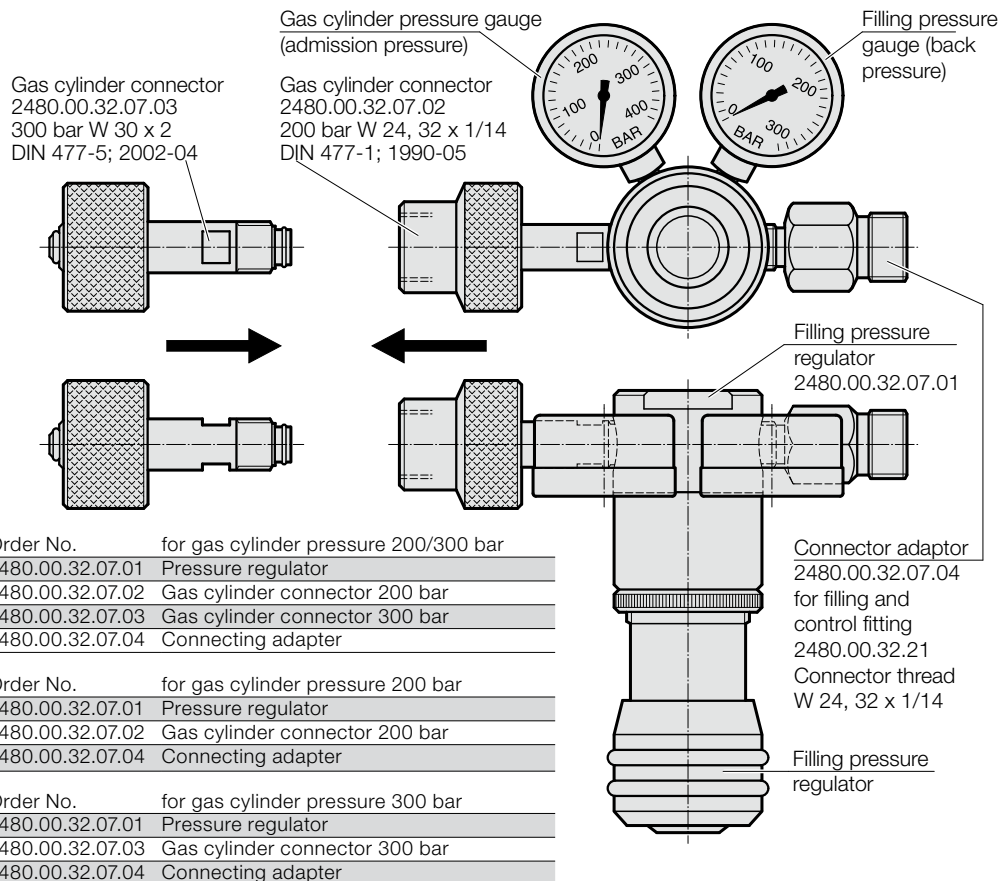
The pressure regulator 2480.00.32.07. is designed for 200 bar connections and for 300 bar gas cylinders. The filling and control fitting 2480.00.32.21 is connected to the cylinder pressure regulator for filling gas springs using filling hose 2480.00.31.02 and connector adaptor 2480.00.32.07.04. Depending on the type of gas cylinder, the gas cylinder connector used can either be the 2480.00.32.07.02 for 200 bar cylinders or the 2480.00.32.07.03 for 300 bar cylinders.

Max. admission pressure 300 bar
Back pressure range 10-200 bar

Other advantages:

- Hasty opening of the gate valve on the filling and control fitting 2480.00.32.21 cannot result in overfilling.
- It is not necessary to have the pressure display of the filling and control fitting 2480.00.32.21 in view.

2480.00.32.07. Gas cylinder pressure regulator



Order No.	for gas cylinder pressure 200/300 bar
2480.00.32.07.01	Pressure regulator
2480.00.32.07.02	Gas cylinder connector 200 bar
2480.00.32.07.03	Gas cylinder connector 300 bar
2480.00.32.07.04	Connecting adapter

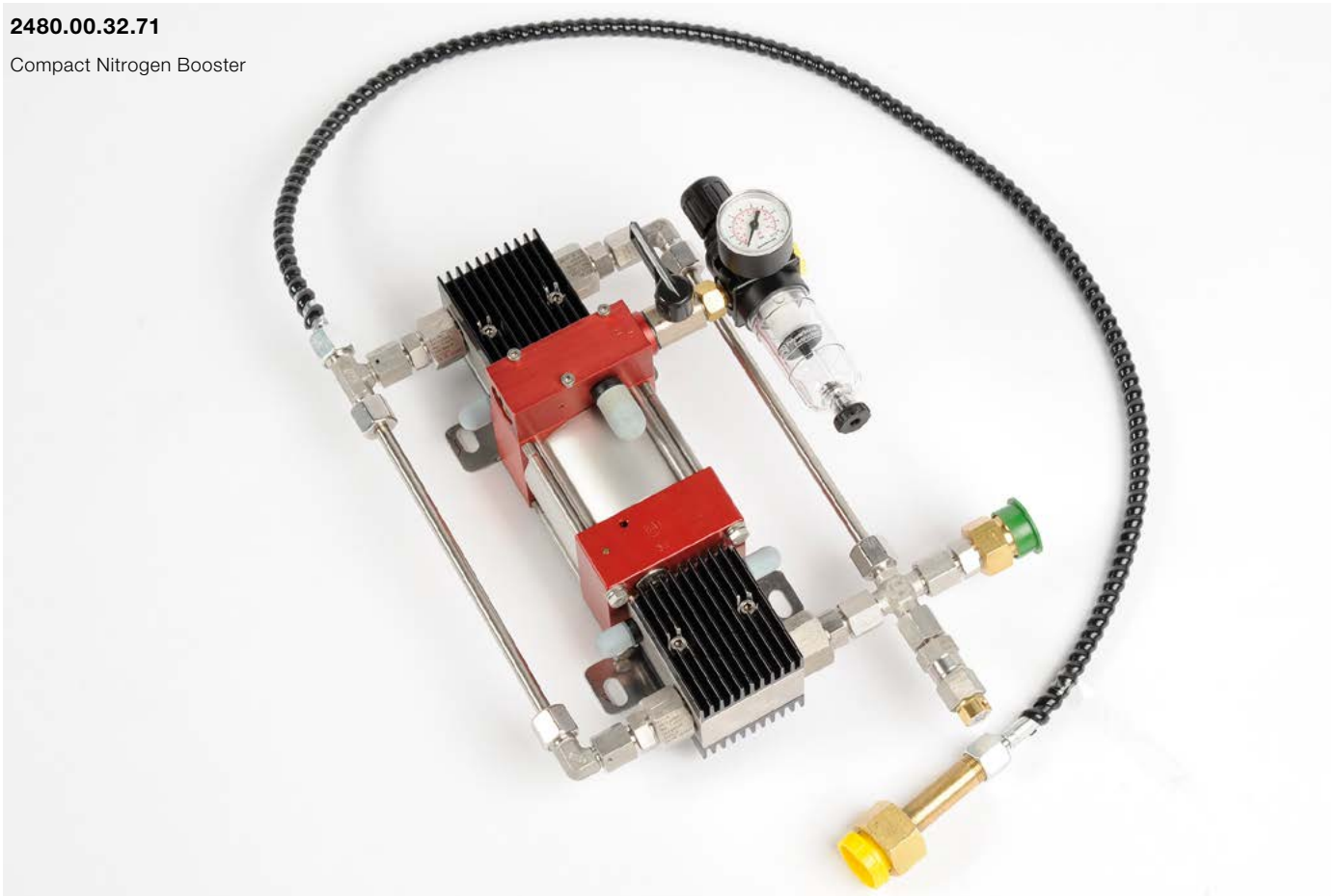
Order No.	for gas cylinder pressure 200 bar
2480.00.32.07.01	Pressure regulator
2480.00.32.07.02	Gas cylinder connector 200 bar
2480.00.32.07.04	Connecting adapter

Order No.	for gas cylinder pressure 300 bar
2480.00.32.07.01	Pressure regulator
2480.00.32.07.03	Gas cylinder connector 300 bar
2480.00.32.07.04	Connecting adapter

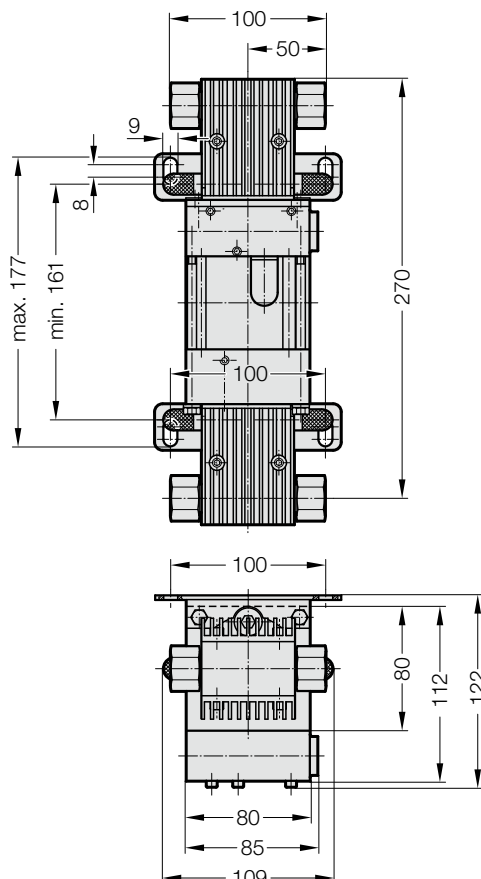
COMPACT NITROGEN BOOSTER

2480.00.32.71

Compact Nitrogen Booster



2480.00.32.71



Description:

The FIBRO compact nitrogen booster 2480.00.32.71 was developed to compress nitrogen gas. It increases the output pressure of the nitrogen cylinders considerably. For example, when filling gas springs, the N₂ cylinders can be used up to a residual pressure of 30 bar.

Advantages:

- ▶ Increase in utilisation capacity
- ▶ Reduction in cylinder replacement time
- ▶ Minimisation of the number of cylinders
- ▶ Light weight (7.2 kg)
- ▶ Compact design
- ▶ Suitable for simple installation directly on all standard nitrogen cylinders (200 bar)

Function:

The FIBRO compact nitrogen booster works according to the principle of a pressure relay valve. Low pressure is applied to a large surface, which in turns applies high pressure to a small surface.

Continuous delivery is achieved by means of an internally actuated 4/2-way valve. Compressed air is used as the drive mechanism.

A holding plate is included to secure the compact nitrogen booster to the nitrogen cylinder. The compact nitrogen booster is simply hung over the nitrogen cylinder connection.

COMPACT NITROGEN BOOSTER HOLDING PLATE

2480.00.32.71.02 Holding plate

for re-order



Connection diagram

Compact Nitrogen Booster



- ① 2480.00.32.71 Compact Nitrogen Booster
- ② Gas cylinder connection W24, 32 x 1/14 for 200 bar nitrogen cylinder
- ③ Nitrogen N₂ inlet
- ④ Compressed air inlet G1/4 max. 10 bar
- ⑤ Overpressure protection 400 bar
- ⑥ Nitrogen N₂ outlet ⑦ Connecting thread W24, 32 x 1/14

Technical data:

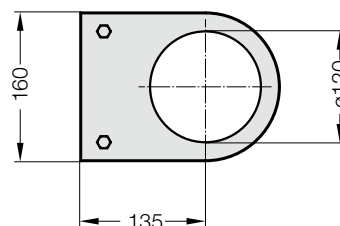
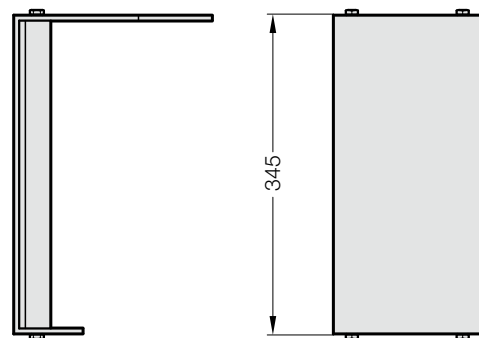
Drive compressed air: 1 – 6 bar
 Calculated operating pressure at 6 bar air drive pressure: 192 bar + remaining pressure in the nitrogen cylinder
 Transmission ratio: 1:32
 Displaced volume/double stroke: 11.6 cm³

Connections:

Compressed air: G1/4" thread
 Nitrogen inlet: Hose DN4, 1 m long with N₂ cylinder connection 200 bar
 Nitrogen outlet: N₂ cylinder connection 200 bar W24, 32 x 1/14
 Max. operating temperature: 60 °C
 Weight: approx. 7.2 kg
 Inlet pressure: 30-300 bar
 Average supply rate*: 280 NL/min

* The delivery rate is dependent on the air drive and inlet pressure.

2480.00.32.71.02



DYNAMOMETER FOR GAS SPRINGS



DYNAMOMETER FOR GAS SPRINGS



TOOLKIT FOR ASSEMBLING GAS SPRINGS



PNEUMATIC HOSE CRIMPING MACHINE HOSE SHEARS



2480.00.54.10 Pneumatic hose crimping machine

Hose crimping machine, for pneumatic hose sizes DN2 and DN5

Description:

The FIBRO pneumatic hose crimping machine, 2480.00.54.10 is suited for crimping the following hose connection systems:

- Minimes system 2480.00.23.
- 24°-cone-system 2480.00.25.
- Connector system, 24° conus micro 2480.00.27.01.

The pneumatic-hydraulic hose crimping machine drive enables simple and fast hose harnessing.

After connecting compressed air (max. 7 bar) on the G1/4" threaded fitting, the hose crimping machine is operated manually with the air-hydraulic pump (0.1 - 0.5 l/min. at 7 bar air pressure).

Lubrication-free

Plain bearing on die:

- improved performance due to reduced friction
- no press tool wear and no contamination from lubricants, 20% reduction in friction loss

Technical data:

Crimp force [kN/t]	750 / 75
Crimp range	52
Opening path	+10
Opening without pressing jaws	52
Pressing jaws nominal hose width DN2	2480.00.54.10.02
Pressing jaws nominal hose width DN5	2480.00.54.10.05
Drive	Compressed air
Oil volume [l]	1.4
Dimensions (LxWxH)	230x180x160
Weight [kg]	16

2480.00.54.03

Hose shears



The following crimping fixtures and hoses can be ordered:

for the Minimes system

2480.00.23.00.	Hose 630 bar dimpled, DN2 *
2480.00.23.01.V	Threaded connection DN2 - 1215, straight, packed
2480.00.23.01.V.025	Threaded connection DN2 - 1215, straight, packed/ 25 pcs
2480.00.23.01.V.050	Threaded connection DN2 - 1215, straight, packed/ 50 pcs
2480.00.23.01.V.100	Threaded connection DN2 - 1215, straight, packed/ 100 pcs
2480.00.23.02.V	Threaded connection DN2 - 1215, 90°, packed
2480.00.23.02.V.025	Threaded connection DN2 - 1215, 90°, packed/ 25 pcs
2480.00.23.02.V.050	Threaded connection DN2 - 1215, 90°, packed/ 50 pcs
2480.00.23.02.V.100	Threaded connection DN2 - 1215, 90°, packed/ 100 pcs

for the connector system, 24° cone micro

2480.00.23.00.	Hose 630 bar dimpled, DN2 *
2480.00.27.01.V	Threaded connection M8 x 1, packed
2480.00.27.01.V.025	Threaded connection M8 x 1, packed/ 25 pcs
2480.00.27.01.V.050	Threaded connection M8 x 1, packed/ 50 pcs
2480.00.27.01.V.100	Threaded connection M8 x 1, packed/ 100 pcs

for the 24° cone system **

2489.00.02.	High-pressure hose, dimpled, DN5 *
2480.00.25.01	Hose fitting, straight
2480.00.25.02	Hose fitting, 90°
2480.00.25.04	Hose fitting, 45°

* Hoses to be ordered in 1 m lengths, e.g.:
example order for hose DN2, 10 m long = 2480.00.23.00.0010

** not for 2480.00.54.20 manual hose press, electric

HAND HELD HOSE CRIMPING MACHINE, ELECTRIC (BATTERY POWERED) HOSE SHEARS



2480.00.54.20 Hand held hose crimping machine, electric (battery powered)

Electric hand held hose crimping machine (battery operated)

for hose size DN2

Description:

The FIBRO electric hand held hose crimping machine, 2480.00.54.20 is suited for crimping the following hose connection systems:

- Minimes system 2480.00.23.
- Connector system, 24° conus micro 2480.00.27.01

The electric/hydraulic (battery-operated) drive of the manual hose press permits quick and easy hose manufacture directly on the die. The correct crimp force is ensured by a crimp force sensor and once correct force is reached an audible signal can be heard. The electric hand held hose crimping machine, is ideal for very quick crimping.

Included: Electric hand held hose crimping machine, crimping jaws, battery, charger and case.

Technical data:

Crimp force [kN/t]	15 / 1,5
Quantity of pressings	approx. 150 at 1,5 Ah
Head for crimping jaws	approx. 350° revolving
Drive	battery operated
Voltage [V]	18
Performance [Ah]	1.5
Battery charging time	15
Dimensions (LxWxH)	377x75x116
Weight [kg]	2.3

The following crimping fixtures and hoses can be ordered:
for the Minimes system

2480.00.23.00.	Hose 630 bar dimpled, DN2 *
2480.00.23.01.V	Threaded connection DN2 - 1215, straight, packed
2480.00.23.01.V.025	Threaded connection DN2 - 1215, straight, packed/ 25 pcs
2480.00.23.01.V.050	Threaded connection DN2 - 1215, straight, packed/ 50 pcs
2480.00.23.01.V.100	Threaded connection DN2 - 1215, straight, packed/ 100 pcs
2480.00.23.02.V	Threaded connection DN2 - 1215, 90°, packed
2480.00.23.02.V.025	Threaded connection DN2 - 1215, 90°, packed/ 25 pcs
2480.00.23.02.V.050	Threaded connection DN2 - 1215, 90°, packed/ 50 pcs
2480.00.23.02.V.100	Threaded connection DN2 - 1215, 90°, packed/ 100 pcs

for the connector system, 24° cone micro

2480.00.23.00.	Hose 630 bar dimpled, DN2 *
2480.00.27.01.V	Threaded connection M8 x 1, packed
2480.00.27.01.V.025	Threaded connection M8 x 1, packed/ 25 pcs
2480.00.27.01.V.050	Threaded connection M8 x 1, packed/ 50 pcs
2480.00.27.01.V.100	Threaded connection M8 x 1, packed/ 100 pcs

* Hoses to be ordered in 1 m lengths, e.g.:
example order for hose DN2, 10 m long = 2480.00.23.00.0010

2480.00.54.03

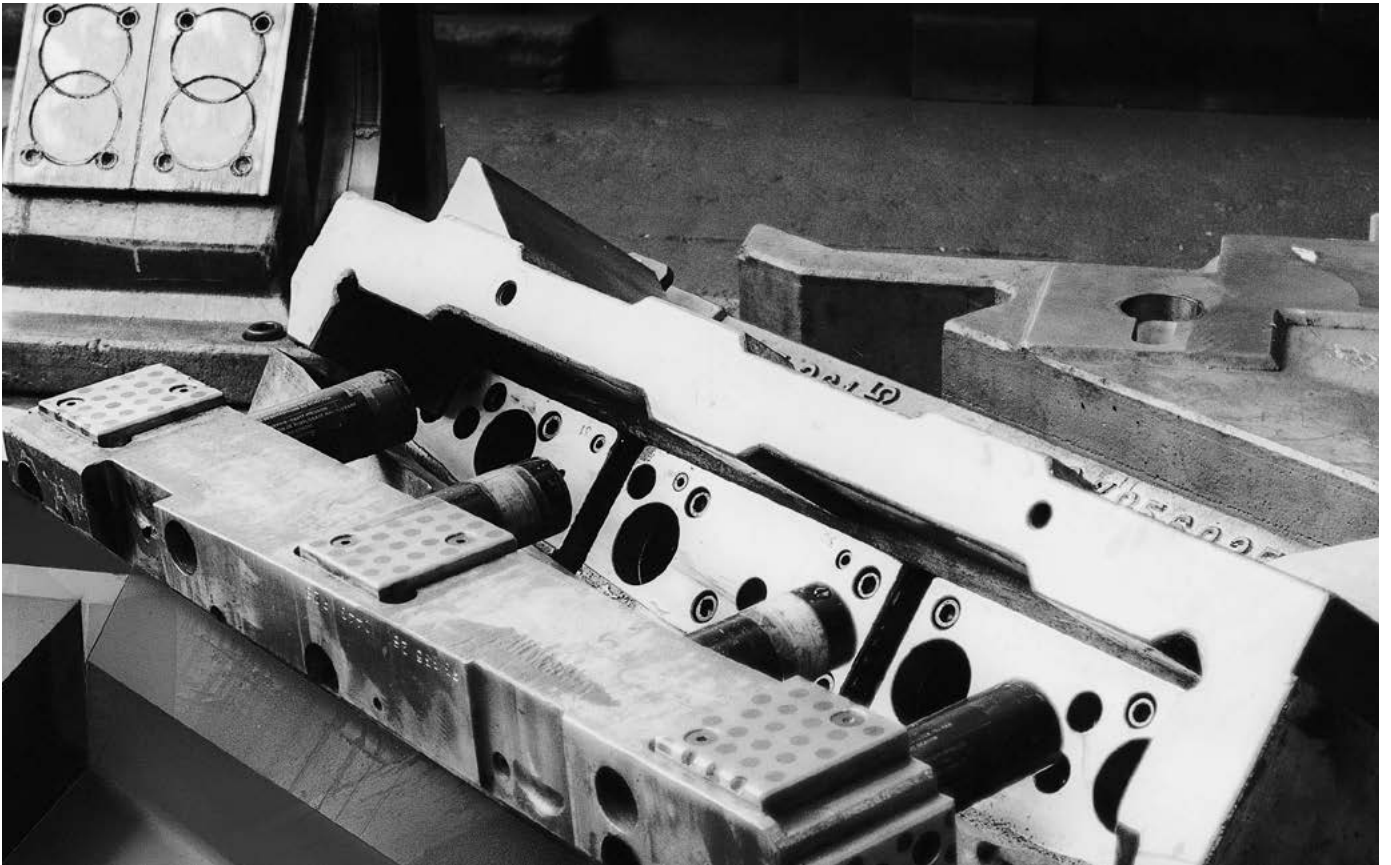
Hose shears



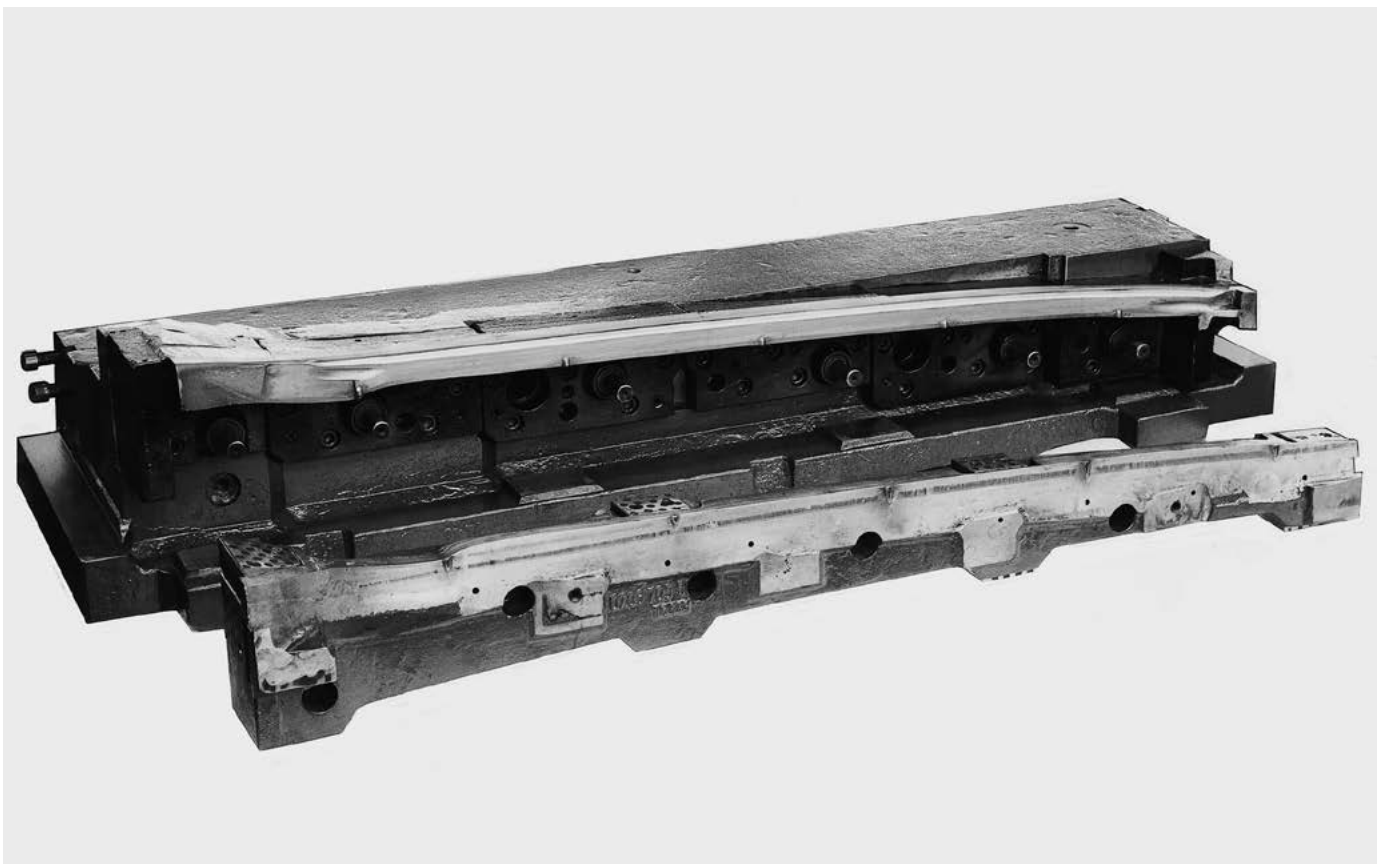
APPLICATION EXAMPLES



APPLICATION EXAMPLES



Trimming tool with inclined, Cam-Operated slide

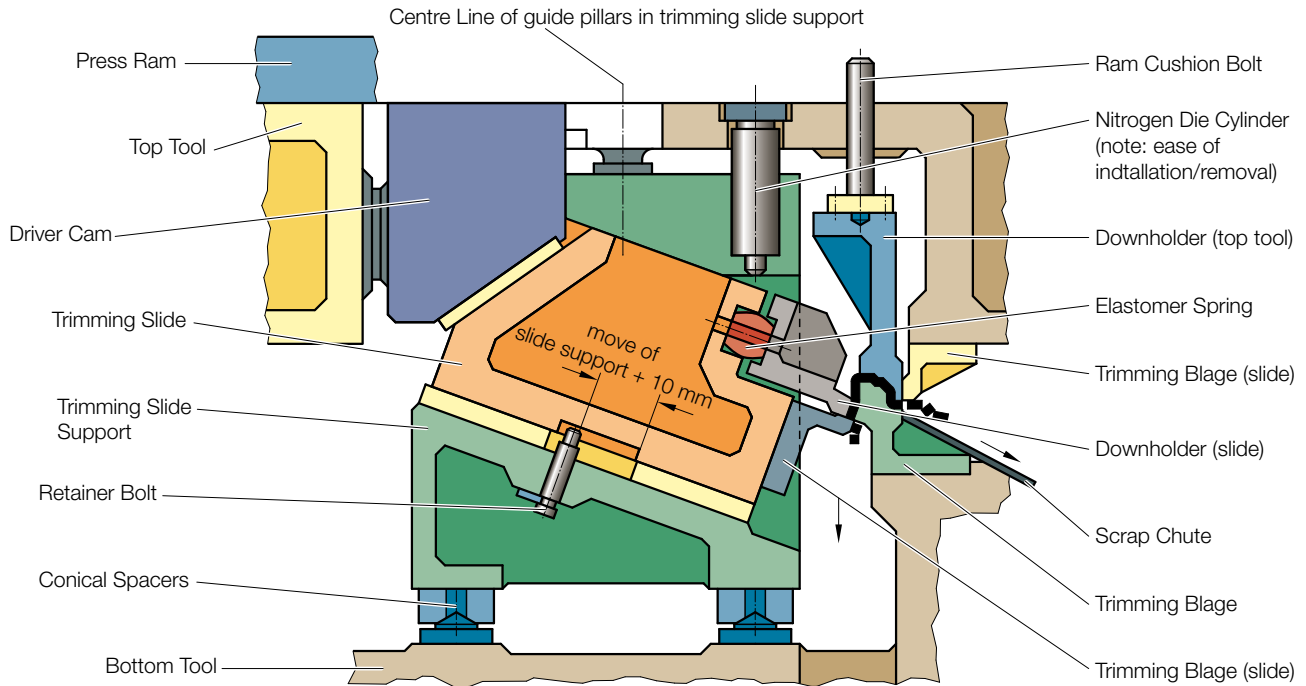


Drawing slide of large forming tool

APPLICATION EXAMPLES

Trimming tool with inclined, Cam-Operated slide

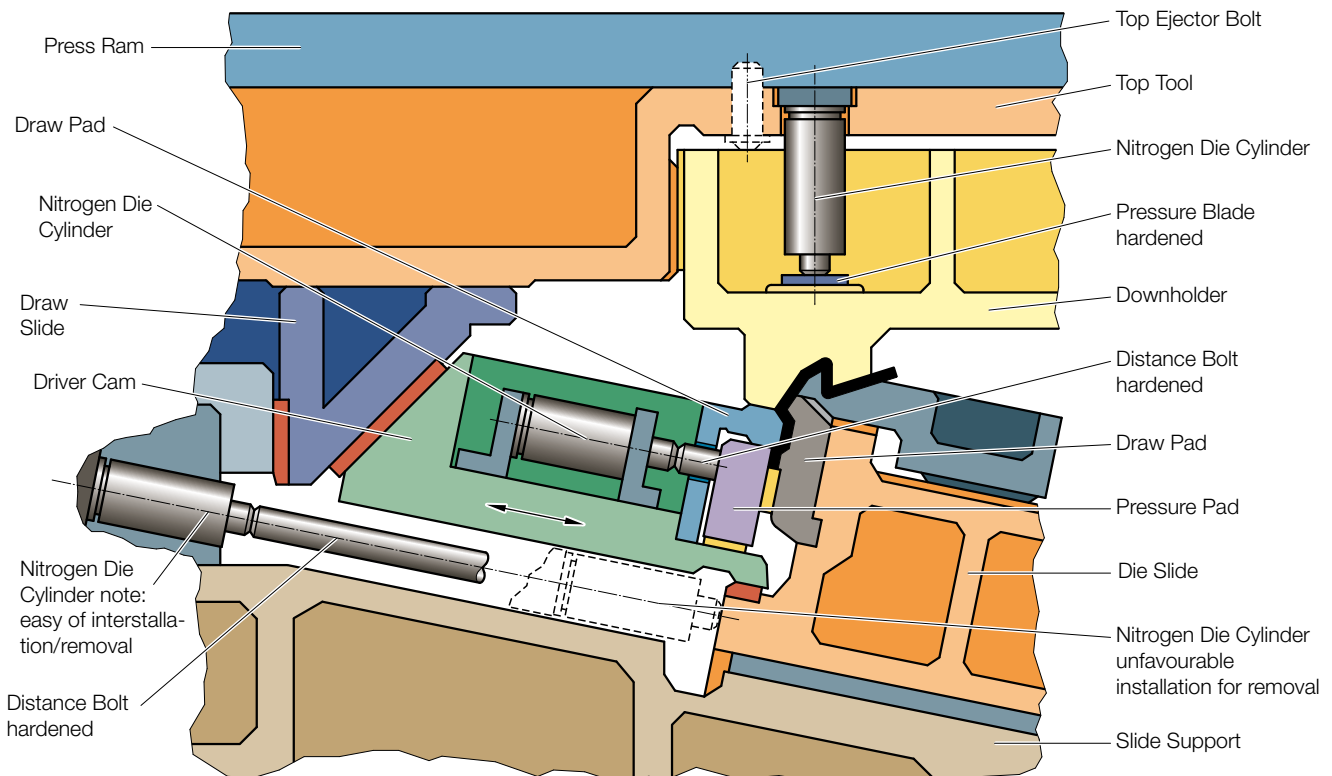
Nitrogen die cylinders in the top ensure the positive centering of the trimming slide on the centering cones in the bottom tool section.



Drawing tool

The nitrogen die cylinder for the drawing slide is easily placed into position; the safety lid secures it. Very high forces are required in this tool for the draw pad in the slide.

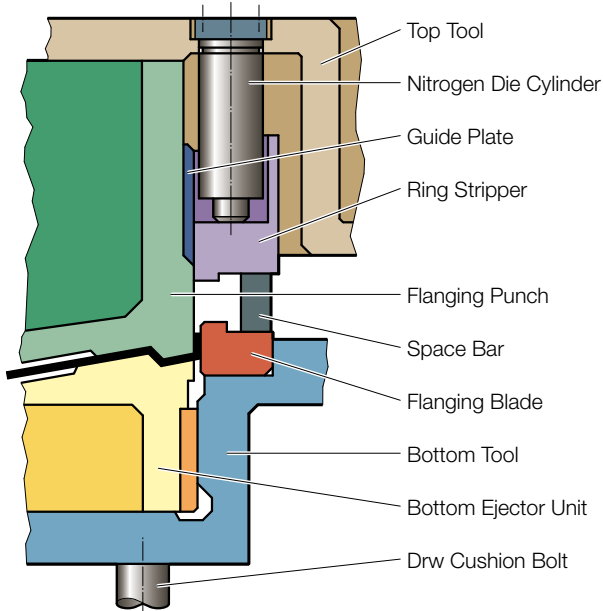
The nitrogen die cylinders in the top tool serve as boosters for the insufficient ram cushion.



APPLICATION EXAMPLES

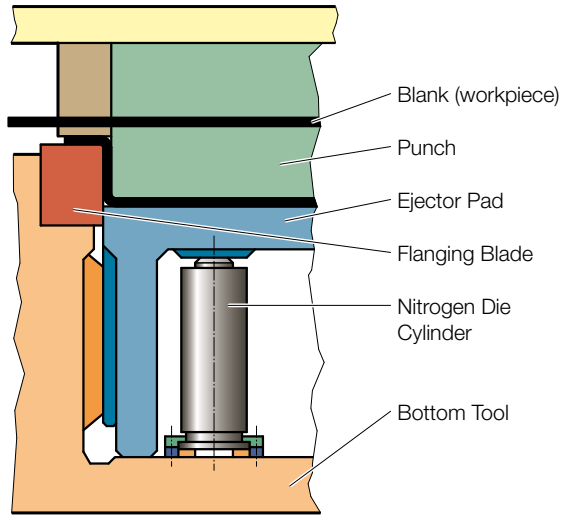
Flanging tool with ring stripper

The ring stripper is actuated by nitrogen die cylinders.



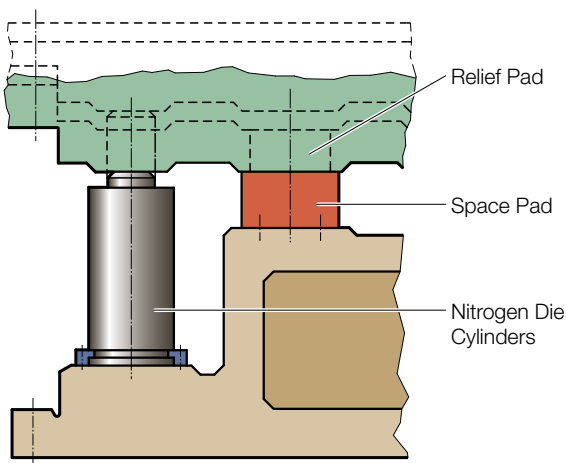
Flanging tool with nitrogen die cylinders

Where bottom ejection facilities are lacking, FIBRO Nitrogen die cylinders will provide reliable actuation of piece part ejectors.



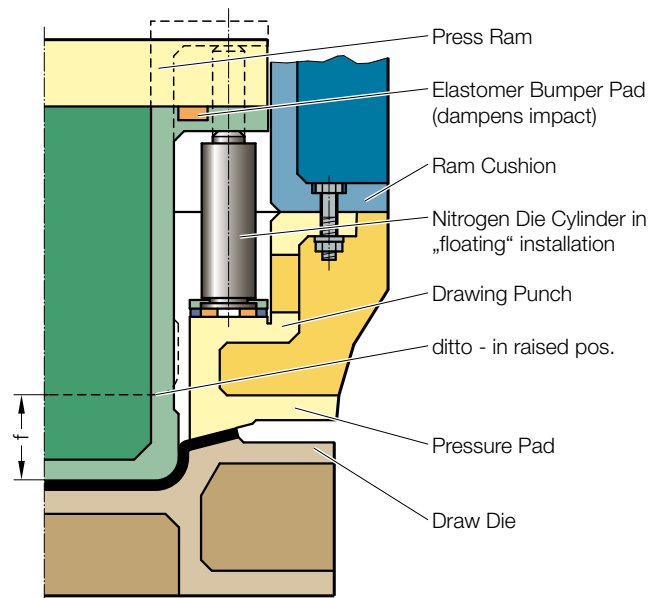
Blanking and piercing tool

The application of nitrogen die cylinders instead of the usual elastomer bumpers results in a significant reduction of setting time. Moreover, injuries caused by "fly-out" elastomer bumpers are eliminated.



Double-Acting drawing tool

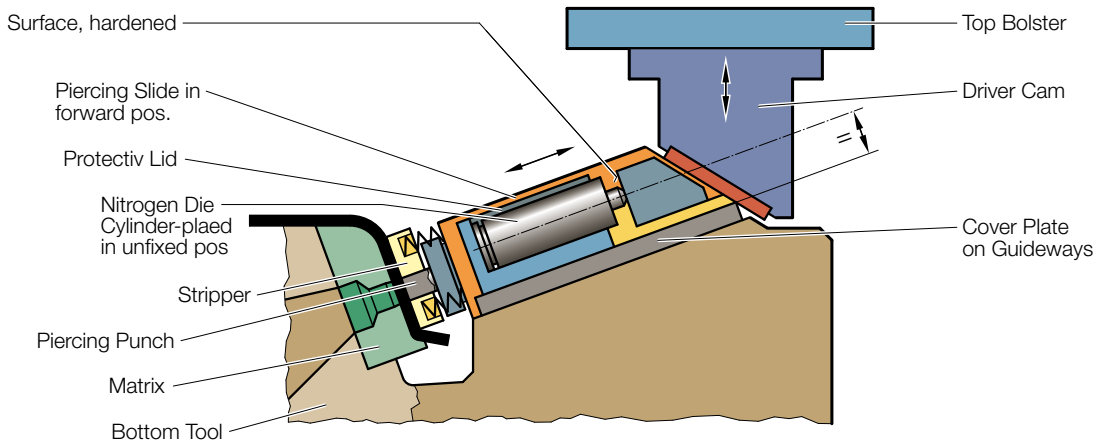
In order to obtain shorter setting times, only the downholder is bolted to the ram cushion. The drawing punch is raised through $f + 20$ mm by nitrogen die cylinders.



APPLICATION EXAMPLES

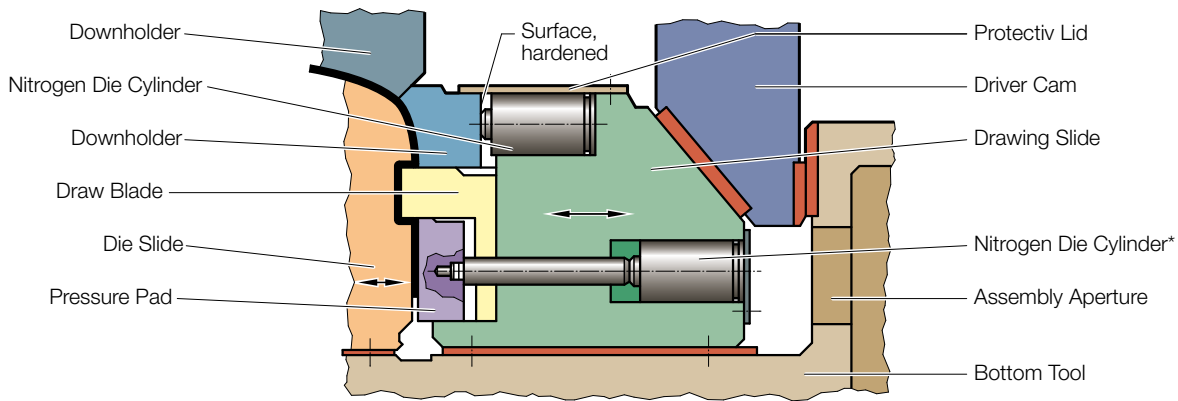
Retraction of piercing slide by nitrogen die cylinder

Die cylinder is mounted to bottom tool. It retracts the slide after completion of the piercing operation. We recommend a "soft"-start on the cam shape in order to reduce impact and acceleration on the die cylinder.



Drawing tool

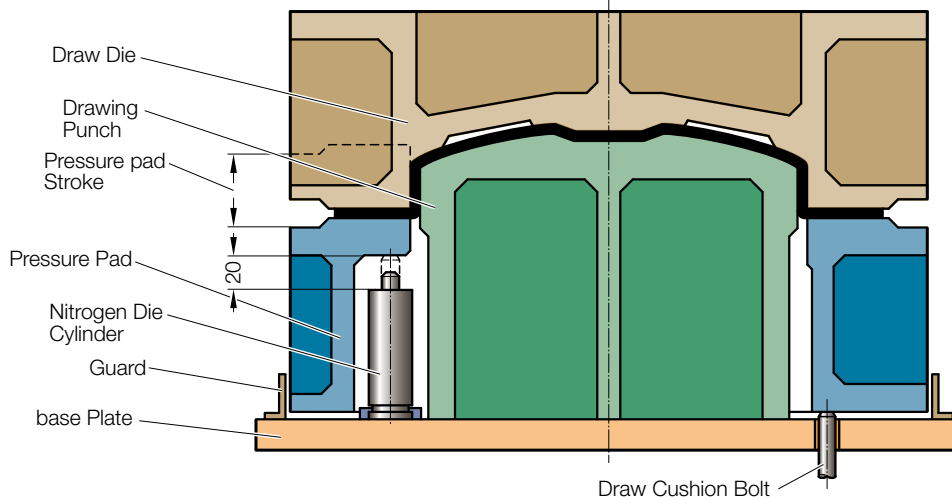
In order to prevent wrinkling, this tool requires high forces on the downholder and pressure pad. An elegant solution was achieved with nitrogen die cylinders. Ease of cylinder installation was ensured.



*Must be secureg with special flange.

Drawing tool

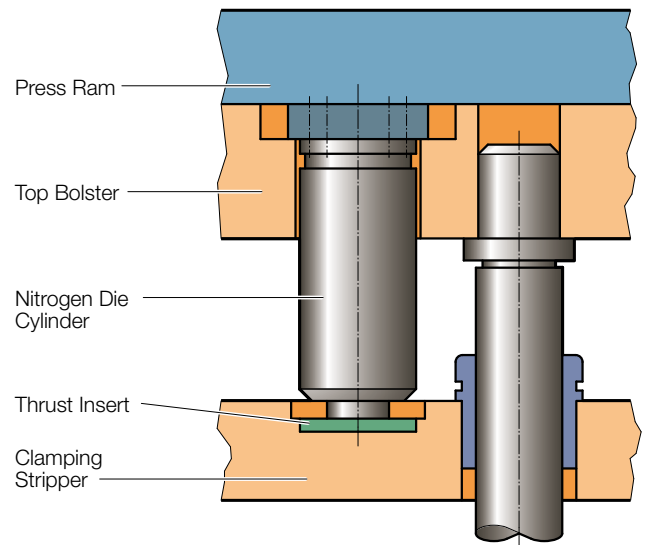
The pressure pad is actuated by nitrogen die cylinders during the final 20 mm of the draw.



APPLICATION EXAMPLES

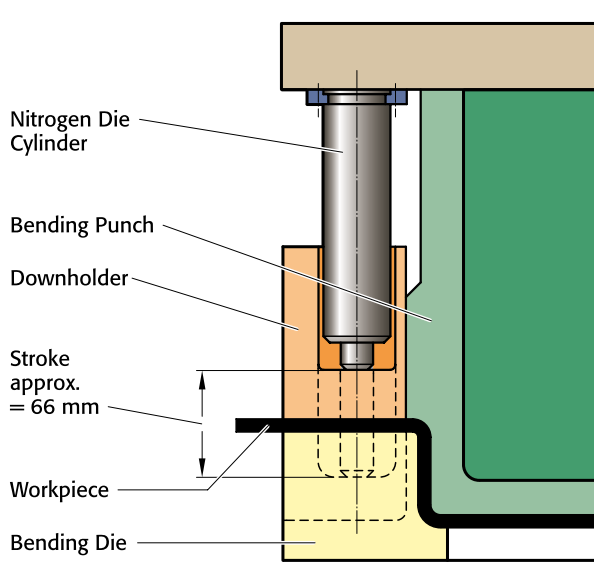
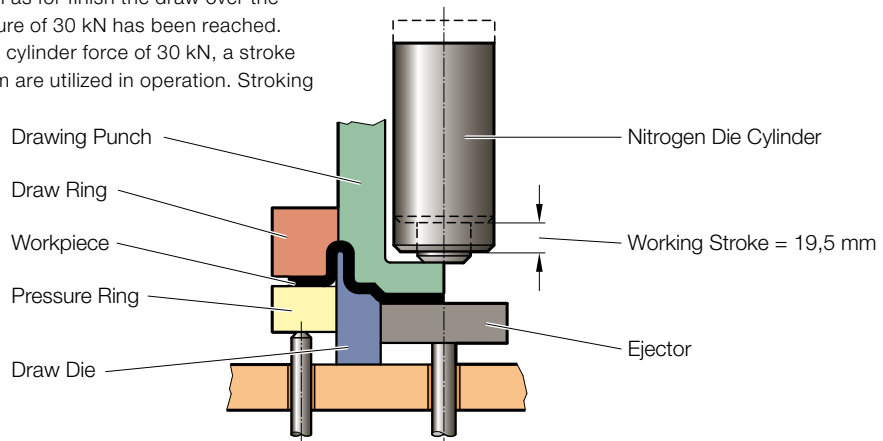
Detail of progression compound tool

The clamping stripper is actuated by two nitrogen die cylinders 2480.12.01500.025. The units provide an initial cylinder force of 15 kN each and a stroke capacity of 25 mm – of which 20 mm are utilized.



Drawing tool

Intended for use in a 100 ton hydraulic press, with one nitrogen die cylinder 2480.12.03000.025 mounted in the drawing punch. In this application the die cylinder serves to accomplish the initial pre-draw of the internal shape, as well as for finish the draw over the draw ring – after the bottoming pressure of 30 kN has been reached. The nitrogen die cylinder has an initial cylinder force of 30 kN, a stroke capacity of 25 mm – of which 19,5 mm are utilized in operation. Stroking speed is 4 SPM.



Bending tool for round bars

This tool employs two nitrogen die cylinders 2480.13.00750.080 for actuating the downholder. Press stroke is 92 mm. The stroke of the downholder is approx. 66 mm.

Because of manual loading, press strokes vary from 36 to 40 SPM. Part ejection is automatic.

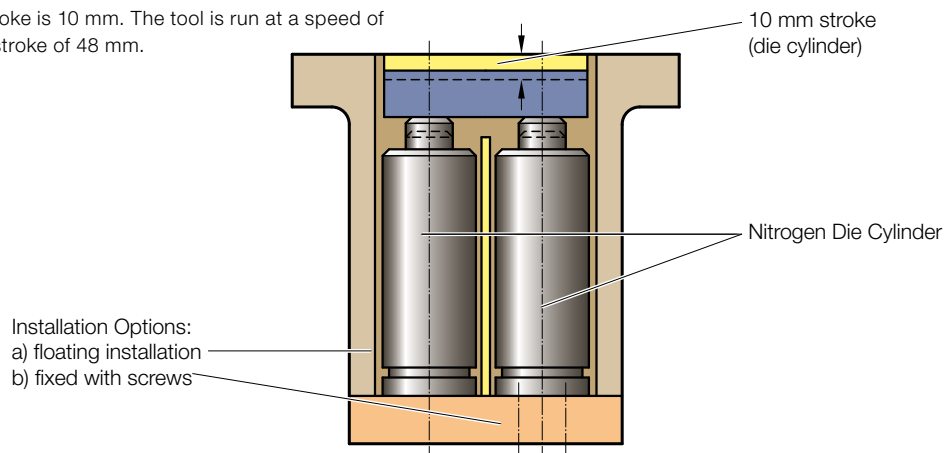
The nitrogen die cylinders provide an initial force of 7,5 kN each, and a stroke capacity of 80 mm.

APPLICATION EXAMPLES

Bottom ejector in progression compound tool

Two nitrogen die cylinders 2480.13.00750.025 are used, providing an initial force of 7,5 kN each, and a stroke capacity of 25 mm.

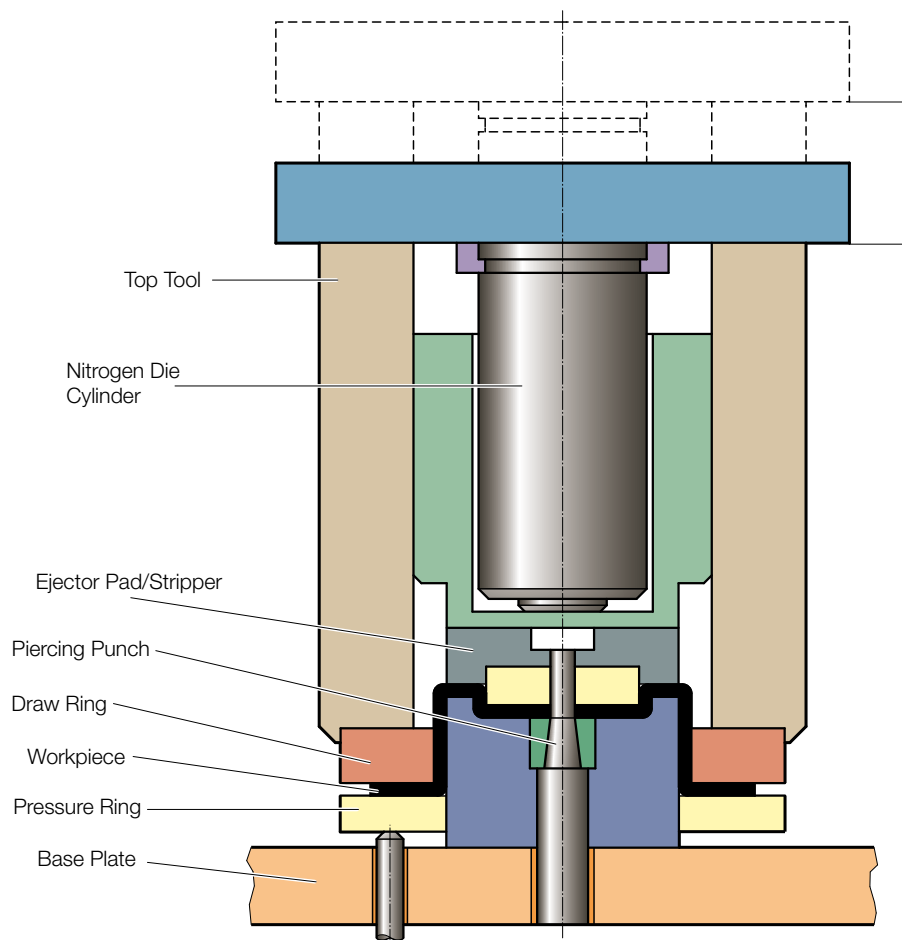
The actual working stroke is 10 mm. The tool is run at a speed of 150 SPM, with a ram stroke of 48 mm.



Drawing- and piercing tool

This tool is used in a 100 ton hydraulic press.

The nitrogen die cylinder is a 2480.13.03000.080, with a charge pressure of 130 bar – giving an initial cylinder force of 26 kN. Stroke capacity is 80 mm. The actual working stroke is 76 mm. The press is run at 14 SPM.



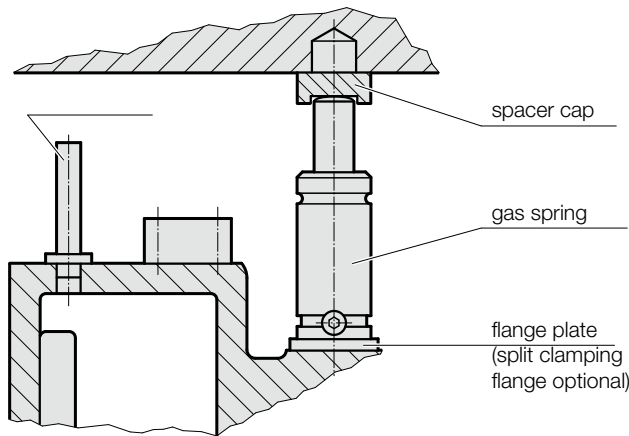
APPLICATION EXAMPLES

Gas springs facilitate tools storage and tools preparation for production

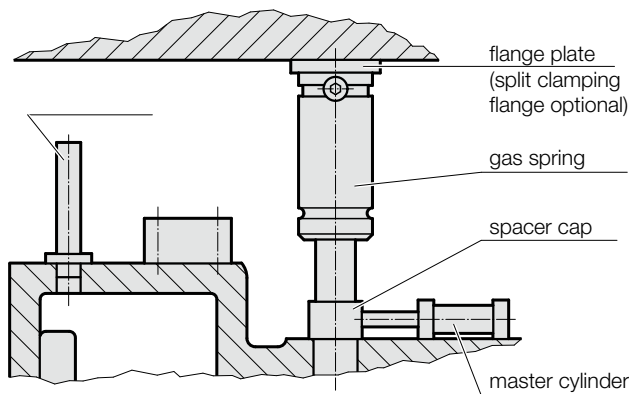
Gas springs find increasing use in large press tools - in the sole role of aiding their storage and production preparation. The springs are bolted to either the upper or lower bolsters. They are activated only when the tool is being taken out of the press. Application examples 1 and 2 show that special spacer caps are inserted prior to the tool being let down onto the gas springs – this being done whilst still in the press. During removal from the press and subsequent storage, the springs will keep the top tool elevated. Storage stop pins are provided next to the springs; when tools are stacked one on top of the other, the increasing mass will force the springs to recede – and the tops will eventually abut against the storage pins. Once the stack is removed, the springs take over again and push

the top tool up. With the usage of 4 gas springs, for example upper die parts with a weight up to 20 tons can be held high. Upon being prepared for production, the springs facilitate access to the tool. Once back in the press, the spacer caps are removed and the storage springs remain inactive during the production run. It is recommended to affix warning signs to the tools in a prominent position: the presence of gas springs in the tool often cannot be seen from the outside.

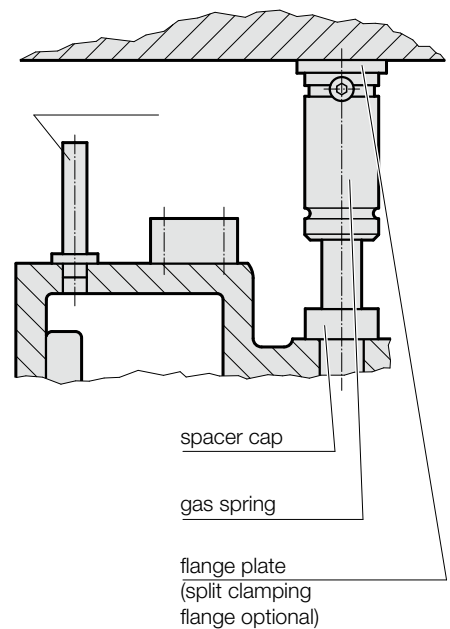
Example 1: Gas Spring fixed to bottom bolster



Example 3: Gas Spring fixed to bottom bolster



Example 2: Gas Spring fixed to top tool



1) storage stop pins are reversible - they are turned round and pushed down into their holes during getting the tool ready for production

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