



PRODUCT CATALOGUE

Gas springs

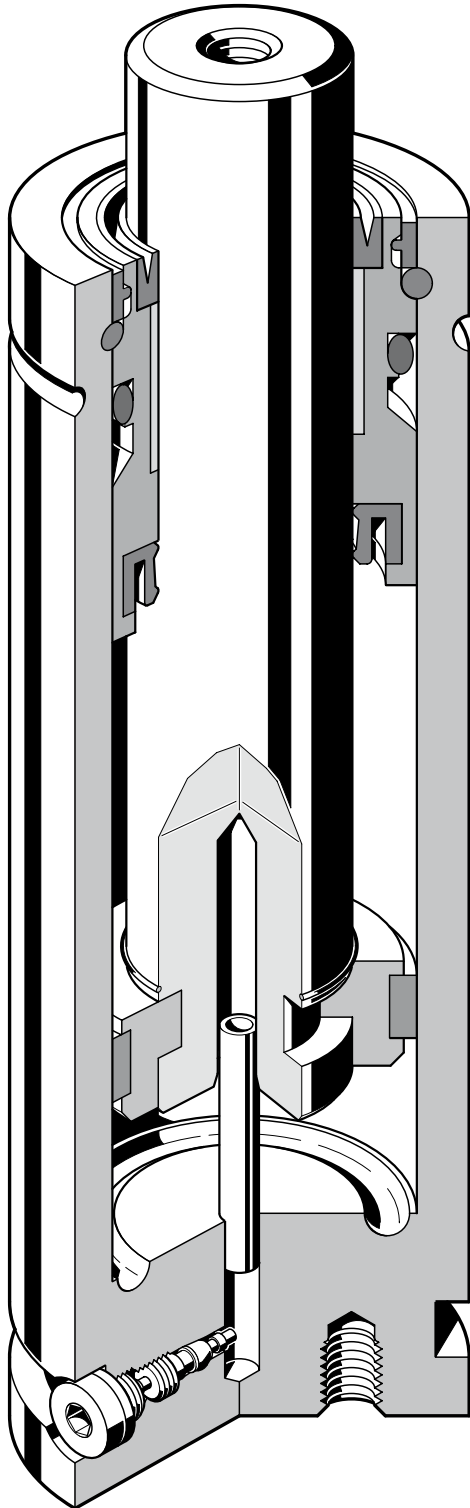
➤ Phasing out generation

precision is our standard

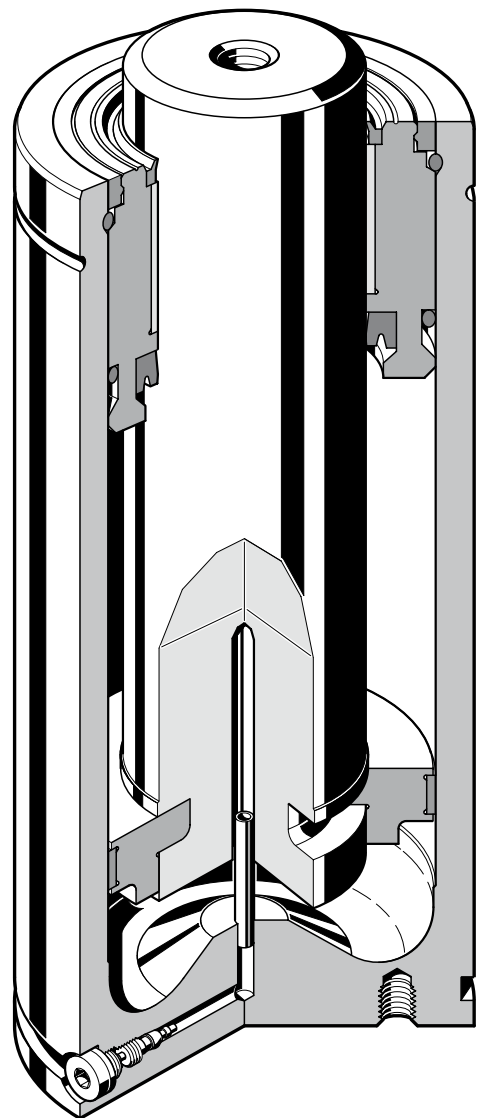
GAS SPRINGS



GAS SPRING TWO-CHAMBER SYSTEM

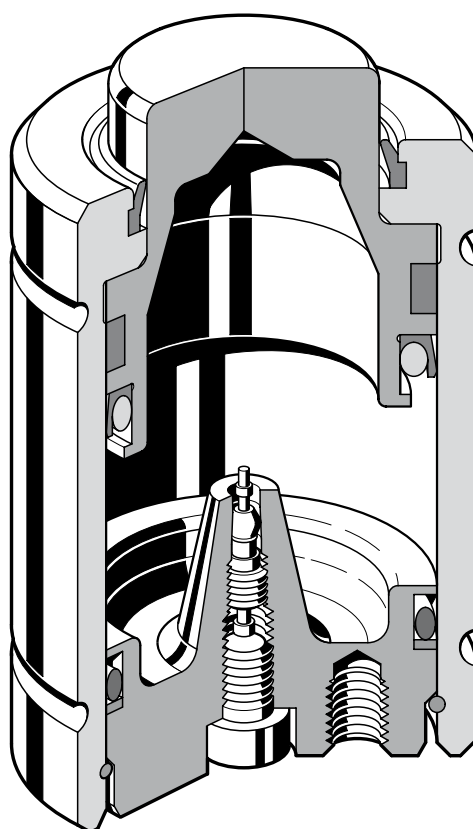


2480.12.



2480.13.

GAS SPRING SINGLE-CHAMBER SYSTEM



2490.

GAS SPRINGS

FIBRO Gas Springs

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

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

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

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

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

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

Application examples are shown on the following pages.

Functioning

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

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

(180 bar).

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

Pressure build-up

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

Operating temp.

The spring temperature should not exceed +80 °C.

Charge pressure

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

Installation recommendations

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



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

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

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

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

GAS SPRINGS

Maintenance

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

Attention

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

Caution

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

Accessories

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

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

Warning signs

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

WARNING

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

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

FIBRO

FIBRO GmbH
August-Läpple-Weg · 74855 Hassmersheim · Germany
T +49 6266-73-0 · info@fibro.de · www.fibro.com

Size 35 x 50 mm

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

WARNING

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

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

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

FIBRO

FIBRO GmbH
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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

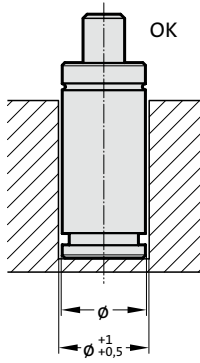
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Polish	2480.00.110.150.PL
Czech	2480.00.110.150.CZ
Turkish	2480.00.110.150.TR
Chinese	2480.00.110.150.CN

GAS SPRINGS - INSTALLATION GUIDELINES

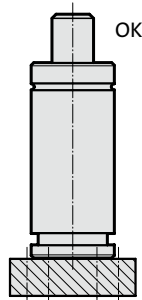
Mounting examples

Mounting possibilities for gas springs are listed below.

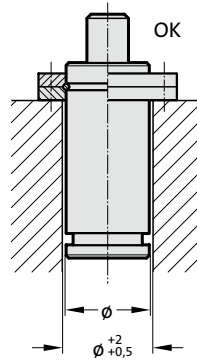
For additional information on mounting, see the corresponding pages in the catalogue.



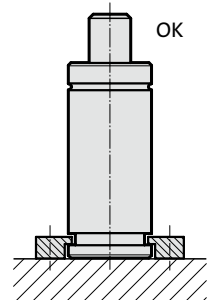
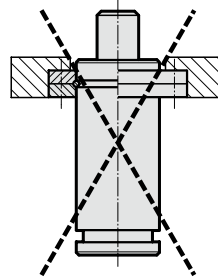
Installed loose in the bore.



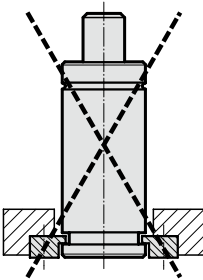
Screw mounted at the base with 2480.011.



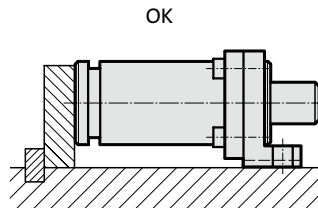
Fixed with 2480.055./057./058./064.



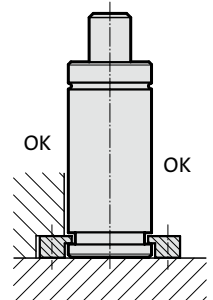
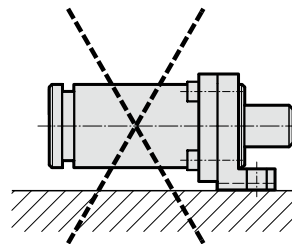
Fixed with 2480.007./008.



Fixed with 2480.007./008.



Fixed with 2480.044./045./047.

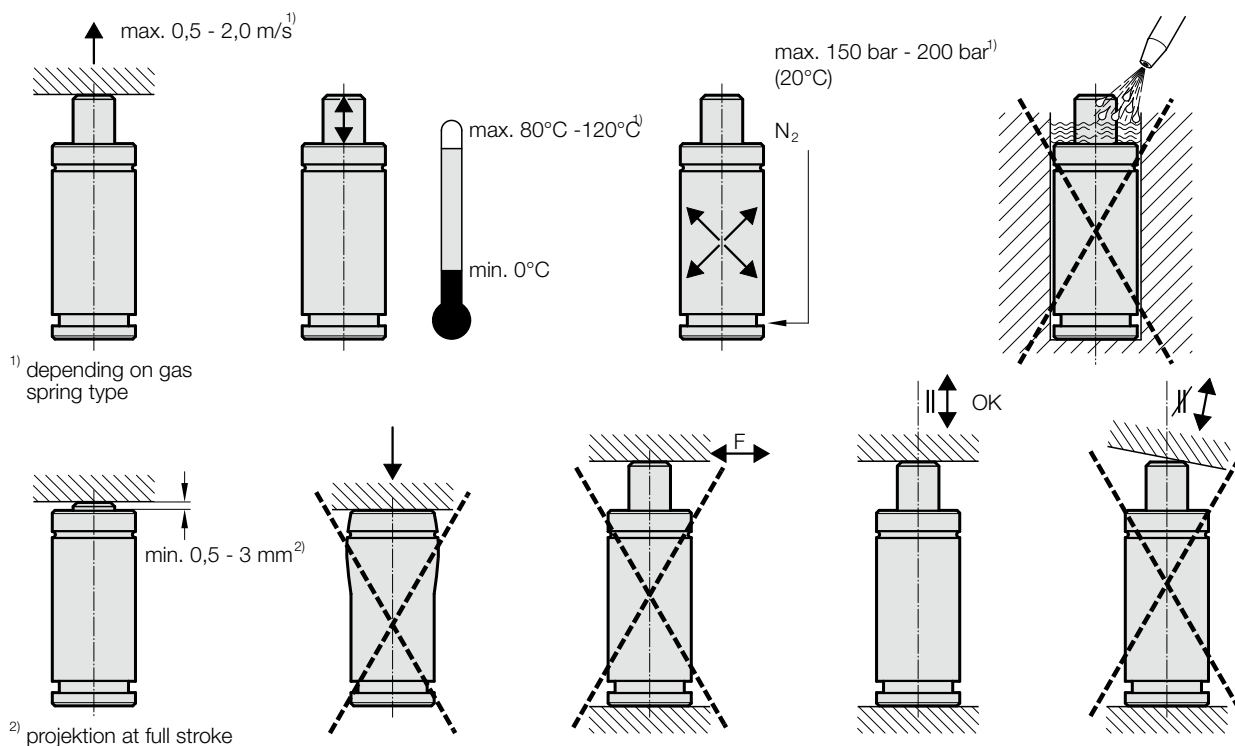


Fixed with 2480.022.

GAS SPRINGS - INSTALLATION GUIDELINES

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

Mounting instructions



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

FIBRO GAS SPRINGS – THE SAFER CHOICE

OPTIMUM SAFETY FOR TOOLS AND OPERATORS

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

FIBRO safety features 1)



PED approval for 2 million strokes

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

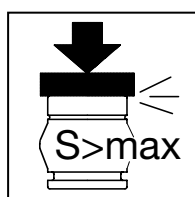
* Calculation value for durability



Normen · Standard Parts · DE-74855 Hassmersheim T +49(0)6266-73-0 · F +49(0)6266-73-237		
Bestell-Nr.:	2480.13.05000.050	
Order-No.:	Fülldruck	Federkraft
Fülldruck	150 bar	Spring Force: 5000 daN
PED-zugelassen für 2.000.000 Hübe bei voller Hubaufstellung. PED-approved for 2,000,000 strokes at full stroke load.		
Gasdruckfeder – Warnung! Nicht öffnen – hoher Druck; Fülldruck max. 150 bar. Bitte Bedienungsanleitung beachten!		
Gas Spring – Warning! Do not open-high pressure; filling pressure max. 150 bar. Please follow instructions for use!		
Ressort à gaz – Attention! Ne pas ouvrir – haute pression; pression de remplissage max. 15 MPa. Veuillez observer les instructions d'emploi!		
Molle a gas – Attenzione! Non aprire – pressione alta massima; pressione di riempimento max. 150 bar. Si prega di osservare le istruzioni per l'uso!		
¡Muelle de gas – Atención! No abrir – alta presión; cargado a max. 150 bar. ¡Por favor observar las instrucciones!		

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

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

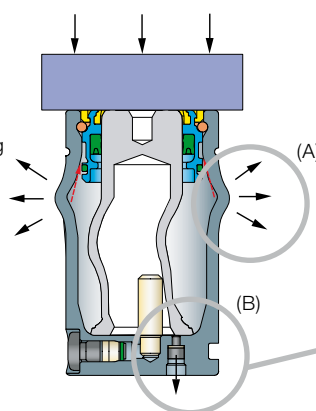


Overstroke protection

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

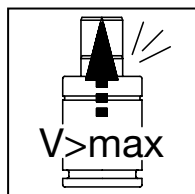
FIBRO gas springs are different:

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



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

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

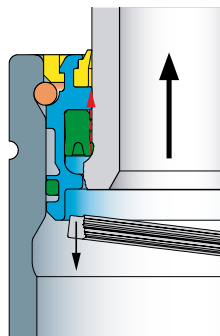


Return stroke protection

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

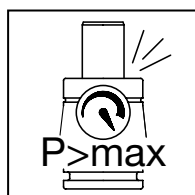
FIBRO gas springs are different:

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



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

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

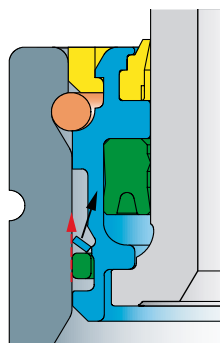


Overpressure protection

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

FIBRO gas springs are different:

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



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

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

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

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

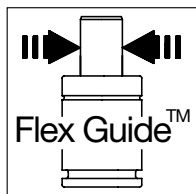
Please refer to the relevant data sheets to check the current safety equipment which is provided with the gas spring you are interested in, or contact FIBRO GmbH directly for more information. For the safe handling of gas springs and other nitrogen products, the safety regulations must be observed. Maintenance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

FIBRO GAS SPRINGS – THE SAFER CHOICE

OPTIMUM SAFETY FOR TOOLS AND OPERATORS



FIBRO reliability features

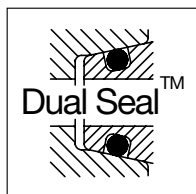
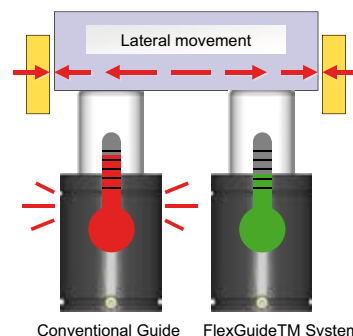
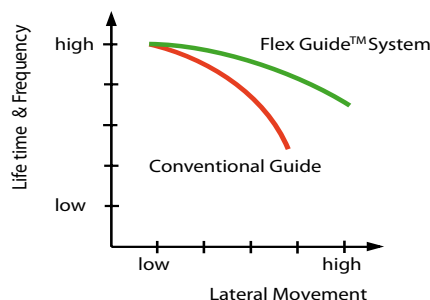


The benefits for you:

Flexible guides: The Flex Guide™ System

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

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

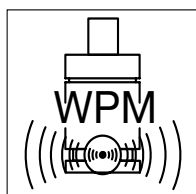
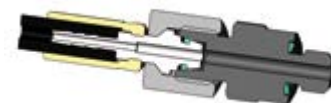


The benefits for you:

Safe hose connections: The Dual Seal™ System

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

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



The benefits for you:

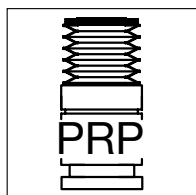
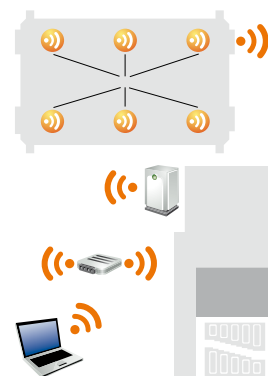
Wireless monitoring:

The Wireless Pressure Monitoring (WPM) System

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

- ▶ **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.

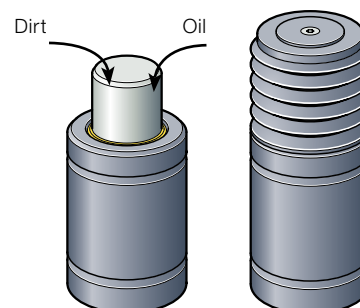


The benefit for you:

Protected piston rods: FIBRO Concertina Shrouds

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

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



GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in lenght in mm	Standard	Note	Order No.
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Gas springs (Spring plungers)

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

Gas springs, small dimensions

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

Standard-Gas springs

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

Standard-Gas springs – HEAVY DUTY

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

Gas springs with through bore passage

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

GAS SPRINGS - SYNOPSIS

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

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

Gas spring with reinforced spring base POWERLINE

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

Gas springs CX – COMPACT XTREME

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

Compact-Gas springs

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

Gas springs low build height

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

Gas springs SPC - SPEED CONTROL™, cushioned

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

Gas springs DS for die separation

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

Gas springs to WDX Standard / request your catalogue

GAS SPRINGS - SYNOPSIS

Nominal force in daN	Outside-Ø in mm	Stroke in mm	Built-in lenght in mm	Standard	Note	Order No.
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Gas springs, threaded

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

Gas springs for working temperatures up to 120°C

Gas springs LCF, damped

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

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

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

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

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

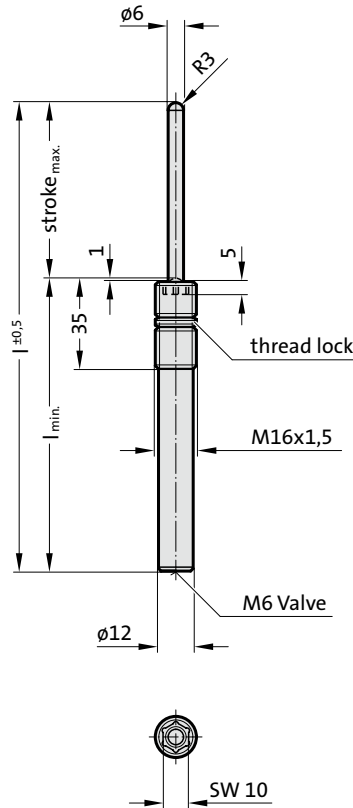
GAS SPRINGS (SPRING PLUNGERS)



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



2479.030.



Description:

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

Note:

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

Pressure medium: Nitrogen - N₂

Max. filling pressure: 150 bar

Min. filling pressure: 6 bar

Working temperature: 0°C to +80°C

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

Max. recommended extensions per minute:

approx. 100 (at 20°C)

Max. piston speed: 1.6 m/s

Upon customers request, also available

unfilled, Order No 2479.030.00000..., Colour:
black

2) Hexagon nut order supplementary:

2479.004.016.15 (M16 x 1,5)

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

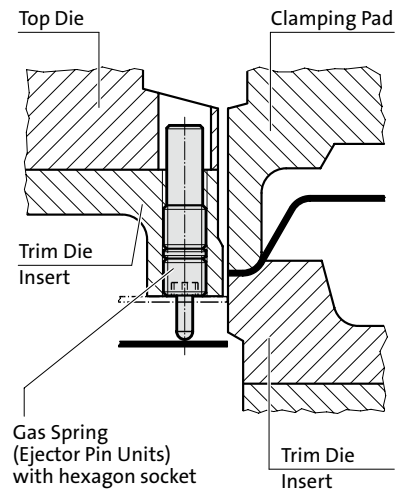
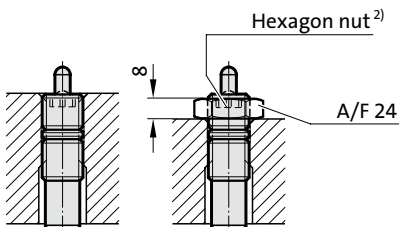
Spring type:

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

Spring force marking:

.00005. - 20 - green

.00020. - 75 - red



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

Description:

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

Note:

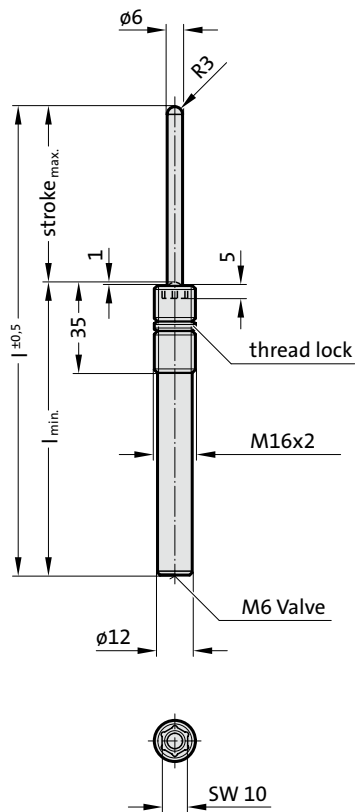
Worn gas springs cannot be repaired, they have to be replaced completely.

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

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

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

2479.031.



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

Spring type:

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

*complete with spring type

Spring force marking:

Spring type - Pressure [bar] - Colour:

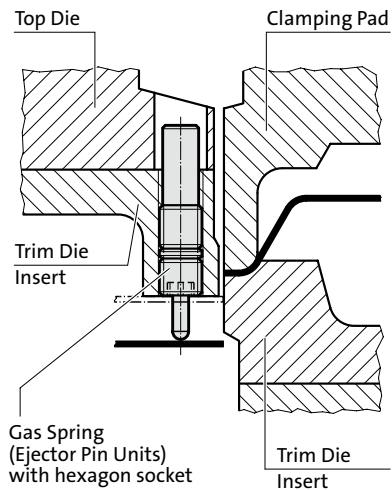
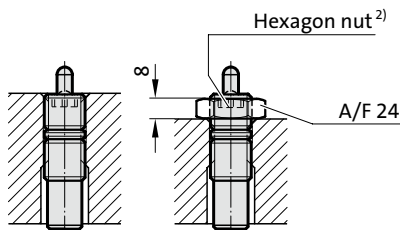
.00004. - 12 - violet

.00005. - 20 - green

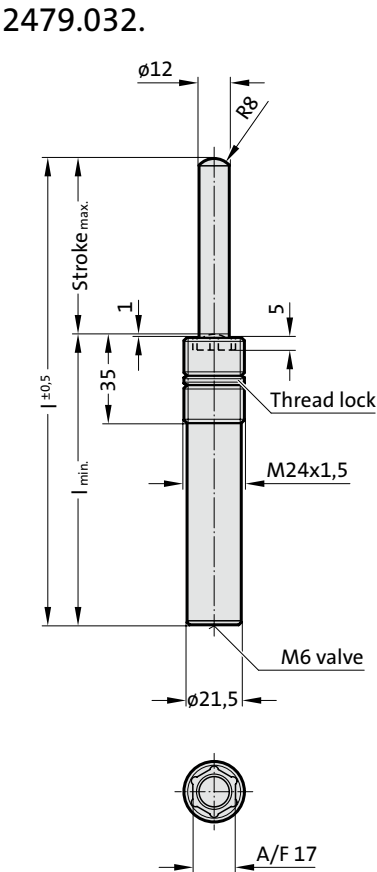
.00010. - 40 - blue

.00020. - 75 - red

.00040. - 150 - yellow



GAS SPRING (SPRING PLUNGER), WITH HEXA- GON 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: 20 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 100 (at 20°C)
Max. piston speed: 1.6 m/s

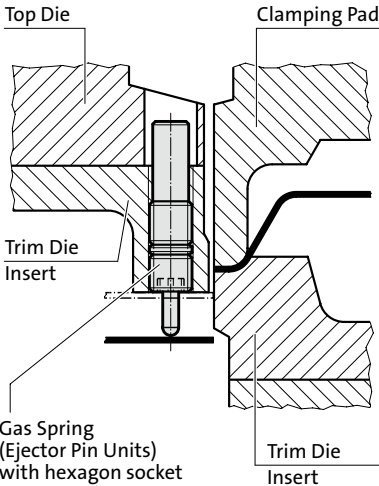
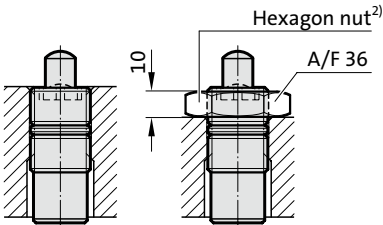
Upon customers request, also available unfilled, Order No 2479.032.00000....., Colour: black

2) Hexagon nut order supplementary: 2479.004.024.15

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

Spring type:		.00020.		.00040.		.00080.		.00170.	
Order No*	Stroke _{max.}	I	I _{min.}	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]	F _{initial} [daN]	F _{final} [daN]
2479.032.00000.010	10	65	55	23	33.1	45	64.8	85	122.4
2479.032.00000.020	20	85	65	23	36.3	45	71.1	85	134.3
2479.032.00000.030	30	105	75	23	38.2	45	74.7	85	141.1
2479.032.00000.040	40	125	85	23	39.3	45	76.9	85	145.4
2479.032.00000.050	50	145	95	23	42.5	45	83.2	85	157.3
2479.032.00000.060	60	165	105	23	42.5	45	83.2	85	157.3
2479.032.00000.070	70	185	115	23	42.8	45	83.7	85	158.1
2479.032.00000.080	80	205	125	23	42.8	45	83.7	85	158.1
2479.032.00000.100	100	245	145	23	43	45	84.1	85	159
2479.032.00000.125	125	295	170	23	43	45	84.1	85	159

*complete with spring type
Spring force marking:
Spring type - Pressure [bar] - Colour:
.00020. - 20 - green
.00040. - 40 - blue
.00080. - 75 - red
.00170. - 150 - yellow



GAS SPRING (SPRING PLUNGER), TO WDX

Description:

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

Note:

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

Pressure medium: Nitrogen - N₂

Max. filling pressure: 150 bar

Min. filling pressure: 20 bar

Working temperature: 0°C to +80°C

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

Max. recommended extensions per minute:

approx. 30 to 80 (at 20°C)

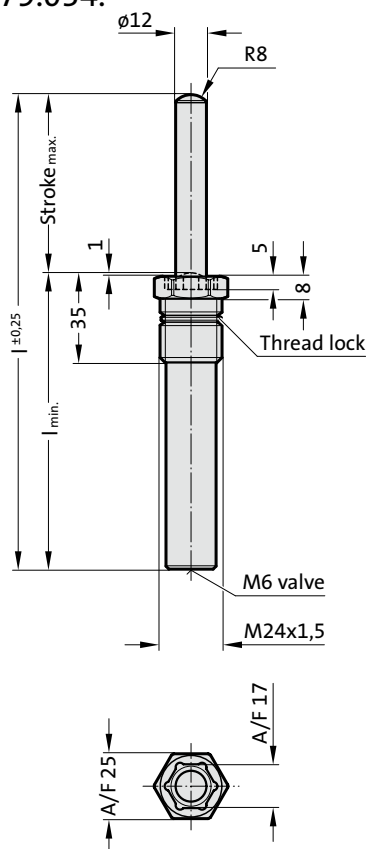
Max. piston speed: 1.6 m/s

Attention!

Different colour coding for spring force used in WDX standard

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

2479.034.



2479.034. Gas spring (Spring plunger), to WDX

Spring type:

Order No*	Stroke _{max.}	l	l _{min.}	.00020. F _{initial} [daN]	F _{final} [daN]	.00040. F _{initial} [daN]	F _{final} [daN]	.00080. F _{initial} [daN]	F _{final} [daN]	.00170. F _{initial} [daN]	F _{final} [daN]
2479.034.00000.010	10	65	55	23	32.5	45	65	85	122	170	243.5
2479.034.00000.016	16	77	61	23	36.6	45	73.3	85	137.4	170	274.8
2479.034.00000.020	20	85	65	23	36	45	72	85	134.5	170	268
2479.034.00000.025	25	95	70	23	38.9	45	77.8	85	145.9	170	291.8
2479.034.00000.030	30	105	75	23	37.5	45	75	85	141	170	281.5
2479.034.00000.038	38	121	83	23	40.7	45	81.4	85	152.7	170	305.4
2479.034.00000.040	40	125	85	23	38.5	45	77	85	144.5	170	289
2479.034.00000.050	50	145	95	23	42	45	83.5	85	156.5	170	313
2479.034.00000.060	60	165	105	23	42	45	84	85	157	170	314
2479.034.00000.070	70	185	115	23	42	45	84	85	157.5	170	315
2479.034.00000.080	80	205	125	23	42	45	84	85	159	170	315.5
2479.034.00000.100	100	245	145	23	42	45	84.5	85	158	170	316.5
2479.034.00000.125	125	295	170	23	42	45	84.5	85	158.5	170	317

*complete with spring type

Spring force marking:

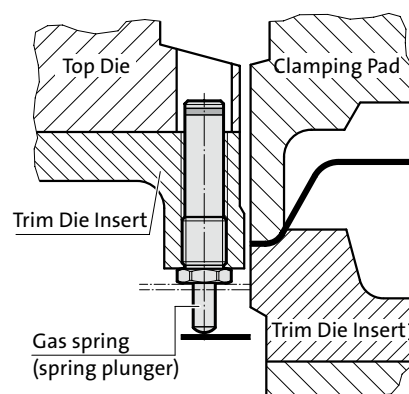
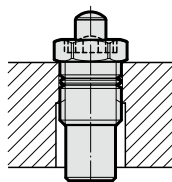
Spring type - Pressure [bar] - Colour:

.00020. - 20 - green

.00040. - 40 - blue

.00080. - 75 - red

.00170. - 150 - yellow

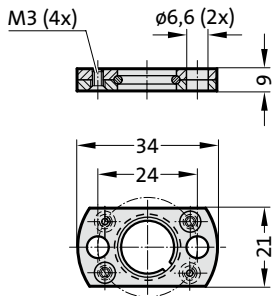


GAS SPRING, SMALL DIMENSION, LOW FORCE



GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

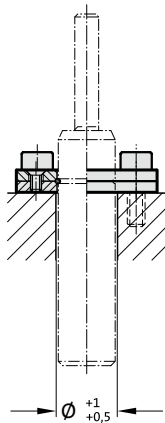
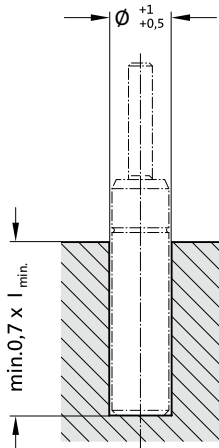
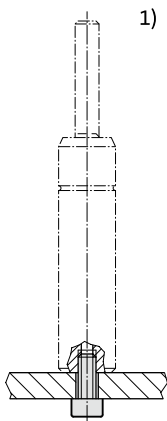
2480.051.00013



Note:

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

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

The gas springs are colour-coded according to the spring force rating ranges 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:

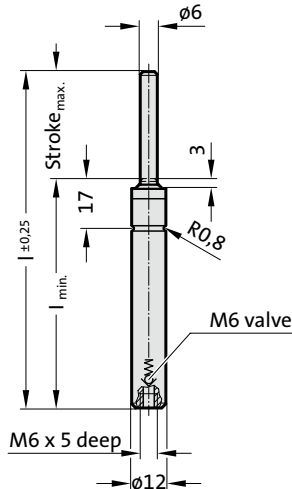
approx. 40 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

Spring forces as per spring diagram.

Upon customers request, also available unfilled, Order No 2482.72.00000...., Colour: black

2482.72.



2482.72. Gas spring, small dimension and low force

Order No*	Stroke _{max.}	l	l _{min.}
2482.72.00000.007	7	56	49
2482.72.00000.010	10	62	52
2482.72.00000.013	12.7	67.4	54.7
2482.72.00000.015	15	72	57
2482.72.00000.019	19	80	61
2482.72.00000.025	25	92	67
2482.72.00000.038	38	118	80
2482.72.00000.050	50	142	92
2482.72.00000.063	63.5	172	108.5
2482.72.00000.075	75	195	120
2482.72.00000.080	80	205	125
2482.72.00000.100	100	245	145
2482.72.00000.125	125	295	170

*complete with initial spring force

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

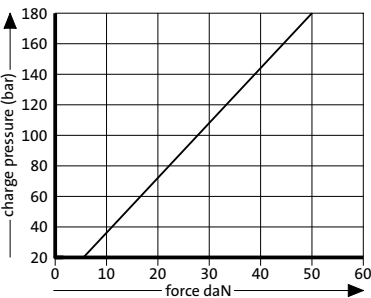
.00013. - 45 - green

.00025. - 90 - blue

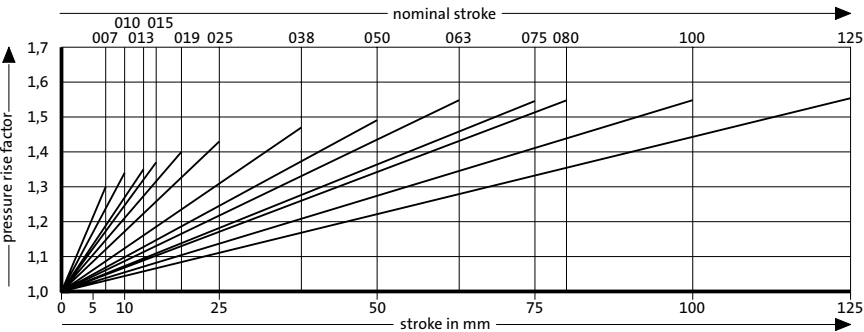
.00038. - 135 - red

.00050. - 180 - yellow

Initial spring force versus charge pressure



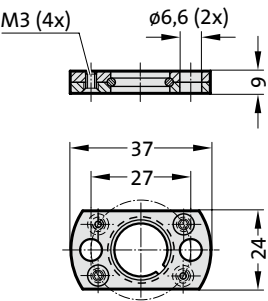
Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

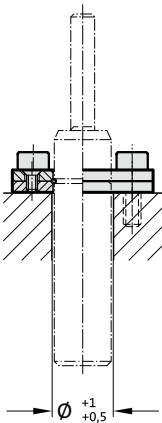
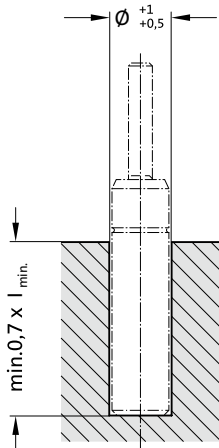
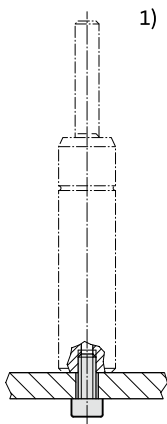
2480.051.00018



Note:

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

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

The gas springs are colour-coded according to the spring force rating ranges 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 speed: 1.6 m/s

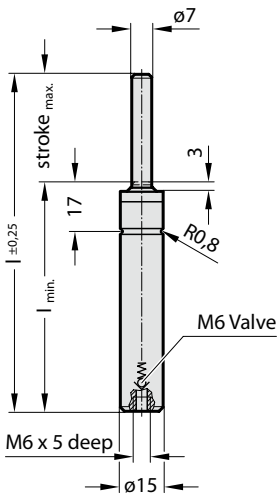
Spring forces as per spring diagram.

Upon customers request, also available

unfilled, Order No 2482.73.00000.1,

Colour: black

2482.73. .1



2482.73. .1 Gas spring, small dimension and low force

Order No*	Stroke _{max.}	l	l _{min.}
2482.73.□□□□□.007.1	7	56	49
2482.73.□□□□□.010.1	10	62	52
2482.73.□□□□□.013.1	12.7	67.4	54.7
2482.73.□□□□□.015.1	15	72	57
2482.73.□□□□□.019.1	19	80	61
2482.73.□□□□□.025.1	25	92	67
2482.73.□□□□□.038.1	38.1	118.2	80.1
2482.73.□□□□□.050.1	50	142	92
2482.73.□□□□□.063.1	63.5	172	108.5
2482.73.□□□□□.075.1	75	195	120
2482.73.□□□□□.080.1	80	205	125
2482.73.□□□□□.100.1	100	245	145
2482.73.□□□□□.125.1	125	295	170

*complete with initial spring force

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

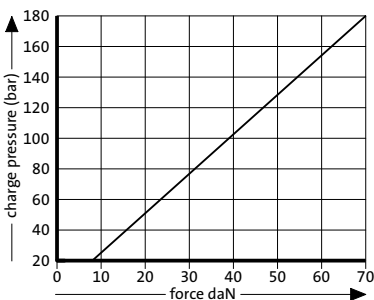
.00018. - 45 - green

.00035. - 90 - blue

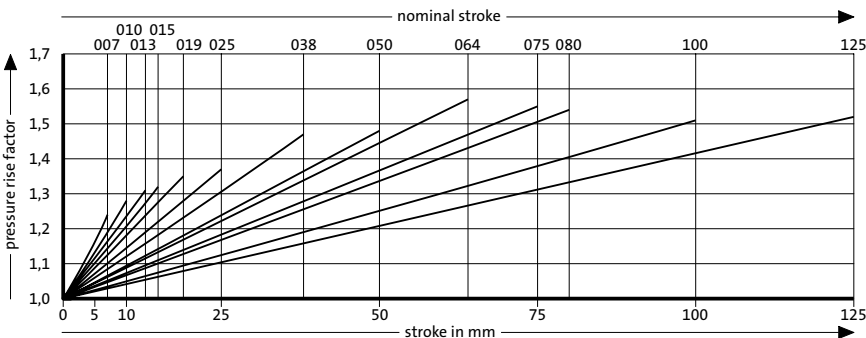
.00050. - 135 - red

.00070. - 180 - yellow

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

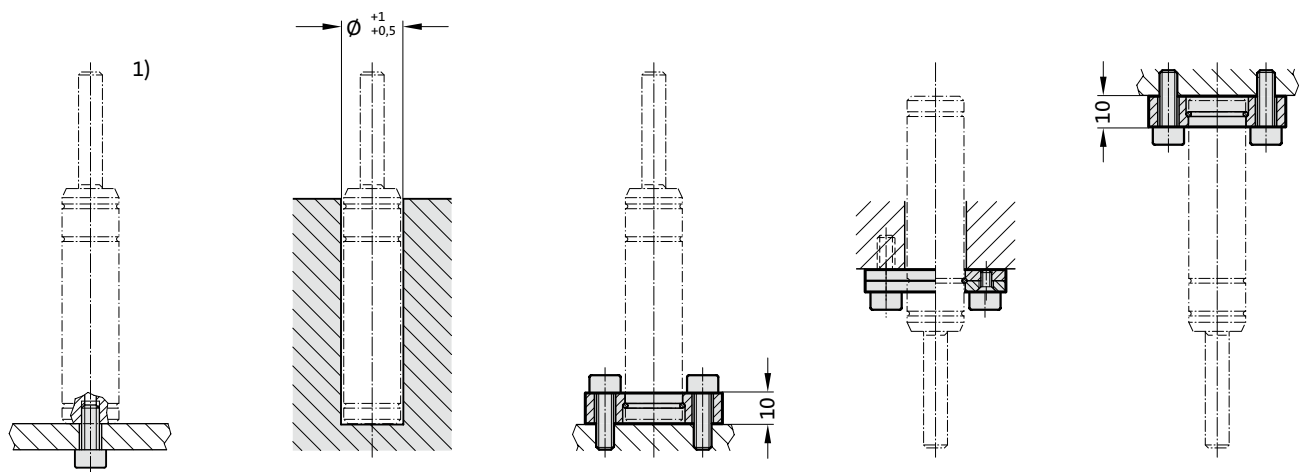


Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

2480.051.01.00030	2480.051.03.00030	2480.052.00030
		Note: ¹⁾ Fixing at bottom thread only recommended for stroke length up to 25 mm.

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

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

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

Gas can be added or reduced from below.

Note:

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

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 100 to 150 (at 20°C)

Max. piston speed: 1.6 m/s

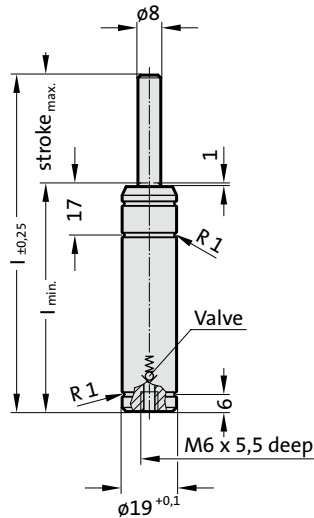
Spring forces as per spring diagram.

Upon customers request, also available

unfilled, Order No 2482.74.00000.2,

Colour: black

2482.74. .2



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

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

*complete with initial spring force

Spring force marking:

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

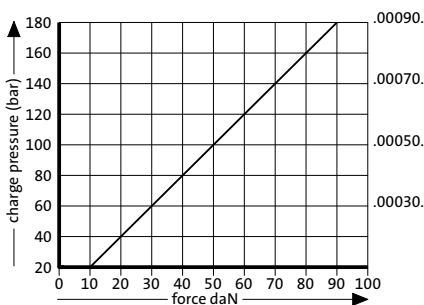
.00030. - 60 - green

.00050. - 100 - blue

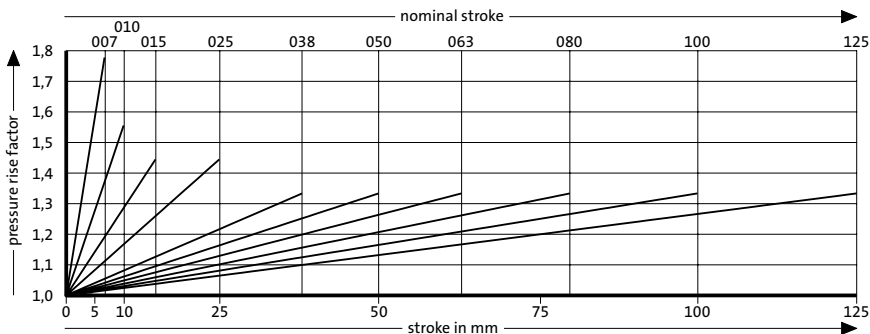
.00070. - 140 - red

.00090. - 180 - yellow

Initial spring force
versus charge pressure



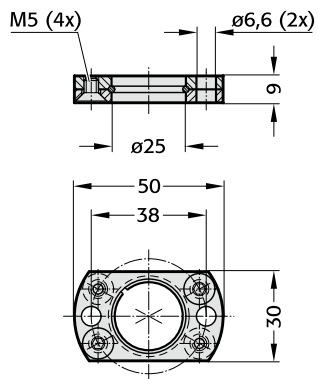
Spring force Diagram displacement versus stroke rise



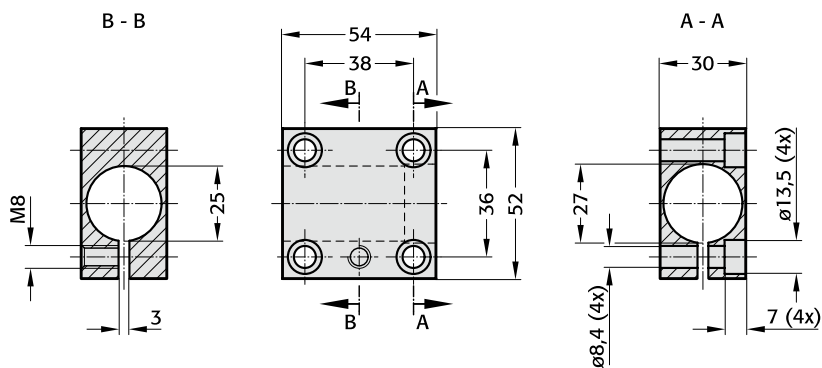
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

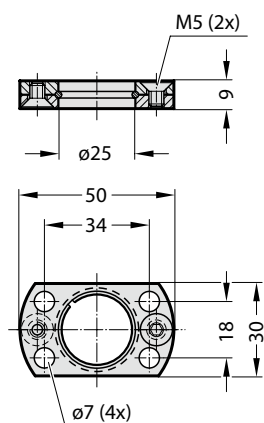
2480.051.00150



2480.053.00150



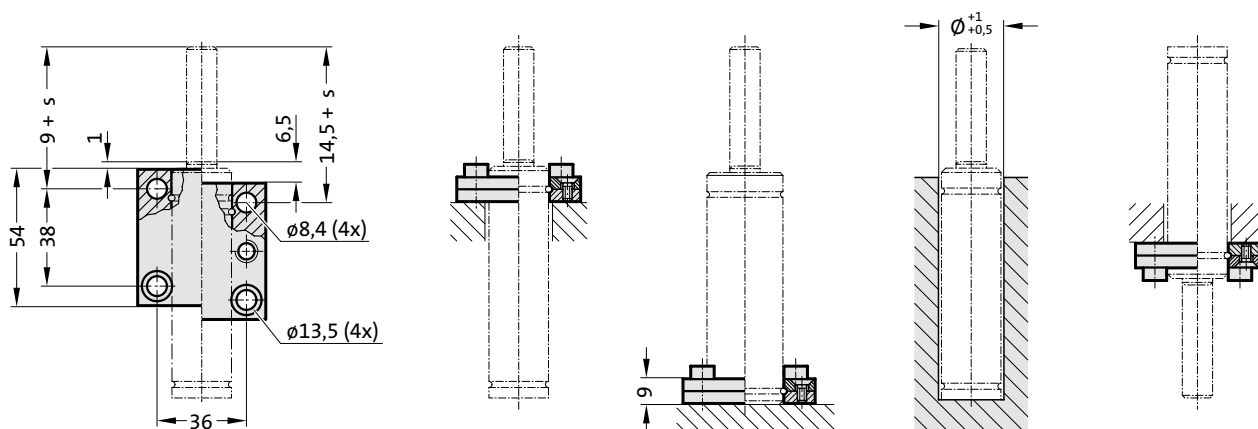
2480.054.00150



Note:

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

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

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

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

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

Note:

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

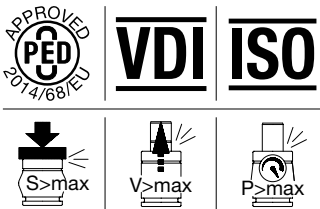
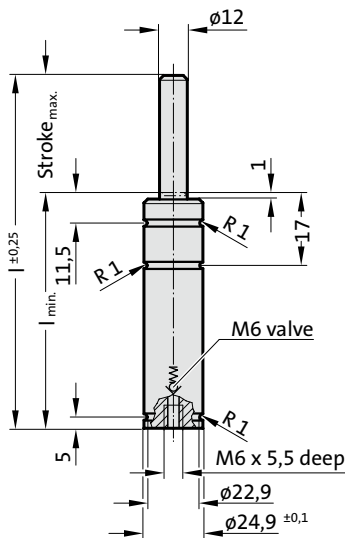
approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

Spring forces as per spring diagram.

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

2480.21.



2480.21. Gas spring, small dimension and low force

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

*complete with initial spring force

Spring force marking:

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

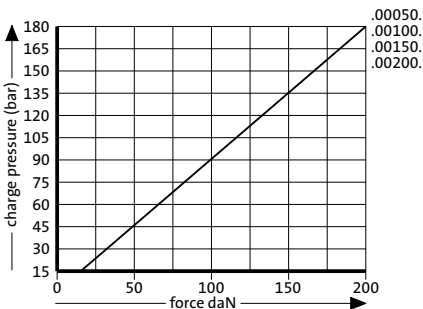
.00050. - 45 - green

.00100. - 90 - blue

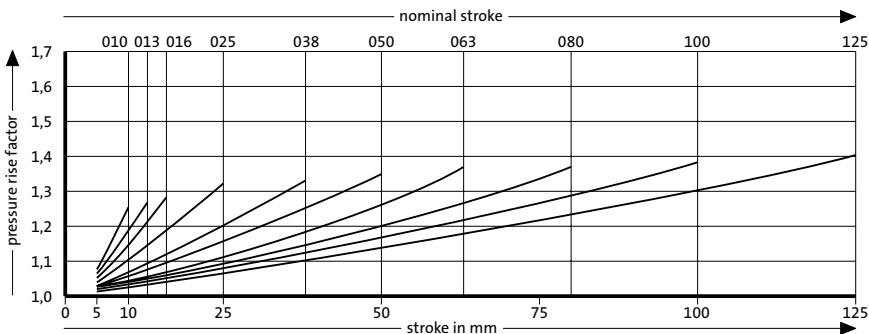
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force
versus charge pressure



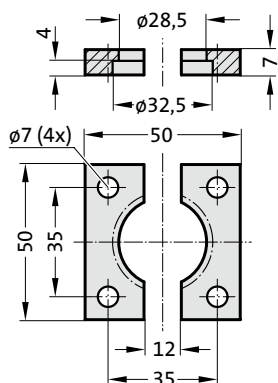
Spring force Diagram displacement versus stroke rise



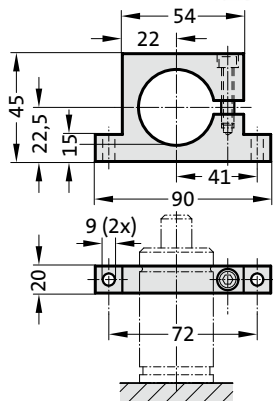
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

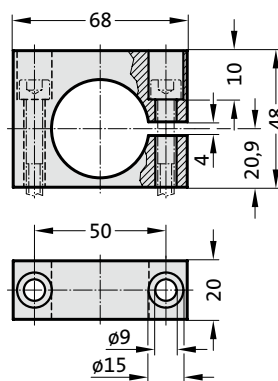
2480.022.00150



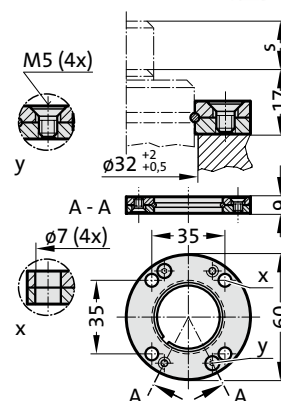
2480.044.00150²⁾



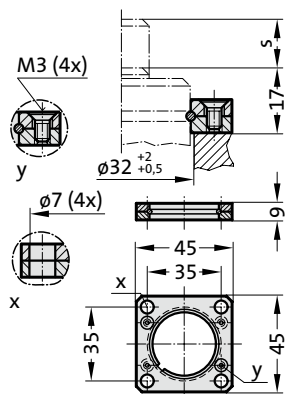
2480.044.03.00150²⁾



2480.055.00150



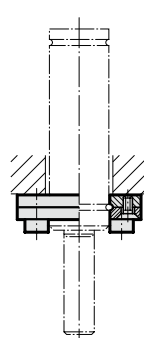
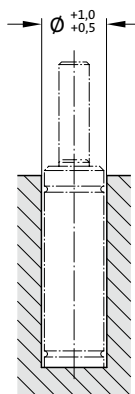
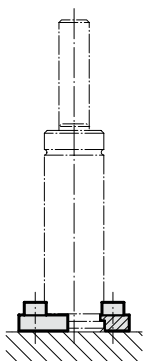
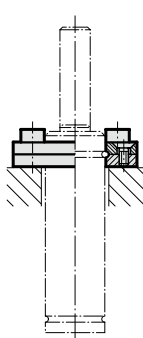
2480.057.00150



Note:

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

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

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

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

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

Note:

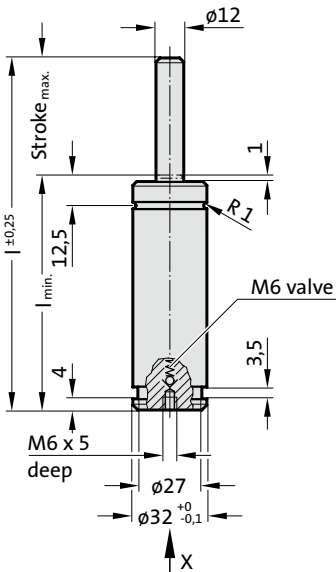
Order No for spare parts kit: 2480.21.00150

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

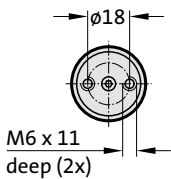
Spring forces as per spring diagram.

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

2480.22. .1



View X - Gas spring



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

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

*complete with initial spring force

Spring force marking:

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

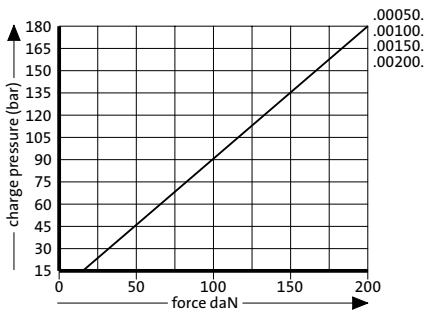
.00050. - 45 - green

.00100. - 90 - blue

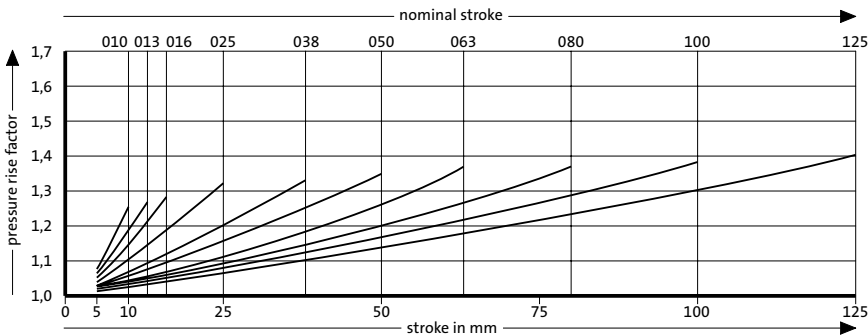
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force
versus charge pressure



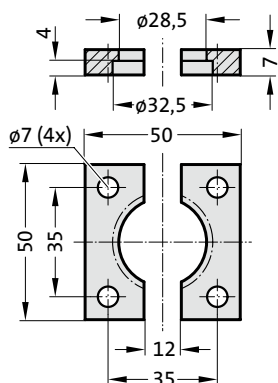
Spring force Diagram displacement versus stroke rise



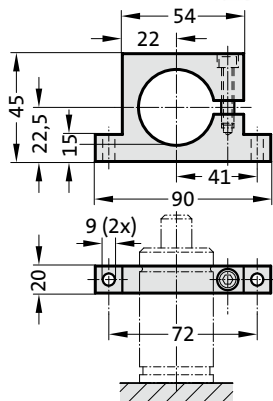
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

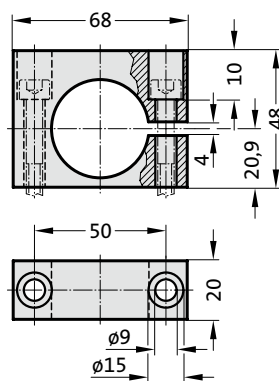
2480.022.00150



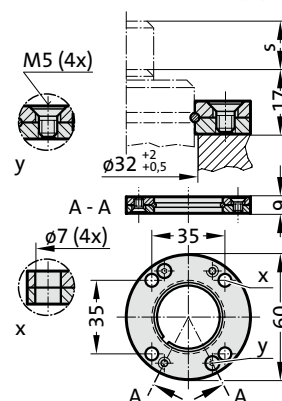
2480.044.00150²⁾



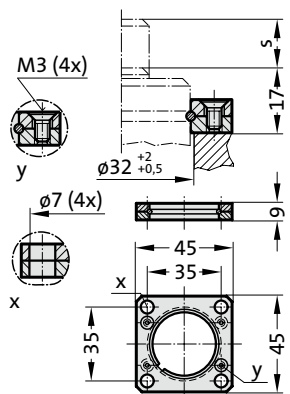
2480.044.03.00150²⁾



2480.055.00150



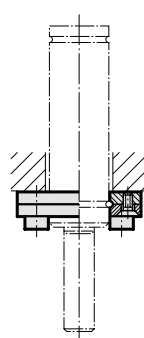
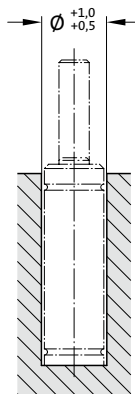
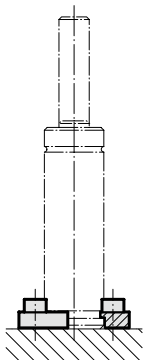
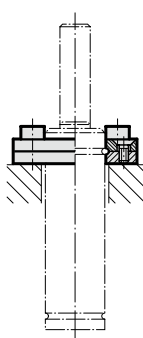
2480.057.00150



Note:

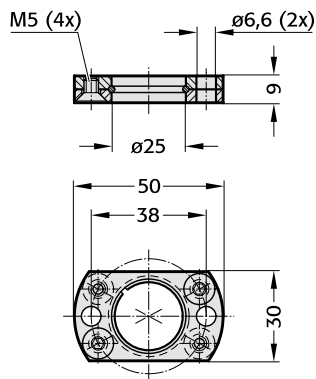
²⁾ Attention:
The spring force must be
absorbed by the stop Surface!

Mounting examples:

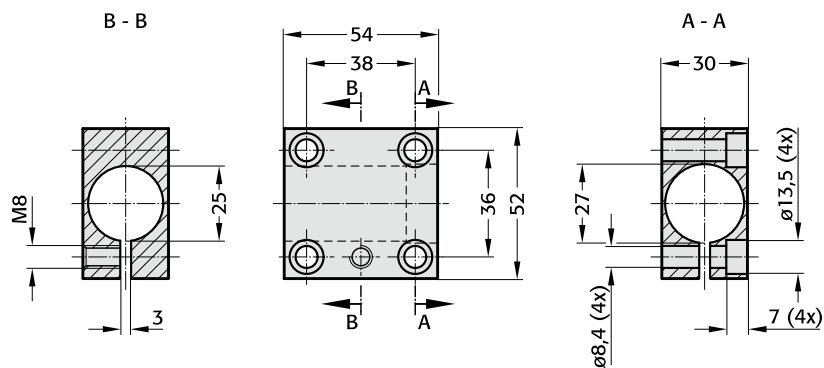


GAS SPRING, SMALL DIMENSION AND LOW FORCE MOUNTING VARIATIONS

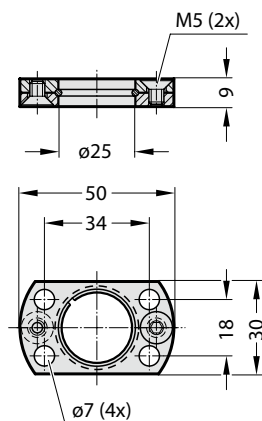
2480.051.00150



2480.053.00150



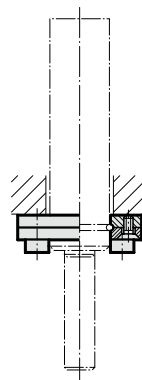
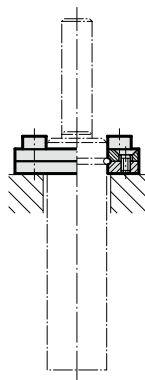
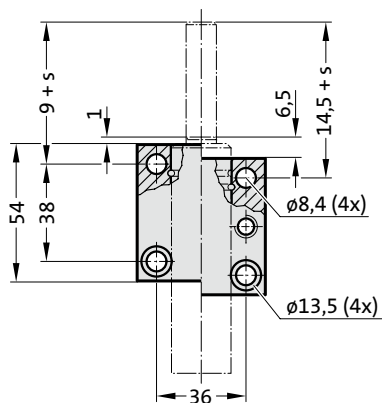
2480.054.00150



Note:

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

Mounting examples:



GAS SPRING, SMALL DIMENSION AND LOW FORCE

Description:

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

Note:

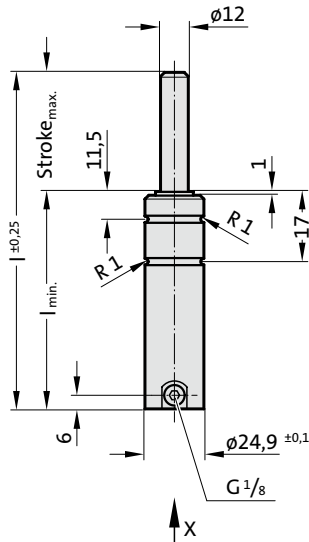
Initial spring force at 180 bar = 200 daN

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen - N₂
Max. filling pressure: 180 bar
Min. filling pressure: 25 bar
Working temperature: 0°C bis +80°C
Temperature related force increase: ± 0,3%/°C
Max. recommended extensions per minute: ca. 80 to 100 (at 20°C)
Max. piston speed: 1,6 m/s

Spring forces as per spring diagram.

2480.23.



View X

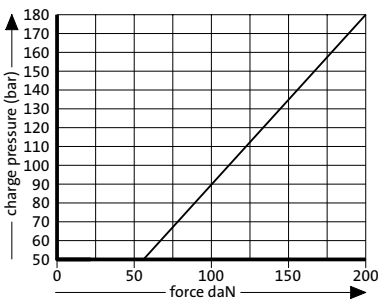


2480.23.

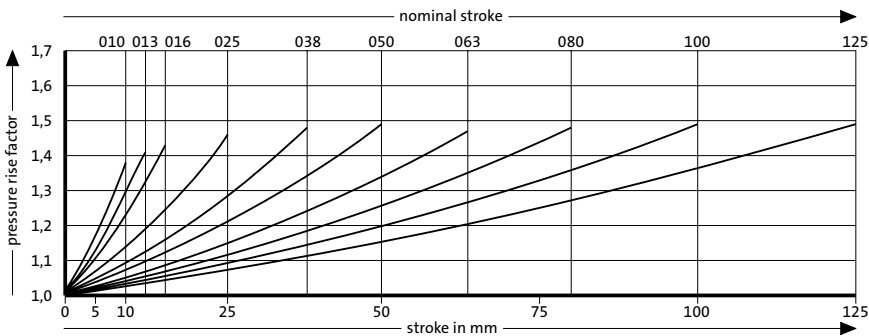
Gas spring, small dimension and low force

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

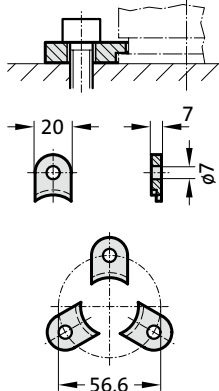
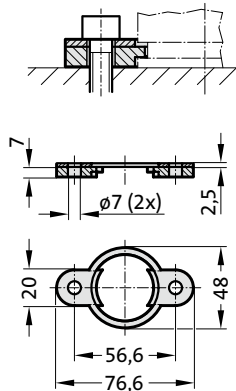
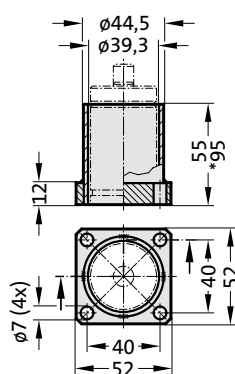
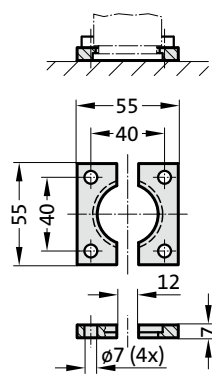
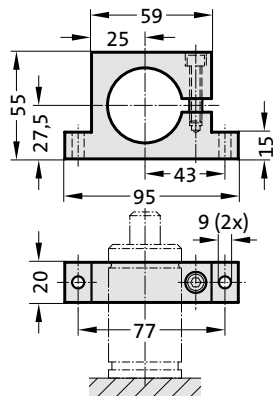
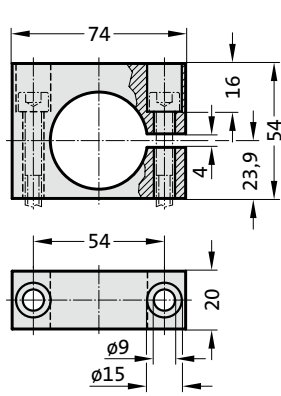
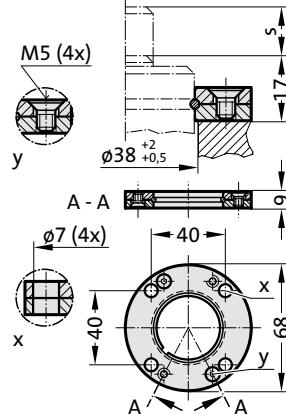
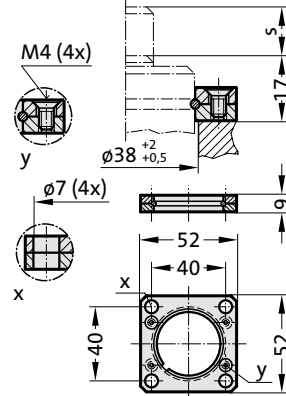


Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS STANDARD



GAS SPRING, STANDARD MOUNTING VARIATIONS

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

3) Not for use with composite connection.

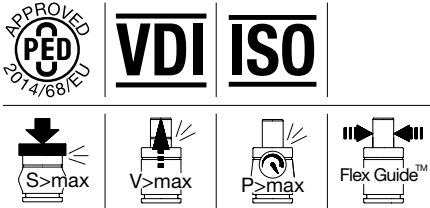
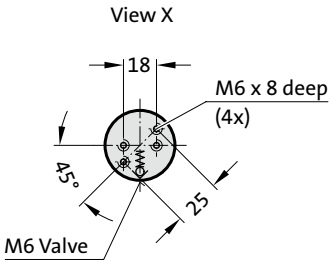
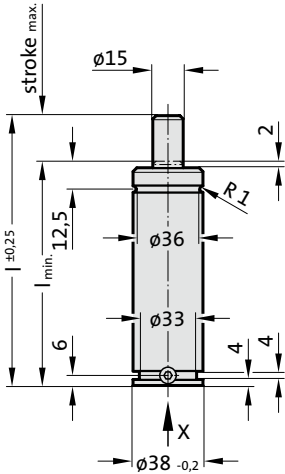
GAS SPRING, STANDARD

Note:
Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.13.00250
Gas spring without valve
Order No (example): 2480.13.00250. .P

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

2480.13.00250.

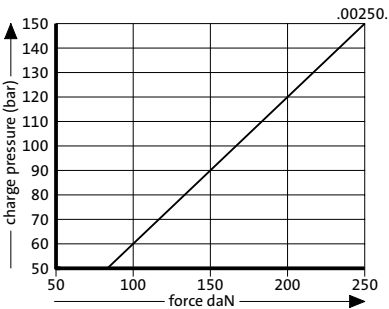


2480.13.00250.

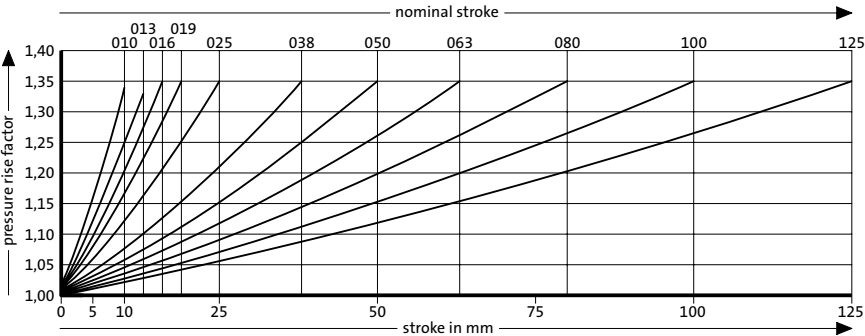
Gas spring, Standard

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

Initial spring force
versus charge pressure



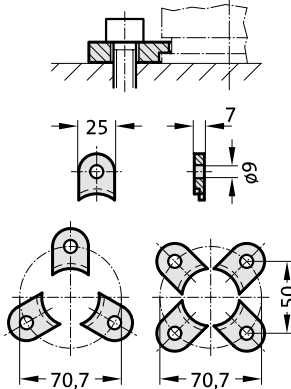
Spring force Diagram displacement versus stroke rise



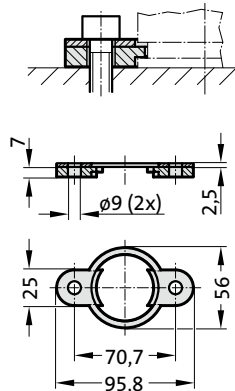
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

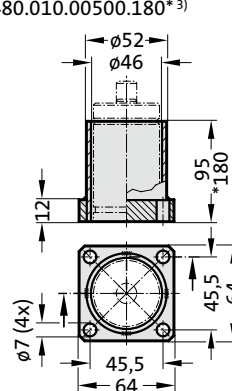
2480.007.00500



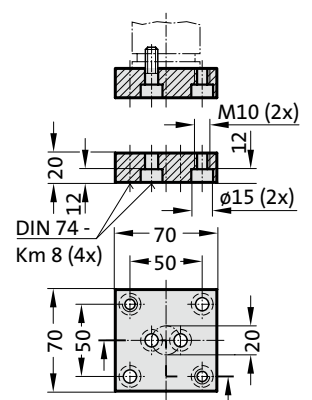
2480.008.00500³⁾



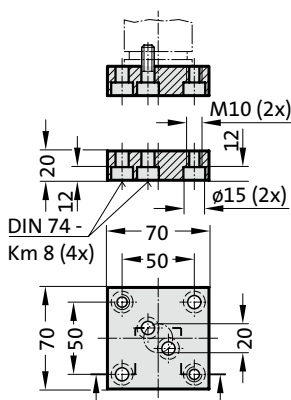
2480.010.00500.095³⁾
2480.010.00500.180^{*3)}



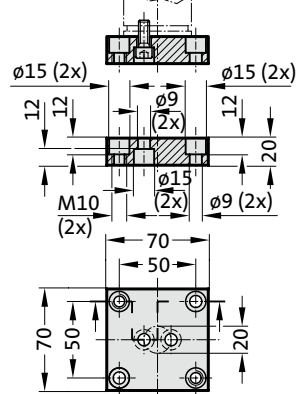
2480.011.00500



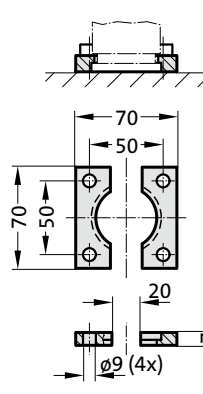
2480.011.00500.1



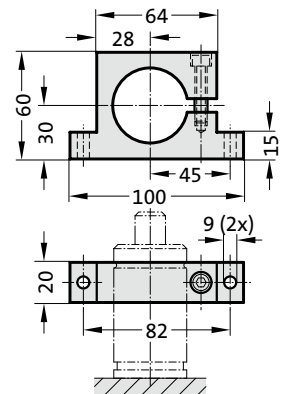
2480.011.00500.2



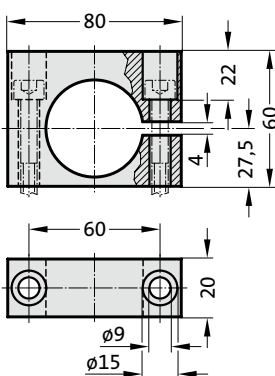
2480.022.00500



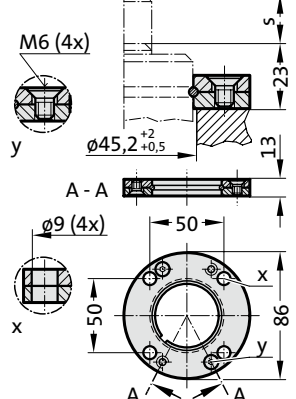
2480.044.00500²⁾



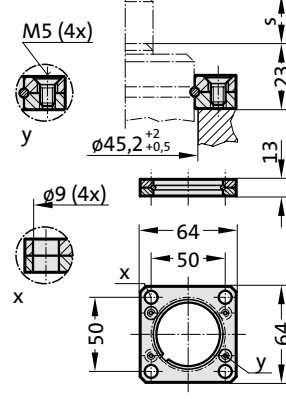
2480.044.03.00500²⁾



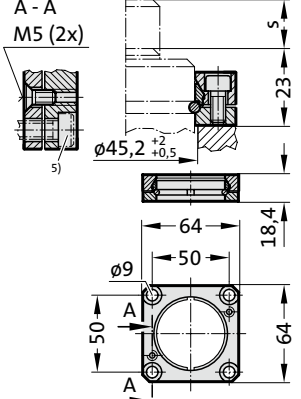
2480.055.00500



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)

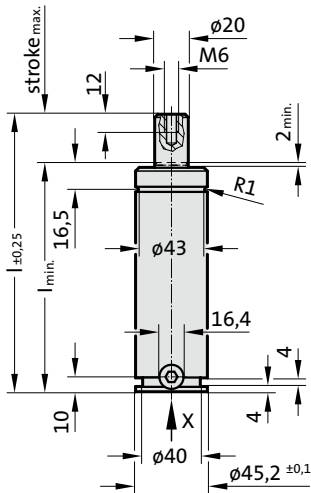
GAS SPRING, STANDARD

Note:
Initial spring force at 150 bar = 470 daN

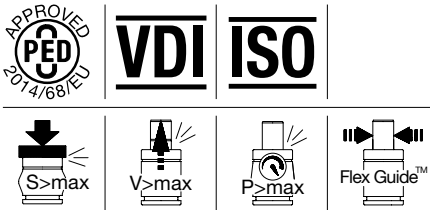
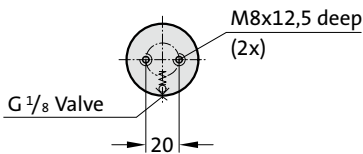
Order No for spare parts kit: 2480.13.00500
Gas spring without valve
Order No (example): 2480.13.00500. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 50 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 40 to 80 (at 20°C)
Max. piston speed: 1.6 m/s

2480.13.00500.



View X

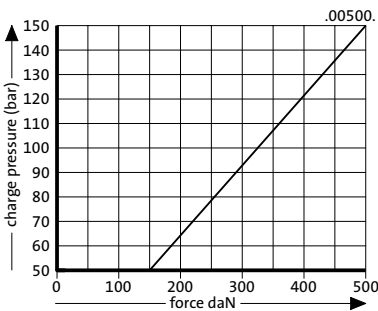


2480.13.00500.

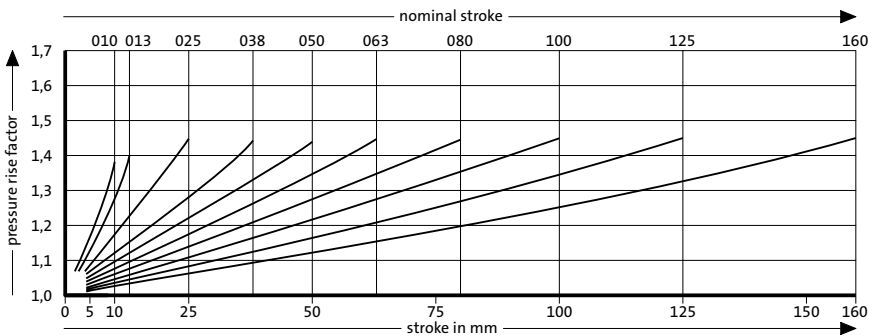
Gas spring, Standard

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

Initial spring force
versus charge pressure



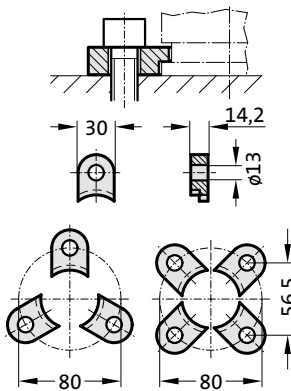
Spring force Diagram displacement versus stroke rise



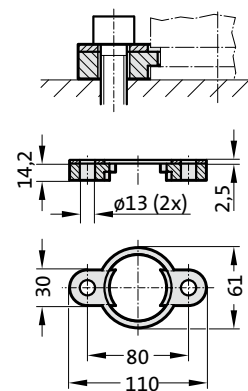
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

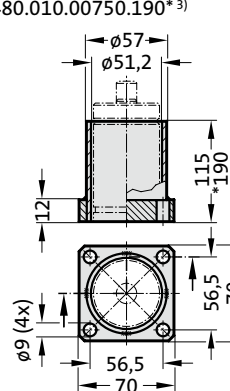
2480.007.00750



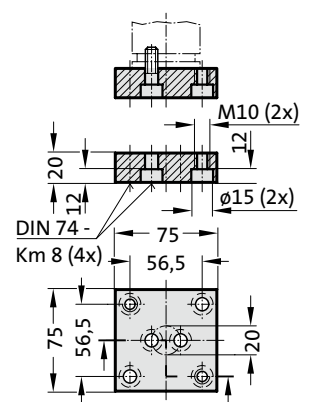
2480.008.00750³⁾



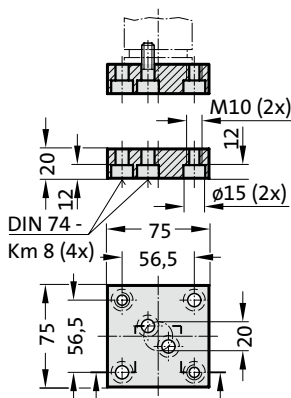
2480.010.00750.115³⁾
2480.010.00750.190^{*3)}



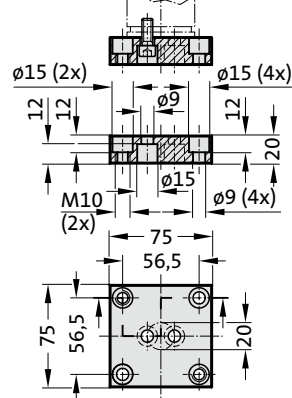
2480.011.00750



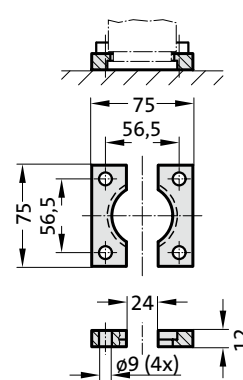
2480.011.00750.1



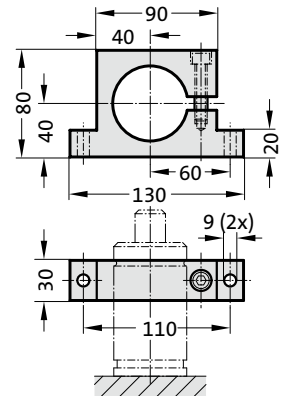
2480.011.00750.3



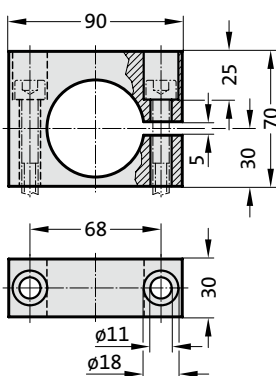
2480.022.00750



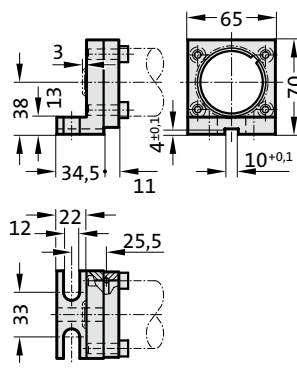
2480.044.00750²⁾



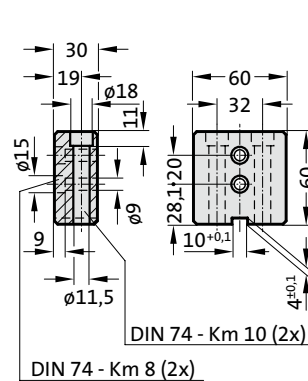
2480.044.03.00750²⁾



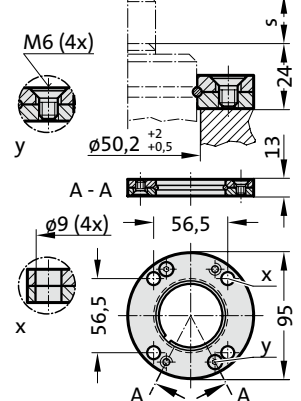
2480.045.00750²⁾



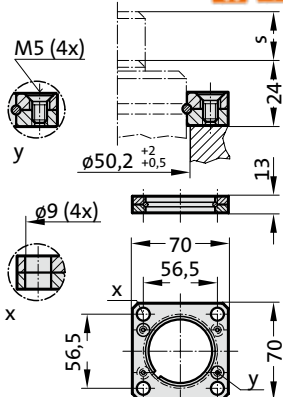
2480.047.00750²⁾



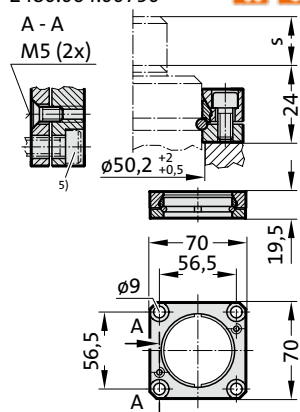
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

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

GAS SPRING, STANDARD

Note:
Initial spring force at 150 bar = 750 daN

Order No for spare parts kit: 2480.13.00750
Order No for spare parts kit: to Renault stan-
dard EM24.54.700 2480.13.00750.R

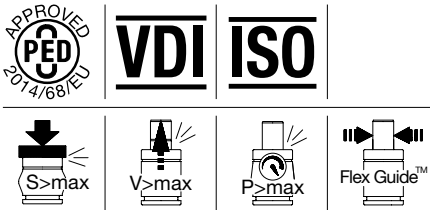
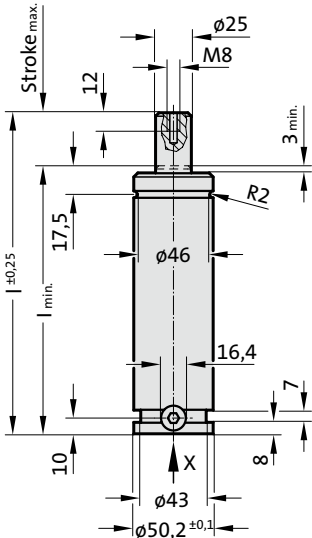
Gas spring without valve
Order No (example): 2480.13.00750. .P

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

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

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

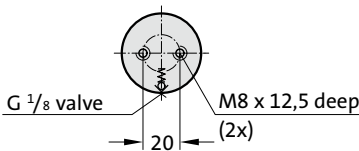
2480.13.00750.



2480.13.00750.

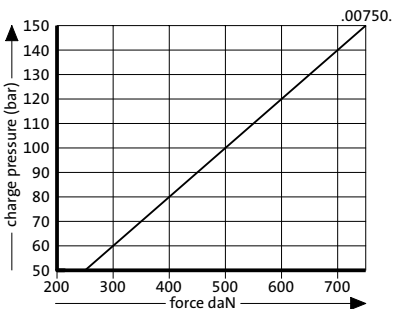
Gas spring, Standard

View X - Gas spring

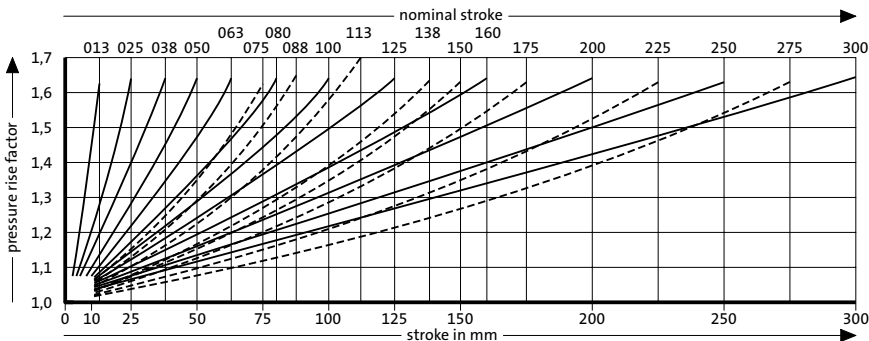


Order No	Stroke _{max.} (s)	I _{min.}	I
2480.13.00750.013	12.7	107.7	120.4
2480.13.00750.025	25	120	145
2480.13.00750.038	38.1	133.1	171.2
2480.13.00750.050	50	145	195
2480.13.00750.063	63.5	158.5	222
2480.13.00750.075 1)	75	170	245
2480.13.00750.080	80	175	255
2480.13.00750.088 1)	87.5	182.5	270
2480.13.00750.100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

Initial spring force
versus charge pressure

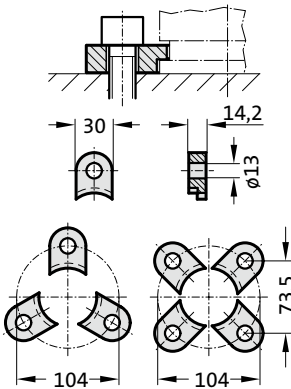
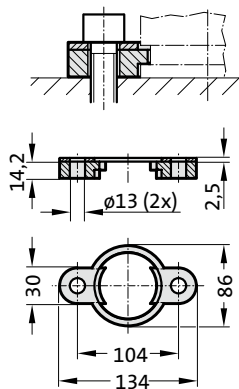
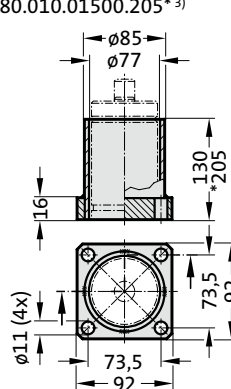
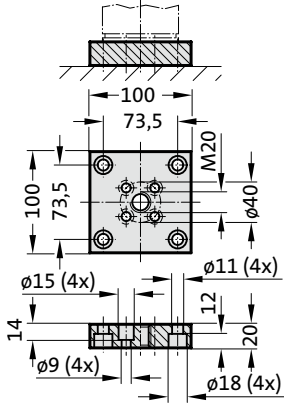
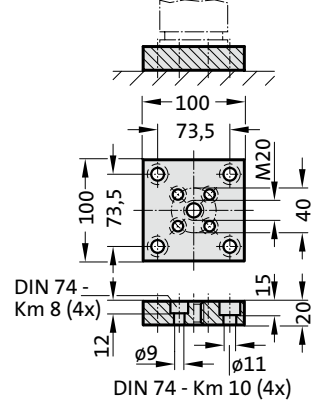
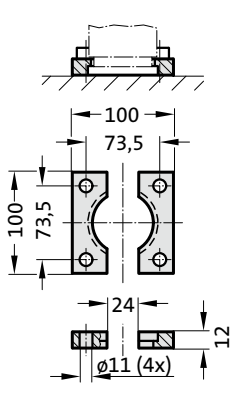
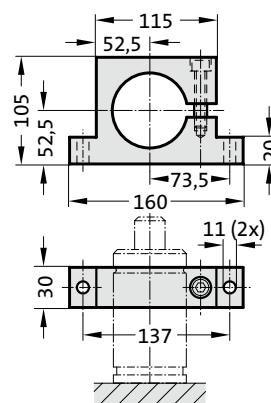
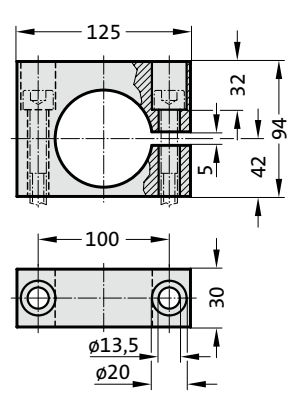
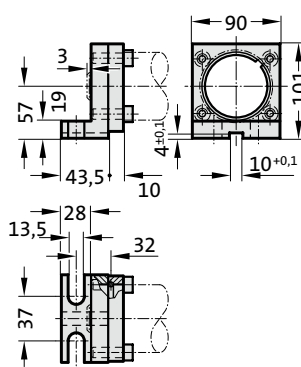
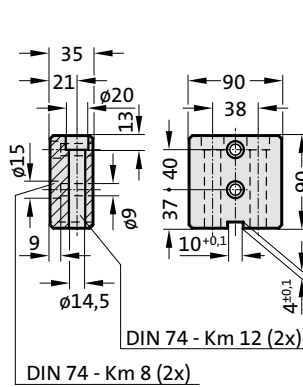
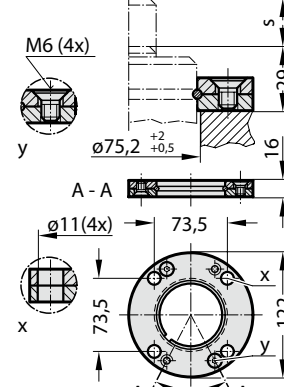
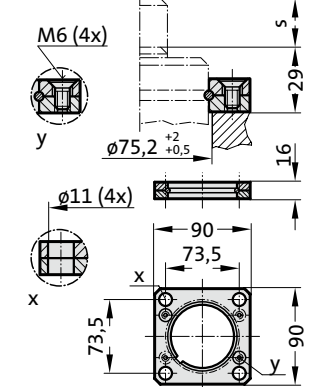
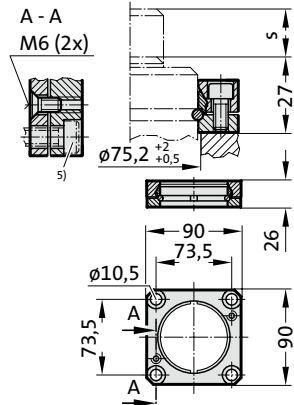


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

Note:

2) Attention:

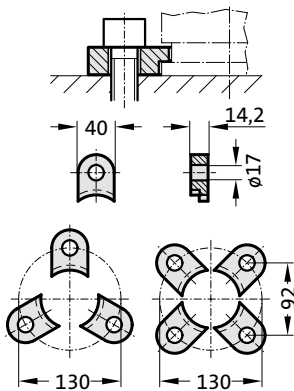
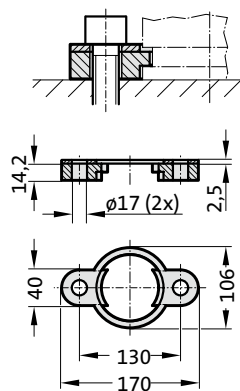
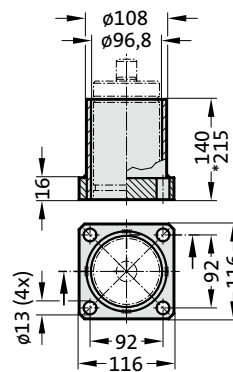
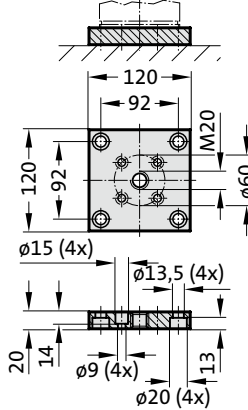
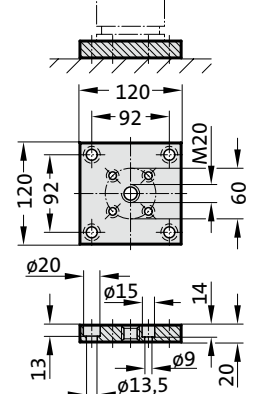
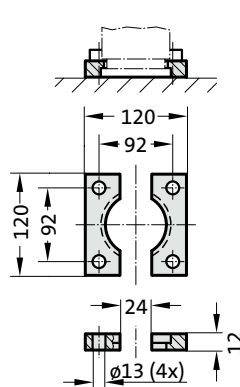
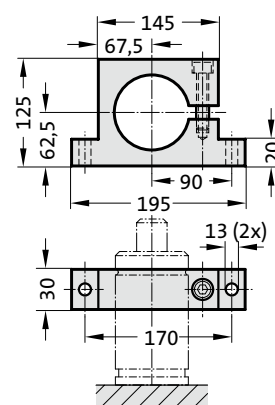
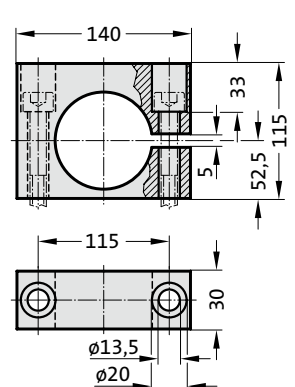
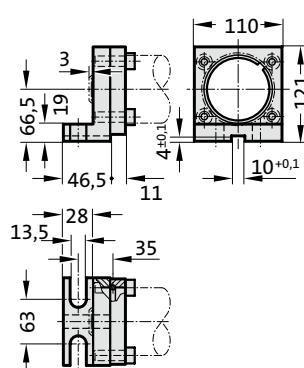
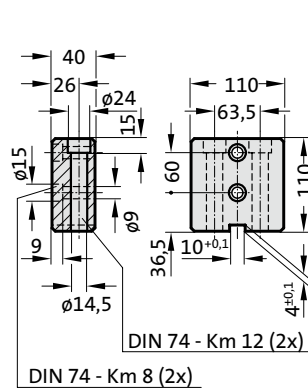
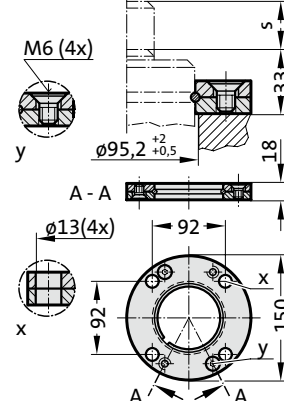
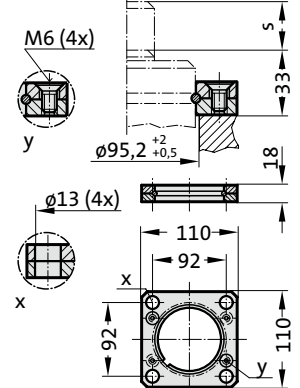
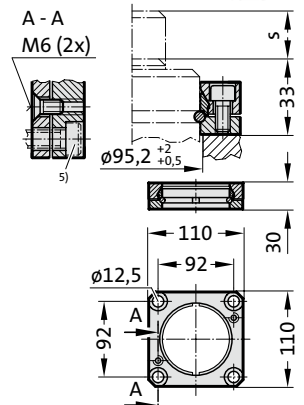
The spring force must be absorbed by the stop Surface!

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 MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING, STANDARD

Note:
Initial spring force at 150 bar = 3000 daN

Order No for spare parts kit: 2480.13.03000
Order No for spare parts kit: to Renault stan-
dard EM24.54.700 2480.13.03000.R

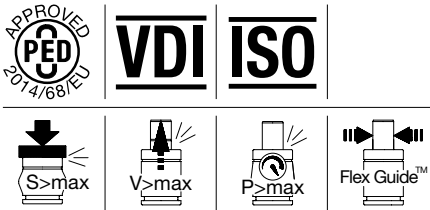
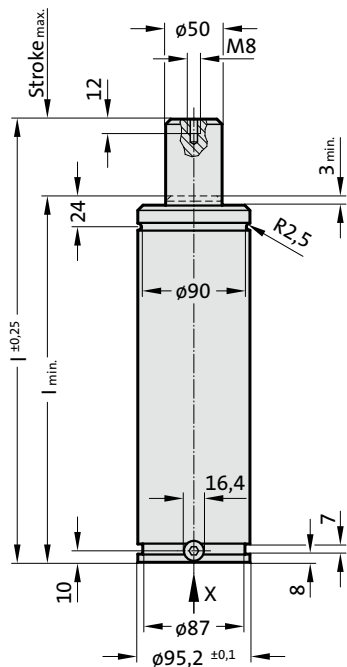
Gas spring without valve
Order No (example): 2480.13.03000. .P

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

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

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

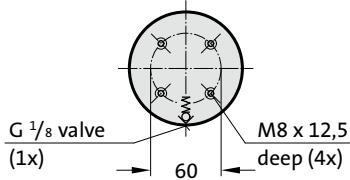
2480.13.03000.



2480.13.03000.

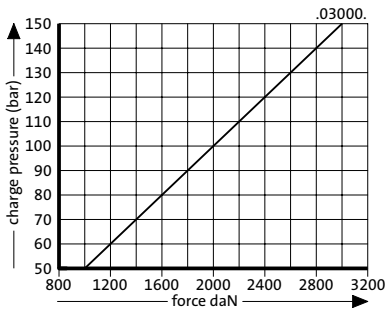
Gas spring, Standard

View X - Gas spring

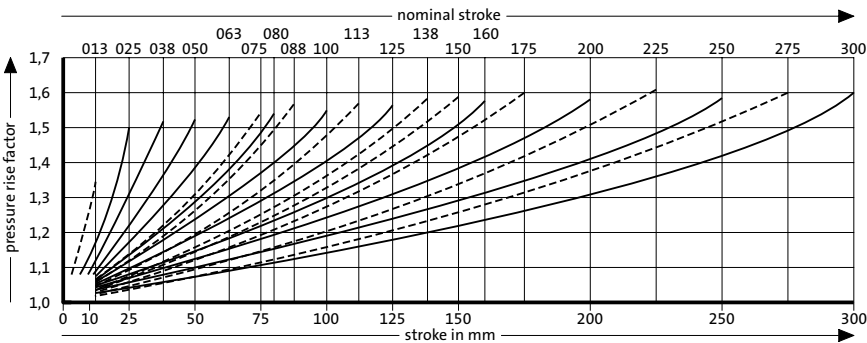


Order No	Stroke _{max.} (s)	<i>l</i> _{min.}	<i>l</i>
2480.13.03000.013 1)	12.7	132.3	145
2480.13.03000.025	25	145	170
2480.13.03000.038	38.1	158.1	196.2
2480.13.03000.050	50	170	220
2480.13.03000.063	63.5	183.5	247
2480.13.03000.075 1)	75	195	270
2480.13.03000.080	80	200	280
2480.13.03000.088.11)	87.5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

Initial spring force
versus charge pressure



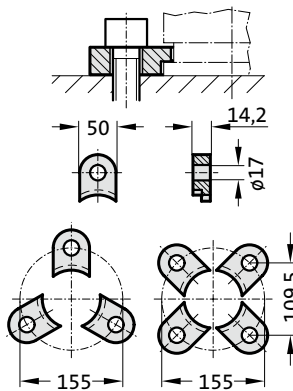
Spring force Diagram displacement versus stroke rise



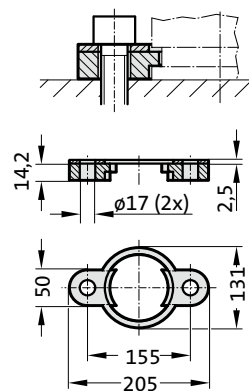
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

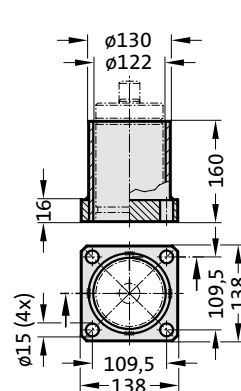
2480.007.05000



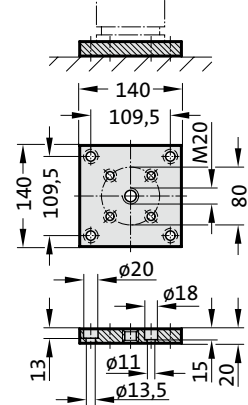
2480.008.05000³⁾



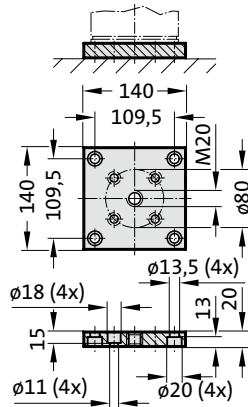
2480.010.05000.160³⁾



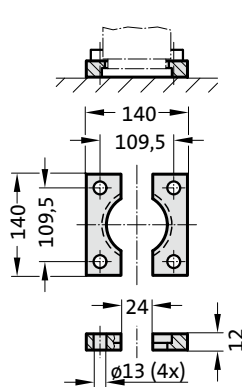
2480.011.05000



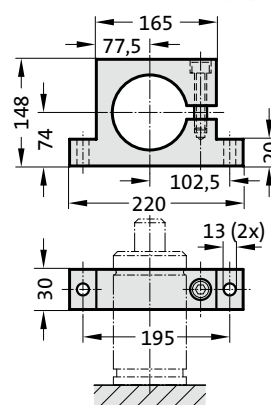
2480.011.05000.2



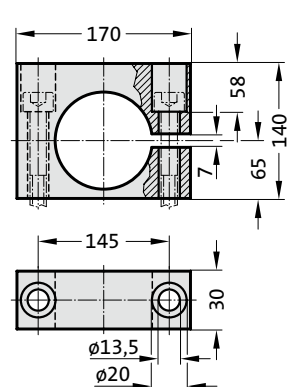
2480.022.05000



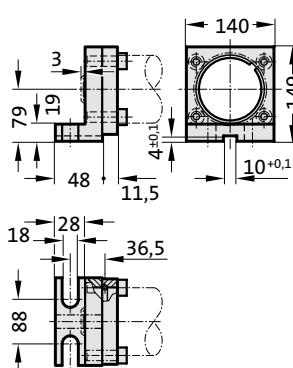
2480.044.05000²⁾



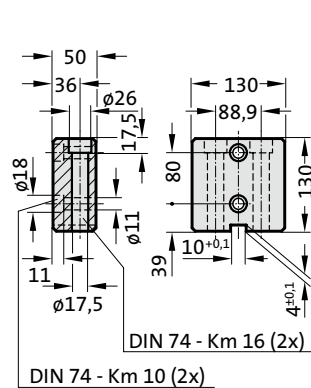
2480.044.03.05000²⁾



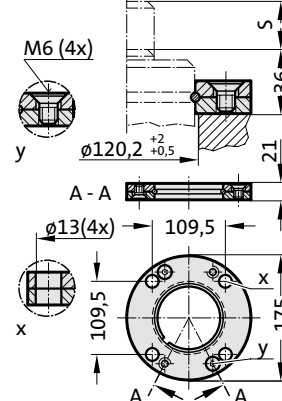
2480.045.05000²⁾



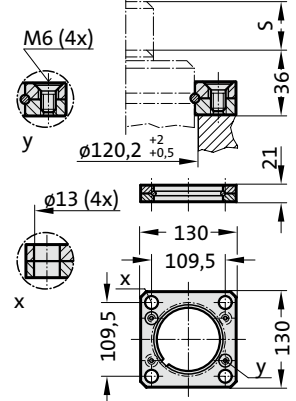
2480.047.05000²⁾



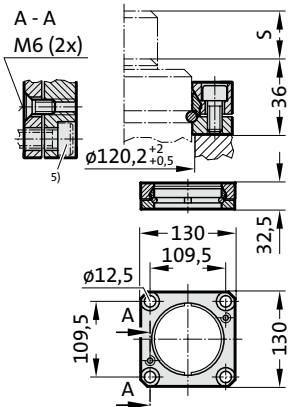
2480.055.05000



2480.057.05000



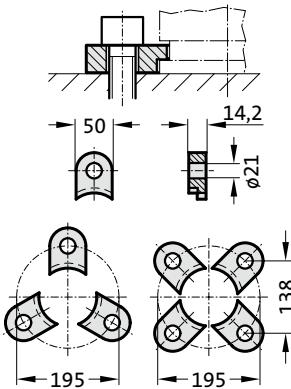
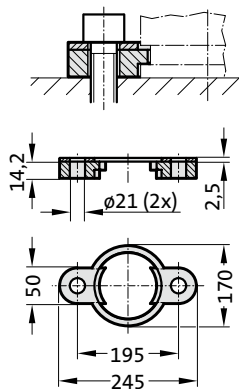
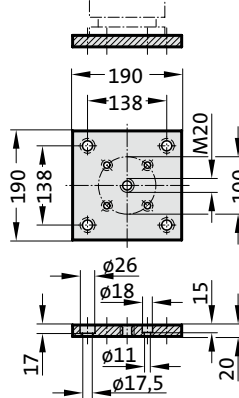
2480.064.05000⁴⁾



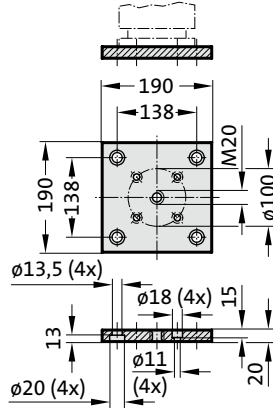
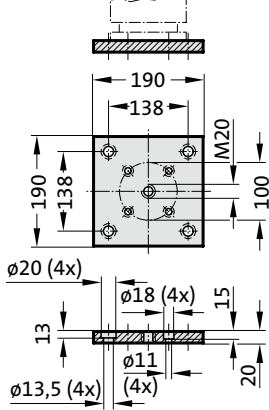
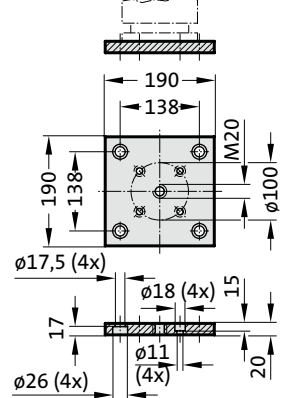
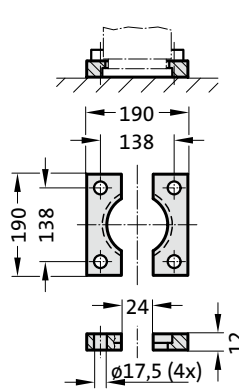
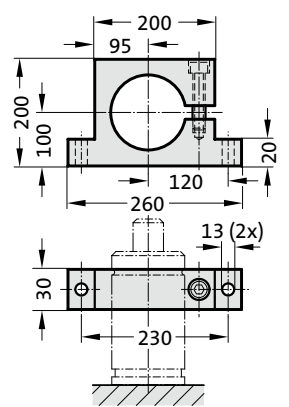
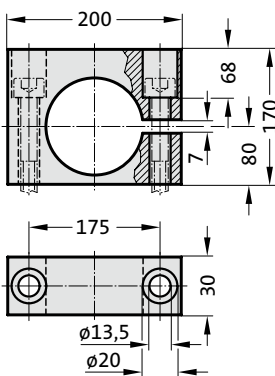
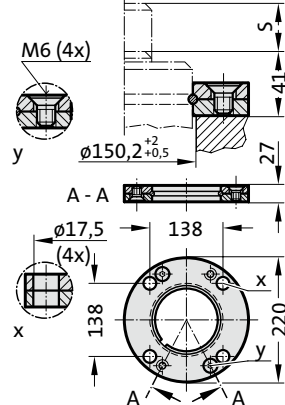
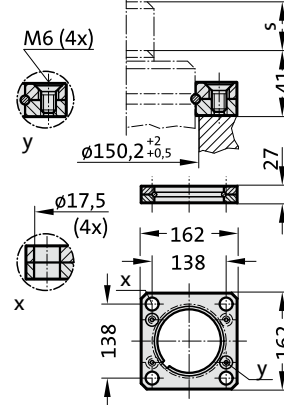
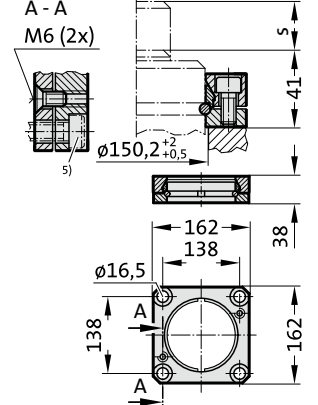
Note:

- 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 MOUNTING VARIATIONS

2480.011.07500.2

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING, STANDARD

Note:
Initial spring force at 150 bar = 7500 daN

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

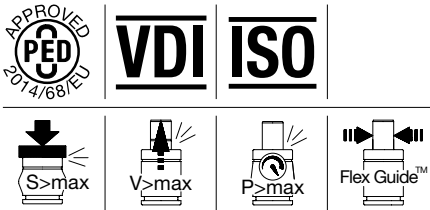
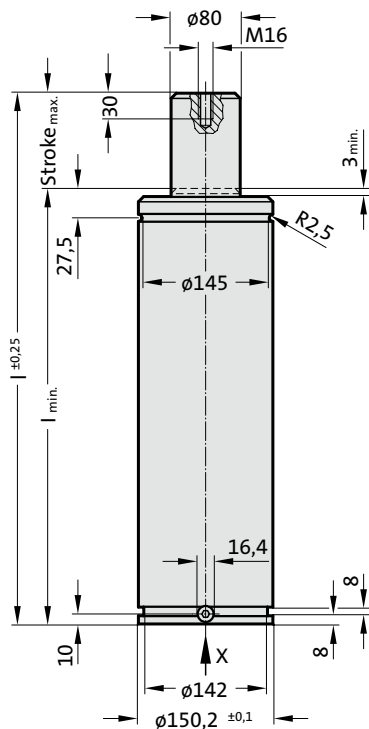
Gas spring without valve
Order No (example): 2480.13.07500. .P

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

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

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

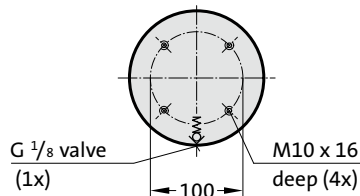
2480.13.07500.



2480.13.07500.

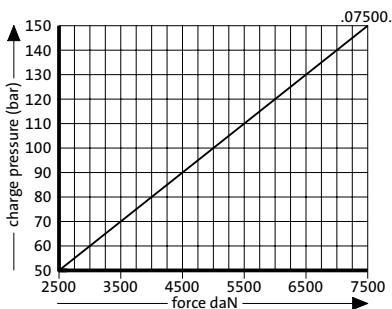
Gas spring, Standard

View X - Gas spring

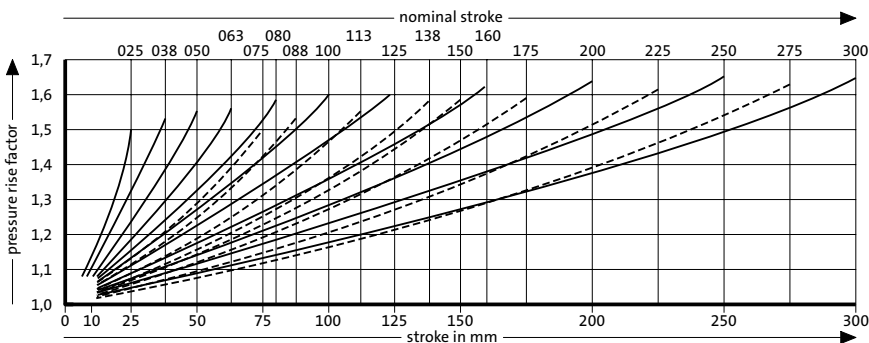


Order No	Stroke _{max.} (s)	l _{min.}	l
2480.13.07500.025	25	180	205
2480.13.07500.038	38.1	193.1	231.2
2480.13.07500.050	50	205	255
2480.13.07500.063	63.5	218.5	282
2480.13.07500.075 1)	75	230	305
2480.13.07500.080	80	235	315
2480.13.07500.088 1)	87.5	242.5	330
2480.13.07500.100	100	255	355
2480.13.07500.113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

Initial spring force
versus charge pressure

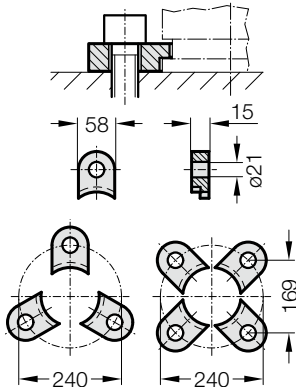
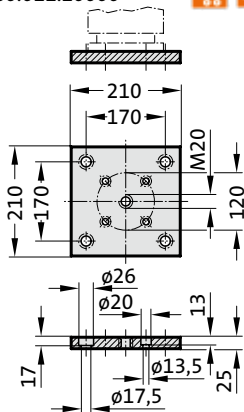
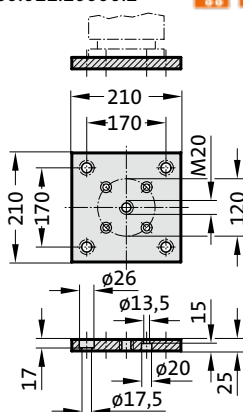
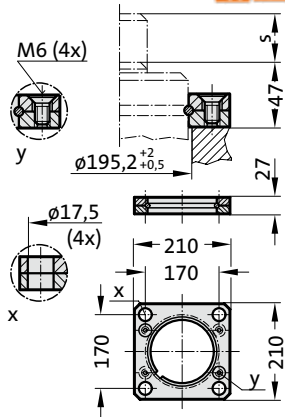
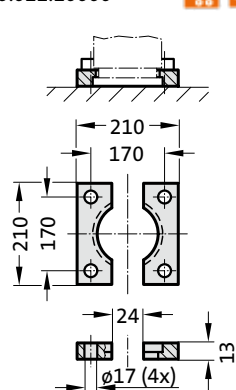


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, STANDARD MOUNTING VARIATIONS

GAS SPRING, STANDARD

Note:
Initial spring force at 150 bar = 10000 daN

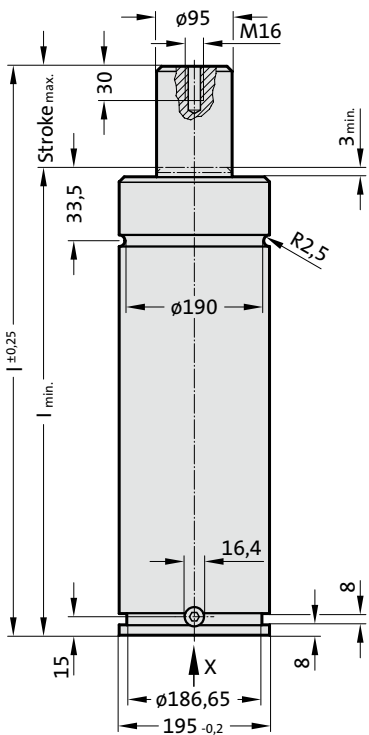
Order No for spare parts kit: 2480.12.10000

Gas spring without valve
Order No (example): 2480.12.10000. .P

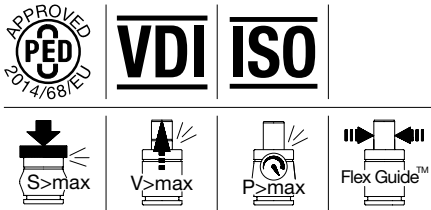
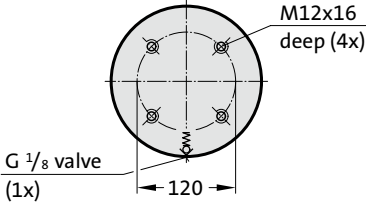
Gas spring to Renault standard EM24.54.700
Order No (example): 2480.12.10000. .R
Gas spring to Renault standard EM24.54.700 without valve
Order No (example): 2480.12.10000. .R.P

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

2480.12.10000.



View X - Gas spring

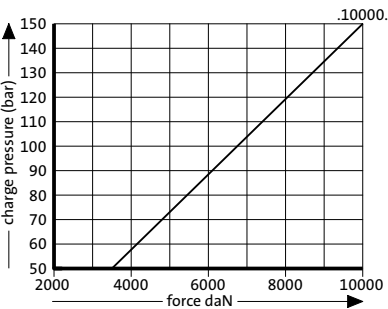


2480.12.10000.

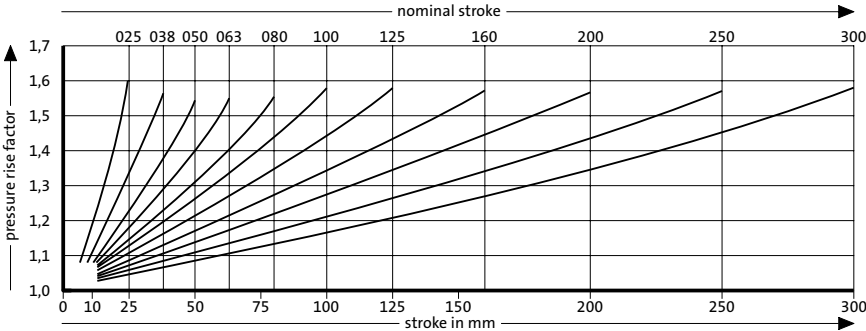
Gas spring, Standard

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

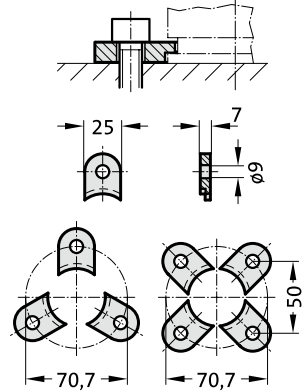
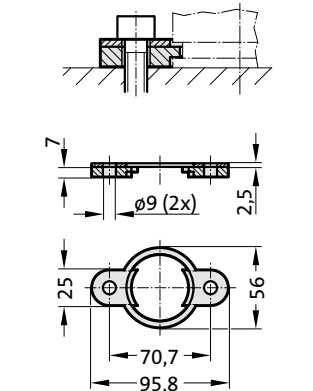
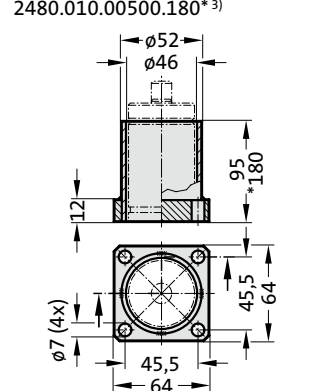
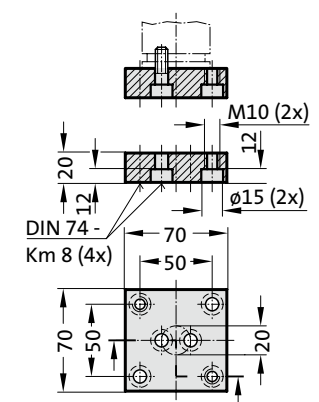
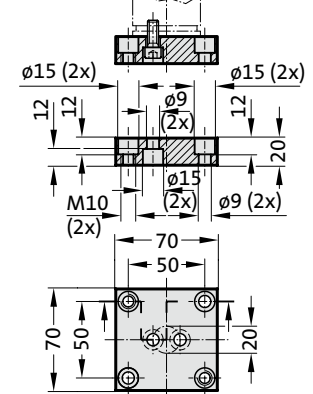
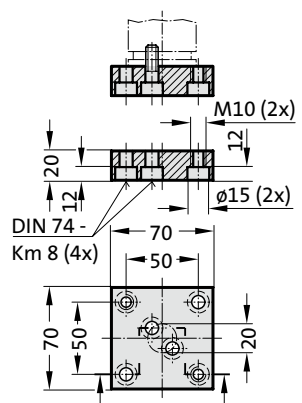
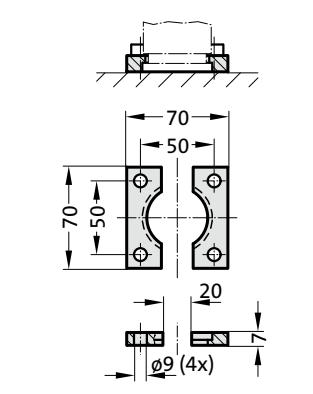
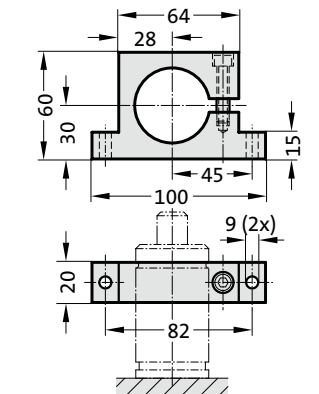
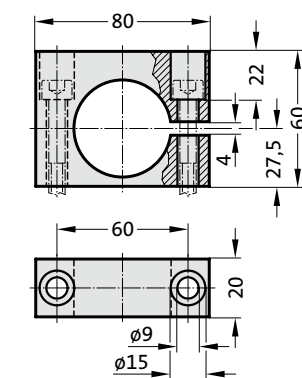
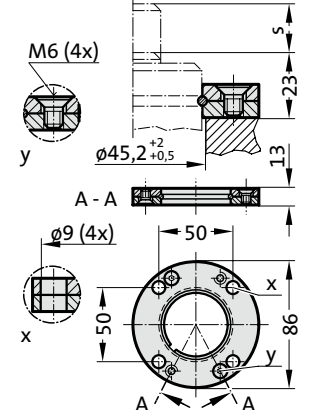
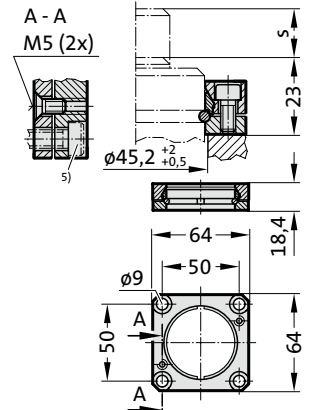
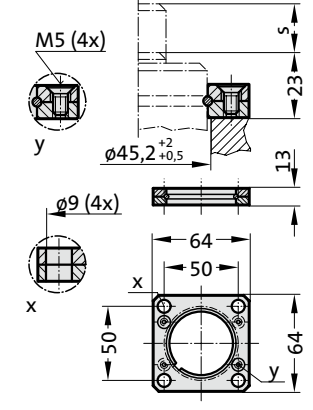


Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS HEAVY DUTY



GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING HEAVY DUTY

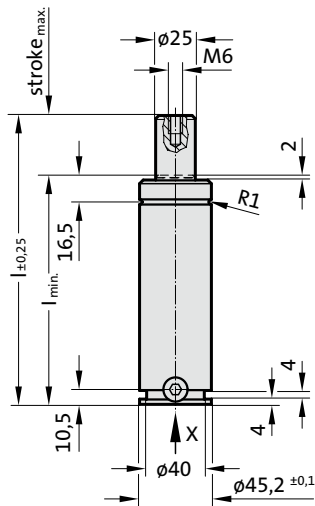
Note:
Initial spring force at 150 bar = 740 daN

Order No for spare parts kit: 2488.13.00750

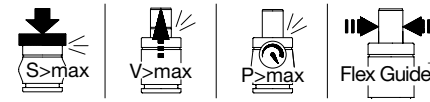
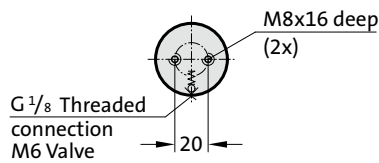
Gas spring without valve
Order No (example): 2488.13.00750. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

2488.13.00750.



View X

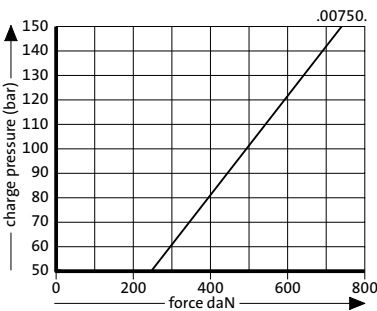


2488.13.00750.

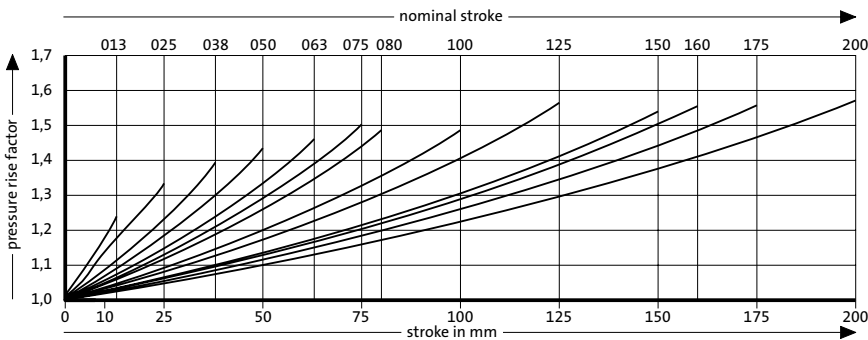
Gas spring HEAVY DUTY

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

Initial spring force
versus charge pressure



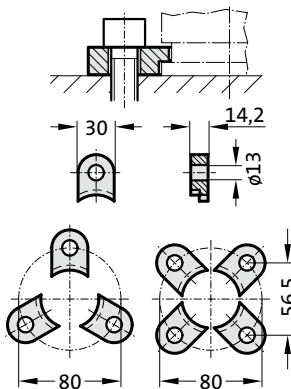
Spring force Diagram displacement versus stroke rise



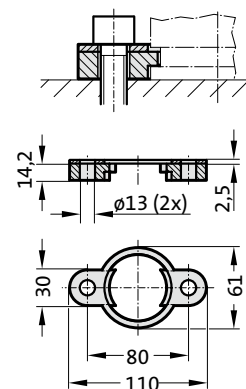
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

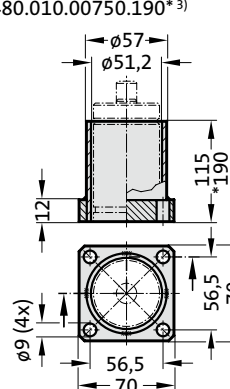
2480.007.00750



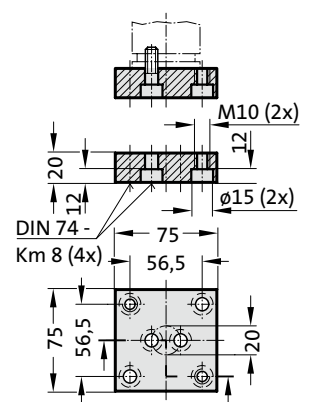
2480.008.00750³⁾



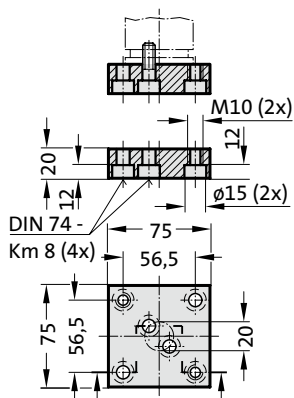
2480.010.00750.115³⁾
2480.010.00750.190^{*3)}



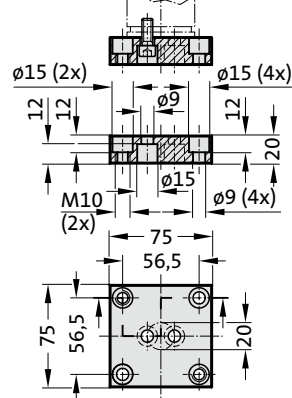
2480.011.00750



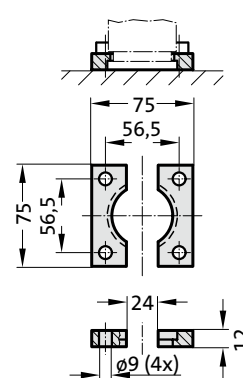
2480.011.00750.1



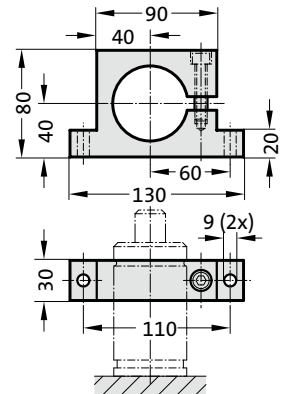
2480.011.00750.3



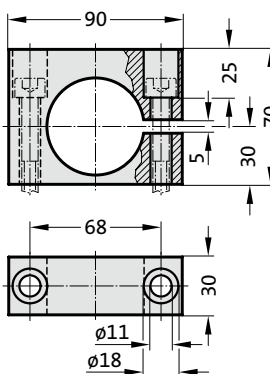
2480.022.00750



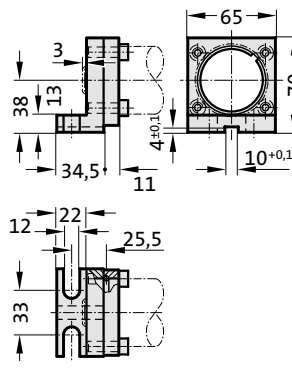
2480.044.00750²⁾



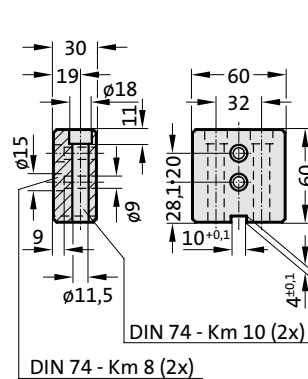
2480.044.03.00750²⁾



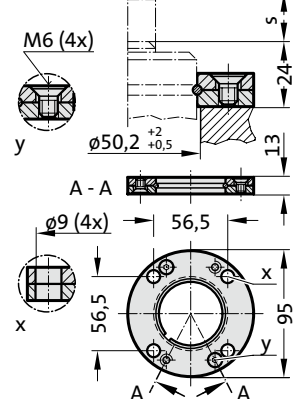
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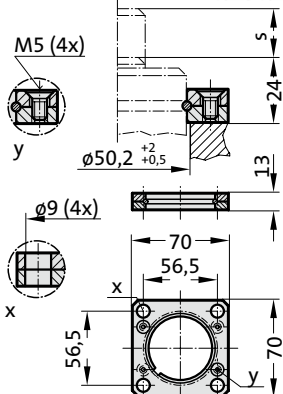
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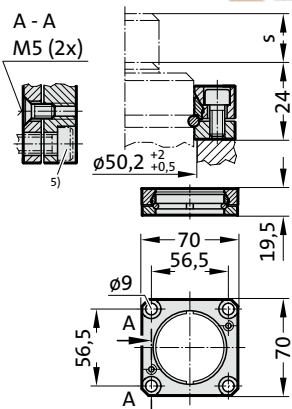
2480.055.00750



2480.057.00750



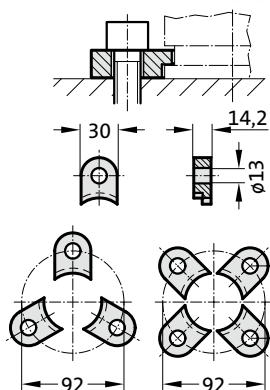
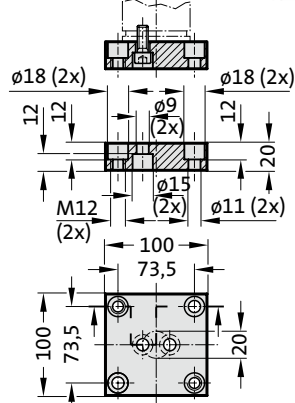
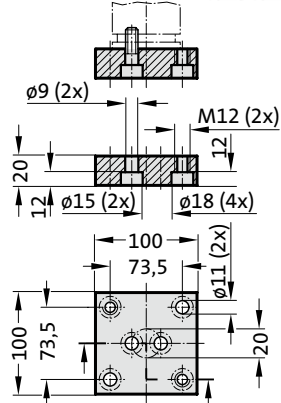
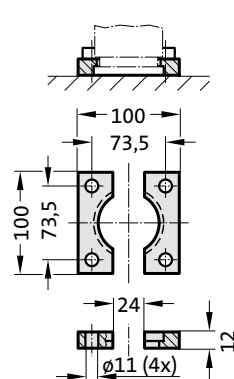
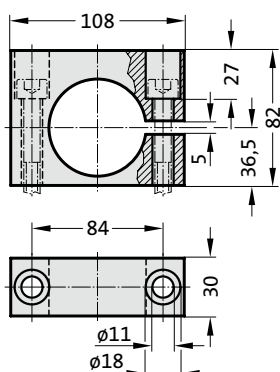
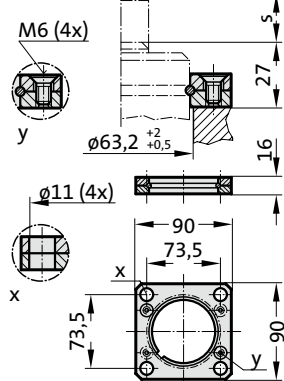
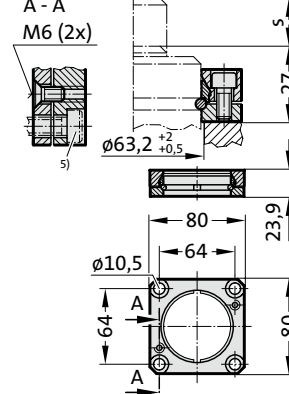
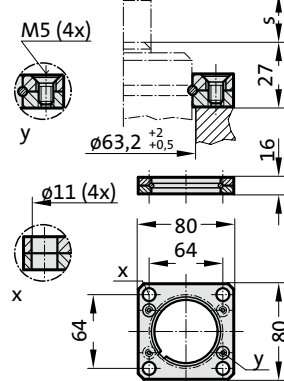
2480.064.00750⁴⁾



Note:

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

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

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

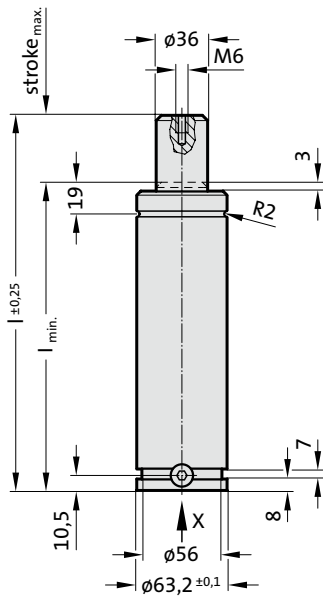
Note:
Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2488.13.01500

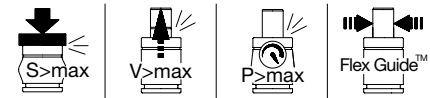
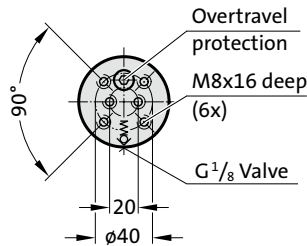
Gas spring without valve
Order No (example): 2488.13.01500. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

2488.13.01500.



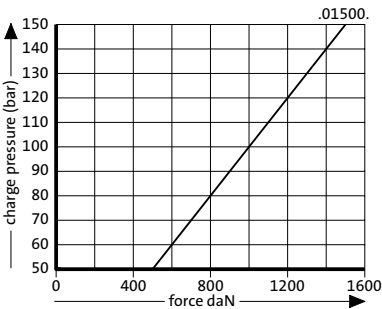
View X



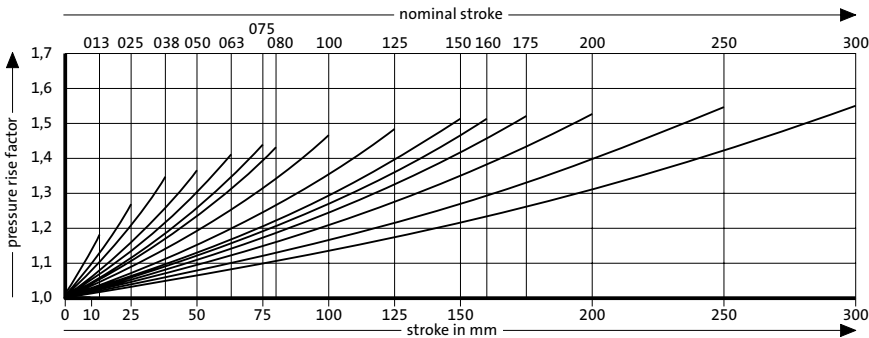
2488.13.01500.
Gas spring HEAVY DUTY

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

Initial spring force
versus charge pressure

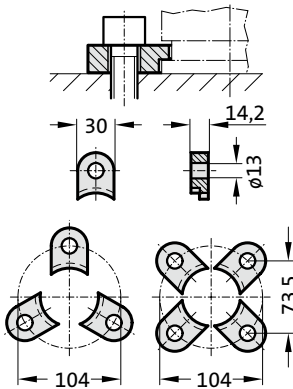
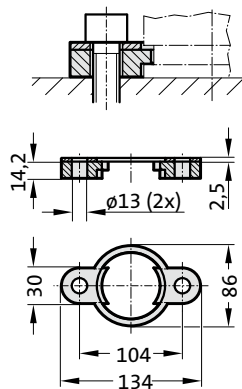
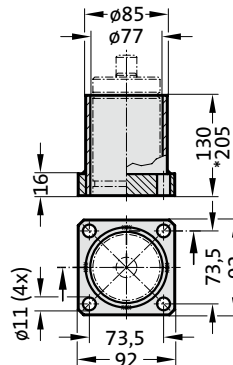
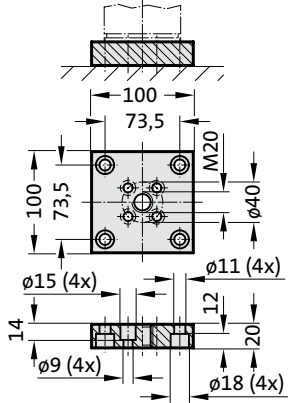
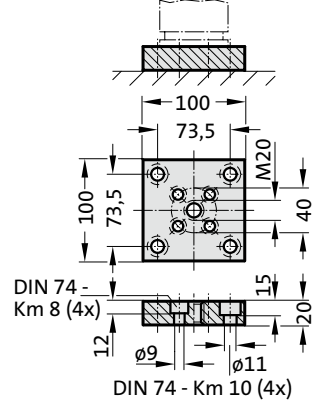
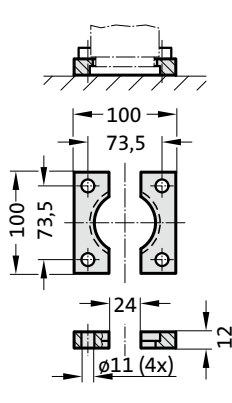
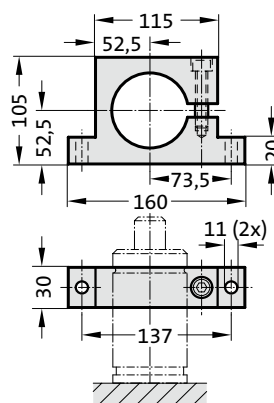
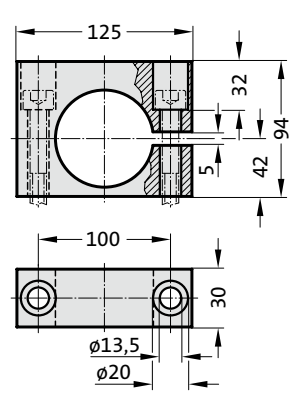
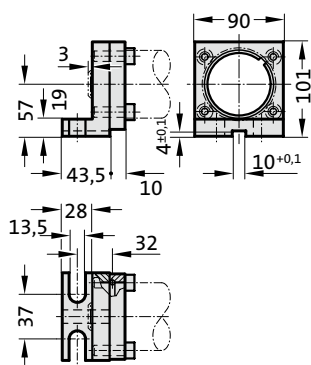
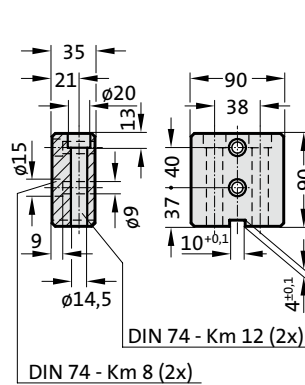
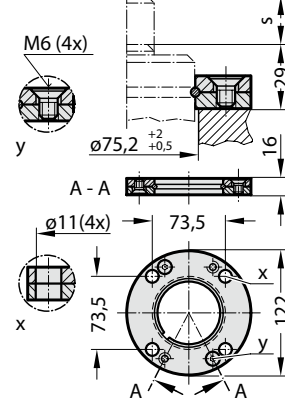
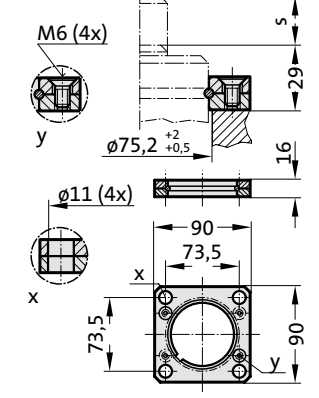
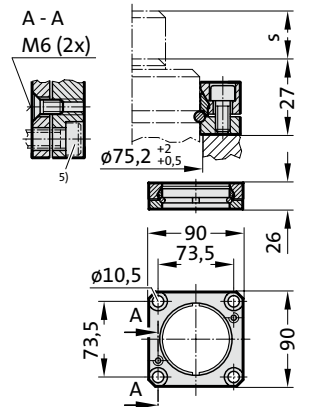


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

Note:

2) Attention:

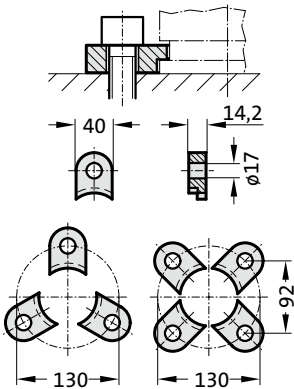
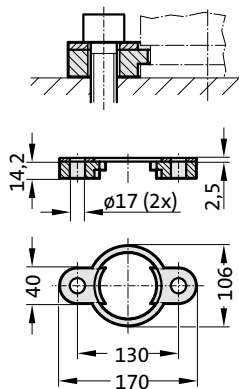
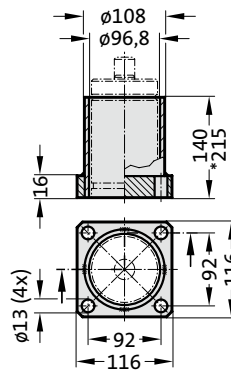
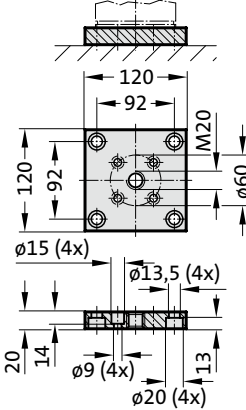
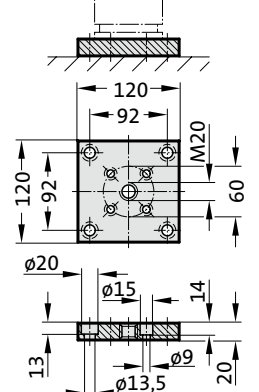
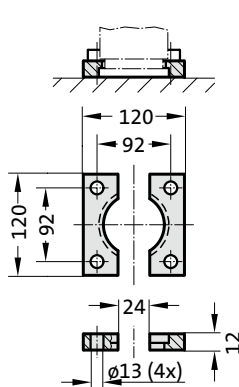
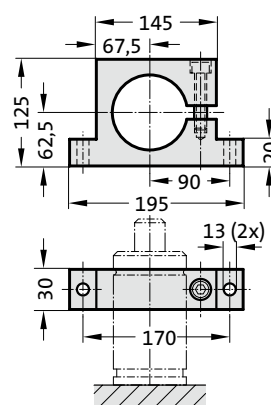
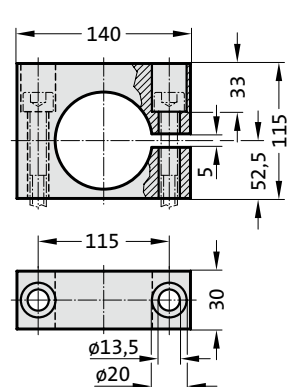
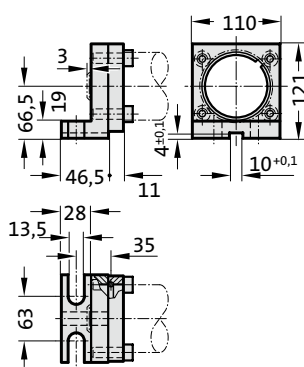
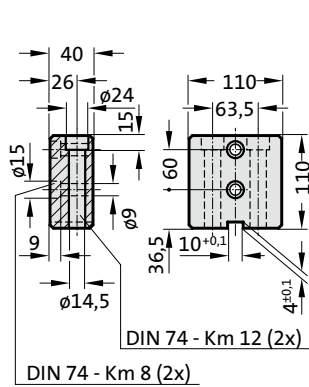
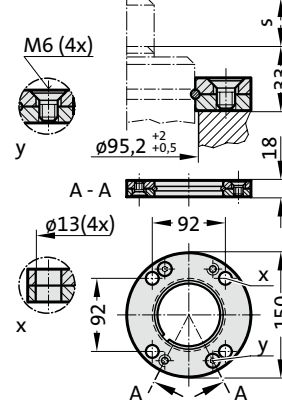
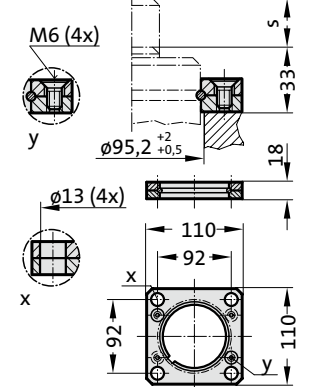
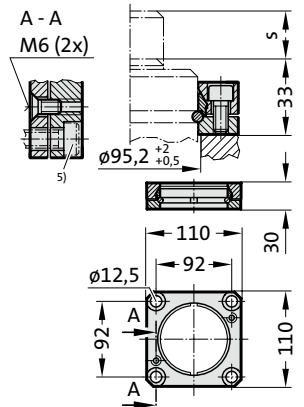
The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING HEAVY DUTY

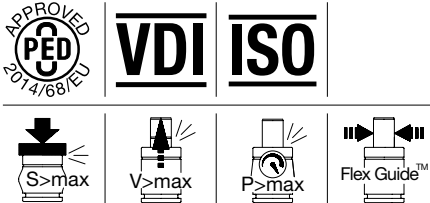
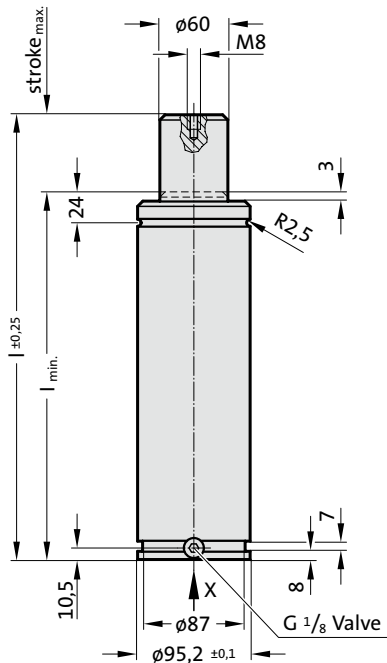
Note:
Initial spring force at 150 bar = 4200 daN

Order No for spare parts kit: 2488.13.04200

Gas spring without valve
Order No (example): 2488.13.04200. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

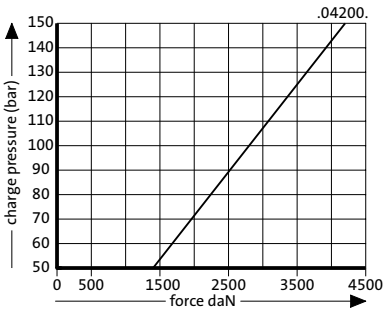
2488.13.04200.



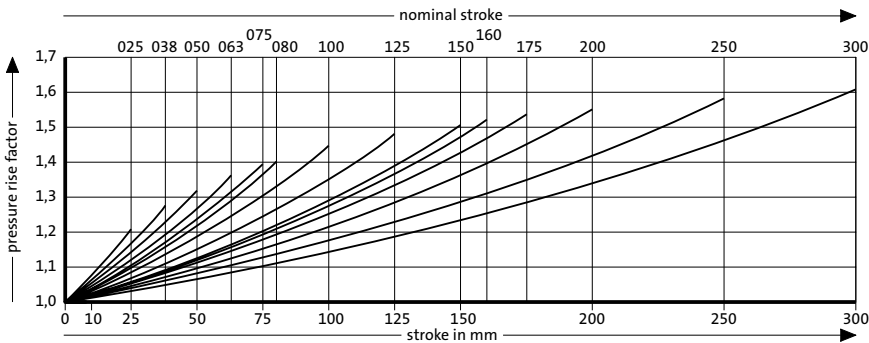
2488.13.04200.
Gas spring HEAVY DUTY

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

Initial spring force
versus charge pressure



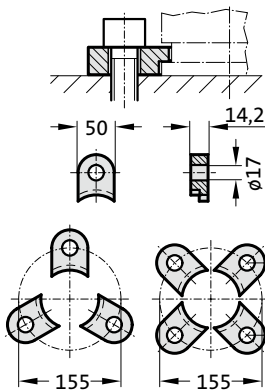
Spring force Diagram displacement versus stroke rise



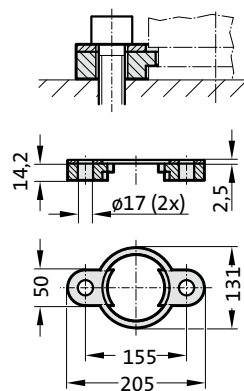
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

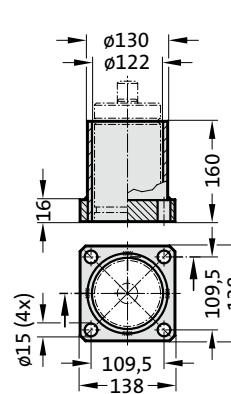
2480.007.05000



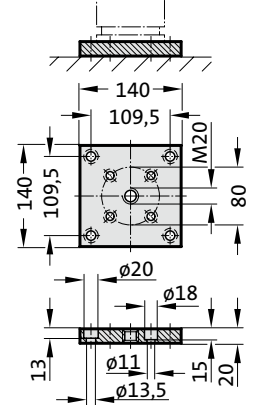
2480.008.05000³⁾



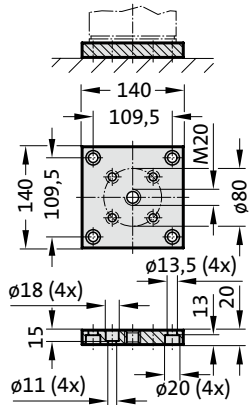
2480.010.05000.160³⁾



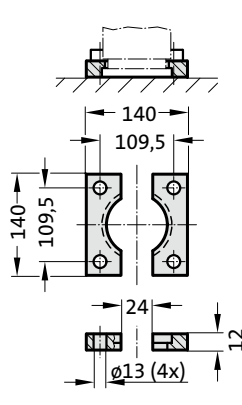
2480.011.05000



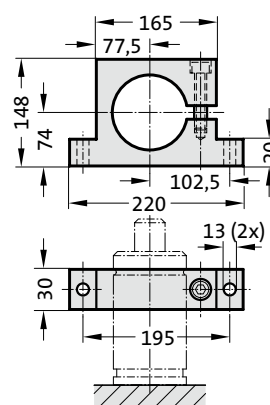
2480.011.05000.2



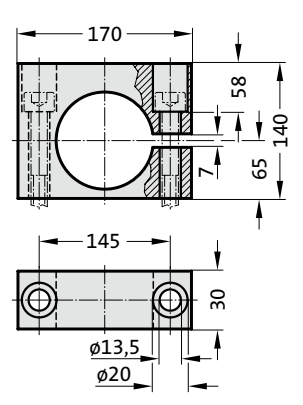
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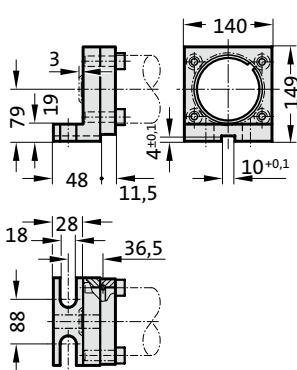
2480.044.05000²⁾



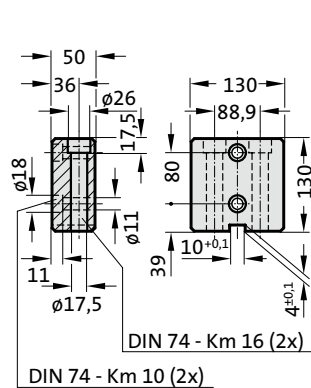
2480.044.03.05000²⁾



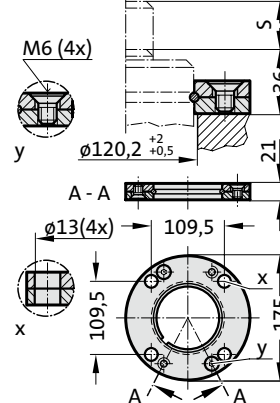
2480.045.05000²⁾



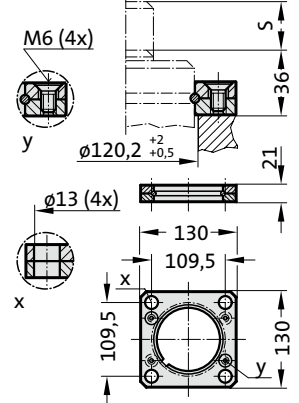
2480.047.05000²⁾



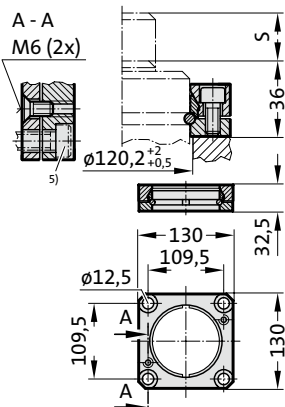
2480.055.05000



2480.057.05000



2480.064.05000⁴⁾



Note:

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

GAS SPRING HEAVY DUTY

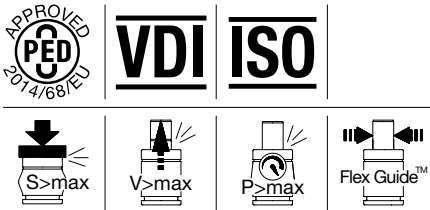
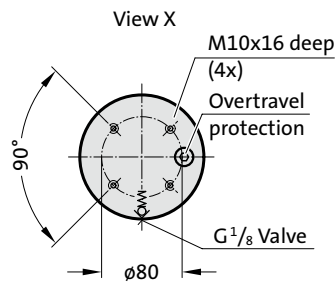
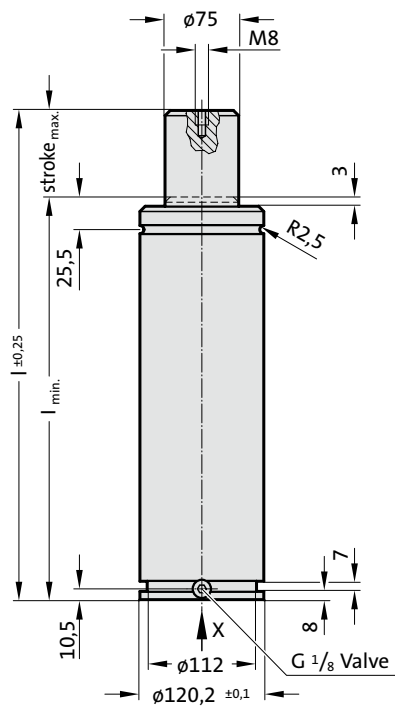
Note:
Initial spring force at 150 bar = 6600 daN

Order No for spare parts kit: 2488.13.06600

Gas spring without valve
Order No (example): 2488.13.06600. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

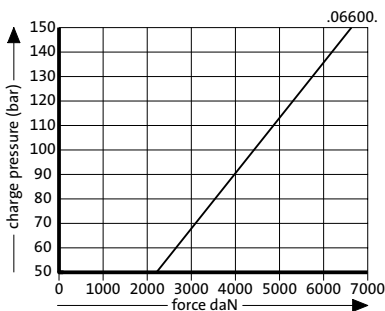
2488.13.06600.



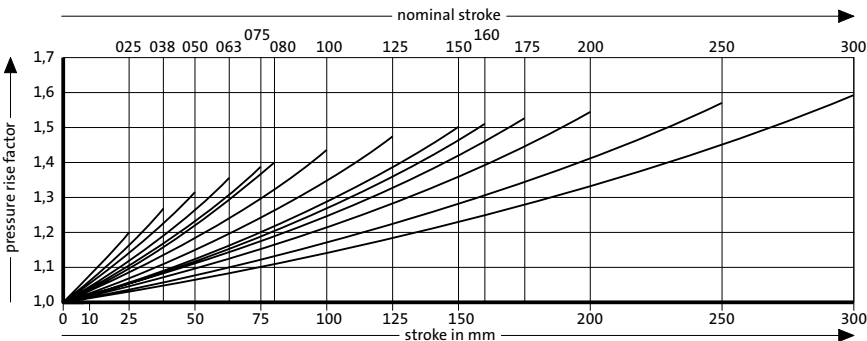
2488.13.06600.
Gas spring HEAVY DUTY

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

Initial spring force
versus charge pressure

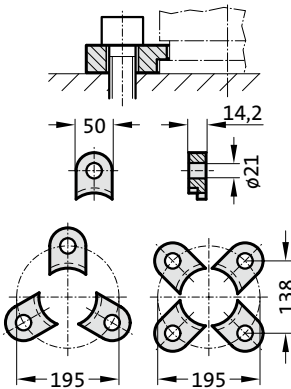
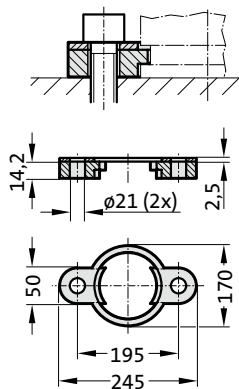
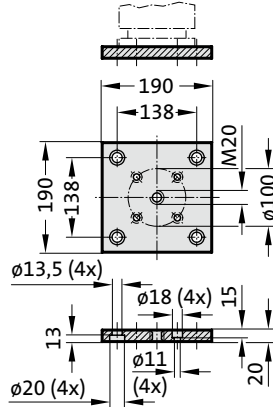
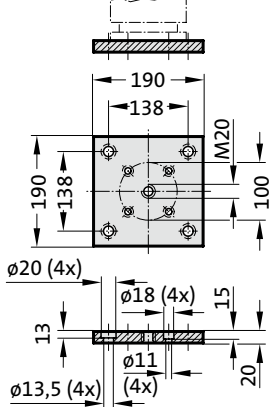
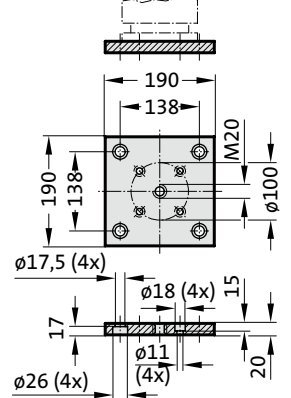
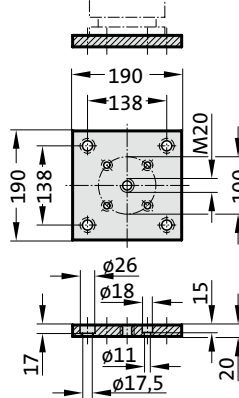
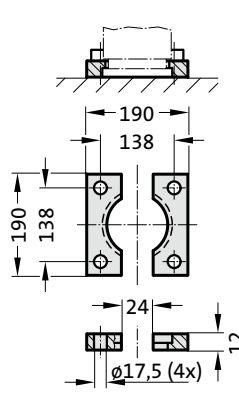
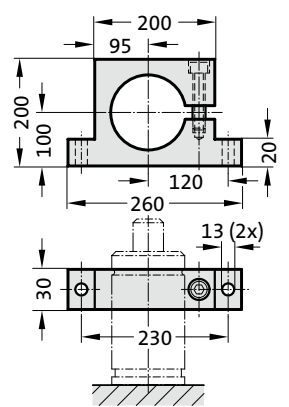
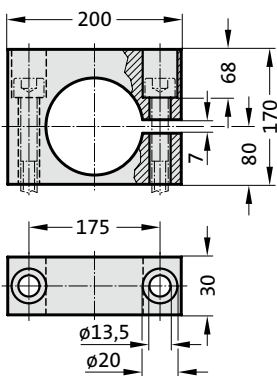
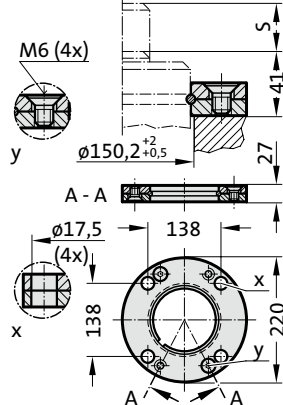
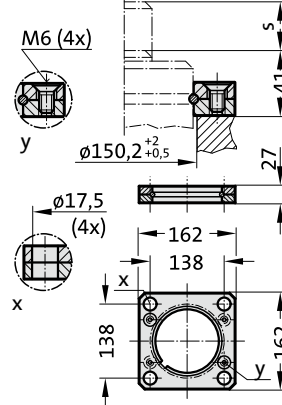
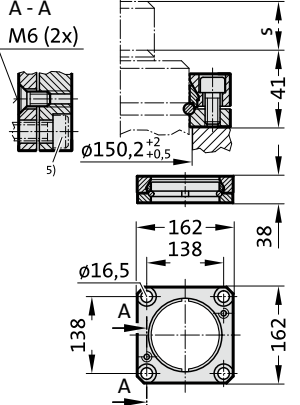


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING HEAVY DUTY

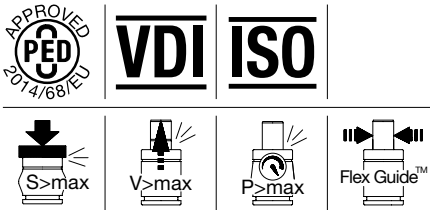
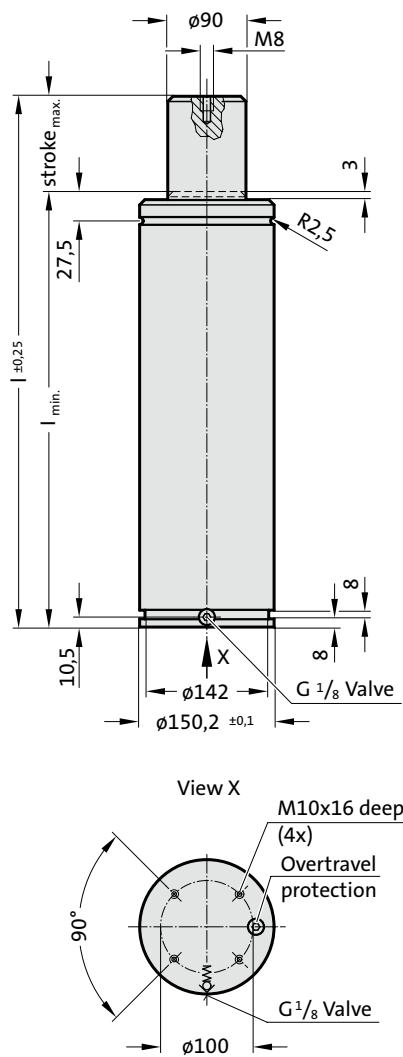
Note:
Initial spring force at 150 bar = 9500 daN

Order No for spare parts kit: 2488.13.09500

Gas spring without valve
Order No (example): 2488.13.09500. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

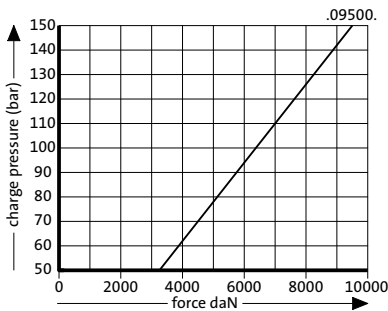
2488.13.09500.



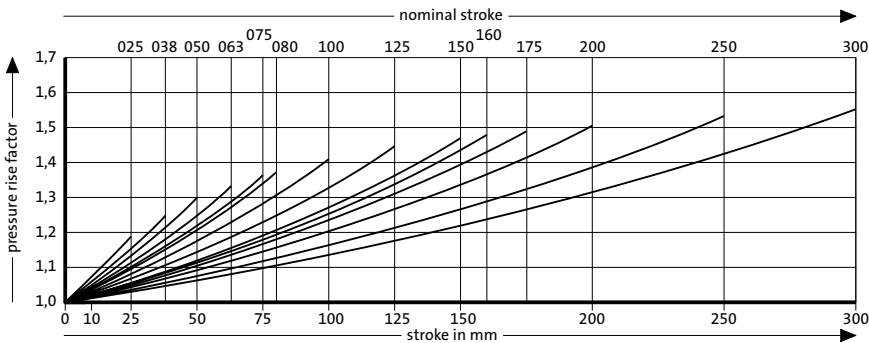
2488.13.09500.
Gas spring HEAVY DUTY

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

Initial spring force
versus charge pressure

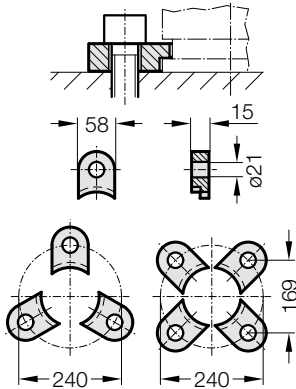
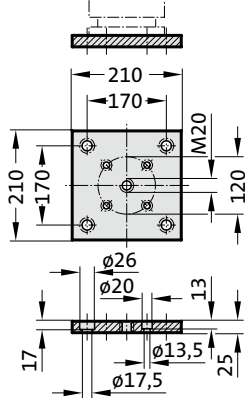
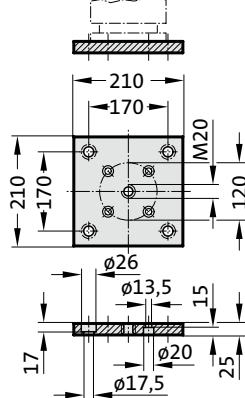
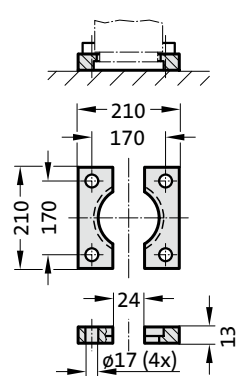
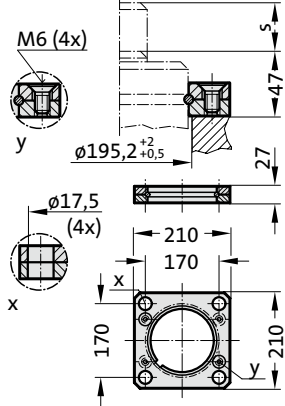


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING HEAVY DUTY MOUNTING VARIATIONS

GAS SPRING HEAVY DUTY

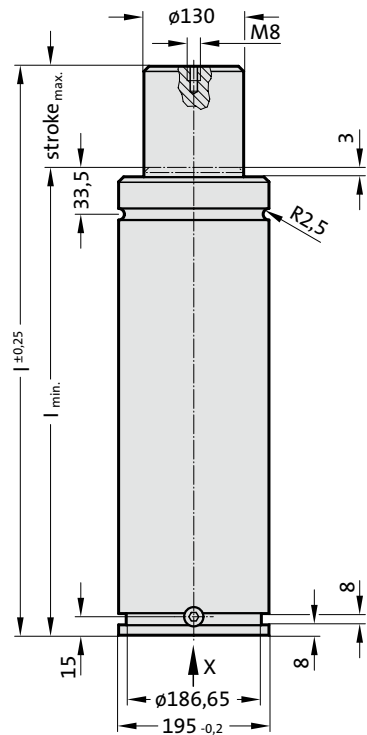
Note:
Initial spring force at 150 bar = 20000 daN

Order No for spare parts kit: 2488.13.20000

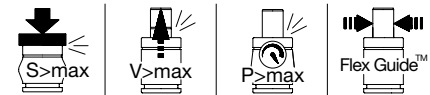
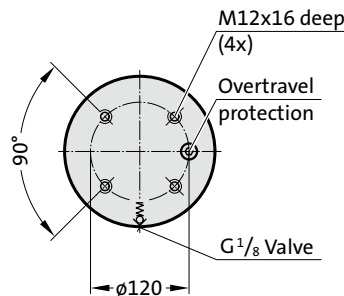
Gas spring without valve
Order No (example): 2488.13.20000. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 15 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

2488.13.20000.



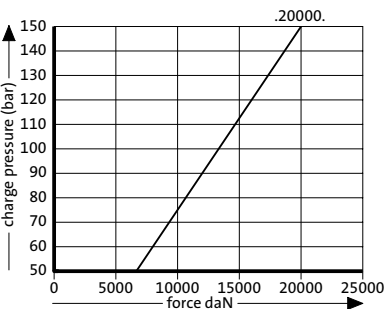
View X



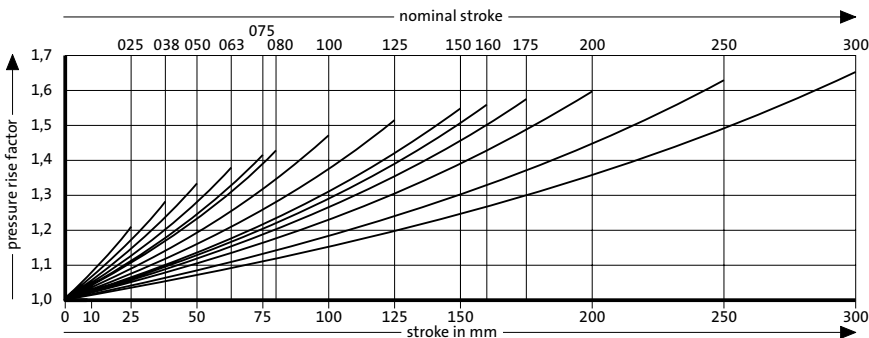
2488.13.20000.
Gas spring HEAVY DUTY

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

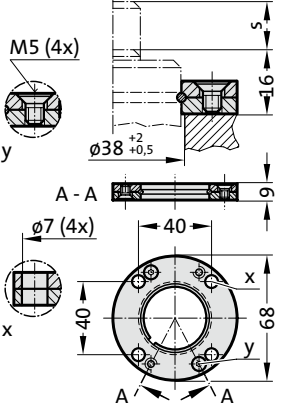
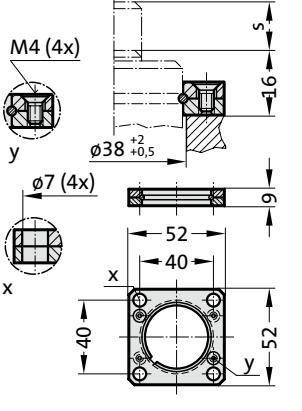


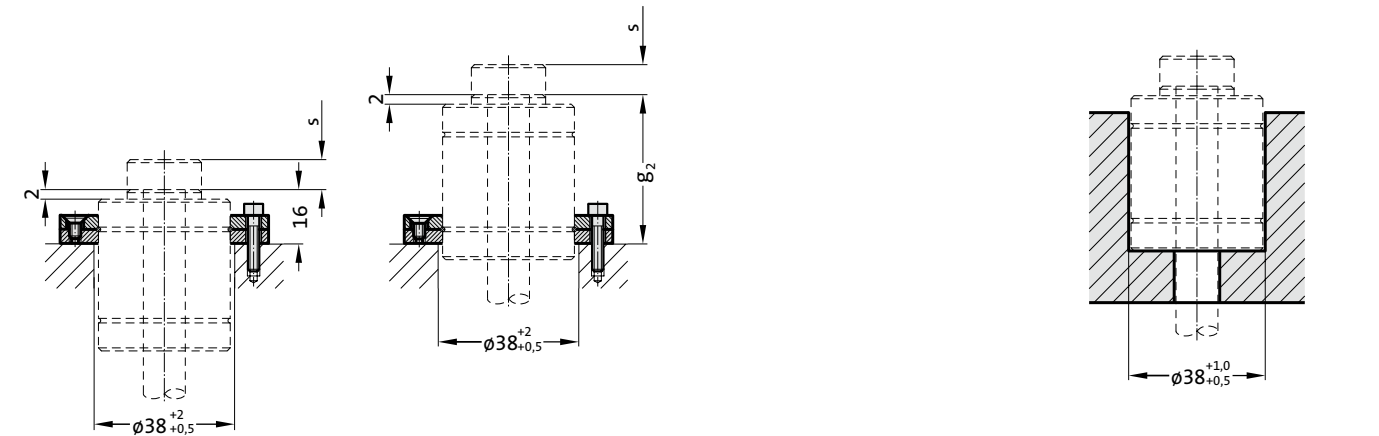
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH THROUGH BORE PASSAGE



GAS SPRING WITH THROUGH BORE PASSAGE MOUNTING VARIATIONS

2480.055.00250   	2480.057.00250   		



GAS SPRING WITH THROUGH BORE PASSAGE

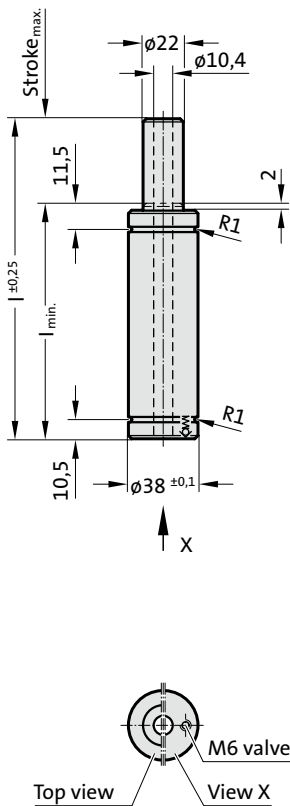
Note:

Initial spring force at 150 bar = 270 daN

Order No for spare parts kit: 2496.12.00270

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

2496.12.00270.



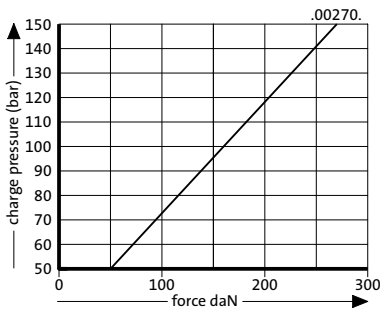
2496.12.00270.

Gas spring with through bore passage

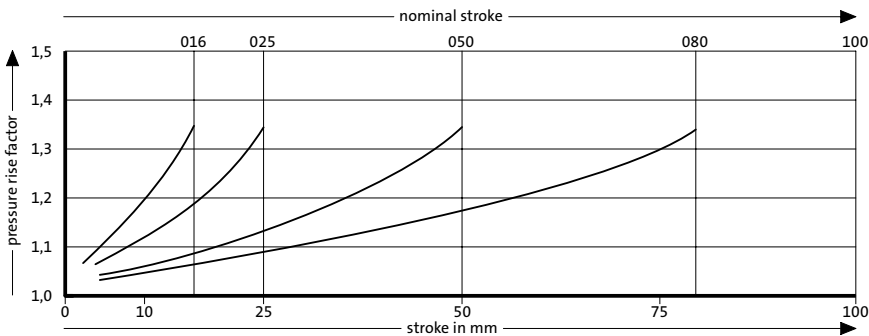
Order No	Stroke _{max.} (s)	$l_{min.}$	l	g_2^*
2496.12.00270.016	16	92	108	86
2496.12.00270.025	25	101	126	95
2496.12.00270.050	50	126	176	120
2496.12.00270.080	80	156	236	150

see mounting example

Initial spring force
versus charge pressure

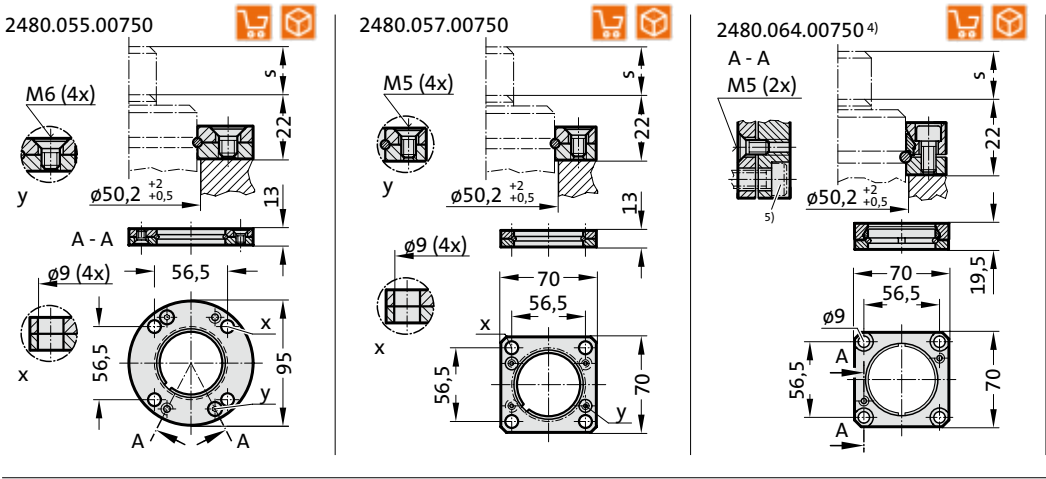


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH THROUGH BORE PASSAGE MOUNTING VARIATIONS

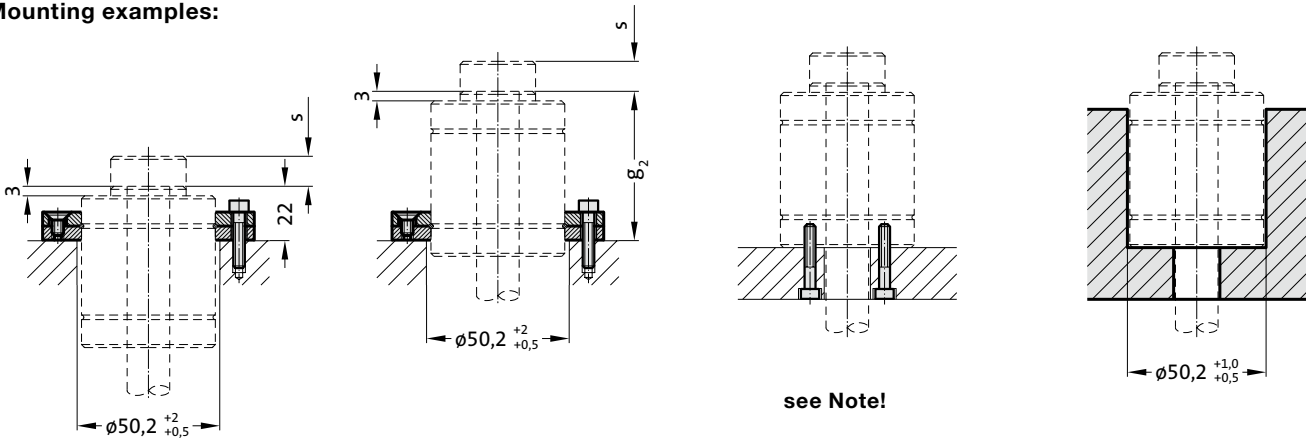


Note:

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

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

Mounting examples:



GAS SPRING WITH THROUGH BORE PASSAGE

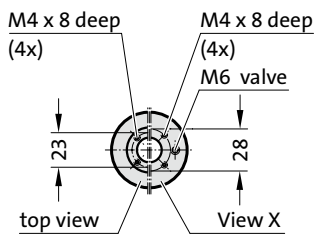
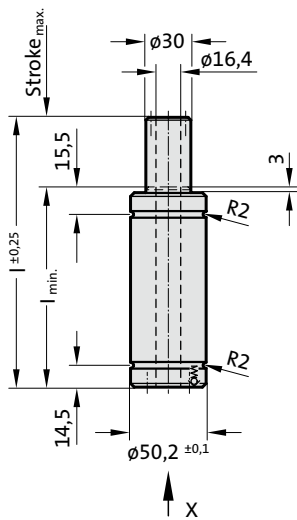
Note:
Initial spring force at 150 bar = 490 daN

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

Order No for spare parts kit: 2496.12.00490

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

2496.12.00490.

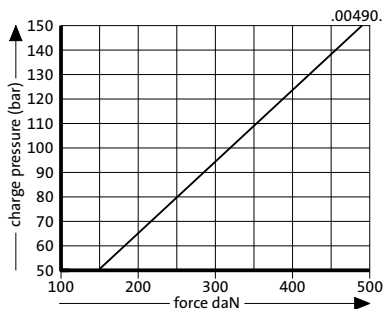


2496.12.00490.
Gas spring with through bore passage

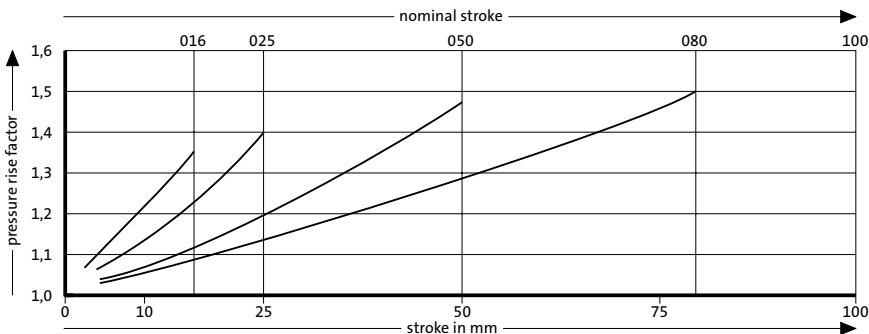
Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2496.12.00490.016	16	96	112	88
2496.12.00490.025	25	105	130	97
2496.12.00490.050	50	130	180	122
2496.12.00490.080	80	160	240	152

see mounting example

Initial spring force
versus charge pressure

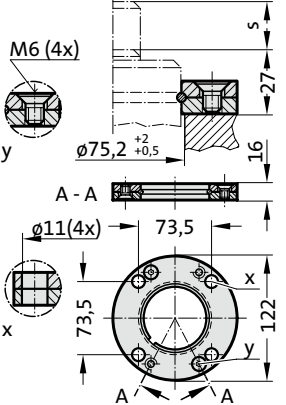
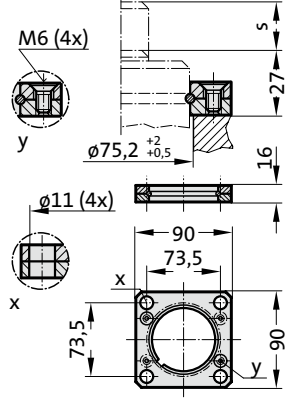
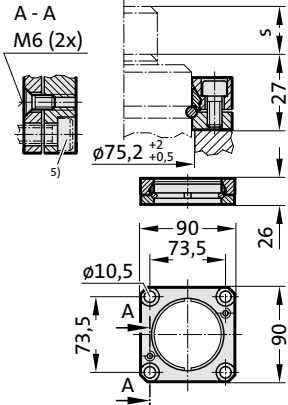


Spring force Diagram displacement versus stroke rise

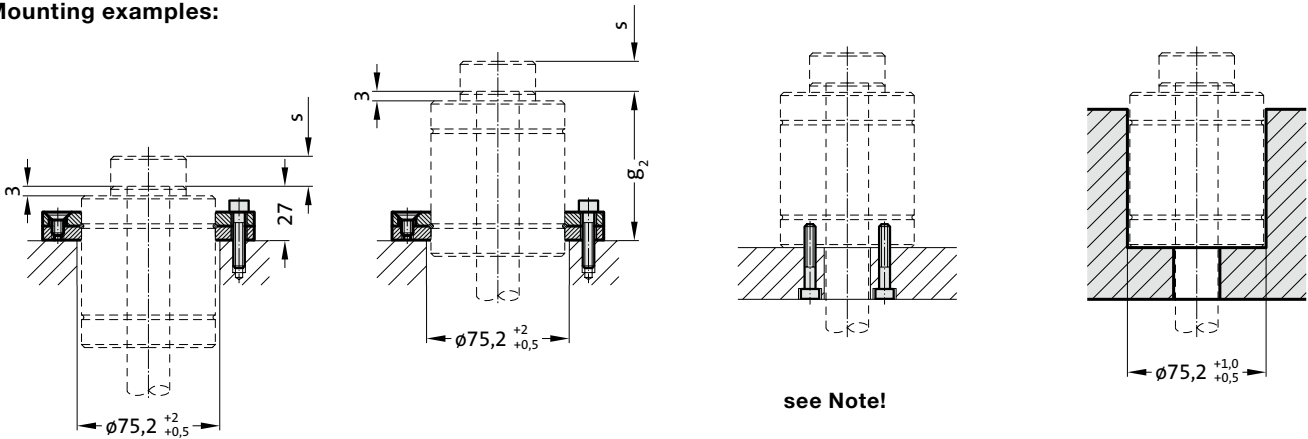


Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH THROUGH BORE PASSAGE MOUNTING VARIATIONS

2480.055.01500   	2480.057.01500   	2480.064.01500⁴⁾   	
			Note: ⁴⁾ Square collar flange, non-rotating, fixing for composite connection. ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

Mounting examples:



GAS SPRING WITH THROUGH BORE PASSAGE

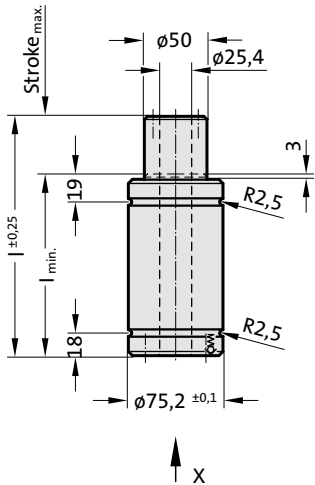
Note:
Initial spring force at 150 bar = 1060 daN

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

Order No for spare parts kit: 2496.12.01060

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

2496.12.01060.

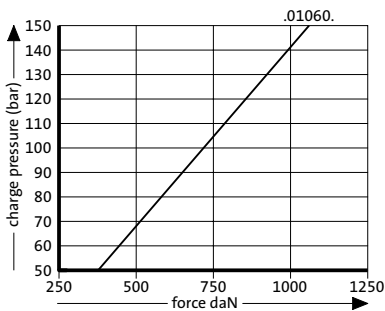


2496.12.01060.
Gas spring with through bore passage

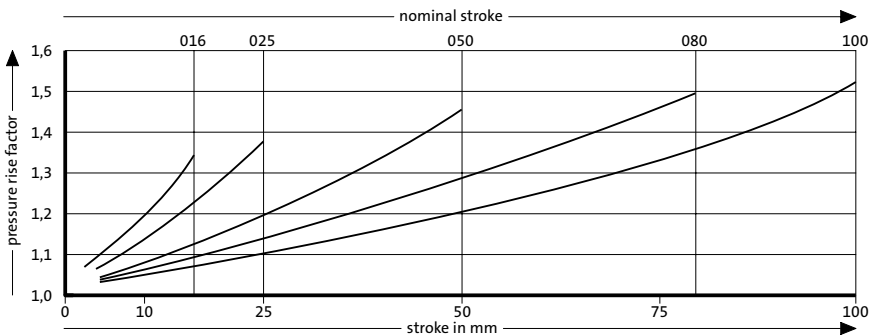
Order No	Stroke _{max.} (s)	$l_{min.}$	l	g_2^*
2496.12.01060.016	16	106	122	96
2496.12.01060.025	25	115	140	105
2496.12.01060.050	50	140	190	130
2496.12.01060.080	80	170	250	160
2496.12.01060.100	100	190	290	180

see mounting example

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

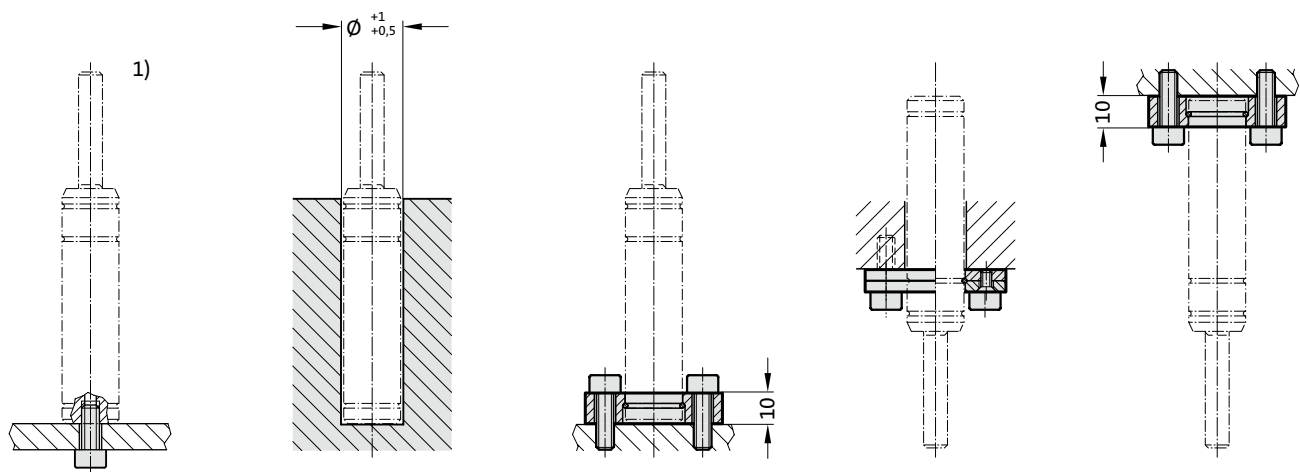
GAS SPRINGS POWERLINE



GAS SPRING POWERLINE MOUNTING VARIATIONS

2480.051.01.00030	2480.051.03.00030	2480.052.00030

Mounting examples:



GAS SPRING POWERLINE

Note:

Initial spring force at 180 bar = 170 daN

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

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

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

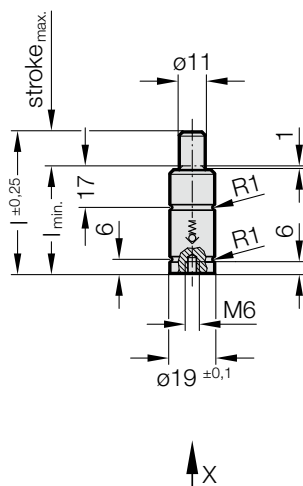
Working temperature: 0°C to +80°C

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

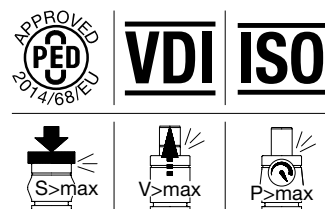
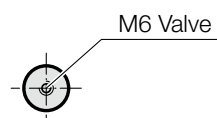
Max. recommended extensions per minute:
approx. 40 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.00170.



View X

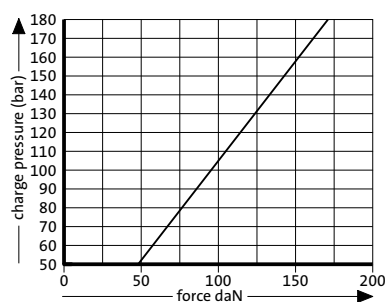


2487.12.00170.

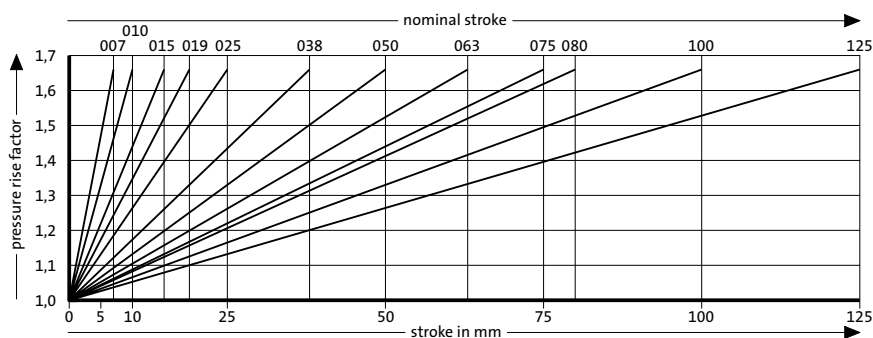
Gas spring POWERLINE

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

Initial spring force versus charge pressure



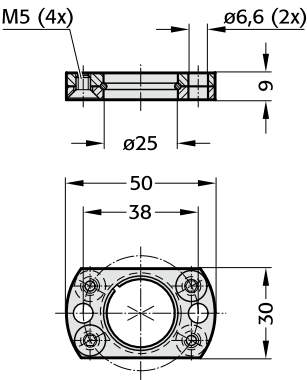
Spring force Diagram displacement versus stroke rise



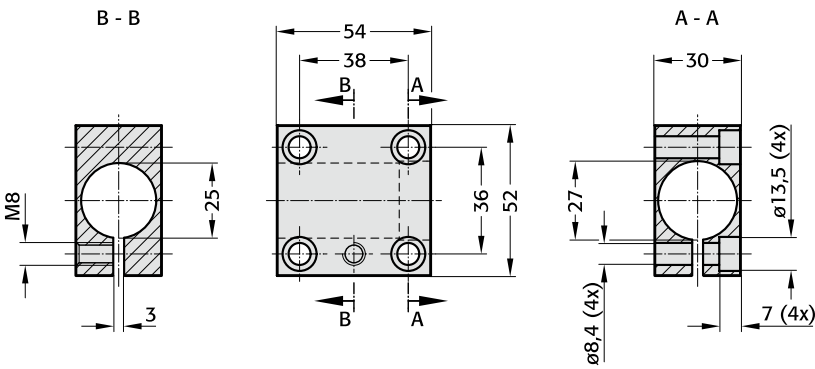
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

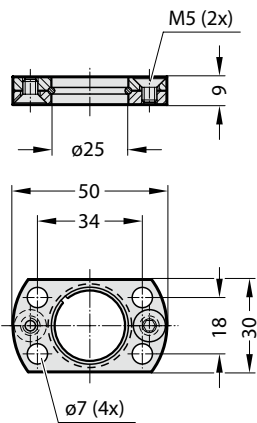
2480.051.00150



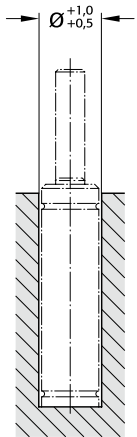
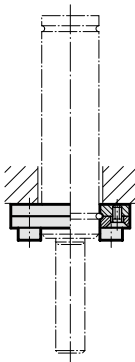
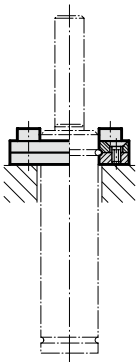
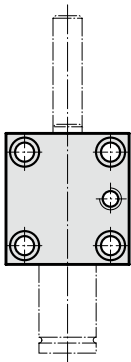
2480.053.00150



2480.054.00150



Mounting examples:



GAS SPRING POWERLINE

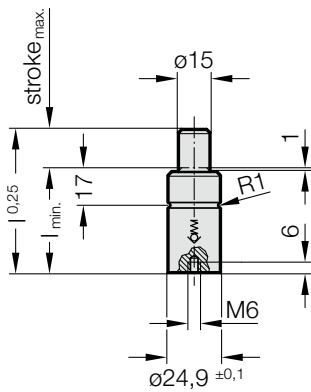
Note:

Initial spring force at 180 bar = 320 daN

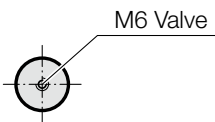
Worn gas springs cannot be repaired, they have to be replaced completely.

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

2487.12.00320.



View X

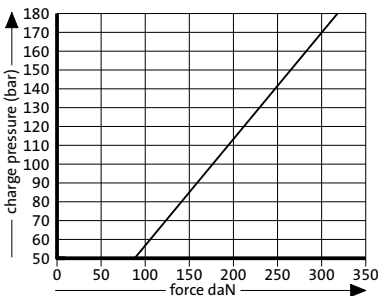


2487.12.00320.

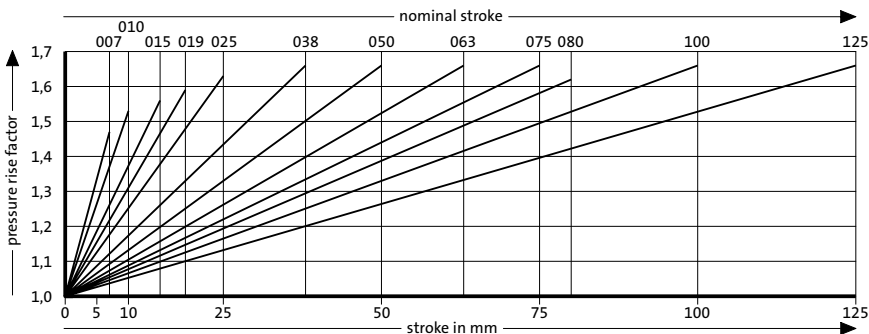
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.00320.007	7	37	44
2487.12.00320.010	10	40	50
2487.12.00320.015	15	45	60
2487.12.00320.019	19	49	68
2487.12.00320.025	25	55	80
2487.12.00320.038	38	68	106
2487.12.00320.050	50	80	130
2487.12.00320.063	63	93	156
2487.12.00320.075	75	110	185
2487.12.00320.080	80	115	195
2487.12.00320.100	100	135	235
2487.12.00320.125	125	160	285

Initial spring force
versus charge pressure



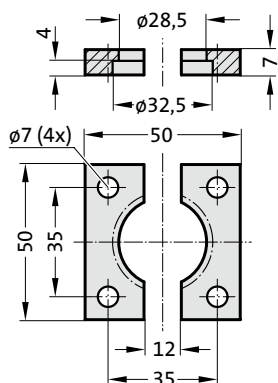
Spring force Diagram displacement versus stroke rise



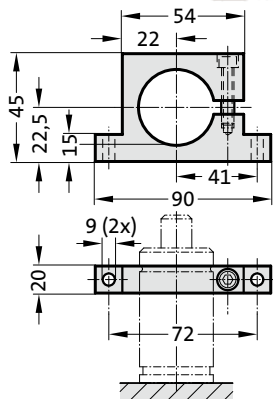
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

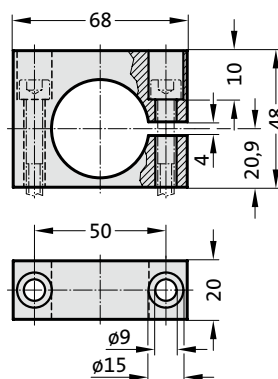
2480.022.00150



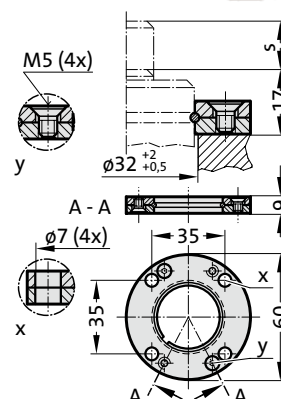
2480.044.00150²⁾



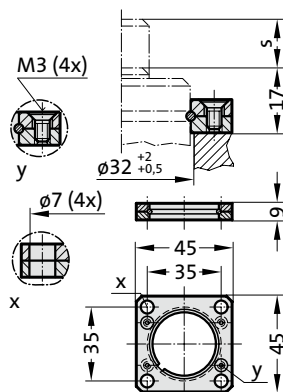
2480.044.03.00150²⁾



2480.055.00150



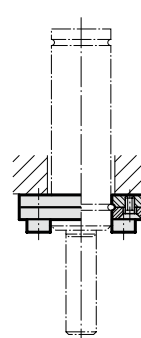
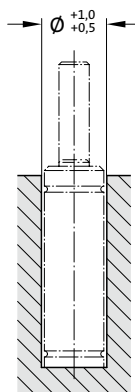
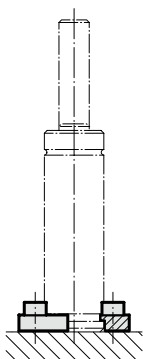
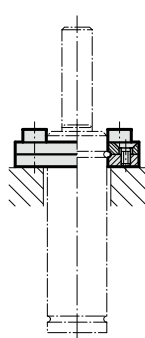
2480.057.00150



Note:

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

Mounting examples:



GAS SPRING POWERLINE

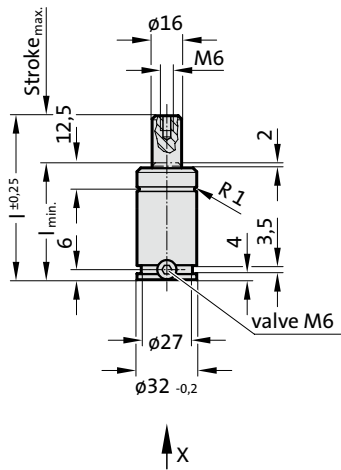
Note:
Initial spring force at 180 bar = 350 daN

Order No for spare parts kit: 2487.12.00350

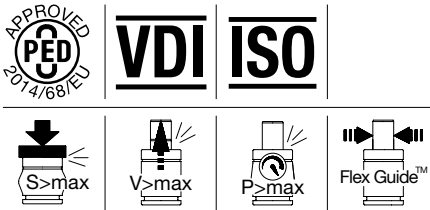
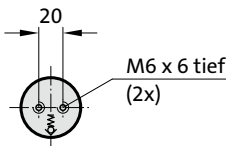
Gas spring without valve
Order No (example): 2487.12.00350. .P

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

2487.12.00350.



View X

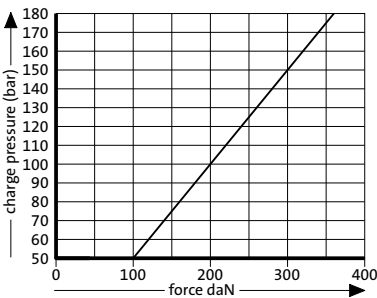


2487.12.00350.

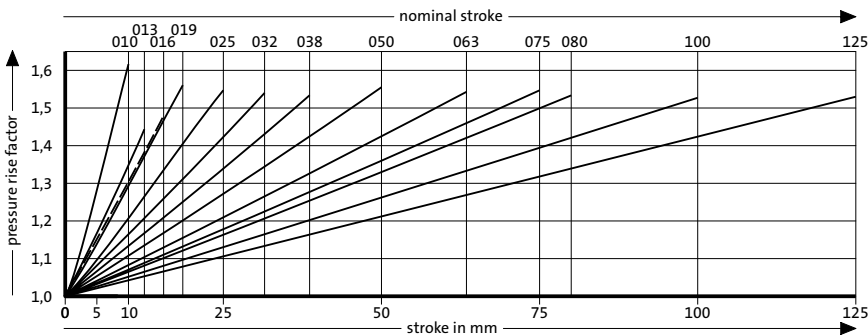
Gas spring POWERLINE

Order No	Stroke _{max} (s)	I _{min}	I
2487.12.00350.010	10	40	50
2487.12.00350.013	13	43	56
2487.12.00350.016	16	46	62
2487.12.00350.019	19	49	68
2487.12.00350.025	25	55	80
2487.12.00350.032	32	62	94
2487.12.00350.038	38	68	106
2487.12.00350.050	50	80	130
2487.12.00350.063	63	93	156
2487.12.00350.075	75	105	180
2487.12.00350.080	80	110	190
2487.12.00350.100	100	130	230
2487.12.00350.125	125	155	280

Initial spring force
versus charge pressure

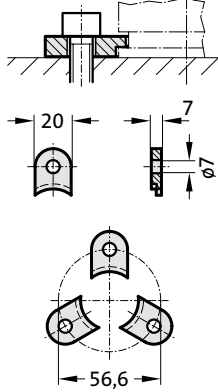
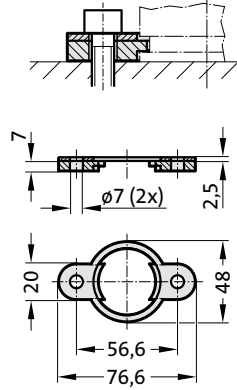
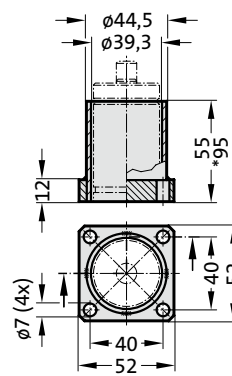
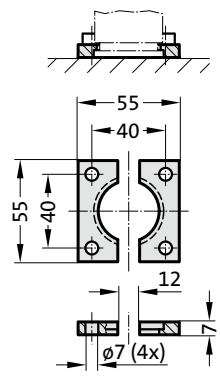
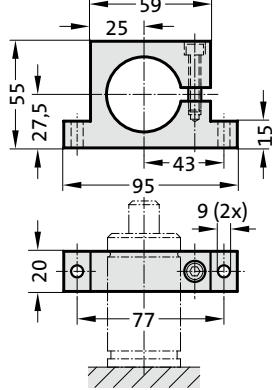
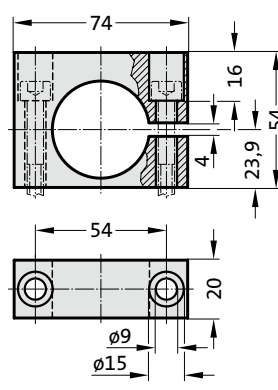
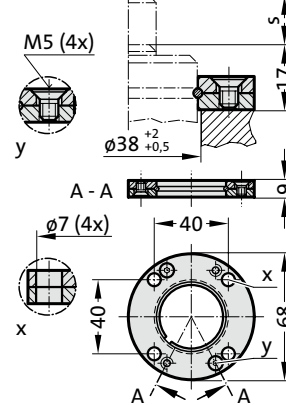
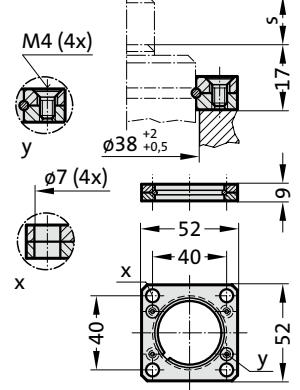


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

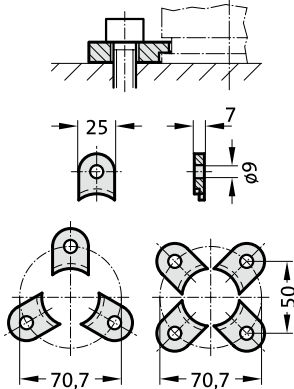


 






2) Attention:
The spring force must be absorbed by the stop Surface!

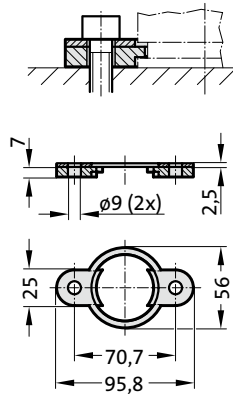
3) Not for use with composite connection.

GAS SPRING POWERLINE MOUNTING VARIATIONS

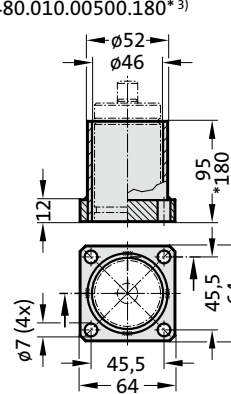
2480.007.00500



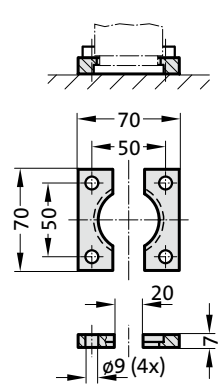
2480.008.00500³⁾



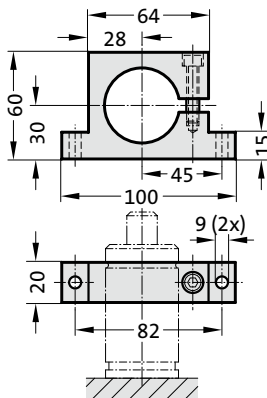
2480.010.00500.095³⁾
2480.010.00500.180^{*3)}



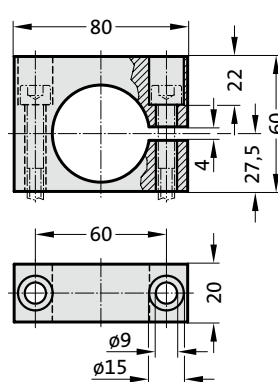
2480.022.00500



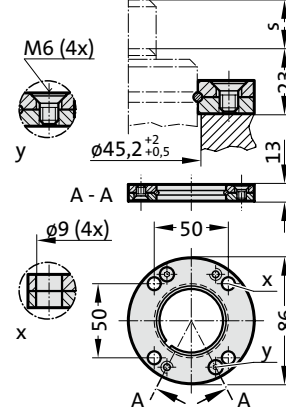
2480.044.00500²⁾



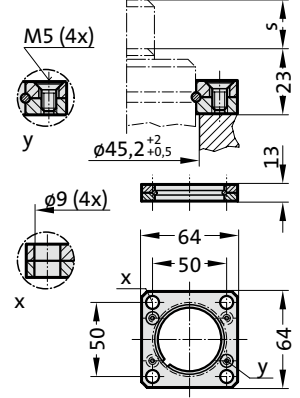
2480.044.03.00500²⁾



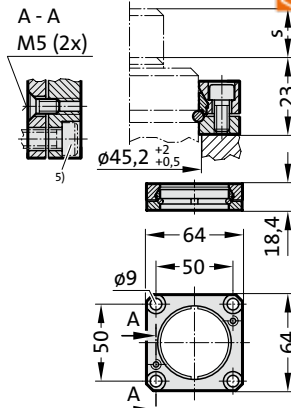
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾



Note:

²⁾ Attention:

The spring force must be absorbed by the stop Surface!

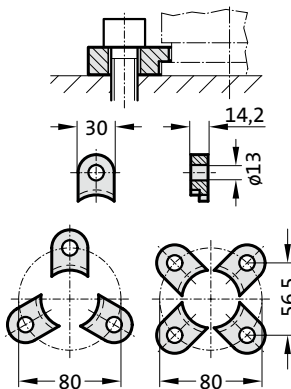
³⁾ Not for use with composite connection.

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

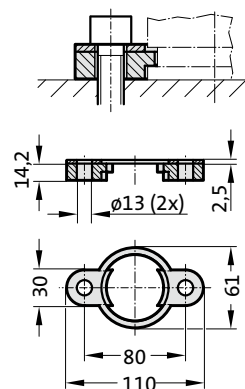
⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE MOUNTING VARIATIONS

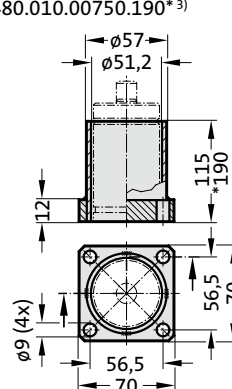
2480.007.00750



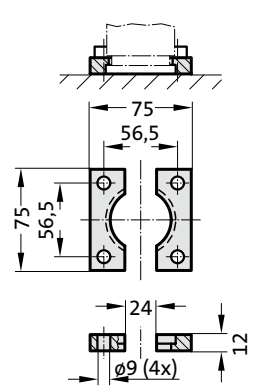
2480.008.00750³⁾



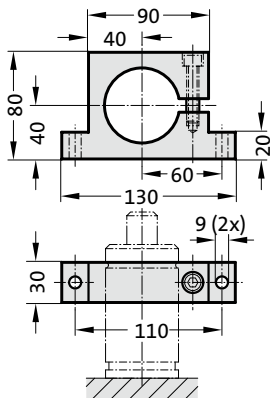
2480.010.00750.115³⁾
2480.010.00750.190^{*3)}



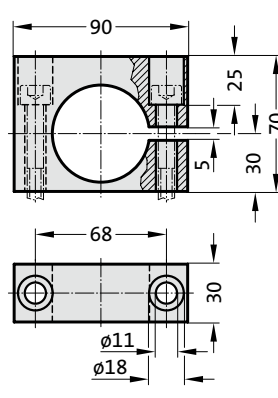
2480.022.00750



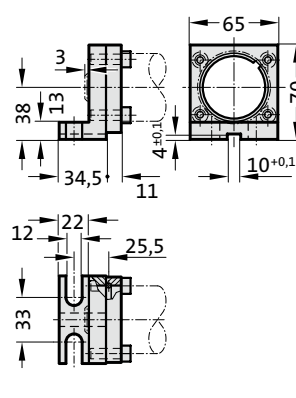
2480.044.00750²⁾



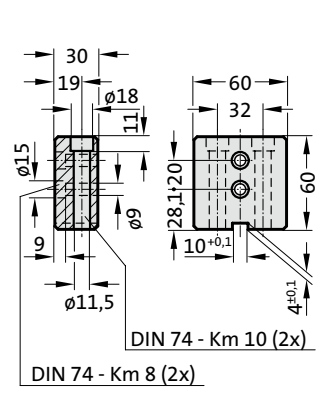
2480.044.03.00750²⁾



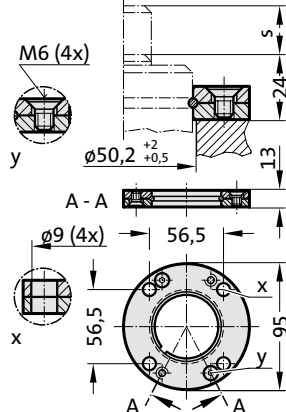
2480.045.00750²⁾



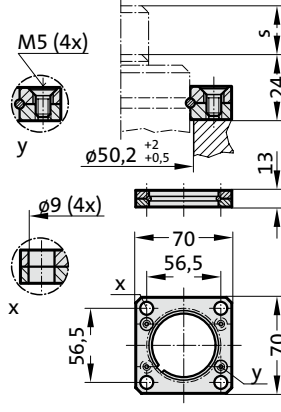
2480.047.00750²⁾



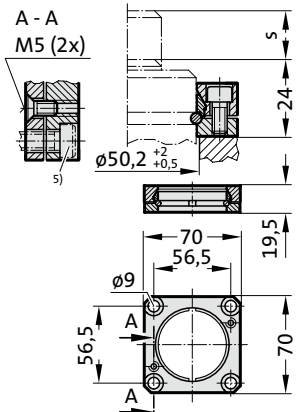
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

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

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 920 daN

Order No for spare parts kit: 2487.12.01000

Gas spring without valve

Order No (example): 2487.12.01000. .1.P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

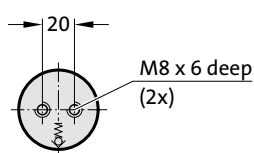
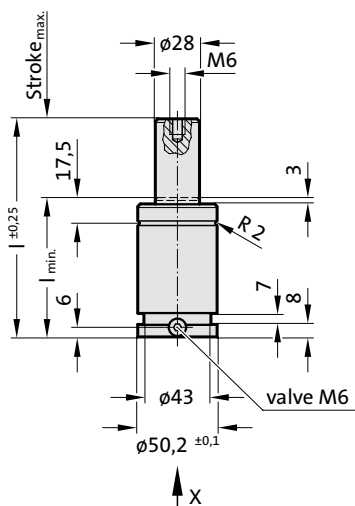
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.01000..1

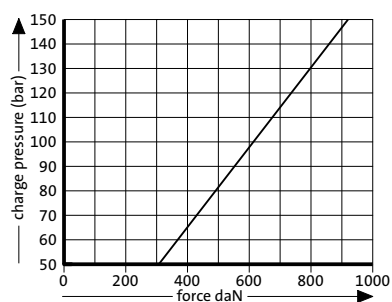


2487.12.01000..1

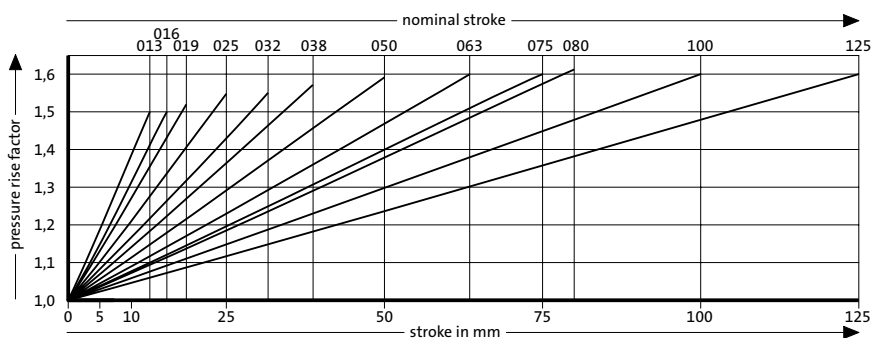
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	t_{min}	l
2487.12.01000.013.1	13	51	64
2487.12.01000.016.1	16	54	70
2487.12.01000.019.1	19	57	76
2487.12.01000.025.1	25	63	88
2487.12.01000.032.1	32	70	102
2487.12.01000.038.1	38	76	114
2487.12.01000.050.1	50	88	138
2487.12.01000.063.1	63	101	164
2487.12.01000.075.1	75	113	188
2487.12.01000.080.1	80	118	198
2487.12.01000.100.1	100	138	238
2487.12.01000.125.1	125	163	288

Initial spring force versus charge pressure



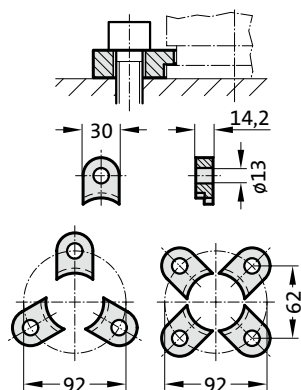
Spring force Diagram displacement versus stroke rise



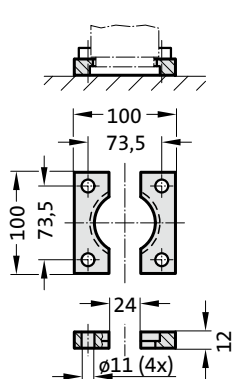
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

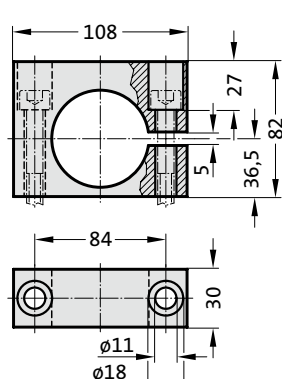
2480.007.01000



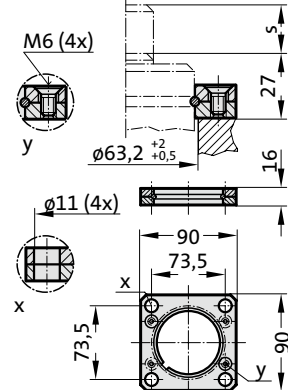
2480.022.01000



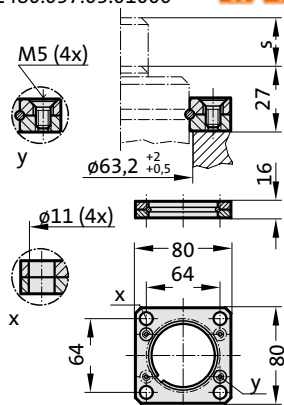
2480.044.03.01000²⁾



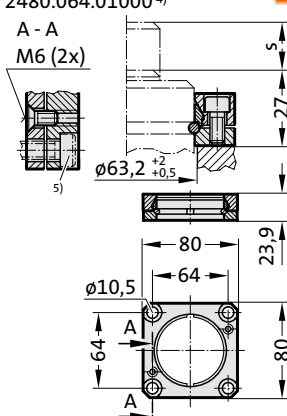
2480.057.01000



2480.057.03.01000



2480.064.01000⁴⁾



Note:

²⁾ Attention:

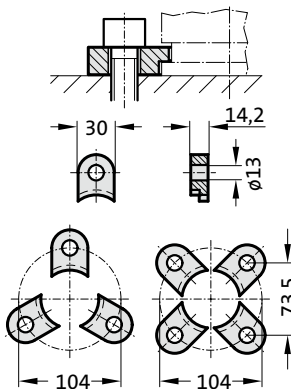
The spring force must be absorbed by the stop Surface!

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

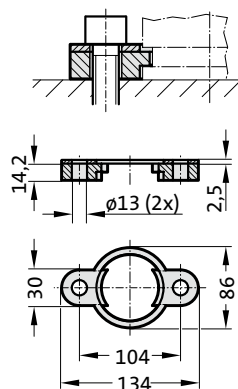
⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE MOUNTING VARIATIONS

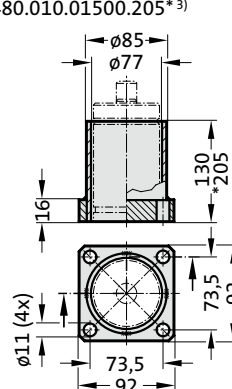
2480.007.01500



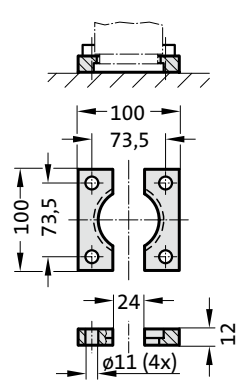
2480.008.01500³⁾



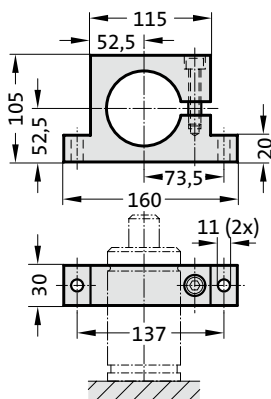
2480.010.01500.130³⁾
2480.010.01500.205³⁾



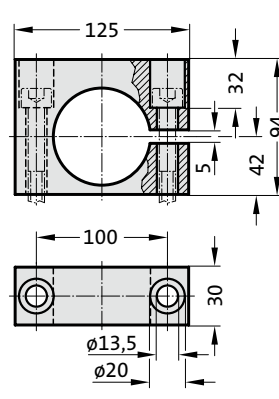
2480.022.01500



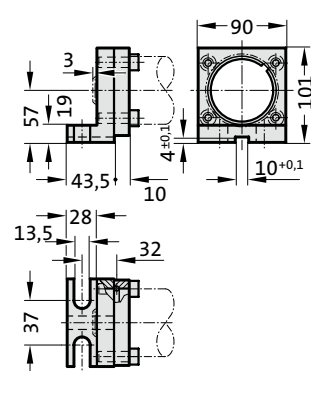
2480.044.01500²⁾



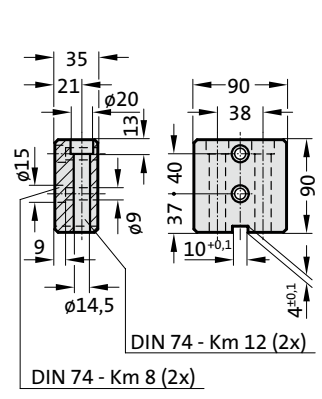
2480.044.03.01500²⁾



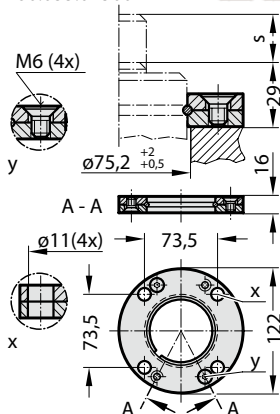
2480.045.01500²⁾



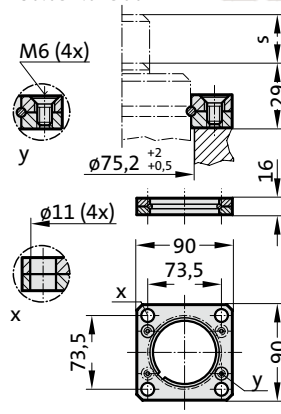
2480.047.01500²⁾



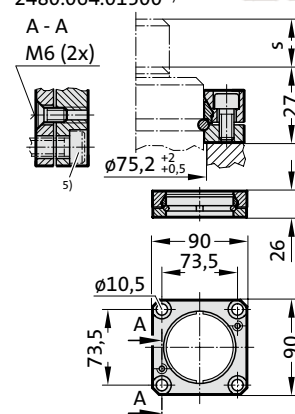
2480.055.01500



2480.057.01500



2480.064.01500⁴⁾



Note:

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

GAS SPRING POWERLINE

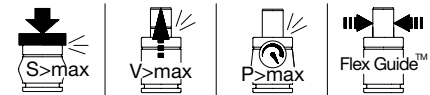
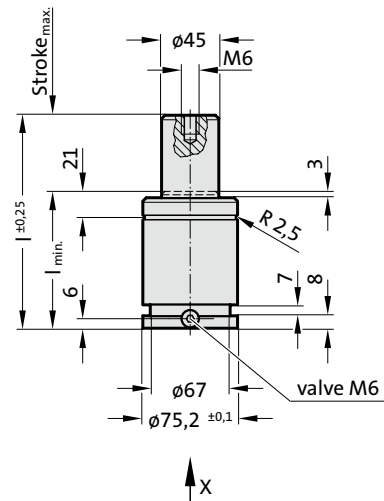
Note:
Initial spring force at 150 bar = 2400 daN

Order No for spare parts kit: 2487.12.02400

Gas spring without valve
Order No (example): 2487.12.02400. .P

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

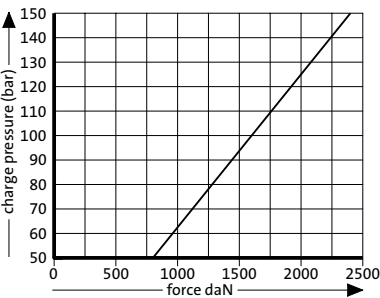
2487.12.02400.



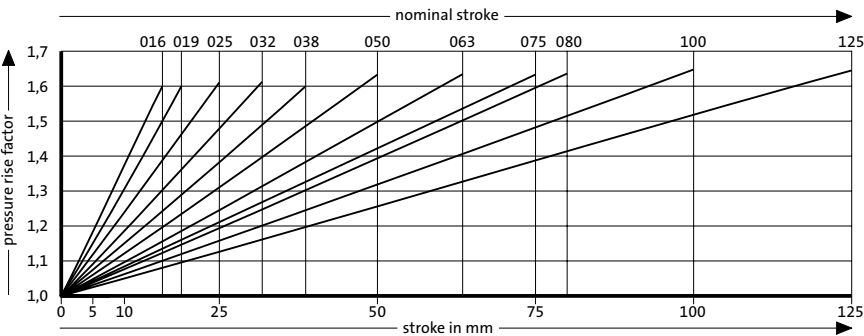
2487.12.02400.
Gas spring POWERLINE

Order No	Stroke _{max.} (s)	l _{min.}	l
2487.12.02400.016	16	61	77
2487.12.02400.019	19	64	83
2487.12.02400.025	25	70	95
2487.12.02400.032	32	77	109
2487.12.02400.038	38	83	121
2487.12.02400.050	50	95	145
2487.12.02400.063	63	108	171
2487.12.02400.075	75	120	195
2487.12.02400.080	80	125	205
2487.12.02400.100	100	145	245
2487.12.02400.125	125	170	295

Initial spring force
versus charge pressure

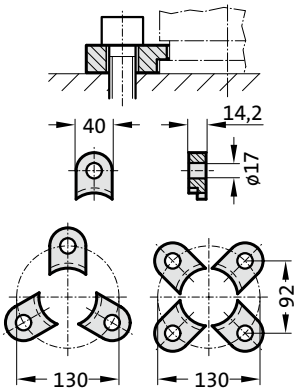
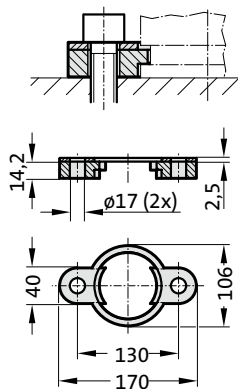
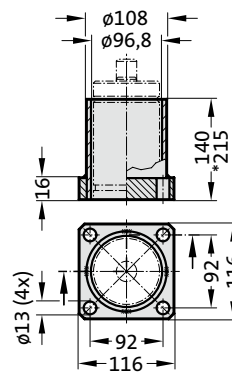
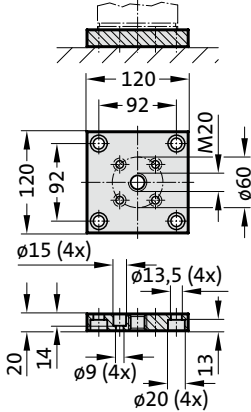
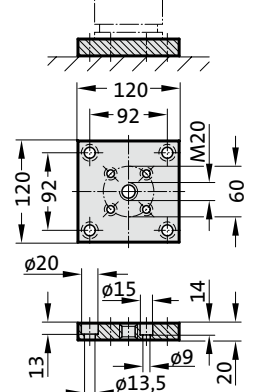
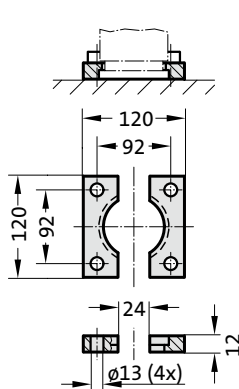
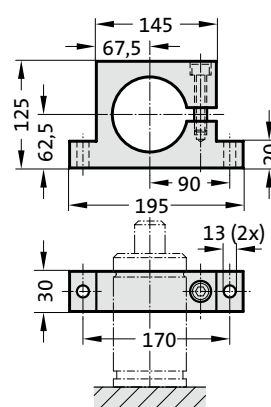
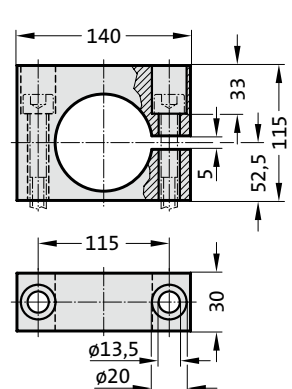
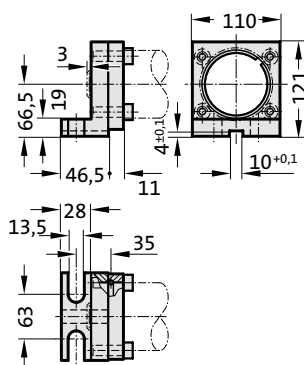
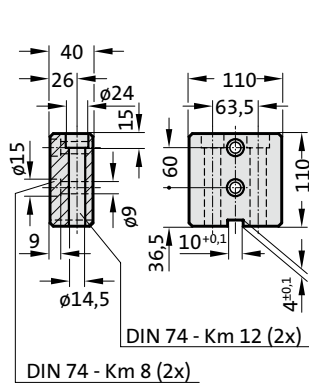
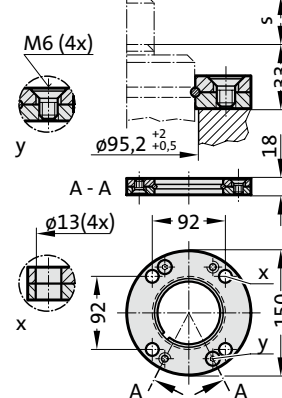
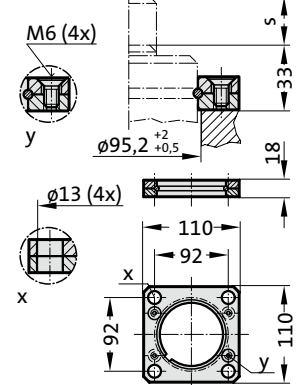
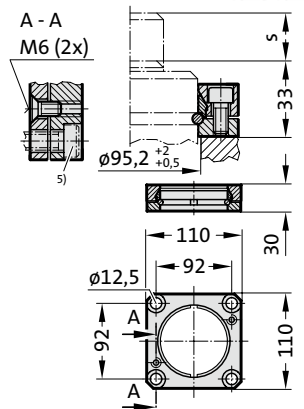


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING POWERLINE

Note:

Initial spring force at 150 bar = 4200 daN

Order No for spare parts kit: 2487.12.04200

Gas spring without valve

Order No (example): 2487.12.04200. .P

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

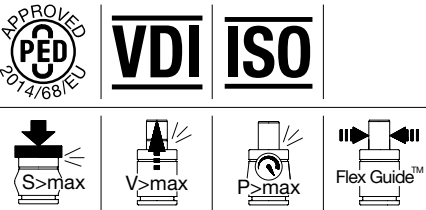
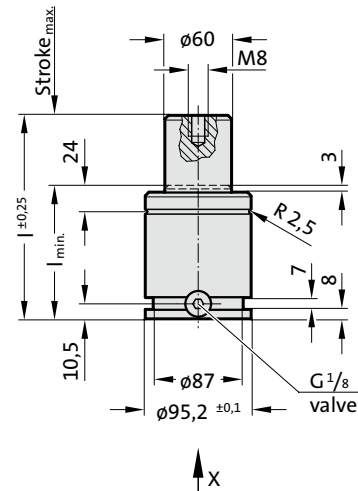
Temperature related force increase: ± 0.3%/°C

Max. recommended extensions per minute:

approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.04200.

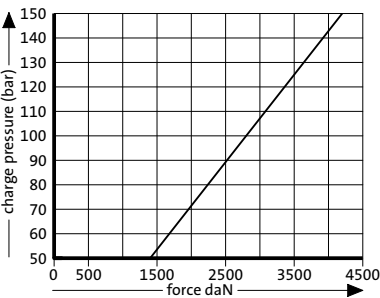


2487.12.04200.

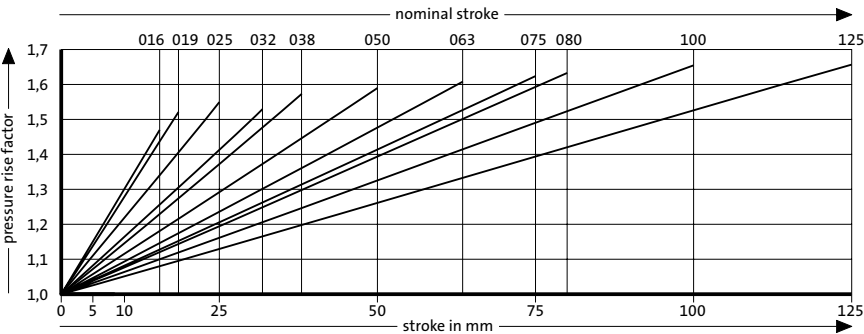
Gas spring POWERLINE

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

Initial spring force
versus charge pressure



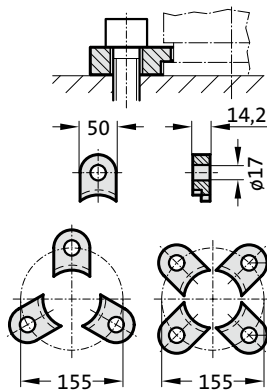
Spring force Diagram displacement versus stroke rise



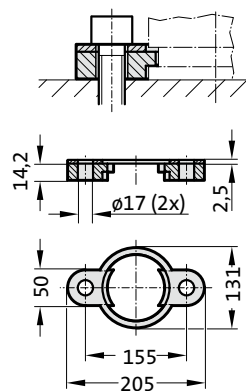
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

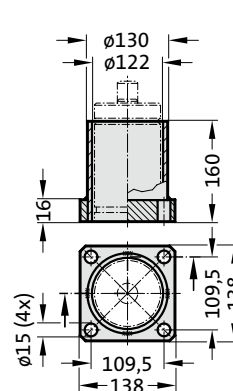
2480.007.05000



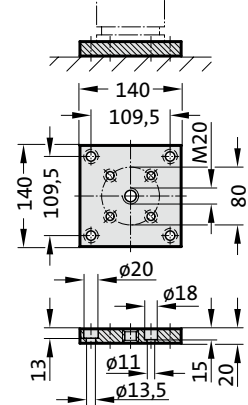
2480.008.05000³⁾



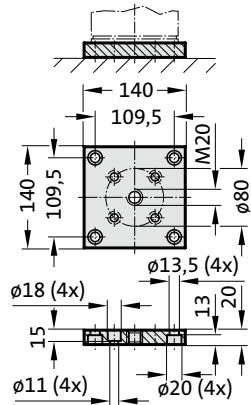
2480.010.05000.160³⁾



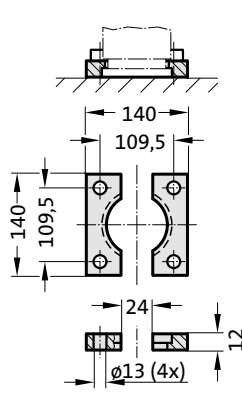
2480.011.05000



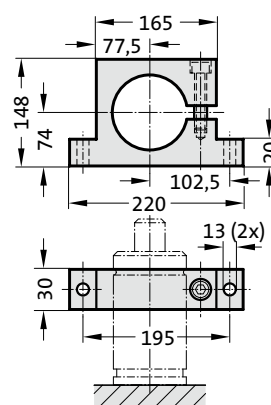
2480.011.05000.2



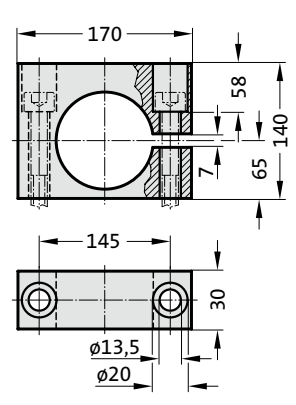
2480.022.05000



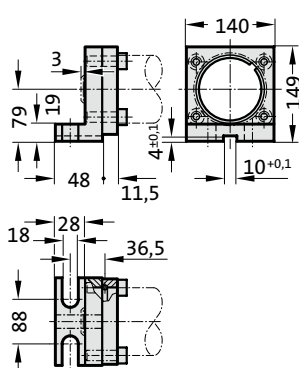
2480.044.05000²⁾



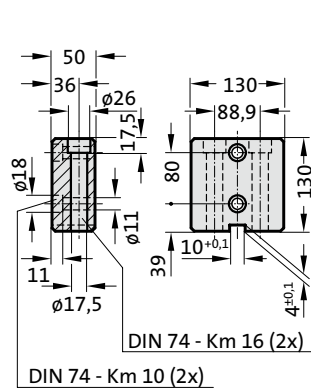
2480.044.03.05000²⁾



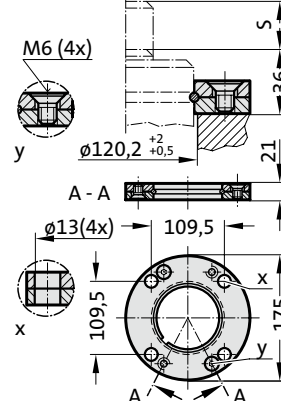
2480.045.05000²⁾



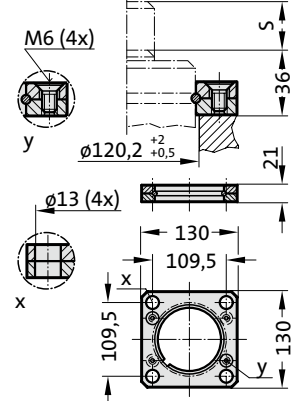
2480.047.05000²⁾



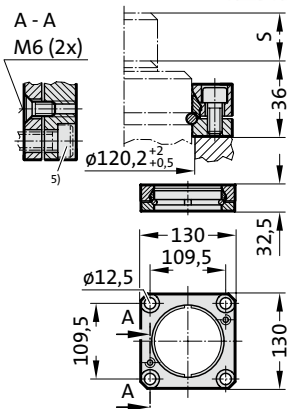
2480.055.05000



2480.057.05000



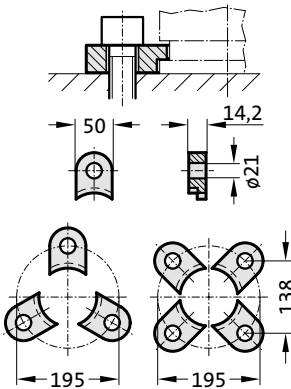
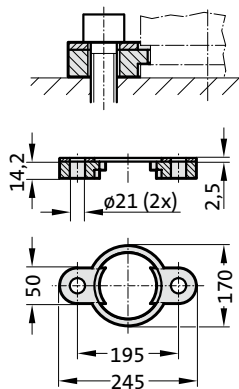
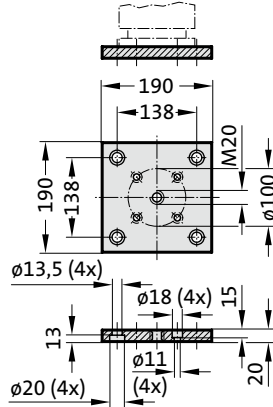
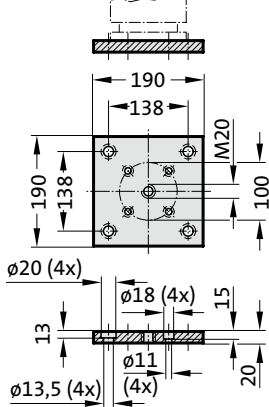
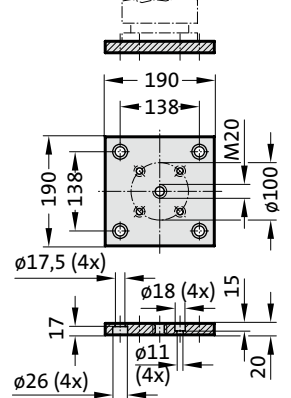
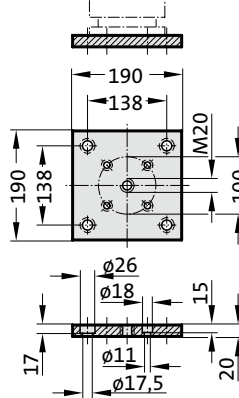
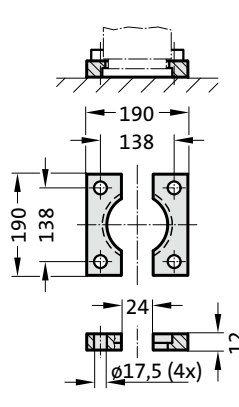
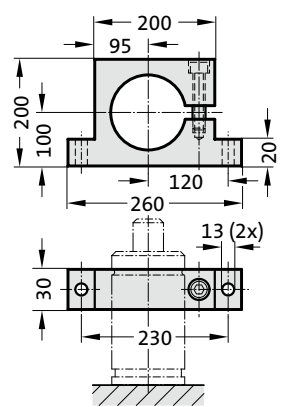
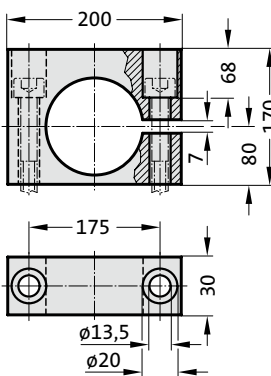
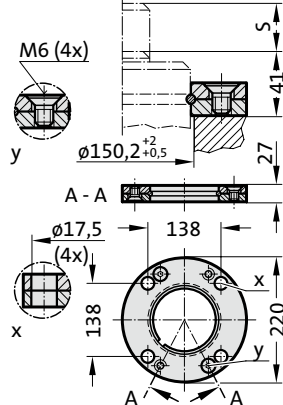
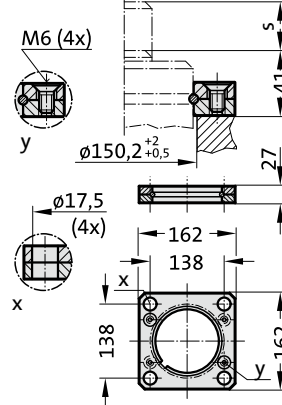
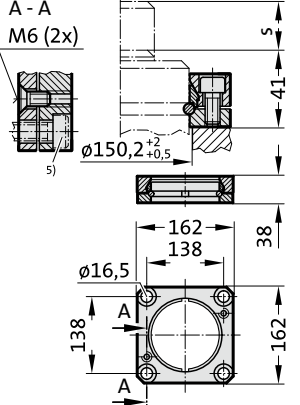
2480.064.05000⁴⁾



Note:

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

GAS SPRING POWERLINE MOUNTING VARIATIONS

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

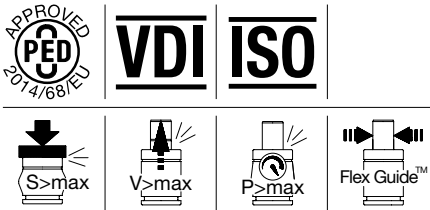
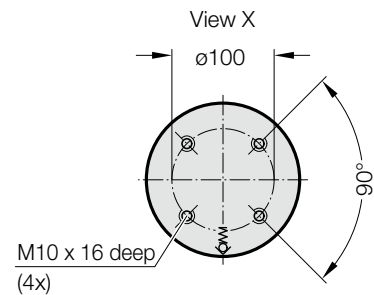
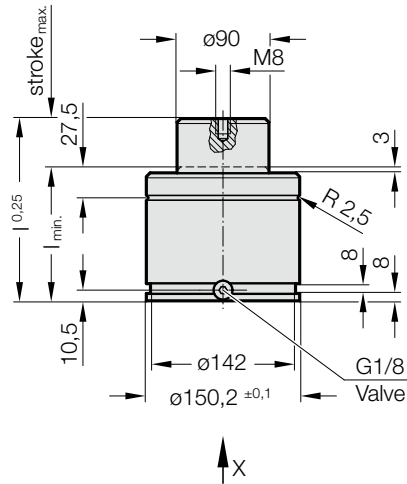
Note:
Initial spring force at 150 bar = 9500 daN

Order No for spare parts kit: 2487.12.09500

Gas spring without valve
Order No (example): 2487.12.09500. .P

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

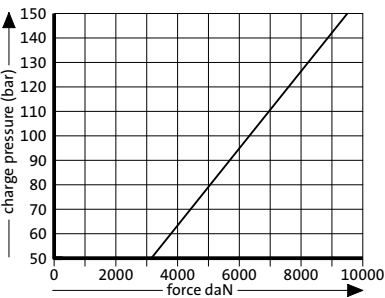
2487.12.09500.



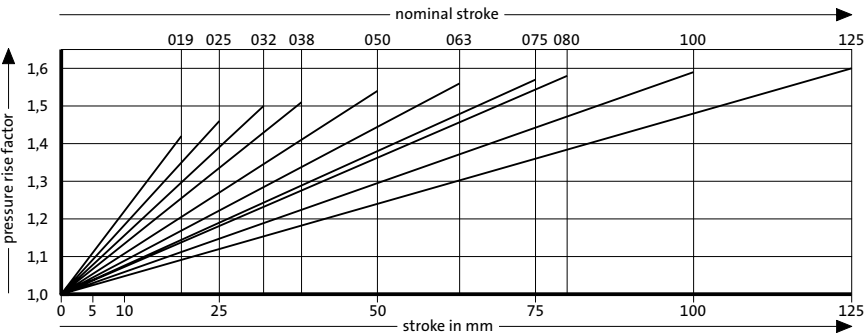
2487.12.09500.
Gas spring POWERLINE

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

Initial spring force
versus charge pressure

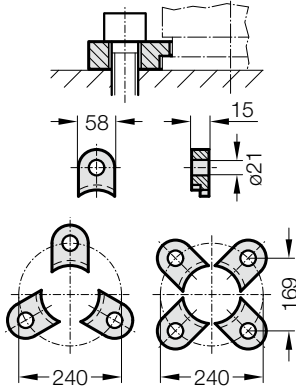
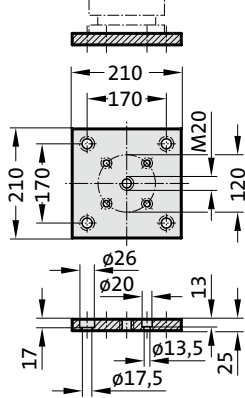
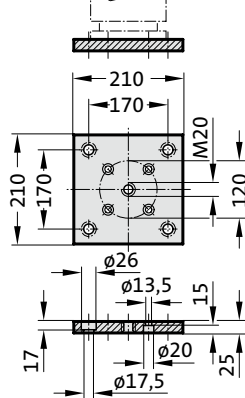
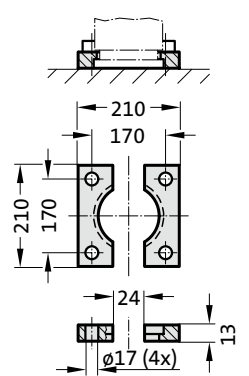
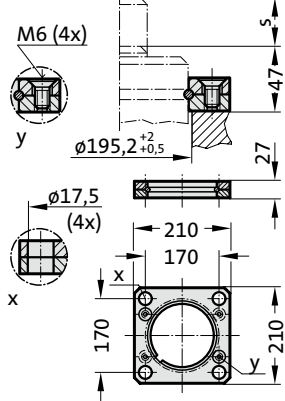


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE MOUNTING VARIATIONS

GAS SPRING POWERLINE

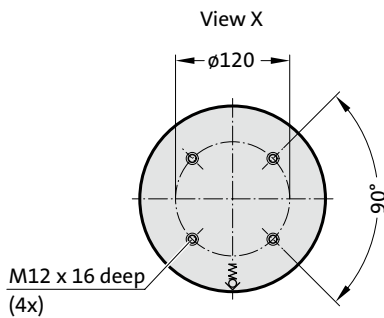
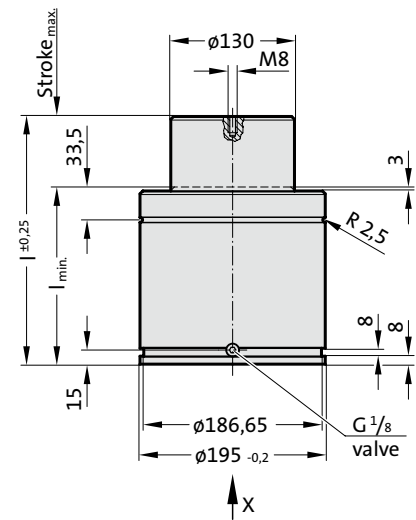
Note:
Initial spring force at 150 bar = 20000 daN

Order No for spare parts kit: 2487.12.20000

Gas spring without valve
Order No (example): 2487.12.20000. .P

Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 10 to 100 (at 20°C)
Max. piston speed: 1.6 m/s

2487.12.20000.

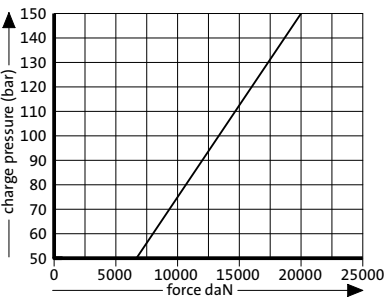


2487.12.20000.

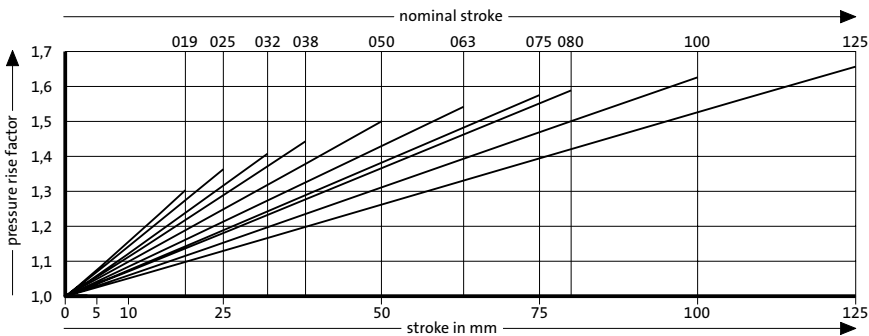
Gas spring POWERLINE

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



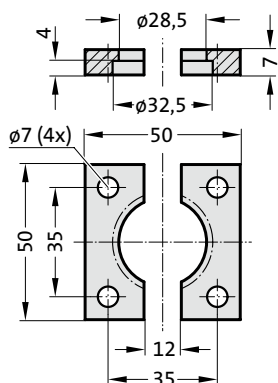
Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS POWERLINE, WITH REINFORCED SPRING BASE

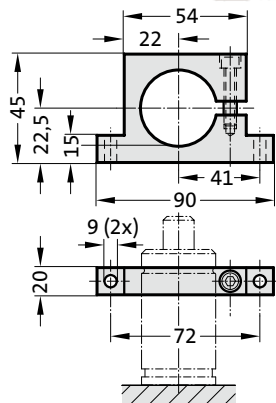


GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

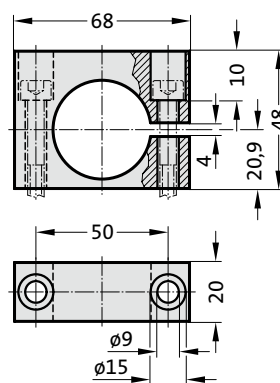
2480.022.00150



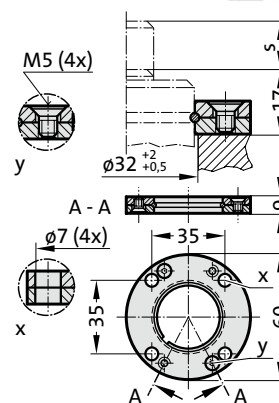
2480.044.00150²⁾



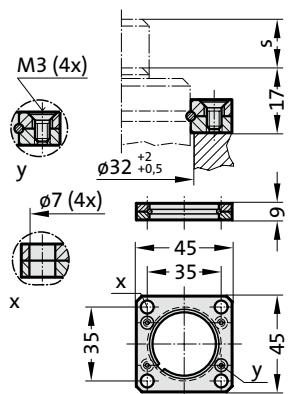
2480.044.03.00150²⁾



2480.055.00150



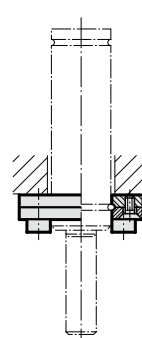
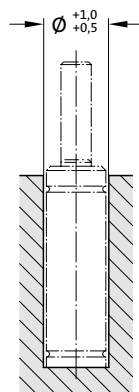
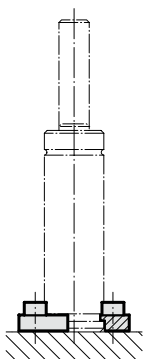
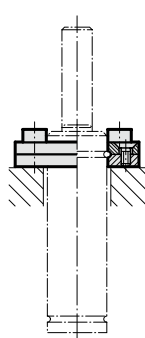
2480.057.00150



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 = 350 daN

Order No for spare parts kit: 2487.12.00350

Pressure medium: Nitrogen N₂

Max. filling pressure: 180 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

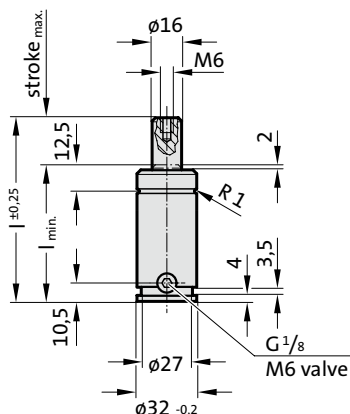
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

approx. 20 to 100 (at 20°C)

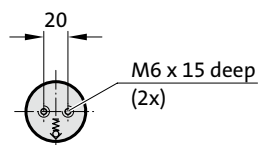
Max. piston speed: 1.6 m/s

2487.12.33.00350.



↑ x

View X

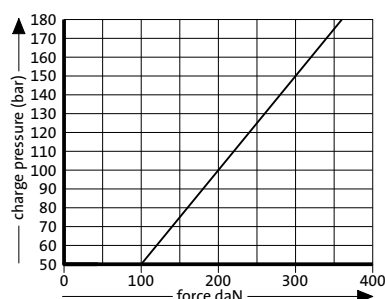


2487.12.33.00350.

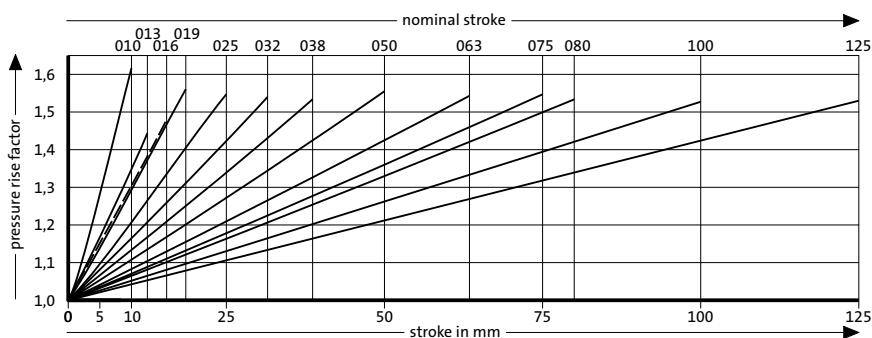
Gas spring POWERLINE with reinforced spring base

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

Initial spring force versus charge pressure



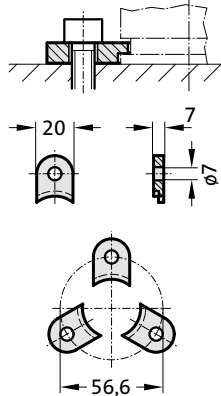
Spring force Diagram displacement versus stroke rise



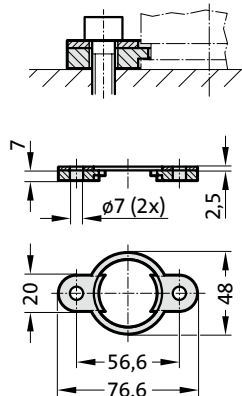
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

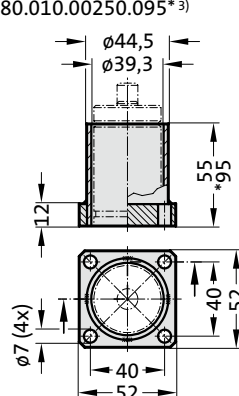
2480.007.00250



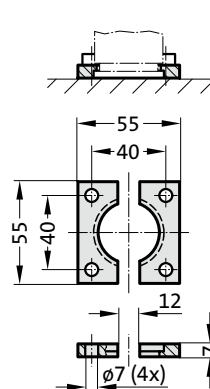
2480.008.00250³⁾



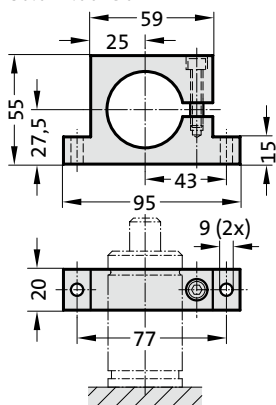
2480.010.00250.055³⁾
2480.010.00250.095³⁾



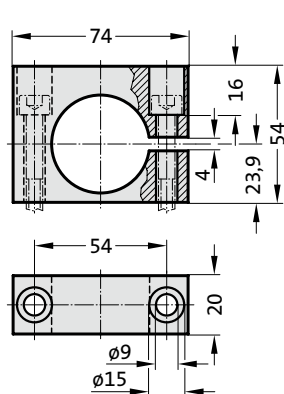
2480.022.00250



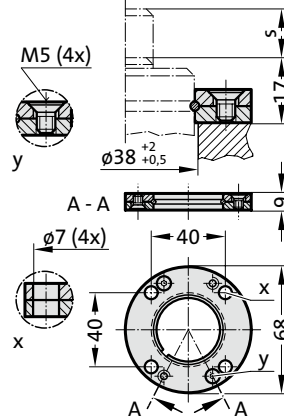
2480.044.00250²⁾



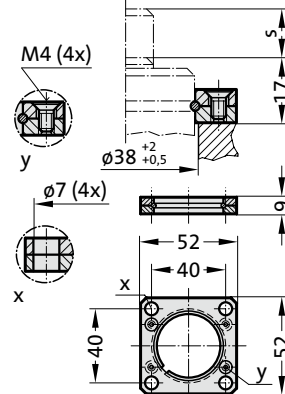
2480.044.03.00250²⁾



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: 2487.12.00500

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

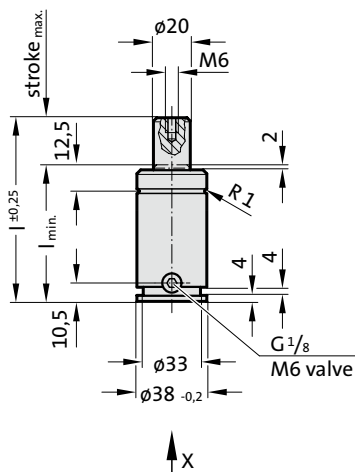
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

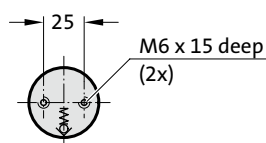
approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.33.00500.



View X

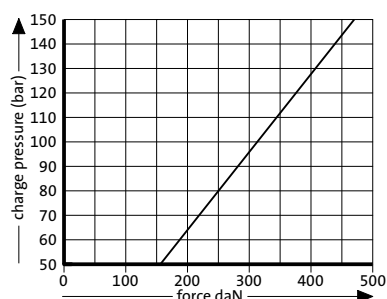


2487.12.33.00500.

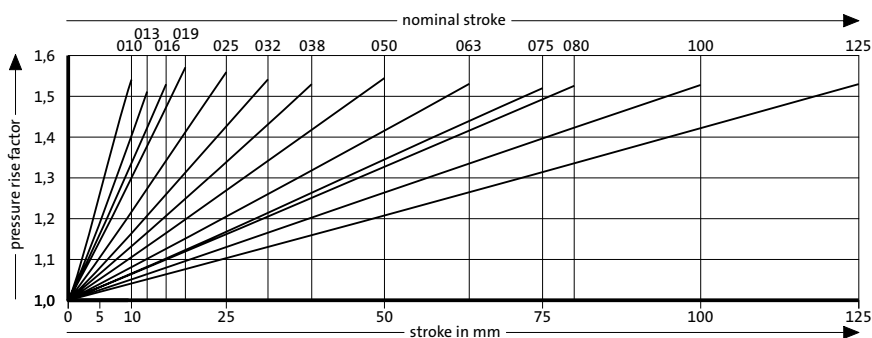
Gas spring POWERLINE with reinforced spring base

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

Initial spring force versus charge pressure



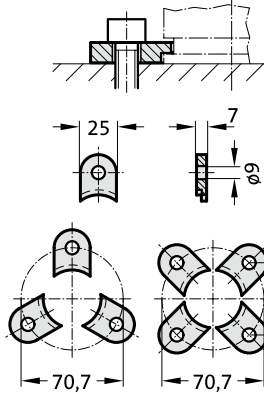
Spring force Diagram displacement versus stroke rise



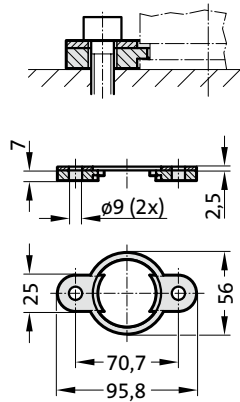
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

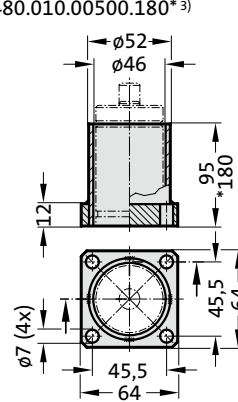
2480.007.00500



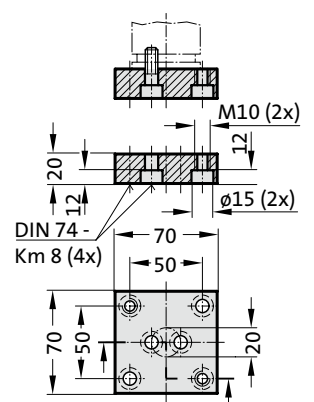
2480.008.00500³⁾



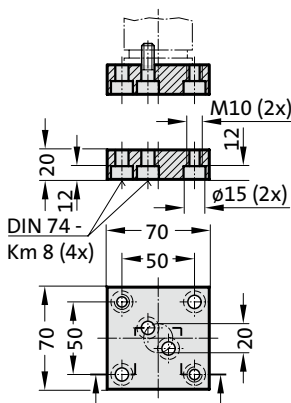
2480.010.00500.095³⁾
2480.010.00500.180^{* 3)}



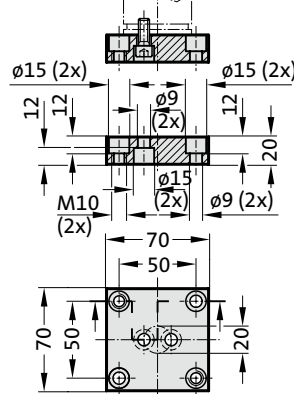
2480.011.00500



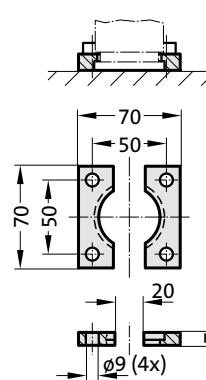
2480.011.00500.1



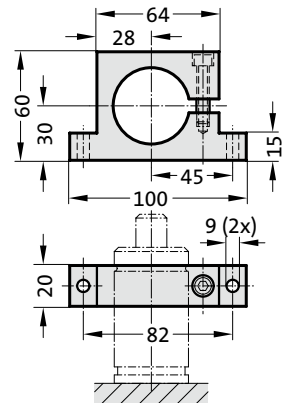
2480.011.00500.2



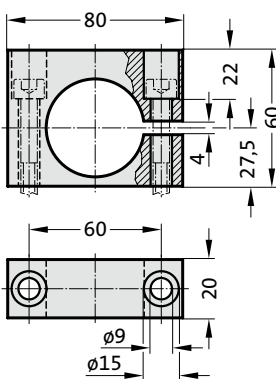
2480.022.00500



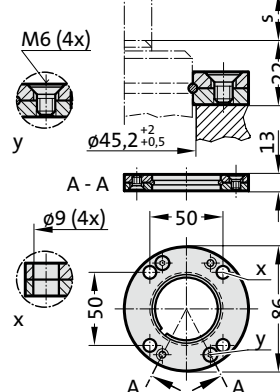
2480.044.00500²⁾



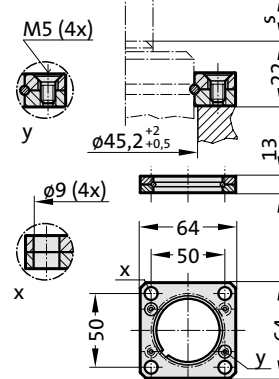
2480.044.03.00500²⁾



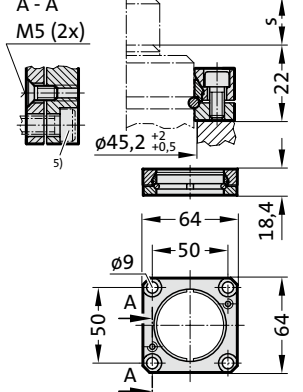
2480.055.00500



2480.057.00500



2480.064.00500⁴⁾

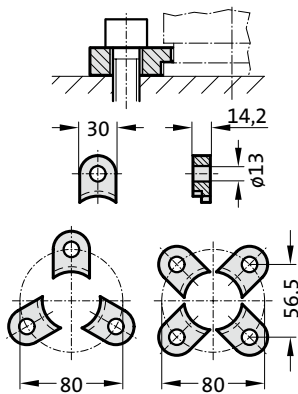


Note:

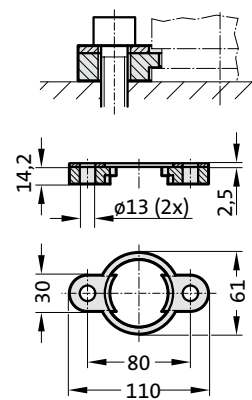
- ²⁾ Attention:
The spring force must be absorbed by the stop Surface!
- ³⁾ Not for use with composite connection.
- ⁴⁾ Square collar flange, non-rotating, fixing for composite connection.
- ⁵⁾ Machine screws with hexagonal socket (compact head recommended)

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

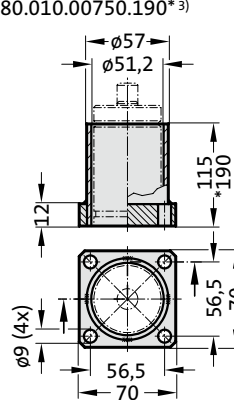
2480.007.00750



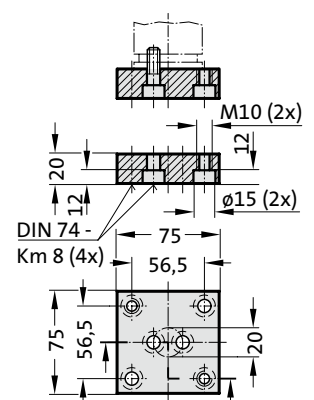
2480.008.00750³⁾



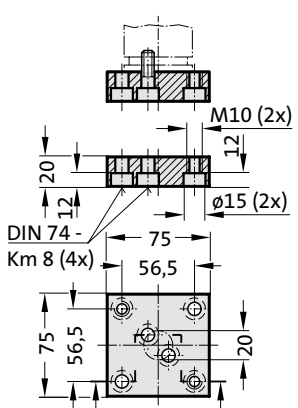
2480.010.00750.115³⁾
2480.010.00750.190^{* 3)}



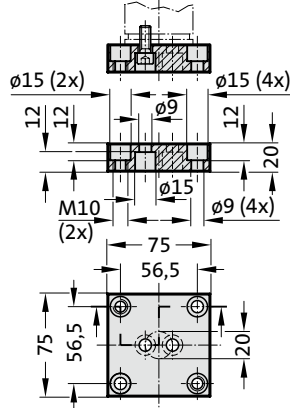
2480.011.00750



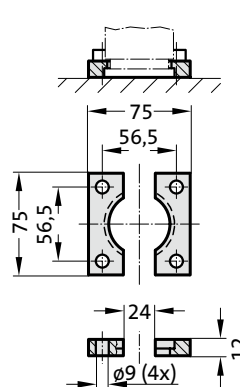
2480.011.00750.1



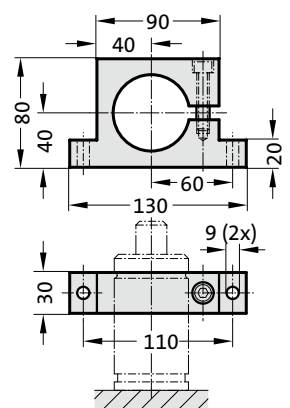
2480.011.00750.3



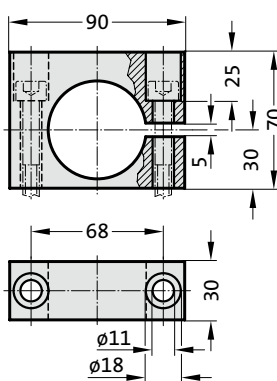
2480.022.00750



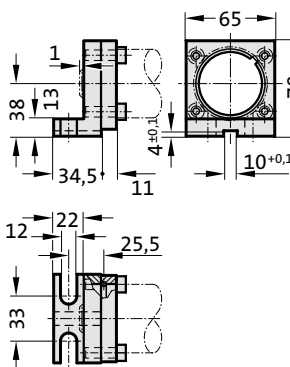
2480.044.00750²⁾



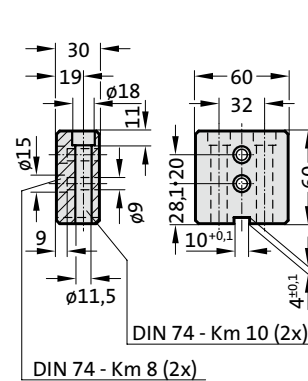
2480.044.03.00750²⁾



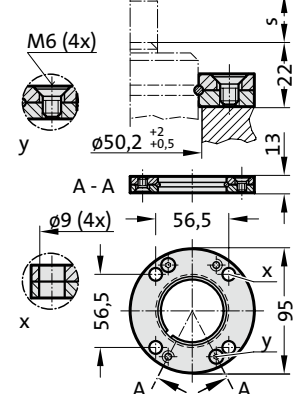
2480.045.00750²⁾



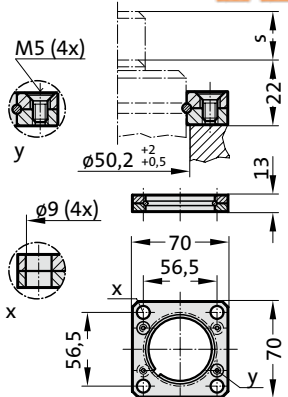
2480.047.00750²⁾



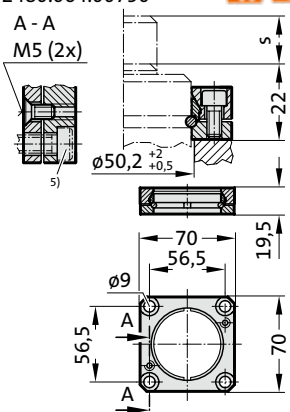
2480.055.00750



2480.057.00750



2480.064.00750⁴⁾



Note:

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

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

Note:

Initial spring force at 150 bar = 920 daN

Order No for spare parts kit: 2487.12.01000

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

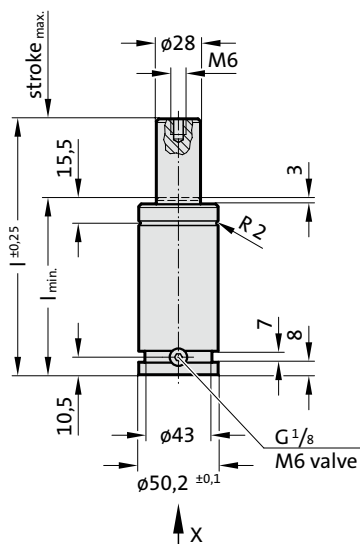
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

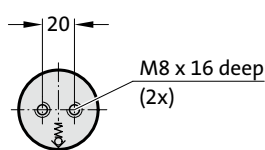
approx. 20 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.33.01000.



View X

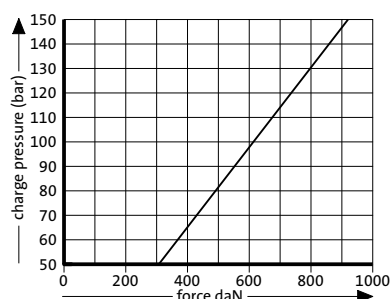


2487.12.33.01000.

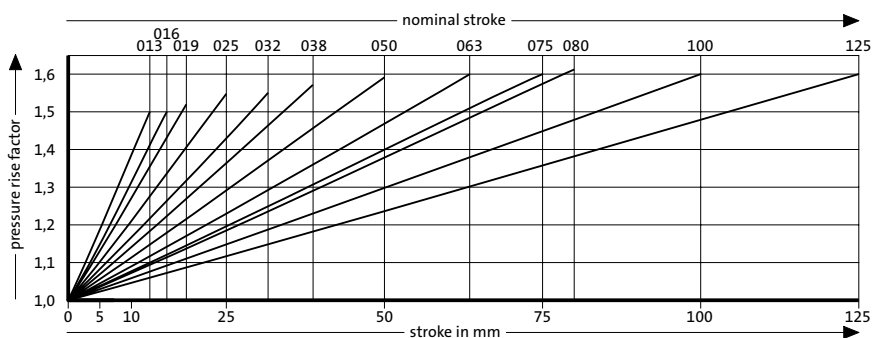
Gas spring POWERLINE with reinforced spring base

Order No	Stroke _{max.} (s)	I _{min.}	I
2487.12.33.01000.013	13	65	78
2487.12.33.01000.016	16	68	84
2487.12.33.01000.019	19	71	90
2487.12.33.01000.025	25	77	102
2487.12.33.01000.032	32	84	116
2487.12.33.01000.038	38	90	128
2487.12.33.01000.050	50	102	152
2487.12.33.01000.063	63	115	178
2487.12.33.01000.075	75	127	202
2487.12.33.01000.080	80	132	212
2487.12.33.01000.100	100	152	252
2487.12.33.01000.125	125	177	302

Initial spring force versus charge pressure



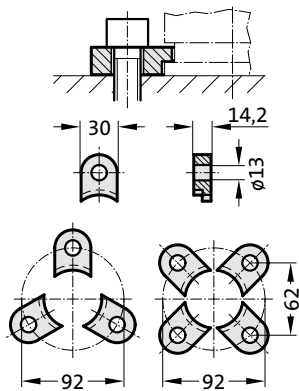
Spring force Diagram displacement versus stroke rise



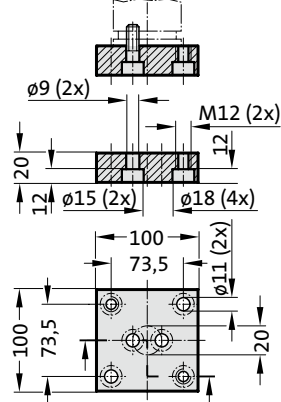
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

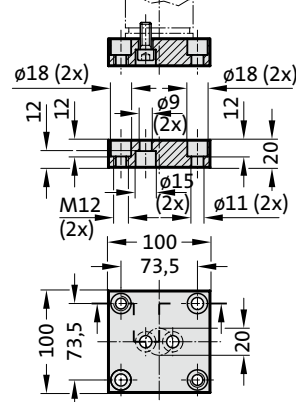
2480.007.01000



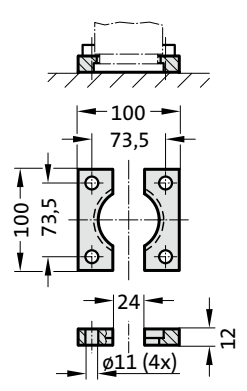
2480.011.01000



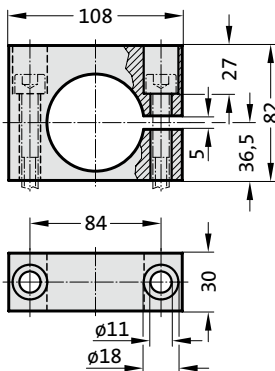
2480.011.01000.2



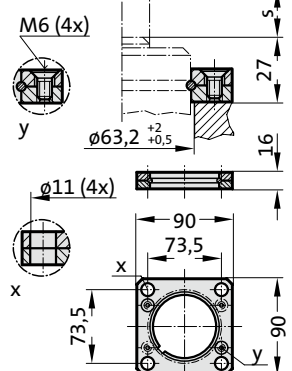
2480.022.01000



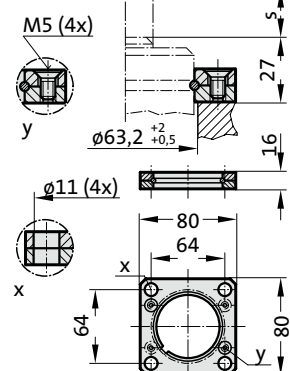
2480.044.03.01000²⁾



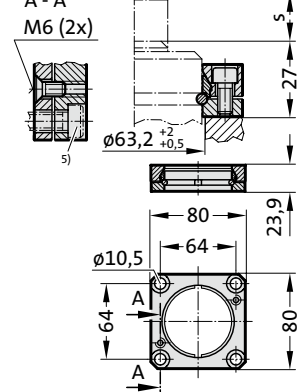
2480.057.01000



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 WITH REINFORCED SPRING BASE

Note:

Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2487.12.01500

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

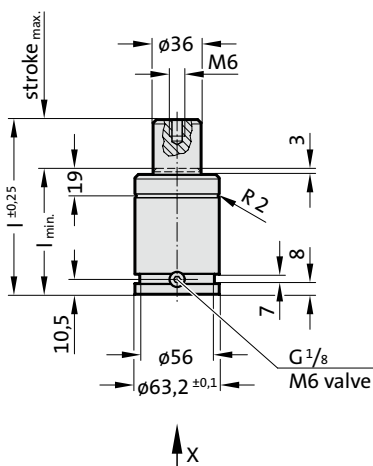
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

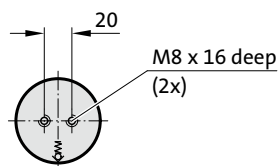
approx. 50 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

2487.12.33.01500.



View X

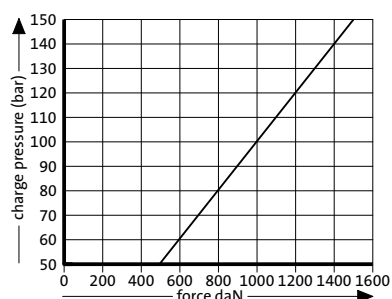


2487.12.33.01500.

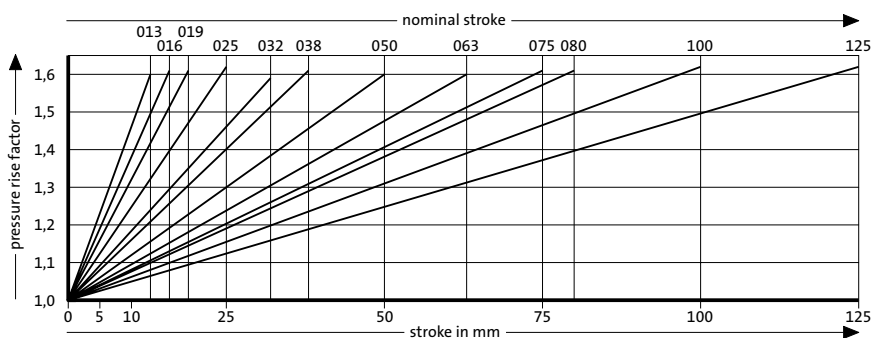
Gas spring POWERLINE with reinforced spring base

Order No	Stroke _{max} (s)	I _{min}	I
2487.12.33.01500.013	13	65	78
2487.12.33.01500.016	16	68	84
2487.12.33.01500.019	19	71	90
2487.12.33.01500.025	25	77	102
2487.12.33.01500.032	32	84	116
2487.12.33.01500.038	38	90	128
2487.12.33.01500.050	50	102	152
2487.12.33.01500.063	63	115	178
2487.12.33.01500.075	75	127	202
2487.12.33.01500.080	80	132	212
2487.12.33.01500.100	100	152	252
2487.12.33.01500.125	125	177	302

Initial spring force versus charge pressure

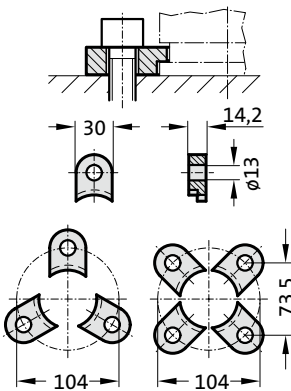
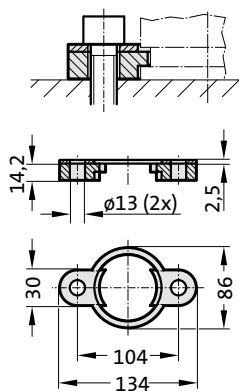
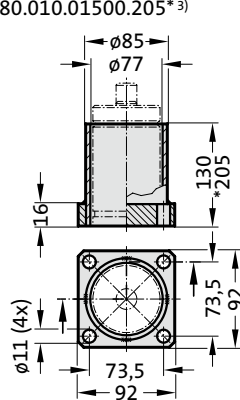
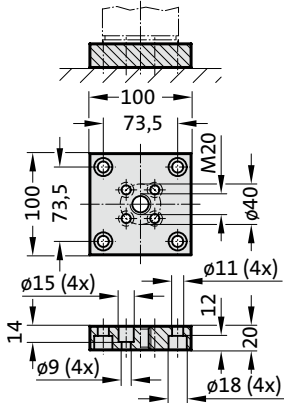
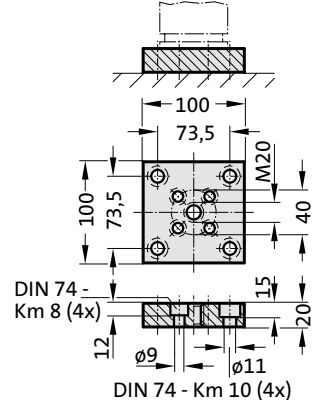
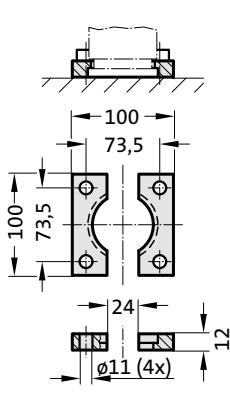
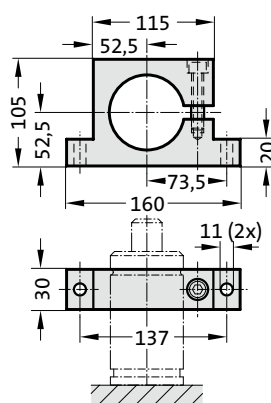
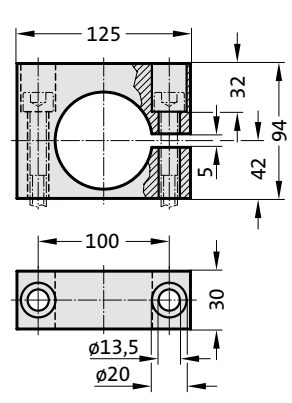
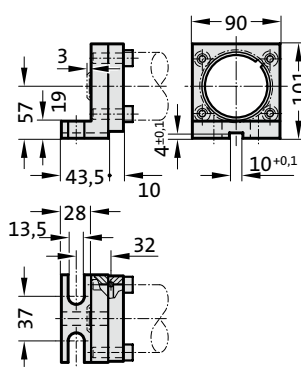
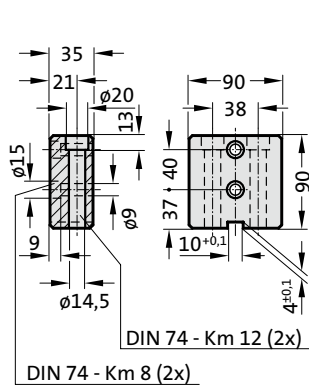
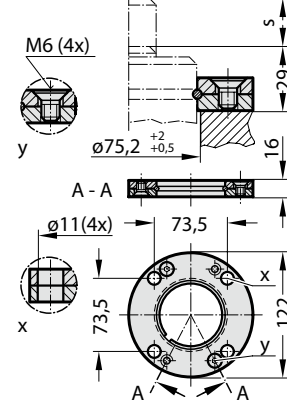
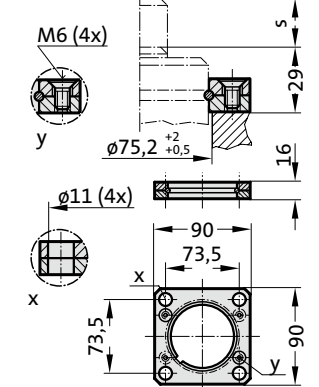
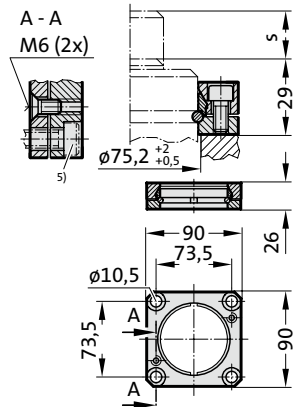


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

Note:

2) Attention:

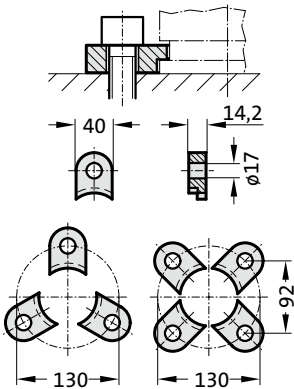
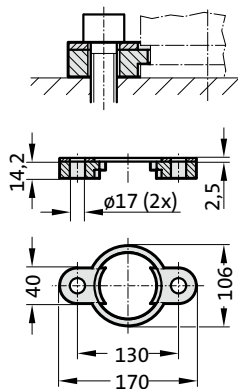
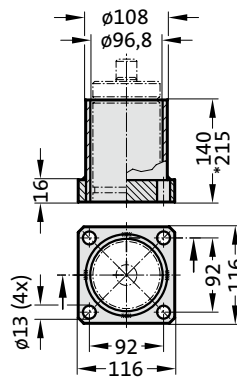
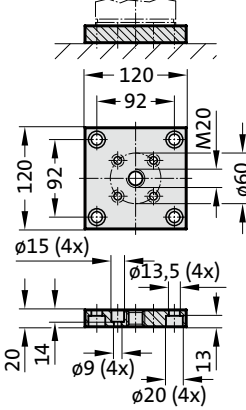
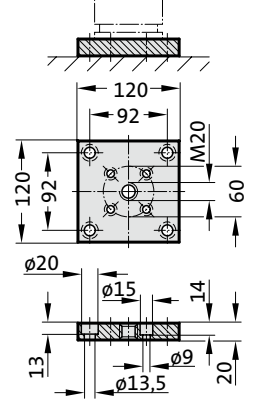
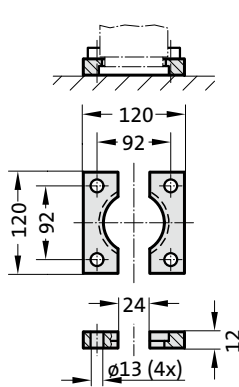
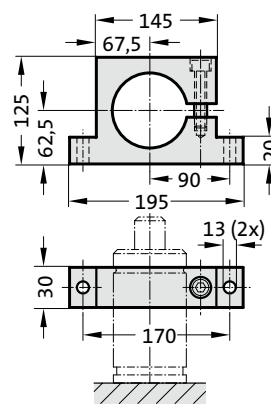
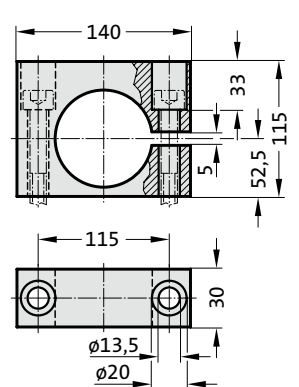
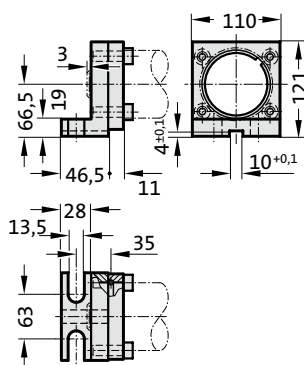
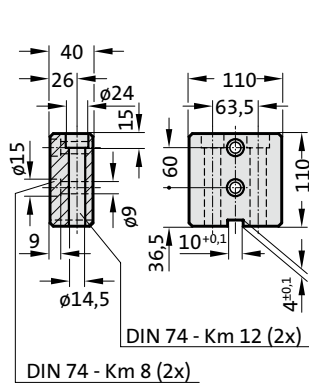
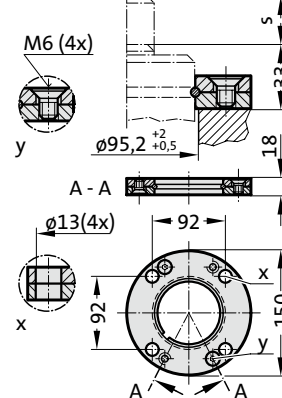
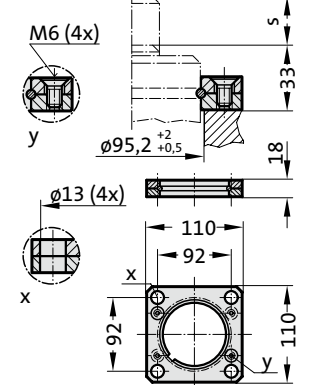
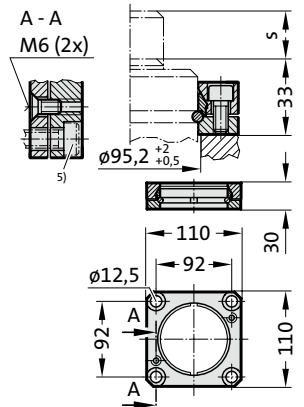
The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

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)

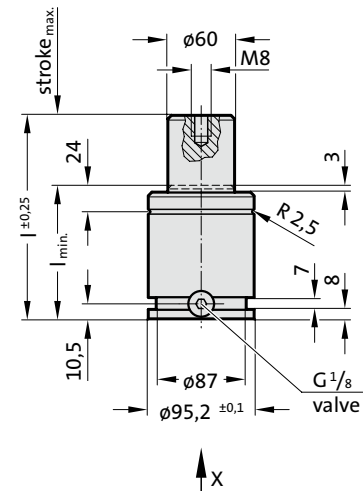
GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

Note:
Initial spring force at 150 bar = 4200 daN

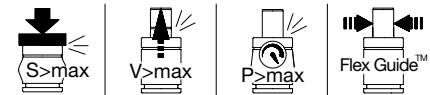
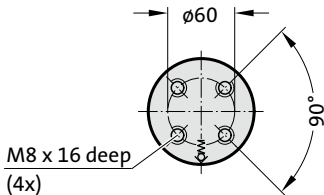
Order No for spare parts kit: 2487.12.04200

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

2487.12.33.04200.



View X

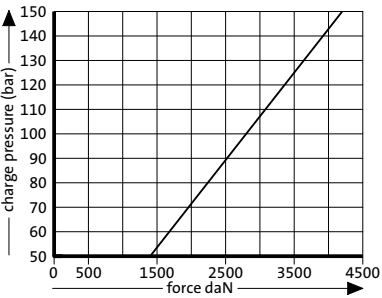


2487.12.33.04200.

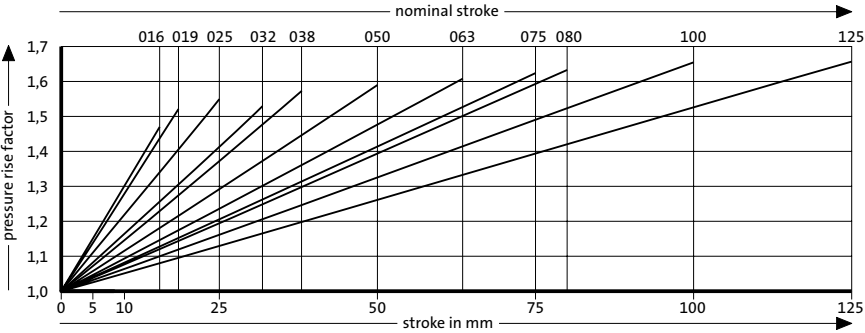
Gas spring POWERLINE with rein-
forced spring base

Order No	Stroke _{max.} (s)	I _{min.}	I
2487.12.33.04200.016	16	78	94
2487.12.33.04200.019	19	81	100
2487.12.33.04200.025	25	87	112
2487.12.33.04200.032	32	94	126
2487.12.33.04200.038	38	100	138
2487.12.33.04200.050	50	112	162
2487.12.33.04200.063	63	125	188
2487.12.33.04200.075	75	137	212
2487.12.33.04200.080	80	142	222
2487.12.33.04200.100	100	162	262
2487.12.33.04200.125	125	187	312

Initial spring force
versus charge pressure



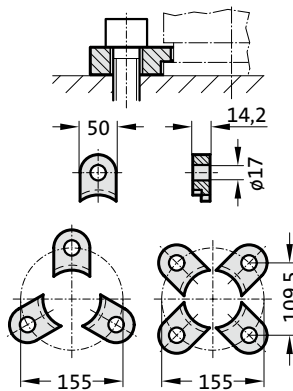
Spring force Diagram displacement versus stroke rise



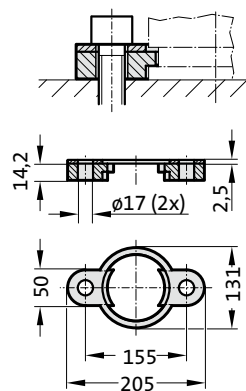
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING POWERLINE WITH REINFORCED SPRING BASE MOUNTING VARIATIONS

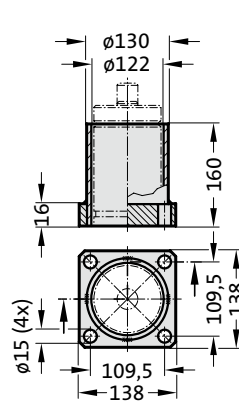
2480.007.05000



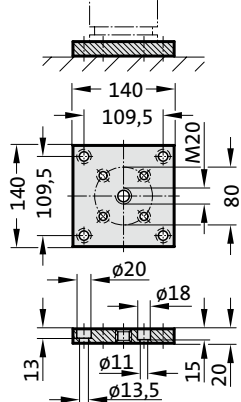
2480.008.05000³⁾



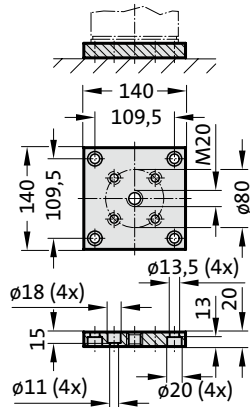
2480.010.05000.160³⁾



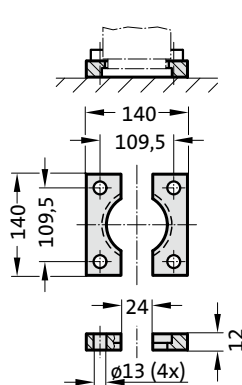
2480.011.05000



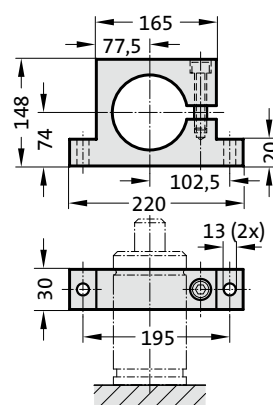
2480.011.05000.2



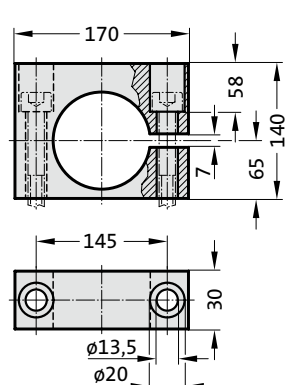
2480.022.05000



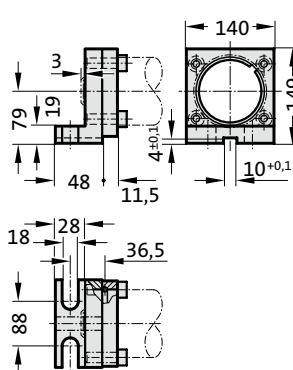
2480.044.05000²⁾



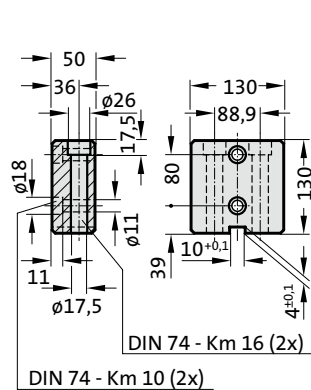
2480.044.03.05000²⁾



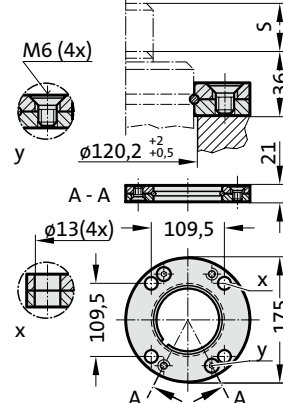
2480.045.05000²⁾



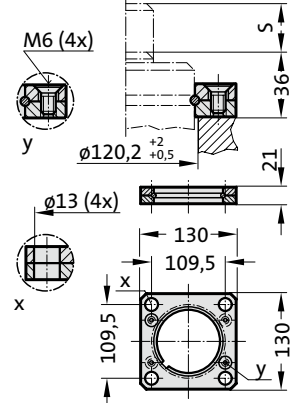
2480.047.05000²⁾



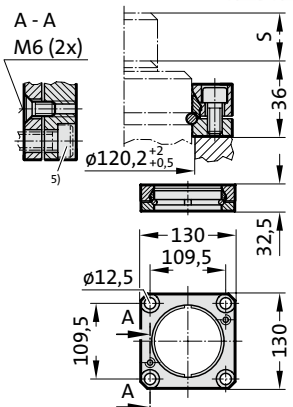
2480.055.05000



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)

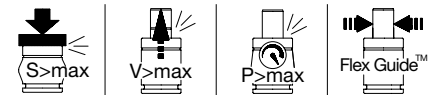
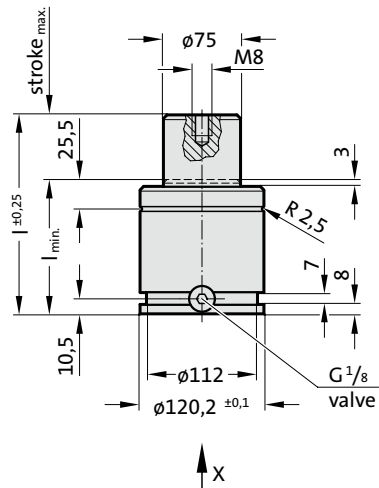
GAS SPRING POWERLINE WITH REINFORCED SPRING BASE

Note:
Initial spring force at 150 bar = 6630 daN

Order No for spare parts kit: 2487.12.06600

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

2487.12.33.06600.

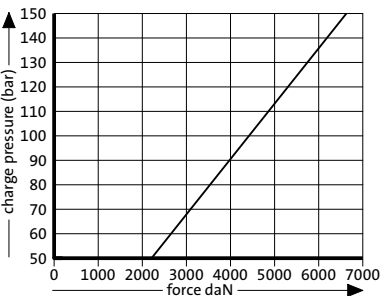


2487.12.33.06600.

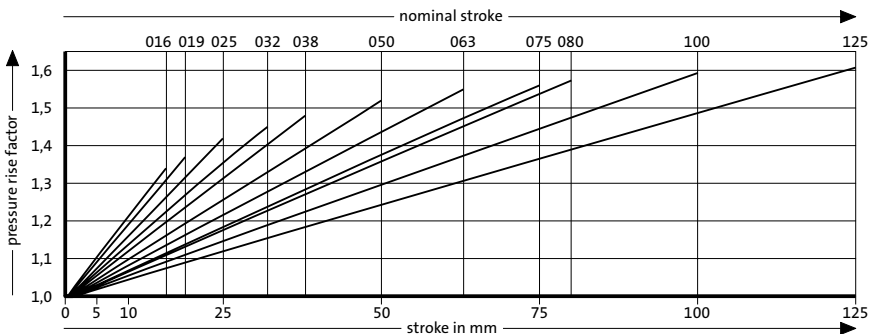
Gas spring POWERLINE with rein-
forced spring base

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

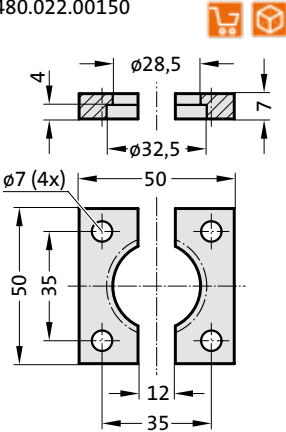
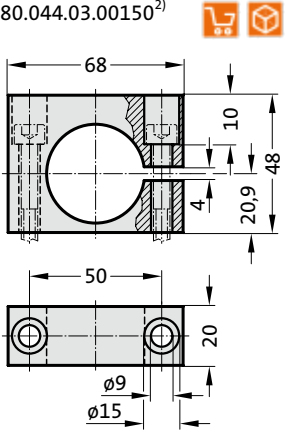


Pressure rise factor accounts for displacement but not external influences!

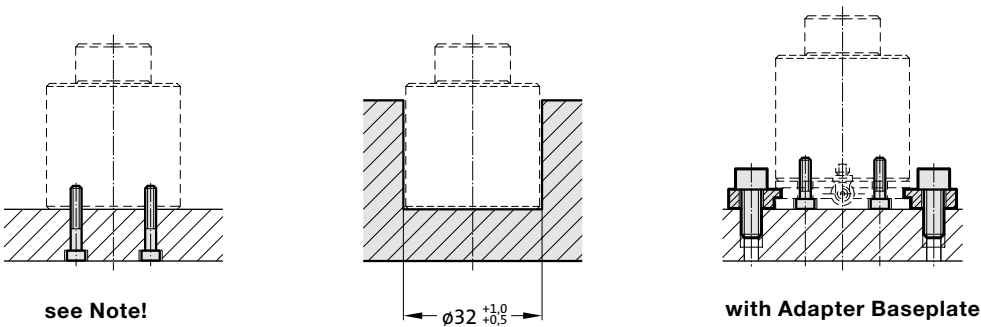
GAS SPRINGS CX - COMPACT XTREME



GAS SPRING CX - COMPACT XTREME, MOUNTING VARIATIONS

2480.022.00150 	2480.044.03.00150²⁾ 		
			Note: ²⁾ Attention: The spring force must be absorbed by the stop Surface!

Mounting examples:



GAS SPRING CX - COMPACT XTREME,

Note:

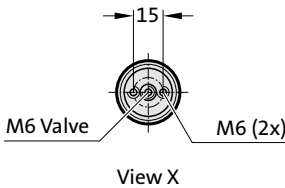
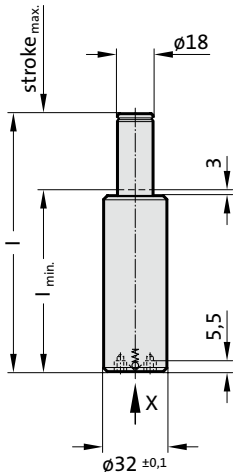
Initial spring force at 200 bar = 500 daN

Order No for spare parts kit: 2497.12.00500

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

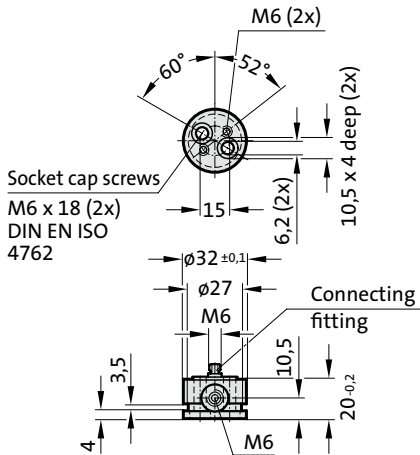
Pressure medium: Nitrogen N₂
Max. filling pressure: 200 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 70 to 200 (at 20°C)
Max. piston speed: 1.6 m/s

2497.12.00500.

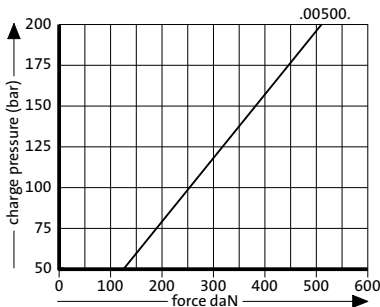


2497.00.20.00500

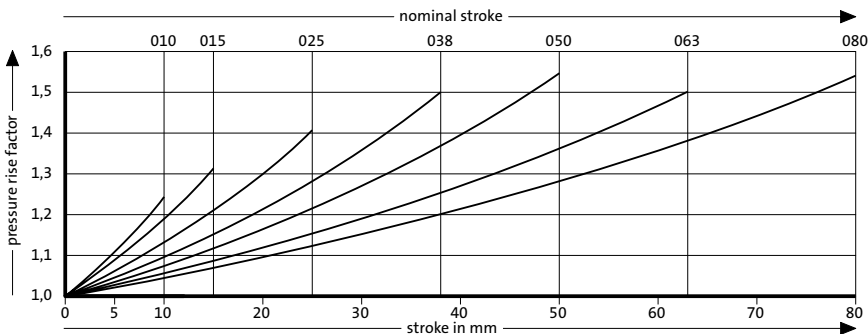
Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



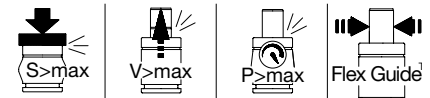
Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



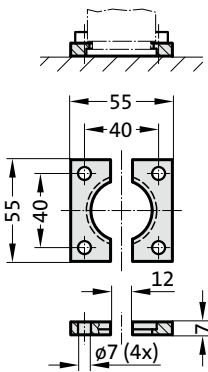
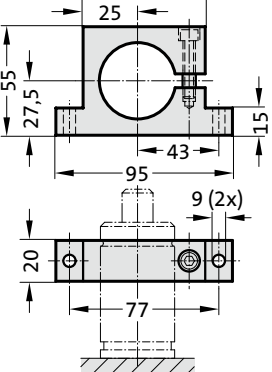
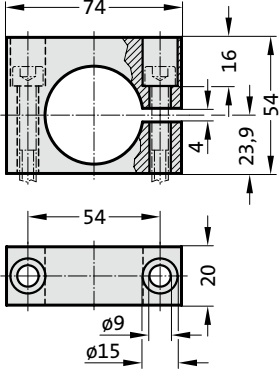
Pressure rise factor accounts for displacement but not external influences!



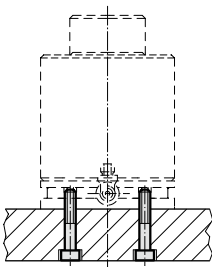
2497.12.00500.
Gas spring CX - Compact xtreme,

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

GAS SPRING CX - COMPACT XTREME, MOUNTING VARIATIONS

2480.022.00250   	2480.044.00250²⁾   	2480.044.03.00250²⁾   
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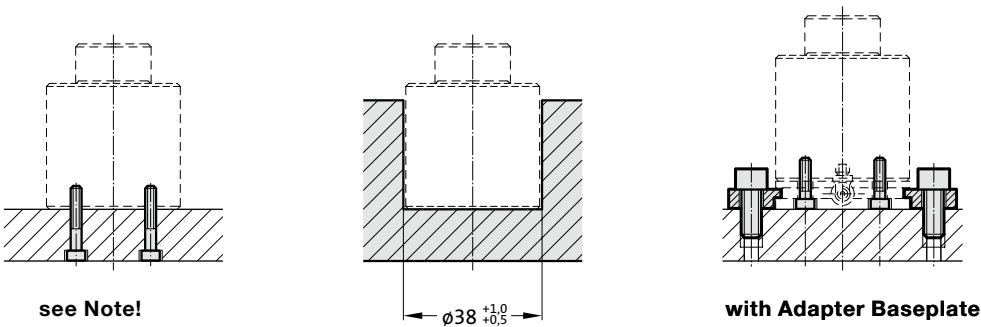
Mounting example:



with Adapter Baseplate

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

Mounting examples:



GAS SPRING CX - COMPACT XTREME,

Note:

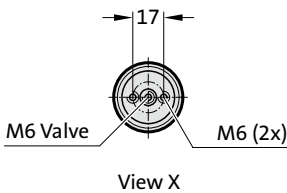
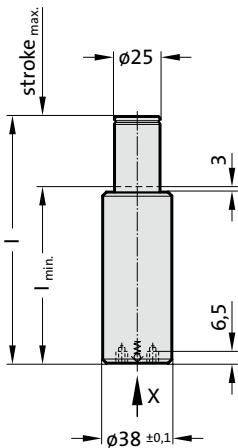
Initial spring force at 200 bar = 1000 daN

Order No for spare parts kit: 2497.12.01000

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

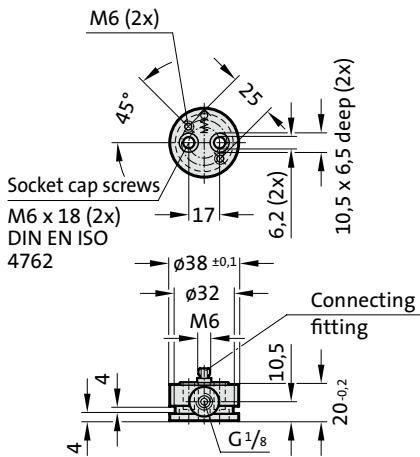
Pressure medium: Nitrogen N₂
Max. filling pressure: 200 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 70 to 200 (at 20°C)
Max. piston speed: 1.6 m/s

2497.12.01000.

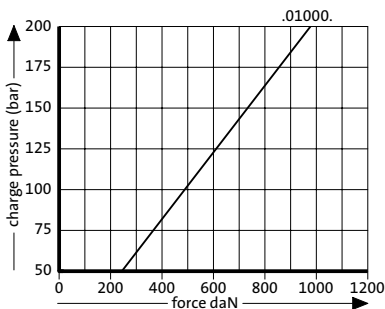


2497.00.20.01000

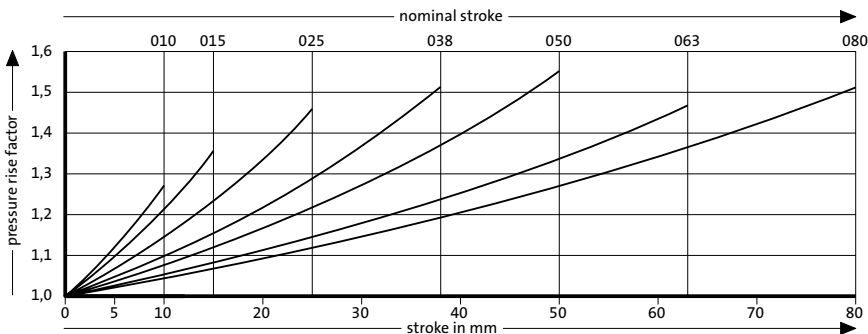
Adapter baseplate with connecting fitting, with valve



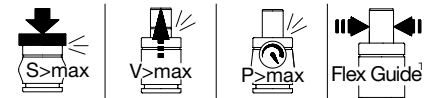
Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

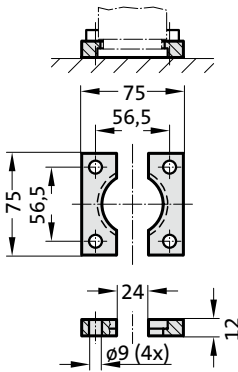
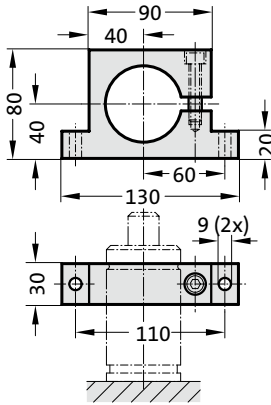
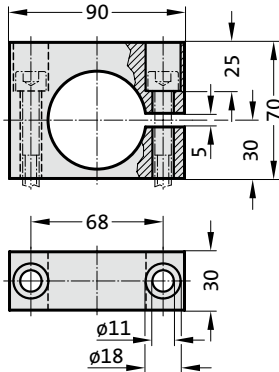


2497.12.01000.

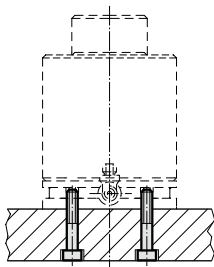
Gas spring CX - Compact xtreme,

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

GAS SPRING CX - COMPACT XTREME, MOUNTING VARIATIONS

2480.022.00750   	2480.044.00750 ²⁾   	2480.044.03.00750 ²⁾   
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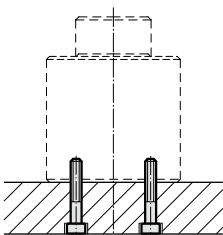
Mounting example:



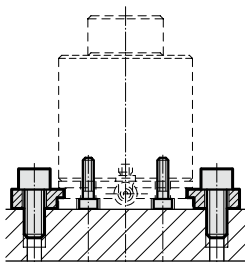
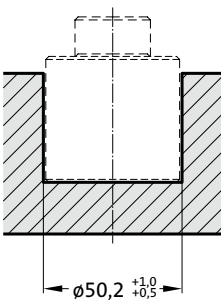
with Adapter Baseplate

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

Mounting examples:



see Note!



with Adapter Baseplate

GAS SPRING CX - COMPACT XTREME,

Note:

Initial spring force at 200 bar = 1900 daN

Order No for spare parts kit: 2497.12.01900

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

Pressure medium: Nitrogen N_2

Max. filling pressure: 200 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

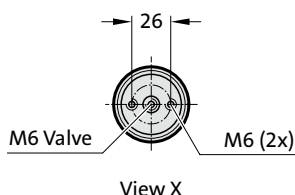
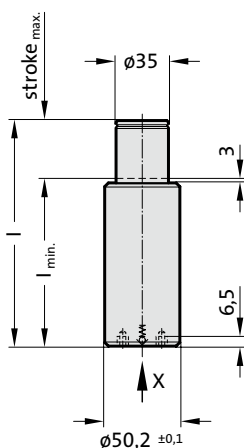
Temperature related force increase: $\pm 0.3\%/^{\circ}C$

Max. recommended extensions per minute:

approx. 50 to 130 (at 20°C)

Max. piston speed: 1.6 m/s

2497.12.01900.

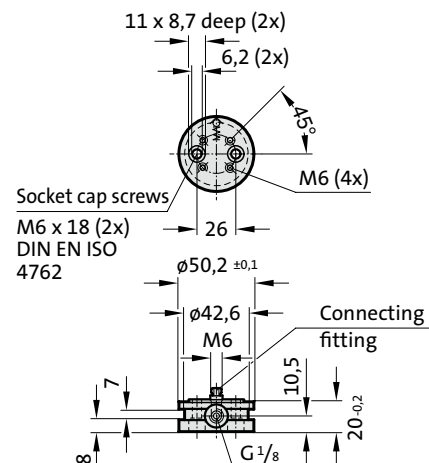


2497.12.01900.

Gas spring CX - Compact xtreme,

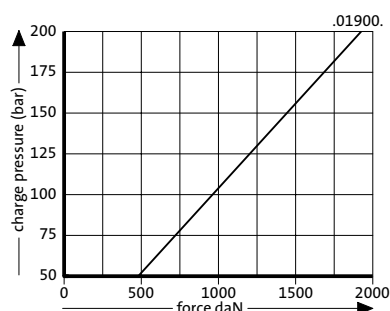
2497.00.20.01900

Adapter baseplate with connecting fitting, with valve

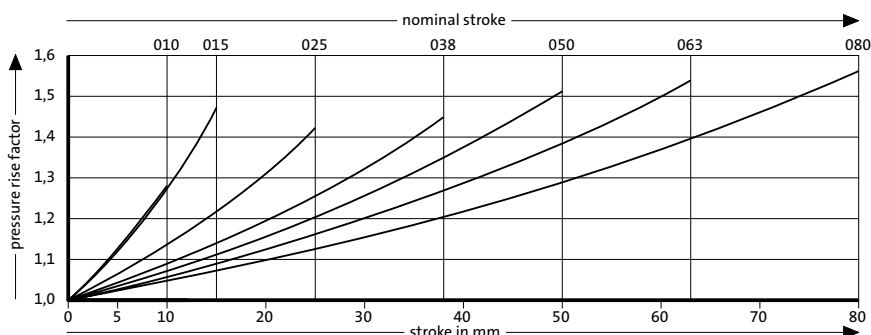


Order No	Stroke _{max.} (s)	l_{min}	l
2497.12.01900.010	10	70	80
2497.12.01900.015	15	80	95
2497.12.01900.025	25	90	115
2497.12.01900.038	38	112	150
2497.12.01900.050	50	125	175
2497.12.01900.063	63	142	205
2497.12.01900.080	80	165	245

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

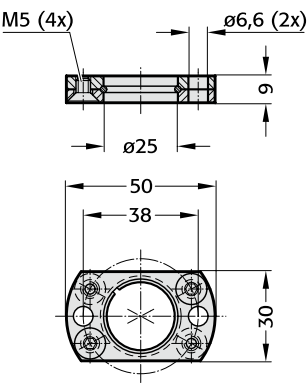
GAS SPRINGS COMPACT FOR SMALL DISPLACEMENTS AND HIGH FORCES



COMPACT GAS SPRING MOUNTING VARIATIONS

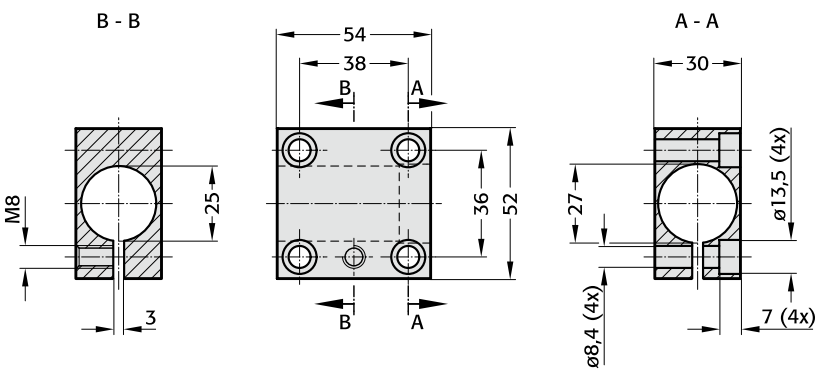
2480.051.00150



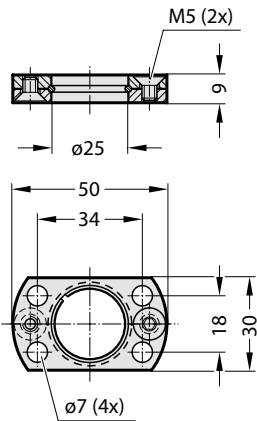
2480.053.00150



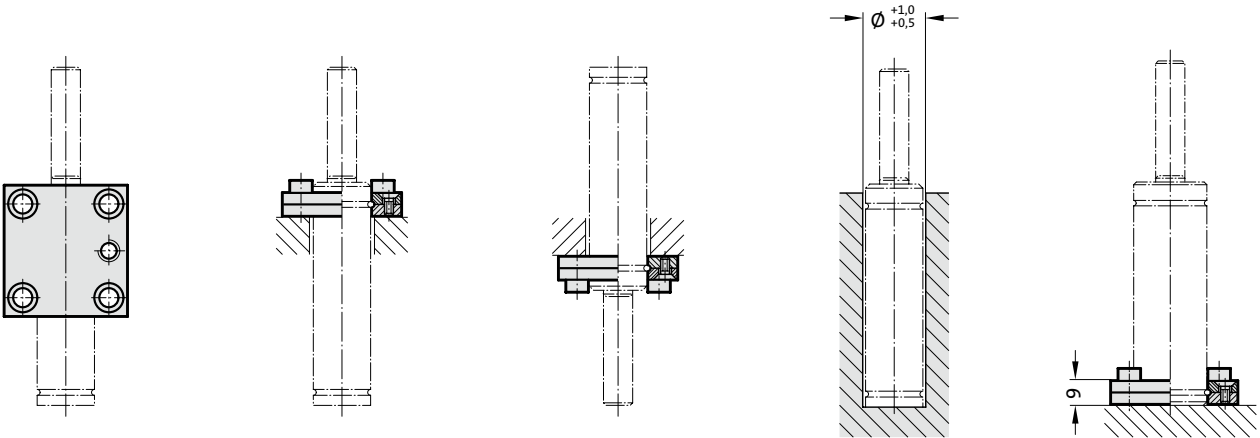



2480.054.00150



Mounting examples:



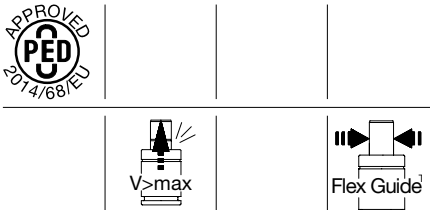
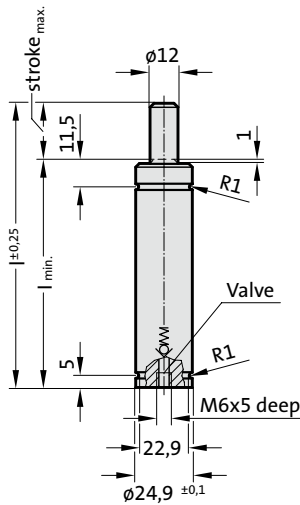
COMPACT GAS SPRING

Note:
Initial spring force at 150 bar = 420 daN

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

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

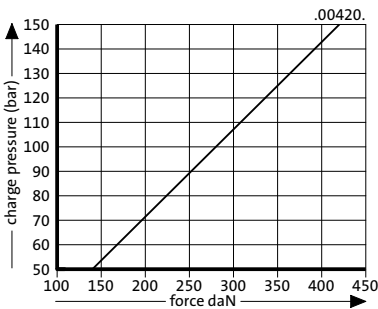
2490.14.00420.



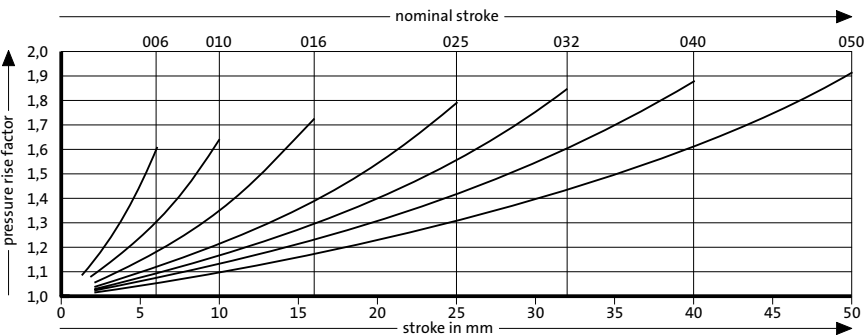
2490.14.00420.
Compact gas spring

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

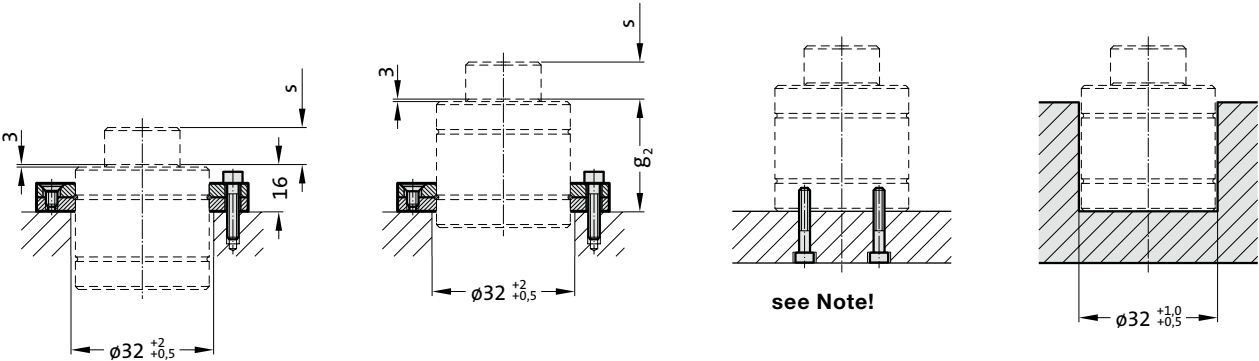


Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

2480.044.03.00150²⁾	2480.055.00150	2480.057.00150	
			Note: 2)²⁾ Attention: The spring force must be absorbed by the stop Surface!

Mounting examples:



COMPACT GAS SPRING

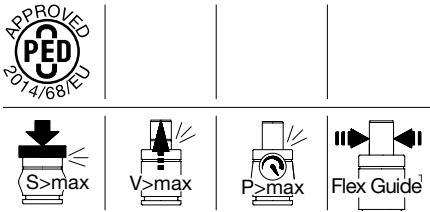
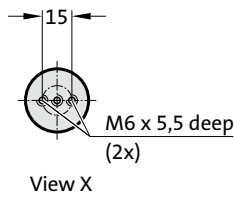
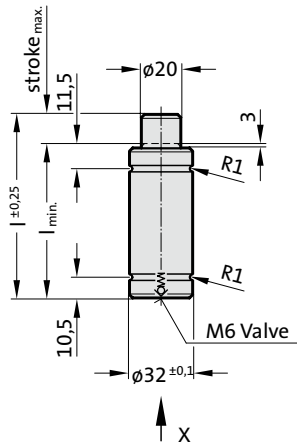
Note:
Initial spring force at 150 bar = 750 daN

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

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

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

2490.14.00750.

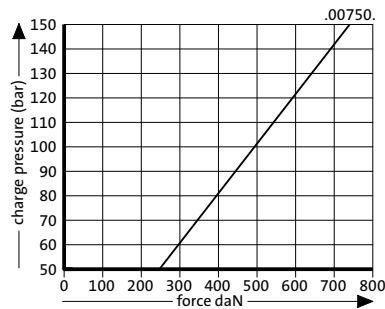


2490.14.00750.
Compact gas spring

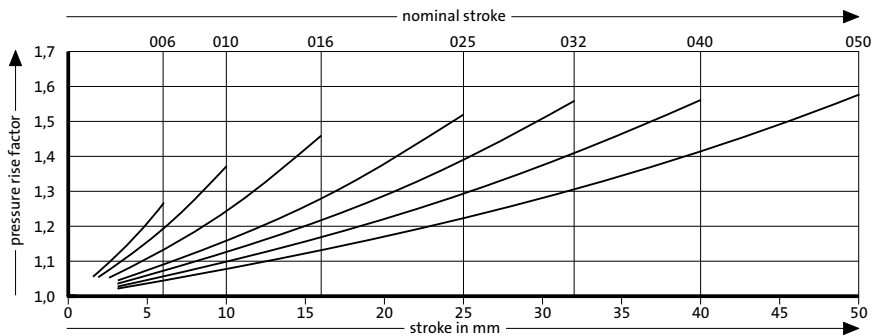
Order No	Stroke _{max} (s)	I _{min}	I	g ₂ *
2490.14.00750.006	6	57	63	51
2490.14.00750.010	10	65	75	59
2490.14.00750.016	16	77	93	71
2490.14.00750.025	25	95	120	89
2490.14.00750.032	32	108	140	102
2490.14.00750.040	40	125	165	119
2490.14.00750.050	50	145	195	139

*see mounting example

Initial spring force
versus charge pressure



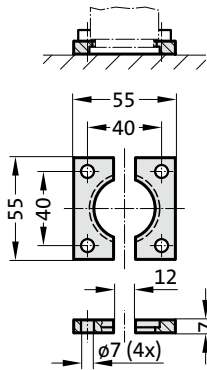
Spring force Diagram displacement versus stroke rise



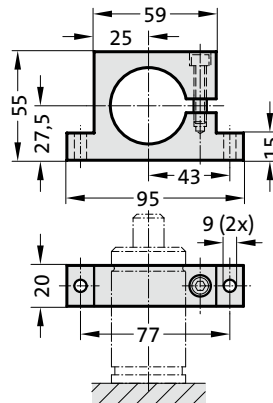
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

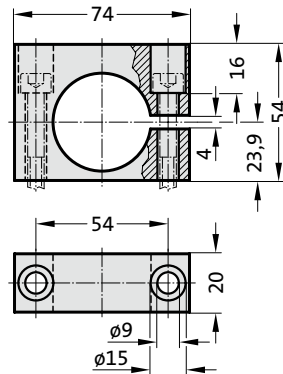
2480.022.00250



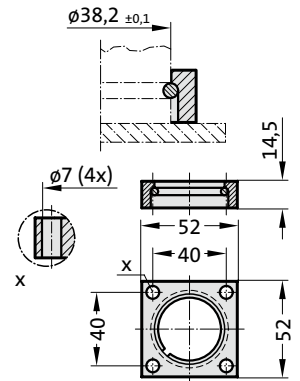
2480.044.00250²⁾



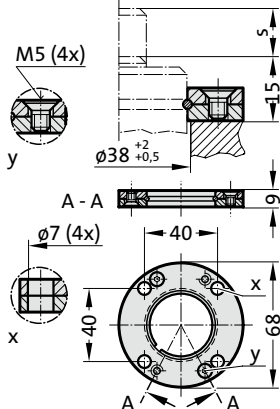
2480.044.03.00250²⁾



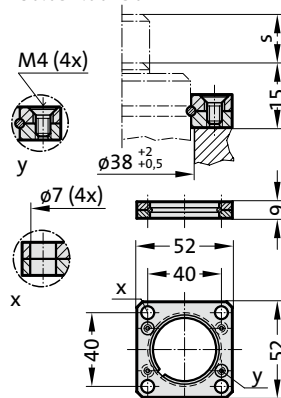
2480.052.01000



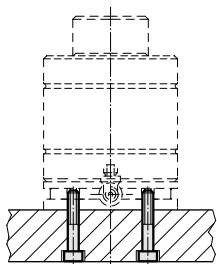
2480.055.00250



2480.057.00250



Mounting example:

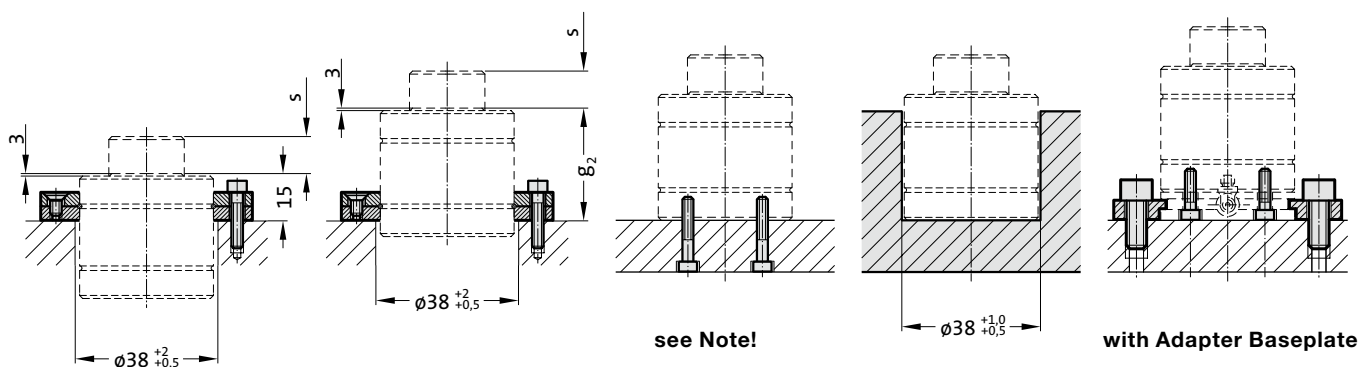


with Adapter Baseplate

Note:

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

Mounting examples:



COMPACT GAS SPRING

Note:
Initial spring force at 150 bar = 1000 daN

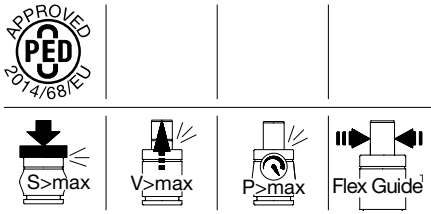
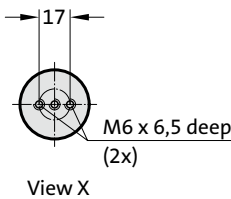
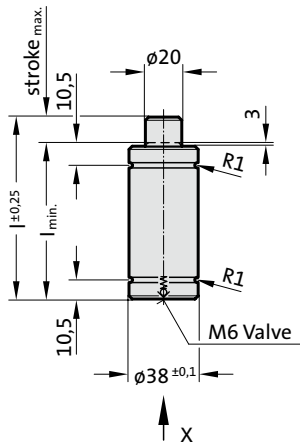
Order No for spare parts kit: 2490.14.01000

Gas spring without valve
Order No (example): 2490.14.01000. .P

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

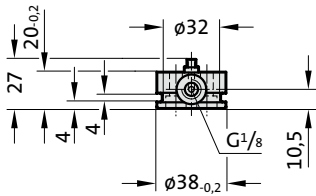
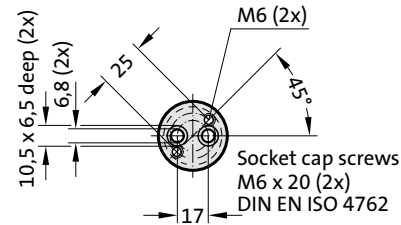
Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 100 (at 20°C)
Max. piston speed: 0.8 m/s

2490.14.01000.

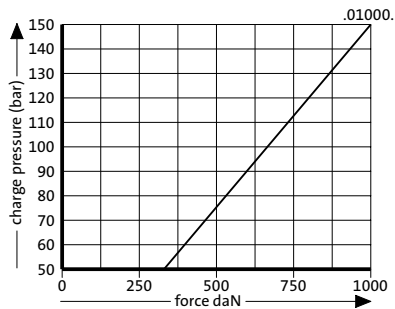


2480.00.20.01000

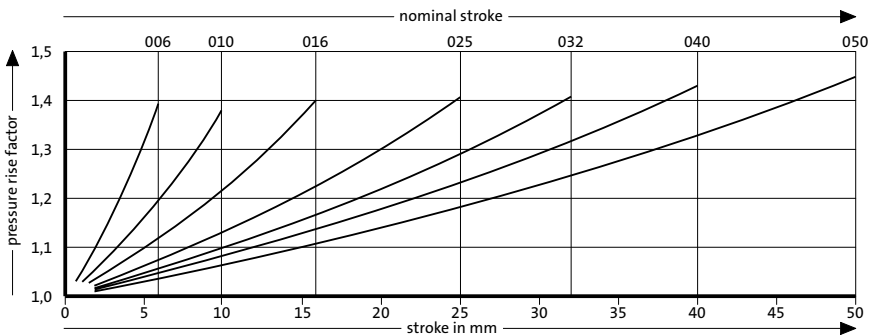
Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



Initial spring force versus charge pressure



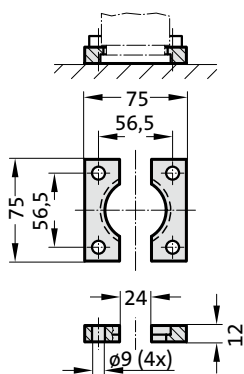
Spring force Diagram displacement versus stroke rise



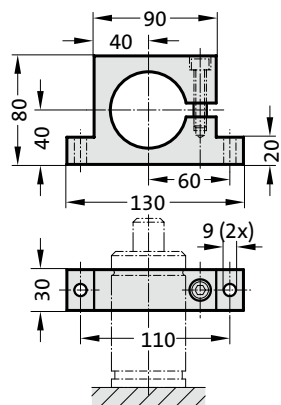
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

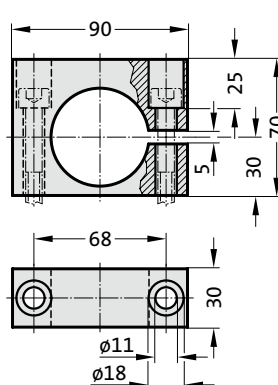
2480.022.00750



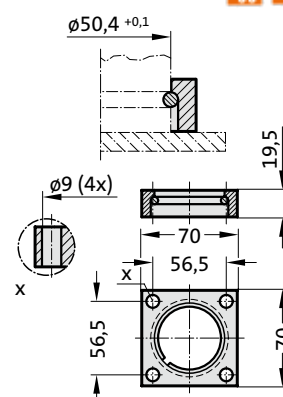
2480.044.00750²⁾



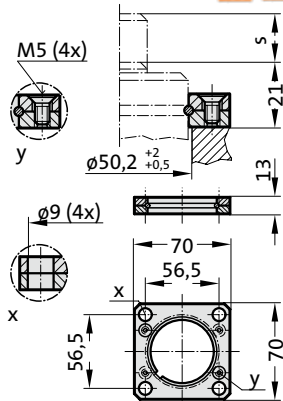
2480.044.03.00750²⁾



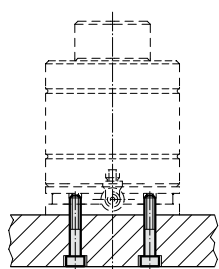
2480.052.1.01800



2480.058.00750



Mounting example:

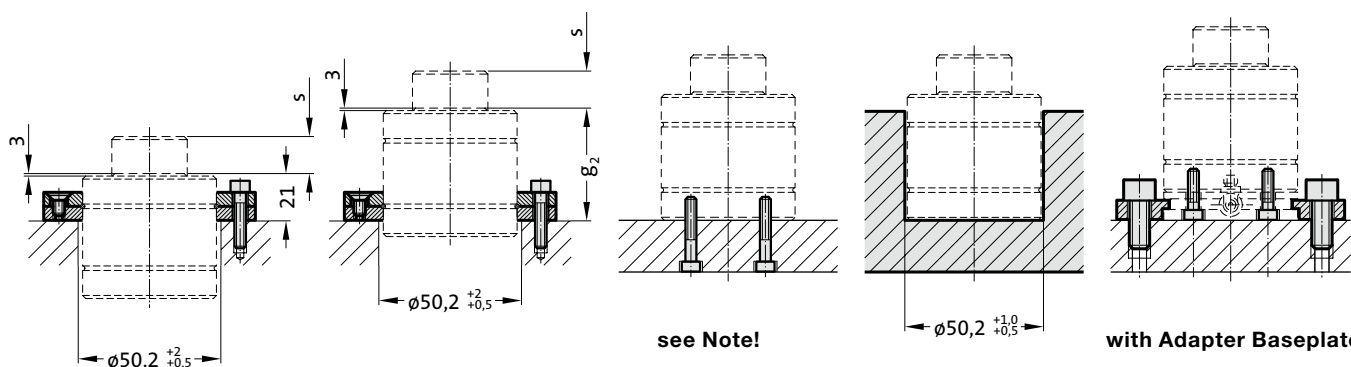


with Adapter Baseplate

Note:

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

Mounting examples:



see Note!

with Adapter Baseplate

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 1800 daN

Order No for spare parts kit: 2490.14.01800

Gas spring without valve

Order No (example): 2490.14.01800. .P

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

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

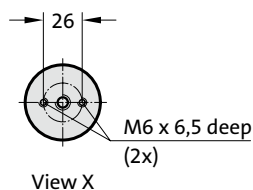
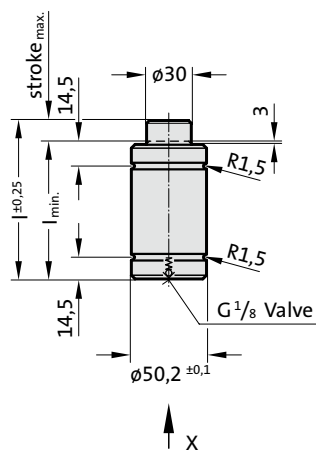
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

approx. 50 to 100 (at 20°C)

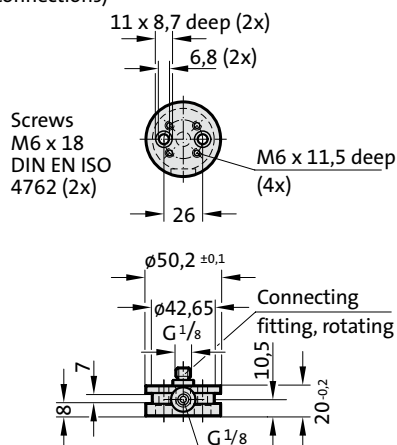
Max. piston speed: 0.8 m/s

2490.14.01800.

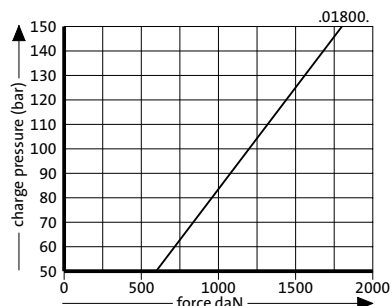


2480.00.20.01800

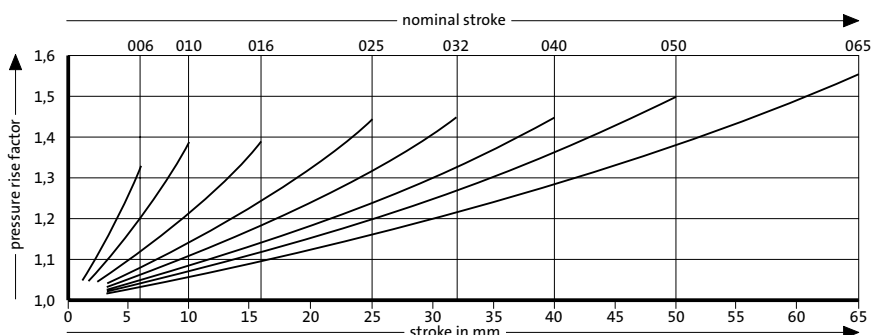
Adapter baseplate with connecting fitting,
without valve (only for use with composite
connections)



Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!



2490.14.01800.

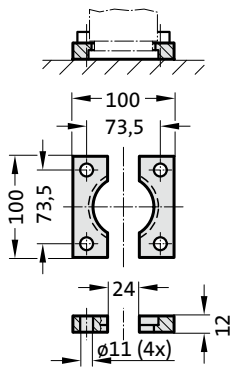
Compact gas spring

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

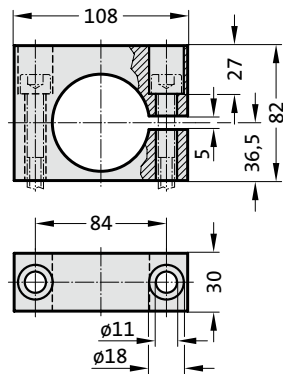
*see mounting example

COMPACT GAS SPRING MOUNTING VARIATIONS

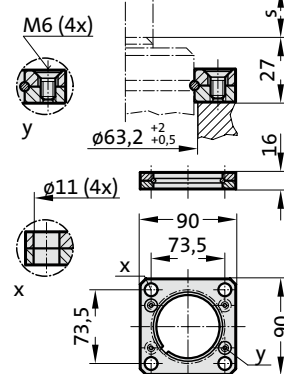
2480.022.01000



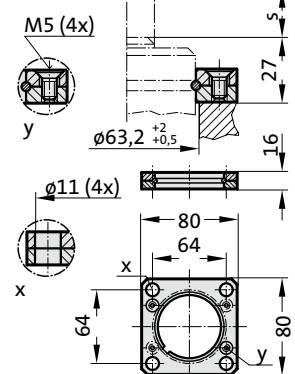
2480.044.03.01000 ²⁾



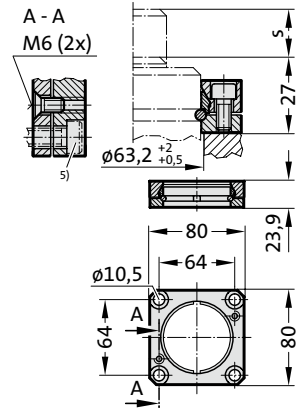
2480.057.01000



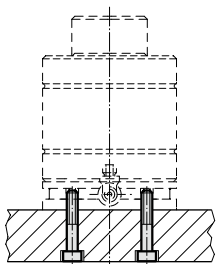
2480.057.03.01000



2480.064.01000 ⁴⁾



Mounting example:

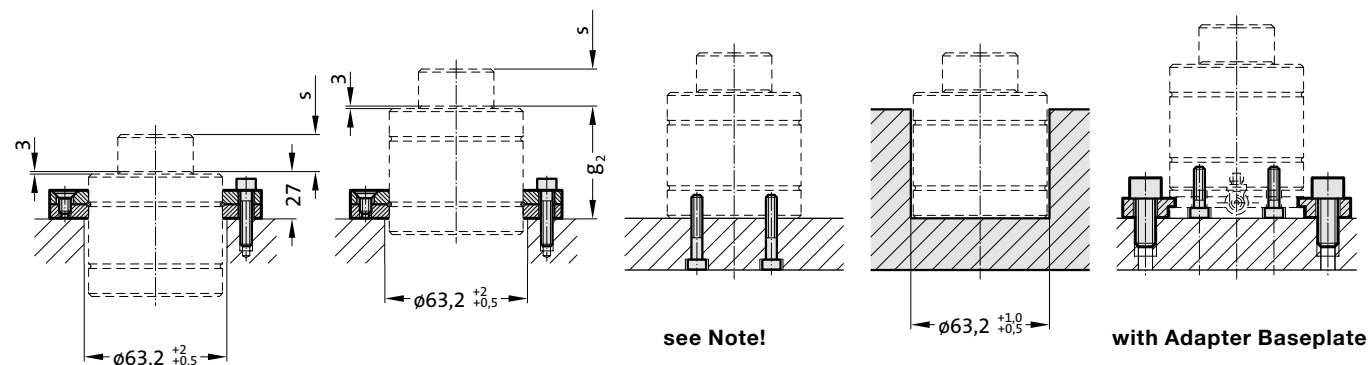


with Adapter Baseplate

Note:

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

Mounting examples:

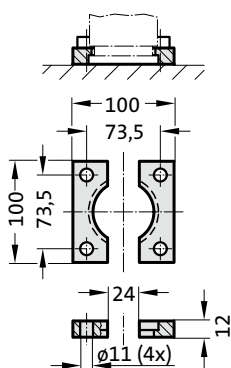


see Note!

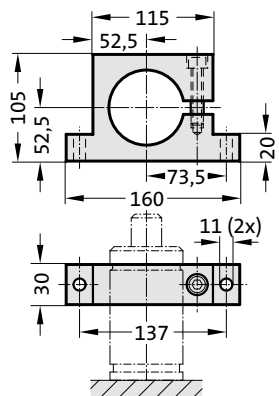
with Adapter Baseplate

COMPACT GAS SPRING MOUNTING VARIATIONS

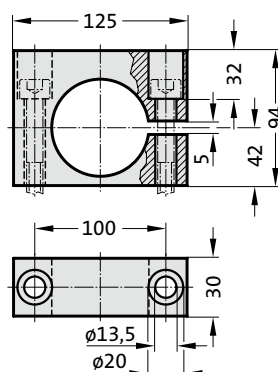
2480.022.01500



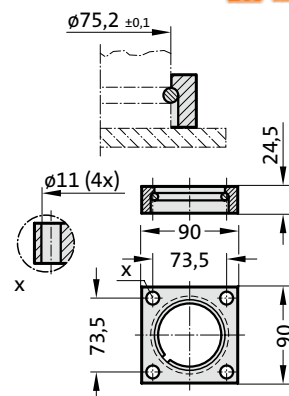
2480.044.01500²⁾



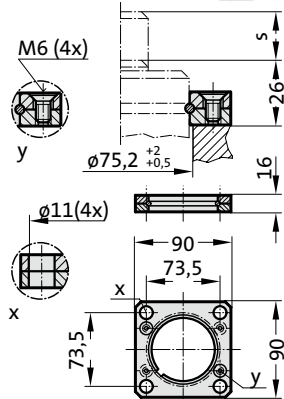
2480.044.03.01500²⁾



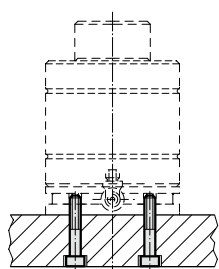
2480.052.04700



2480.058.01500



Mounting example:

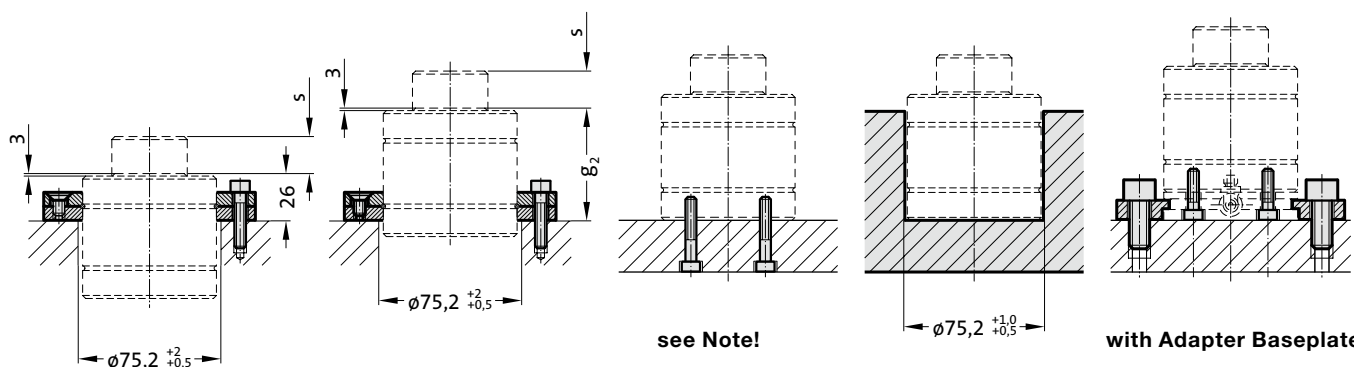


with Adapter Baseplate

Note:

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

Mounting examples:



see Note!

with Adapter Baseplate

COMPACT GAS SPRING

Note:

Initial spring force at 150 bar = 4700 daN

Order No for spare parts kit: 2490.14.04700

Gas spring without valve

Order No (example): 2490.14.04700. .P

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

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

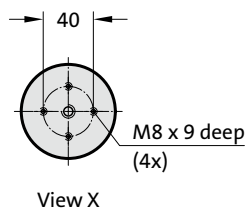
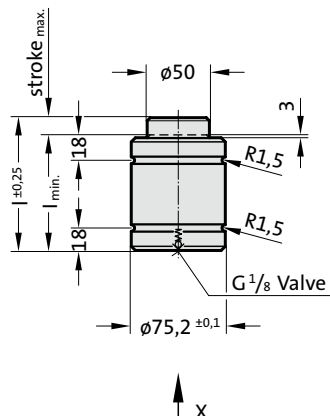
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

approx. 80 to 100 (at 20°C)

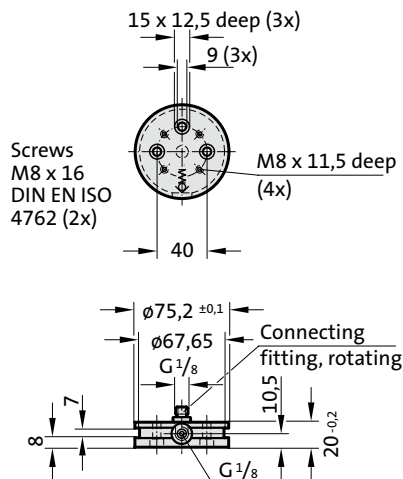
Max. piston speed: 0.8 m/s

2490.14.04700.

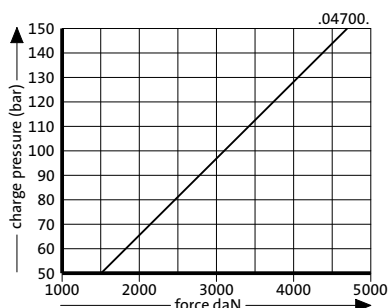


2480.00.20.04700

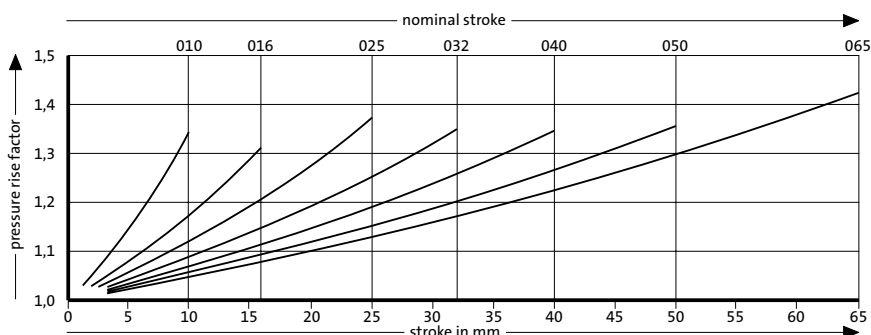
Adapter baseplate with connecting Fitting



Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!



2490.14.04700.

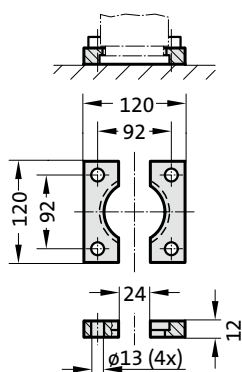
Compact gas spring

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

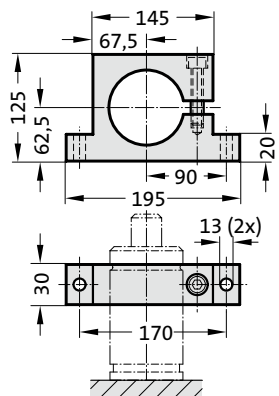
*see mounting example

COMPACT GAS SPRING MOUNTING VARIATIONS

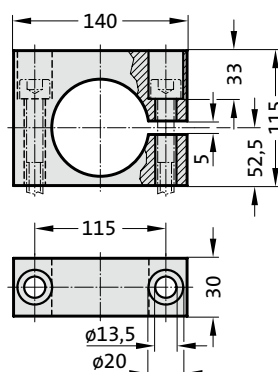
2480.022.03000



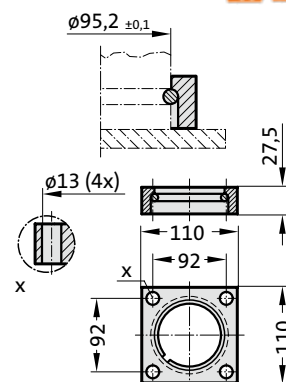
2480.044.03000²⁾



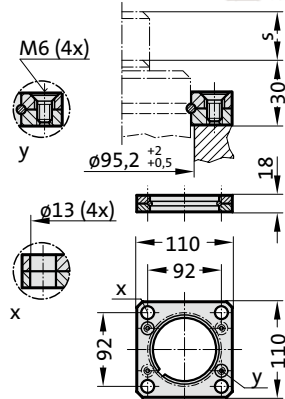
2480.044.03.03000²⁾



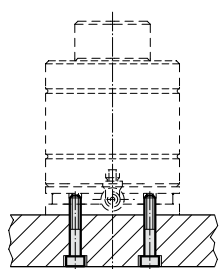
2480.052.07500



2480.058.03000



Mounting example:

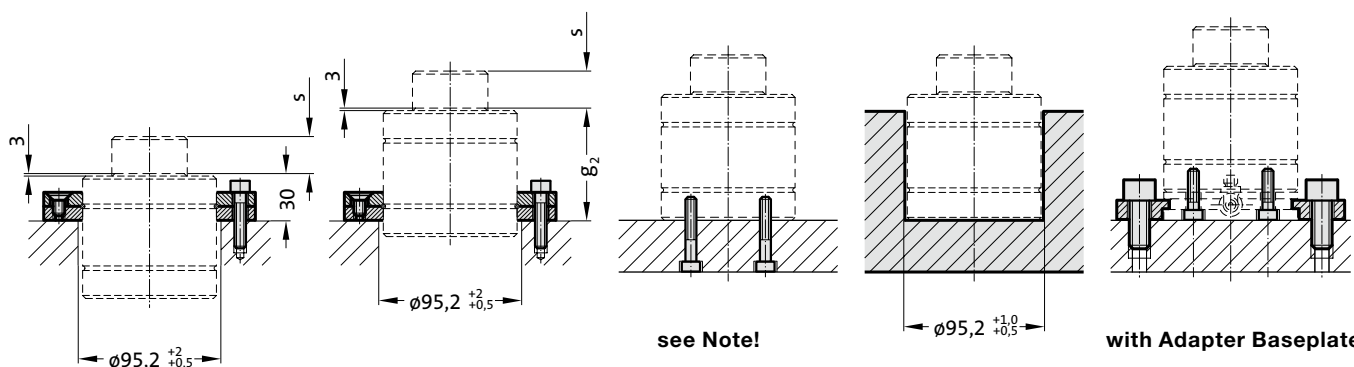


with Adapter Baseplate

Note:

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

Mounting examples:



COMPACT GAS SPRING

Note:
Initial spring force at 150 bar = 7500 daN

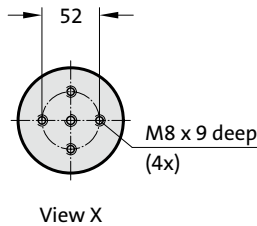
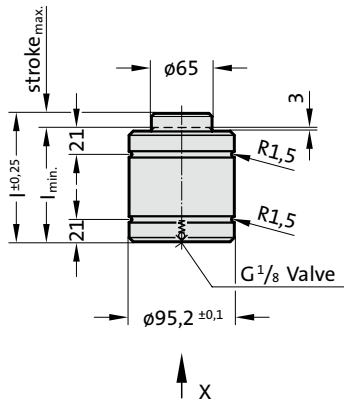
Order No for spare parts kit: 2490.14.07500

Gas spring without valve
Order No (example): 2490.14.07500. .P

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

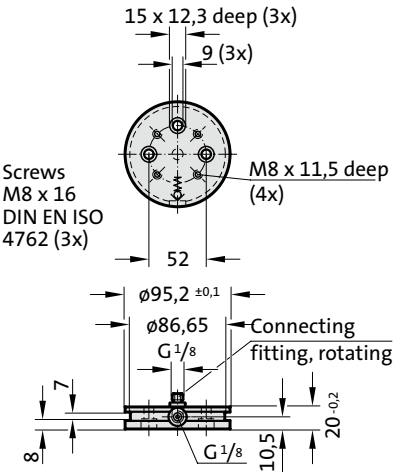
Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute:
approx. 80 to 100 (at 20°C)
Max. piston speed: 0.8 m/s

2490.14.07500.

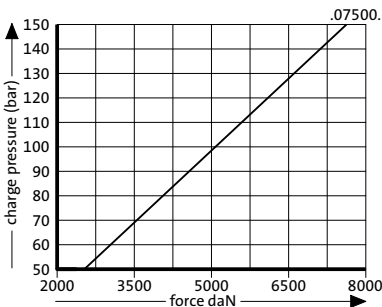


2480.00.20.07500

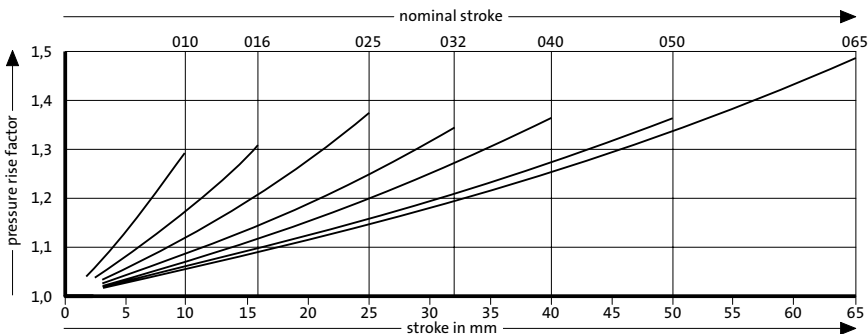
Adapter baseplate with connecting Fitting



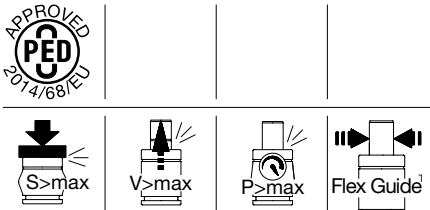
Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!



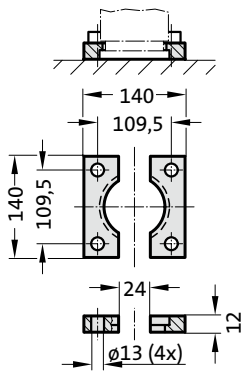
2490.14.07500.
Compact gas spring

Order No	Stroke _{max.} (s)	l _{min.}	l	g ₂ *
2490.14.07500.010	10	80	90	68
2490.14.07500.016	16	100	116	88
2490.14.07500.025	25	120	145	108
2490.14.07500.032	32	150	182	138
2490.14.07500.040	40	170	210	158
2490.14.07500.050	50	205	255	193
2490.14.07500.065	65	214	279	202

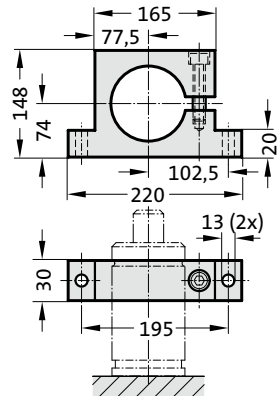
*see mounting example

COMPACT GAS SPRING MOUNTING VARIATIONS

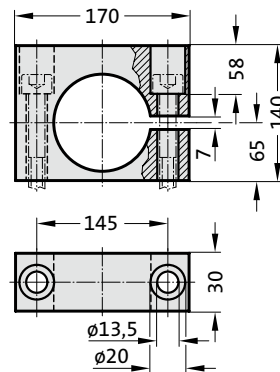
2480.022.05000



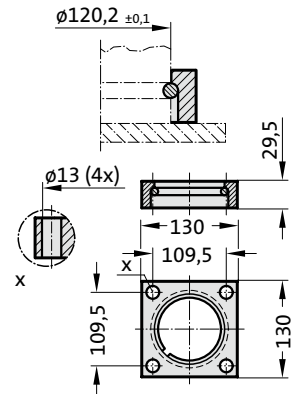
2480.044.05000²⁾



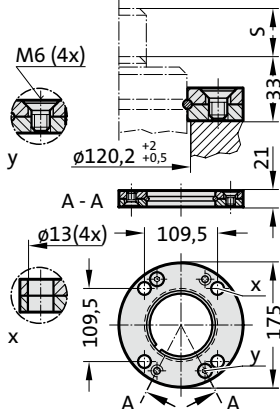
2480.044.03.05000²⁾



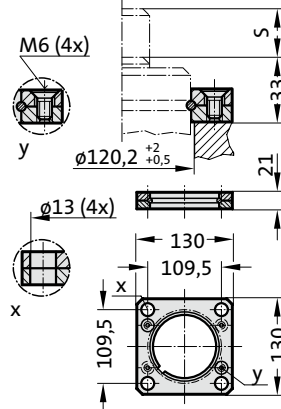
2480.052.11800



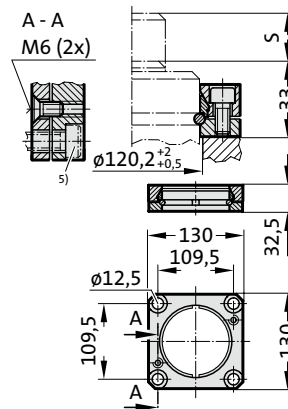
2480.055.05000



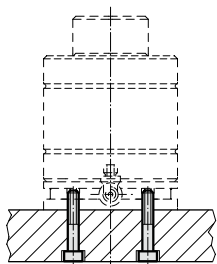
2480.057.05000



2480.064.05000⁴⁾



Mounting example:

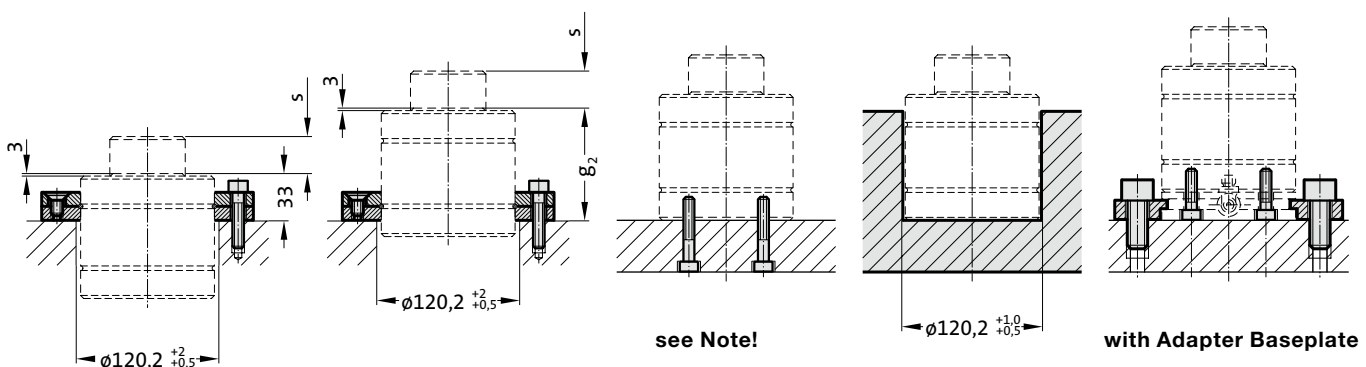


with Adapter Baseplate

Note:

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

Mounting examples:



COMPACT GAS SPRING

Note:
Initial spring force at 150 bar = 11800 daN

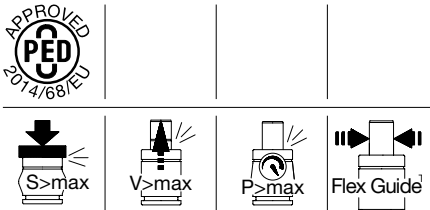
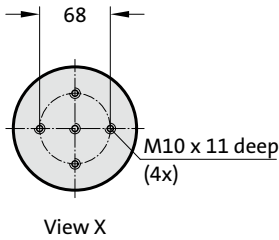
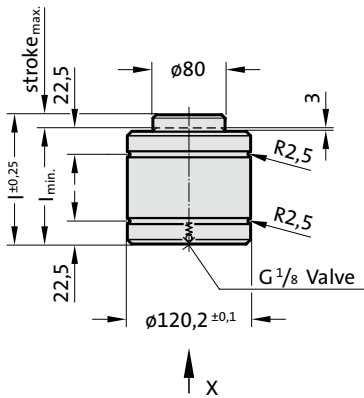
Order No for spare parts kit: 2490.14.11800

Gas spring without valve
Order No (example): 2490.14.11800. .P

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

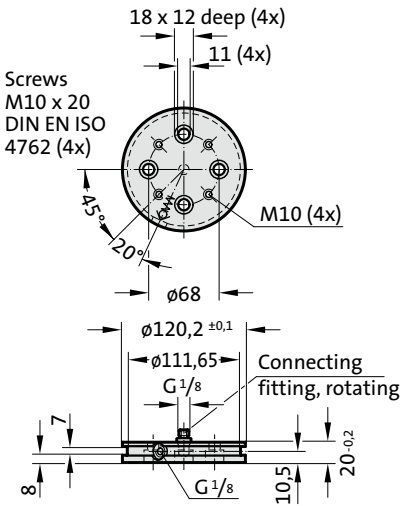
Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: ± 0.3%/°C
Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)
Max. piston speed: 0.8 m/s

2490.14.11800.

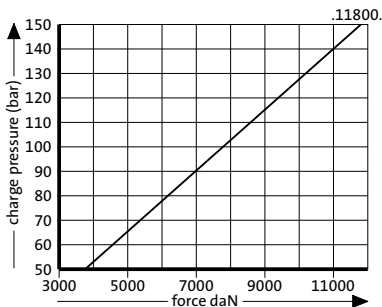


2480.00.20.11800

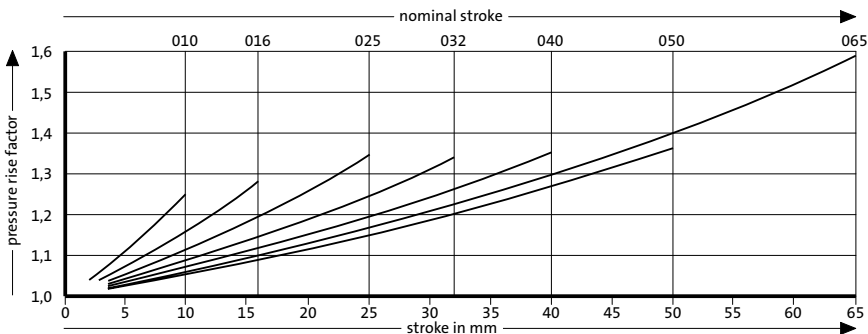
Adapter baseplate with connecting Fitting



Initial spring force
versus charge pressure



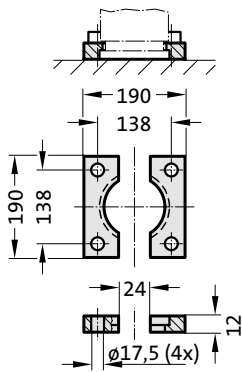
Spring force Diagram displacement versus stroke rise



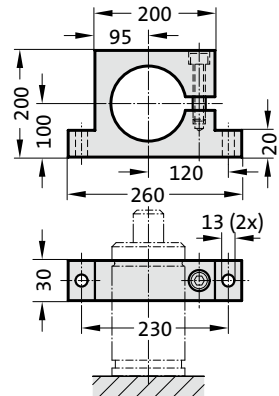
Pressure rise factor accounts for displacement but not external influences!

COMPACT GAS SPRING MOUNTING VARIATIONS

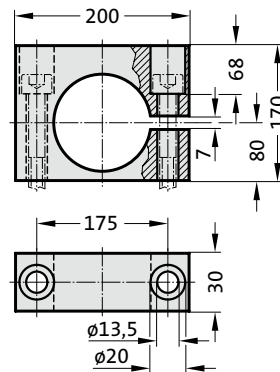
2480.022.07500



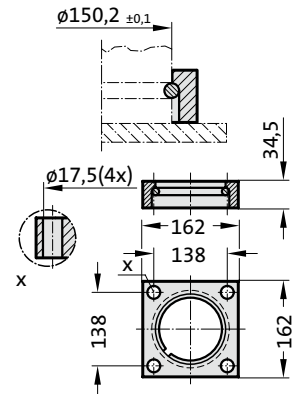
2480.044.07500²⁾



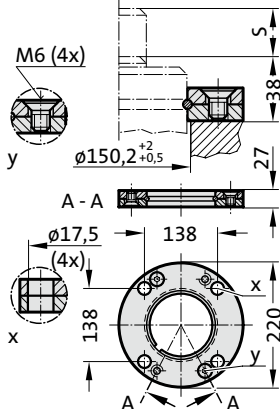
2480.044.03.07500²⁾



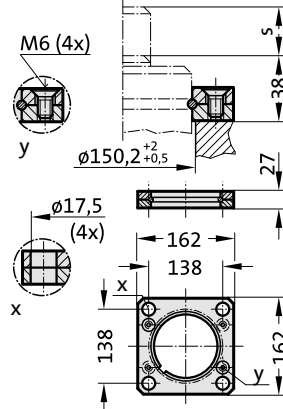
2480.052.18300



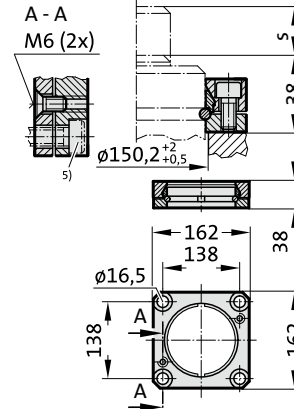
2480.055.07500



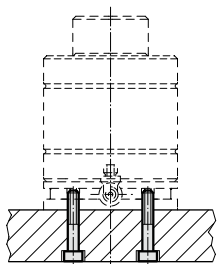
2480.057.07500



2480.064.07500⁴⁾



Mounting example:

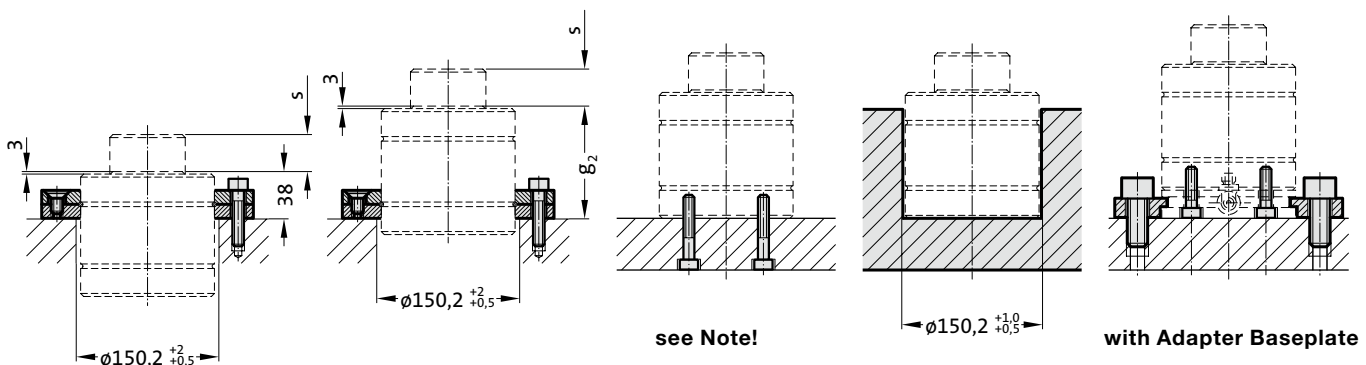


with Adapter Baseplate

Note:

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

Mounting examples:



GAS SPRINGS LOW BUILD HEIGHT



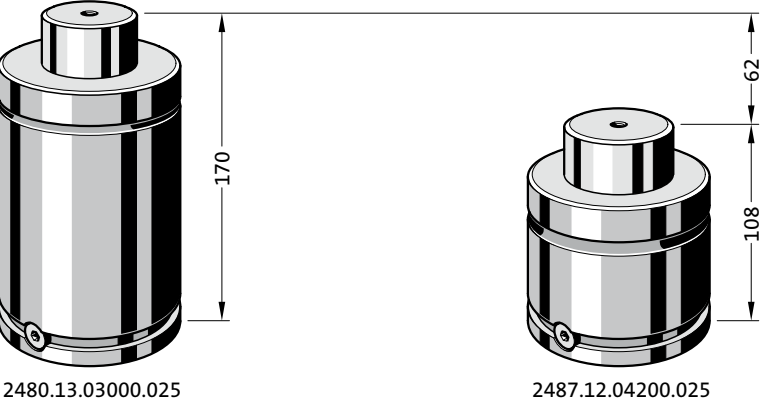
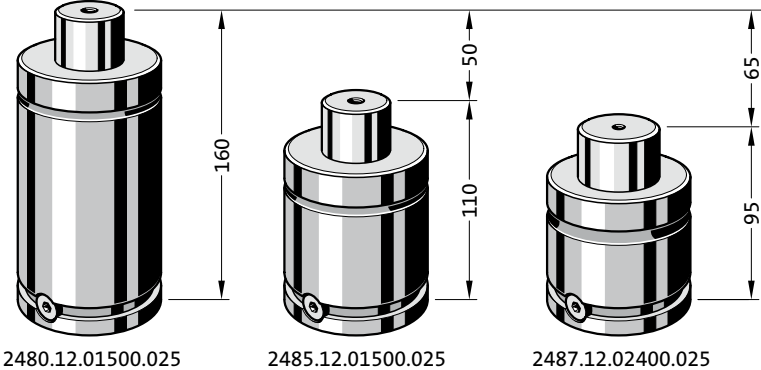
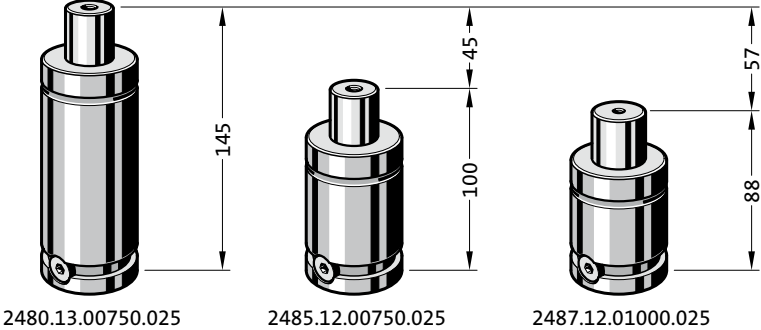
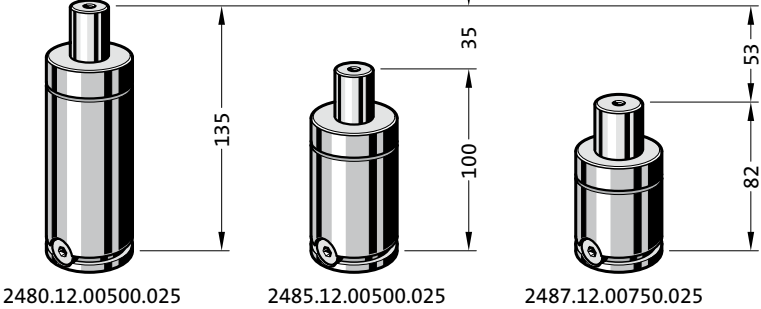
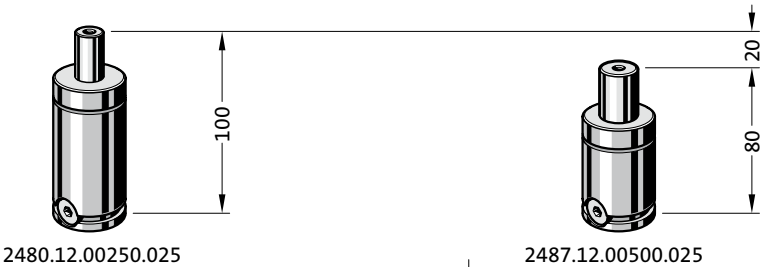
GAS SPRINGS LOW BUILD HEIGHT

Normal construction

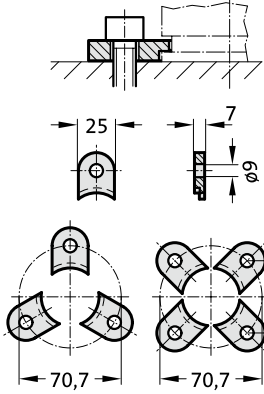
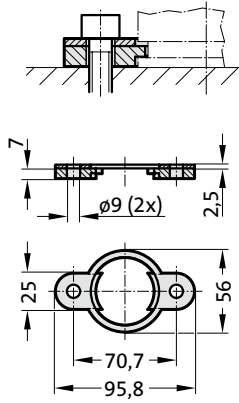
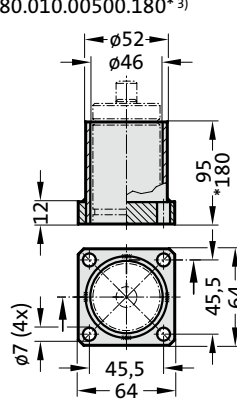
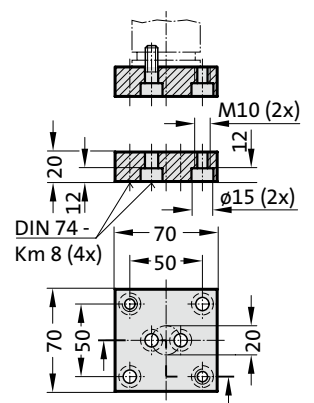
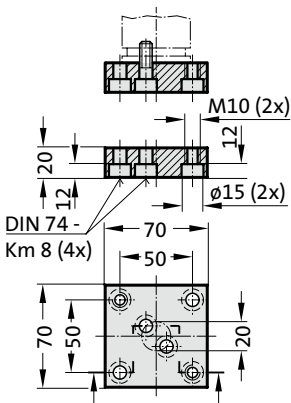
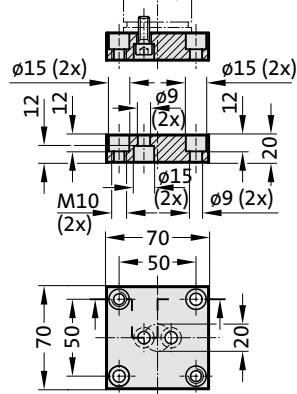
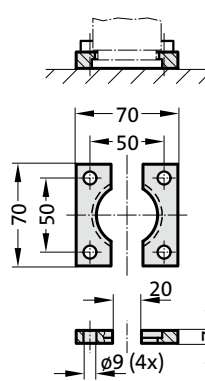
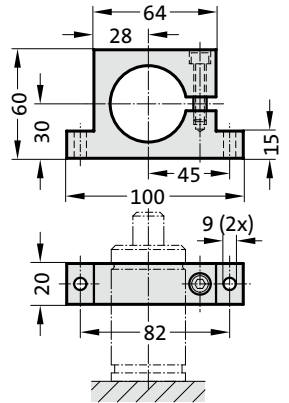
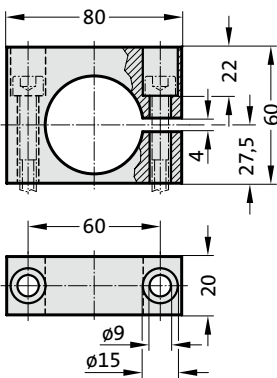
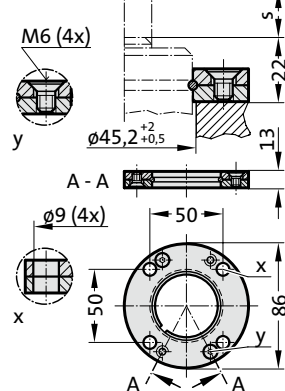
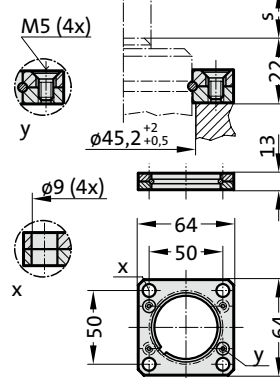
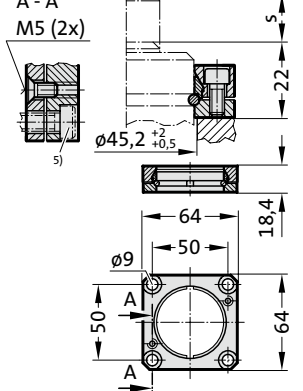
Compact construction

POWERLINE

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



GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

Note:

2) Attention:

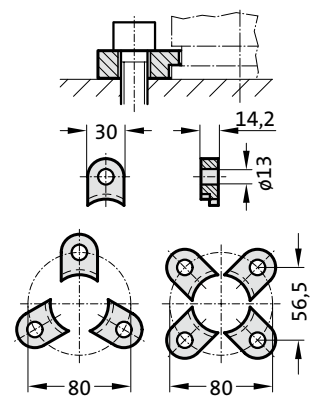
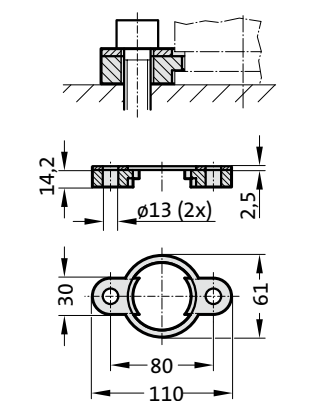
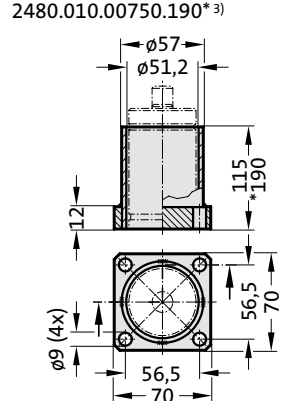
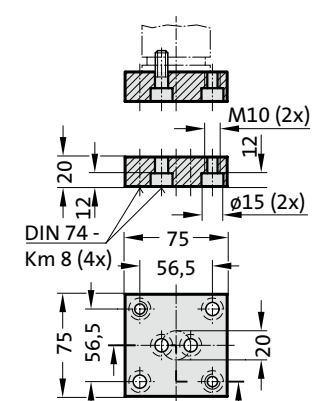
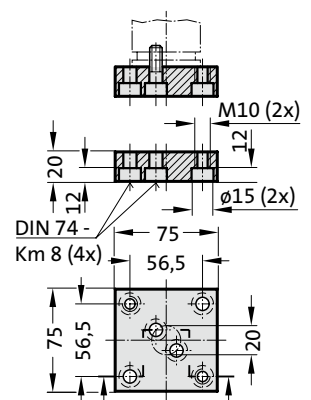
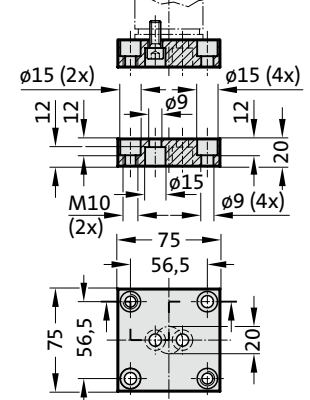
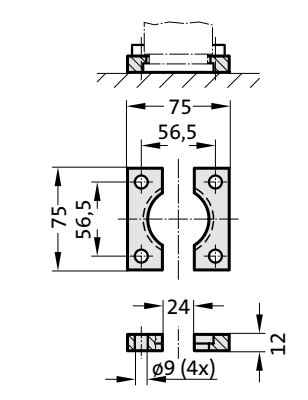
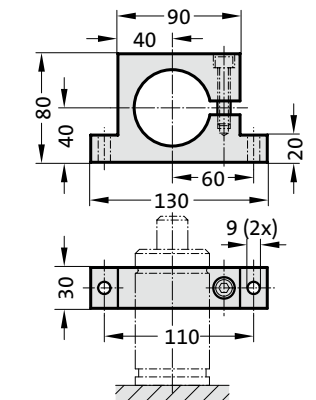
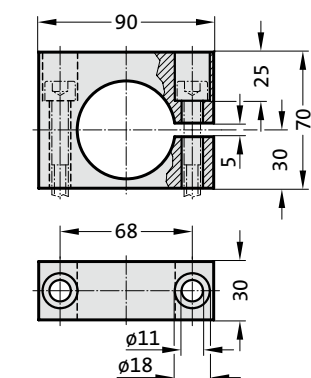
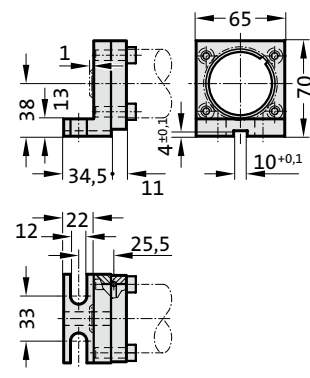
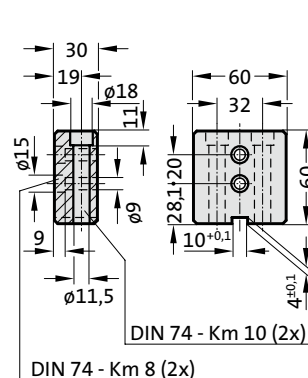
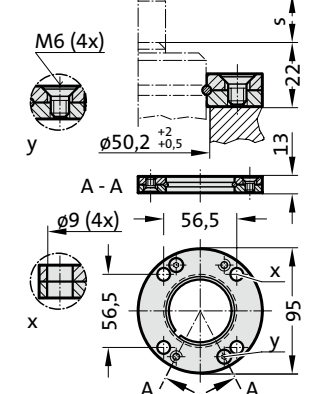
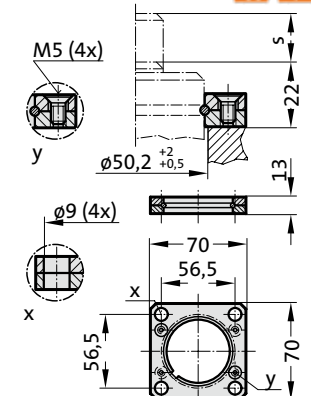
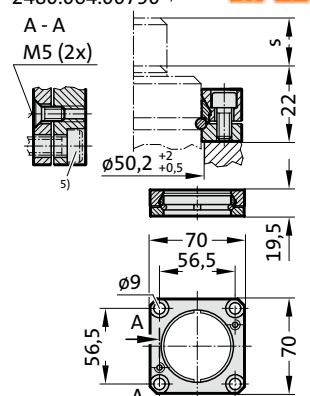
The spring force must be absorbed by the stop Surface!

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 MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

GAS SPRING, WITH LOW BUILD HEIGHT

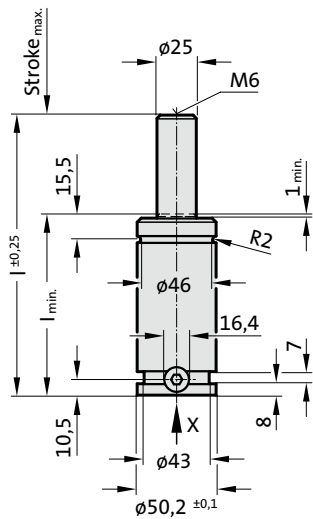
Note:
Initial spring force at 150 bar = 750 daN

Order No for spare parts kit: 2485.12.00750

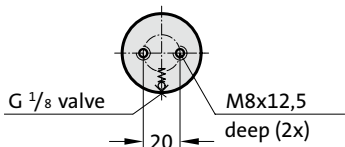
Gas spring without valve
Order No (example): 2485.12.00750. .P

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

2485.12.00750.



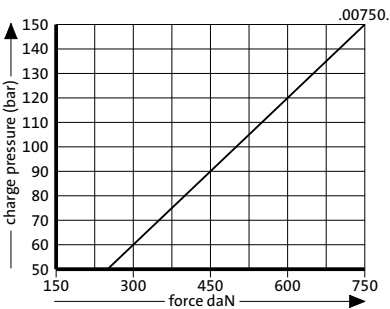
View X - Gas spring



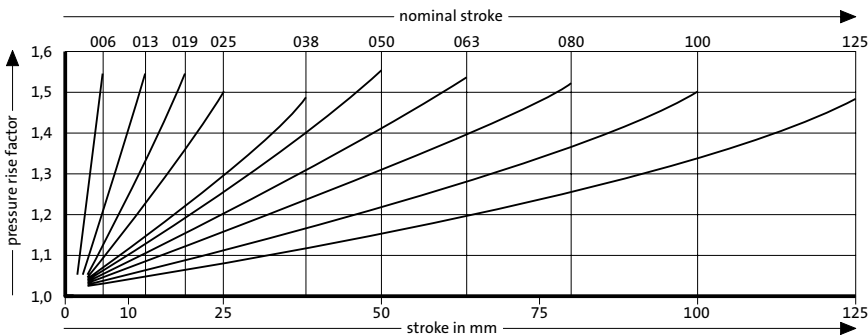
2485.12.00750.
Gas spring, with low build height

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

Initial spring force
versus charge pressure



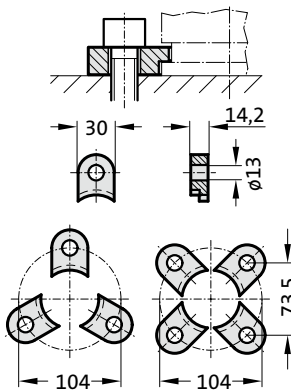
Spring force Diagram displacement versus stroke rise



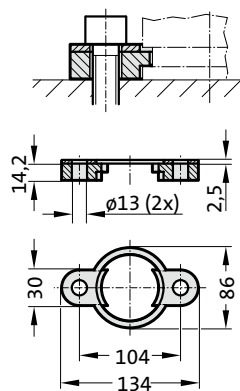
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING, WITH LOW BUILD HEIGHT MOUNTING VARIATIONS

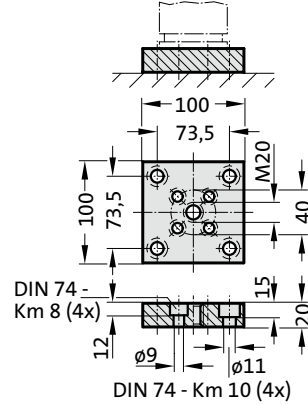
2480.007.01500



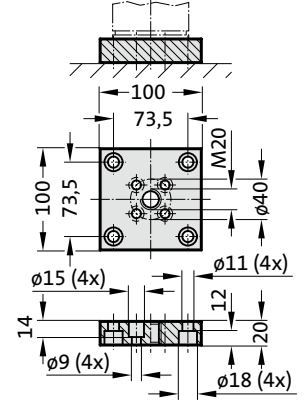
2480.008.01500³⁾



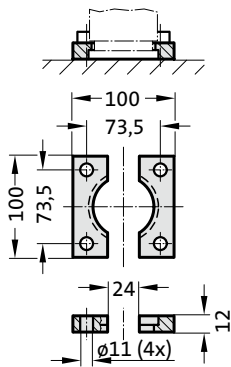
2480.011.01500



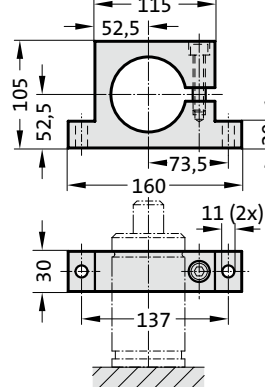
2480.011.01500.2



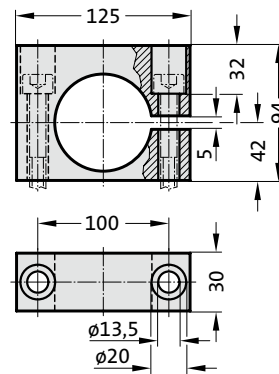
2480.022.01500



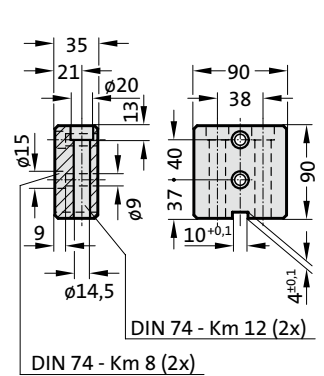
2480.044.01500²⁾



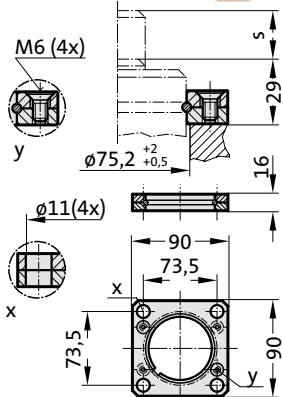
2480.044.03.01500²⁾



2480.047.01500²⁾



2480.058.01500



Note:

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

GAS SPRING, WITH LOW BUILD HEIGHT

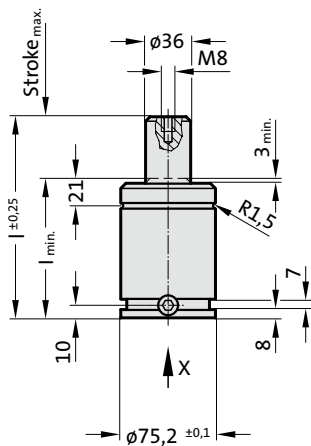
Note:
Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2485.12.01500

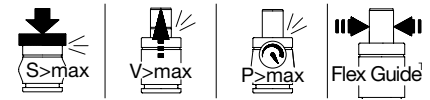
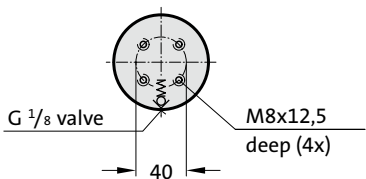
Gas spring without valve
Order No (example): 2485.12.01500. .P

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

2485.12.01500.



View X - Gas spring

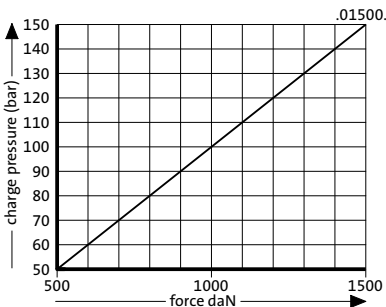


2485.12.01500.

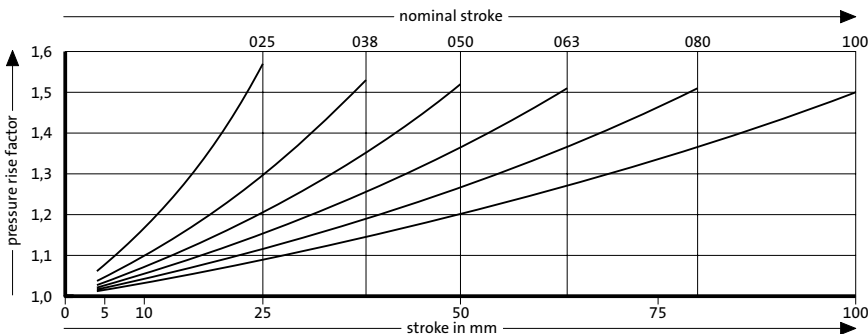
Gas spring, with low build height

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS SPC - SPEED CONTROL™



GAS SPRINGS SPC - SPEED CONTROL™

Description:

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

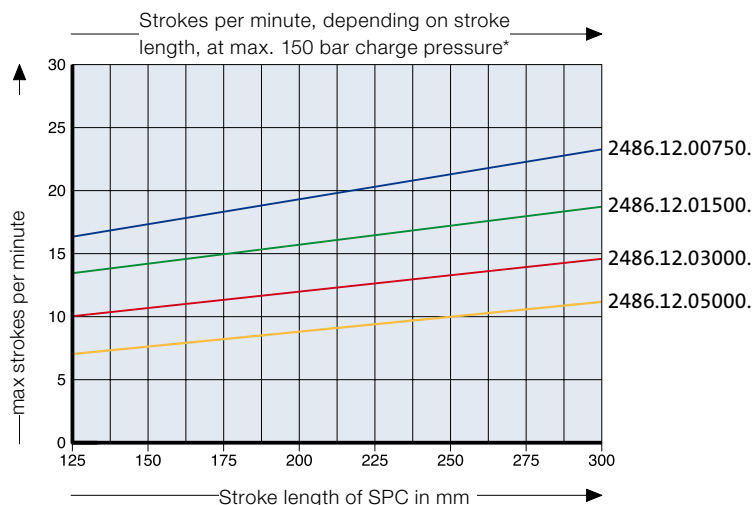
The SPC gas springs have an integrated return stroke delay, which reduces the speed of the gas spring to 0.4 m/s during the last 30 mm stroke. This gently stops the sheet holder.

Properties:

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

GAS SPRINGS SPC - SPEED CONTROL™

Performance:



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



Note !

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

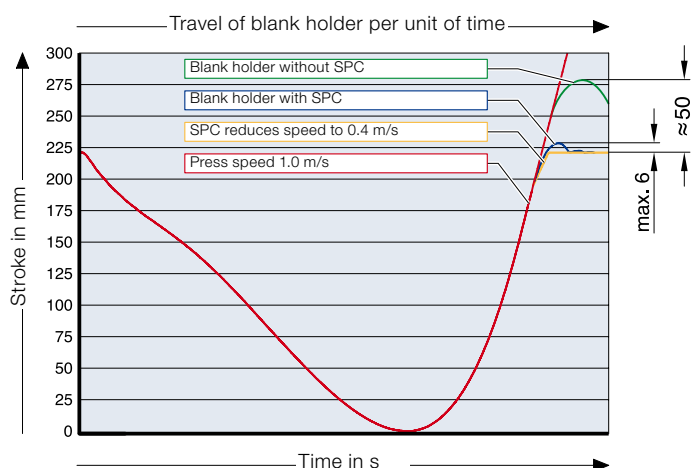


Caution !

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

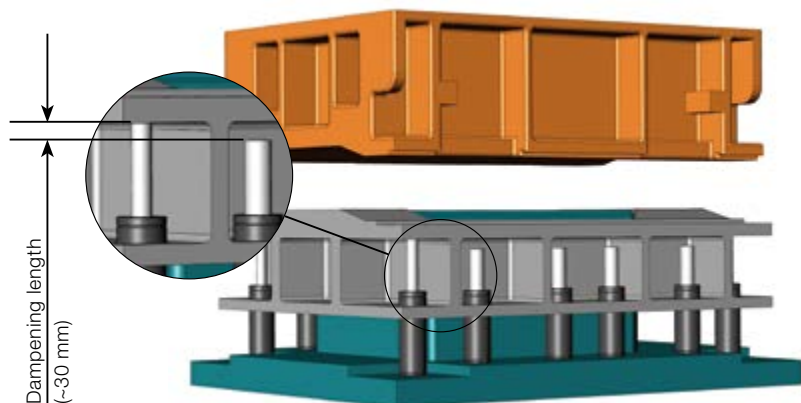
*At ambient room temperature with free air flow

Function example:



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

Installation:



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

Option 1:

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

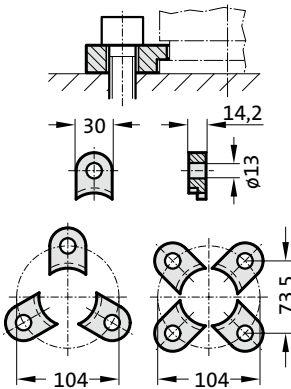
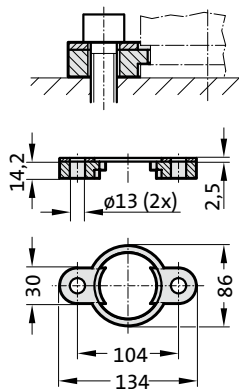
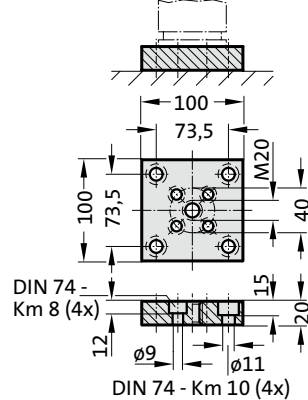
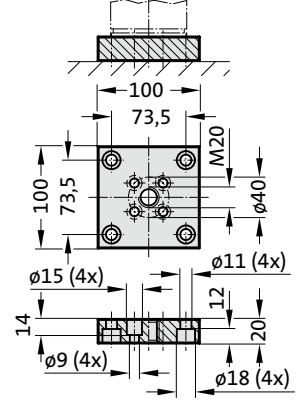
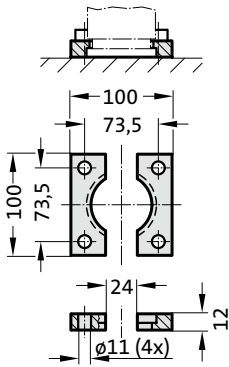
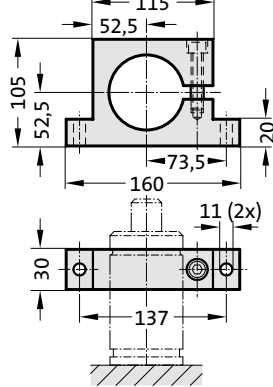
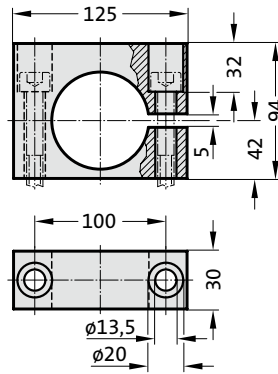
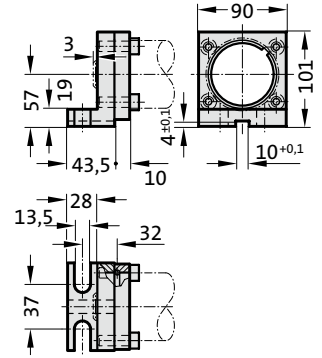
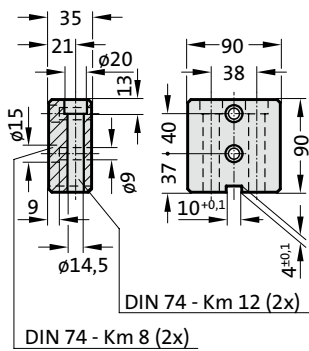
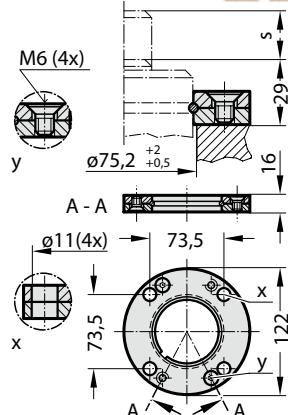
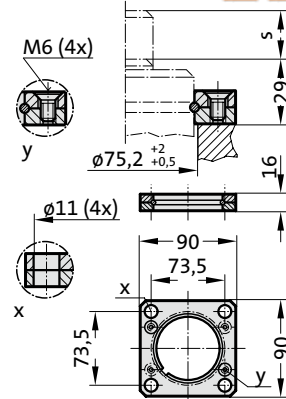
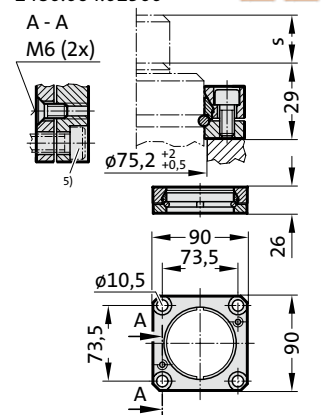
Option 2:

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

Attention:

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

GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

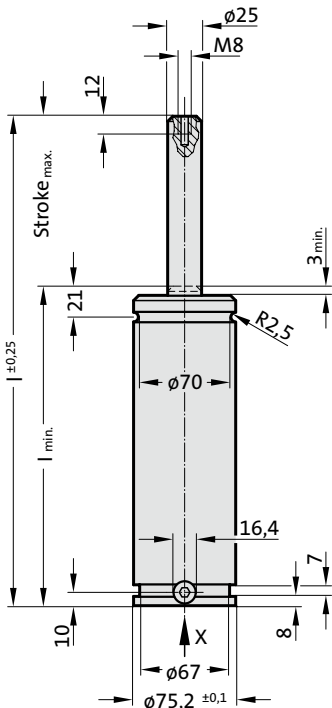
GAS SPRING SPEED CONTROL, CUSHIONED

Note:
Initial spring force at 150 bar = 750 daN

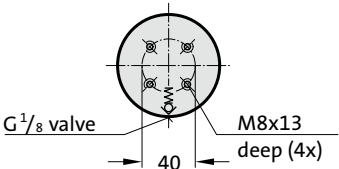
Order No for spare parts kit: 2486.12.00750

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

2486.12.00750.



View X - Gas spring

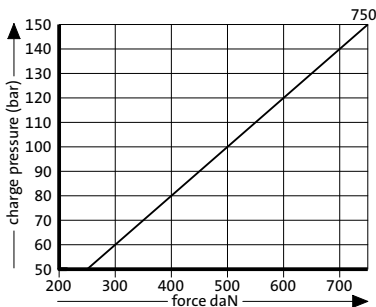


2486.12.00750.

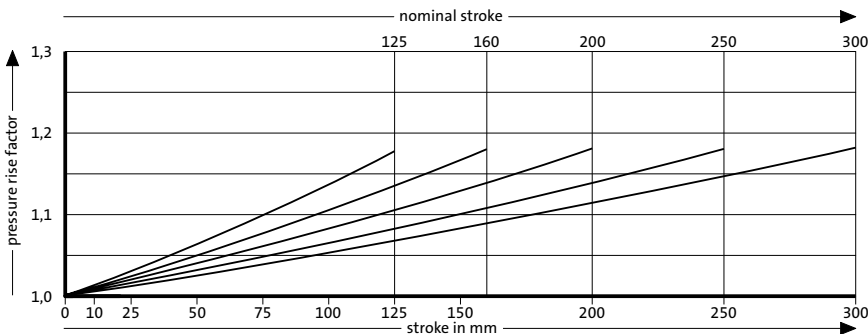
Gas spring **SPEED CONTROL,**
cushioned

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

Initial spring force
versus charge pressure



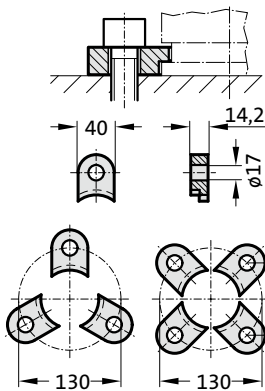
Spring force Diagram displacement versus stroke rise



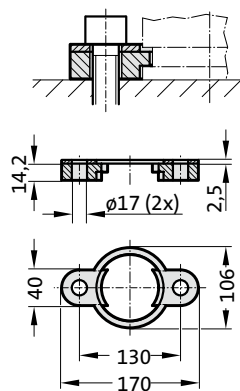
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

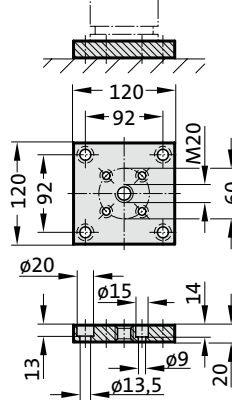
2480.007.03000



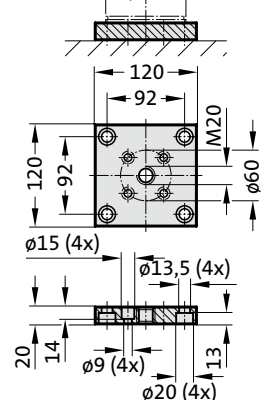
2480.008.03000³⁾



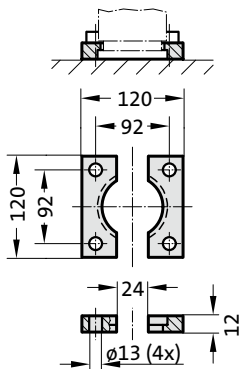
2480.011.03000



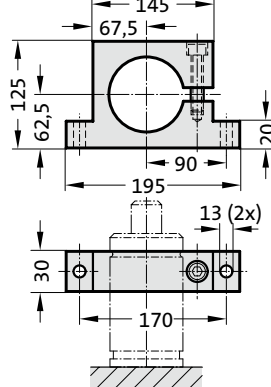
2480.011.03000.2



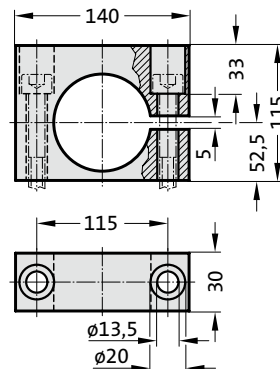
2480.022.03000



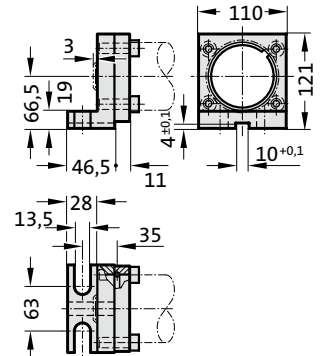
2480.044.03000²⁾



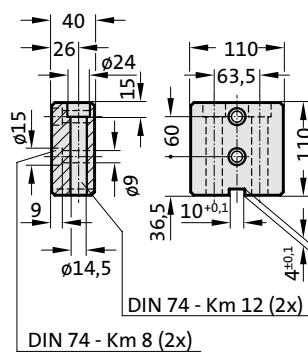
2480.044.03.03000²⁾



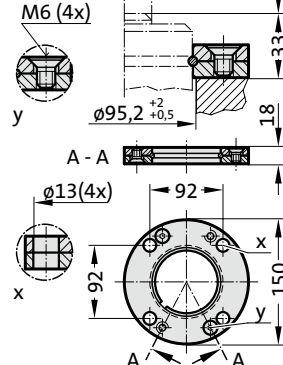
2480.045.03000²⁾



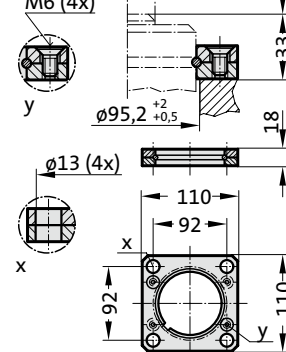
2480.047.03000²⁾



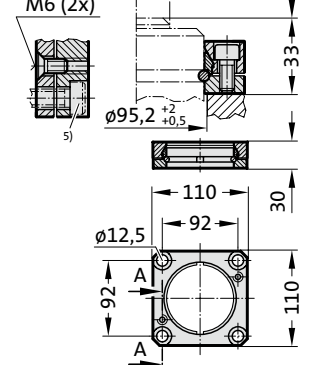
2480.055.03000



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)

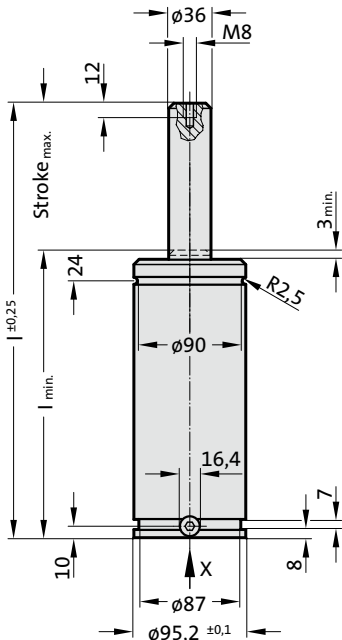
GAS SPRING SPEED CONTROL, CUSHIONED

Note:
Initial spring force at 150 bar = 1500 daN

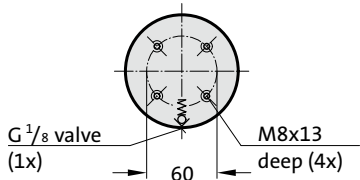
Order No for spare parts kit: 2486.12.01500

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

2486.12.01500.



View X - Gas spring

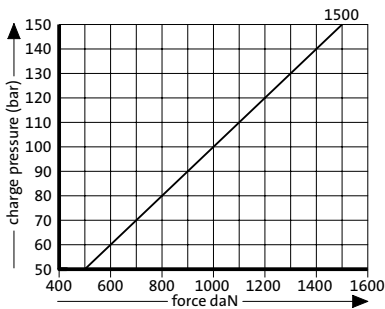


2486.12.01500.

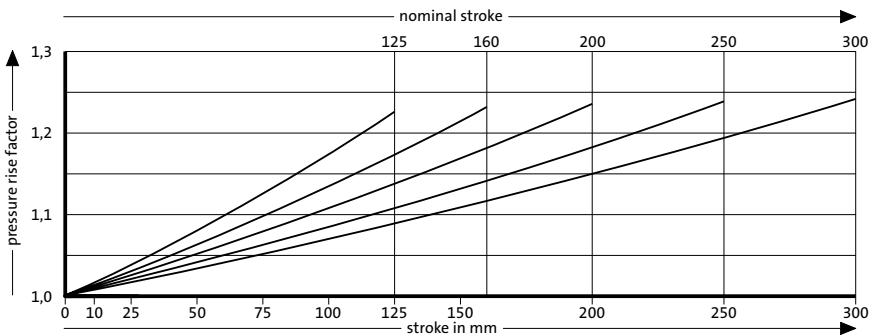
Gas spring **SPEED CONTROL,**
cushioned

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

Initial spring force
versus charge pressure

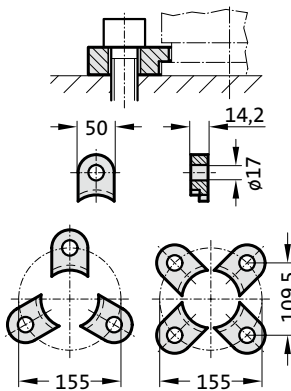
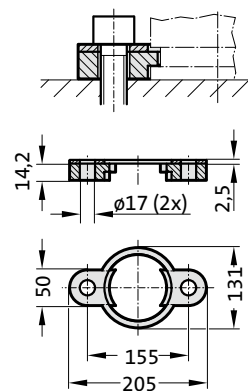
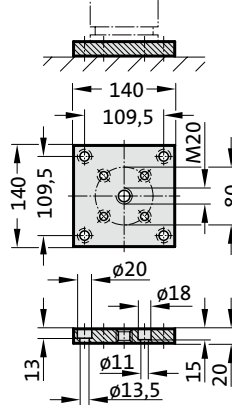
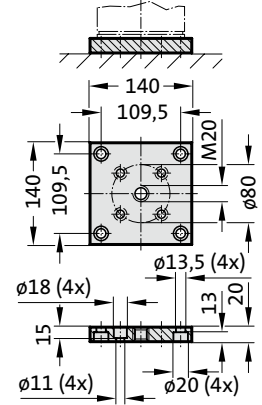
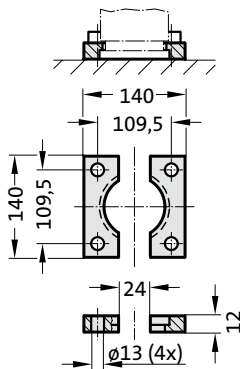
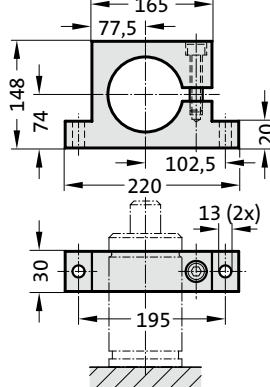
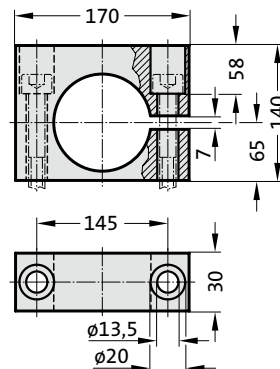
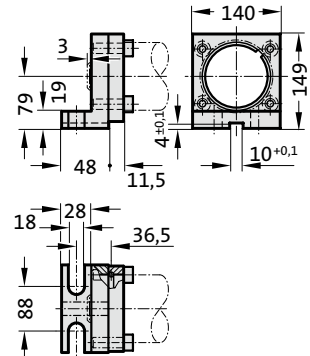
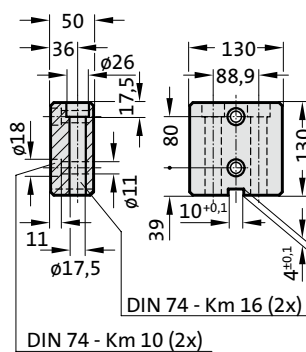
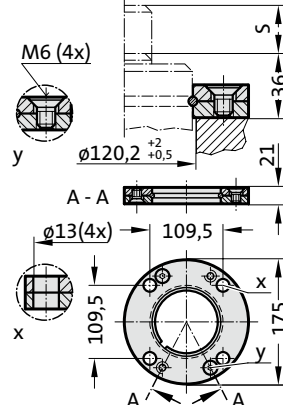
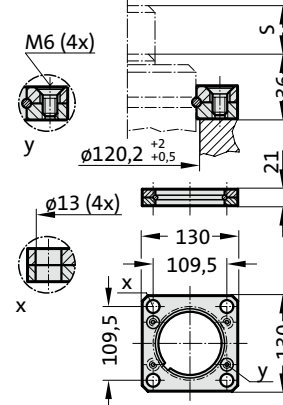
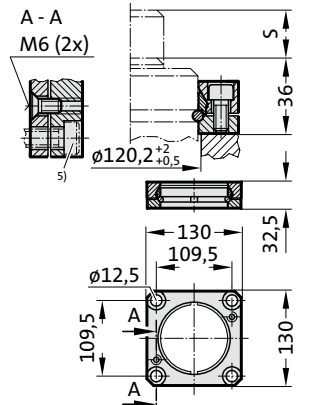


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

Note:

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

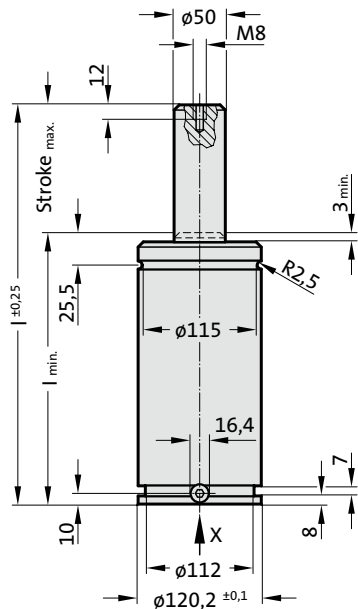
GAS SPRING SPEED CONTROL, CUSHIONED

Note:
Initial spring force at 150 bar = 3000 daN

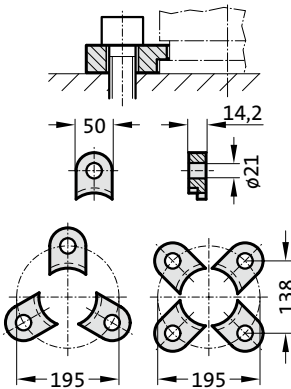
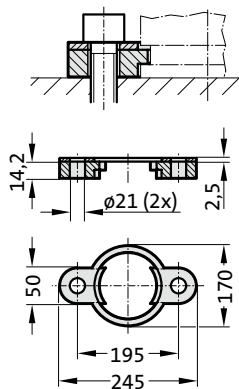
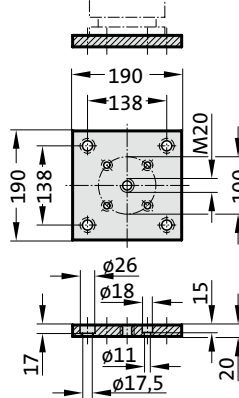
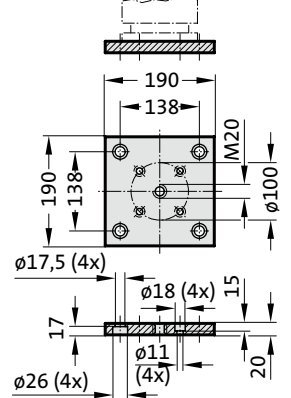
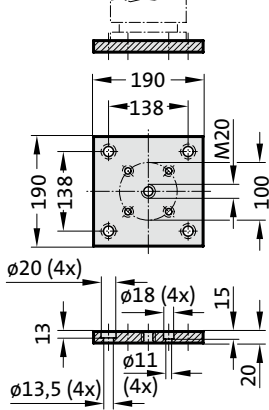
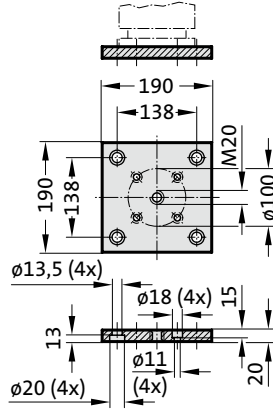
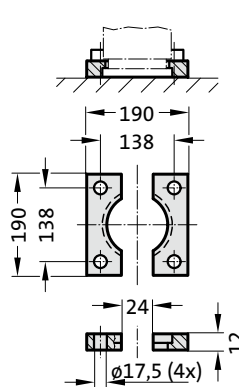
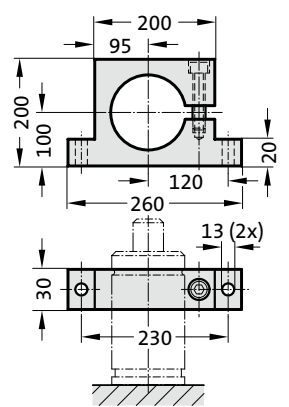
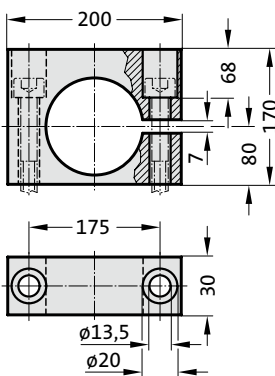
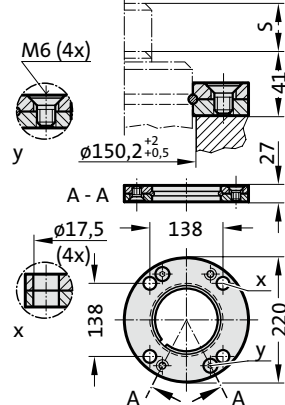
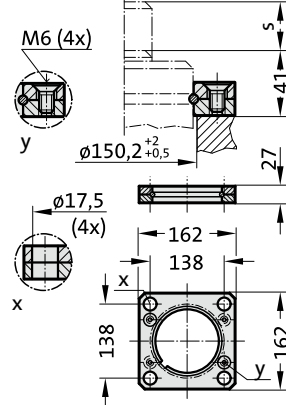
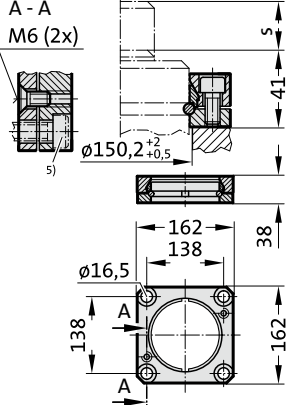
Order No for spare parts kit: 2486.12.03000

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

2486.12.03000.



GAS SPRING SPEED CONTROL, CUSHIONED MOUNTING VARIATIONS

Note:

2) Attention:

The spring force must be absorbed by the stop Surface!

3) Not for use with composite connection.

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

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

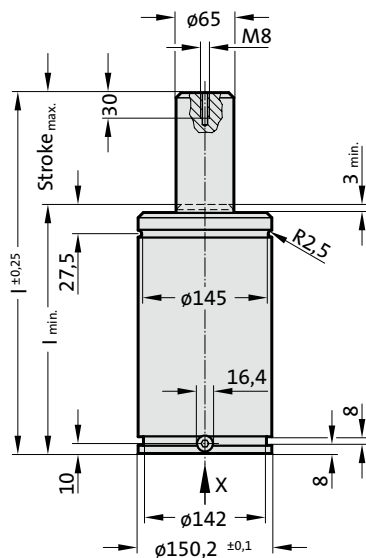
GAS SPRING SPEED CONTROL, CUSHIONED

Note:
Initial spring force at 150 bar = 5000 daN

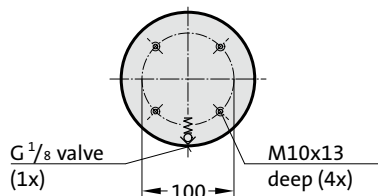
Order No for spare parts kit: 2486.12.05000

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

2486.12.05000.



View X - Gas spring

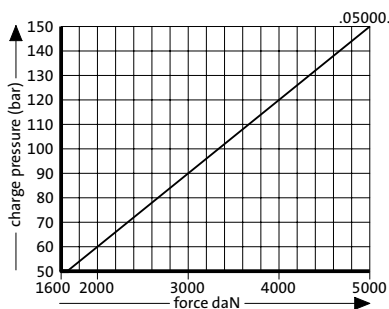


2486.12.05000.

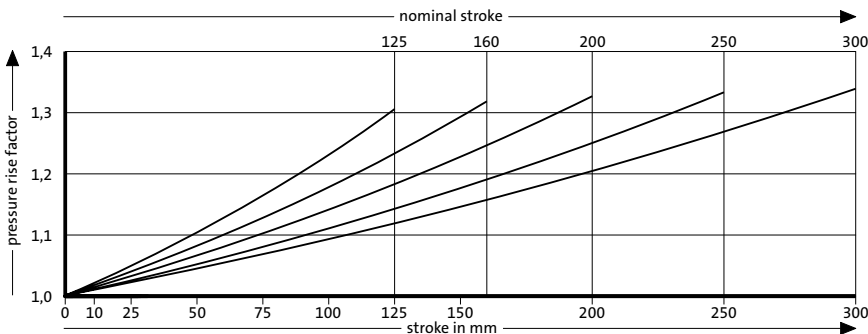
**Gas spring SPEED CONTROL,
cushioned**

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS DS FOR DIE SEPARATION



GAS SPRINGS DS FOR DIE SEPARATION

Description

In line of reducing the set-up time while installing the tool in the press there are used autonomous acted gas springs for tool spacing. While using conventional gas springs they are activated with every press stroke about the whole stroke length.

The new FIBRO gas spring, DS (Die Separation) have been developed especially for tool spacing.

Because of the slow return stroke speed, the gas spring DS does not need the total stroke length.

The FIBRO gas spring, DS minimises unwanted friction in the tool, press and in the gas spring itself.

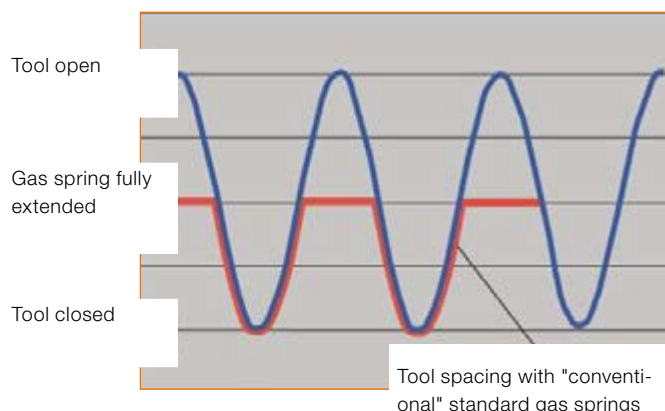
A further benefit is that they use up to 80% less energy than "conventional" standard gas springs.

Function:

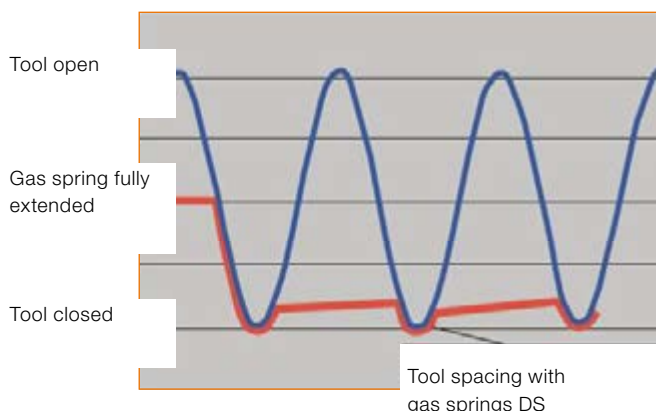
When conventional standard gas springs are used to distance the upper and lower parts of the die, additional initial forces are exerted on each stroke carried out. This force can increase further at the end of the stroke (see diagram 1). When using the "new" DS gas springs in the same application, the force is reduced to less than 10% for each stroke (diagram 2).

The return stroke speed of the gas springs DS is very slow. The duration of the complete return stroke is 1-2 minutes. However, this slow speed has no negative influence on the end position (gas springs fully extended). The piston rod is actuated oscillating up to 10% of the total stroke depending on the production rate.

Diagrams 1

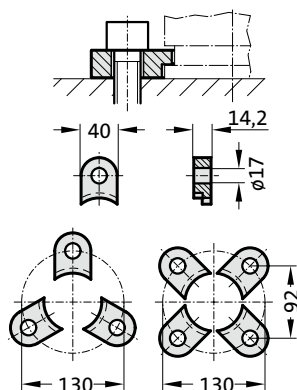


Diagrams 2

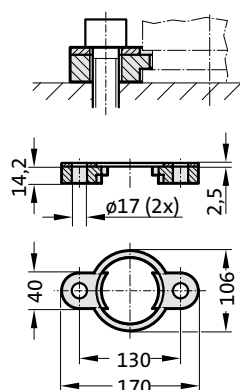


GAS SPRING DS MOUNTING VARIATIONS

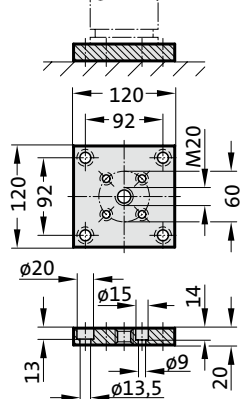
2480.007.03000



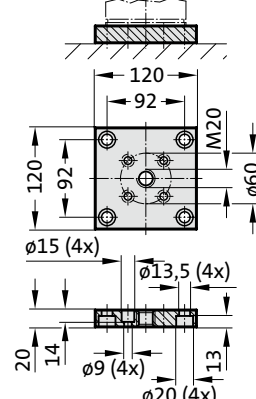
2480.008.03000³⁾



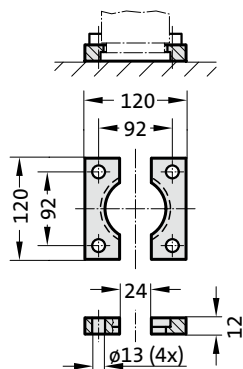
2480.011.03000



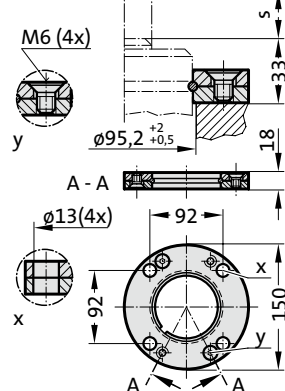
2480.011.03000.2



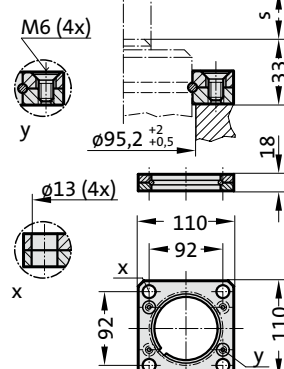
2480.022.03000



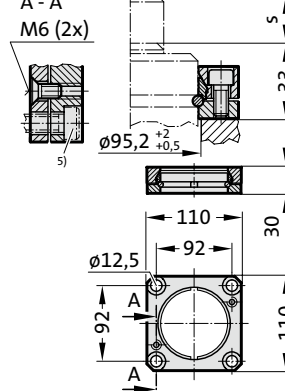
2480.055.03000



2480.057.03000



2480.064.03000⁴⁾



Note:

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

GAS SPRING DS

Note:

Initial spring force at 150 bar = 3000 daN

Order No. for spare parts kit: 2486.22.03000

Pressure medium: Nitrogen - N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C bis +80°C

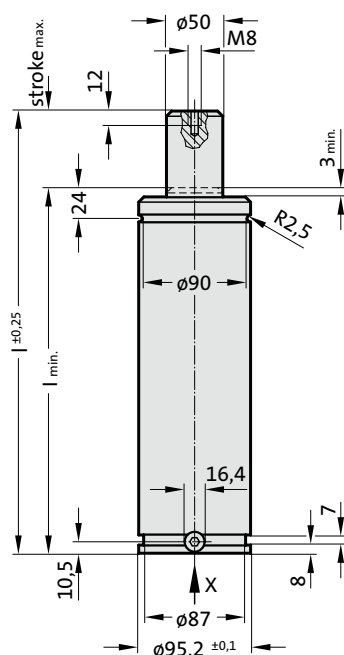
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

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

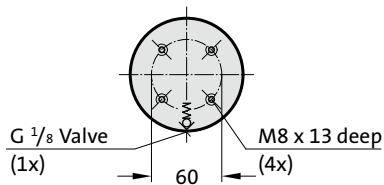
Max. piston speed: 1.6 m/s

Max. return stroke speed: 0.2 m/min

2486.22.03000.



View X - Gas spring

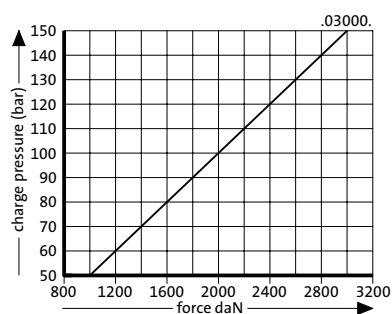


2486.22.03000.

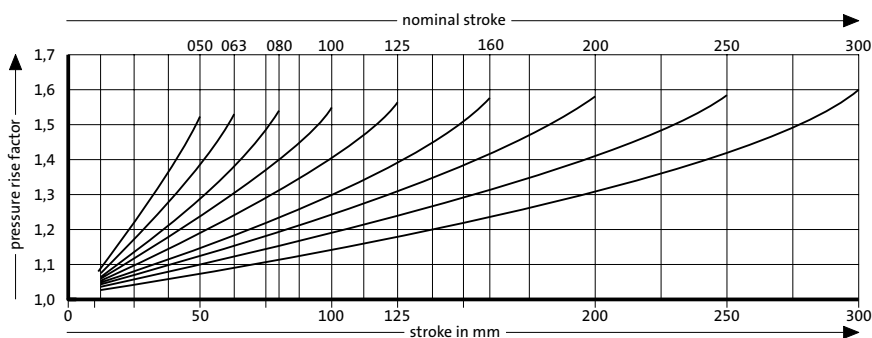
Gas spring DS

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

Initial spring force versus charge pressure



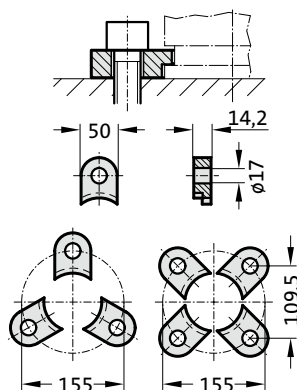
Spring force Diagram displacement versus stroke rise



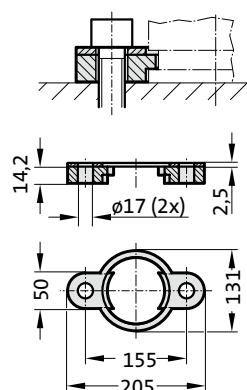
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING DS MOUNTING VARIATIONS

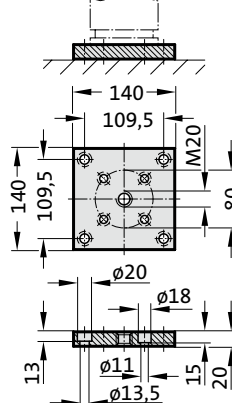
2480.007.05000



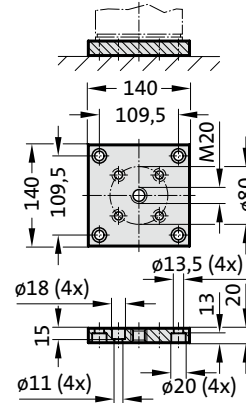
2480.008.05000³⁾



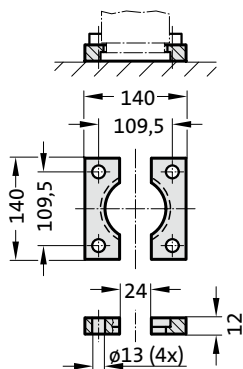
2480.011.05000



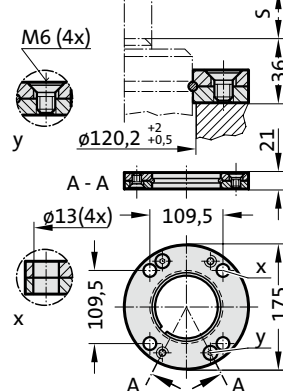
2480.011.05000.2



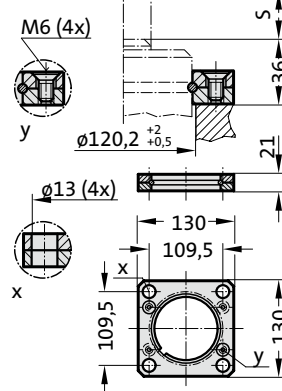
2480.022.05000



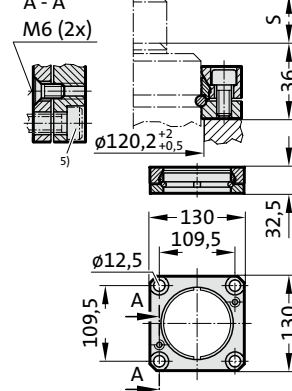
2480.055.05000



2480.057.05000



2480.064.05000⁴⁾



Note:

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

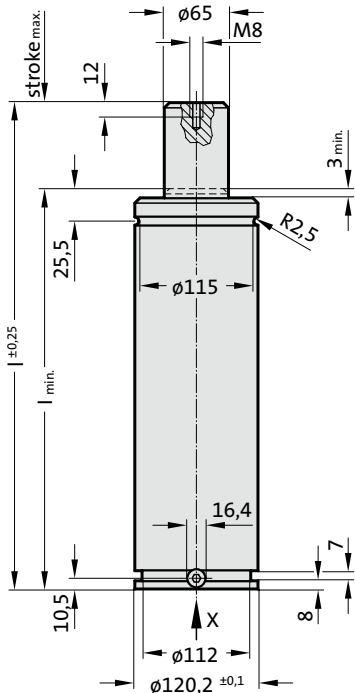
GAS SPRING DS

Note:
Initial spring force at 150 bar = 5000 daN

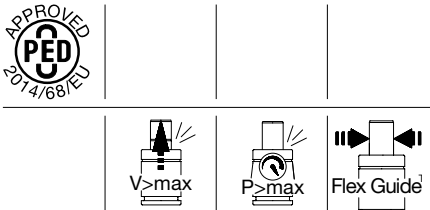
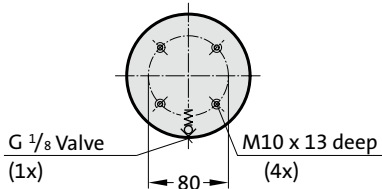
Order No. for spare parts kit: 2486.22.05000

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

2486.22.05000.



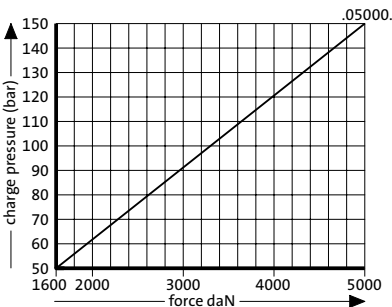
View X - Gas spring



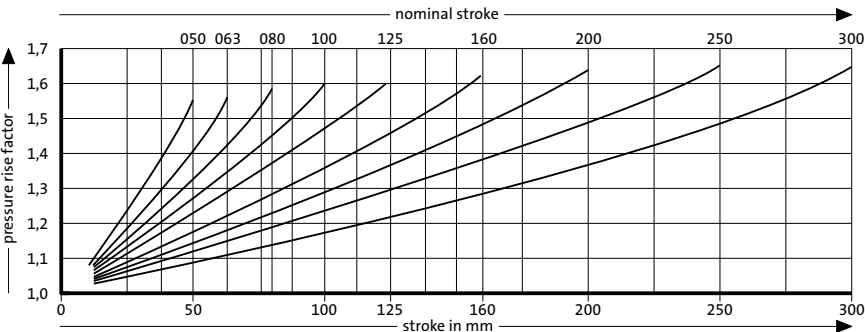
2486.22.05000.
Gas spring DS

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

Initial spring force
versus charge pressure



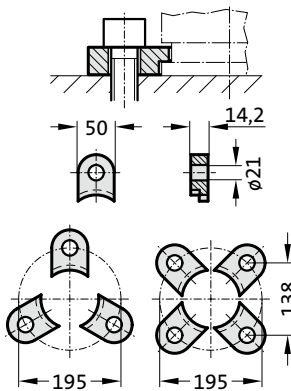
Spring force Diagram displacement versus stroke rise



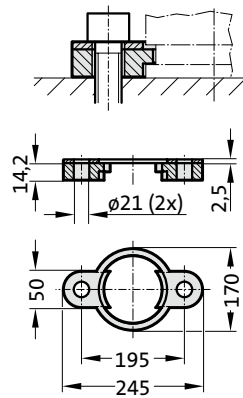
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING DS MOUNTING VARIATIONS

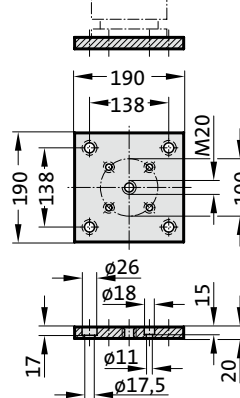
2480.007.07500



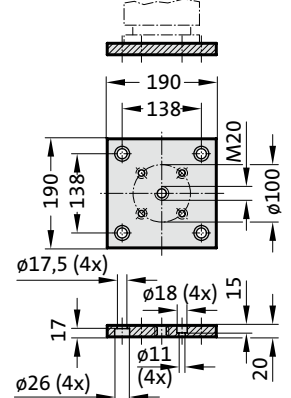
2480.008.07500³⁾



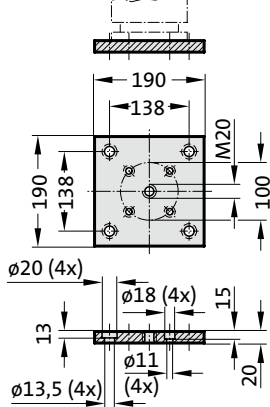
2480.011.07500



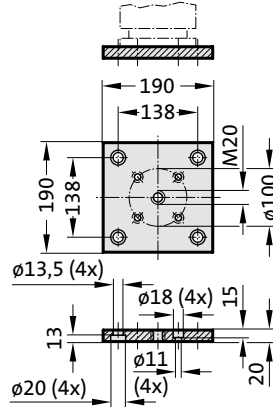
2480.011.07500.2



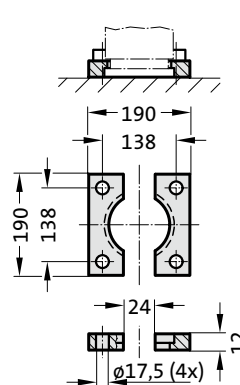
2480.011.03.07500



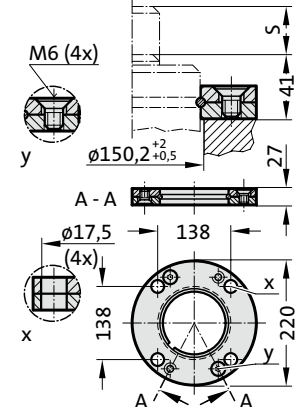
2480.011.03.07500.2



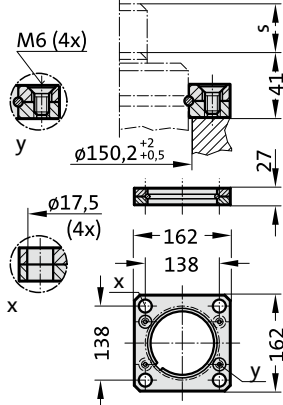
2480.022.07500



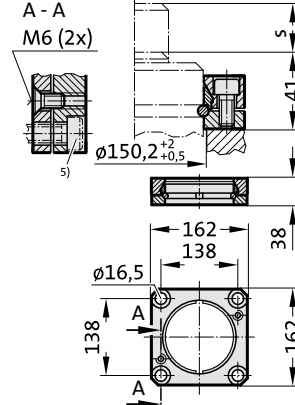
2480.055.07500



2480.057.07500



2480.064.07500⁴⁾



Note:

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

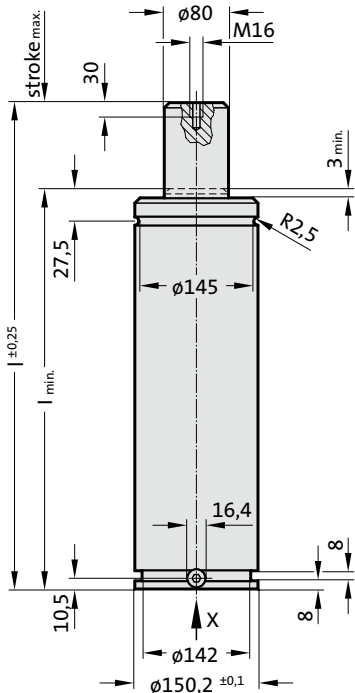
GAS SPRING DS

Note:
Initial spring force at 150 bar = 7500 daN

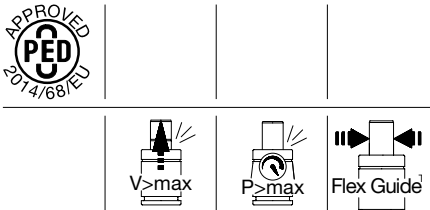
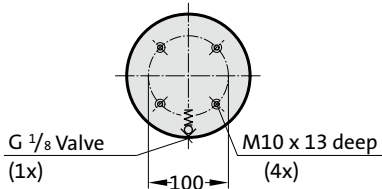
Order No. for spare parts kit: 2486.22.07500

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

2486.22.07500.



View X - Gas spring

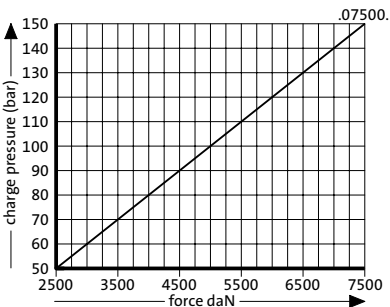


2486.22.07500.

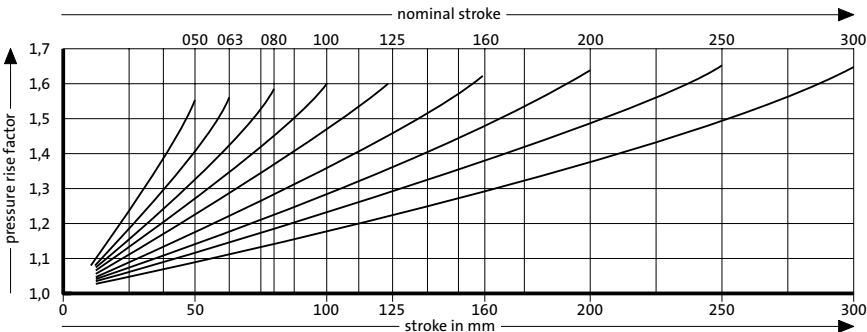
Gas spring DS

Order No	Stroke _{max.} (s)	l _{min.}	l
2486.22.07500.050	50	205	255
2486.22.07500.063	63.5	218.5	282
2486.22.07500.080	80	235	315
2486.22.07500.100	100	255	355
2486.22.07500.125	125	280	405
2486.22.07500.160	160	315	475
2486.22.07500.200	200	355	555
2486.22.07500.250	250	405	655
2486.22.07500.300	300	455	755

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS WITH FASTENING TO FORD STANDARD WDX

Please request your catalogue



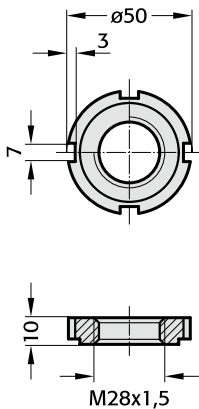
GAS SPRINGS WITH THREAD



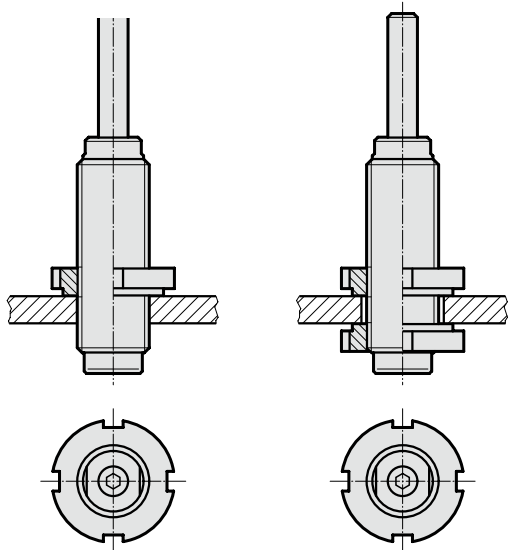
GAS SPRING WITH EXTERNAL THREAD

MOUNTING VARIATIONS

2480.005.00200.
Slotted nut



Mounting examples:



GAS SPRING WITH EXTERNAL THREAD

Description:

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

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

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

Note:

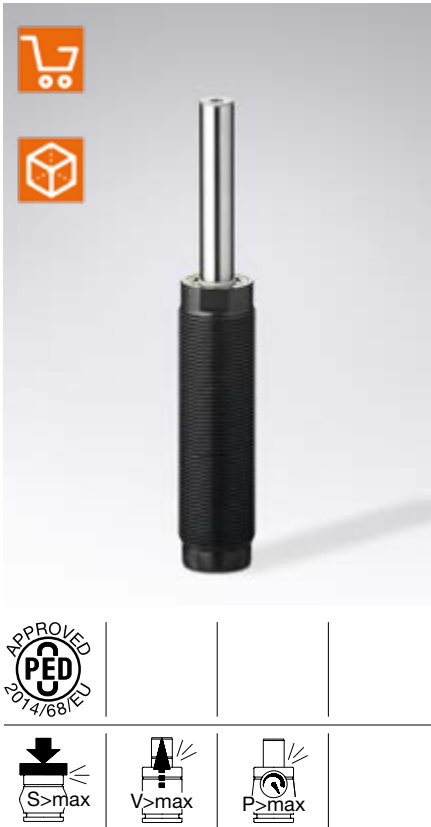
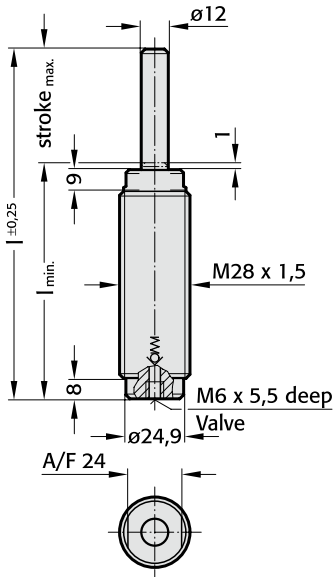
Order No for spare parts kit: 2480.21.00150

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

Spring forces as per spring diagram.

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

2480.32.



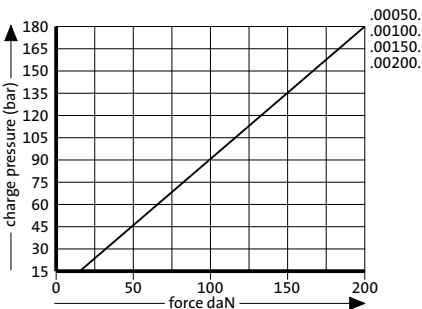
2480.32. Gas spring with external thread

Order No*	Stroke _{max.}	l	l _{min.}
2480.32.00000.010	10	62	52
2480.32.00000.013	12.7	67.4	54.7
2480.32.00000.016	16	74	58
2480.32.00000.025	25	92	67
2480.32.00000.038	38.1	118.2	80.1
2480.32.00000.050	50	142	92
2480.32.00000.063	63.5	169	105.5
2480.32.00000.080	80	202	122
2480.32.00000.100	100	242	142
2480.32.00000.125	125	292	167

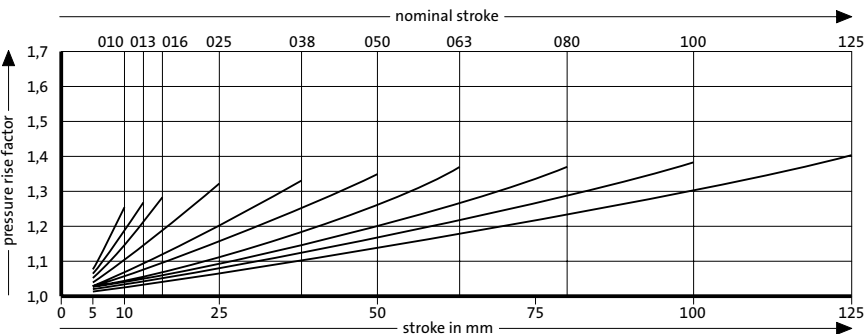
*complete with initial spring force

Spring force marking:
Initial spring force [daN] - Pressure [bar] - Colour:
.00050. - 45 - green
.00100. - 90 - blue
.00150. - 135 - red
.00200. - 180 - yellow

Initial spring force
versus charge pressure



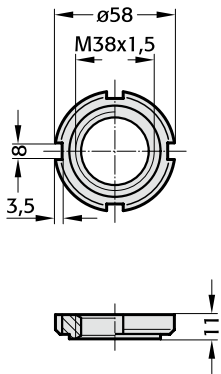
Spring force Diagram displacement versus stroke rise



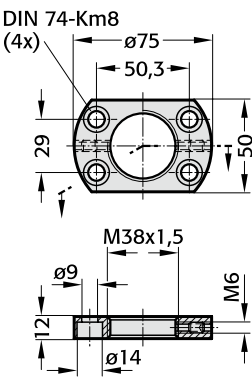
Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH EXTERNAL THREAD MOUNTING VARIATIONS

2480.005.00250.
Slotted nut



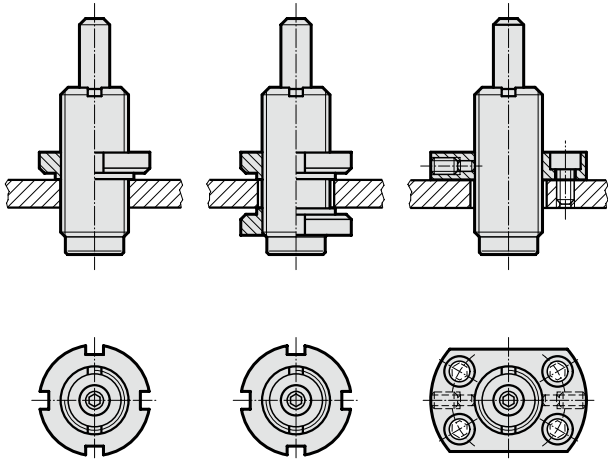
2480.006.00250.
Clamped flange



2480.00.51.01
Box spanner for assembling/disassembling
of gas springs



Mounting examples:



GAS SPRING WITH EXTERNAL THREAD

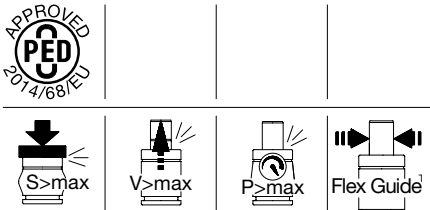
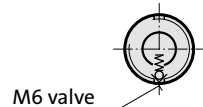
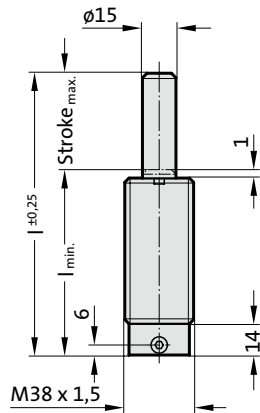
Note:
Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.12.00250

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

Fixing:
Installation with ring nut(s) 2480.005.00250 can be done with one or two ring nuts. If the hole in the bolster plate is not threaded, two ring nuts are needed. Holes threaded M 38 × 1,5 require one only ring nut for mounting of the gas springs.
Mounting with a threaded flange plate has the advantage of a degree of adjustability as far as the flange screws permit, moreover it is often found easier to make do with a clearance hole in the tool plate. Locking is by way of two lock screws with thrust plugs, provided in the threaded flange.
Diameter of through-hole in tool plate = 38 mm – plus four tapped holes M 8.

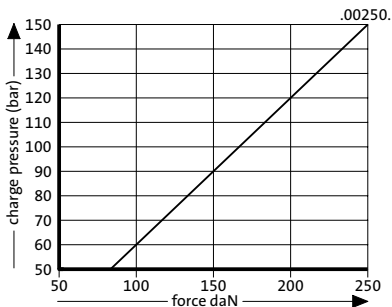
2480.32.00250.



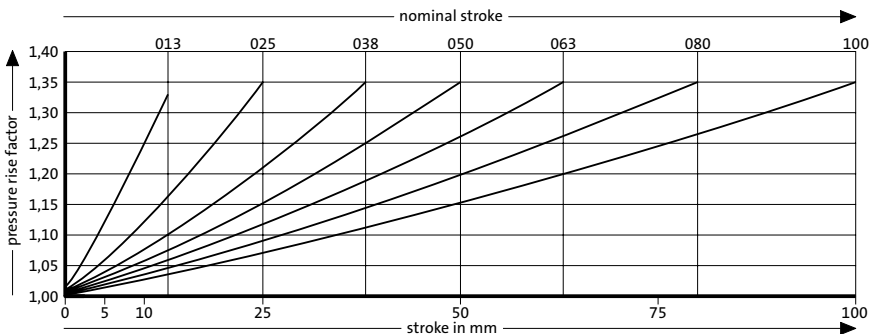
2480.32.00250.
Gas spring with external thread

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

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

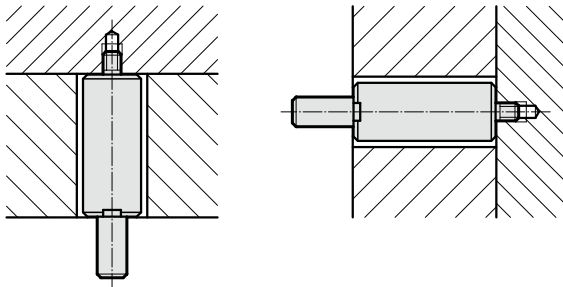
2480.00.51.01



Box spanner for assembling/disassembling of gas springs



Mounting examples:



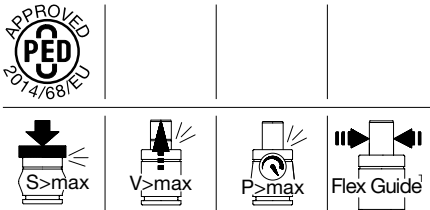
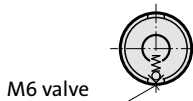
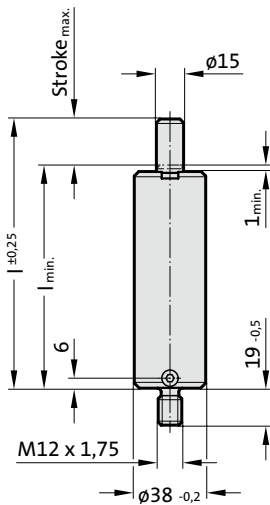
GAS SPRING WITH MALE FIXING THREAD, SMALL MOUNTING HEIGHT

Note:
Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.12.00250

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

2480.82.00250.

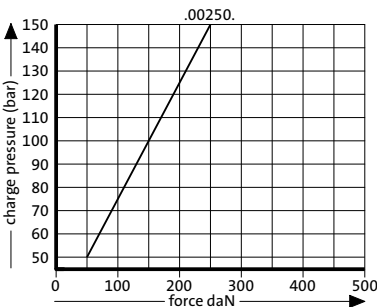


2480.82.00250.

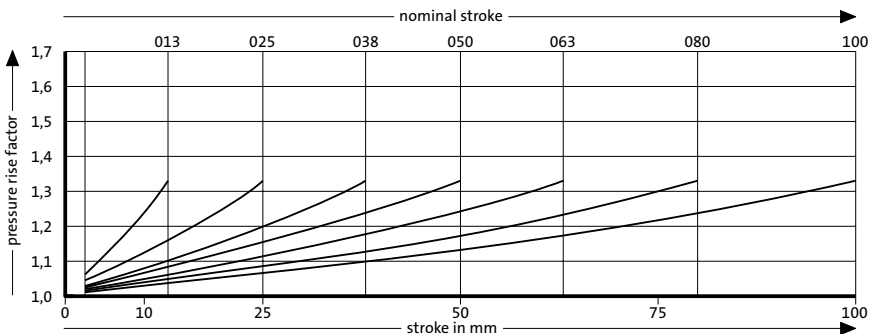
Gas spring with male fixing thread,
small mounting height

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH MALE FIXING THREAD, POWERLINE MOUNTING VARIATIONS

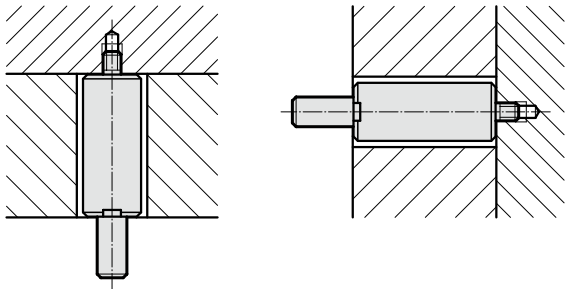
2480.00.51.05



Box spanner for assembling/disassembling of gas springs



Mounting examples:



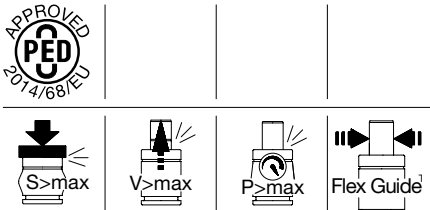
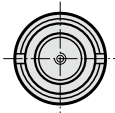
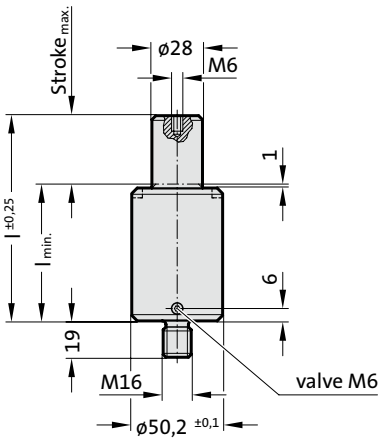
GAS SPRING WITH MALE FIXING THREAD, POWERLINE

Note:
Initial spring force at 150 bar = 920 daN

Order No for spare parts kit: 2487.12.01000

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

2487.82.01000.

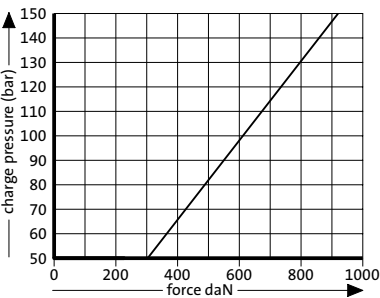


2487.82.01000.

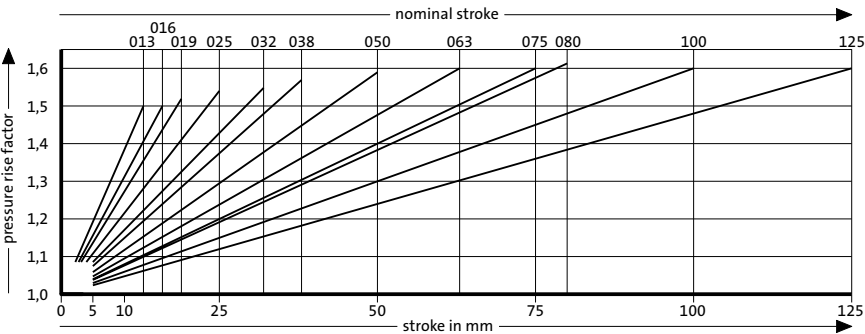
Gas spring with male fixing thread,
POWERLINE

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise

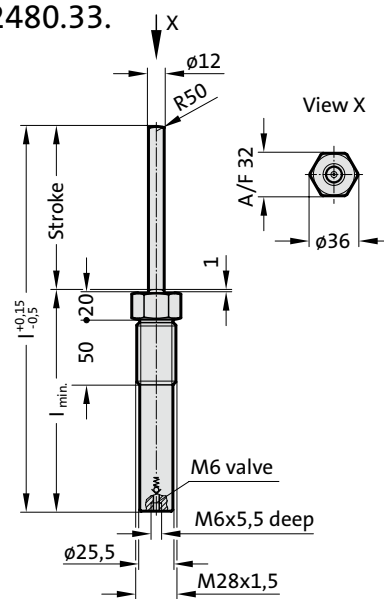


Pressure rise factor accounts for displacement but not external influences!

GAS SPRING WITH HEXAGONAL FLANGE



2480.33.



Description:

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

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

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

Note:

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

Order No for spare parts kit: 2480.21.00150

Pressure medium: Nitrogen N_2

Max. filling pressure: 180 bar

Min. filling pressure: 13 bar

Working temperature: 0°C to +80°C

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

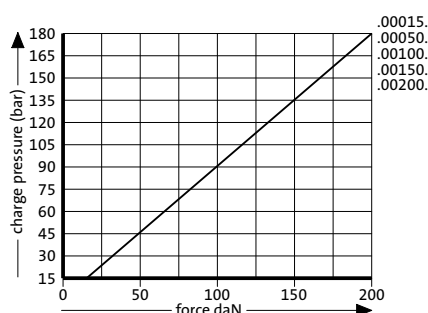
Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)

Max. piston speed: 1.6 m/s

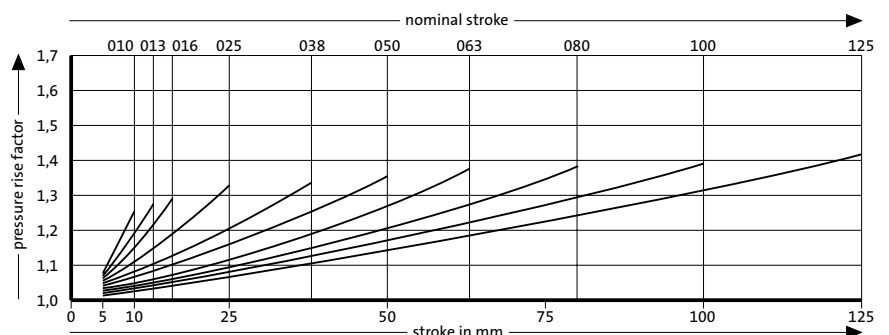
2480.33. Gas spring with hexagonal flange

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

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

GAS SPRINGS FOR WORKING TEMPERATURES UP TO 120 ° C



GAS SPRINGS *LCF, DAMPED



* LCF Force Manager is a warning sign of Associated Spring

GAS SPRINGS *LCF, DAMPED

Description:

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

Negative factors such as

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

are all minimised by LCF springs.

Characteristics such as

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

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

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

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

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

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

They are thus more economical and environmentally-friendly.

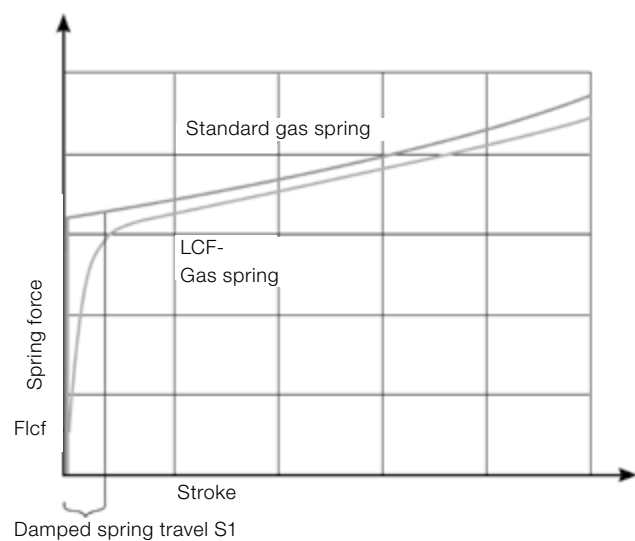
The LCF springs reduce the extreme bounce off the pad during the return stroke, thus lessening vibration on the workpiece and allowing the workpiece to be transported more effectively.

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

* LCF Force Manager is a warning sign of Associated Spring

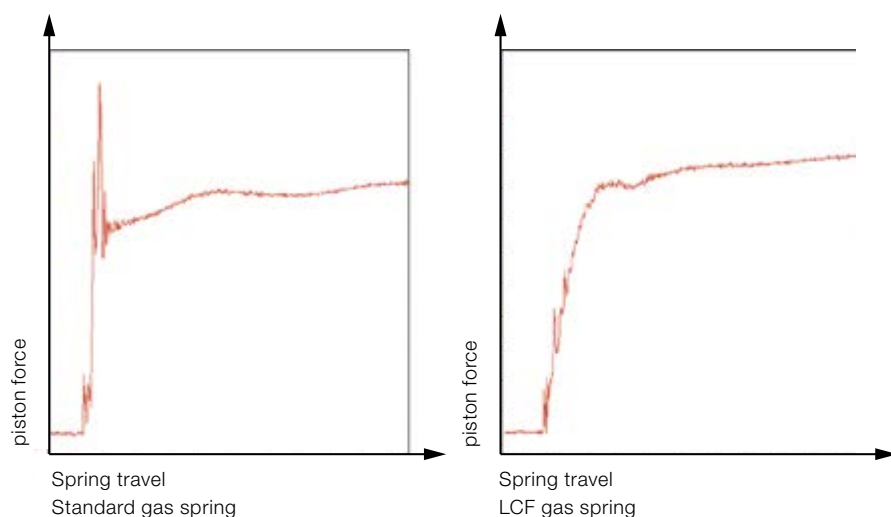
GAS SPRINGS *LCF, DAMPED

2484.13. Force diagram for gas springs LCF

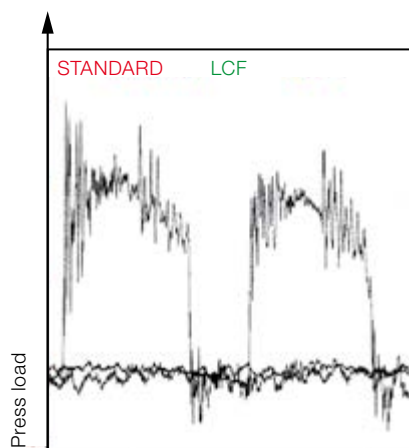


With the springs from the LCF series, the force builds up gradually and acceleration is uniform.

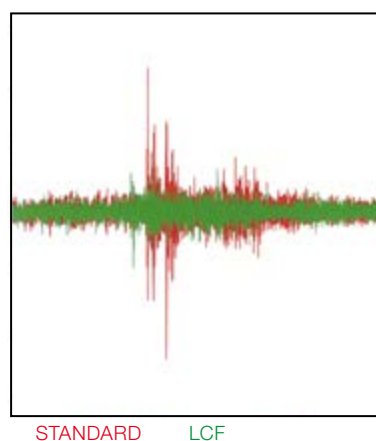
Measured dynamic piston force, Measured values for the 5000 series



Comparative press load diagram



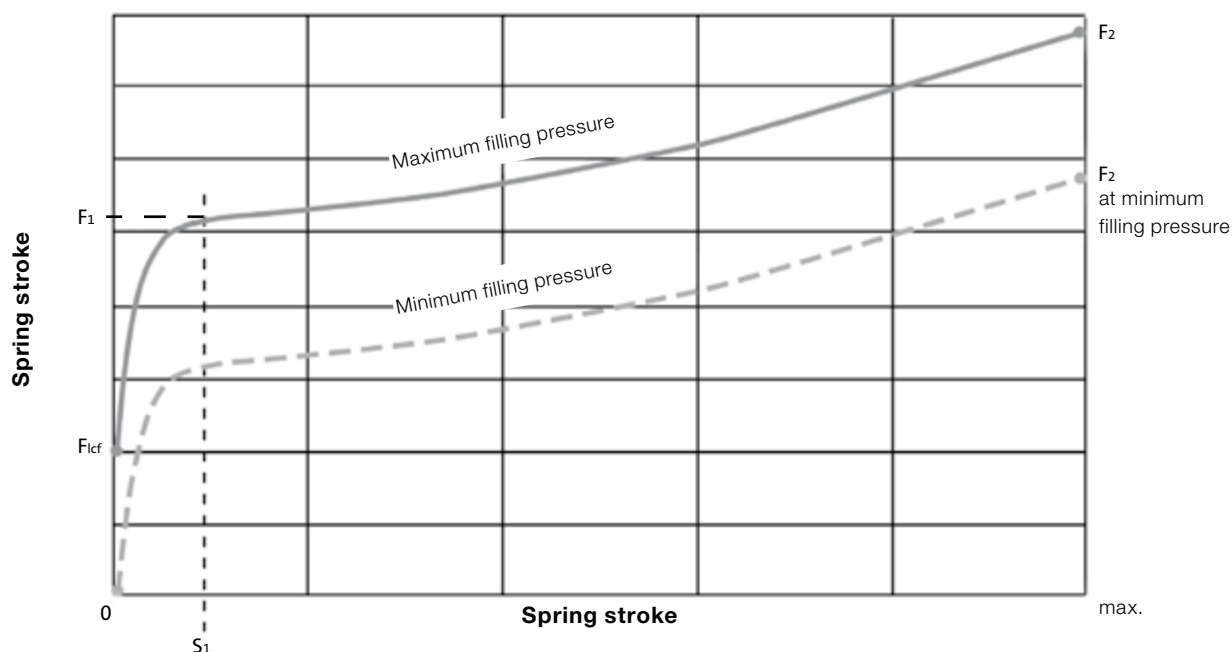
Noise reduction



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

GAS SPRINGS *LCF, DAMPED

2484.13. Force diagram for gas springs LCF



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

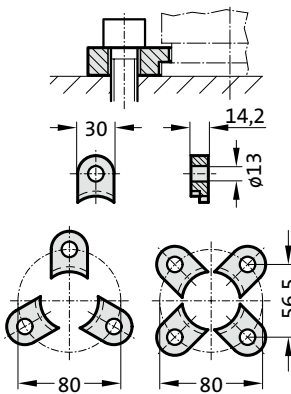
Guidelines for the use of LCF gas springs

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

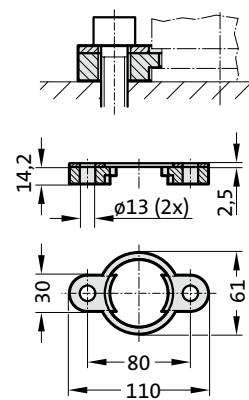
Spring size	F_{1cr} at 150 bar [daN]	Damped spring travel S_1	Minimum filling pressure [bar]
2484.13.00750.	470	3,1	70
2484.12.01500.	700	4,6	105
2484.13.03000.	1600	3,8	69
2484.13.05000.	2500	7,7	76
2484.13.07500.	3000	10,4	90

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

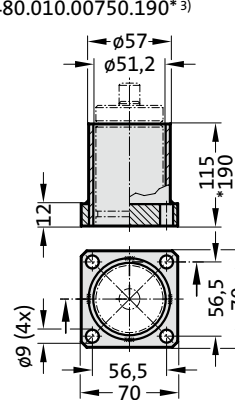
2480.007.00750



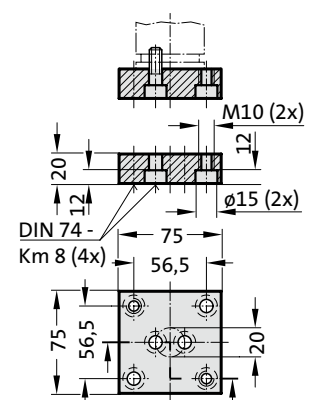
2480.008.00750³⁾



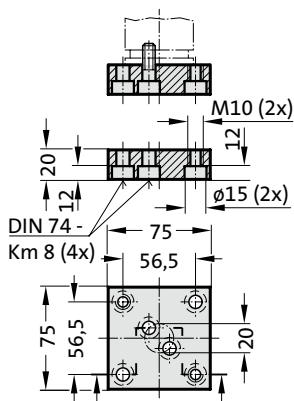
2480.010.00750.115³⁾
2480.010.00750.190^{* 3)}



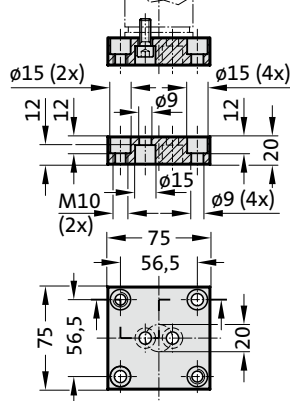
2480.011.00750



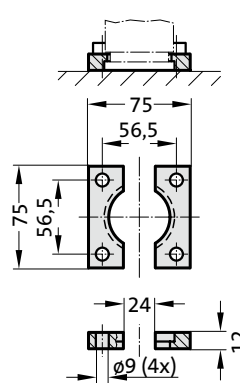
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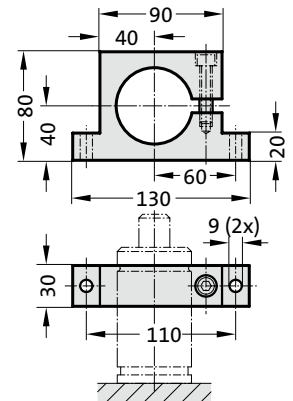
2480.011.00750.3



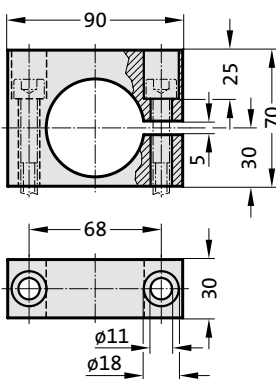
2480.022.00750



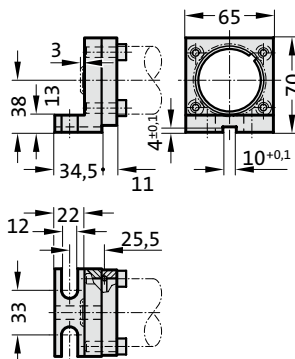
2480.044.00750²⁾



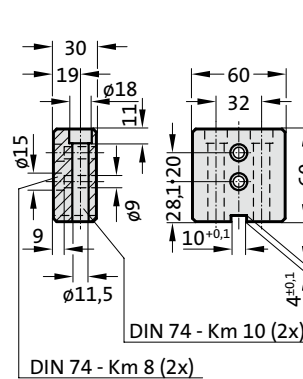
2480.044.03.00750²⁾



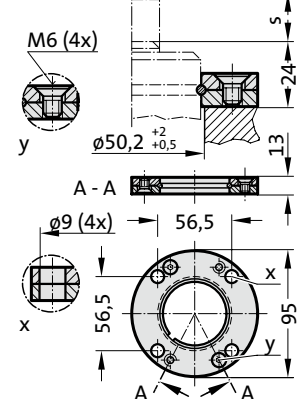
2480.045.00750²⁾



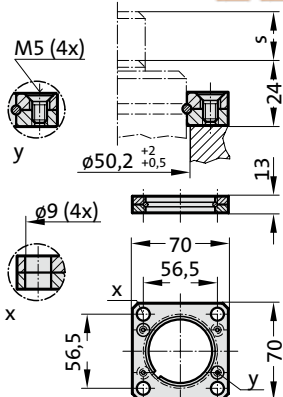
2480.047.00750²⁾



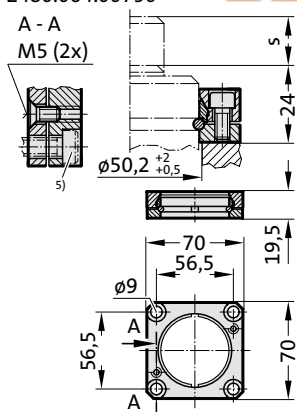
2480.055.00750



2480.057.00750



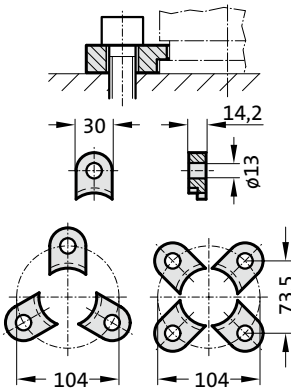
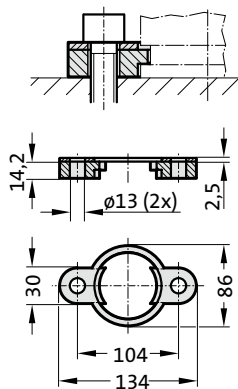
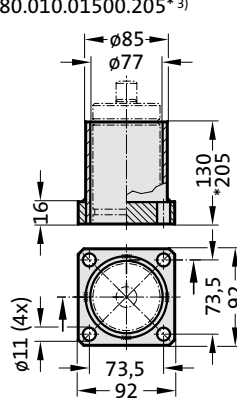
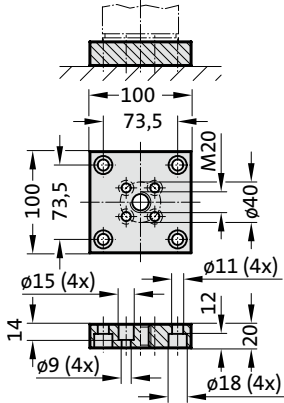
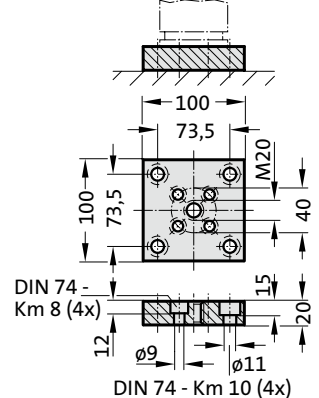
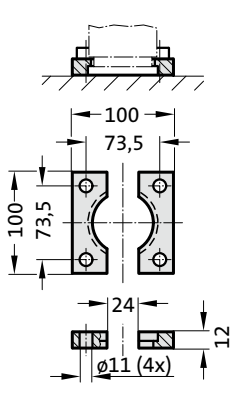
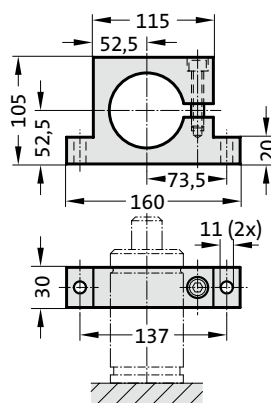
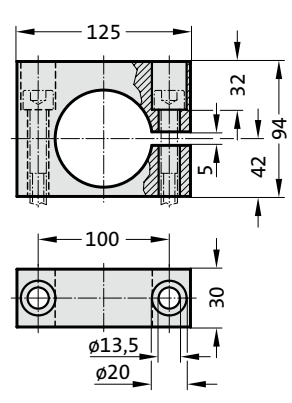
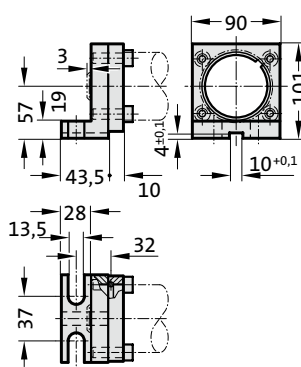
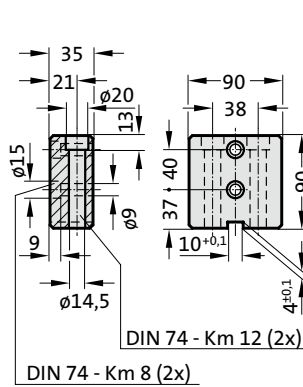
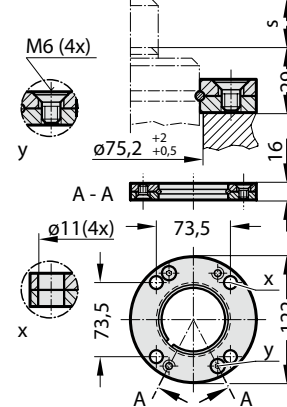
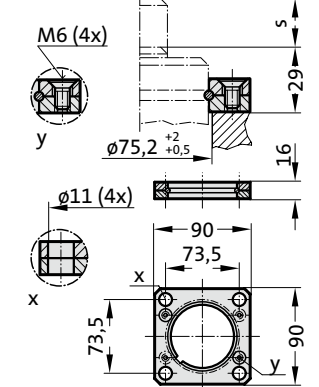
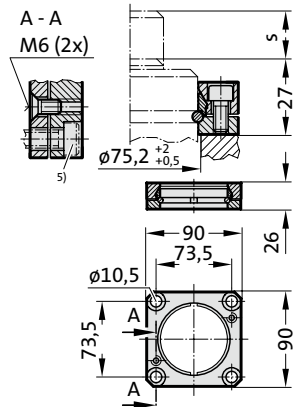
2480.064.00750⁴⁾



Note:

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

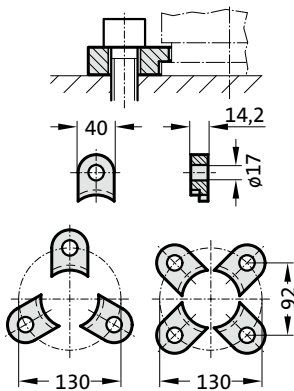
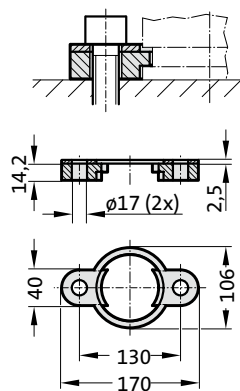
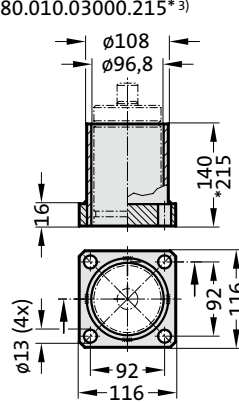
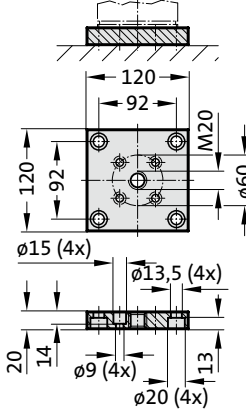
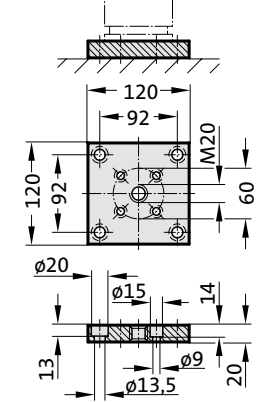
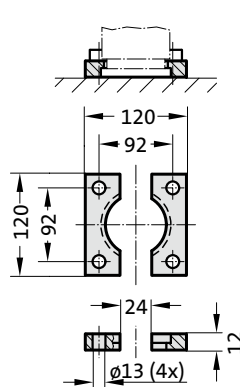
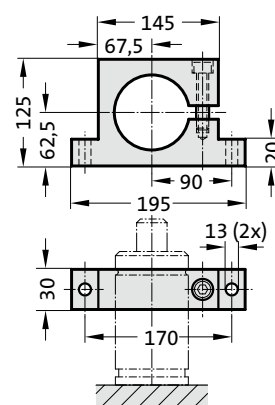
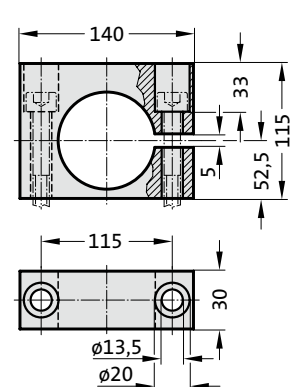
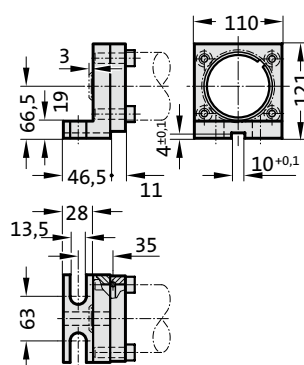
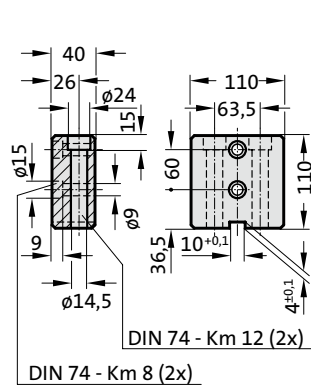
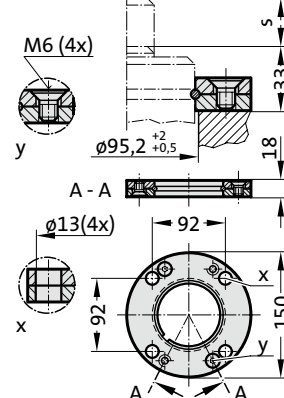
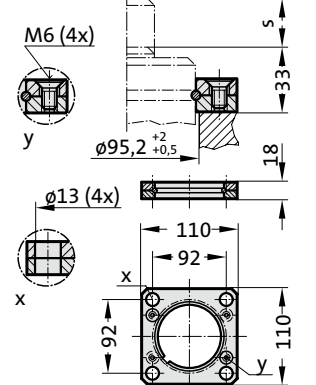
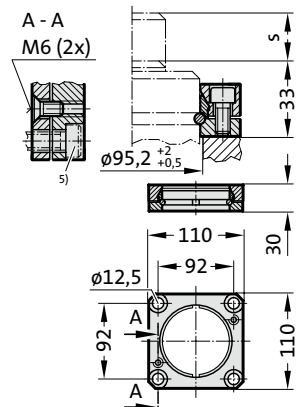
LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

Note:

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

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

Note:

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

LCF GAS SPRING, DAMPED

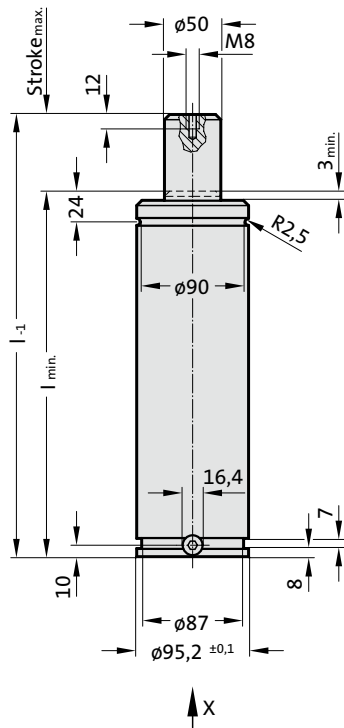
Note:
Initial spring force F_{lcf} at 150 bar =1600 daN
Full spring force after 3.8 mm damped spring travel

Order No for spare parts kit: 2484.13.03000

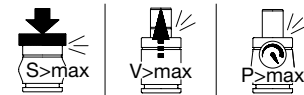
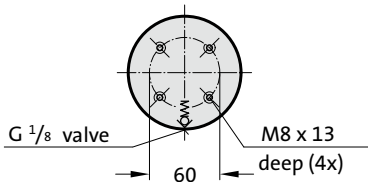
Gas spring without valve
Order No (example): 2484.13.03000. .P

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

2484.13.03000.



View X - Gas spring

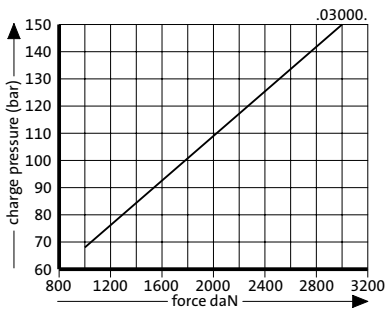


2484.13.03000.

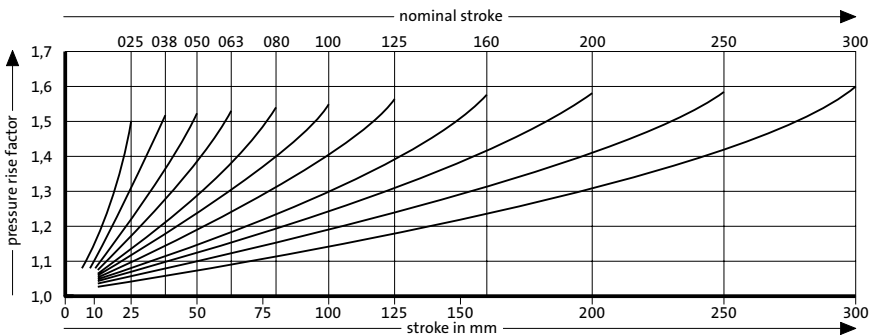
LCF Gas Spring, damped

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

Initial spring force
versus charge pressure



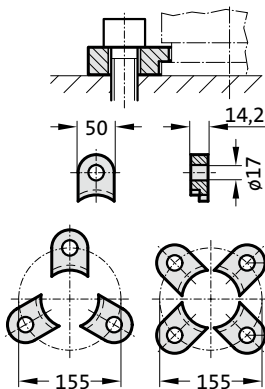
Spring force Diagram displacement versus stroke rise



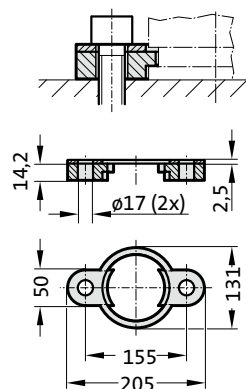
Pressure rise factor accounts for displacement but not external influences!

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

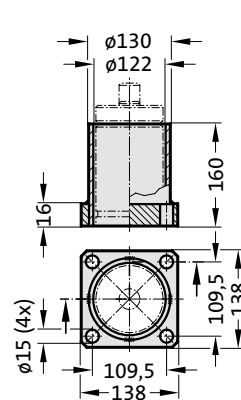
2480.007.05000



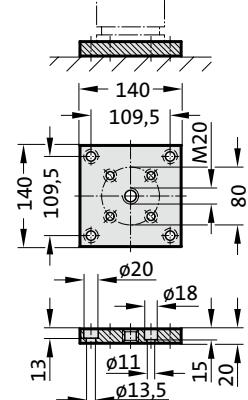
2480.008.05000 3)



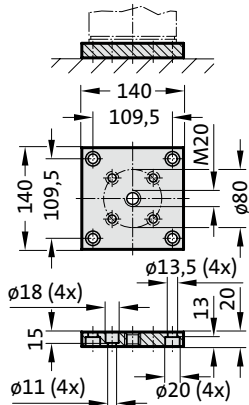
2480.010.05000.160³⁾



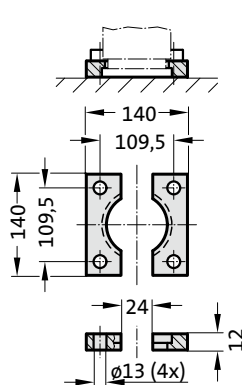
2480.011.05000



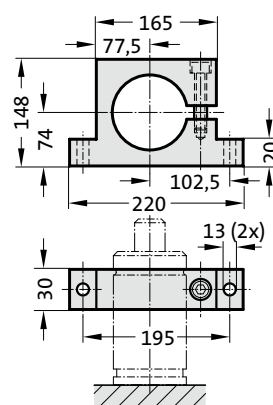
2480.011.05000.2



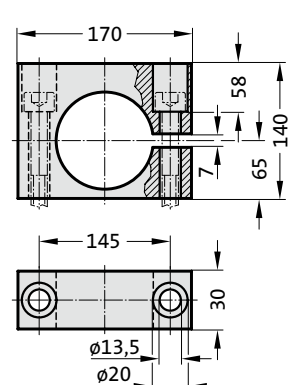
2480.022.05000



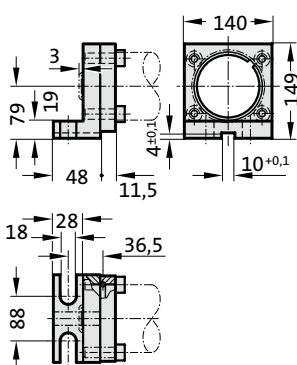
2480.044.05000 2)



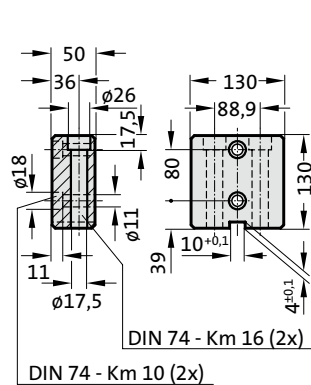
2480.044.03.05000 2)



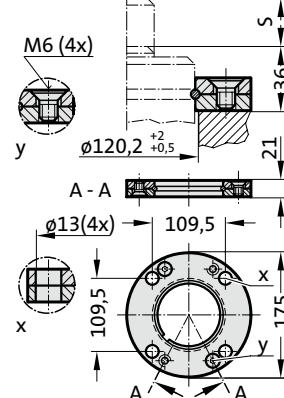
2480.045.05000 2)



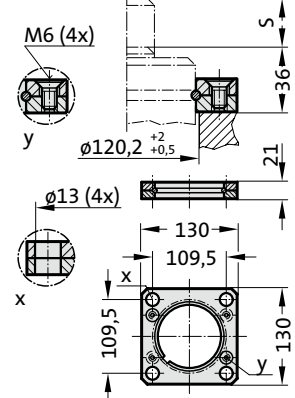
2480.047.05000 ²⁾



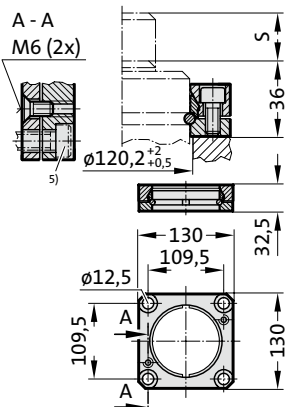
2480.055.05000



2480.057.05000



2480.064.05000 4)

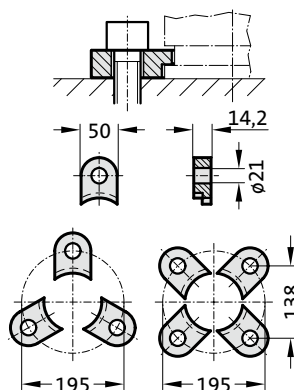
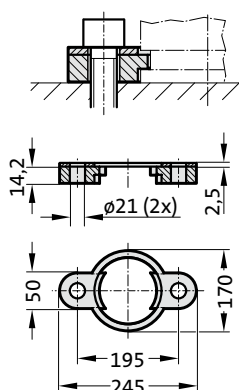


Note:

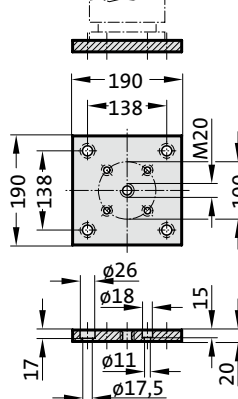
- 2) Attention:
The spring force must be absorbed by the stop Surface!
- 3) Not for use with composite connection.
- 4) Square collar flange, non-rotating, fixing for composite connection.
- 5) Machine screws with hexagonal socket (compact head recommended)

LCF GAS SPRING, DAMPED MOUNTING VARIATIONS

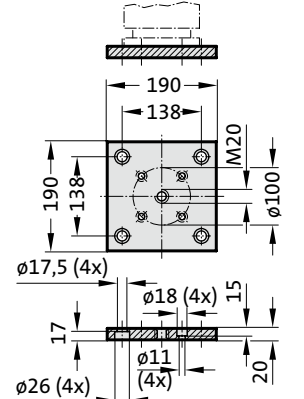
2480.007.07500

2480.008.07500 ³⁾

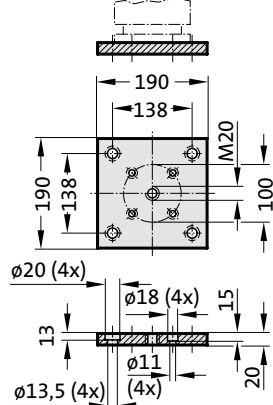
2480.011.07500



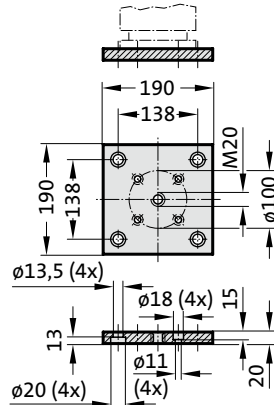
2480.011.07500.2



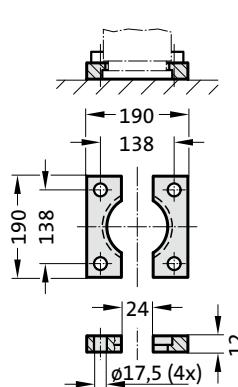
2480.011.03.07500



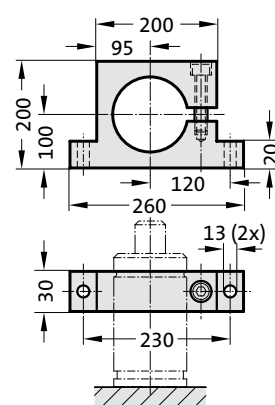
2480.011.03.07500.2



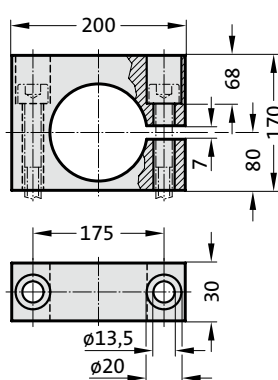
2480.022.07500



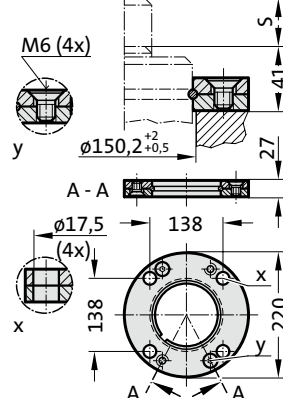
2480.044.07500 2)



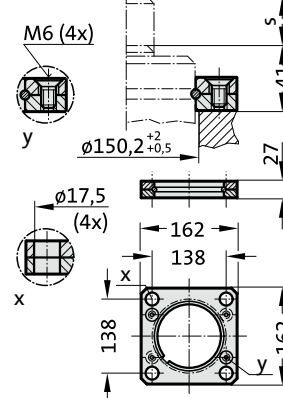
2480.044.03.07500 ²⁾



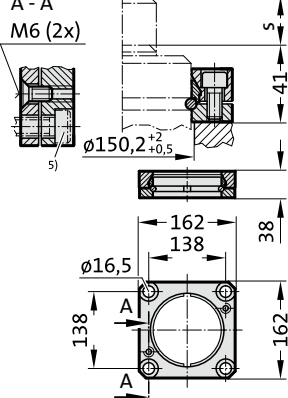
2480.055.07500



2480.057.07500



2480.064.07500 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)

LCF GAS SPRING, DAMPED

Note:

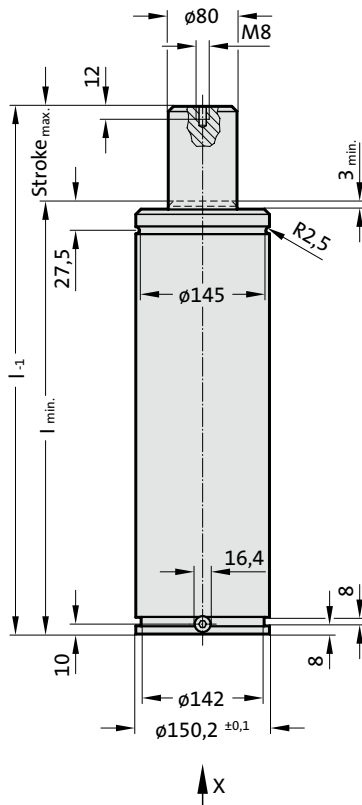
Initial spring force F_{icf} at 150 bar = 3000 daN
Full spring force after 10.4 mm damped spring travel

Order No for spare parts kit: 2484.13.07500

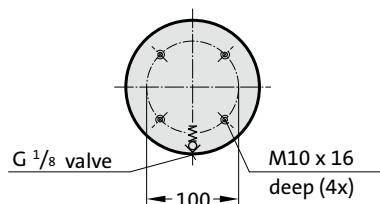
Gas spring without valve
Order No (example): 2484.13.07500. .P

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 89 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$
 Max. recommended extensions per minute:
 approx. 15 to 40 (at 20°C)
 Max. piston speed: 1.6 m/s

2484.13.07500.



View X - Gas spring

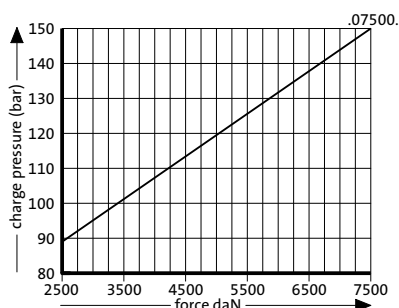


2484.13.07500.

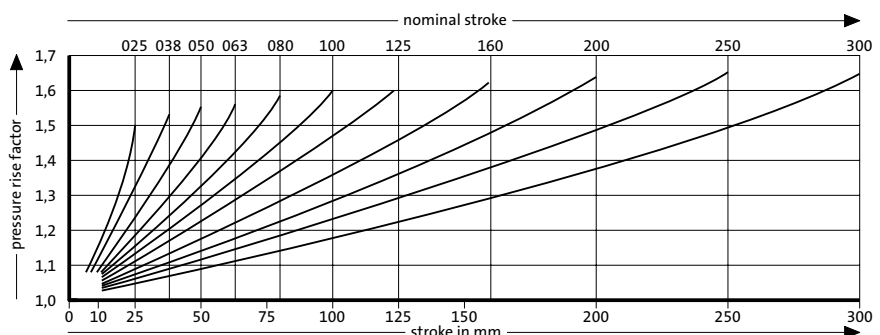
LCF Gas Spring, damped

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

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

CONTROLLABLE GAS SPRINGS

PATENTED



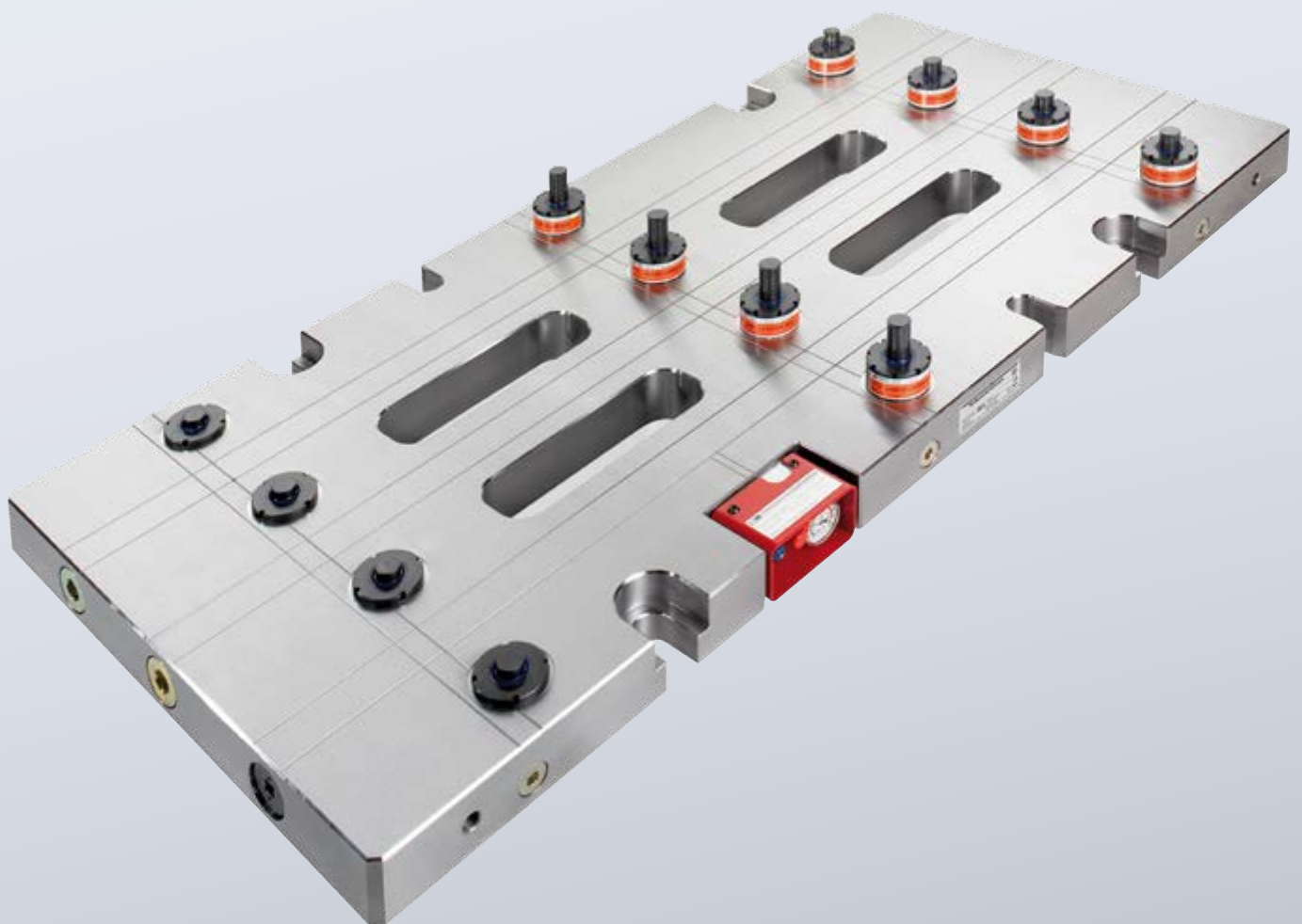
PLEASE REQUEST YOUR CATALOGUE

AIR SPRINGS TO VW STANDARD



PLEASE REQUEST YOUR CATALOGUE

MANIFOLDSYSTEMS



PLEASE REQUEST YOUR CATALOGUE

COMPOSITE PLATES



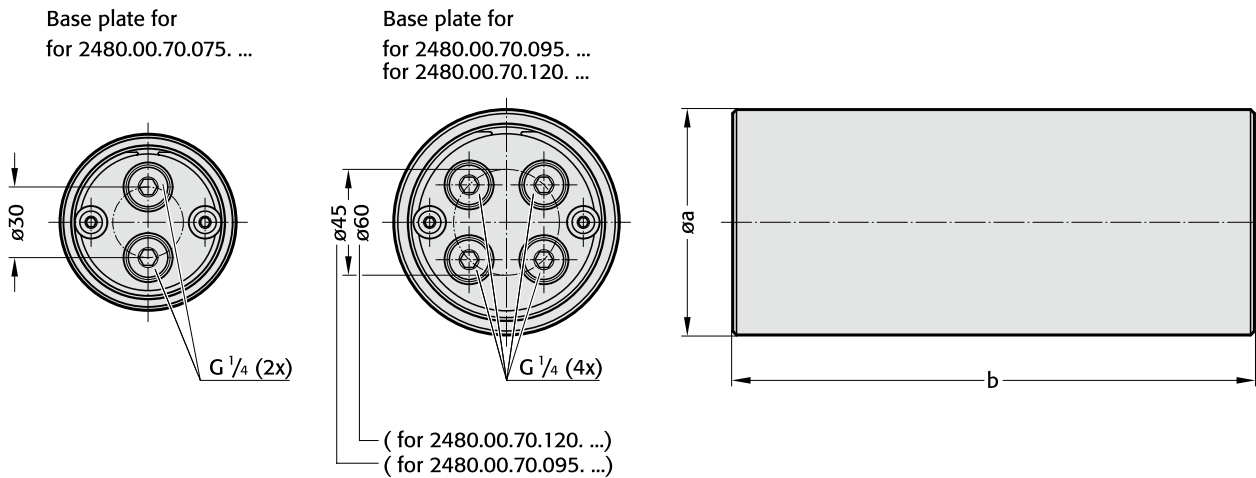
PLEASE REQUEST YOUR CATALOGUE

GAS SPRINGS - ACCESSORIES



PRESSURE RESERVOIR FOR REDUCED PRESSURE RISE

2480.00.70.



Description:

The pressure reservoir and its base plates are manufactured from the same high grade steel as FIBRO gas springs. The advantage of including a pressure reservoir in the system is that in operation the gas pressure rises to a lesser extent. Apart from the purely technical pressure factors, a reduced pressure rise is beneficial to the service life of the system.

Function:

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

Note:

If a pressure reservoir is to be installed, we recommend the 24°-cone-system, which ensures that the gas flow is not inhibited. Mounting clamps should be ordered separately. At least 2 are required for each pressure reservoir, see following pages.

2480.00.70. Pressure accumulator

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

Ordering Code (example):

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

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

Calculating the isothermic increase in pressure*

(*by approximation)

Pressure build-up =		$\frac{V_a + (n \times V_g^{1})}{V_a + (n \times (V_g^{1}) - \text{Hub} \times A)}$
V _a	[l]	Volume of pressure reservoir, see table
V _g ¹⁾	[l]	Gas volume of gas springs, corresponding spring type
Stroke		1) Note: For the design, gas volume of the spring type, please contact FIBRO!
A		Stroke length of gas springs, corresponding to spring type
n		Piston surface of gas springs, see table
		Number of gas springs

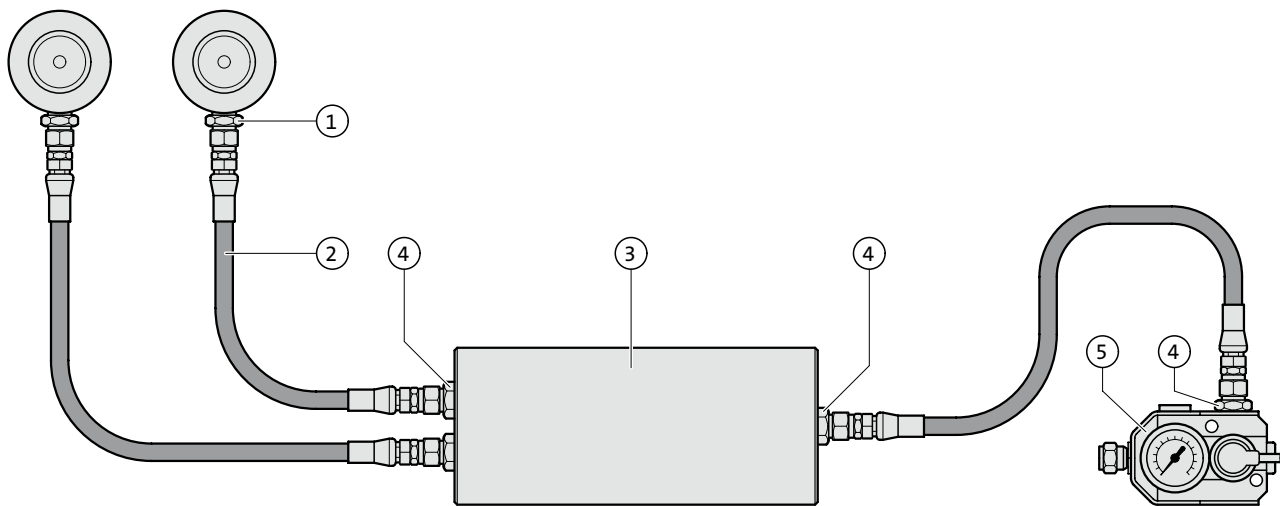
Calculation example:

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

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

PRESSURE RESERVOIR FOR REDUCED PRESSURE RISE

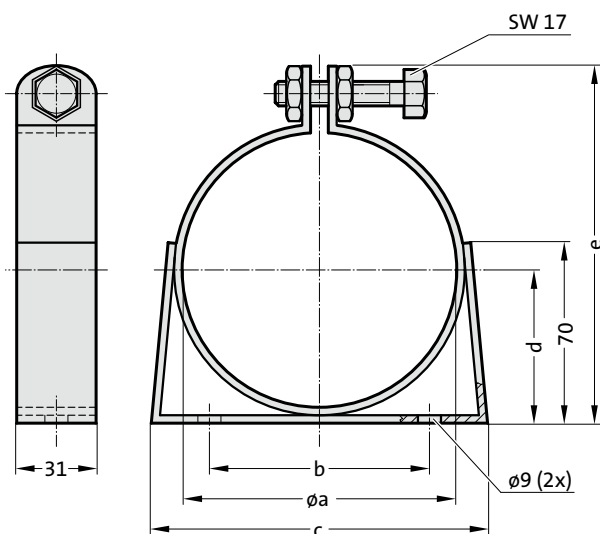
2480.00.70. Installation example: 24° cone hose system



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

MOUNTING CLAMP FOR PRESSURE RESERVOIR

2480.00.70.



Description:

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

Attention:

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

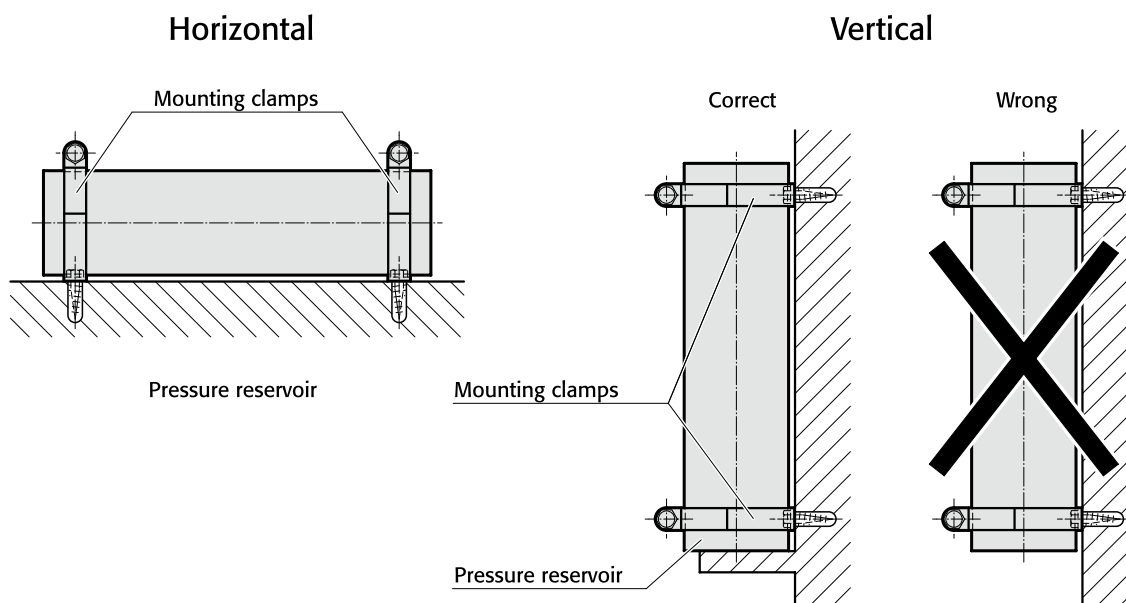
Ordering Code (example):

Mounting clamp for pressure reservoir (1 Stück)	=	2480.00.70.
Øa = 75 mm	=	075
Order No.	=	2480.00.70.075

2480.00.70. Mounting clamp for pressure reservoir

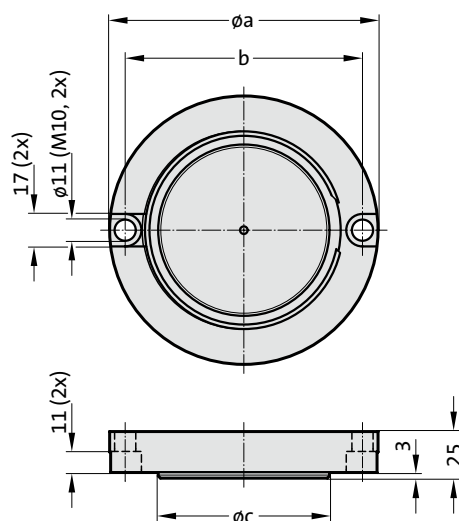
Order No.	Øa	b	c	d	e
2480.00.70.075	75	80	105	41,5	102
2480.00.70.095	95	100	145	51,5	122
2480.00.70.120	120	100	145	64	147

Installation options:



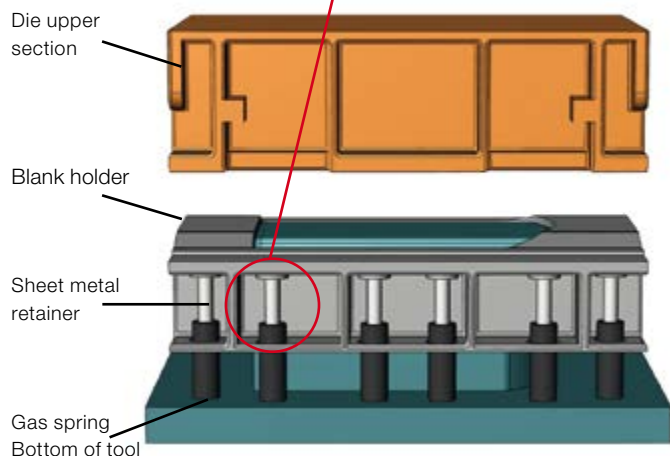
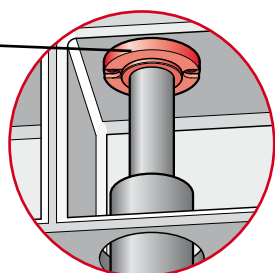
PRESSURE PLATES, SHOCK ABSORBING

2480.015.

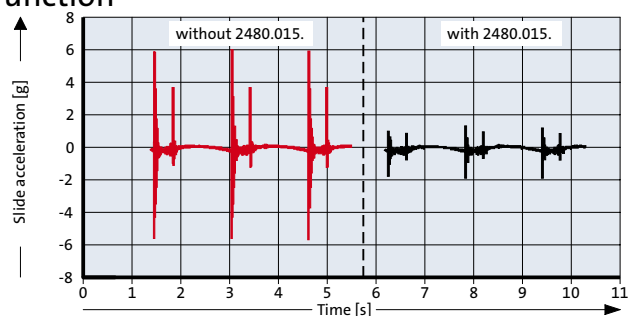


Mounting example

Pressure plate,
shock
absorbing
2480.015.



Function



2480.015. Pressure Plates, shock absorbing

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

Description:

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

Factors such as

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

are reduced by a specially developed damping element.

Guidelines for using shock absorbing pressure plates with gas springs:

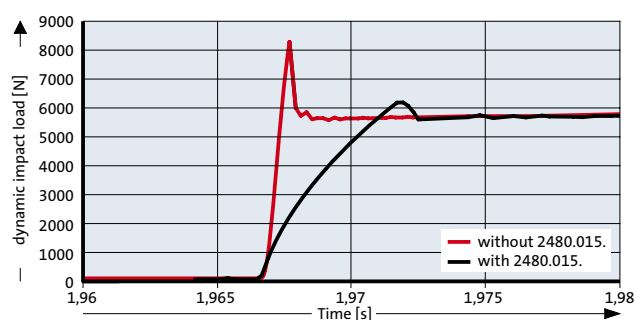
1. After the maximum shock absorbing travel of 3 mm the gas spring will reach the same initial spring force as it would without the shock absorbing pressure plate.
2. The shock absorbing pressure plate is mounted between the tool and the piston rod of the gas spring.

Material:

Steel, nitride
Polyurethane

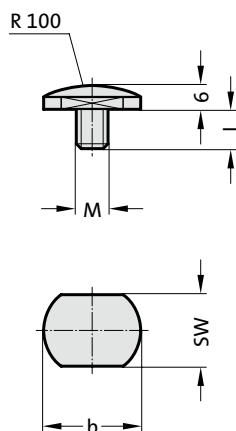
Note:

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



THRUST PAD PRESSURE PLATE

2480.004.



2480.004. Thrust Pad

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

Description:

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

Material:

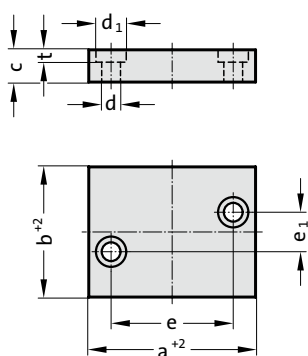
No 1.7131, case-hardened

Attention:

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



2480.009.



2480.009. Pressure plate

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

*Execution .1/2 to Volvo standard

Material:

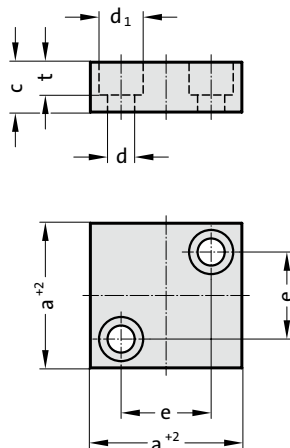
No 1.2842, hardened

or

No 1.2379, hardened



2480.018.



2480.018. Pressure plate

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

Material:

No 1.2842, hardened



PRESSURE PLATE PRESSURE PLATE TO RENAULT STANDARD

2480.019. Pressure plate

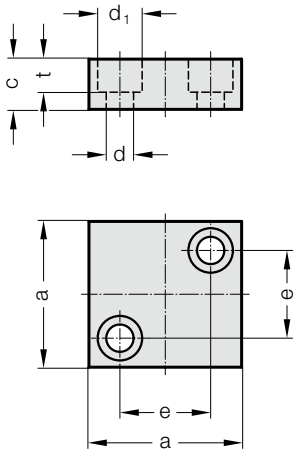
Order No*	max. piston rod diameter	a	c	d	d ₁	e	t
2480.019.00100	15	40	15	9	15	21	10
2480.019.00100.2	20	40	15	7	11	24	7
2480.019.03.00500.12	20	40	12	7	11	24	7
2480.019.00750	25	56	20	11	18	32	13
2480.019.03.01500.12	36	60	12	9	15	38	9
2480.019.03.01500.15	36	60	15	9	15	40	9
2480.019.03000	50	70	20	11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

*Execution .03 to VDI 3003

Material:

No 1.2842, hardened
or
No 1.2379, hardened

2480.019.



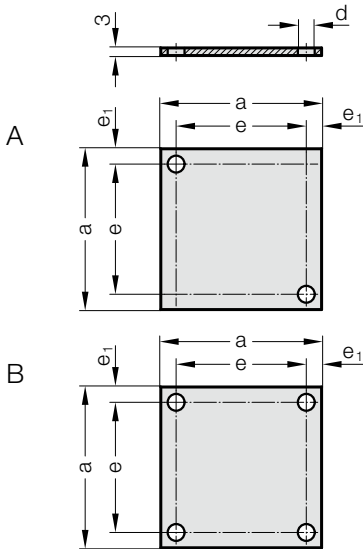
2480.019.45. Pressure plate to Renault standard

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

Material:

No 1.2842, hardened
or
No 1.2379, hardened

2480.019.45.



Description:

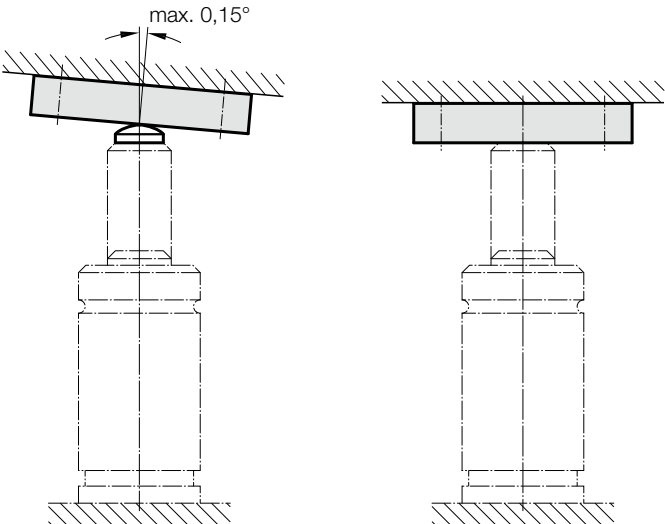
The hardened thrust pad 2480.004. reduces side forces in cases of skew thrust vaces or lateral displacement component.

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

Note:

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

Mounting example





CONCERTINA SHROUD FOR GAS SPRINGS

Description:

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

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

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

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

Technical data

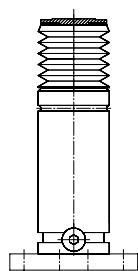
Material :	Concertina shroud:	CSM-Rubber 65 ±3 Shore A
	Washer:	Steel burnished
	Ring:	stainless Steel
Temperature range:		0-90 °C
Chemical resistance	Acids:	very good
	Alkalines:	very good
	Solvent:	adequate
Weather resistance	Sun light (UV):	good
	Ozone:	very good
	Water:	adequate
Oil resistance:	mineral: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

Delivery:

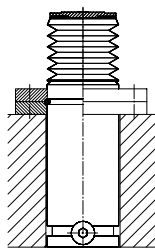
Concertina shroud incl. rotatable disk and countersunk screw.
Custom dimensions/materials available on request.



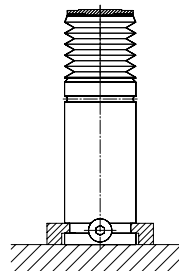
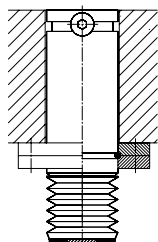
Mounting examples:



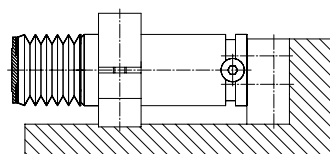
Screw mounted at the base with 2480.011.



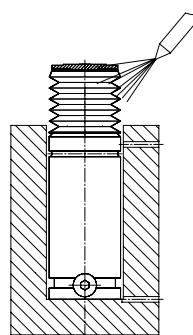
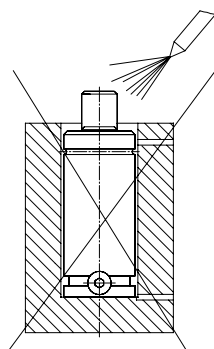
fastened with 2480.055./057./064.



fastened with 2480.007./008.



fastened with 2480.044./045./047.



installed loose in the bore

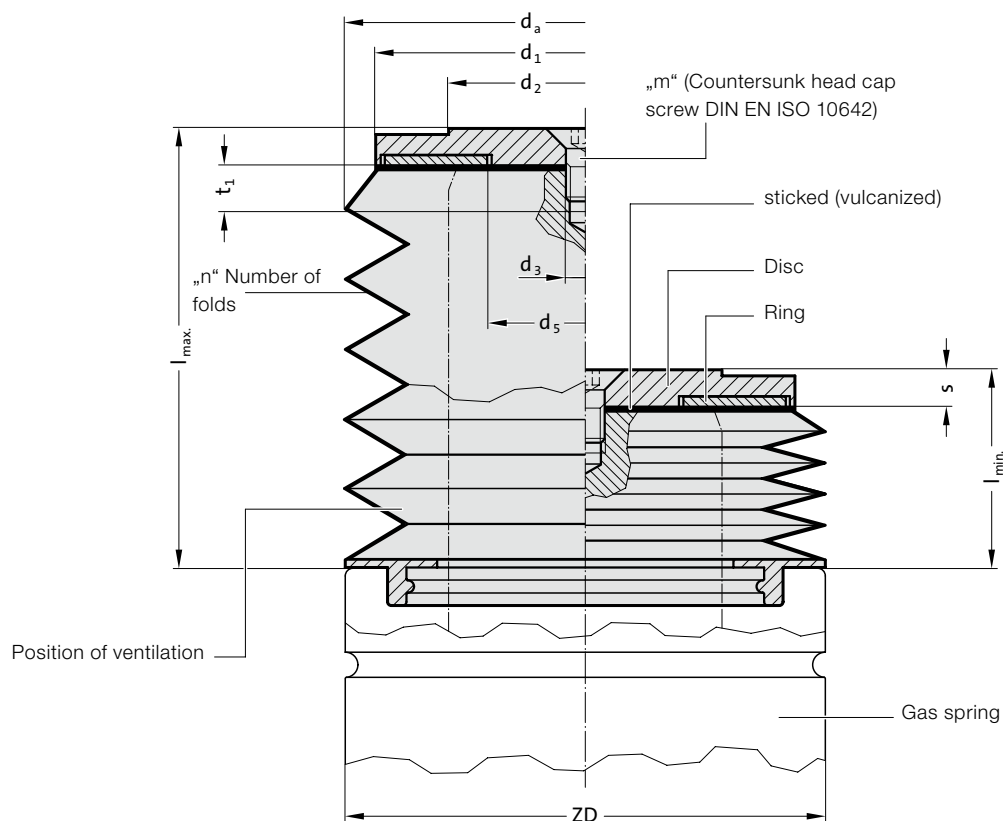


More mounting examples for gas springs see page „Mounting directions for gas springs“

CONCERTINA SHROUD FOR GAS SPRINGS



2480.080.



2480.080. Concertina shroud for gas springs

Type of gas spring	2487.12.00350. 2487.12.33.00350.	2487.12.00500. 2487.12.33.00500.	2480.13.00500.	2487.12.00750..1 2487.12.33.00750. 2488.13.00750.	2480.13.00750.	2487.12.01000..1 2487.12.33.01000. 2488.13.01000.	2487.12.01500. 2487.12.33.01500. 2488.13.01500.	2480.12.01500.	2487.12.02400. 2487.12.33.02400. 2488.13.02400.	2480.13.03000.	2487.12.04200. 2487.12.33.04200. 2488.13.04200.	2480.13.05000.	2487.12.06600. 2487.12.33.06600. 2488.13.06600.	2480.13.07500.	2487.12.09500. 2488.13.09500.
ZD	32	38	45	45	50	50	63	75	75	95	95	120	120	150	150
d _a	45	50	50	55	55	65	65	75	75	95	95	120	120	150	150
d ₁	32	38	45	45	50	50	63	75	75	95	95	120	120	150	150
d ₂ / KD	16	20	20	25	25	28	36	36	45	50	60	65	75	80	90
s	6	6	6	6	6	6	6	6	6	6	6	6	6	9	6
d ₃	6,6	6,6	6,6	6,6	9	6,6	6,6	9	6,6	9	9	9	9	17	9
d ₅	10	14	14	17	17	20	28	28	37	42	51	57	66	71	81
t ₁	5	5	10	5	10	5	5	10	5	10	5,5	10	5,5	20	5,5
m	M6×8	M6×8	M6×12	M6×8	M8×12	M6×10	M6×10	M8×12	M6×10	M8×12	M8×12	M8×12	M8×12	M16×25	M8×12
Stroke	125 (Stroke ≤ 125)														
l _{min.}	28	28	28	28	28	28	28	28	28	28	28	23	23	24	21
l _{max.}	133	133	133	133	134	134	134	134	134	134	134	134	134	137	134
n	10	10	10	10	10	10	10	10	10	8	8	6	6	5	5
Stroke	300 (Stroke > 125), not for 2487.12.*														
l _{min.}	-	-	-	-	52	--*/52	--*/52	52	--*/52	54	--*/54	41	--*/41	37	--*/34
l _{max.}	-	-	-	-	309	309	309	309	309	309	309	309	309	402	309
n	-	-	-	-	22	--*/22	--*/22	22	--*/22	19	--*/19	14	--*/14	11	--*/11

Ordering Code (example):

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



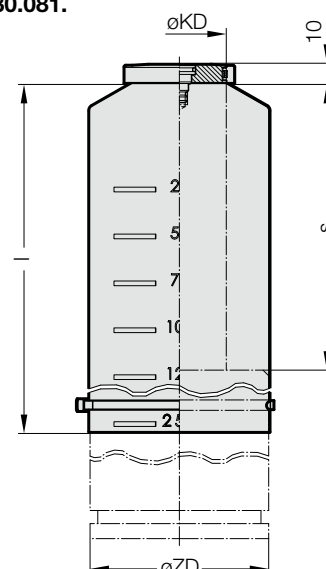
PISTON ROD PROTECTION, FIBRO-TEX®



Mounting example



2480.081.



Description:

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

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

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

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

Note:

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

Technical data:

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

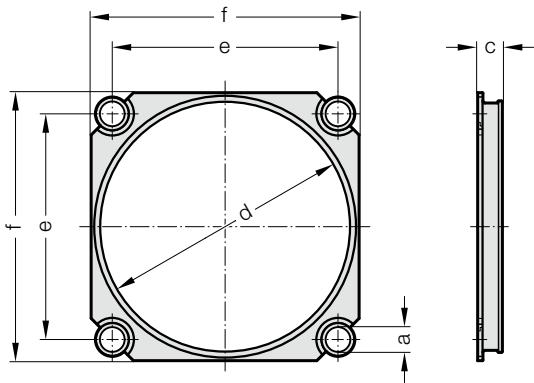
2480.081. Piston rod protection, FIBRO-TEX®

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

RETAINING PLATE FOR SADDLE FLANGE
CABLE TIE PLIERS



2480.081.00.057.



Mounting example



2480.081.00.057. Retaining plate for saddle flange

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

Description:

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

Material:

Retainer plate: Plastic Discs: Steel

Attention:

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

2480.081.00.007 Cable tie pliers



Description:

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

Note:

Order Number for spare part cable ties

2480.081.00.006.1 (piston rod)

2480.081.00.006.2 (gas spring housing)

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

GAS SPRINGS - CONNECTOR SYSTEMS

GENERAL

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

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

Minimes-system 2480.00.23./24.

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

Technical data:

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

Recommended application:

For gas springs with M6 gas connection.

Not suitable for use with a pressure reservoir due to small internal diameter (reduced flow volume).

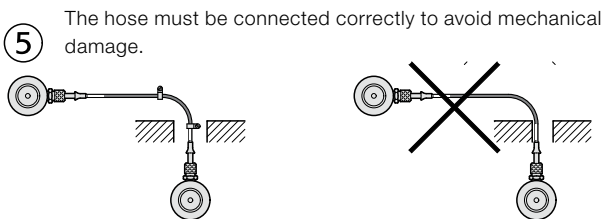
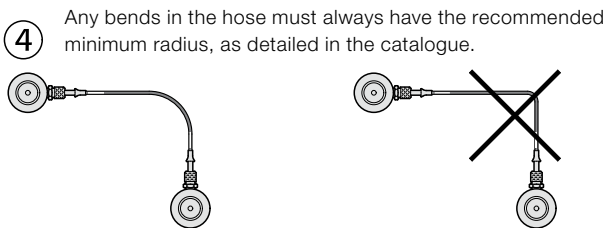
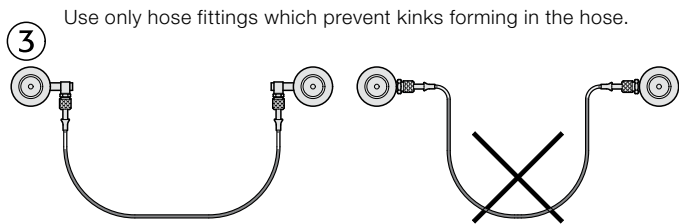
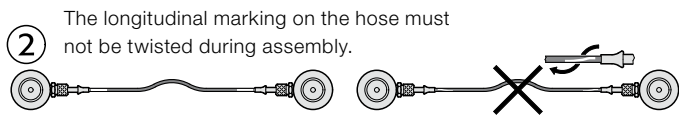
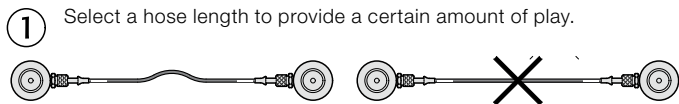
Note: Pipe system, 24° conus micro for higher temps on request.

INSTRUCTIONS FOR HOSE ASSEMBLY

MOUNTING ARRANGEMENT FOR GAS SPRINGS

IN THE MINIMESS SYSTEM

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



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

Attention!

Any modifications whatsoever to the product are prohibited.

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

2480. Connection 1:

Direct connection for group

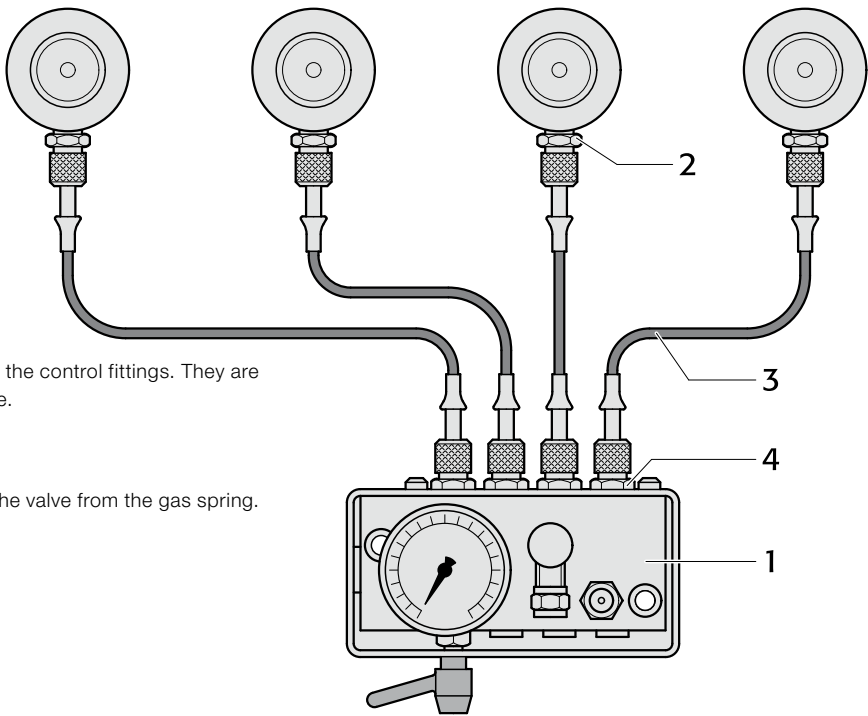
Function:

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

See control fittings 2480.00.30.

Note:

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

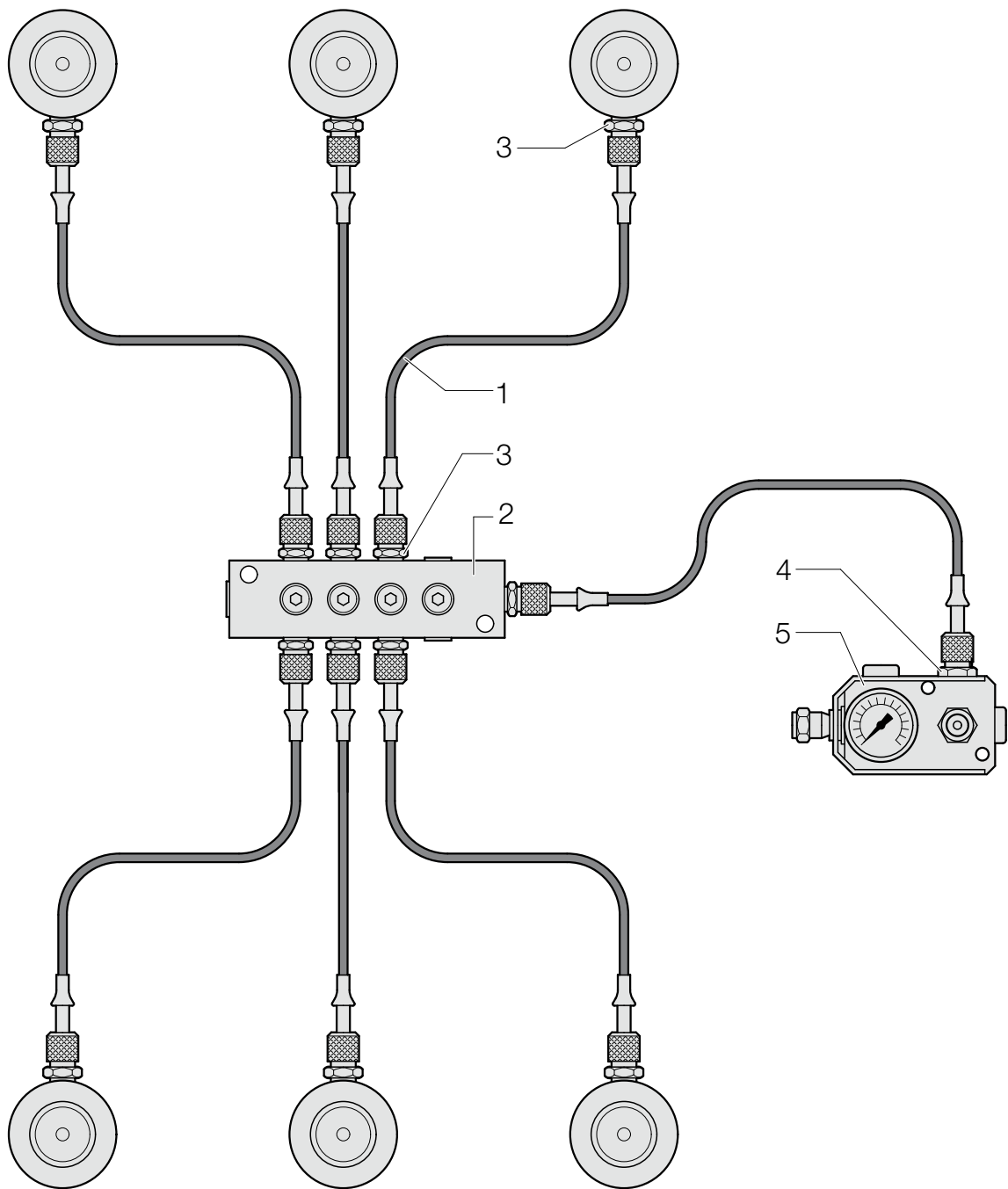


Item No.	Term	Quantity	Order No.	Note
1	Control fitting	1	2480.00.30.01.1	Optionally with diaphragm pressure switch 2480.00.30.02
2	Gauging coupling	4	2480.00.24.01	
3	Gauging hose	4	2480.00.23.□□.□□□	Type of connection and length as required
4	Gauging coupling	4	2480.00.24.02	

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 2:

Group series connection



Function:

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

Note:

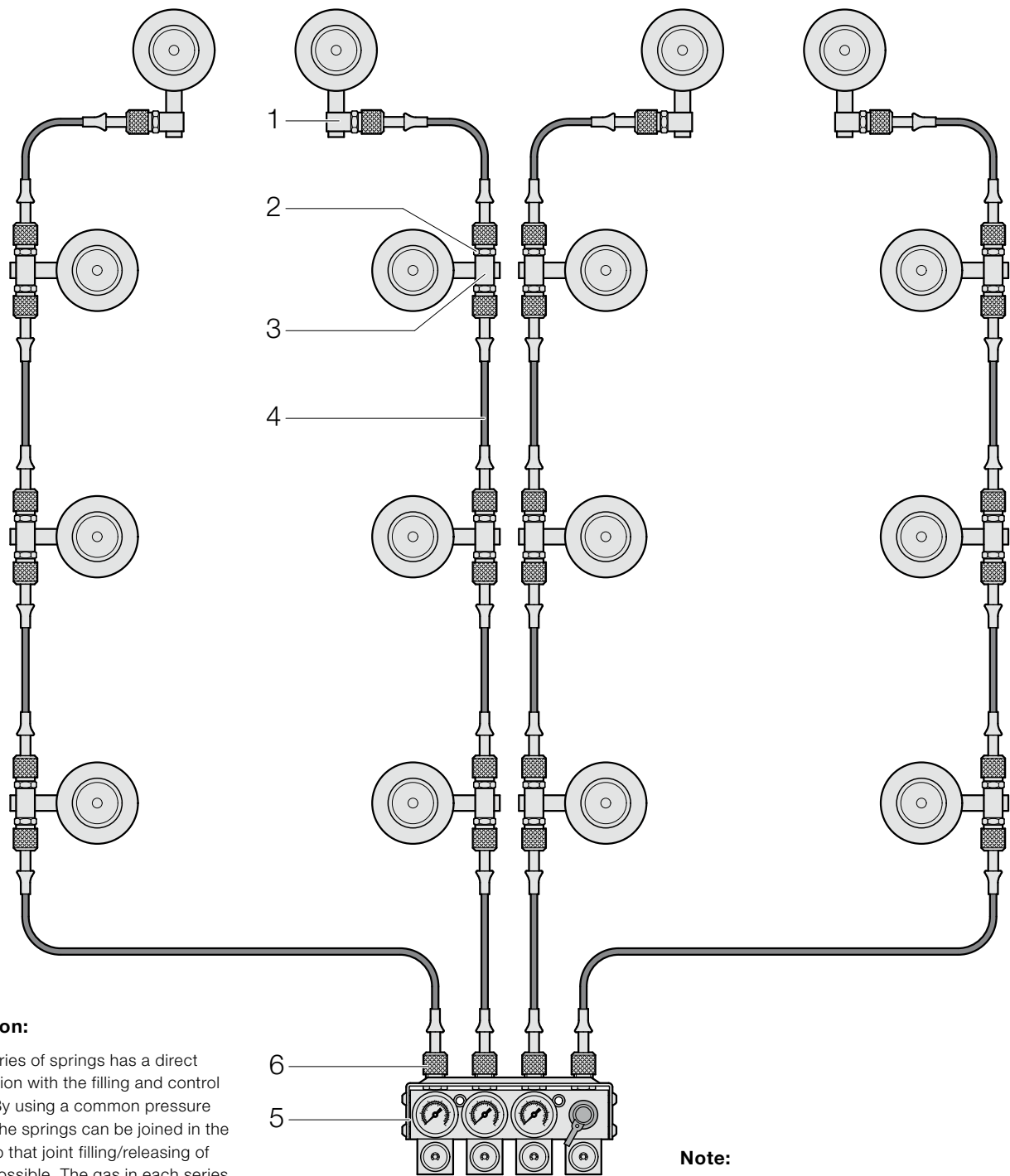
When installing gas springs always remove the valve from the gas spring.

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

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 3:

Multiple connections with independent functioning



Function:

Each series of springs has a direct connection with the filling and control fitting. By using a common pressure supply the springs can be joined in the fitting so that joint filling/releasing of gas is possible. The gas in each series of springs can also be filled/released or monitored individually. See multi-way control fitting 2480.00.39.06.04

Note:

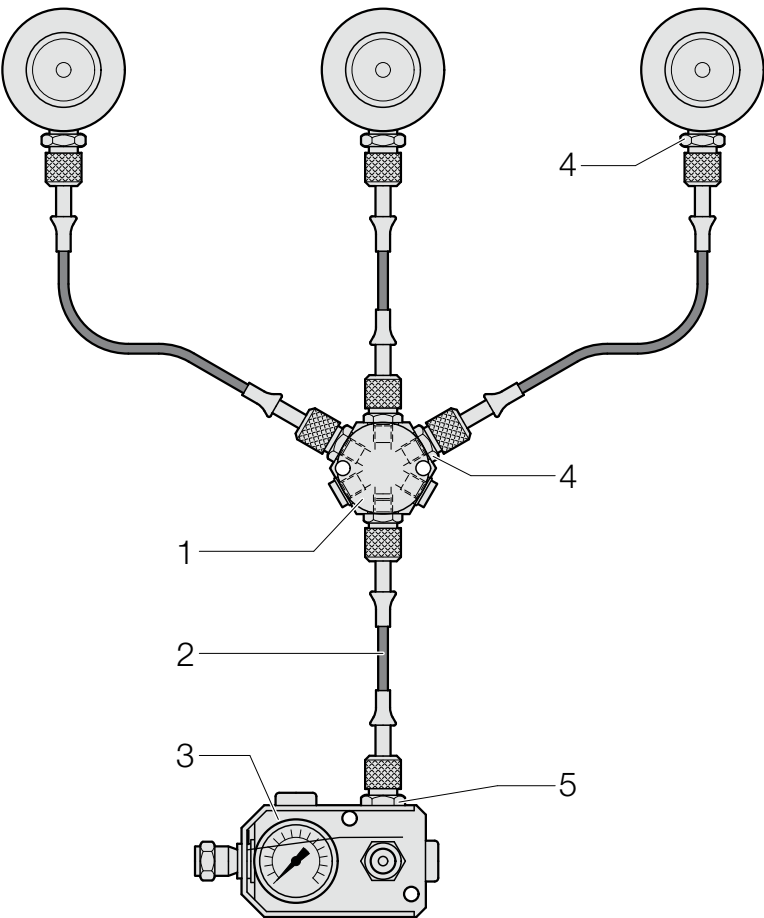
When installing gas springs always remove the valve from the gas spring.

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

MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 4.1:

Group series connection



Function:

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

Note:

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

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

2480. Connection 4.2:

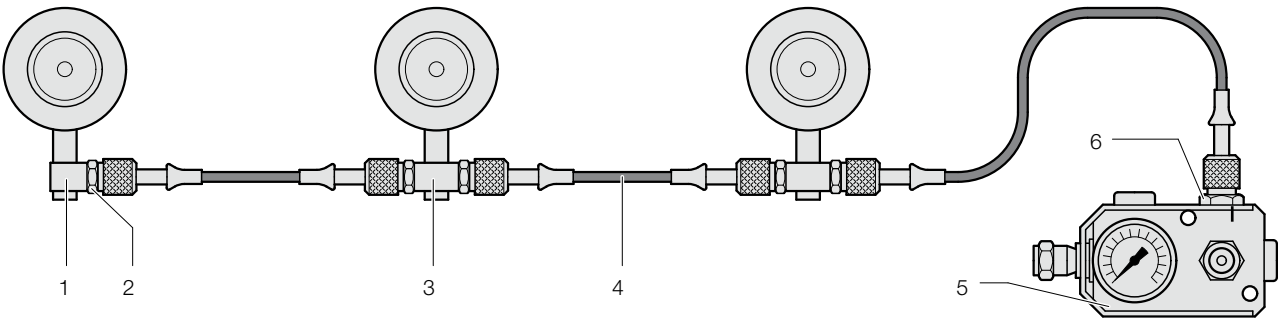
Group series connection

Function:

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

Note:

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



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

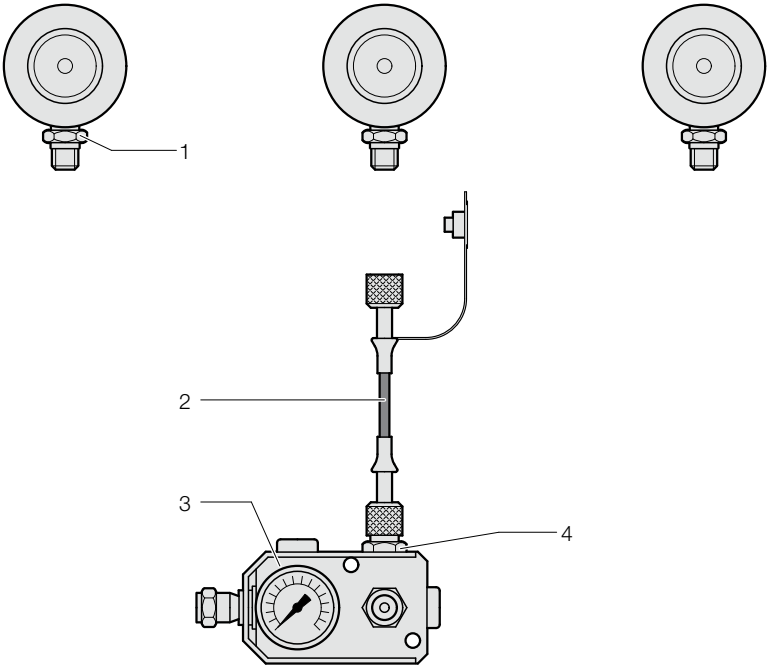
MOUNTING ARRANGEMENT FOR GAS SPRINGS IN THE MINIMESS SYSTEM

2480. Connection 5:

Independent test connection

Function:

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



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

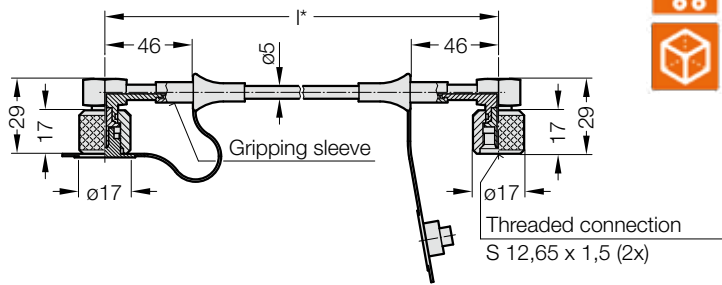
GAS SPRING ACCESSORIES
MINIMESS – COMPOUND THREADED JOINTS

2480.00.23.03.
Gauging hose Mini, both ends
90°-angle

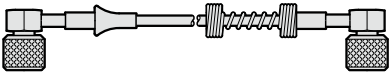
Order example:
Shortest factory length:
90 mm excl. bend protection
150 mm bend protection on one side
300 mm bend protection on both sides
Minimum bending radius: R20 mm

*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

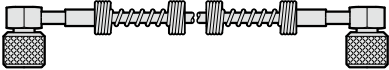
2480.00.23.03.
Gauging hose -
both ends
90°-angle



2480.00.23.03.----.3
Antikink spiral, at one end



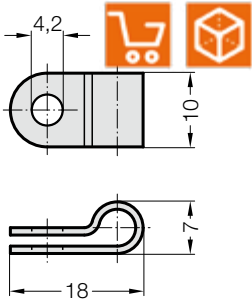
2480.00.23.03.----.2
Antikink spiral, at both ends



Ordering Code (example):

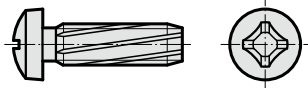
Table with 4 columns: Description, Code, Length, and Order No. It shows examples for gauging hose Mini with different lengths and bend protections.

2480.00.23.12.01
Hose clamp
for gauging hose DN2 (Ø5 mm)



Material:
Polyamide
Note:
Supplied without screws

2192.50.04.012
Self-tapping screw DIN 7516
M4x12



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

2480.00.23.13.
Anti-scuff spiral
for subsequent installation over hoses and tubing



Table with 2 columns: Order No. and Length l [m]. It lists order numbers for lengths of 1, 2, 5, and 10 meters.

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

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

GAS SPRING ACCESSORIES

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

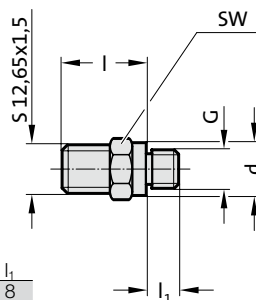
**2480.00.24.04 without valve
for connection to control fitting**

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.



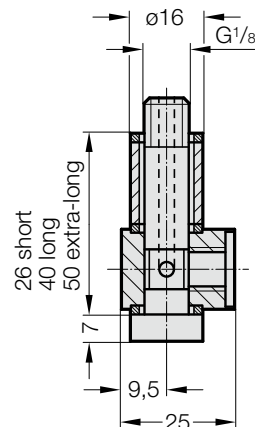
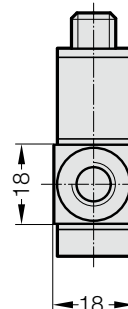
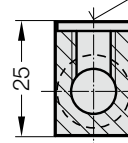
G 1/8

2480.00.24.16 long

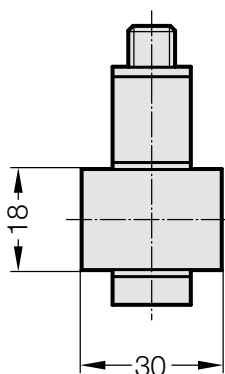
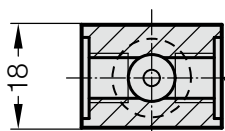
2480.00.24.17 short

2480.00.24.18 extra-long

Single adapter



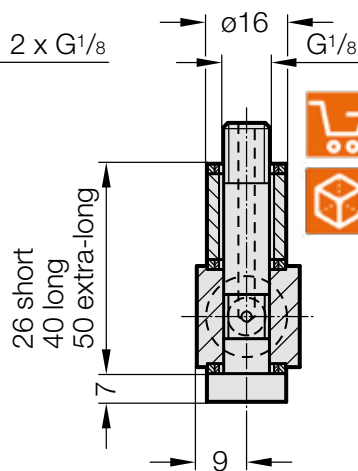
2480.00.24.13 long



2480.00.24.14 short

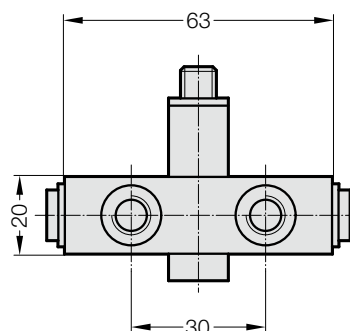
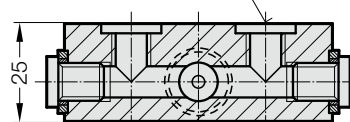
2480.00.24.15 extra-long

Double adapter



2480.00.24.10 long

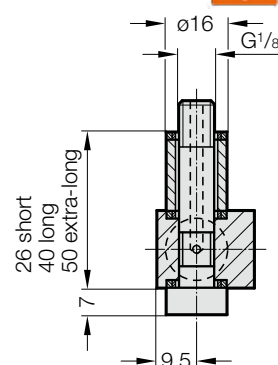
4 x G 1/8



2480.00.24.11 short

2480.00.24.12 extra-long

Multiple adapter

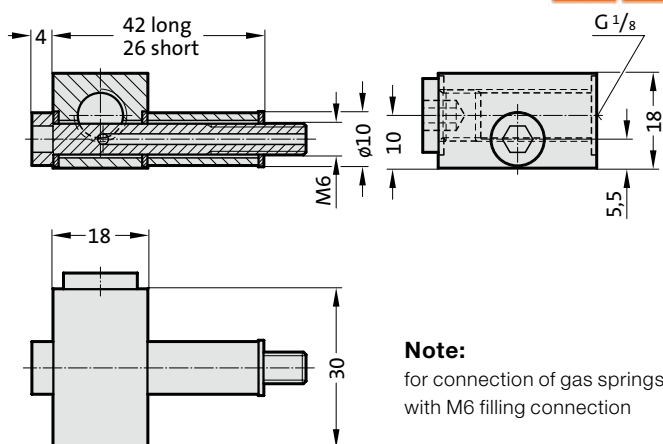


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

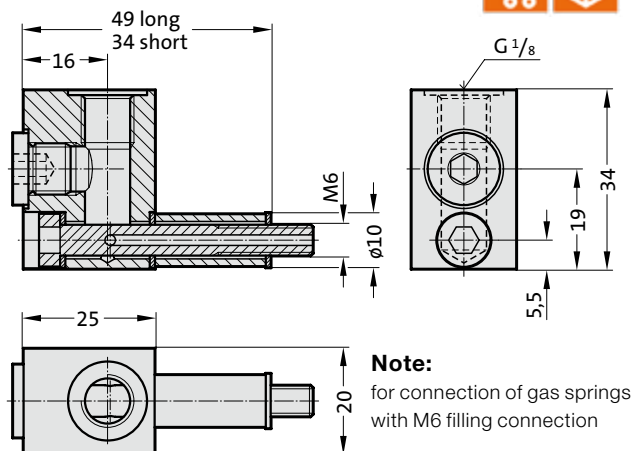
2480.00.24.53 horizontal, long
2480.00.24.54 horizontal, short

Double adapter



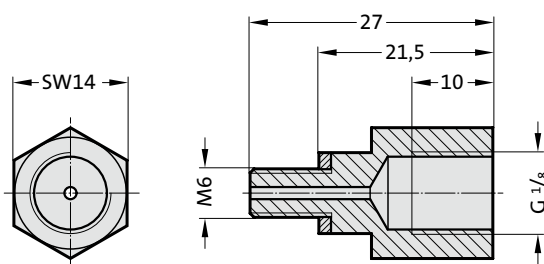
2480.00.24.56 vertical, long
2480.00.24.57 vertical, short

Double adapter

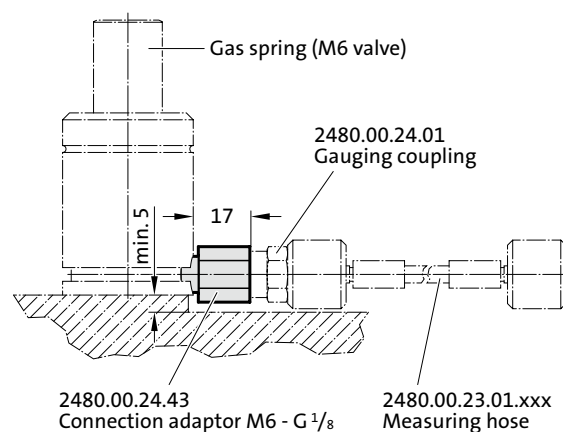


2480.00.24.43

Connection fitting M6-G1/8



Mounting example:

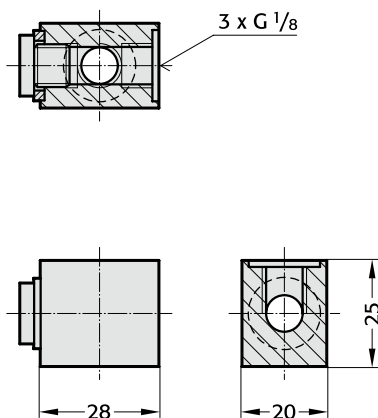


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

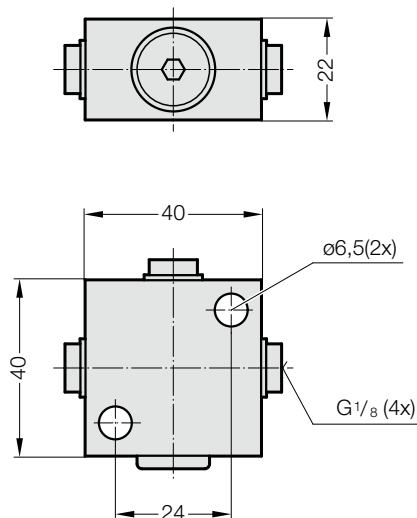
2480.00.24.30

Distributor block G1/8, 3 ports



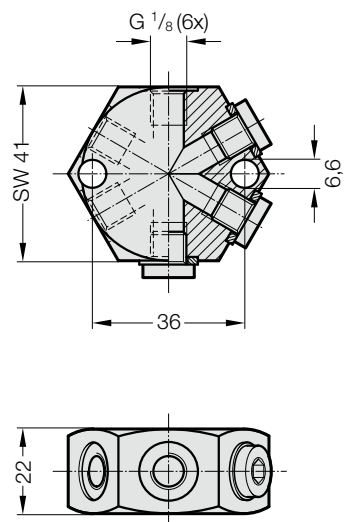
2480.00.24.34

Distributor block G1/8, 4 ports



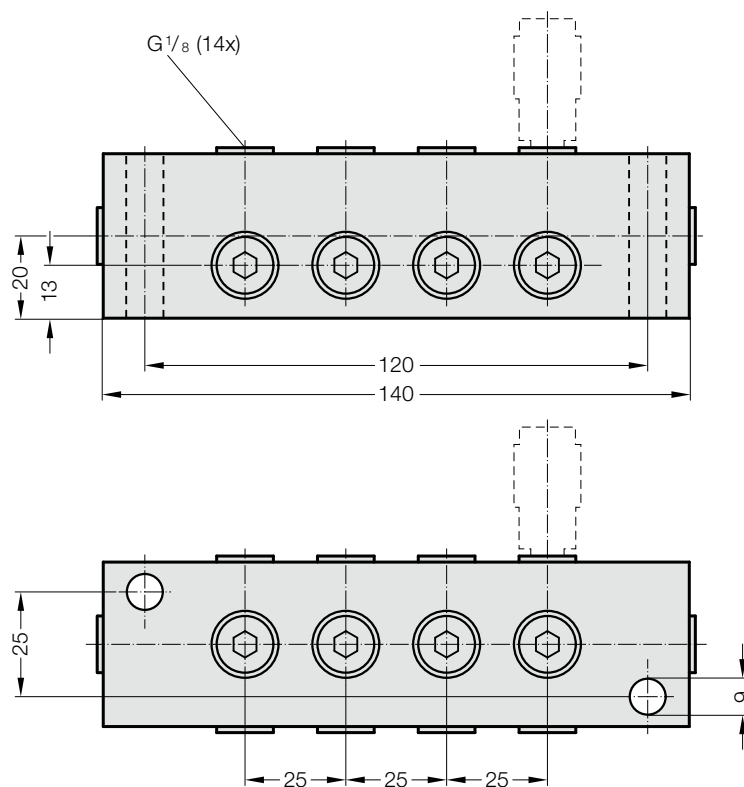
2480.00.24.31

Distributor block G1/8, 6 ports



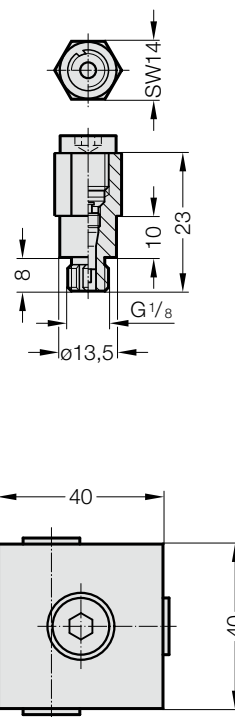
2480.00.24.33

Distributor G1/8, 14 ports



2480.00.40

Filling adapter

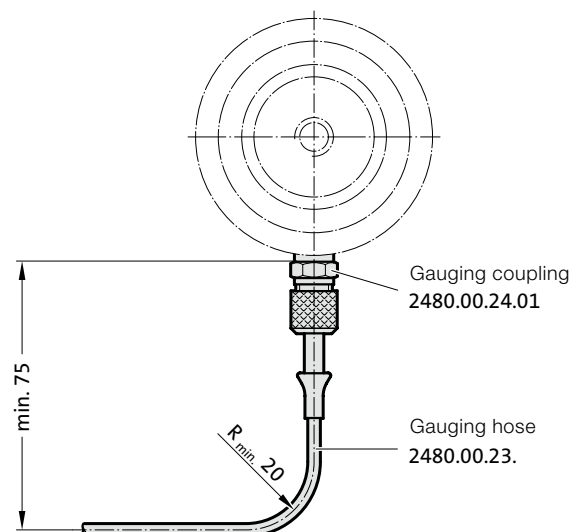
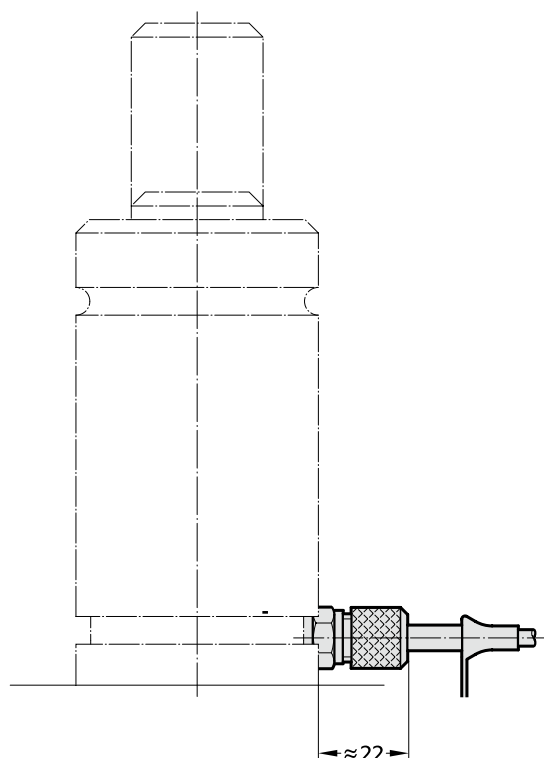


GAS SPRING ACCESSORIES

MINIMESS – COMPOUND THREADED JOINTS

2480.00.24.01

Gauging coupling with valve



2480.00.24.10 long

11 short

12 extra-long

Multiple adapter with two gauging couplings

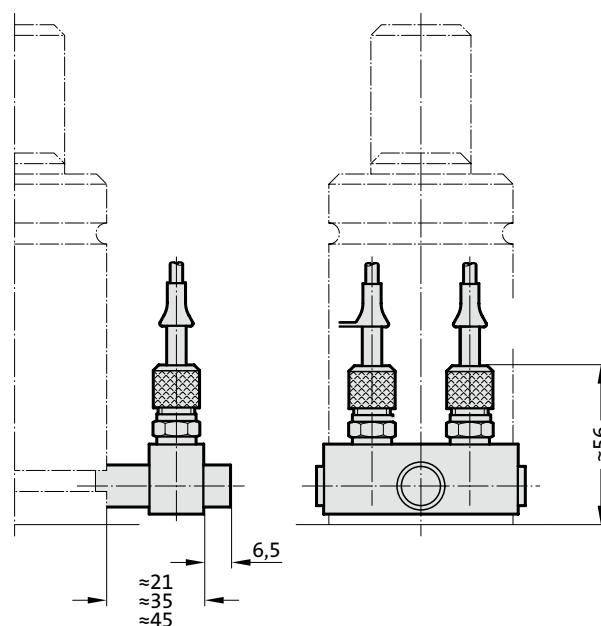
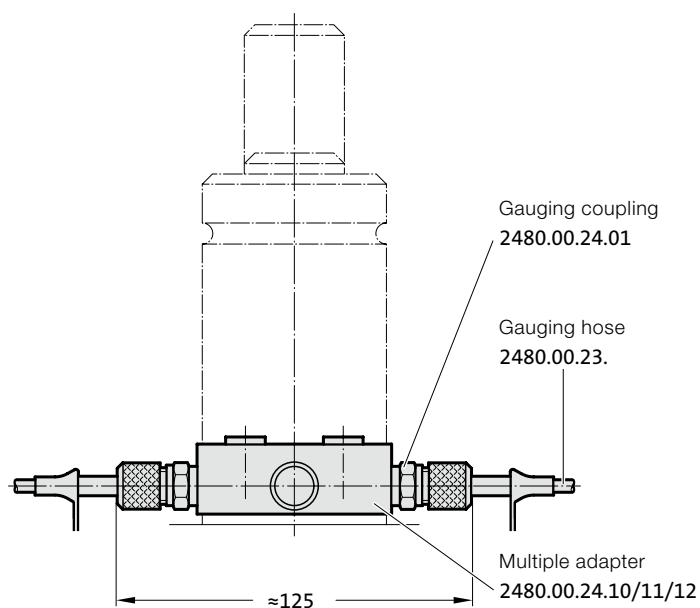


Note:

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

Execution: Horizontal connection

Execution: Vertical connection

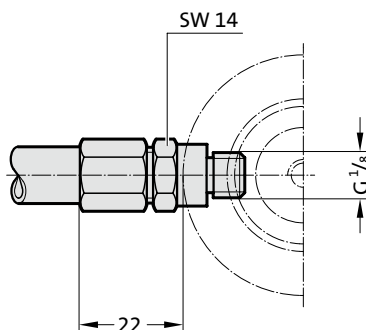


GAS SPRING ACCESSORIES

COMPRESSION FITTING – COMPOUND THREADED JOINTS

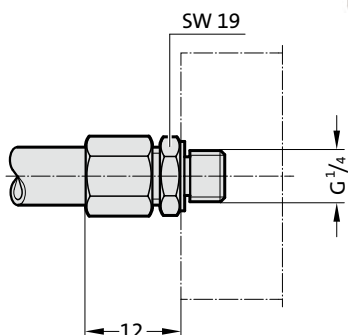
2480.00.10.01

Direct test connection to gas spring



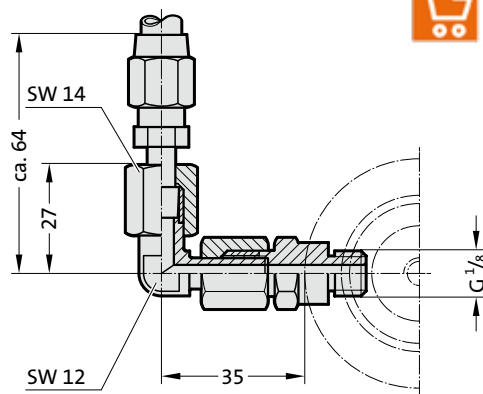
2480.00.10.03

Direct test connection to control fitting



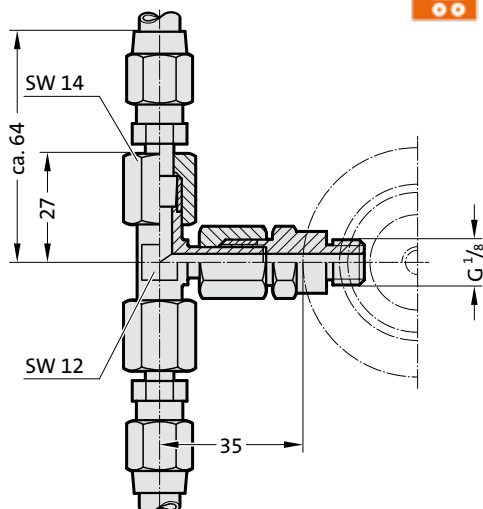
2480.00.10.10

Adjustable angular coupling



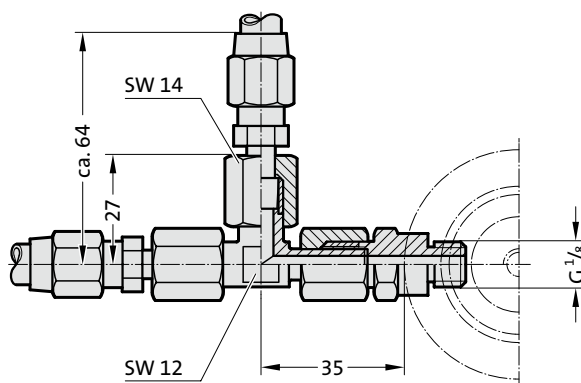
2480.00.10.11

Adjustable T-Coupling



2480.00.10.12

Adjustable L-Coupling

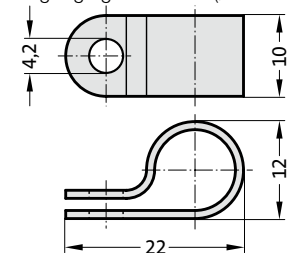


GAS SPRING ACCESSORIES

COMPRESSION FITTING – COMPOUND THREADED JOINTS

2480.00.10.20.12.01

Hose clamp
for gauging hose DN4 (Ø 9 mm)



Material:

Polyamide

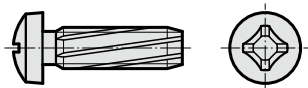
Note:

Supplied without screws



2192.50.04.012

Self-tapping screw DIN 7516
M4x12



Note:

self-tapping

Diameter of hole for self-tapping
screw = 3.6 mm



2480.00.23.13.

Anti-suff spiral
for subsequent installation over hoses and tubing



Order No. I [m]

2480.00.23.13.0001	1
2480.00.23.13.0002	2
2480.00.23.13.0005	5
2480.00.23.13.0010	10

Inner ø 7 mm
For hose external ø max. 5-11 mm

Temperature range -30°C up to +100°C

Description:

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

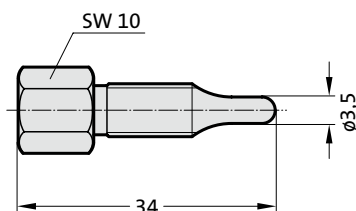
Material:

Polyamide



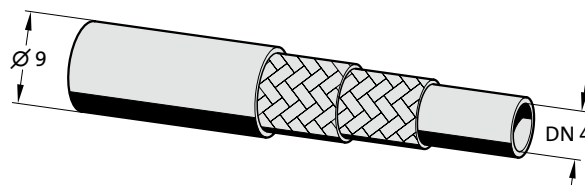
2480.00.54.01

Expansion punch for hosing



2480.00.10.20.

High-pressure hose



Ordering Code (example):

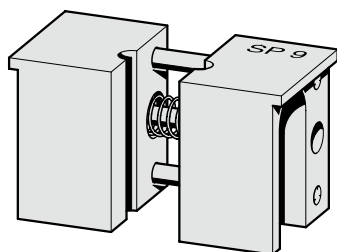
High-pressure hose = 2480.00.10.20.

Length 10 m = 0010

Order No. = 2480.00.10.20.0010

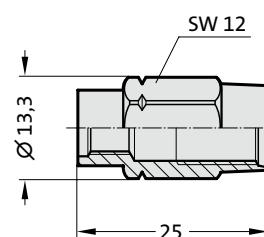
2480.00.54.02

Vice jaws
for holding high-pressure hose



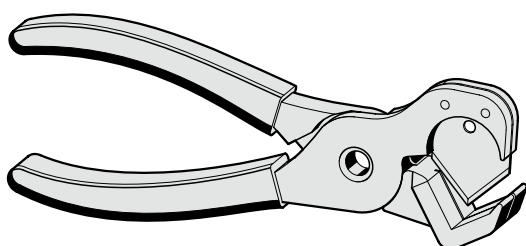
2480.00.10.21

Hose screw fitting (female)



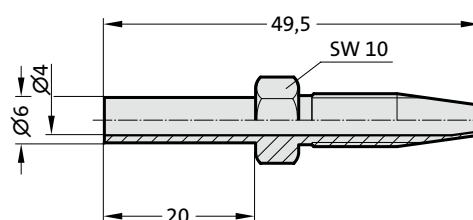
2480.00.54.03

Hose shears

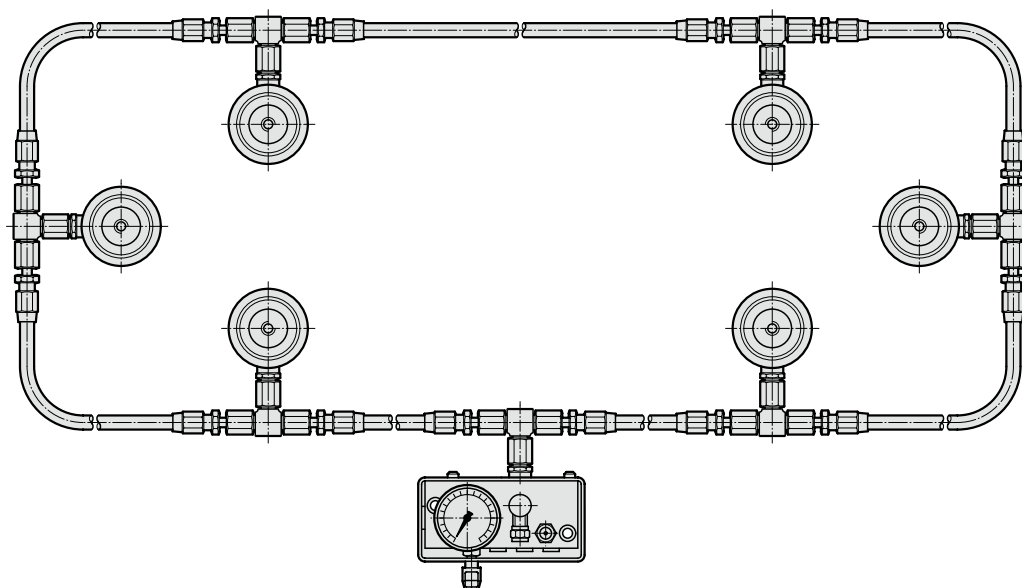
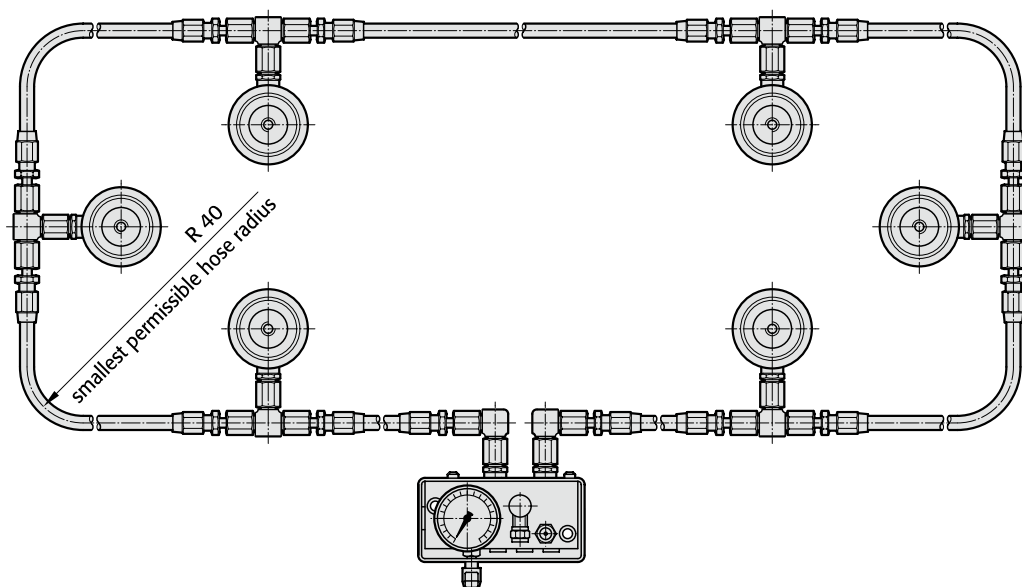
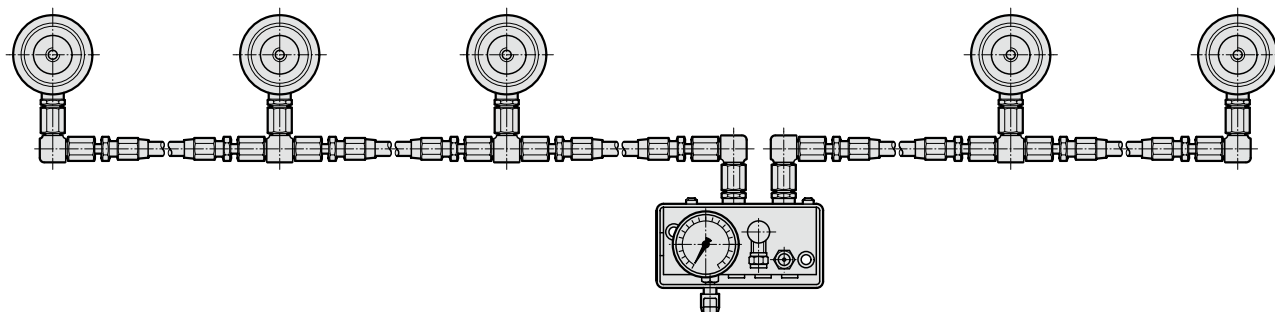


2480.00.10.22

Hose screw fitting (male)



ASSEMBLY ARRANGEMENT OF GAS SPRINGS IN SERVIAL CONNECTION COMPRESSION FITTING



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

GAS SPRING ACCESSORIES

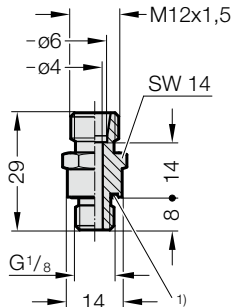
24°-CONE THREADED JOINTS

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.26.03



Screw connection GE-24° conus,
DN5 - G¹/₈

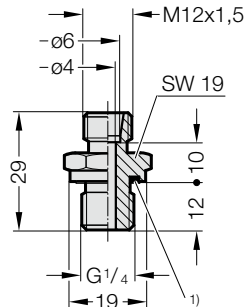


¹⁾ Eolastic-Seal ED

2480.00.26.04



Screw connection GE-24° conus,
DN5 - G¹/₄

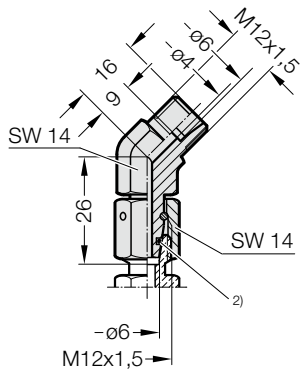


¹⁾ Eolastic-Seal ED

2480.00.26.21



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

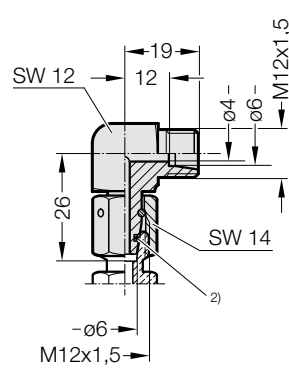


²⁾ O-ring

2480.00.26.22



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

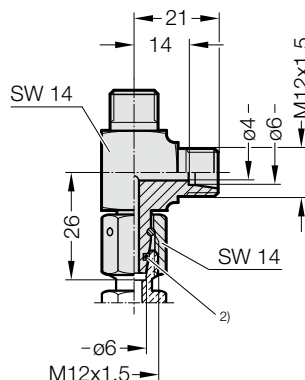


²⁾ O-ring

2480.00.26.23



Screw connection L-24° conus,
DN5, adjustable

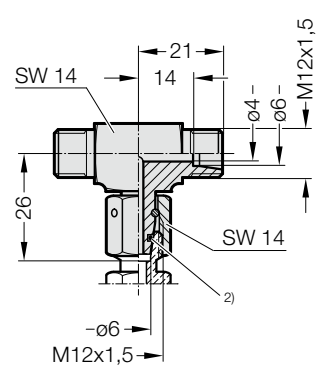


²⁾ O-ring

2480.00.26.24



Screw connection T-24° conus,
DN5, adjustable

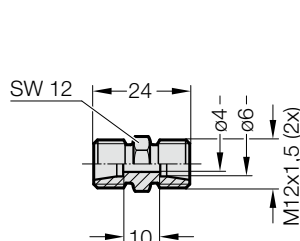


²⁾ O-ring

2480.00.26.25



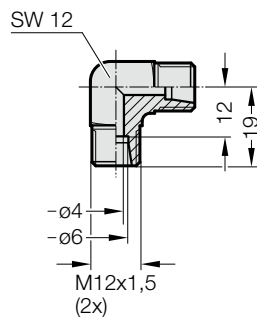
Adapter GE-24° conus,
hose - hose, DN5



2480.00.26.26



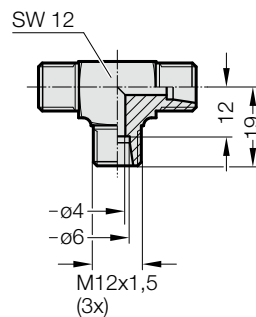
Adapter 90°-24° conus,
hose - hose, DN5



2480.00.26.27



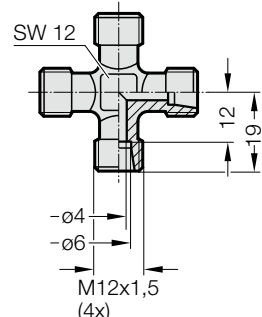
Adapter T-24° conus,
hose - hose, DN5



2480.00.26.28



Adapter K-24° conus,
hose - hose, DN5



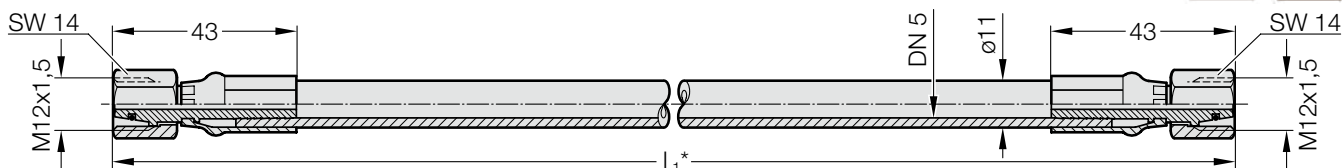
GAS SPRING ACCESSORIES

24°-CONE CONNECTION HOSES

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.01.

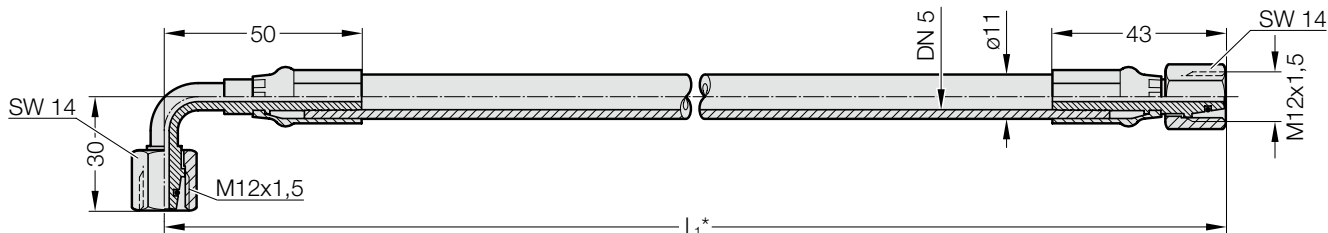
Hose – conical seals with union nuts and O-Ring (straight/straight)



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

2480.00.25.02.

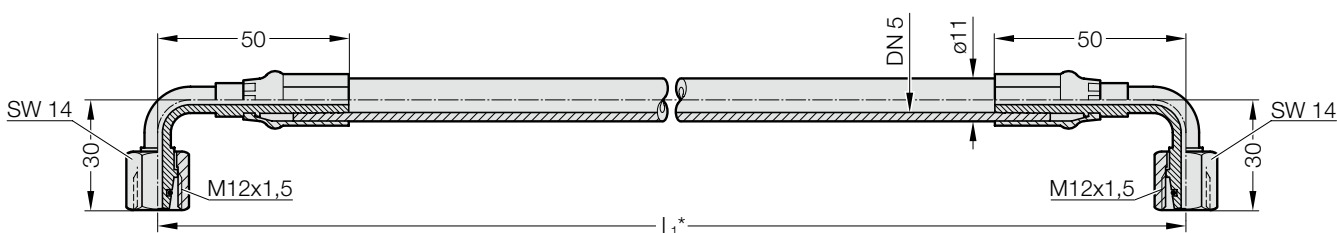
Hose – conical seals with union nuts and O-Ring (90° bend/straight)



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

2480.00.25.03.

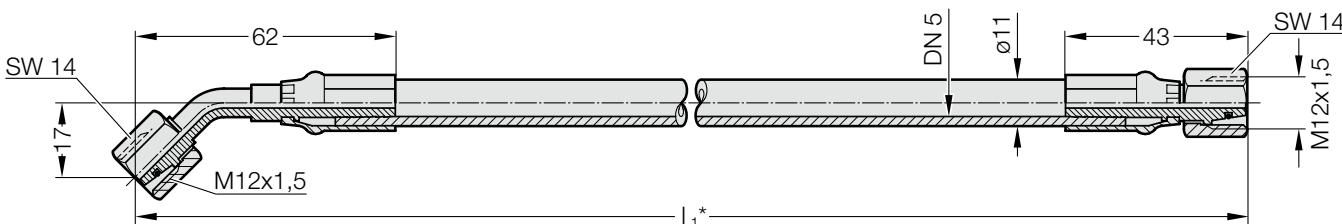
Hose – conical seals with union nuts and O-Ring (90° bend/both ends)



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

2480.00.25.04.

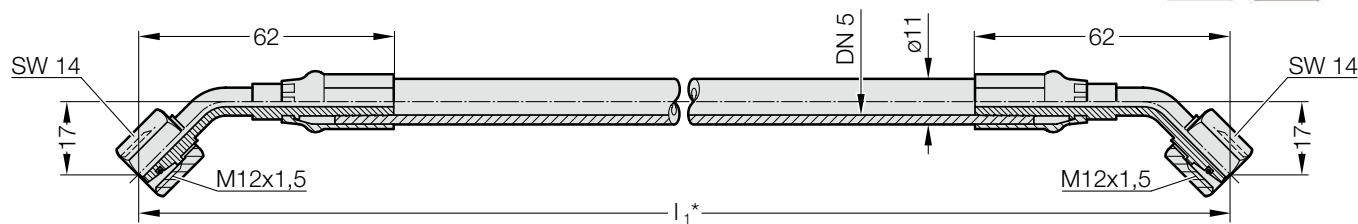
Hose – conical seals with union nuts and O-Ring (45° bend/straight)



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

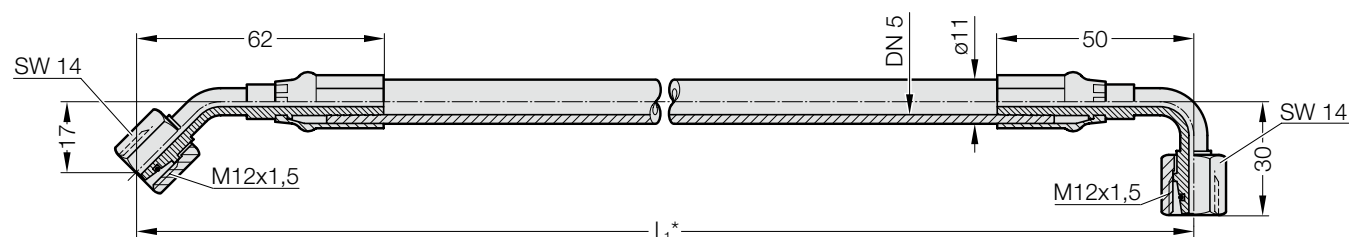
GAS SPRING ACCESSORIES
24°-CONE CONNECTION HOSES
(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.05. Hose – conical seals with union nuts and O-Ring (45° bend/both ends)



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

2480.00.25.06. Hose – conical seals with union nuts and O-Ring (45° bend/ 90° bend)



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

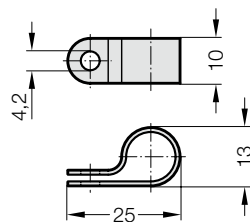
Order example:

Shortest factory length: 140 mm
Minimum bending radius: R40

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

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

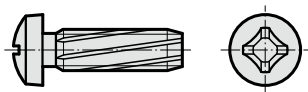
2480.00.25.12.01 Hose clamp
for gauging hose DN5 ($\varnothing$ 11 mm)



Material:
Polyamide

Note:
Supplied without screws

2192.50.04.012 Self-tapping screw DIN 7516
M4x12



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

2480.00.23.13. Anti-scuff spiral
for subsequent installation over hoses and tubing



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

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

Description:

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

Material:
Polyamide

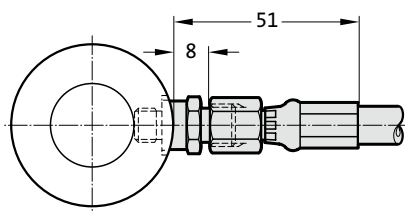
GAS SPRING ACCESSORIES

DIRECT CONNECTION DIMENSIONS

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

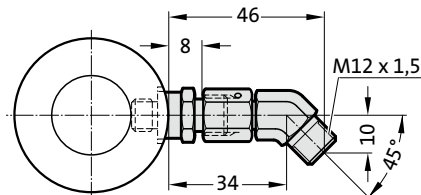
Direct connection

hose straight with adaptor 2480.00.26.03



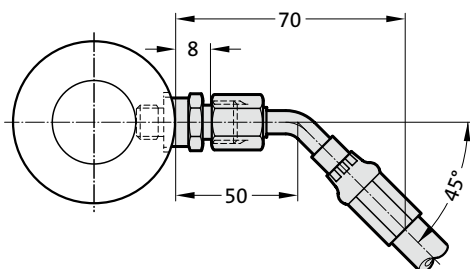
Direct connection

with elbow adaptor 45° 2480.00.26.21



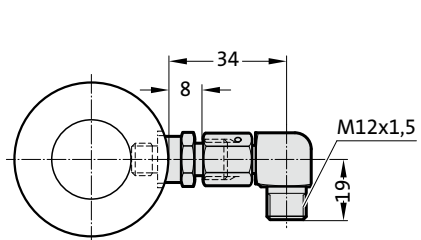
Direct connection

45° hose with adaptor 2480.00.26.03



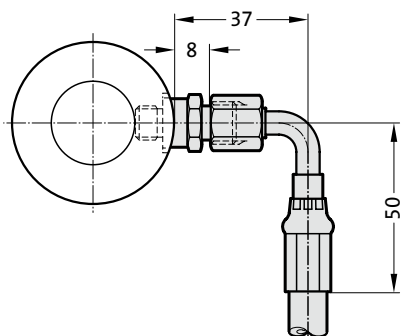
Direct connection

with elbow adaptor 90° 2480.00.26.22



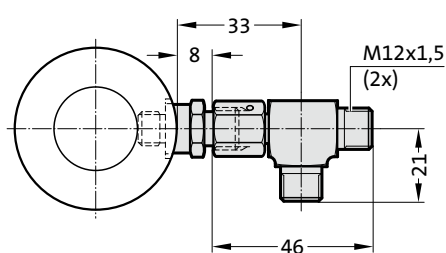
Direct connection

90° hose with adaptor 2480.00.26.03



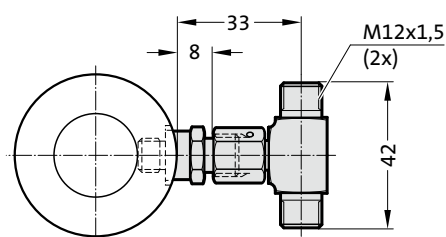
Direct connection

with L-coupling 2480.00.26.23



Direct connection

with T-coupling 2480.00.26.24



GAS SPRING ACCESSORIES

CONNECTOR SYSTEM, 24° CONUS MICRO

2480.00.27.01

M8x1 hose connector

Order example:

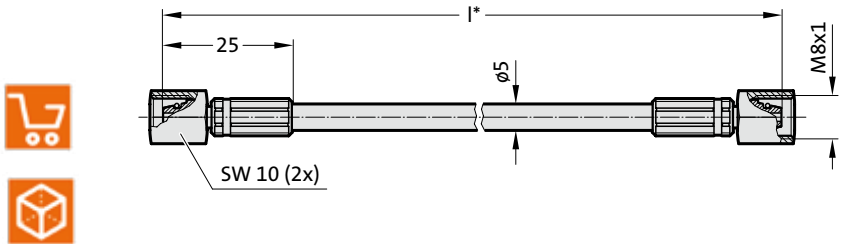
Shortest factory length:
90 mm excl. bend protection
150 mm bend protection on one side
300 mm bend protection on both sides
Minimum bending radius: R20 mm

*Measuring hose available in the following lengths:

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

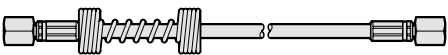
2480.00.27.01.

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



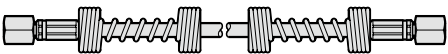
2480.00.27.01.....1

Antikink spiral, at one end



2480.00.27.01.....2

Antikink spiral, at both ends

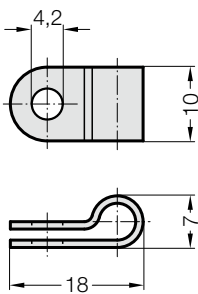


Ordering Code (example):

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

2480.00.23.12.01

Hose clamp
for gauging hose DN2 (Ø5 mm)



Material:

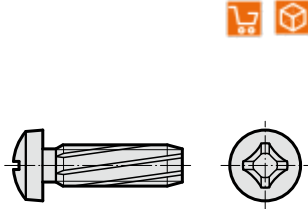
Polyamide

Note:

Supplied without screws

2192.50.04.012

Self-tapping screw DIN 7516
M4x12



Note:

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

2480.00.23.13.

Anti-scuff spiral
for subsequent installation over hoses and tubing



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

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

Description:

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

Material:

Polyamide

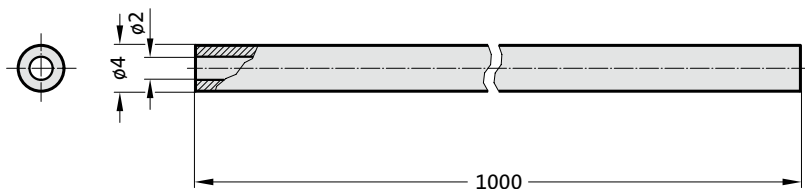
GAS SPRING ACCESSORIES

PIPE -24° CONUS MICRO

2480.00.27.11

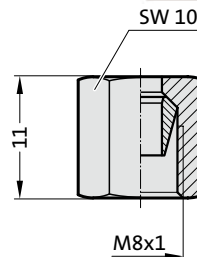
Pipe -24° conus micro
Delivered length: 1 m

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



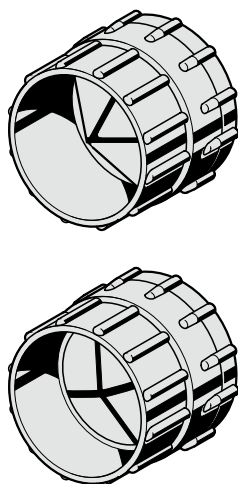
2480.00.27.11.01

Cutting ring screw connection - pipe 24° conus micro



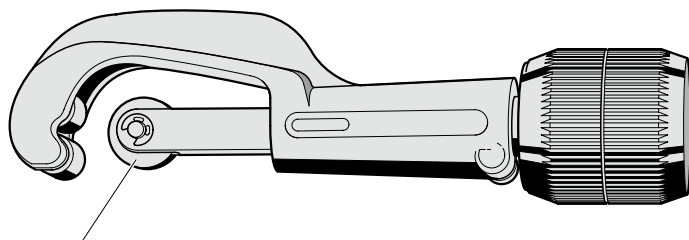
2480.00.27.00.01

Deburring tool for 24° conus micro



2480.00.27.00.02

Pipe cutter for 24° conus micro



2480.00.27.00.02.1

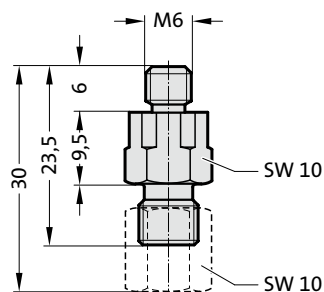
Replacement cutting wheel for pipe cutter

GAS SPRING ACCESSORIES

CONNECTOR SYSTEM, 24° CONUS MICRO

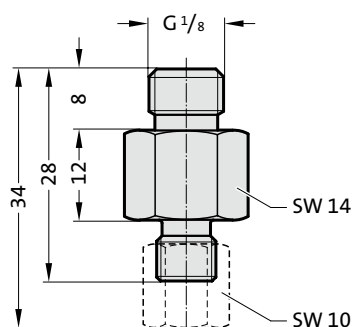
2480.00.28.01

Screw connection
GE-M6-24° cone micro



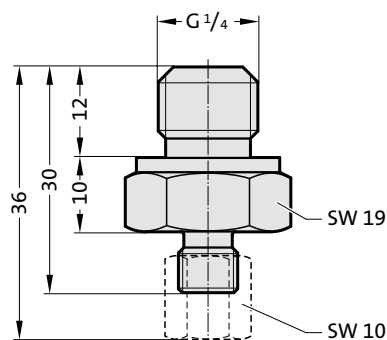
2480.00.28.02

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



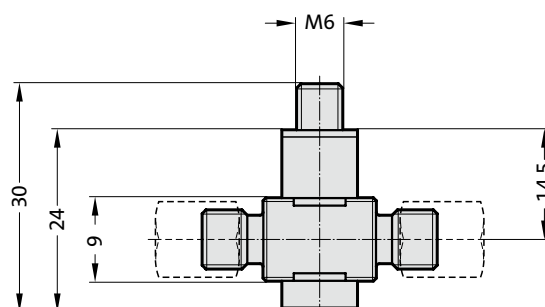
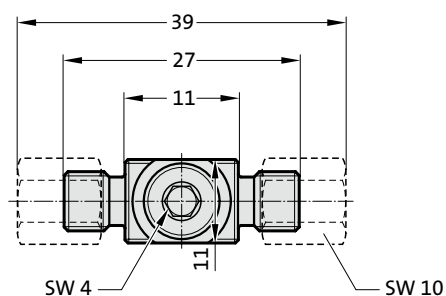
2480.00.28.03

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



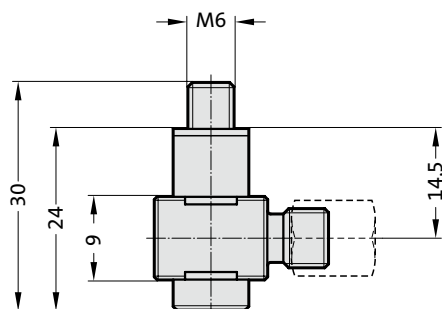
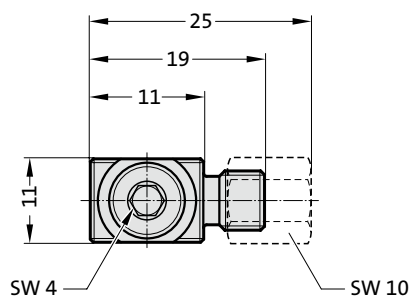
2480.00.28.14

Screw connection, T-24° conus micro



2480.00.28.17

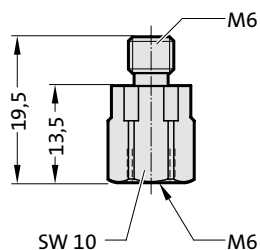
Screw connection, W-24° conus micro



GAS SPRING ACCESSORIES CONNECTOR SYSTEM, MICRO

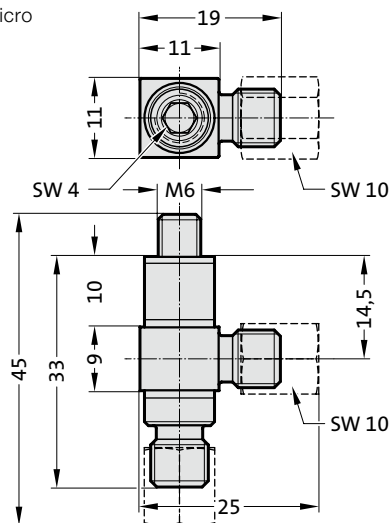
2480.00.22.06.06

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



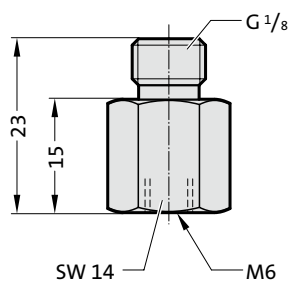
2480.00.28.15

Screw connection,
L-24° conus micro



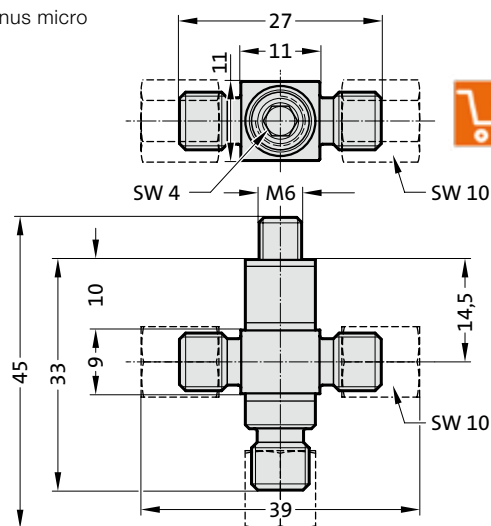
2480.00.22.18.06

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



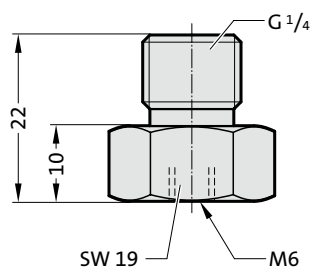
2480.00.28.16

Screw connection,
K-24° conus micro



2480.00.22.14.06

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

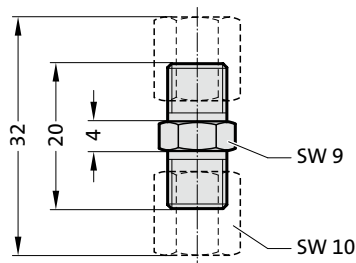


GAS SPRING ACCESSORIES

CONNECTOR SYSTEM 24° CONE MICRO

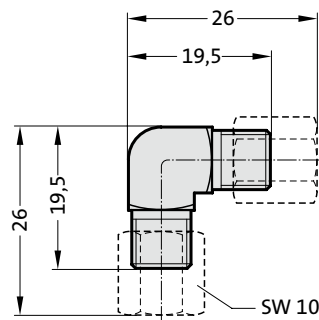
2480.00.28.25

Adapter, GE-24° cone micro
hose – hose



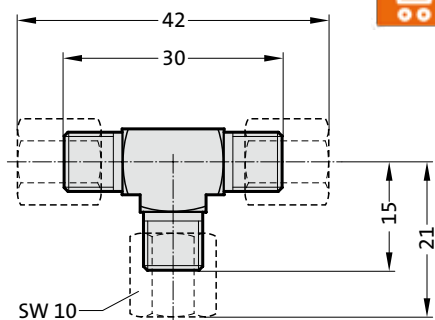
2480.00.28.26

Adapter, W-24° cone micro
hose – hose



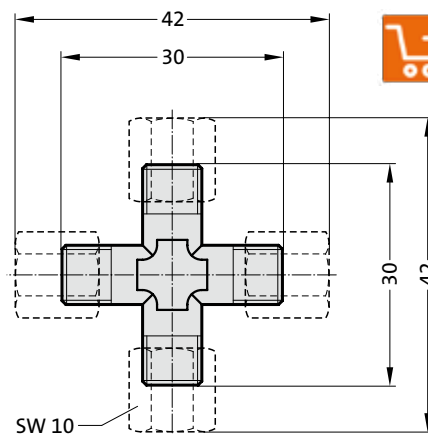
2480.00.28.27

Adapter, T-24° cone micro
hose – hose



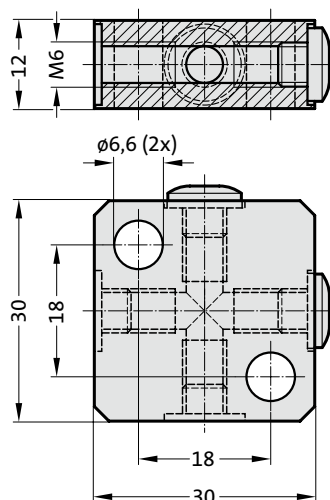
2480.00.28.28

Adapter, K-24° cone micro
hose – hose



2480.00.28.34

Distributor block M6, 4 ports



CONTROL FITTING WITHOUT PRESSURE RELIEF WITH PRESSURE RELIEF



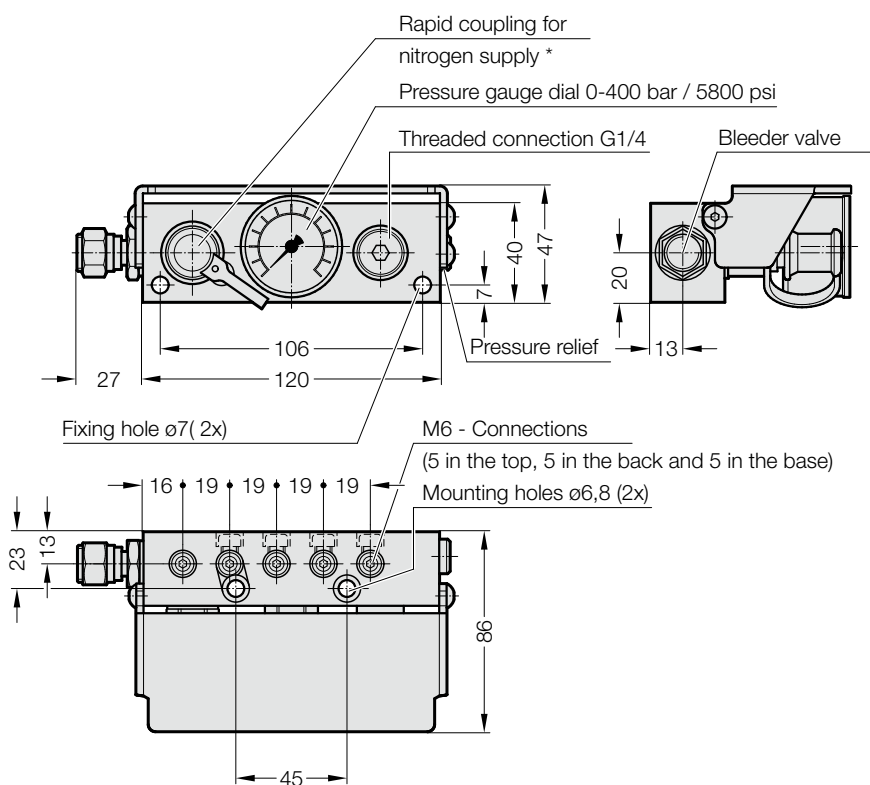
Description:

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

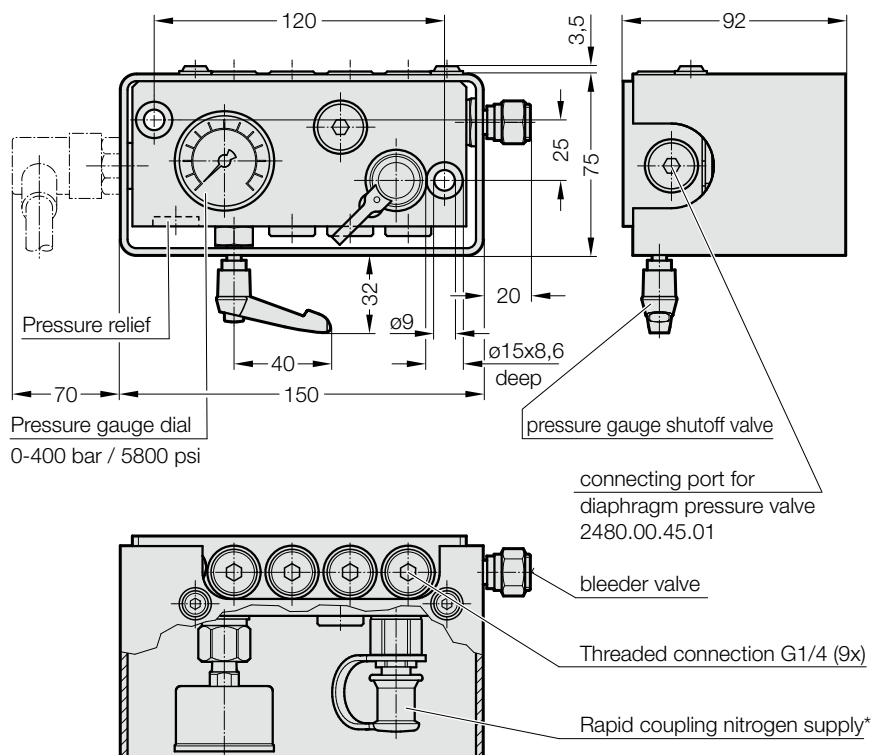
2480.00.34.11.1 without pressure relief
2480.00.34.13.1 with pressure relief



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:

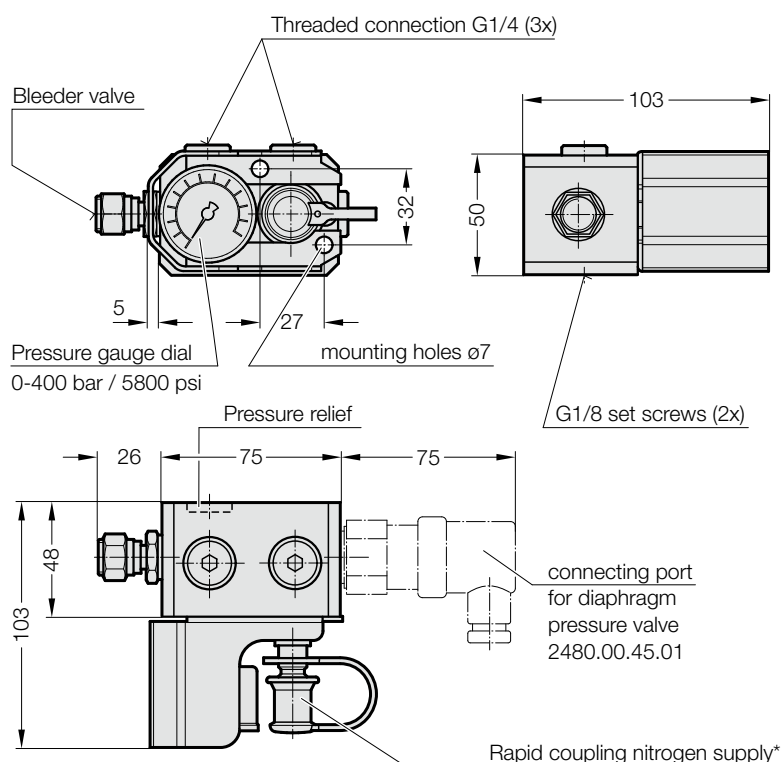
The control fitting 2480.00.30.01.1/02.1/03.1/04.1 serves to control the charge pressure of up to eight connected gas springs. Pressure checks during operation can be effected in two ways:

- via optical monitoring of the pressure gauge dial.
- 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

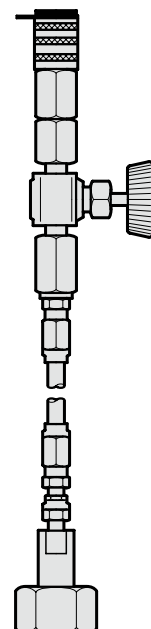


Description:

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

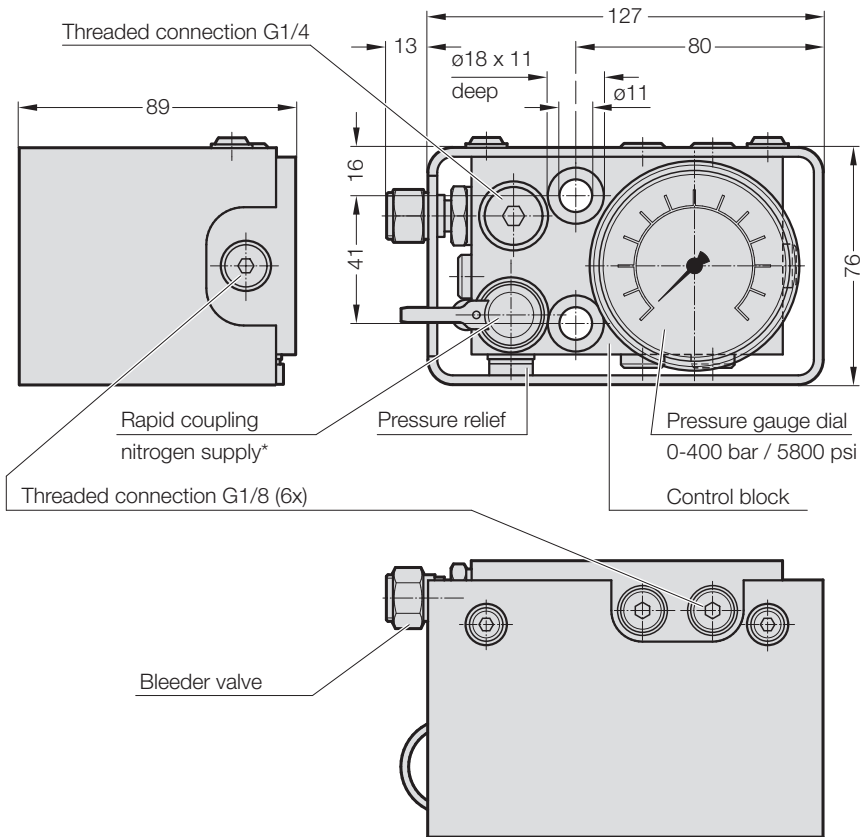
Note:

* 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



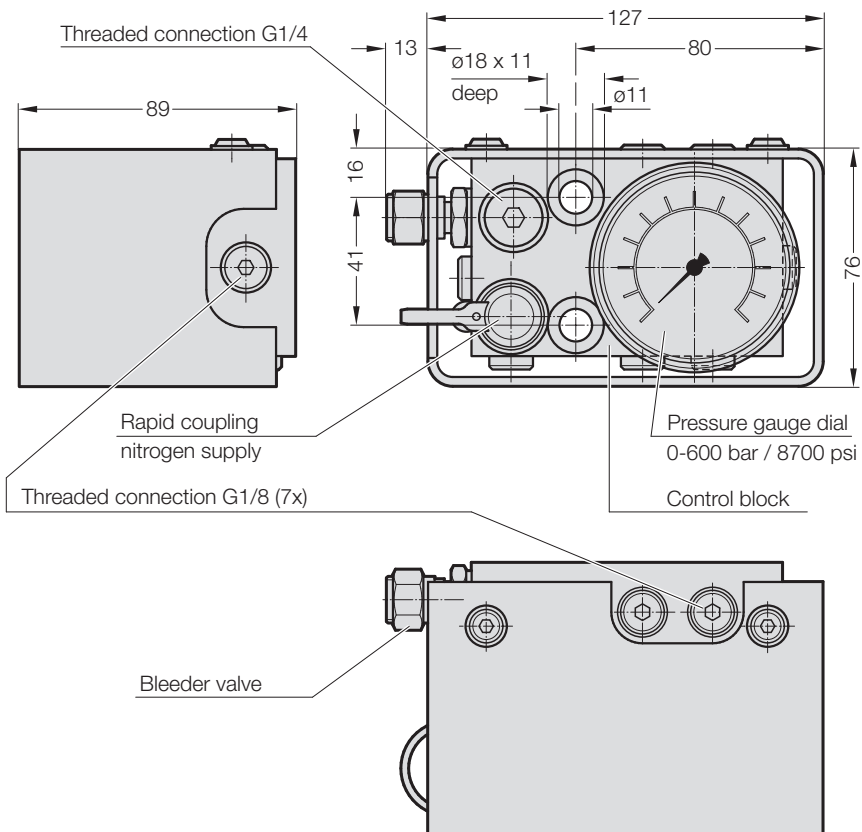
Description:

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 six 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 seven 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

2480.00.39.05. Multiple control fitting



2480.00.39.05. Multiple control fitting

subject to alterations

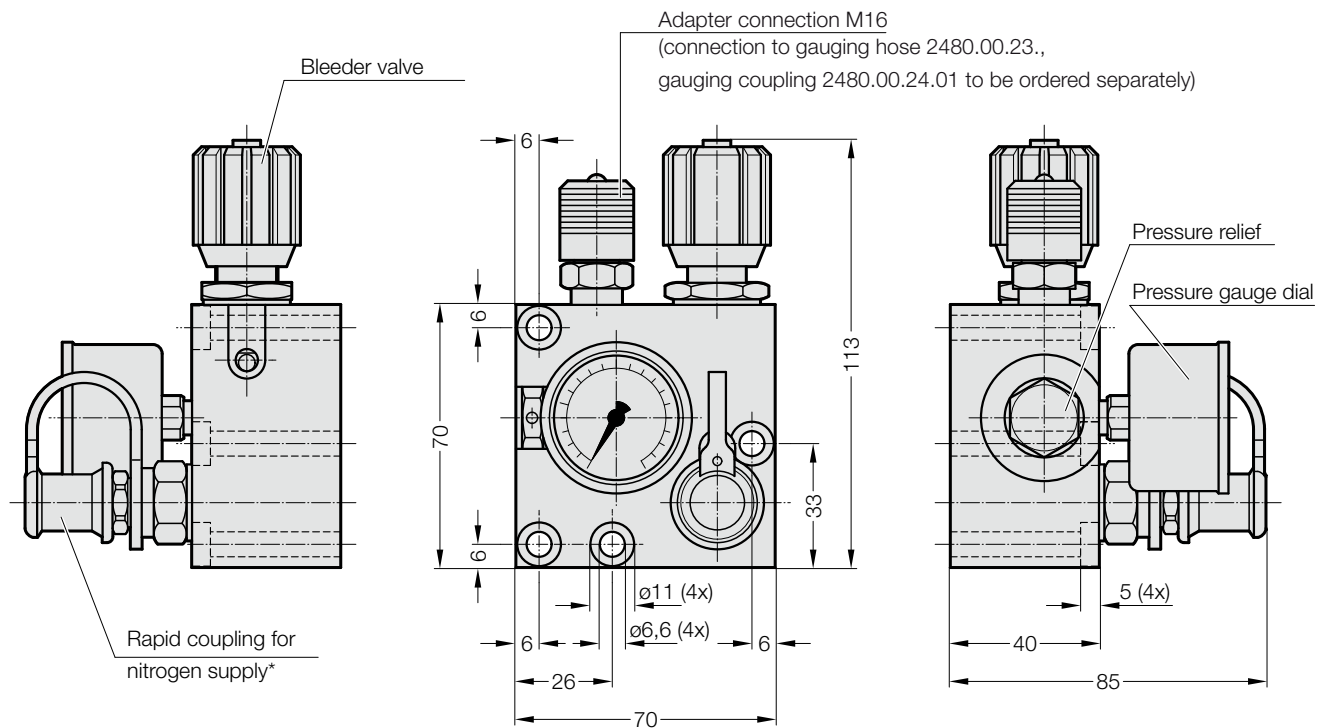
2480.00.39.06. Multiple control fitting



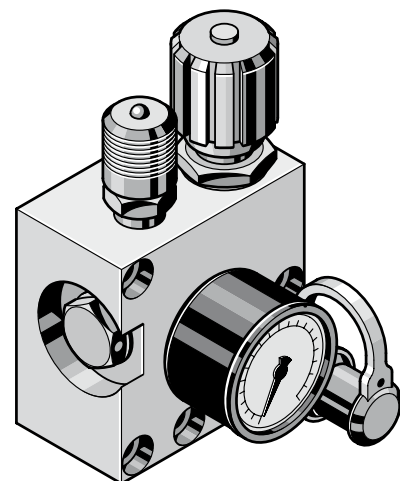
2480.00.39.06. Multiple control fitting

Order No	Number of testing units	I	I_1
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

2480.00.31.11.1



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

2480.00.45.02

Diaphragm pressure switch

2480.00.45.01

Setting range20-250 bar

Tolerance±5.0 bar

Overpressure protection350 bar

max. voltage250 V

2480.00.45.02

Setting range10-80 bar

Tolerance±1.6 bar

Overpressure protection350 bar

max. voltage250 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.

subject to alterations

F397

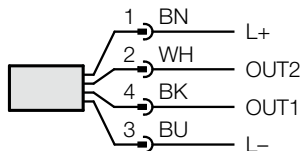
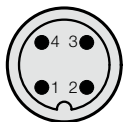
DIAPHRAGM PRESSURE SWITCH, DIGITAL



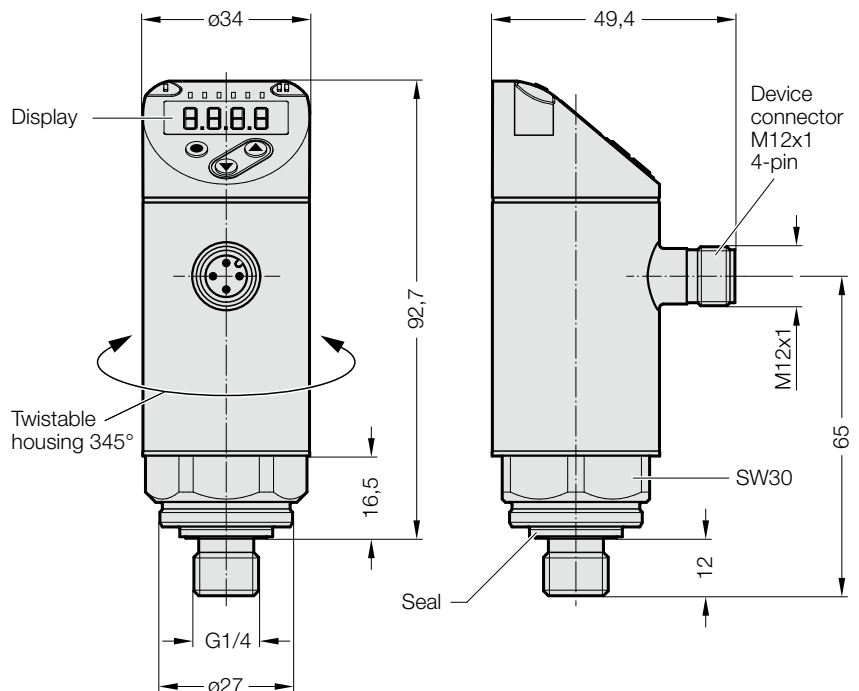
2480.00.45.04

Pin assignment:

M12x1, 4-pin



OUT1 - Switch output, IO-LINK
OUT2 - Switch output, color coding in accordance with DIN EN 60947-5-2



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 connention	G1/4

Area of application:

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

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

Outputs:

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

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

Ambient conditions:

Protection type	IP 65; IP 67
-----------------	--------------

Approvals/Tests:

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

Mechanical data:

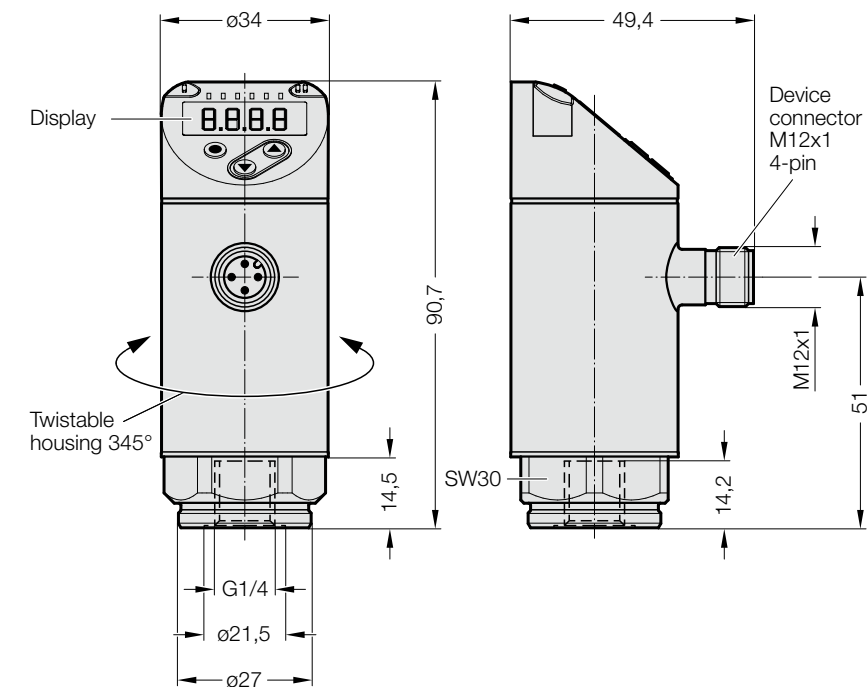
Materials	1.4542 (Stainless steel)
Tightening torque	25 ... 35 Nm

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

2480.00.45.04.A

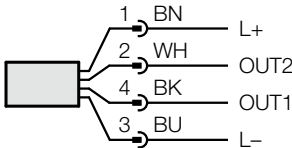
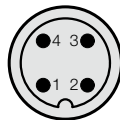


Note:
2191.00.12.04.030 connecting cable, straight
3 m long, to be ordered separately.



Pin assignment:

M12x1, 4-pin



OUT1 - Switch output, IO-LINK
OUT2 - Switch output, color coding in
accordance with DIN EN 60947-5-2

Description:

The membrane pressure switch, digital 2480.00.45.04.A, 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 I nitrogen connection and M12 plug connection, is the optimal solution for hydraulic and pneumatic applications.

Benefits:

- 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 connention	G1/4

Area of application:

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

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

Outputs:

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

subject to alterations

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

Ambient conditions:

Protection type	IP 65; IP 67
-----------------	--------------

Approvals/Tests:

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

Mechanical data:

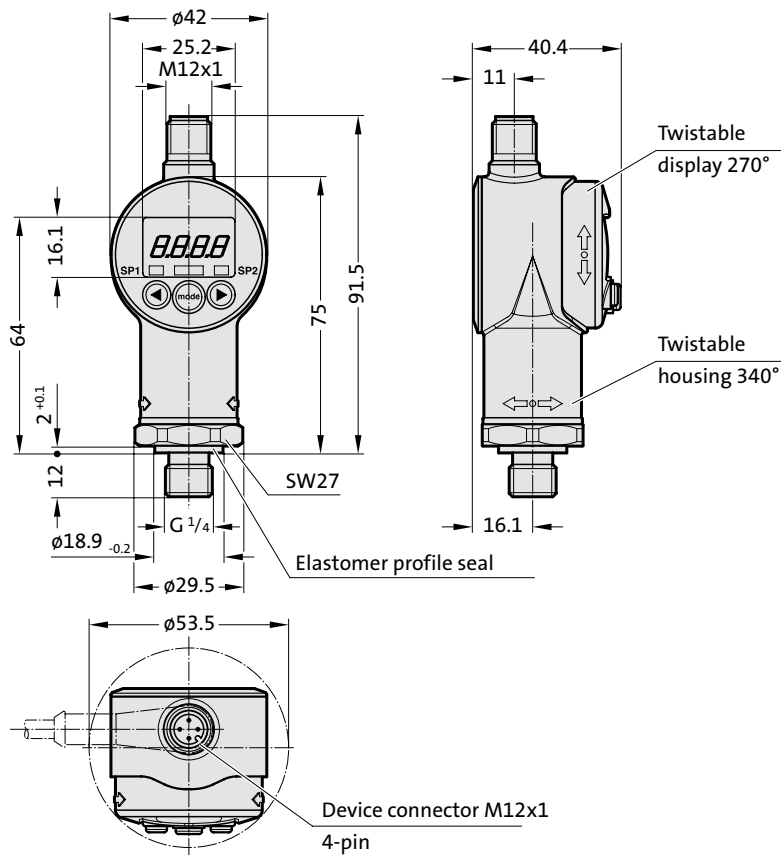
Materials	1.4542 (Stainless steel)
Tightening torque	25 ... 35 Nm

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

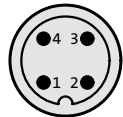
DIAPHRAGM PRESSURE SWITCH, DIGITAL

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

Analogue 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 (WPM) 2.1
WIRELESS MONITORING OF GAS SPRINGS



PLEASE REQUEST YOUR CATALOGUE

FILLING AND CONTROL FITTING

FILLING HOSE

CYLINDER PRESSURE REGULATOR



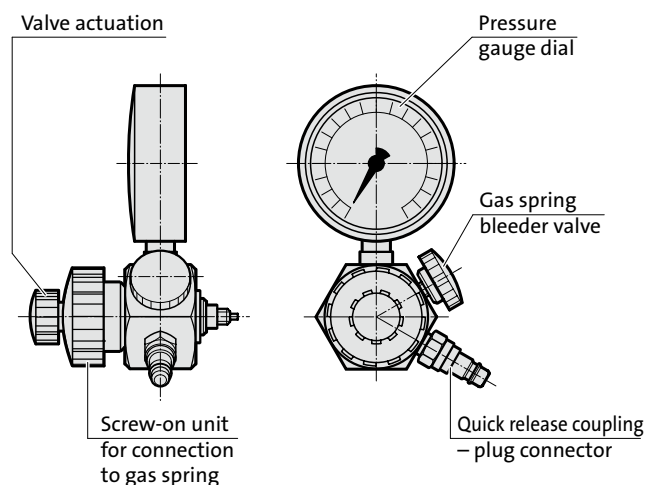
Description:

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.

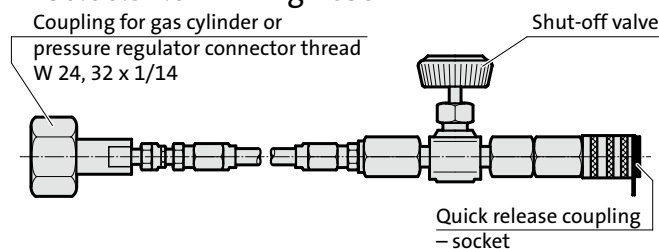
2480.00.32.21 Filling and control fitting



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:

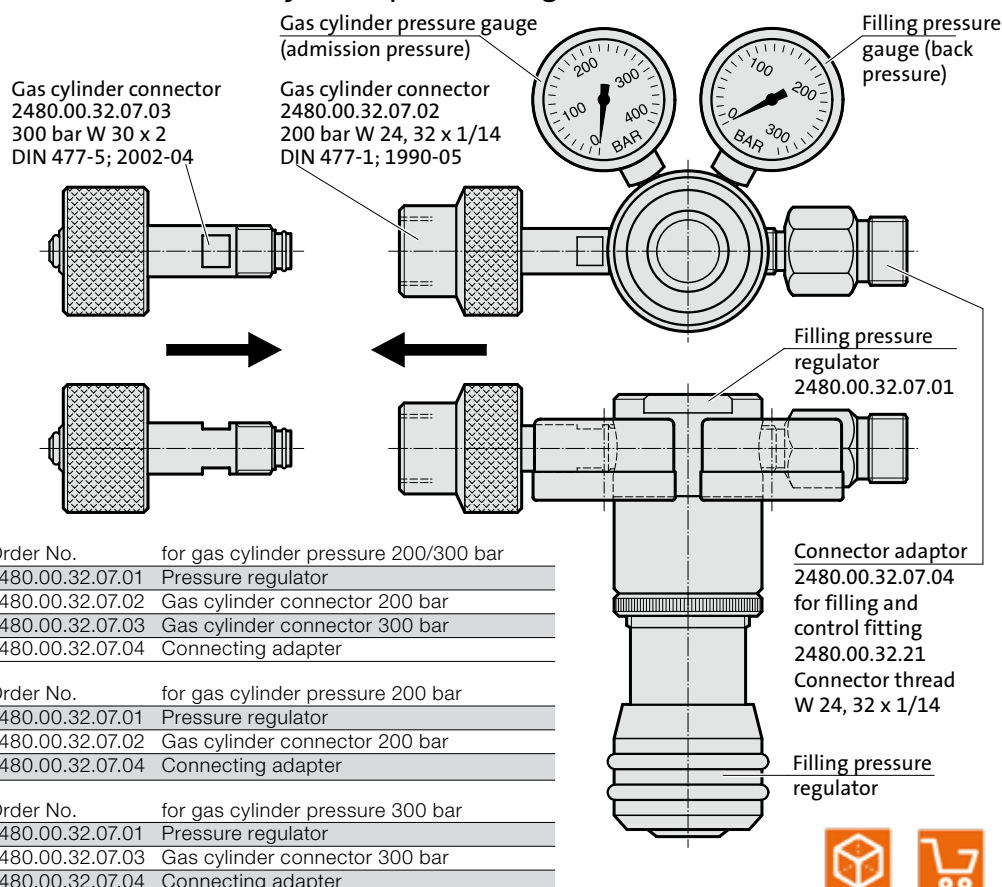
The pressure regulator 2480.00.32.07. is designed for 200 bar connections and for 300 bar gas cylinders. The filling and control fitting 2480.00.32.21 is connected to the cylinder pressure regulator for filling gas springs using filling hose 2480.00.31.02 and connector adaptor 2480.00.32.07.04. Depending 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

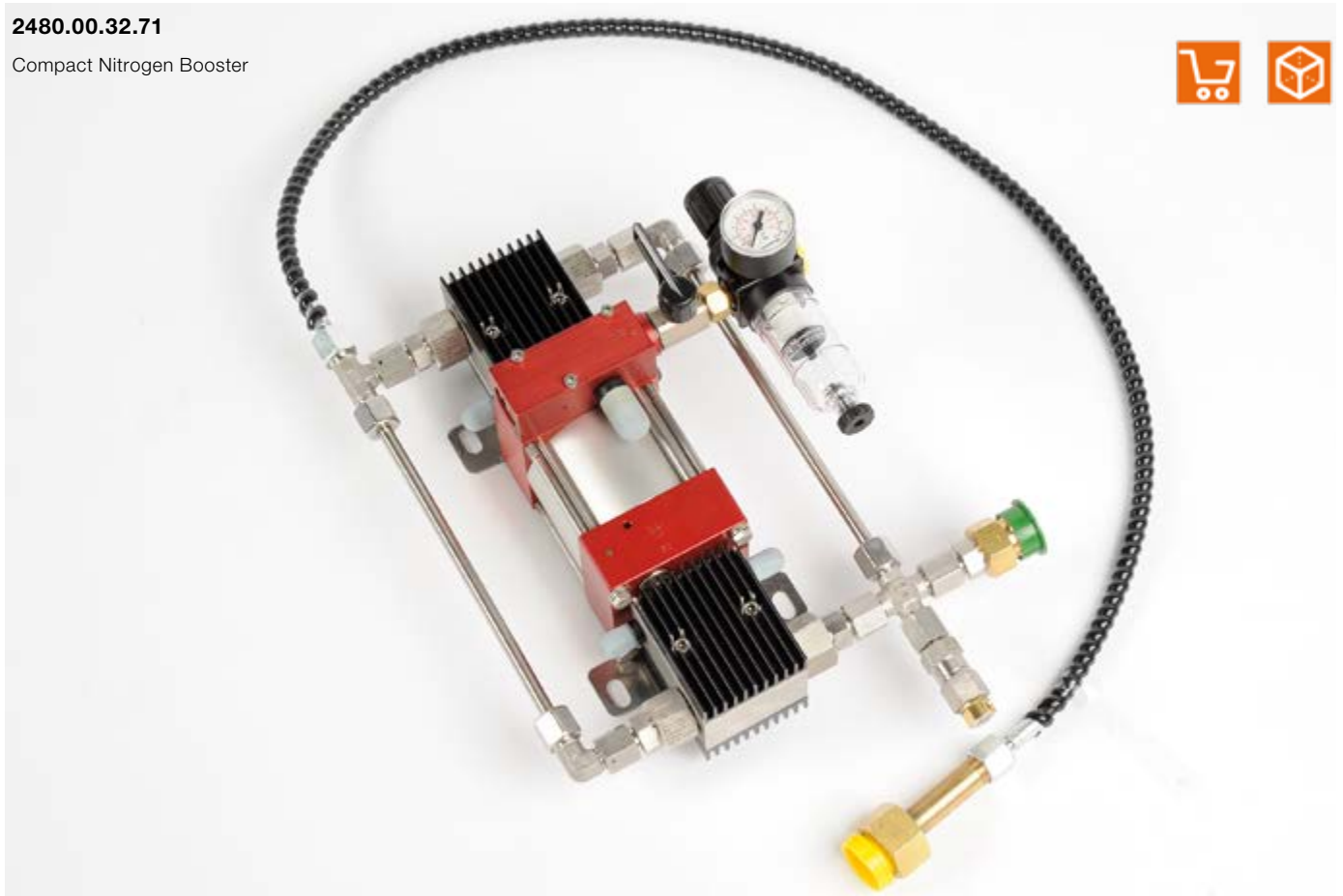
Order No.	for gas cylinder pressure 300 bar
2480.00.32.07.01	Pressure regulator
2480.00.32.07.03	Gas cylinder connector 300 bar
2480.00.32.07.04	Connecting adapter



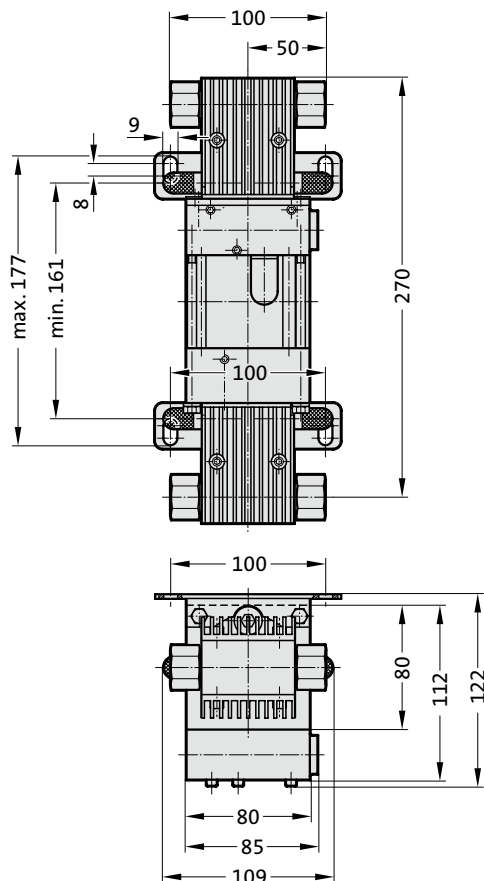
COMPACT NITROGEN BOOSTER

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 N_2 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

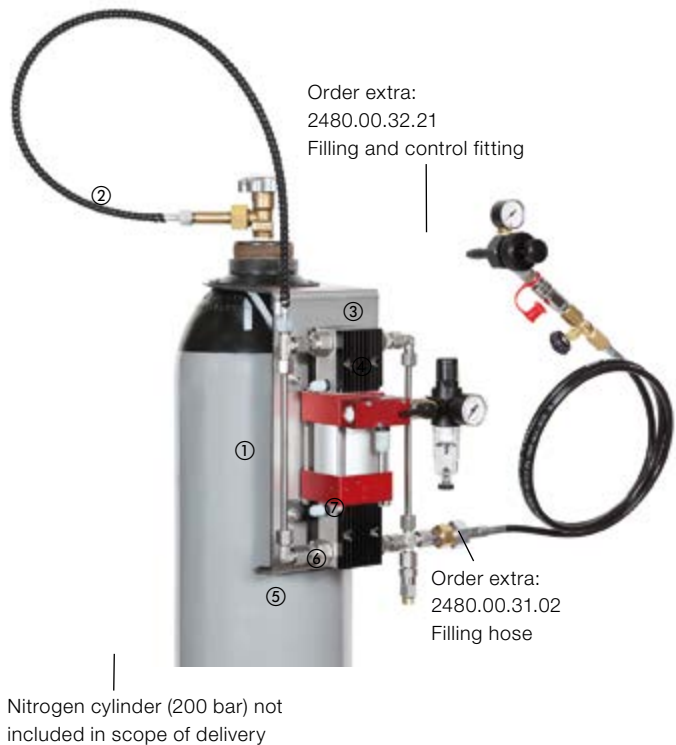
2480.00.32.71.02 Holding plate

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

2480.00.32.71.02

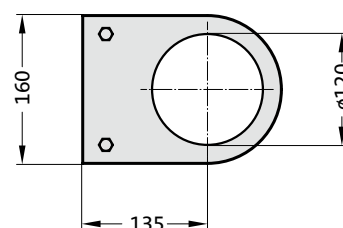
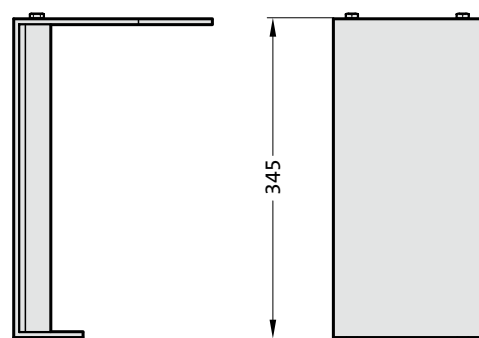
Technical data:

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.



DYNAMOMETER FOR GAS SPRINGS

2480.00.35.021
Analogue display



2480.00.35.032
Digital display



Description:

The dynamometer with mechanical measuring device can be used to test the spring force of gas springs up to 8000 daN.

The dynamometer with digital measuring device can be used to test the spring force of gas springs up to 10000 daN.

The dynamometer 2480.00.35.021 with analogue display is supplied with three interchangeable pressure measuring nozzles different ranges of values:

up to 300 daN,
from 300 to 1750 daN
and from 1750 bto 8000 daN

The dynamometer 2480.00.35.032 with digital display has a pressure measuring nozzle for forces ranging from 0 to 10000 daN.

Maximum spring installation height:

analogous = 700 mm
digital = 760 mm

DYNAMOMETER FOR GAS SPRINGS

2480.00.35.04



Description:

The dynamometer with digital measuring device can be used to test the spring force of gas springs up to 2000 daN. Max. spring installation height: 488 mm.
Max. spring diameter: 150 mm.

Toolkit for assembling gas springs

2480.00.50.11



2480.00.50.11

Toolkit for all gas springs



Description:

Toolkit for assembling and disassembling gas springs.

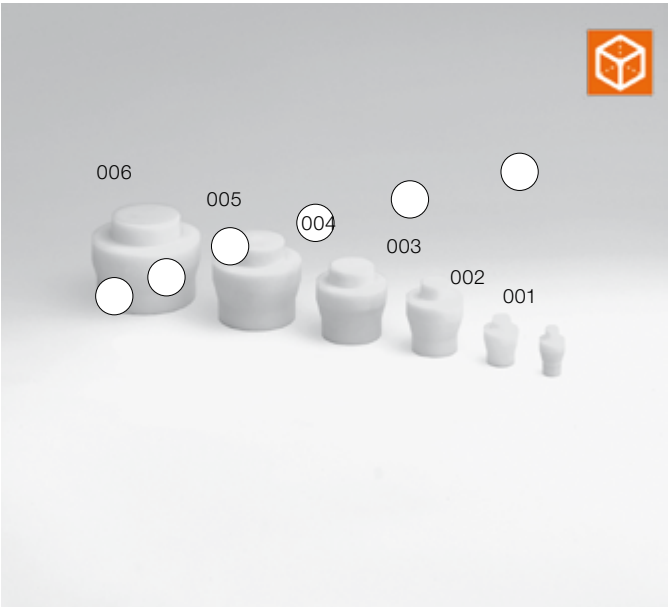
Note:

Read instructions for use before working on it.
Every tool can be ordered separately.

The toolkit contains:

Item	Order No	Term	Note
0.01	2480.00.50.11.00.001	Tool case (without content)	
1.01	2480.00.50.11.01.001	Assembly sleeve 00200	Piston rods ø 12
1.02	2480.00.50.11.01.002	Assembly sleeve 00250	Piston rods ø 15
1.03	2480.00.50.11.01.003	Assembly sleeve 00500	Piston rods ø 20
1.04	2480.00.50.11.01.004	Assembly sleeve 00500 POWERLINE	Piston rods ø 20
1.05	2480.00.50.11.01.005	Assembly sleeve 00750	Piston rods ø 25
1.06	2480.00.50.11.01.006	Assembly sleeve 01500	Piston rods ø 36
1.07	2480.00.50.11.01.007	Assembly sleeve 01500 POWERLINE	Piston rods ø 36
1.08	2480.00.50.11.01.008	Assembly sleeve 03000	Piston rods ø 50
1.09	2480.00.50.11.01.009	Assembly sleeve 05000	Piston rods ø 65
1.10	2480.00.50.11.01.010	Assembly sleeve 07500	Piston rods ø 80
1.11	2480.00.50.11.01.011	Assembly sleeve 10000	Piston rods ø 95
1.12	2480.00.50.11.01.012	Assembly sleeve 20000 POWERLINE	Piston rods ø 130
2.01	2480.00.50.11.02.001	Retaining ring tool, universal	
2.02	2480.00.50.11.02.002	Retaining ring tool, compact for gas springs - New generation	
3.01	2480.00.50.11.03.001	T-lever	M8
3.02	2480.00.50.11.03.002	T-lever	M16
3.03	2480.00.50.11.03.003	T-lever	G1/8
3.04	2480.00.50.11.03.004	T-lever, Extension	M6
4.01	2480.00.50.11.04.001	Valve tongs	
5.01	2480.00.50.11.05.001	Valve tool for valve VG5 248.00.41	G1/8
5.02	2480.00.50.11.05.002	Valve tool for valve 2480.00.41.1	M6
5.03	2480.00.50.11.05.003	Valve tool for gas springs - New generation	M6 - G1/8
5.04	2480.00.50.11.05.004	Valve tool for gas springs - New generation	M6
5.05	2480.00.50.11.05.005	Valve tool for gas springs - New generation	G1/8
6.01	2480.00.50.11.06.001	Disassembly handle	M3
7.01	2480.00.50.11.07.001	Torque wrench for valve for gas springs - New generation	SW3,5 - 0,6 Nm

ASSEMBLING CONE



2480.00.50.04.

Assembling cone for gas springs with through bore passage 2496.12.

Item	Order No	Term
001	2480.00.50.04.001	Assembling cone 00270
002	2480.00.50.04.002	Assembling cone 00490
003	2480.00.50.04.003	Assembling cone 01060
004	2480.00.50.04.004	Assembling cone 01750
005	2480.00.50.04.005	Assembling cone 03300
006	2480.00.50.04.006	Assembling cone 04250

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:

- Minimesse 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 Minimesse system

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

for the connector system, 24° cone micro

2480.00.23.00.	Hose 630 bar dimpled, DN2 *
2480.00.27.01.V	Threaded connection, straight, packed
2480.00.27.01.V.025	Threaded connection, straight, packed/ 25 Stck
2480.00.27.01.V.050	Threaded connection, straight, packed/ 50 Stck
2480.00.27.01.V.100	Threaded connection, straight, packed/ 100 Stck

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:
- Minimesse 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 Minimesse system

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

for the connector system, 24° cone micro

2480.00.23.00.	Hose 630 bar dimpled, DN2 *
2480.00.27.01.V	Threaded connection, straight, packed
2480.00.27.01.V.025	Threaded connection, straight, packed/ 25 Stck
2480.00.27.01.V.050	Threaded connection, straight, packed/ 50 Stck
2480.00.27.01.V.100	Threaded connection, straight, packed/ 100 Stck

* 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

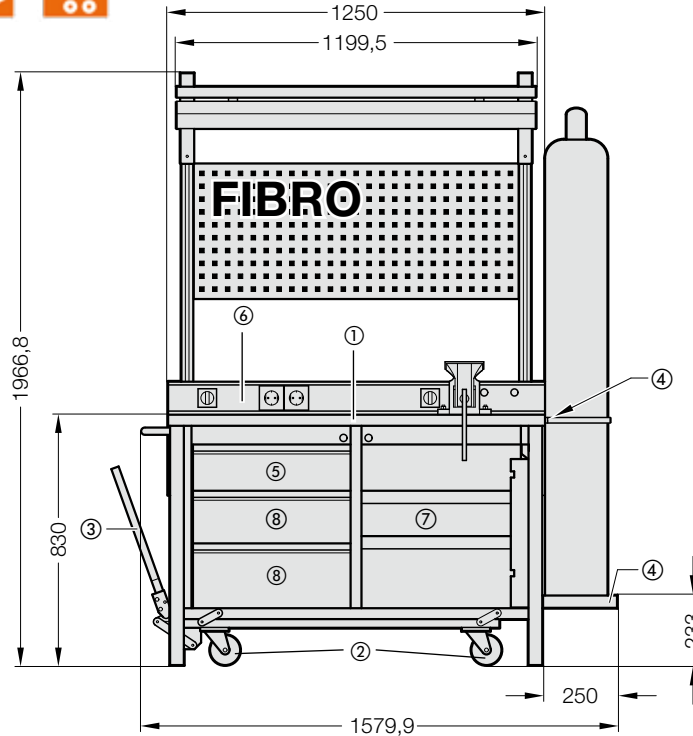
Hose shears



SERVICE STATION, MOBILE, FOR GAS SPRINGS

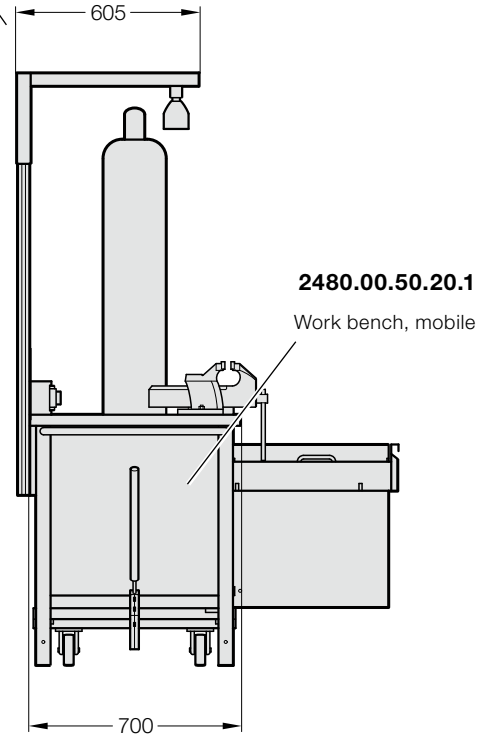
2480.00.50.20.

Service station, mobile, for gas springs



2480.00.50.20.2

Lighting unit, removable



2480.00.50.20.1

Work bench, mobile

Description:

The mobile service station for gas springs represents an optimum solution if gas springs are to be filled and/or maintained directly on the press or tool.

The service station consists of the workbench, mobile 2480.00.50.20.1 and a lighting unit, removable 2480.00.50.20.2.

Advantages:

- "All in One" solution
- High mobility coupled with secure stability
- Clean handling of the gas spring components
- High user comfort

The mobile work bench 2480.00.50.20.1 is equipped with a 40 mm thick Troidur work surface (1). The surface is hard-wearing and very easy to keep clean.

The height adjustable chassis with 4 castors (2) allows for high mobility and provides secure stability for the service station. The chassis is easily moved up and down by way of an excenter lever (3) located on the left of the unit.

At the right of the unit, a loading receptacle with a locking clip (4) is located for 200 bar bottles.

A removable oil sump with a grate in the upper drawer (5) will ensure clean handling of the internal gas spring components.

The energy panel (6) offers great user comfort because of its integrated operating elements, like the compressed air connection, light switch and 3 x 230 V electric outlet.

The removable lighting unit 2480.00.50.20.2 is height adjustable to cater to the individual requirements of the user.

Technical data:

2480.00.50.20.1 Work bench, mobile:

Work surface, Troidur (mm) 1250 x 700 x 40

Work bench chassis made from profile steel tubing (mm) 45 x 45 x 2

Parallel vices, jaw width = 100 mm

2480.00.50.20.2 Lighting unit, removable:

Elongated light (w = 1200 mm) with connection cable and plug

2 x 45 W, strip louvre with reflector

Electronic ballast

Protection type IP20

Connections

Input:

Central supply line on the right side of the cabinet (bottom rear) with electric supply line (protected energy supply plug)

1/4" internal thread for air infeed

Power bar:

1 x 1/4" internal thread for air

1 x On/OFF switch for air supply, rotary switch for

Nitrogen Compact Booster

3 x 230 V socket (with hinged lid)

1 x ON/OFF switch for power supply, rotary switch

Accessories:

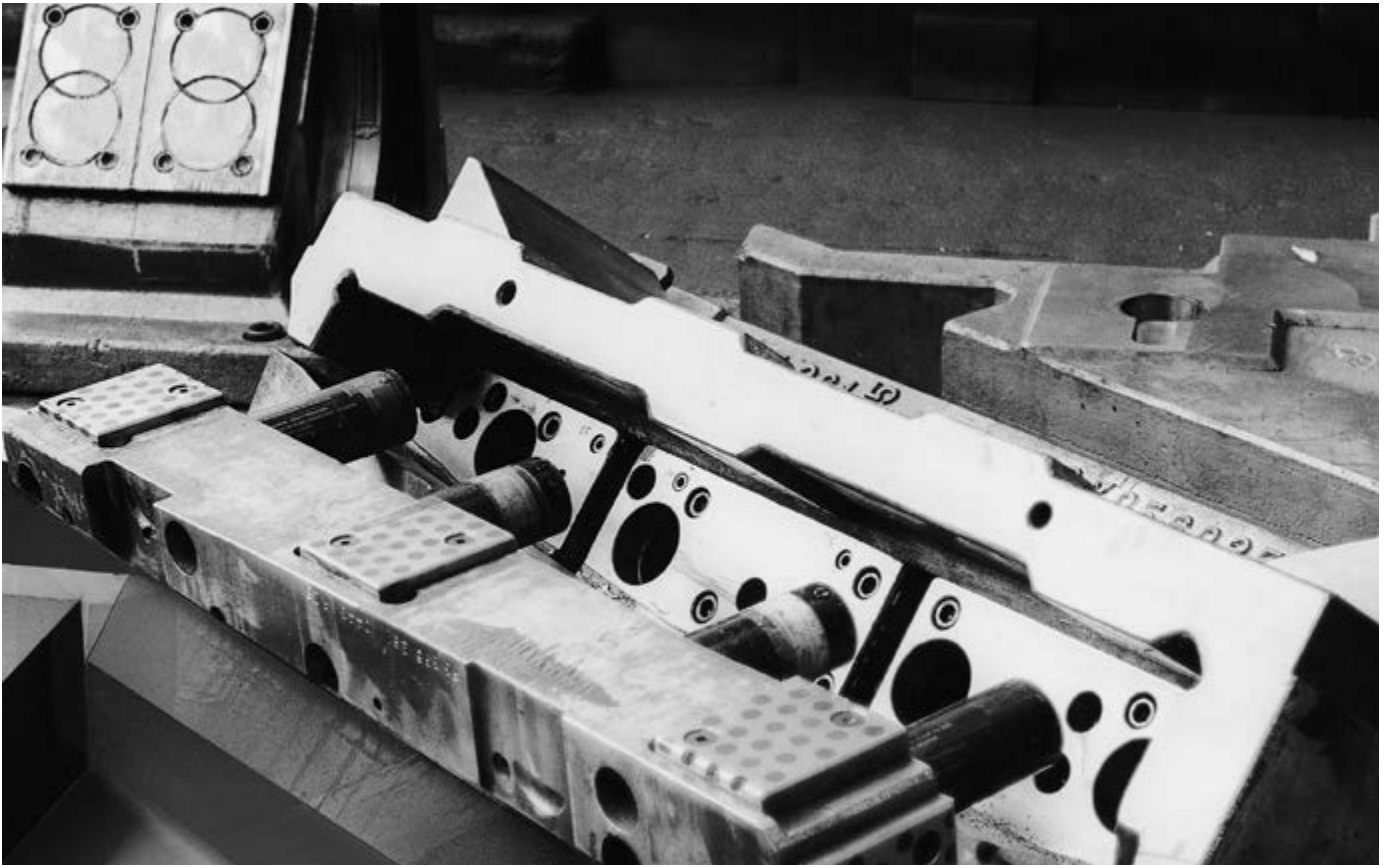
For optimised utilisation of the nitrogen bottle fill amount, a Compact Booster 2480.00.32.71 and a hose line DN4, 3 m 2480.00.32.71.05.03 can be integrated in specifically provided receiving braces in the cabinet (7).

The two free drawers (8) offer additional space for specialist tool sets 2480.00.50.11 for the repair of gas springs.

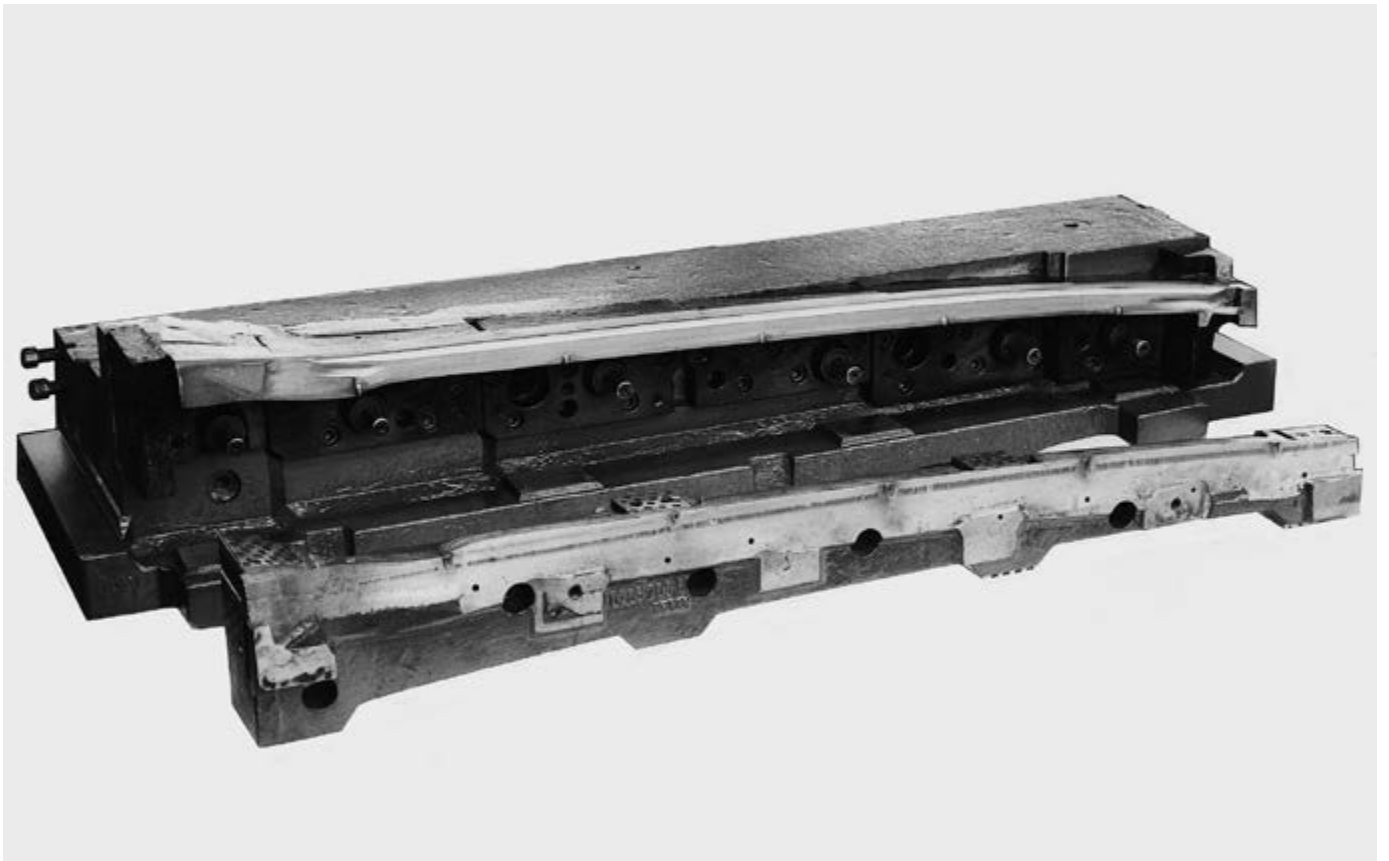
APPLICATION EXAMPLES



APPLICATION EXAMPLES



Trimming tool with inclined, Cam-Operated slide

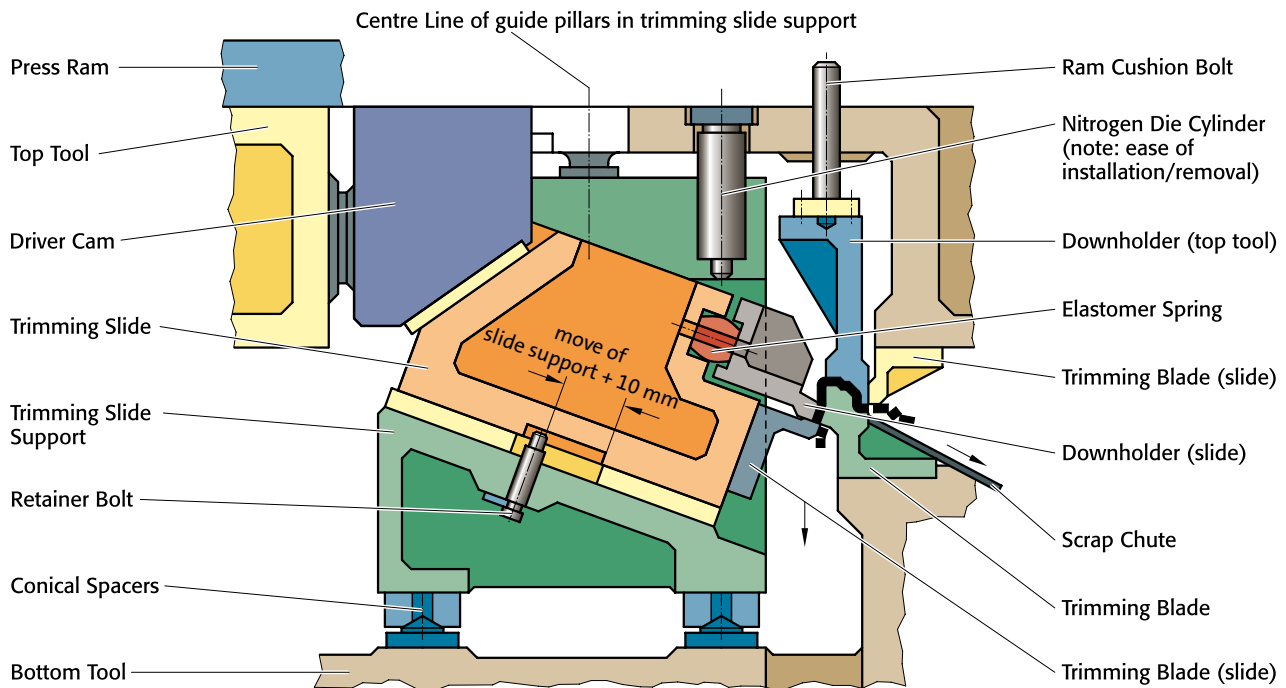


Drawing slide of large forming tool

APPLICATION EXAMPLES

Trimming tool with inclined, Cam-Operated slide

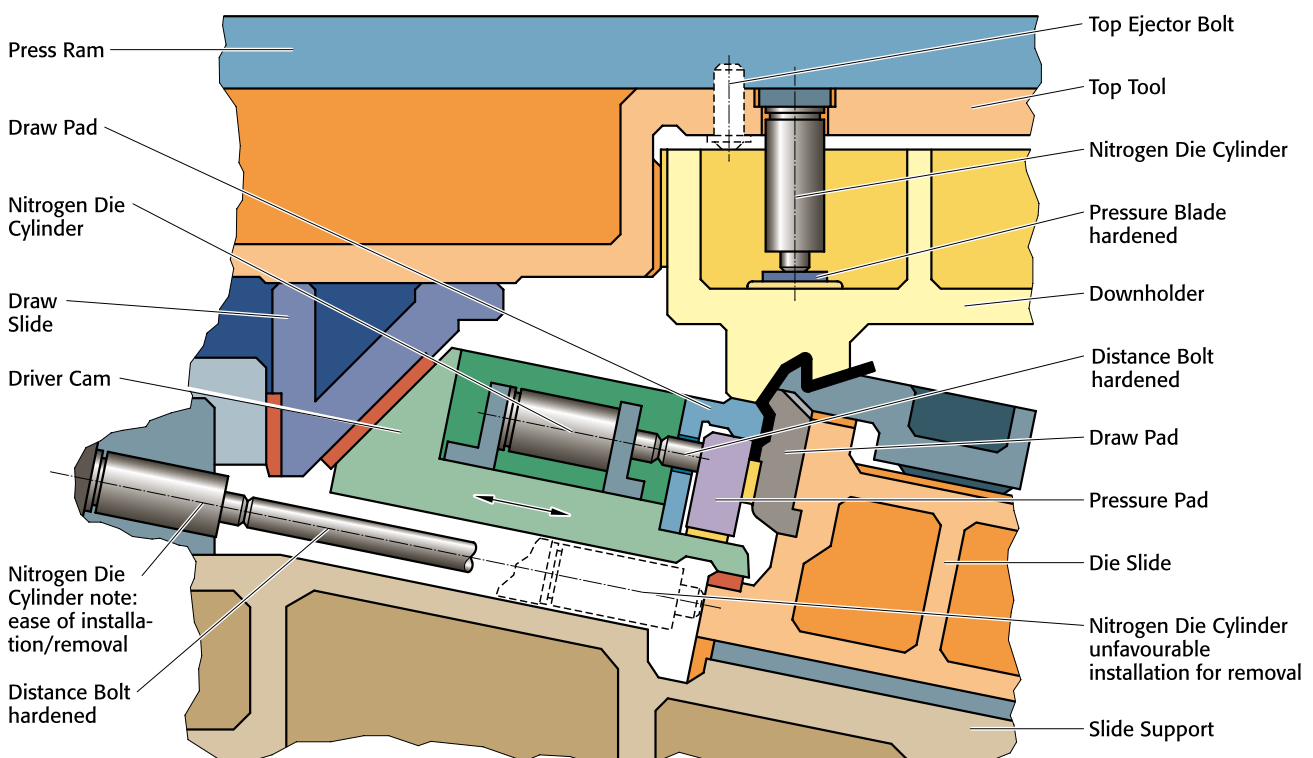
Nitrogen die cylinders in the top ensure the positive centering of the trimming slide on the centering cones in the bottom tool section.



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.

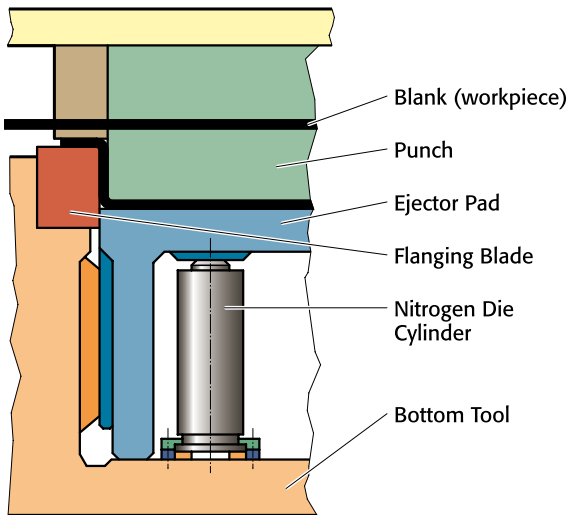
The nitrogen die cylinders in the top tool serve as boosters for the insufficient ram cushion.



APPLICATION EXAMPLES

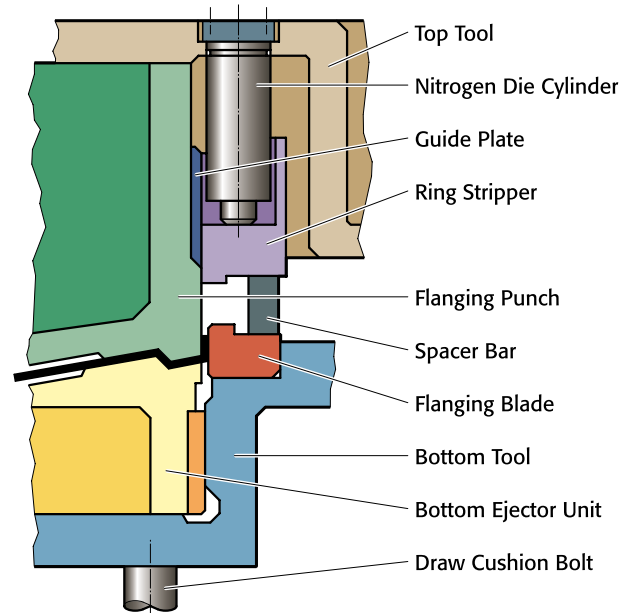
Flanging tool with nitrogen die cylinders

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



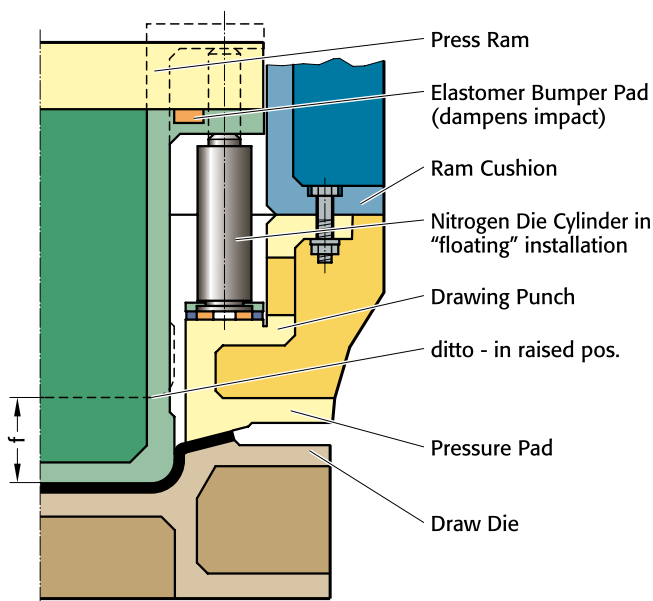
Flanging tool with ring stripper

The ring stripper is actuated by nitrogen die cylinders.



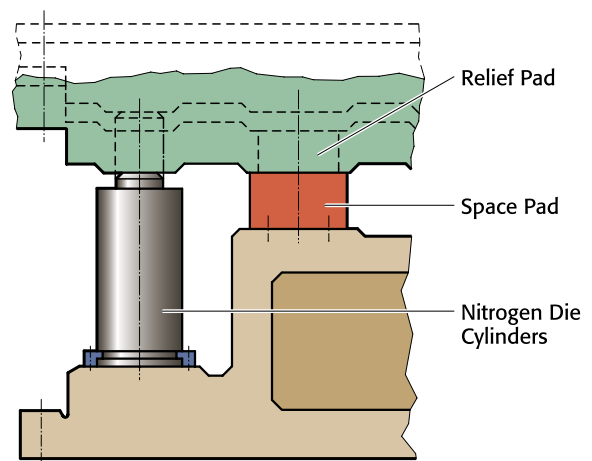
Double-Acting drawing tool

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.



Blanking and piercing tool

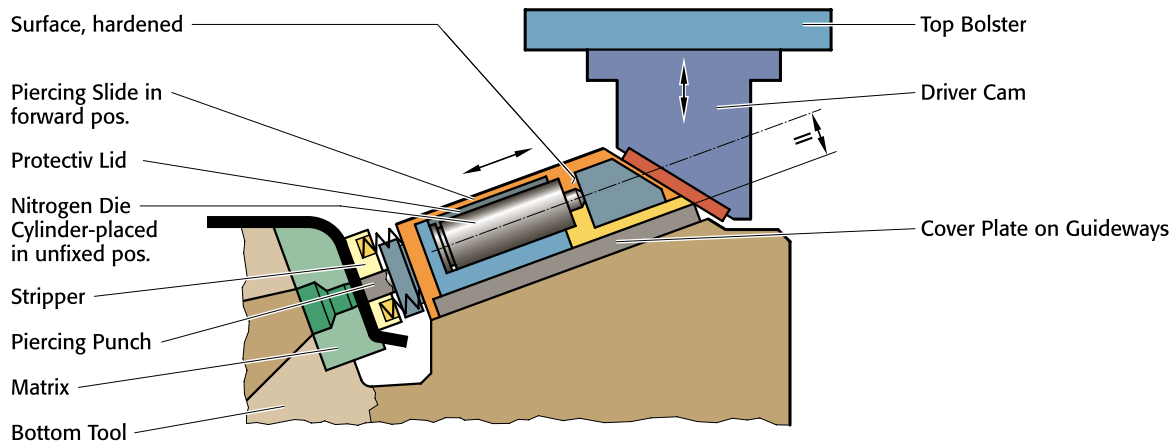
The application of nitrogen die cylinders instead of the usual elastomer bumpers results in a significant reduction of setting time. Moreover, injuries caused by "fly-out" elastomer bumpers are eliminated.



APPLICATION EXAMPLES

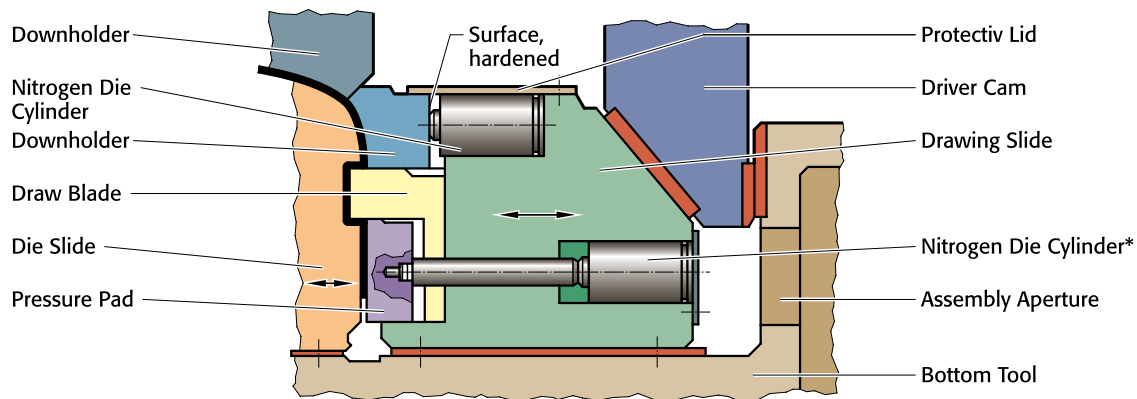
Retraction of piercing slide by nitrogen die cylinder

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

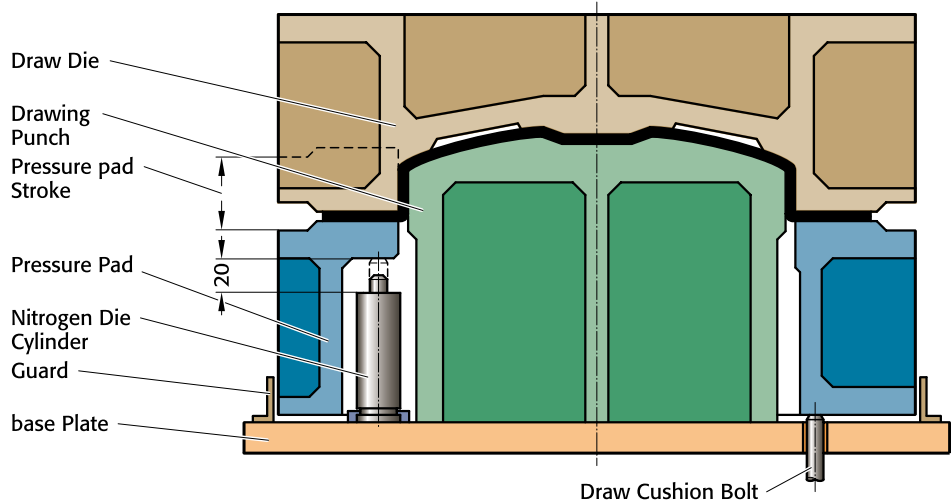
In order to prevent wrinkling, this tool requires high forces on the downholder and pressure pad. An elegant solution was achieved with nitrogen die cylinders. Ease of cylinder installation was ensured.



*Must be secured with special flange.

Drawing tool

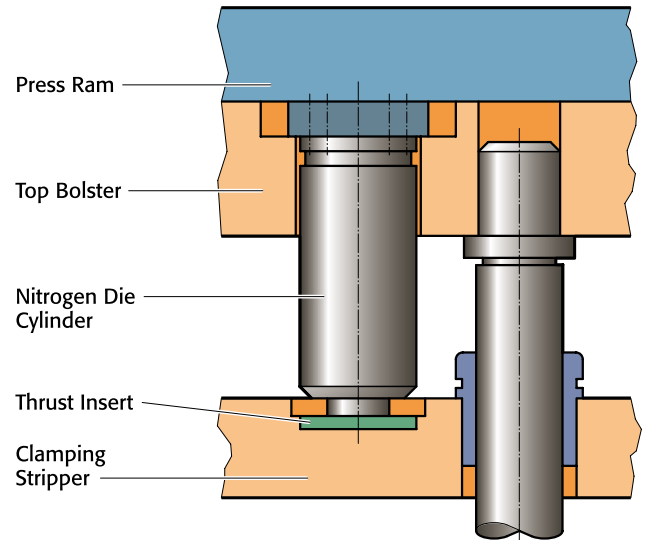
The pressure pad is actuated by nitrogen die cylinders during the final 20 mm of the draw.



APPLICATION EXAMPLES

Detail of progression compound tool

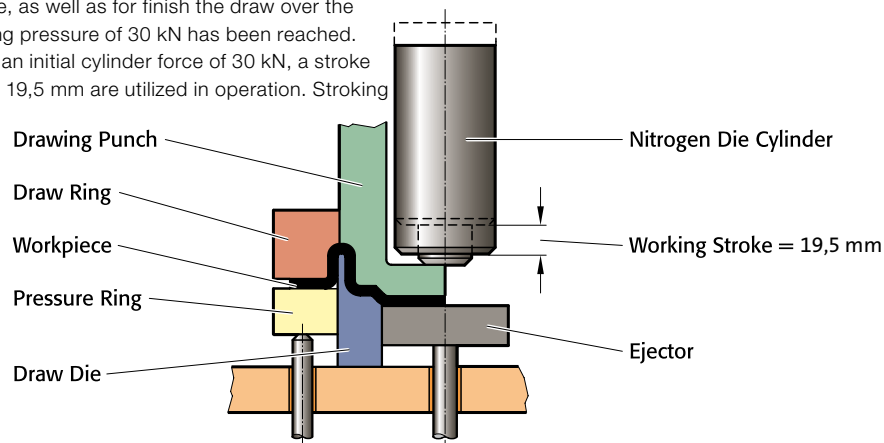
The clamping stripper is actuated by two nitrogen die cylinders 2480.12.01500.025. The units provide an initial cylinder force of 15 kN each and a stroke capacity of 25 mm – of which 20 mm are utilized.



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.

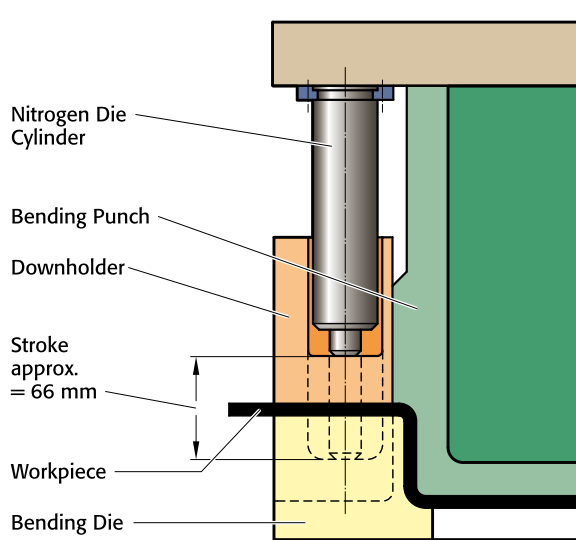


Bending tool for round bars

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.

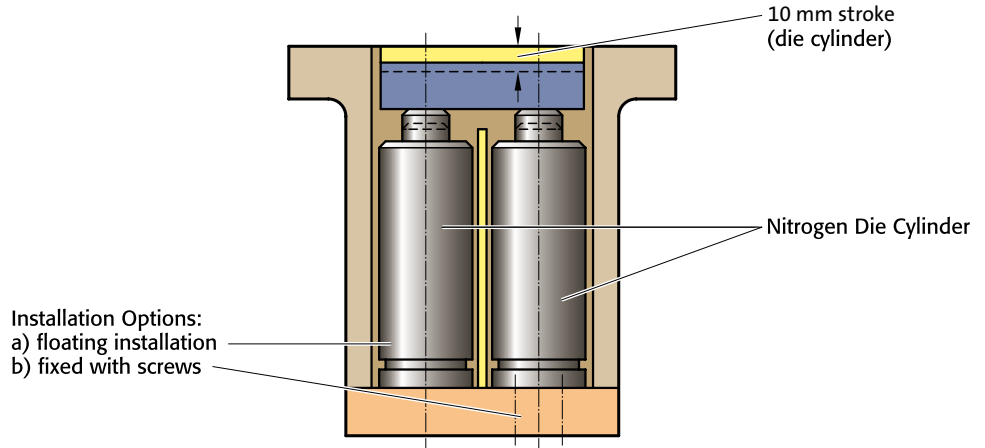


APPLICATION EXAMPLES

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.

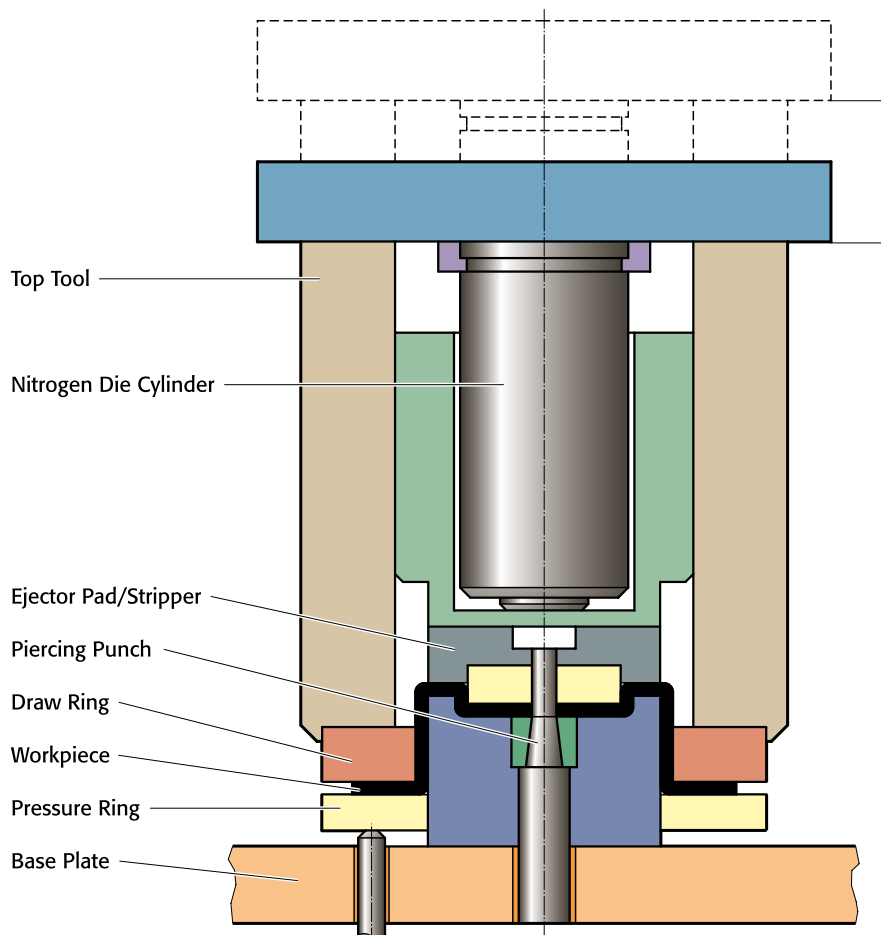
The actual working stroke is 10 mm. The tool is run at a speed of 150 SPM, with a ram stroke of 48 mm.



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

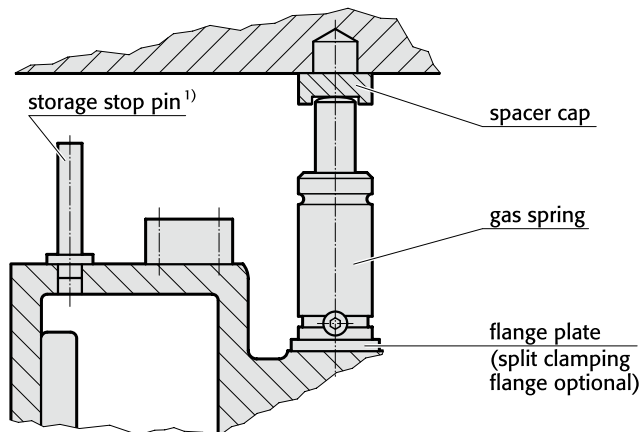
the top tool up.

With the usage of 4 gas springs, for example upper die parts with a weight up to 20 tons can be held high.

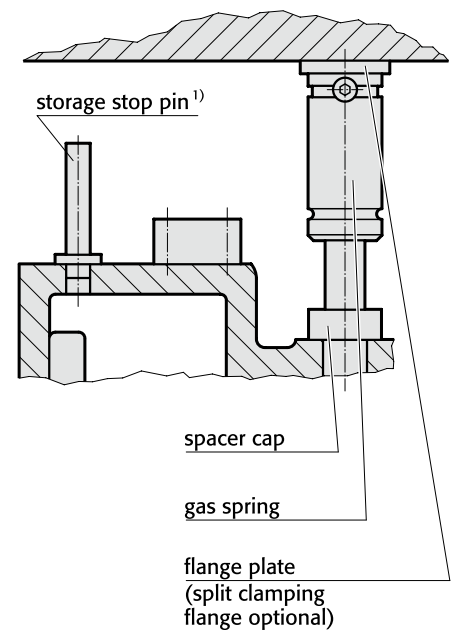
Upon being prepared for production, the springs facilitate access to the tool. Once back in the press, the spacer caps are removed and the storage springs remain inactive during the production run.

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.

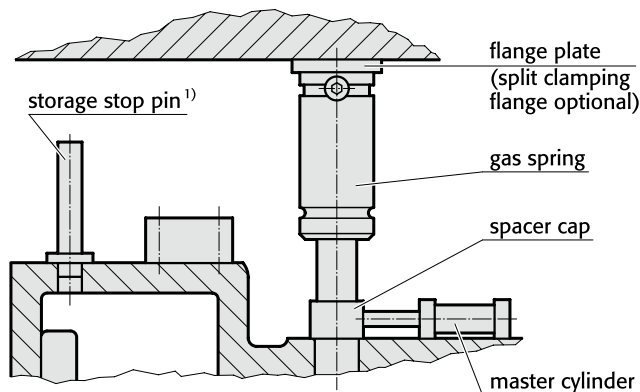
Example 1: Gas Spring fixed to bottom bolster



Example 2: Gas Spring fixed to top tool



Example 3: Gas Spring fixed to bottom bolster

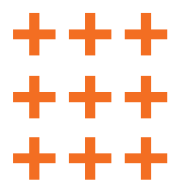


1) storage stop pins are reversible - they are turned round and pushed down into their holes during getting the tool ready for production

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