

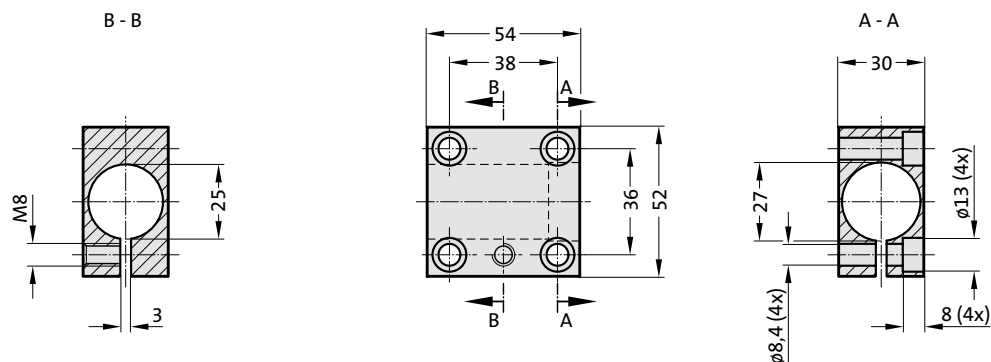


**Compact
Gas springs
for small
displacement and
high forces**

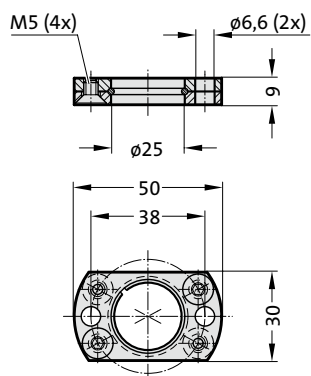


Compact gas spring Mounting variations

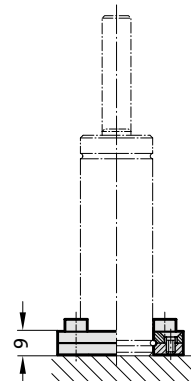
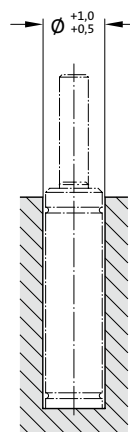
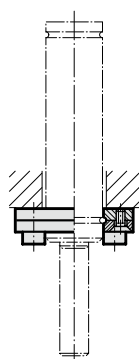
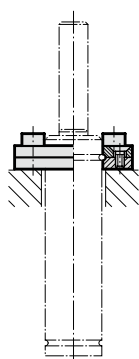
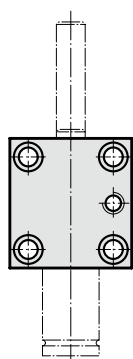
2480.053.00150



2480.051.00150



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

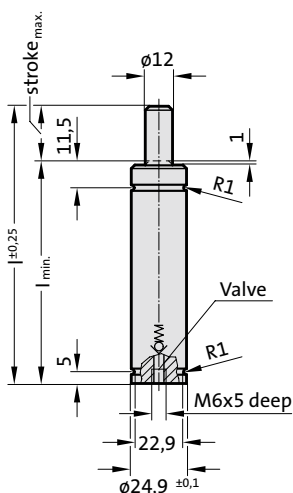
Working temperature: 0°C to +80°C

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

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

Max. piston speed: 0.8 m/s

2490.14.00420.

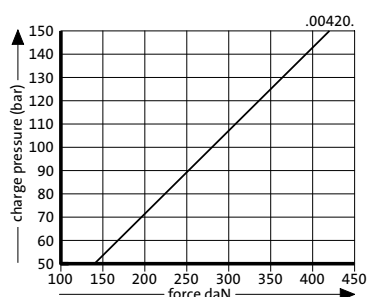


2490.14.00420.

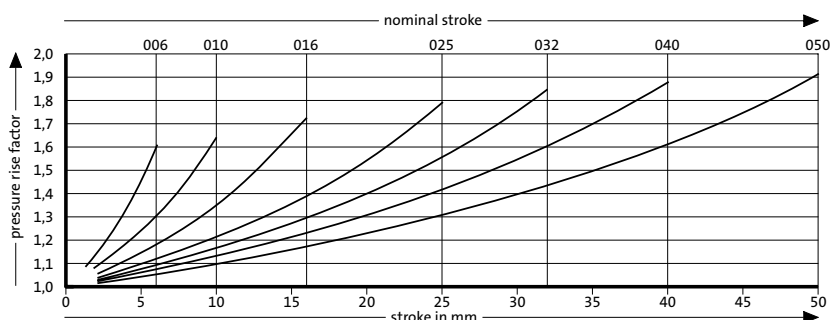
Compact gas spring

Order No	Stroke _{max.}	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!

Mounting examples:

The four drawings illustrate the assembly in different states:

- Drawing 1:** Shows the assembly with a 16mm thick plate. The dimensions are: $\phi 32^{+2}_{+0.5}$ for the hole diameter, 16 for the plate thickness, and stroke for the vertical movement.
- Drawing 2:** Shows the assembly with a 3mm thick plate. The dimensions are: $\phi 32^{+2}_{+0.5}$ for the hole diameter, 3 for the plate thickness, and stroke for the vertical movement.
- Drawing 3:** Shows the assembly with a 3mm thick plate and a 16mm thick plate. The dimensions are: $\phi 32^{+2}_{+0.5}$ for the hole diameter, 3 for the plate thickness, 16 for the plate thickness, and stroke for the vertical movement.
- Drawing 4:** Shows the assembly with a 3mm thick plate and a 16mm thick plate, highlighting the internal cavity. The dimensions are: $\phi 32^{+1.0}_{+0.5}$ for the hole diameter, 3 for the plate thickness, 16 for the plate thickness, and stroke for the vertical movement.



Compact gas spring

Note:

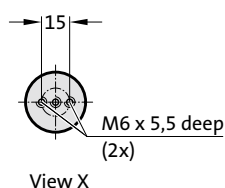
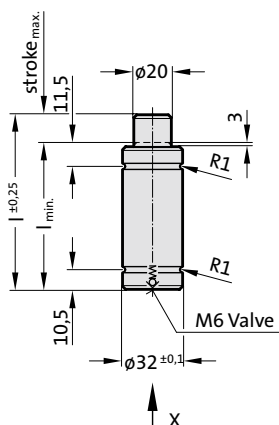
Initial spring force at 150 bar = 750 daN

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 N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to $+80^{\circ}\text{C}$
 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

2490.14.00750.



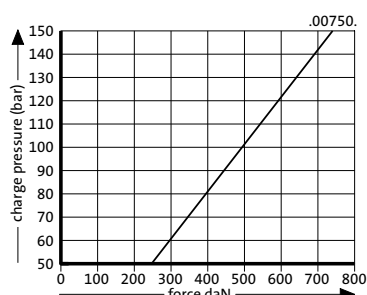
2490.14.00750.

Compact gas spring

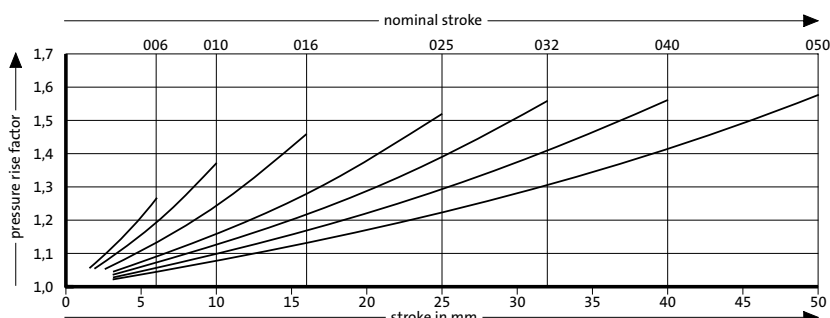
Order No	Stroke _{max}	l _{min}	l	g ₂ *
2490.14.00750.006	6	57	63	51
2490.14.00750.010	10	65	75	59
2490.14.00750.016	16	77	93	71
2490.14.00750.025	25	95	120	89
2490.14.00750.032	32	108	140	102
2490.14.00750.040	40	125	165	119
2490.14.00750.050	50	145	195	139

*see mounting example

Initial spring force
versus charge pressure



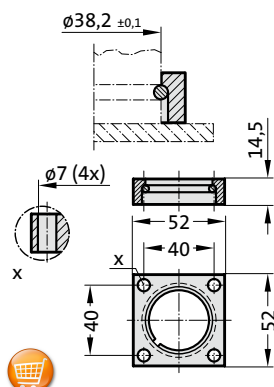
Spring force Diagram displacement versus stroke rise



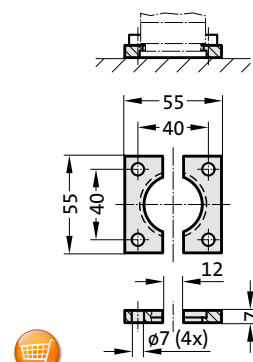
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

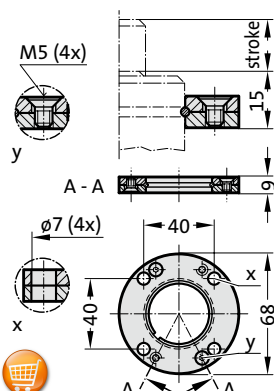
2480.052.01000



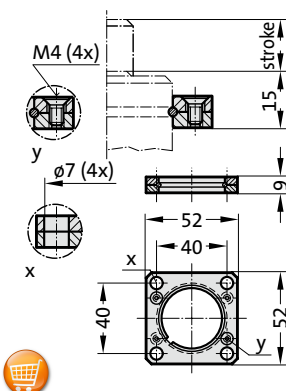
2480.022.00250



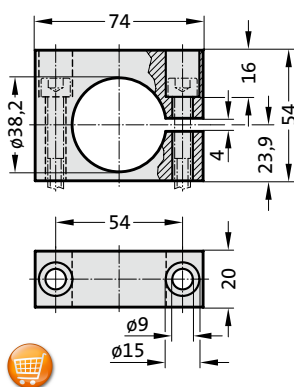
2480.055.00250



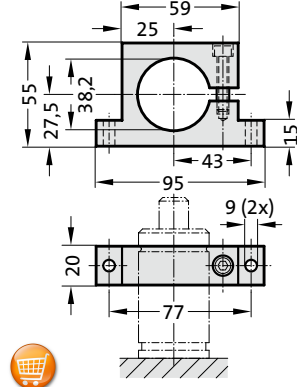
2480.057.00250



2480.044.03.00250²⁾



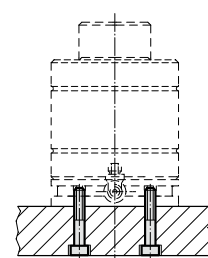
2480.044.00250²⁾



Note:

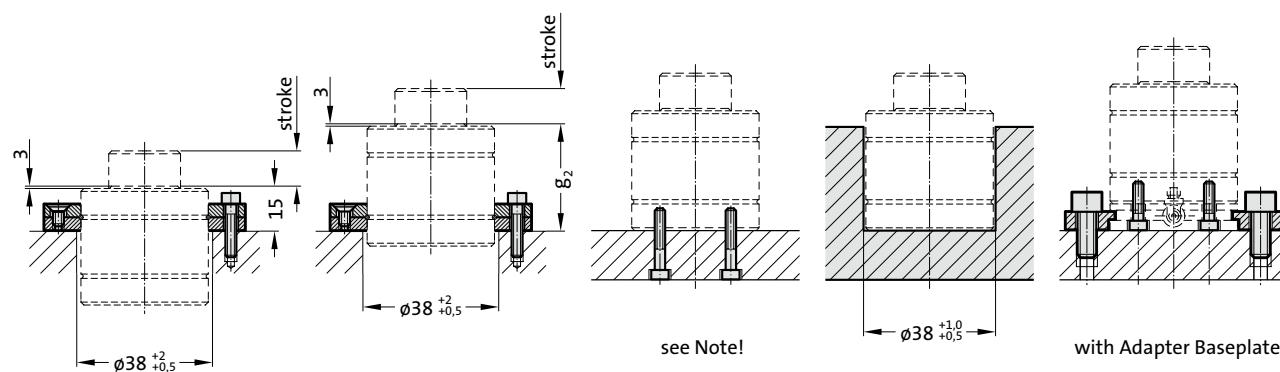
²⁾ Attention:
The spring force must be absorbed by the stop surface!

Mounting Example:



with Adapter Baseplate

Mounting examples:



see Note!

with Adapter Baseplate



Compact gas spring

Note:

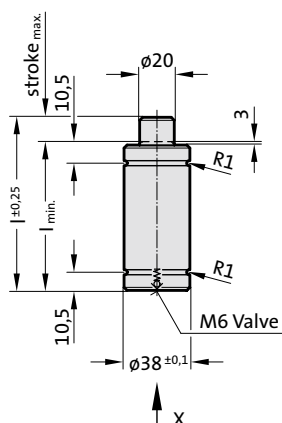
Initial spring force at 150 bar = 1000 daN

Order No for spare parts kit: 2490.14.01000

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

2490.14.01000.



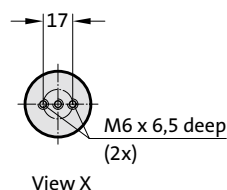
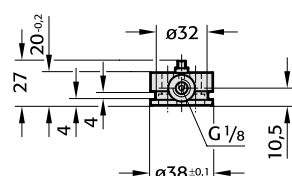
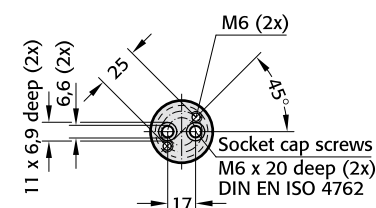
2490.14.01000. Compact gas spring

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

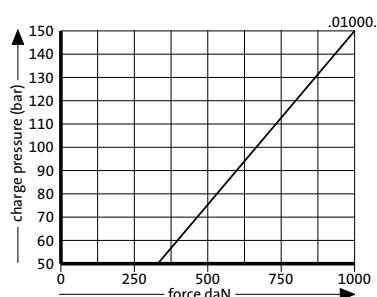
*see mounting example

2480.00.20.01000

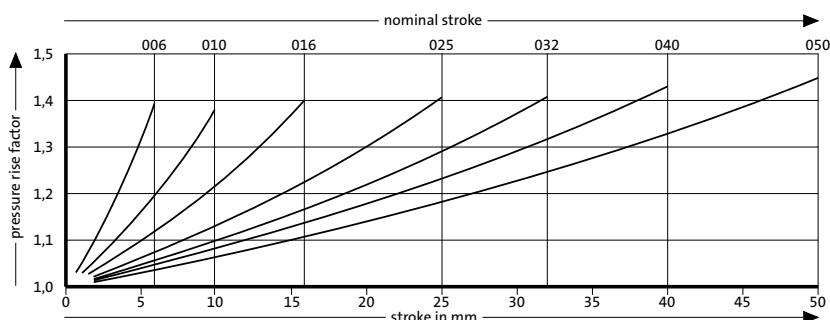
Adapter baseplate with connecting fitting, without valve (only for use with composite connections)



Initial spring force
versus charge pressure



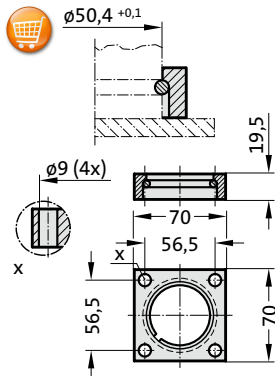
Spring force Diagram displacement versus stroke rise



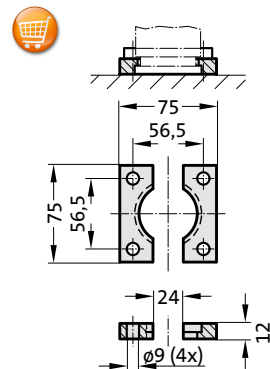
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

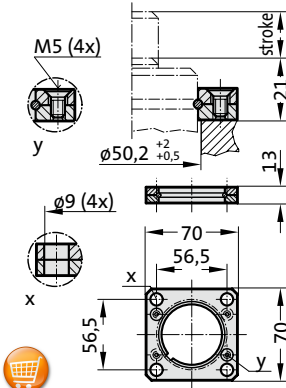
2480.052.1.01800



2480.022.00750



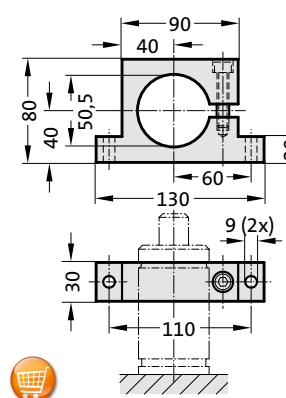
2480.058.00750



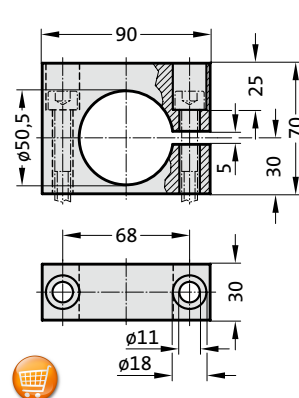
Note:

²⁾ Attention:
The spring force must be absorbed
by the stop surface.

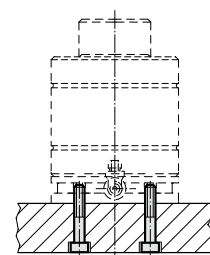
2480.044.00750 ²⁾



2480.044.03.00750 ²⁾

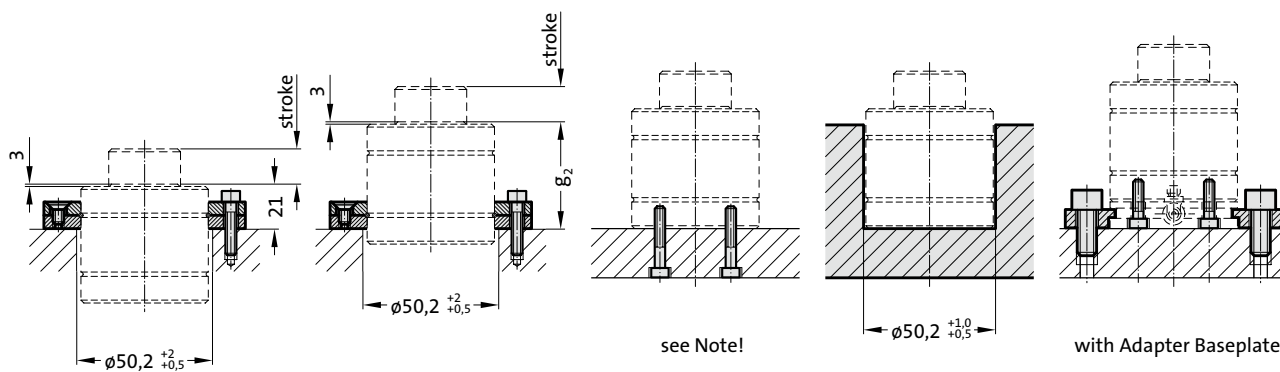


Mounting Example:



with Adapter Baseplate

Mounting examples:



Compact gas spring

Note:

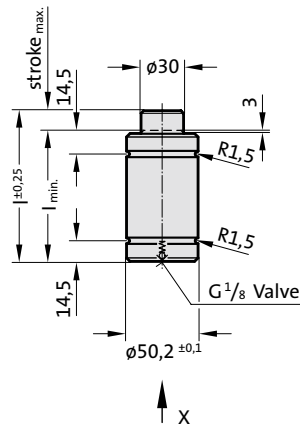
Initial spring force at 150 bar = 1800 daN

Order No for spare parts kit: 2490.14.01800

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

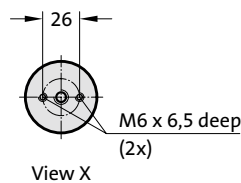
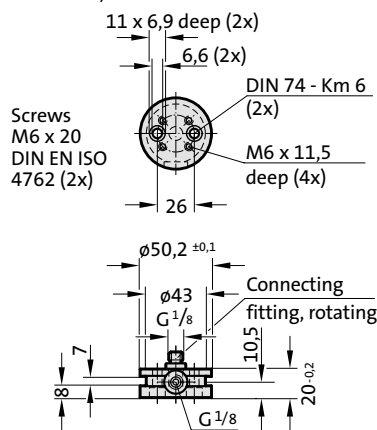
Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute:
 approx. 50 to 100 (at 20°C)
 Max. piston speed: 0.8 m/s

2490.14.01800.



2480.00.20.01800

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

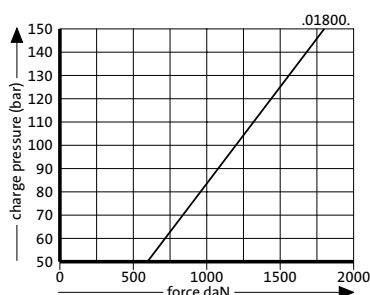


2490.14.01800.
Compact gas spring

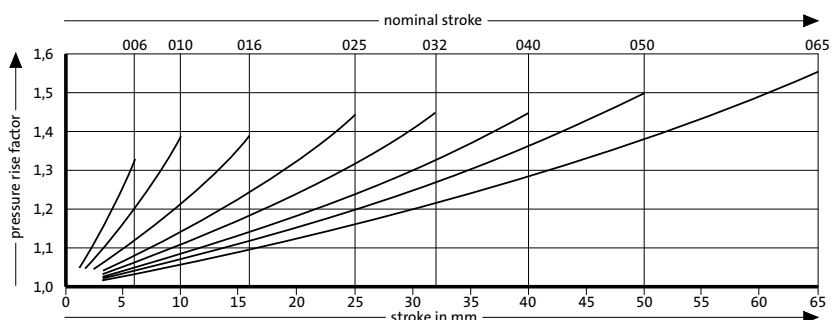
Order No	Stroke _{max.}	l _{min.}	l	g ₂ [*]
2490.14.01800.006	6	60	66	52
2490.14.01800.010	10	70	80	62
2490.14.01800.016	16	90	106	82
2490.14.01800.025	25	110	135	102
2490.14.01800.032	32	130	162	122
2490.14.01800.040	40	150	190	142
2490.14.01800.050	50	170	220	162
2490.14.01800.065	65	206	271	198

*see mounting example

Initial spring force versus charge pressure



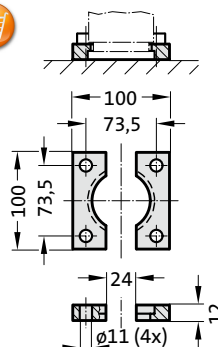
Spring force Diagram displacement versus stroke rise



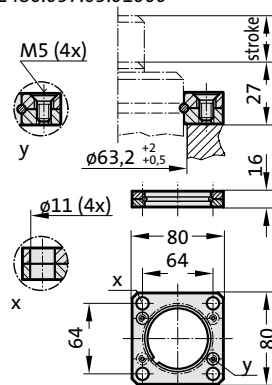
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

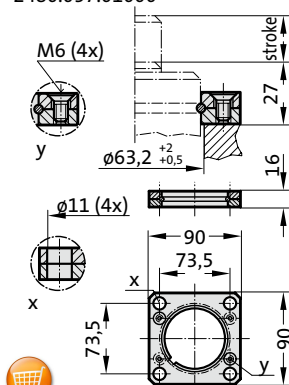
2480.022.01000



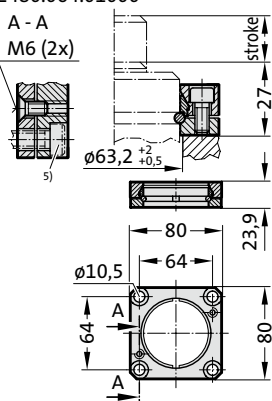
2480.057.03.01000



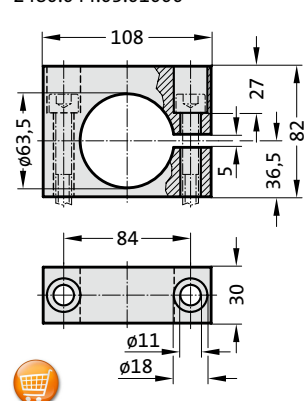
2480.057.01000



2480.064.01000⁴⁾



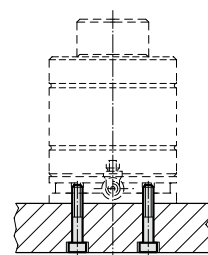
2480.044.03.01000²⁾



Note:

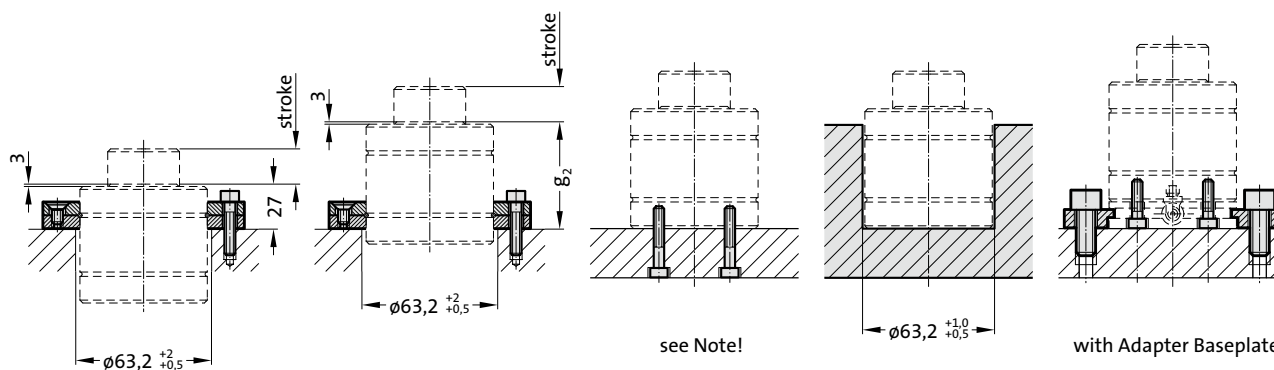
- 2) Attention:
The spring force must be absorbed by the stop surface!
- 4) Square collar flange, non-rotating, fixing for composite connection.
- 5) Machine screws with hexagonal socket (compact head recommended)

Mounting Example:



with Adapter Baseplate

Mounting examples:



see Note!

with Adapter Baseplate

Compact gas spring

Note:

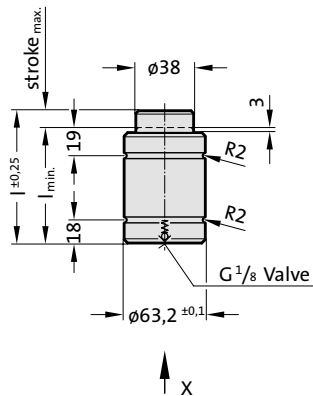
Initial spring force at 150 bar = 3000 daN

Order No for spare parts kit: 2490.14.03000

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

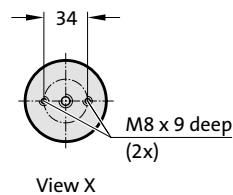
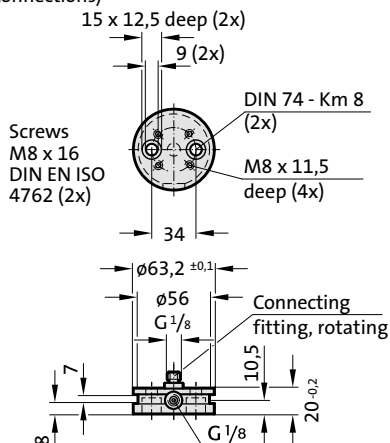
Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: ± 0.3%/°C
 Max. recommended extensions per minute:
 approx. 80 to 100 (at 20°C)
 Max. piston speed: 0.8 m/s

2490.14.03000.



2480.00.20.03000

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



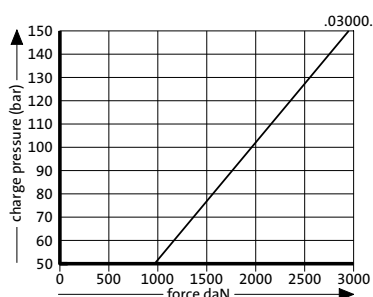
2490.14.03000.

Compact gas spring

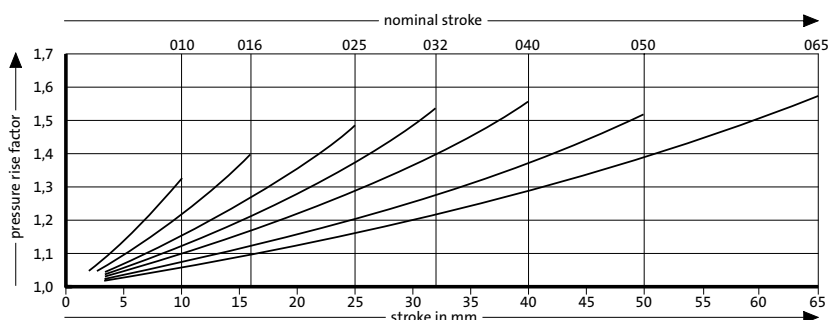
Order No	Stroke _{max}	l _{min}	l	g ₂
2490.14.03000.010	10	75	85	65
2490.14.03000.016	16	87	103	77
2490.14.03000.025	25	105	130	95
2490.14.03000.032	32	118	150	108
2490.14.03000.040	40	135	175	125
2490.14.03000.050	50	155	205	145
2490.14.03000.065	65	191	256	181

*see mounting example

Initial spring force versus charge pressure



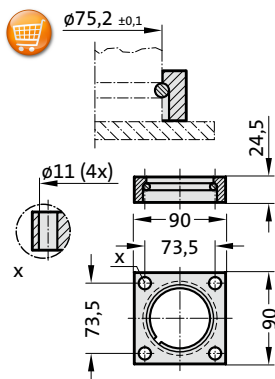
Spring force Diagram displacement versus stroke rise



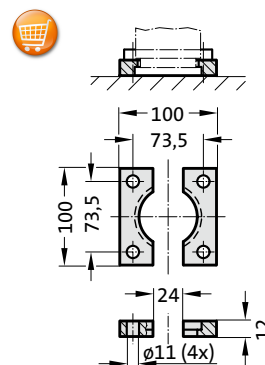
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

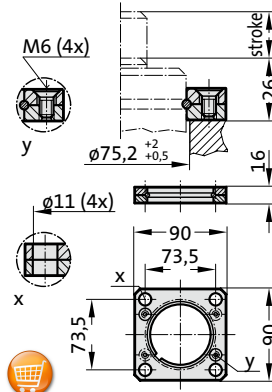
2480.052.04700



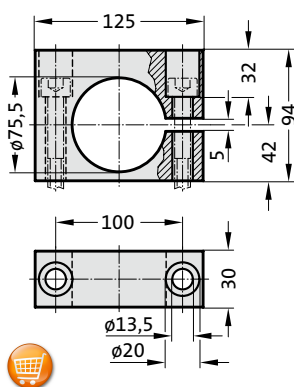
2480.022.01500



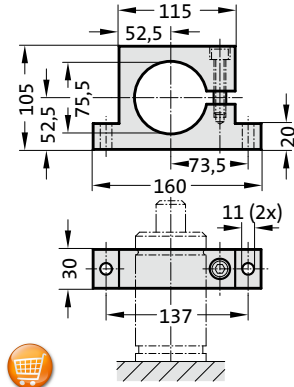
2480.058.01500



2480.044.03.01500²⁾



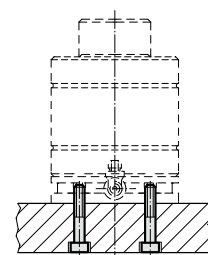
2480.044.01500²⁾



Note:

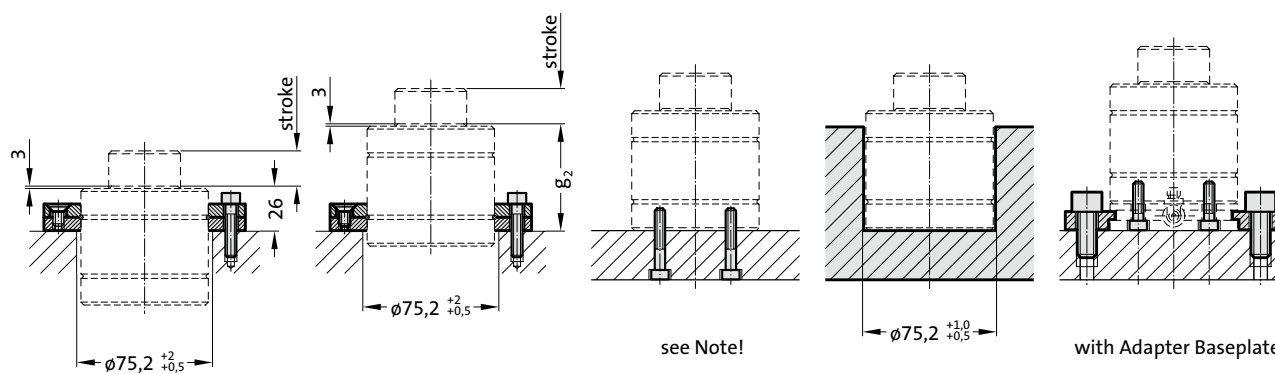
²⁾ Attention:
The spring force must be absorbed by the stop surface!

Mounting Example:



with Adapter Baseplate

Mounting examples:





Compact gas spring

Note:

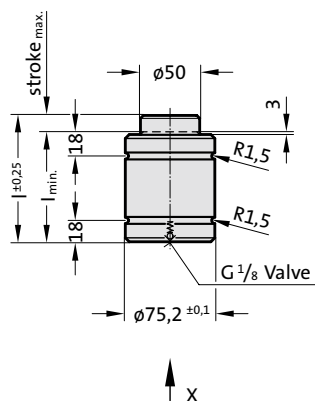
Initial spring force at 150 bar = 4700 daN

Order No for spare parts kit: 2490.14.04700

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.

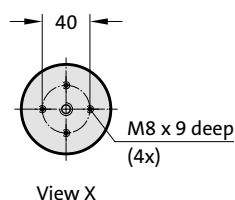
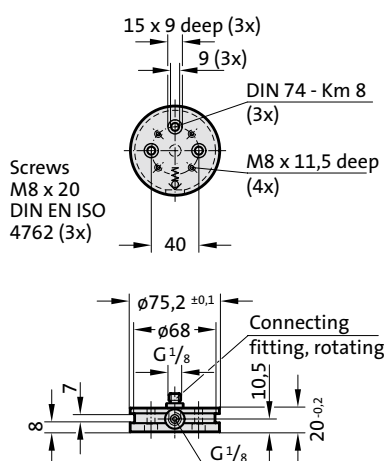
Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$
Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)
Max. piston speed: 0.8 m/s

2490.14.04700.



2480.00.20.04700

Adapter baseplate with connecting Fitting



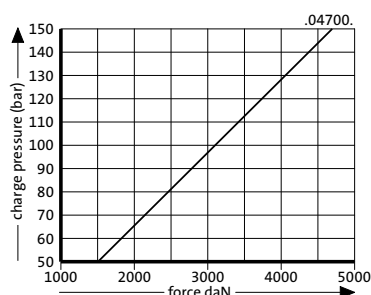
2490.14.04700.

Compact gas spring

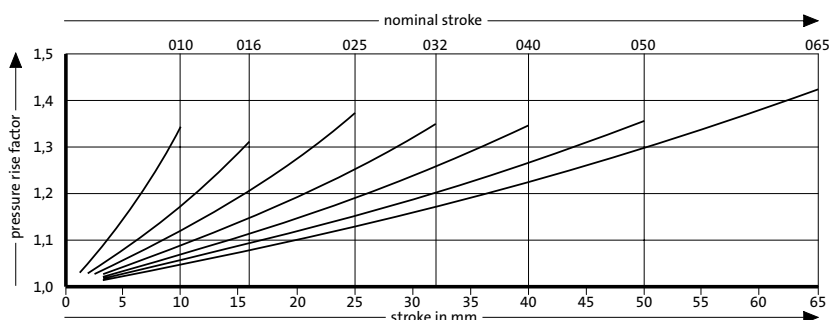
Order No	Stroke _{max.}	l _{min.}	l	g ₂ *
2490.14.04700.010	10	70	80	60
2490.14.04700.016	16	90	106	80
2490.14.04700.025	25	110	135	100
2490.14.04700.032	32	135	167	125
2490.14.04700.040	40	160	200	150
2490.14.04700.050	50	190	240	180
2490.14.04700.065	65	208	273	198

*see mounting example

Initial spring force
versus charge pressure



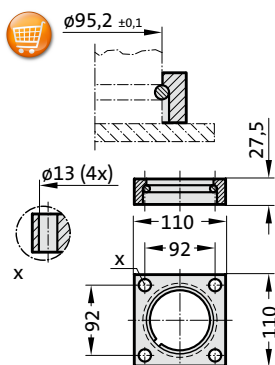
Spring force Diagram displacement versus stroke rise



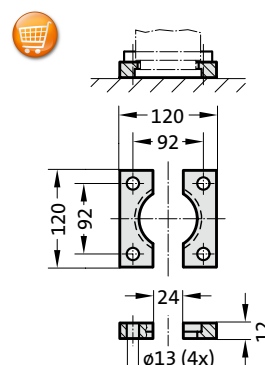
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

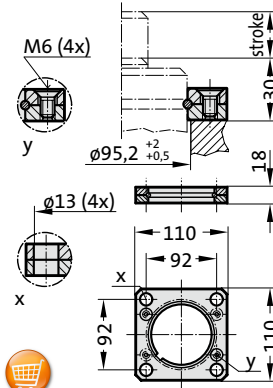
2480.052.07500



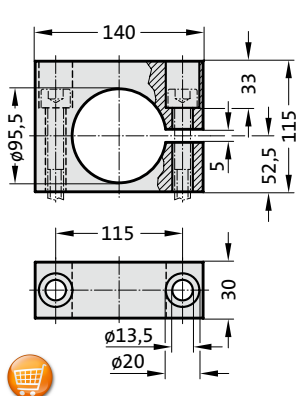
2480.022.03000



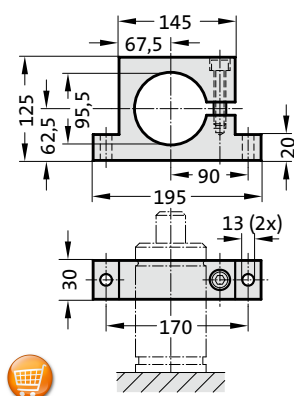
2480.058.03000



2480.044.03.03000²⁾



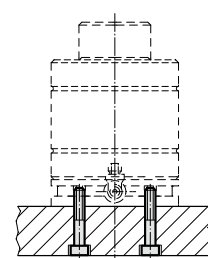
2480.044.03000²⁾



Note:

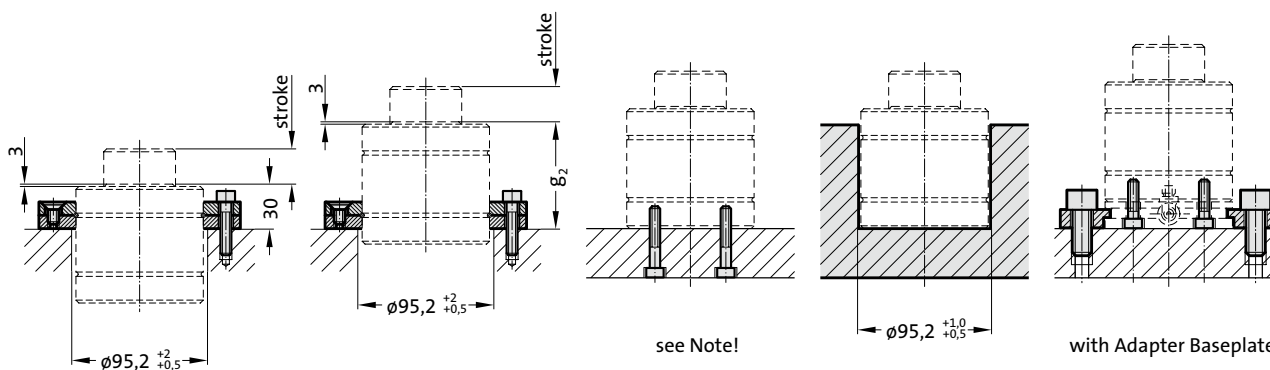
²⁾ Attention:
The spring force must be absorbed
by the stop surface!

Mounting Example:



with Adapter Baseplate

Mounting examples:





Compact gas spring

Note:

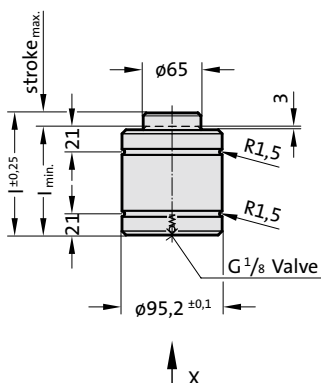
Initial spring force at 150 bar = 7500 daN

Order No for spare parts kit: 2490.14.07500

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.

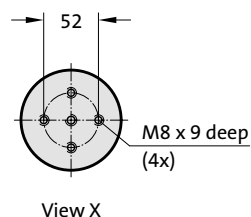
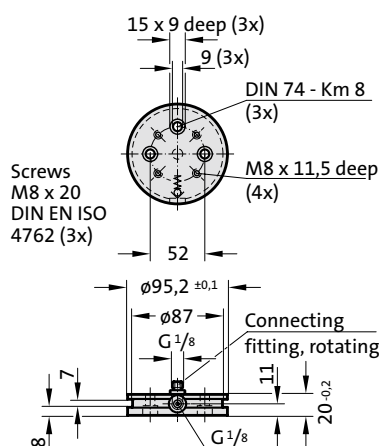
Pressure medium: Nitrogen N₂
Max. filling pressure: 150 bar
Min. filling pressure: 25 bar
Working temperature: 0°C to +80°C
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$
Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)
Max. piston speed: 0.8 m/s

2490.14.07500.



2480.00.20.07500

Adapter baseplate with connecting Fitting



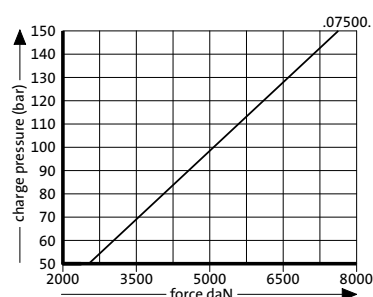
2490.14.07500.

Compact gas spring

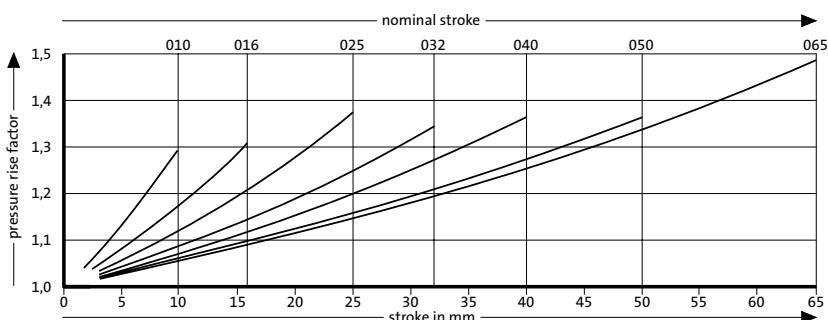
Order No	Stroke _{max}	l _{min}	l	g ₂ *
2490.14.07500.010	10	80	90	68
2490.14.07500.016	16	100	116	88
2490.14.07500.025	25	120	145	108
2490.14.07500.032	32	150	182	138
2490.14.07500.040	40	170	210	158
2490.14.07500.050	50	205	255	193
2490.14.07500.065	65	214	279	202

*see mounting example

Initial spring force
versus charge pressure



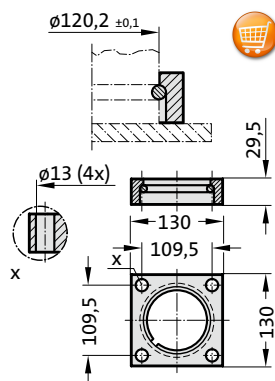
Spring force Diagram displacement versus stroke rise



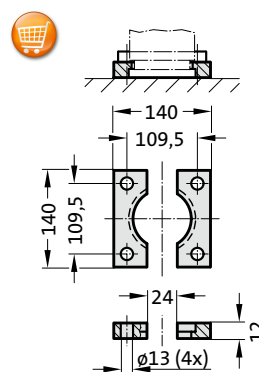
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

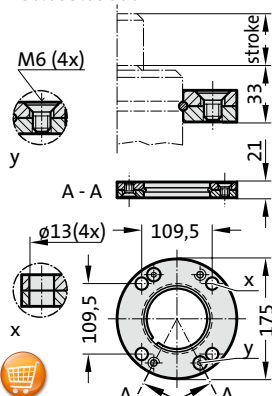
2480.052.11800



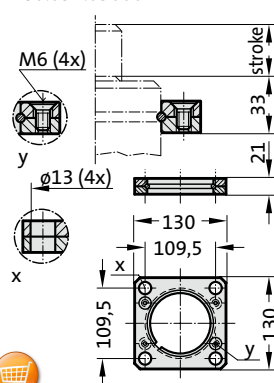
2480.022.05000



2480.055.05000



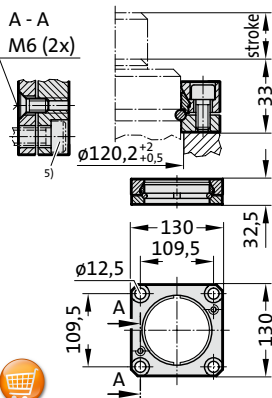
2480.057.05000



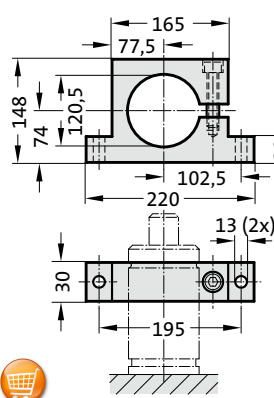
Note:

- 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)

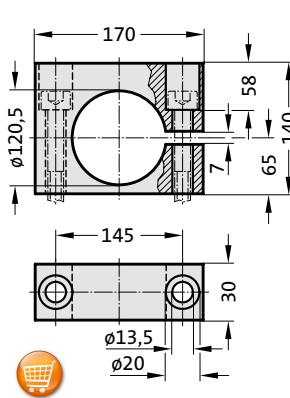
2480.064.05000⁴⁾



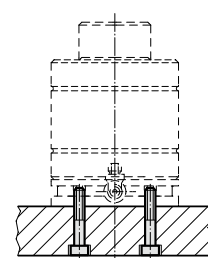
2480.044.05000²⁾



2480.044.03.05000²⁾

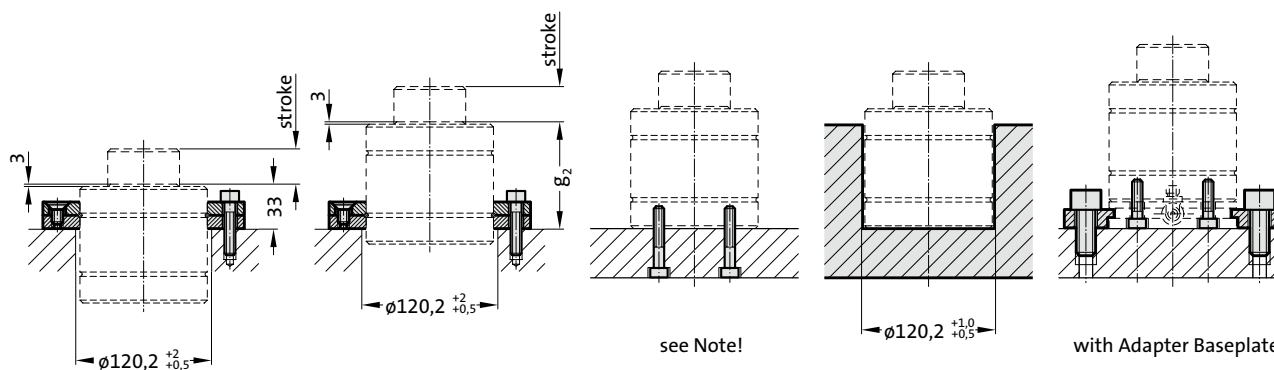


Mounting Example:



with Adapter Baseplate

Mounting examples:



see Note!

with Adapter Baseplate

Compact gas spring

Note:

Initial spring force at 150 bar = 11800 daN

Order No for spare parts kit: 2490.14.11800

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

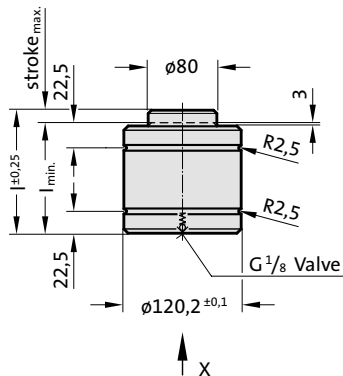
Working temperature: 0°C to +80°C

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

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

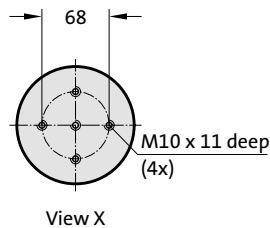
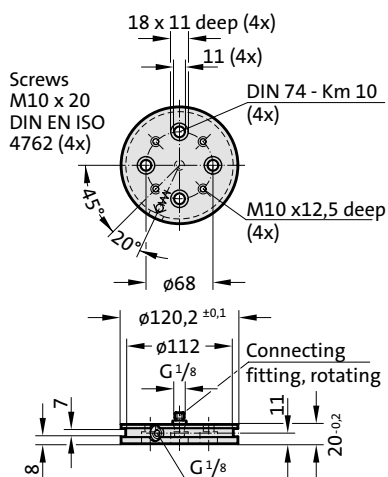
Max. piston speed: 0.8 m/s

2490.14.11800.



2480.00.20.11800

Adapter baseplate with connecting Fitting



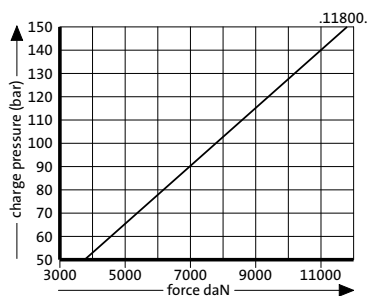
2490.14.11800.

Compact gas spring

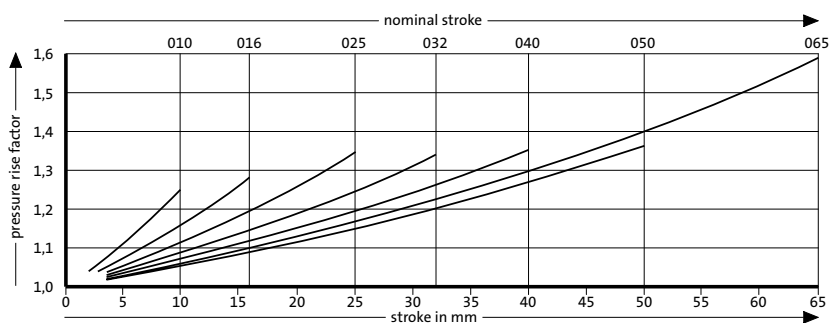
Order No	Stroke _{max}	l _{min}	l	g ₂ *
2490.14.11800.010	10	90	100	78
2490.14.11800.016	16	110	126	98
2490.14.11800.025	25	130	155	118
2490.14.11800.032	32	155	187	143
2490.14.11800.040	40	180	220	168
2490.14.11800.050	50	210	260	198
2490.14.11800.065	65	255	320	243

*see mounting example

Initial spring force versus charge pressure



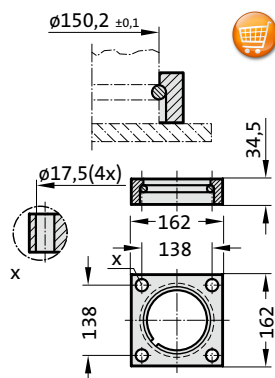
Spring force Diagram displacement versus stroke rise



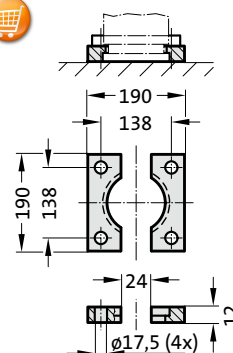
Pressure rise factor accounts for displacement but not external influences!

Compact gas spring Mounting variations

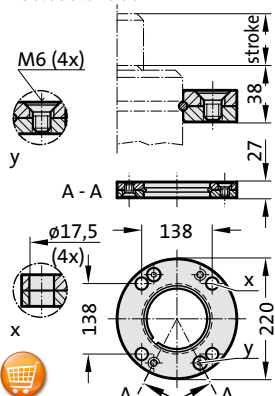
2480.052.18300



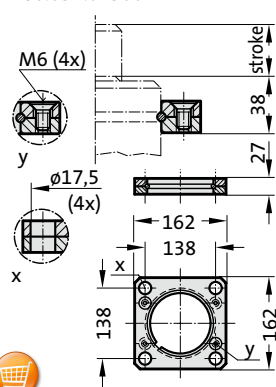
2480.022.07500



2480.055.07500



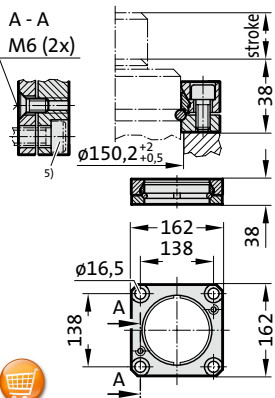
2480.057.07500



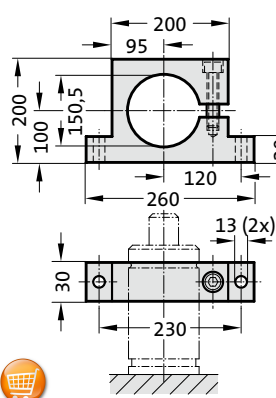
Note:

- 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)

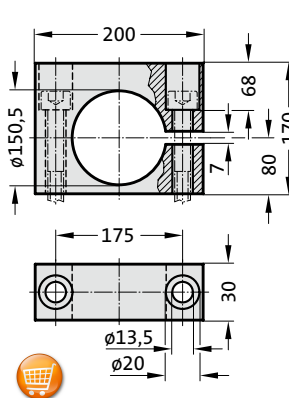
2480.064.07500⁴⁾



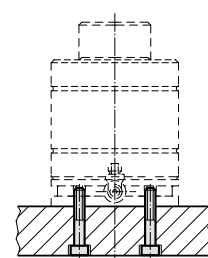
2480.044.07500²⁾



2480.044.03.07500²⁾

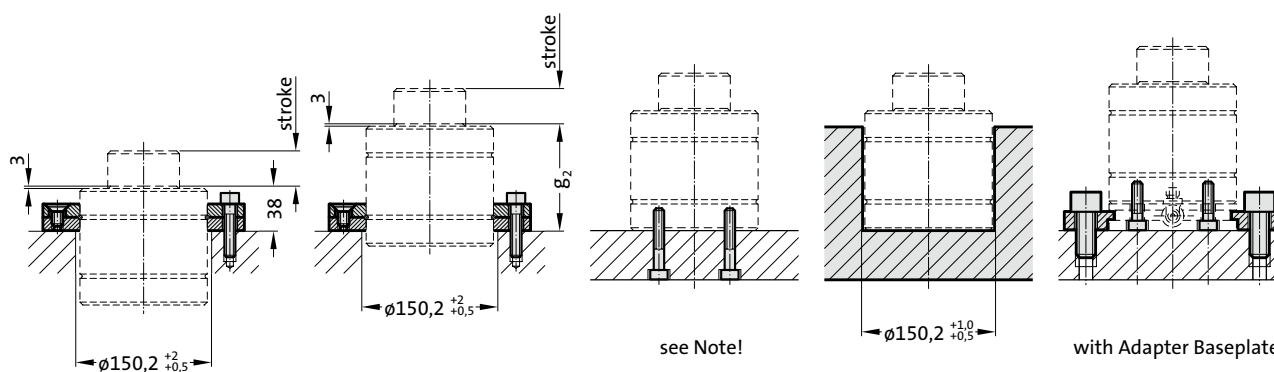


Mounting Example:



with Adapter Baseplate

Mounting examples:



see Note!

with Adapter Baseplate



Compact gas spring

Note:

Initial spring force at 150 bar = 18300 daN

Order No for spare parts kit: 2490.14.18300

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

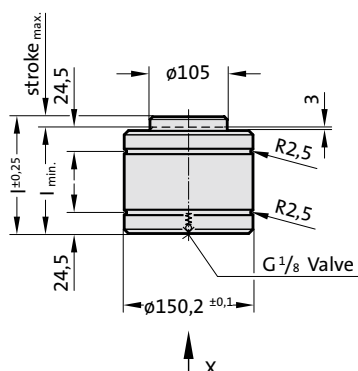
Working temperature: 0°C to +80°C

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

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

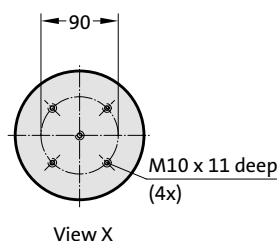
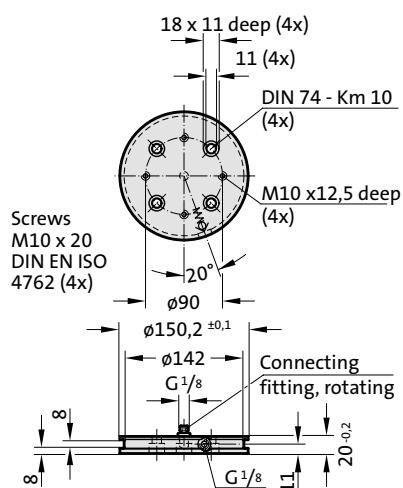
Max. piston speed: 0.8 m/s

2490.14.18300.



2480.00.20.18300

Adapter baseplate with connecting Fitting



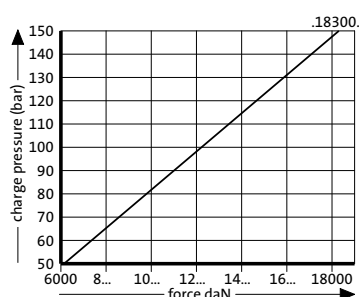
2490.14.18300.

Compact gas spring

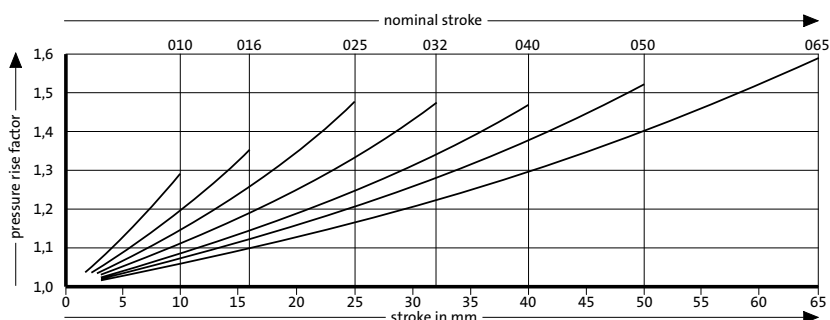
Order No	Stroke _{max.}	l _{min.}	l	g ₂ *
2490.14.18300.010	10	100	110	89
2490.14.18300.016	16	120	136	109
2490.14.18300.025	25	140	165	129
2490.14.18300.032	32	165	197	154
2490.14.18300.040	40	195	235	184
2490.14.18300.050	50	220	270	209
2490.14.18300.065	65	258	323	247

*see mounting example

Initial spring force
versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!



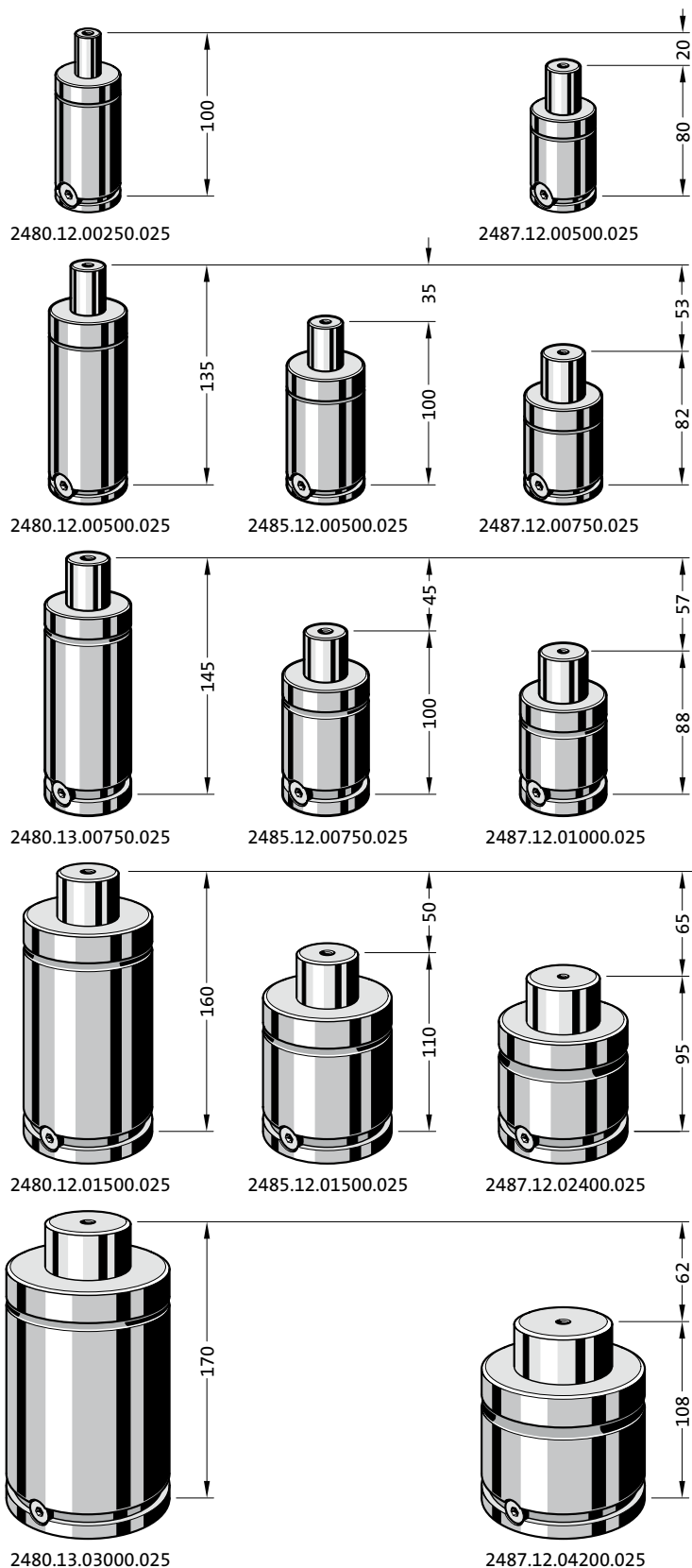
**Gas springs
low build height**



Gas spring, with low build height

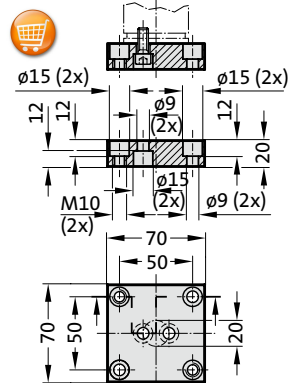
Normal construction Compact construction POWER LINE

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

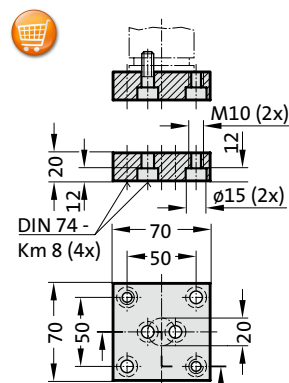


Gas spring, with low build height Mounting variations

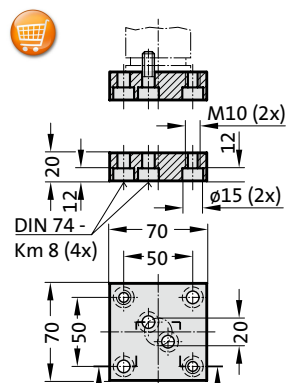
2480.011.00500.2



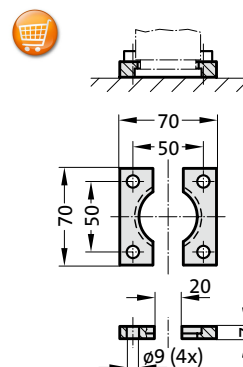
2480.011.00500



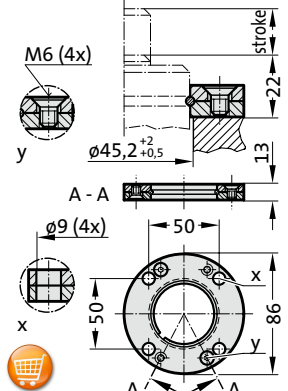
2480.011.00500.1



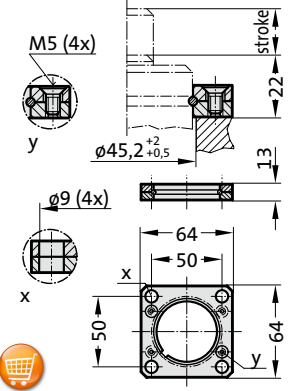
2480.022.00500



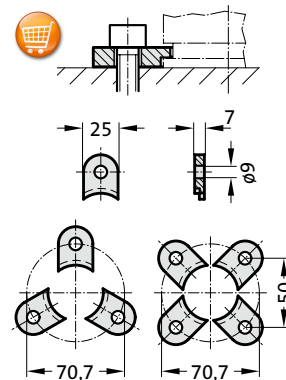
2480.055.00500



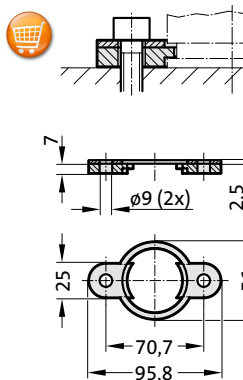
2480.057.00500



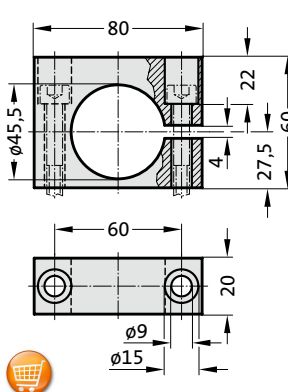
2480.007.00500



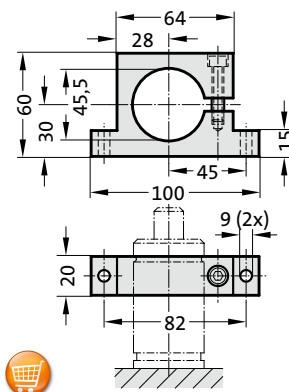
2480.008.00500³⁾



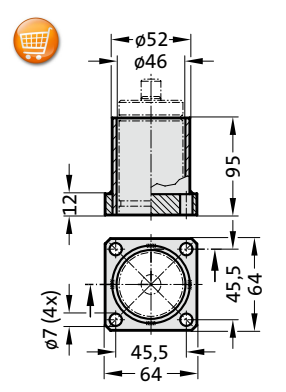
2480.044.03.00500²⁾



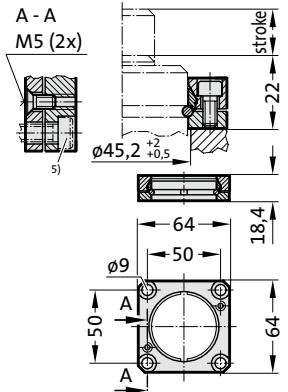
2480.044.00500²⁾



2480.010.00500.095³⁾



2480.064.00500⁴⁾



Note:

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

Gas spring, with low build height

Note:

Initial spring force at 150 bar = 470 daN

Order No for spare parts kit: 2485.12.00500

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 50 bar

Working temperature: 0°C to +80°C

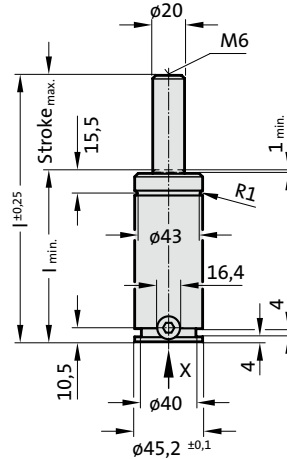
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

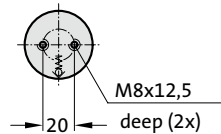
approx. 40 to 80 (at 20°C)

Max. piston speed: 1.6 m/s

2485.12.00500.



View X - Gas spring

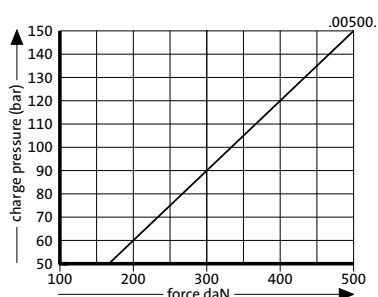


2485.12.00500.

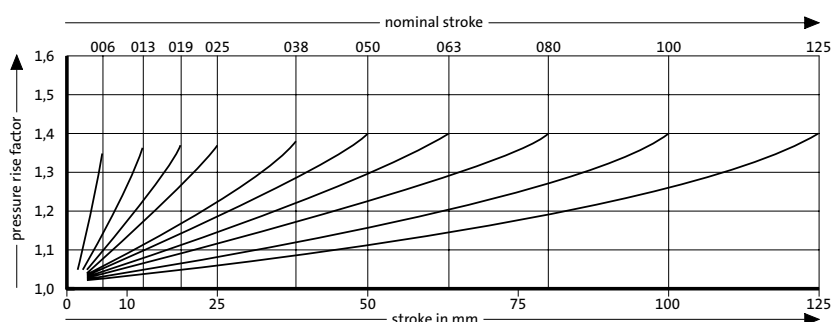
Gas spring, with low build height

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

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

Technical drawing of a mechanical part, showing front and top views with dimensions.

Front View (Top):

- Overall width: 90
- Overall height: 70
- Top flange thickness: 25
- Internal hole diameter: $\varnothing 50,5$
- Internal hole depth: 5
- Bottom flange thickness: 30

Top View (Bottom):

- Overall width: 68
- Overall height: 30
- Two circular features (holes or bosses) are shown, each with a diameter of $\varnothing 11$.
- Distance between the centers of the two circular features: $\varnothing 18$

- 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

Pressure medium: Nitrogen N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C to +80°C

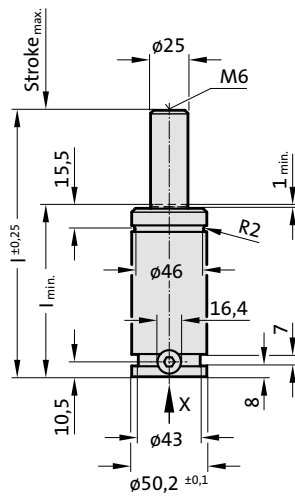
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

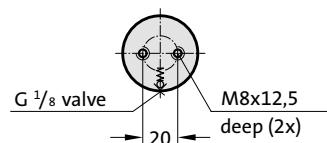
approx. 15 to 40 (at 20°C)

Max. piston speed: 1.6 m/s

2485.12.00750.



View X - Gas spring

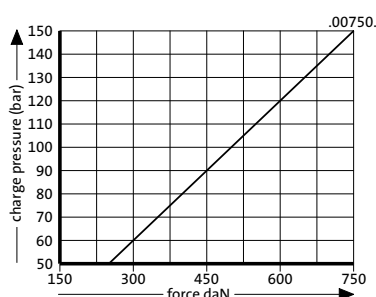


2485.12.00750.

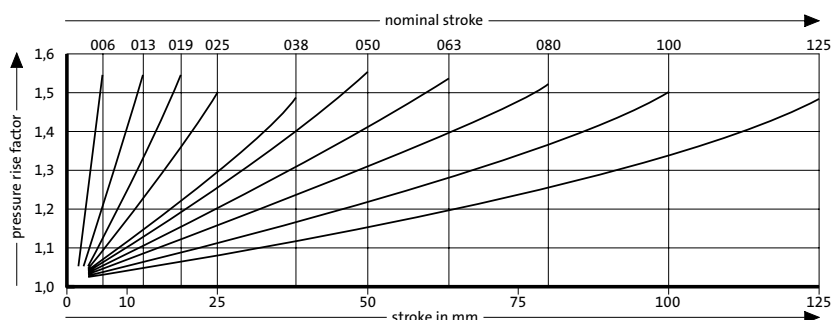
Gas spring, with low build height

Order No	Stroke _{max}	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



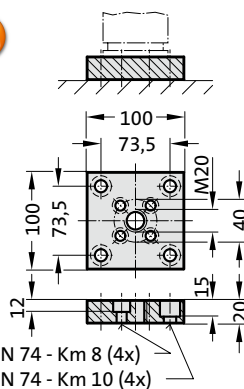
Spring force Diagram displacement versus stroke rise



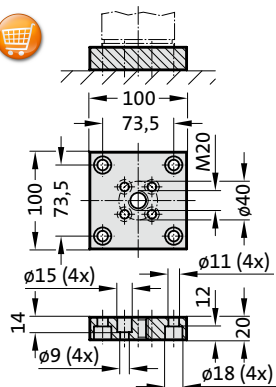
Pressure rise factor accounts for displacement but not external influences!

Gas spring, with low build height Mounting variations

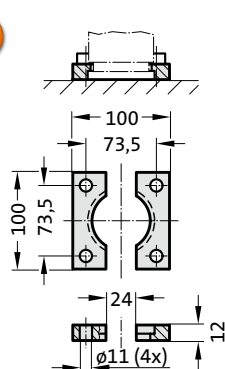
2480.011.01500



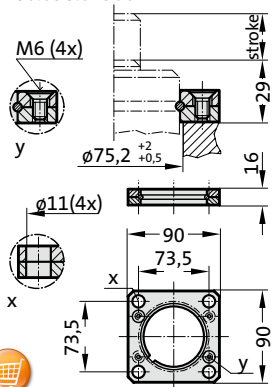
2480.011.01500.2



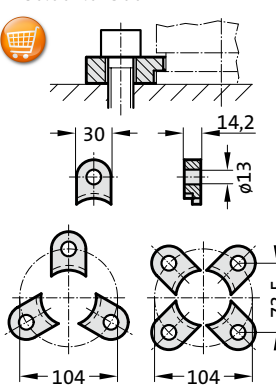
2480.022.01500



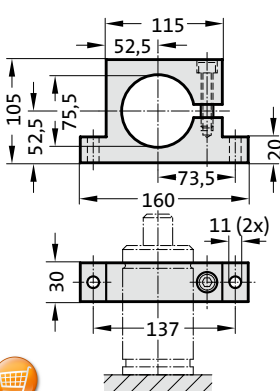
2480.058.01500



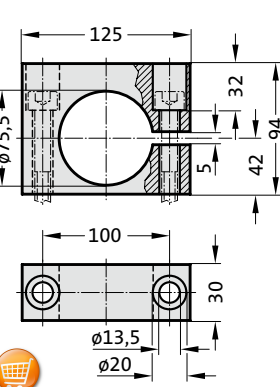
2480.007.01500



2480.044.01500²⁾



2480.044.03.01500²⁾



Note:

²⁾ Attention:
The spring force must be
absorbed by the stop surface.



Gas spring, with low build height

Note:

Initial spring force at 150 bar = 1500 daN

Order No for spare parts kit: 2485.12.01500

Pressure medium: Nitrogen N_2

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

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

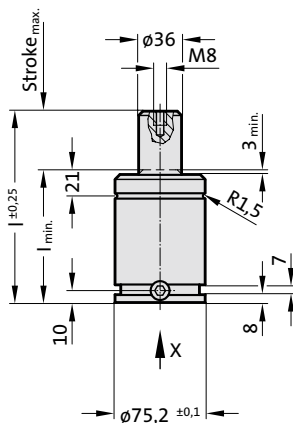
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

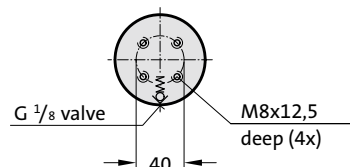
approx. 15 to 40 (at 20°C)

Max. piston speed: 1.6 m/s

2485.12.01500.



View X - Gas spring

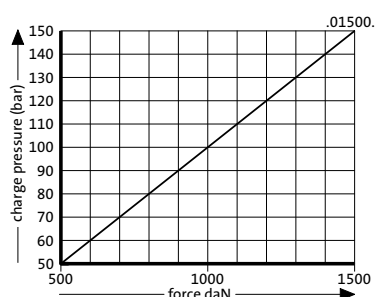


2485.12.01500.

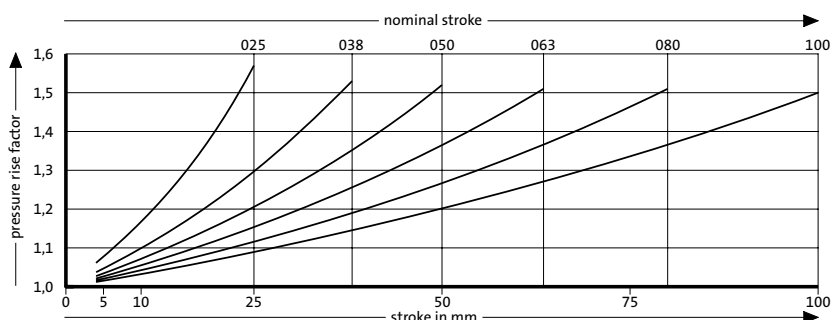
Gas spring, with low build height

Order No	Stroke _{max.}	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!



»Speed Control™«,
Gas springs, SPC,
cushioned



SPC gas spring, cushioned

Description

FIBRO SPC gas springs »Speed Control™« have been engineered to reduce or eliminate blank holder bounce; commonly associated with increased return stroke speeds form link drive presses.

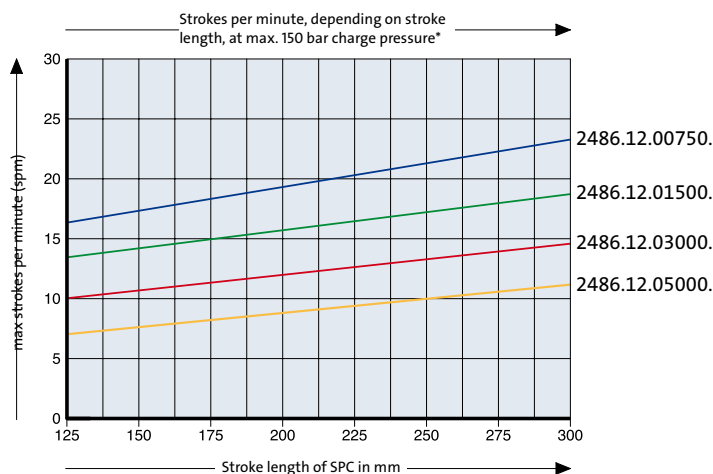
SPC gas springs have inbuilt return stroke speed dampening, which decelerates the last 30 mm of piston rod stroke to 0.4 m/s, helping to bring the blank holder to a smooth stop.

Benefits of the »Speed Control™« SPC gas springs, cushioned:

- Eliminates blank holder bounce
- Increases productivity by more increasing part transfer efficiency.
- Easily retrofitted to existing dies
- Stroke lengths 125 to 300 mm.
- Linkable using hose system.

SPC gas spring, cushioned

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.



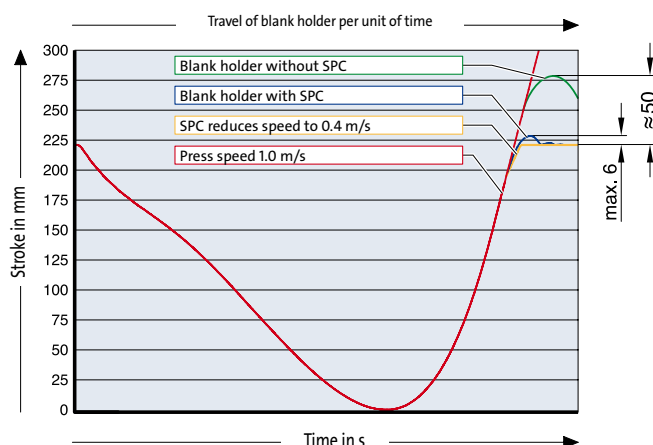
Caution !

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.

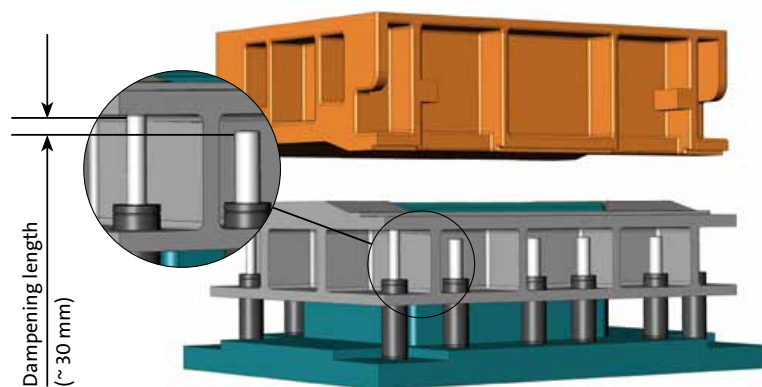
*At ambient room temperature with free air flow

Function example



»Speed Control™« SPC 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:

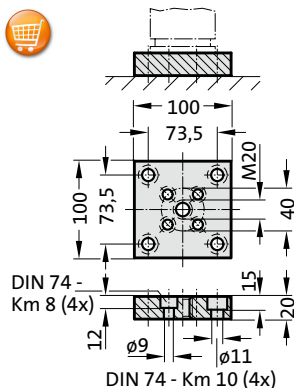
Option 1 – replace all gas springs with SPC gas springs

Option 2 – corner solution (see below)

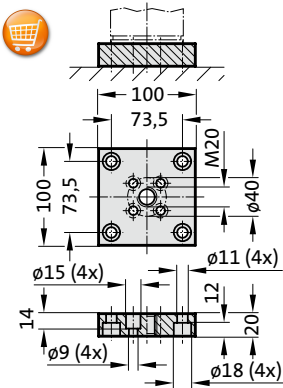
Please note: Springs must be installed with a recess of 25 mm to balance the total length difference (2 x stroke length = 50 mm). Alternatively, the contact surface of the sheet metal retainer can be recessed in order to achieve the same effect.

Gas spring SPEED CONTROL, cushioned Mounting variations

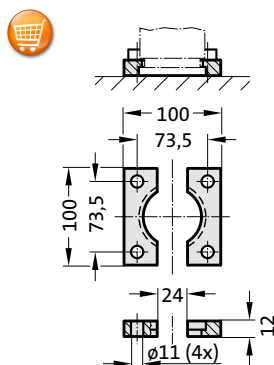
2480.011.01500



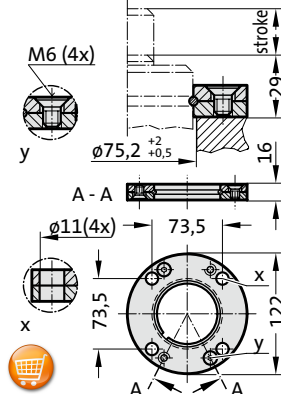
2480.011.01500.2



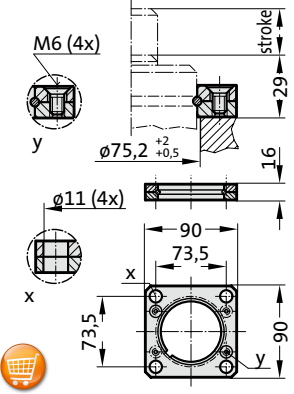
2480.022.01500



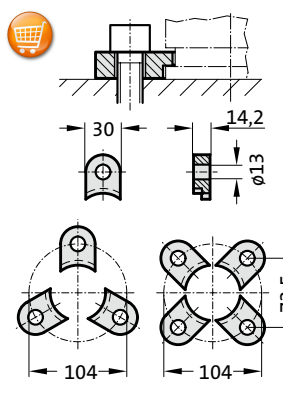
2480.055.01500



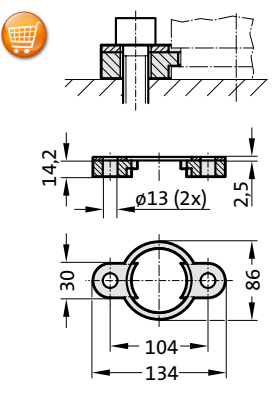
2480.057.01500



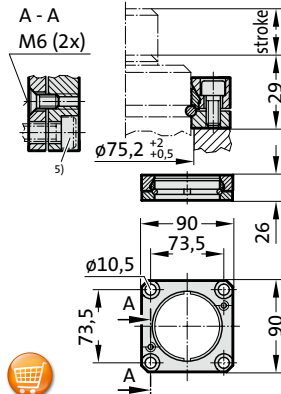
2480.007.01500



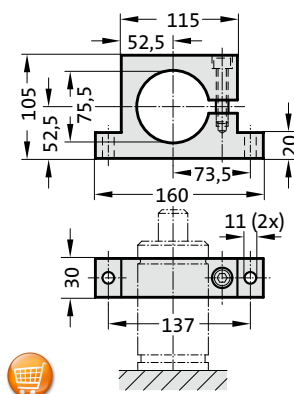
2480.008.01500³⁾



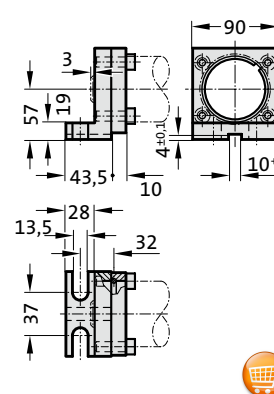
2480.064.01500⁴⁾



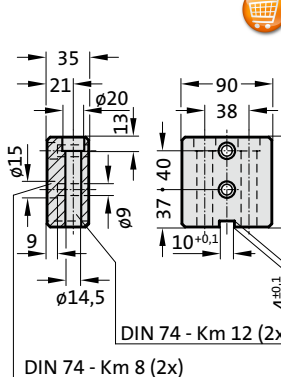
2480.044.01500²⁾



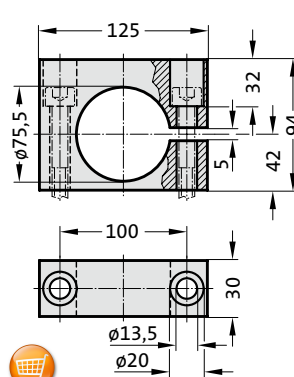
2480.045.01500²⁾



2480.047.01500²⁾



2480.044.03.01500²⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop surface.
- ³⁾ Note:
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

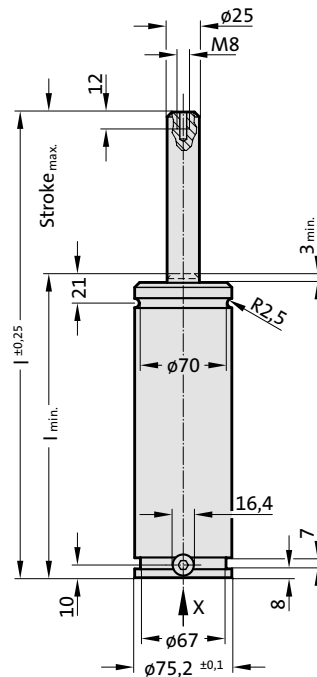
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

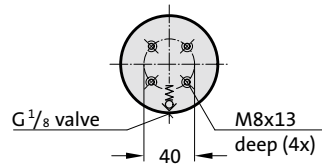
approx. 16 to 24 (at 20°C)

Dampening length: ~ 30 mm
Piston rod speed, decelerated: 0.4 m/s

2486.12.00750.



View X - Gas spring

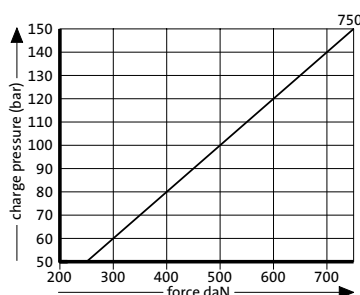


2486.12.00750.

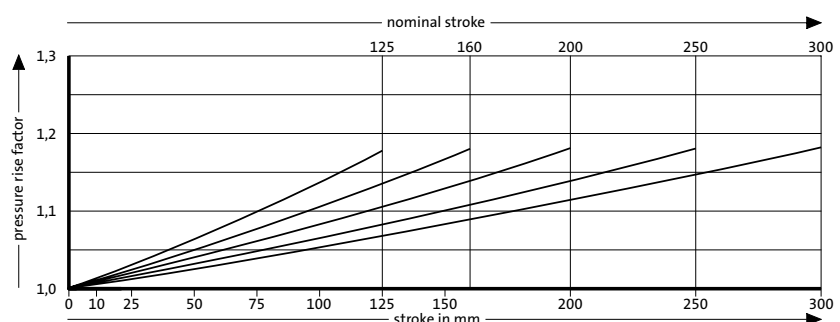
Gas spring SPEED CONTROL,
cushioned

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

Initial spring force versus charge pressure



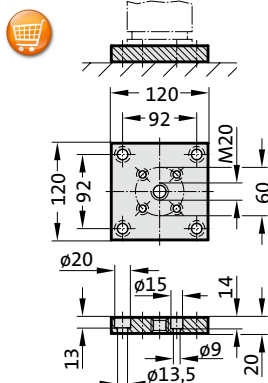
Spring force Diagram displacement versus stroke rise



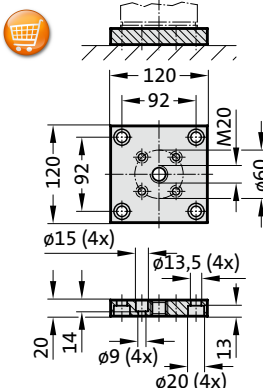
Pressure rise factor accounts for displacement but not external influences!

Gas spring SPEED CONTROL, cushioned Mounting variations

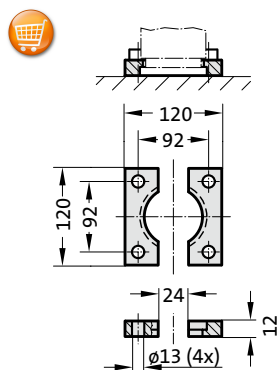
2480.011.03000



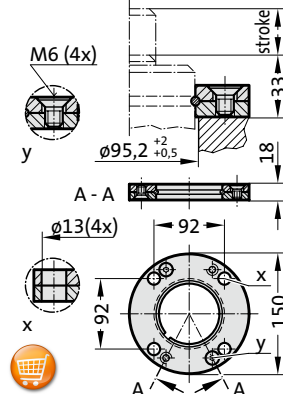
2480.011.03000.2



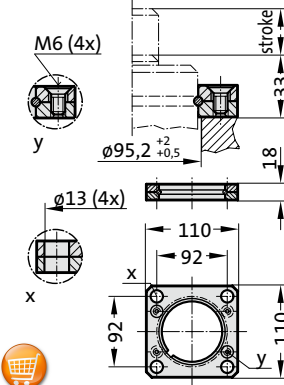
2480.022.03000



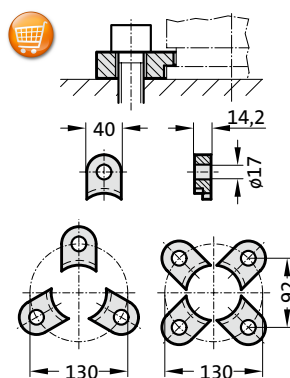
2480.055.03000



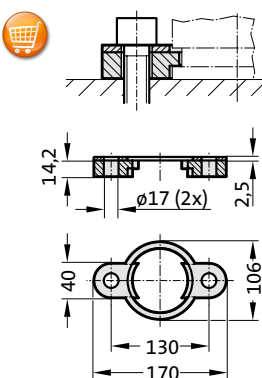
2480.057.03000



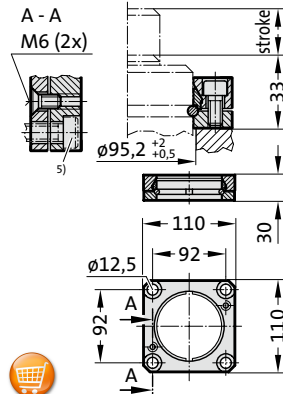
2480.007.03000



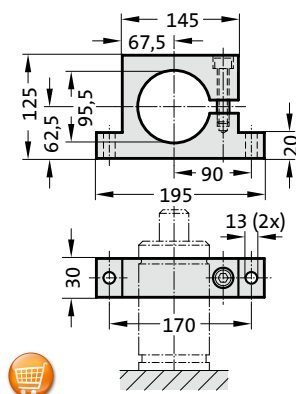
2480.008.03000 3)



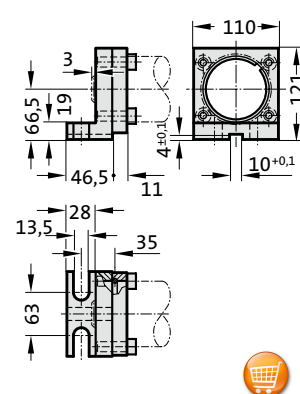
2480.064.03000 4)



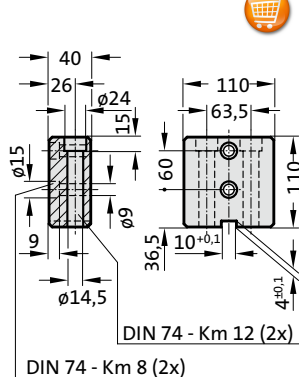
2480.044.03000 2)



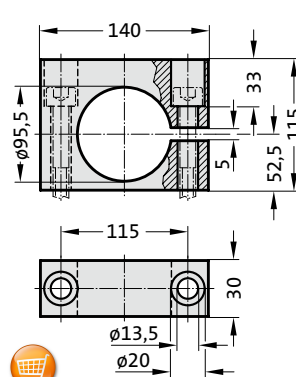
2480.045.03000 2)



2480.047.03000 2)



2480.044.03.03000 ²⁾



Note:

- 2) Attention:
The spring force must be absorbed by the stop surface.
- 3) Note:
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

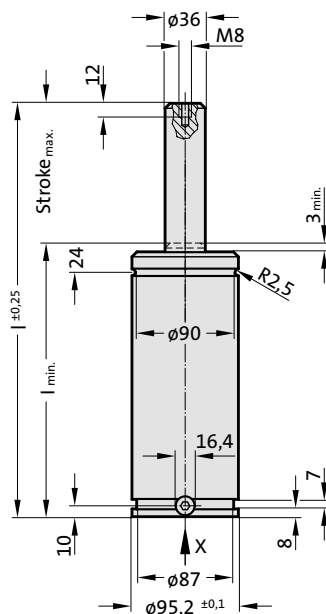
Note:

Initial spring force at 150 bar = 1500 daN

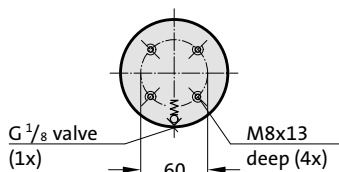
Order No for spare parts kit: 2486.12.01500

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: $\pm 0.3\%/^{\circ}\text{C}$
 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

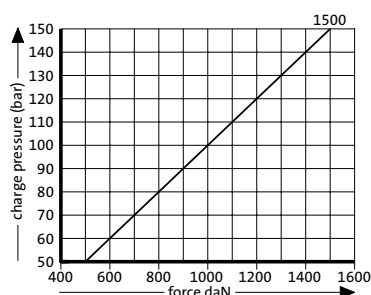


2486.12.01500.

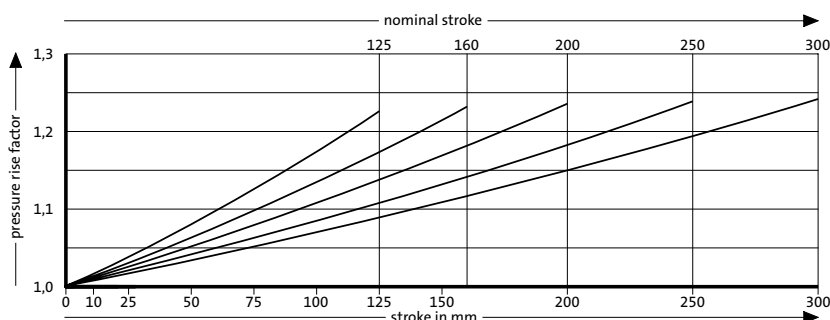
Gas spring SPEED CONTROL, cushioned

Order No	Stroke _{max.}	l _{min.}	l
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



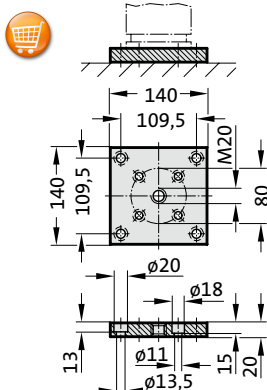
Spring force Diagram displacement versus stroke rise



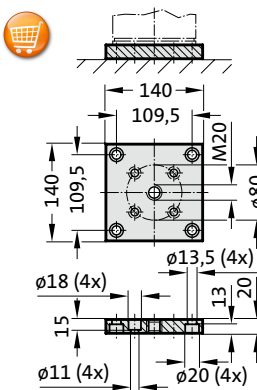
Pressure rise factor accounts for displacement but not external influences!

Gas spring SPEED CONTROL, cushioned Mounting variations

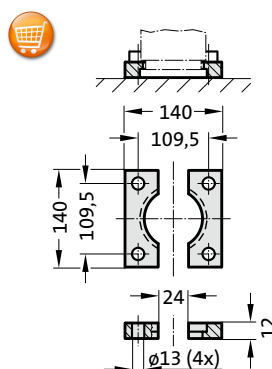
2480.011.05000



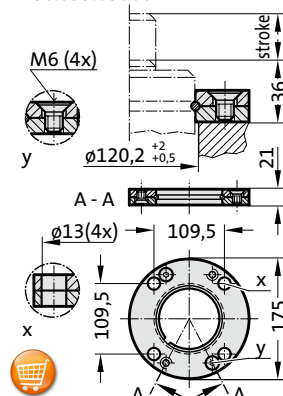
2480.011.05000.2



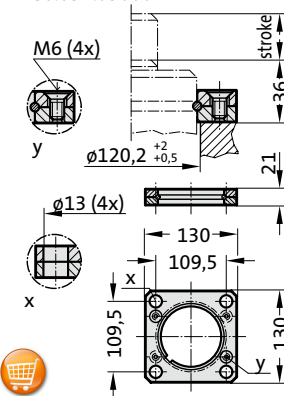
2480.022.05000



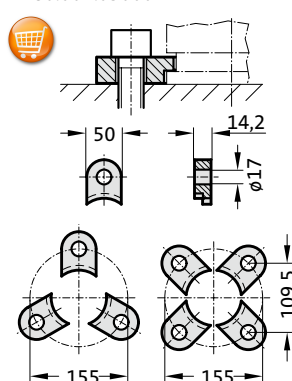
2480.055.05000



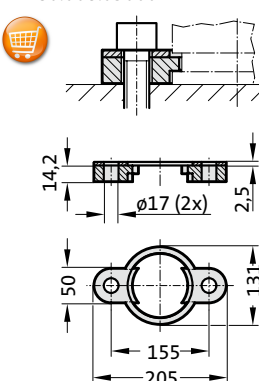
2480.057.05000



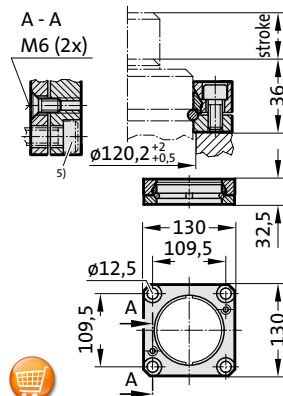
2480.007.05000



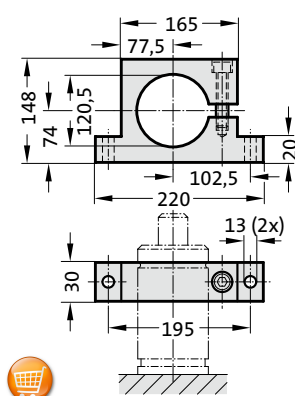
2480.008.05000³⁾



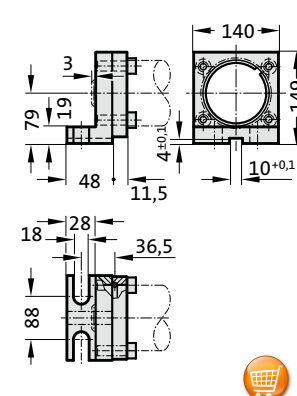
2480.064.05000⁴⁾



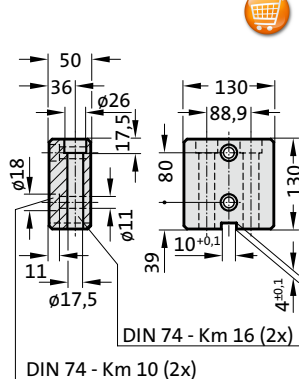
2480.044.05000²⁾



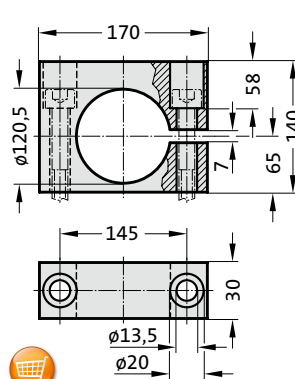
2480.045.05000²⁾



2480.047.05000²⁾



2480.044.03.05000²⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop surface.
- ³⁾ Note:
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

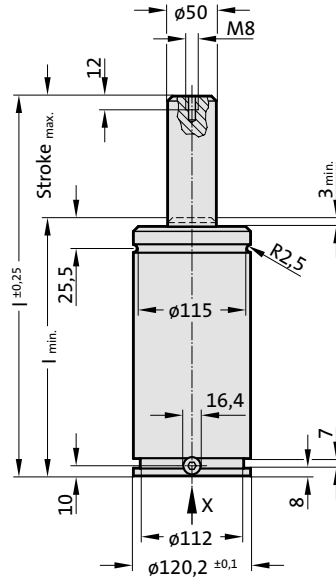
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:

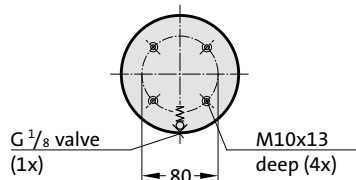
approx. 10 to 13 (at 20°C)

Dampening length: ~ 30 mm
Piston rod speed, decelerated: 0.4 m/s

2486.12.03000.



View X - Gas spring

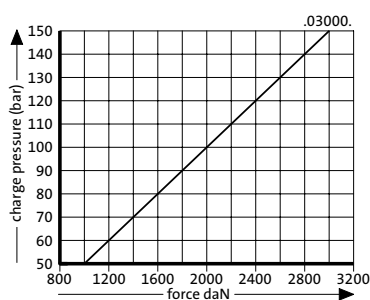


2486.12.03000.

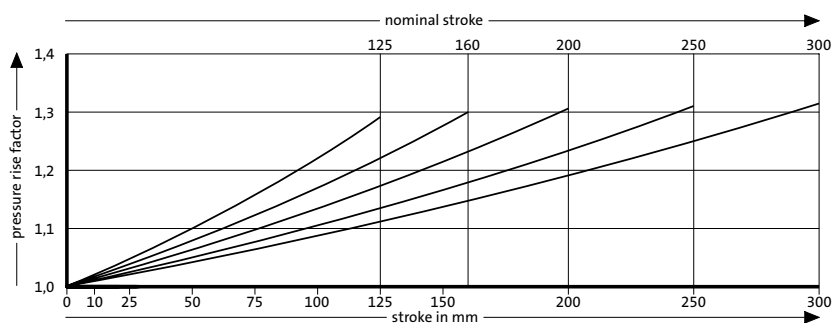
Gas spring SPEED CONTROL,
cushioned

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

Initial spring force versus charge pressure



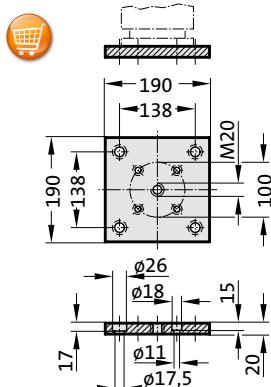
Spring force Diagram displacement versus stroke rise



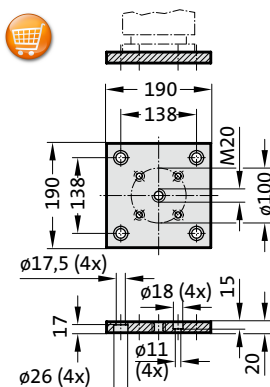
Pressure rise factor accounts for displacement but not external influences!

Gas spring SPEED CONTROL, cushioned Mounting variations

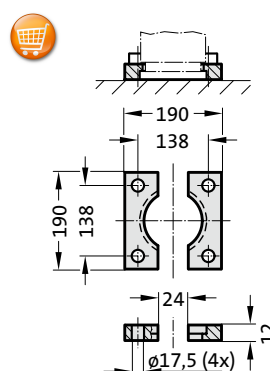
2480.011.07500



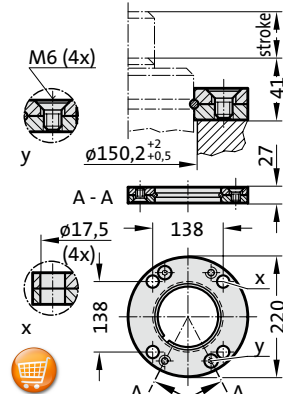
2480.011.07500.2



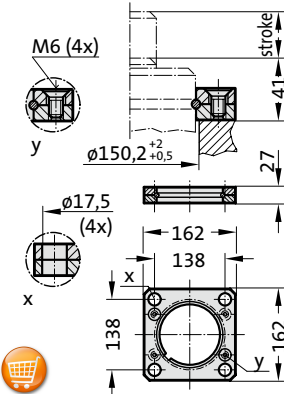
2480.022.07500



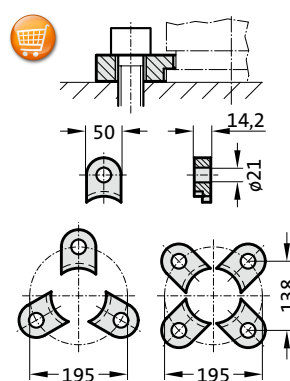
2480.055.07500



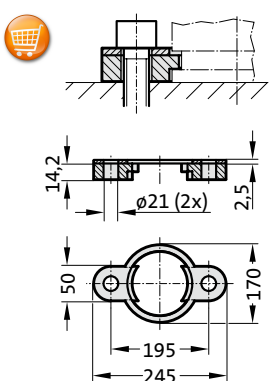
2480.057.07500



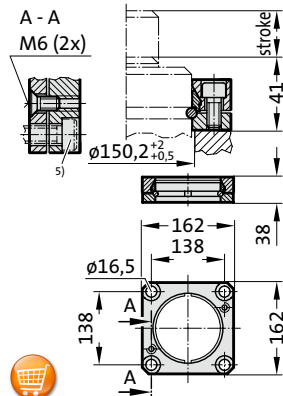
2480.007.07500



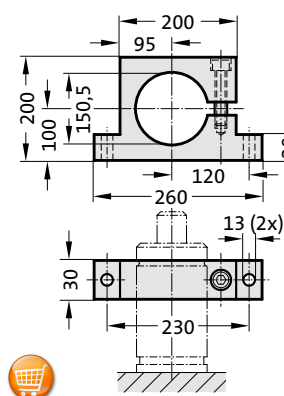
2480.008.07500³⁾



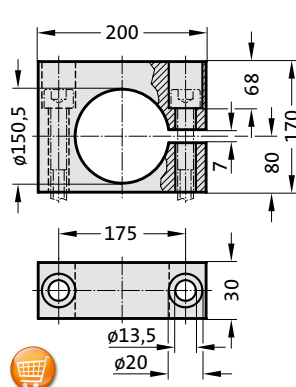
2480.064.07500⁴⁾



2480.044.07500²⁾



2480.044.03.07500²⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop surface.
- ³⁾ Note:
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

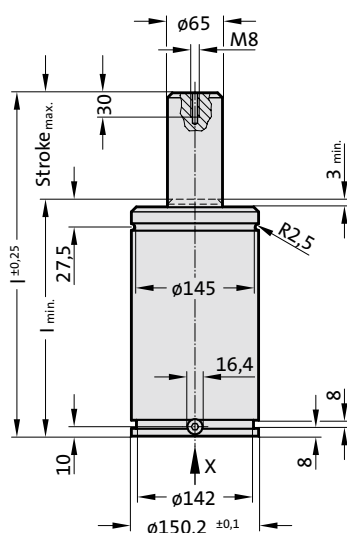
Note:

Initial spring force at 150 bar = 5000 daN

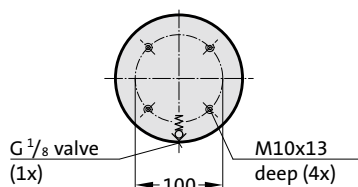
Order No for spare parts kit: 2486.12.05000

Pressure medium: Nitrogen N_2
 Max. filling pressure: 150 bar
 Min. filling pressure: 25 bar
 Working temperature: 0°C to $+80^{\circ}\text{C}$
 Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$
 Max. recommended extensions per minute:
 approx. 6 to 11 (at 20°C)
 Dampening length: $\sim 30\text{ mm}$
 Piston rod speed, decelerated: 0.4 m/s

2486.12.05000.



View X - Gas spring

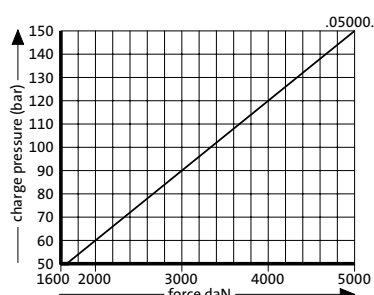


2486.12.05000.

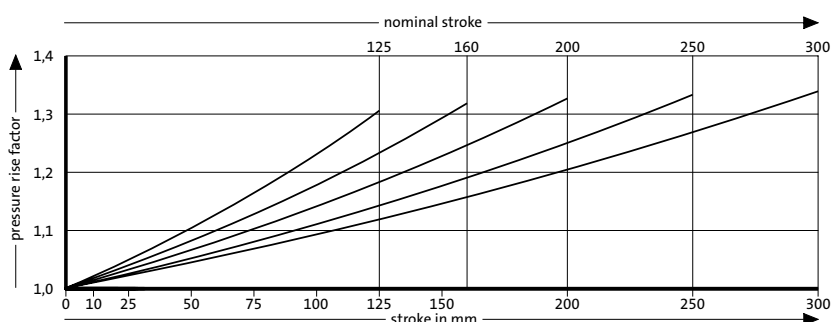
Gas spring SPEED CONTROL,
cushioned

Order No	Stroke _{max.}	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 spring, DS for Die Separation



Gas spring, 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.

Properties:

- Initial spring forces of 3000 daN to 7500 daN
- Stroke lengths of 125 mm to 300 mm
- Standardised dimensions in accordance with ISO, VDI, CNOMO
- Very slow return stroke speed compared to standard gas springs: 0,2 m/min.
- Standard safety features (FIBRO Safer Choice)
 - Safety piston rod
 - Overpressure protection
- High flexibility during fixing from the top mounting notch and lower fixing groove, together with the tapped bores in the spring base

Application example:

When using „conventional“ standard gas springs (such as 2480.13.05000.250) for creating spacing between the top and bottom parts of the tool, additional initial forces of 20 t are exercised when each stroke is performed. This force may rise to up to 30 t at the end of the stroke (see diagram 1). When you use the „new“ gas springs, DS (for example, 2486.22.05000.250), the force in every stroke is reduced to less than 10% in the same application (diagram 2).

The return stroke speed in the gas springs, DS is very slow. The complete return stroke takes 1-2 minutes.

However, this slow speed does not have any negative impact on the end position (gas springs fully extended) of the return stroke at the end of production. The piston rod is actuated oscillating up to 10% of the entire stroke, depending on the production rate.

Diagram 1

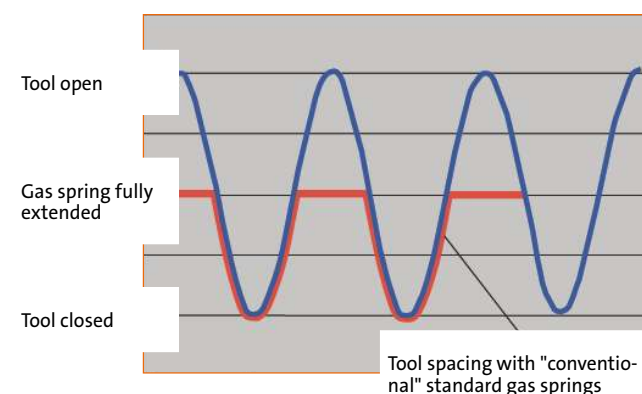
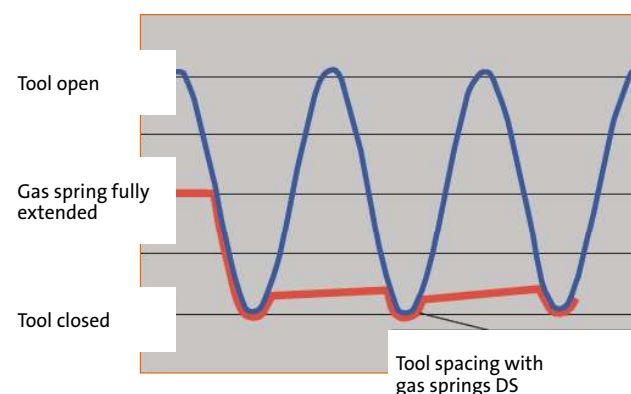
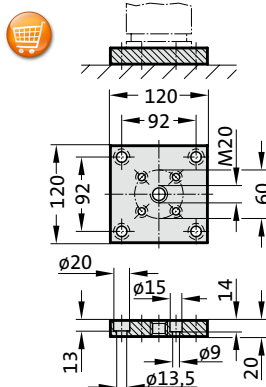


Diagram 2

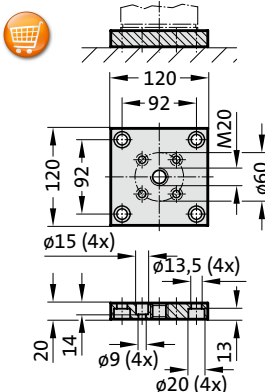


Gas spring DS Mounting variations

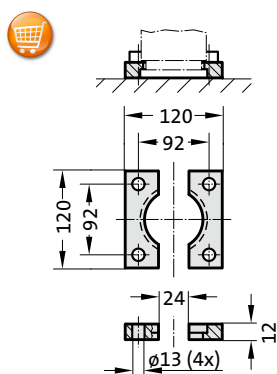
2480.011.03000



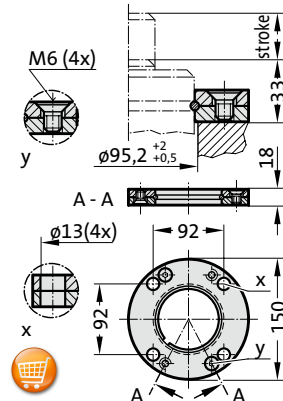
2480.011.03000.2



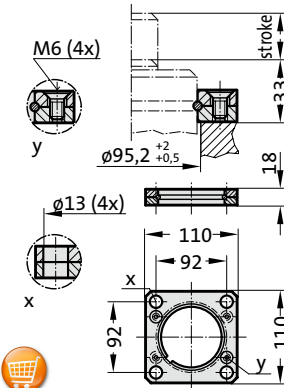
2480.022.03000



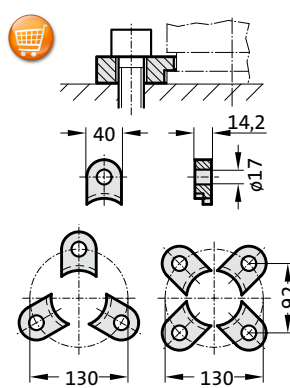
2480.055.03000



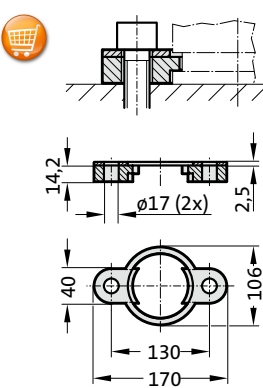
2480.057.03000



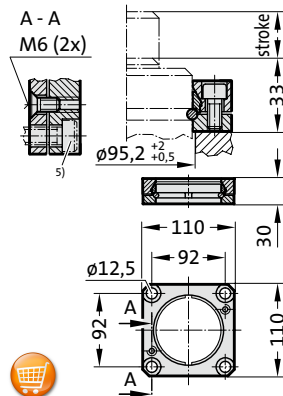
2480.007.03000



2480.008.03000³⁾



2480.064.03000⁴⁾



Note:

- ³⁾ Note:
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).

Note:

Initial spring force at 150 bar = 3000 daN

Pressure medium: Nitrogen - N₂

Max. filling pressure: 150 bar

Min. filling pressure: 25 bar

Working temperature: 0°C bis +80°C

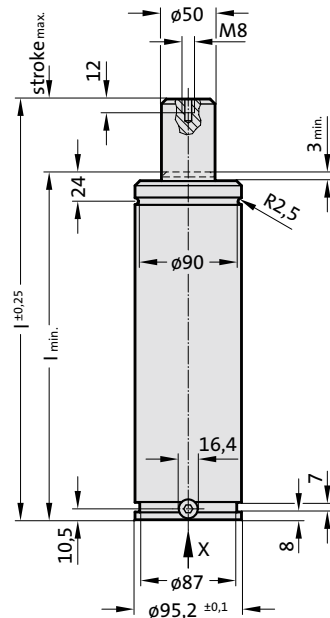
Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$

Max. recommended extensions per minute:
 22' : 72' : 228'

approx. 20 to 50 (at 20°C)

Max. piston speed: 1.6 m/s
Max. return stroke speed: 0.2 m/min

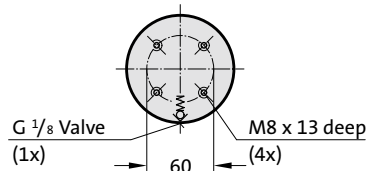
2486.22.03000.



2486.22.03000.

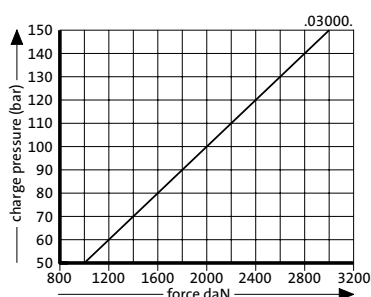
Gas spring DS

View X - Gas spring

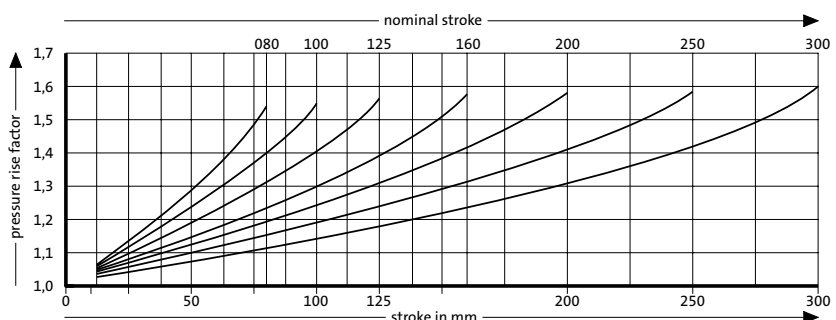


Order No	Stroke _{max}	l _{min}	l
2486.22.03000.080	80	200	280
2486.22.03000.100	100	220	320
2486.22.03000.125	125	245	370
2486.22.03000.160	160	280	440
2486.22.03000.200	200	320	520
2486.22.03000.250	250	370	620
2486.22.03000.300	300	420	720

Initial spring force versus charge pressure



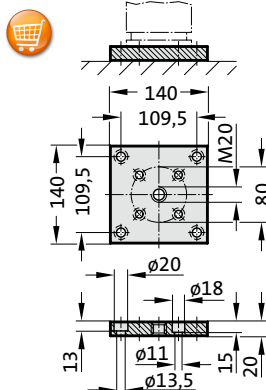
Spring force Diagram displacement versus stroke rise



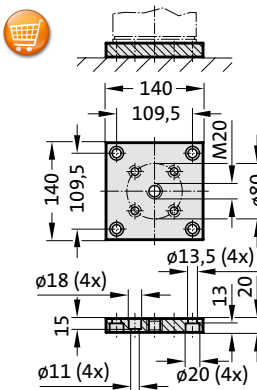
Pressure rise factor accounts for displacement but not external influences!

Gas spring DS Mounting variations

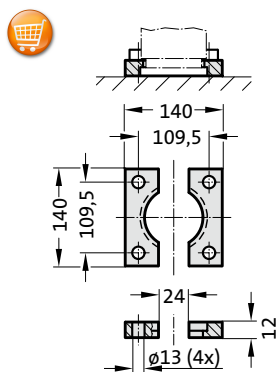
2480.011.05000



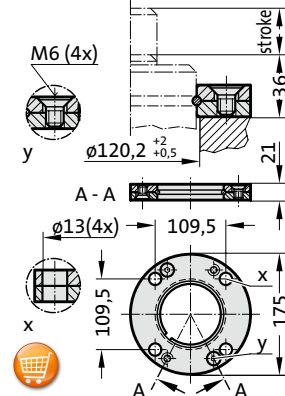
2480.011.05000.2



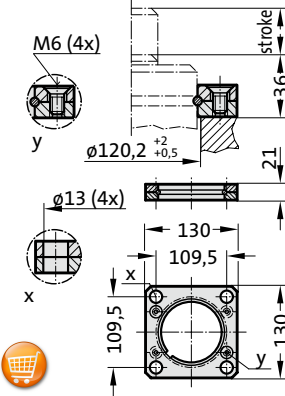
2480.022.05000



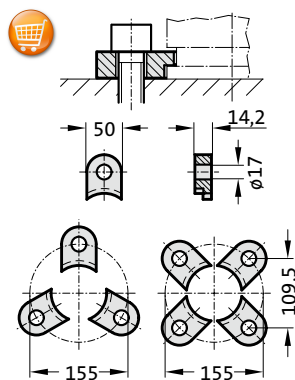
2480.055.05000



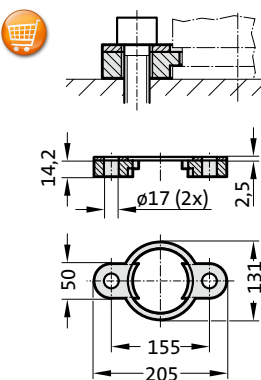
2480.057.05000



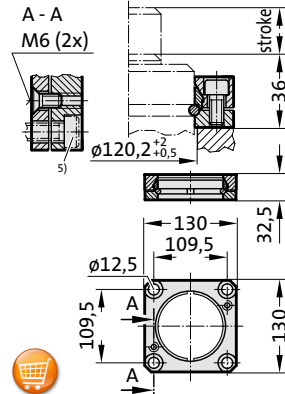
2480.007.05000



2480.008.05000³⁾



2480.064.05000⁴⁾



Note:

- ³⁾ Note:
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).

Note:

Initial spring force at 150 bar = 5000 daN

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: $\pm 0.3\%/^{\circ}\text{C}$

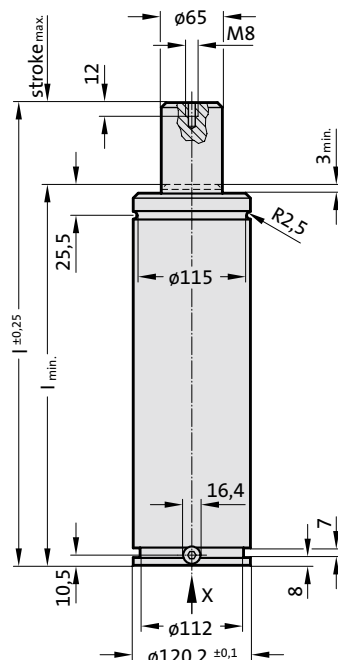
Max. recommended extensions per minute:

approx. 20 to 50 (at 20°C)

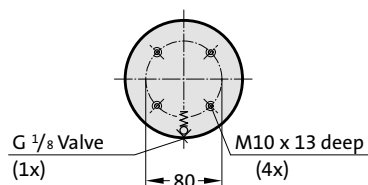
Max. piston speed: 1.6 m/s

Max. return stroke speed: 0.2 m/min

2486.22.05000.



View X - Gas spring

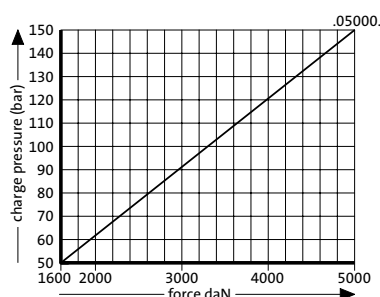


2486.22.05000.

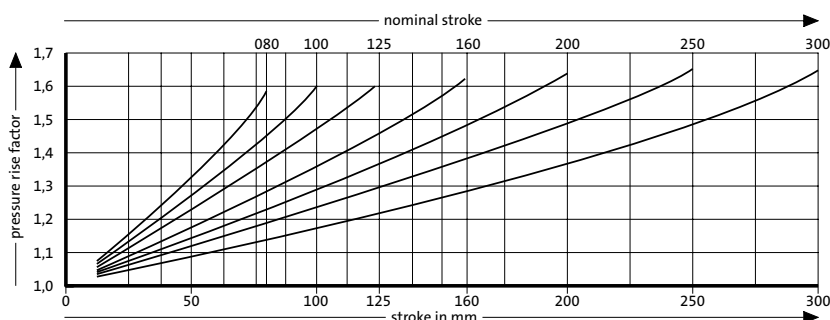
Gas spring DS

Order No	Stroke _{max.}	l _{min.}	l
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



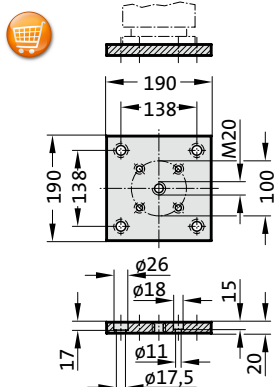
Spring force Diagram displacement versus stroke rise



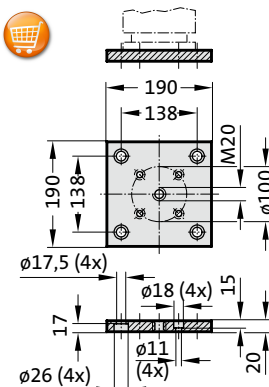
Pressure rise factor accounts for displacement but not external influences!

Gas spring DS Mounting variations

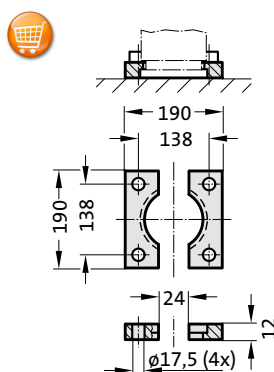
2480.011.07500



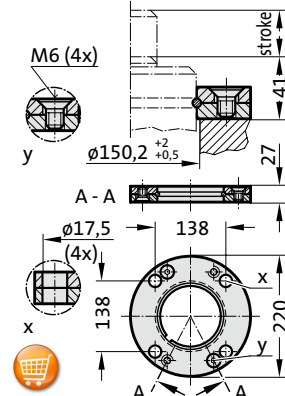
2480.011.07500.2



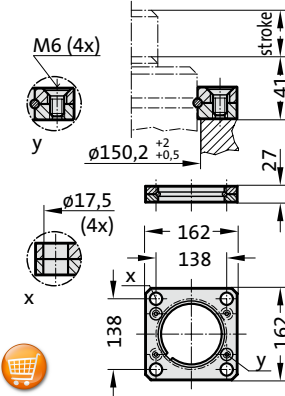
2480.022.07500



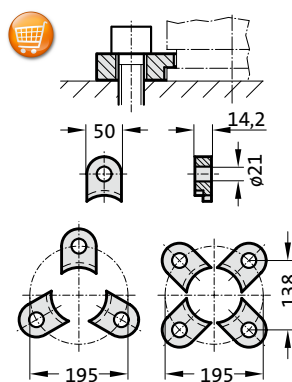
2480.055.07500



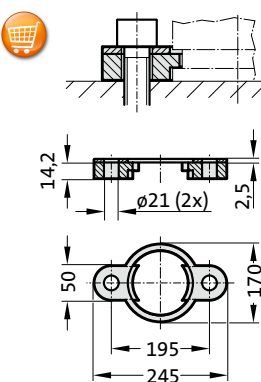
2480.057.07500



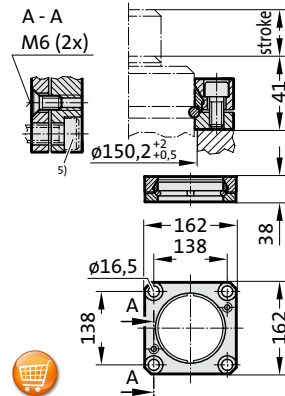
2480.007.07500



2480.008.07500³⁾



2480.064.07500⁴⁾



Note:

- ³⁾ Note:
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).

Note:

Initial spring force at 150 bar = 7500 daN

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: $\pm 0.3\%/^{\circ}\text{C}$

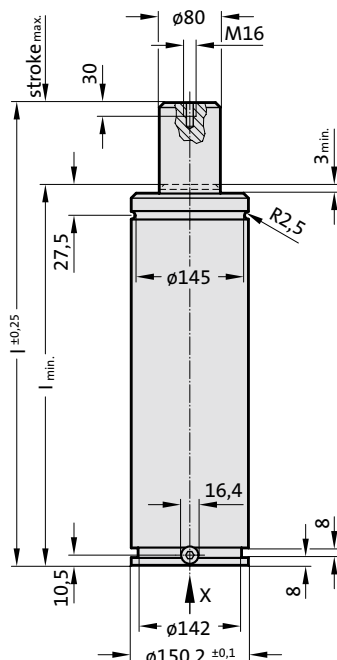
Max. recommended extensions per minute:

approx. 20 to 50 (at 20°C)

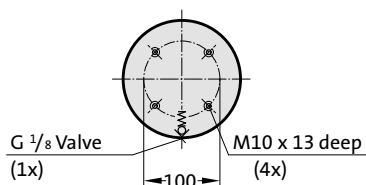
Max. piston speed: 1.6 m/s

Max. return stroke speed: 0.2 m/min

2486.22.07500.



View X - Gas spring

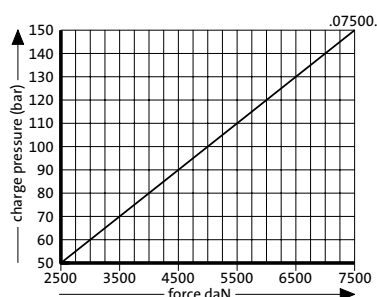


2486.22.07500.

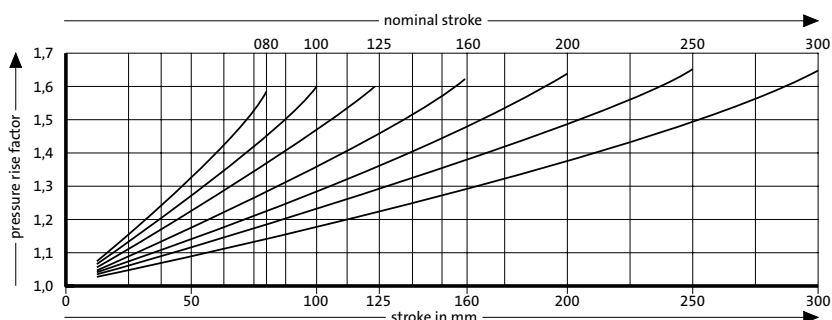
Gas spring DS

Order No	Stroke _{max.}	l _{min.}	l
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





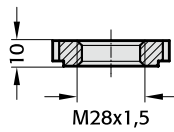
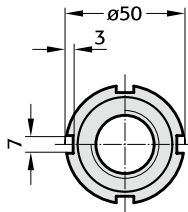
Gas springs with thread



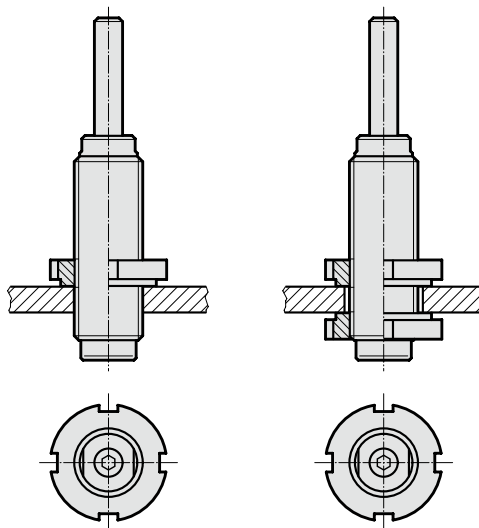
Gas spring with external thread Mounting variations

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

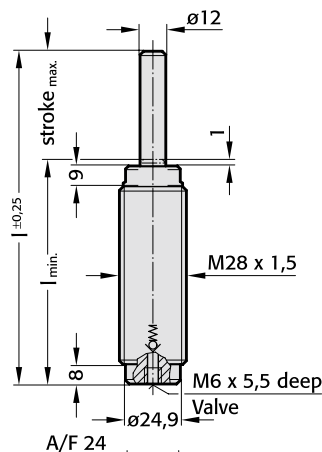
Working temperature: 0°C to +80°C

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

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

Max. piston speed: 1.6 m/s

2480.32.



Spring forces as per spring diagram.

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

2480.32. Gas spring with external thread

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

*complete with initial spring force

Spring force marking:

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

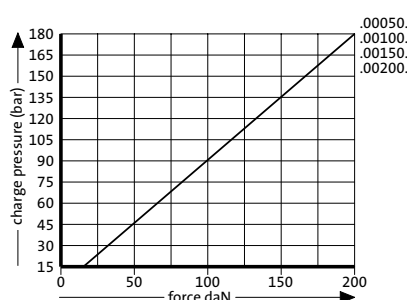
.00050. - 45 - green

.00100. - 90 - blue

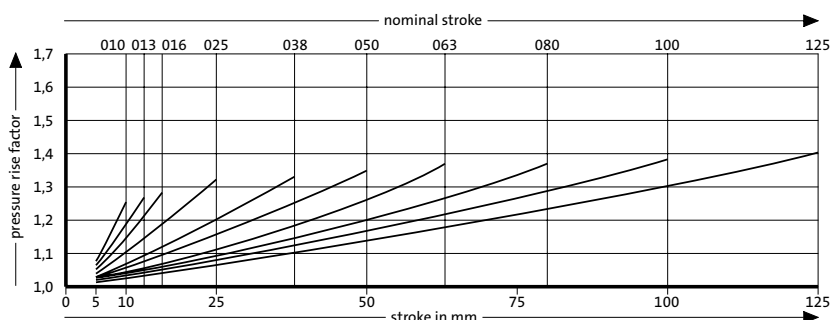
.00150. - 135 - red

.00200. - 180 - yellow

Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise

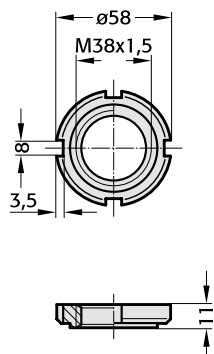


Pressure rise factor accounts for displacement but not external influences!

Gas spring with external thread Mounting variations

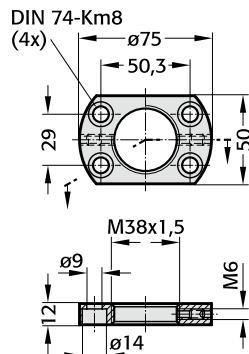
2480.005.00250.

Slotted nut



2480.006.00250.

Clamped flange

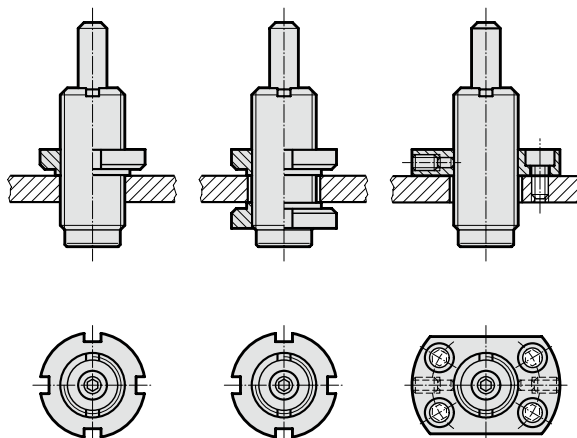


2480.00.51.01

Box spanner for assembling/disassembling
of gas springs



Mounting examples:





Gas spring with external thread

Note:

Initial spring force at 150 bar = 250 daN

Order No for spare parts kit: 2480.12.00250

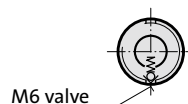
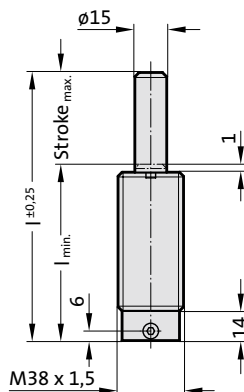
Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 50 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}\text{C}$
 Max. recommended extensions per minute:
 approx. 80 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

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 x 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.

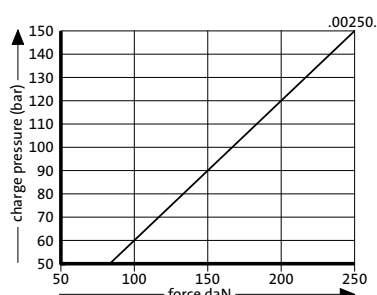


2480.32.00250.

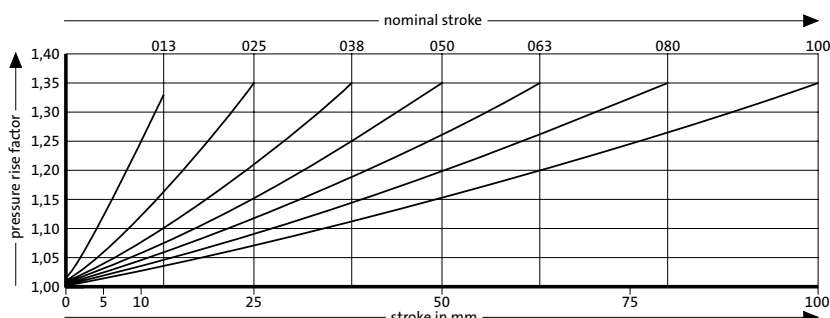
Gas spring with external thread

Order No	Stroke _{max.}	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

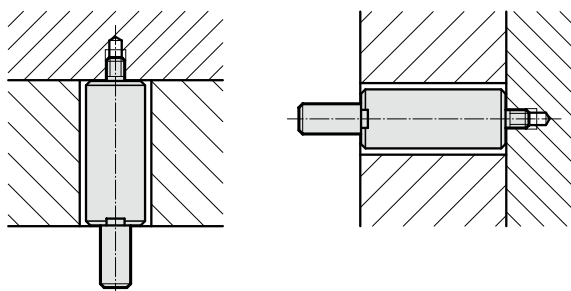


2480.00.51.01

Box spanner for assembling/disassembling
of gas springs



Mounting examples:





Gas spring with male fixing thread, small mounting height

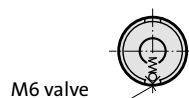
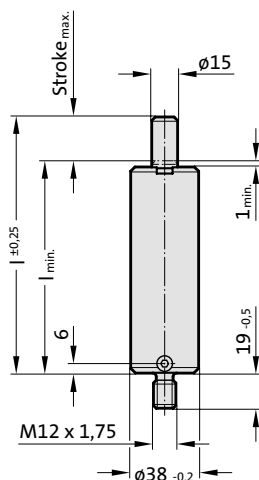
Note:

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: $\pm 0.3\%/^{\circ}\text{C}$
 Max. recommended extensions per minute:
 approx. 80 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

2480.82.00250.

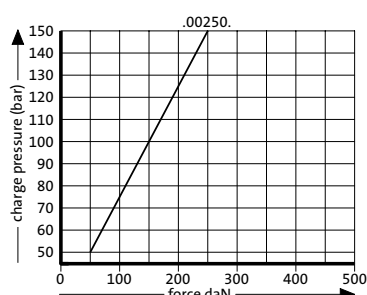


2480.82.00250.

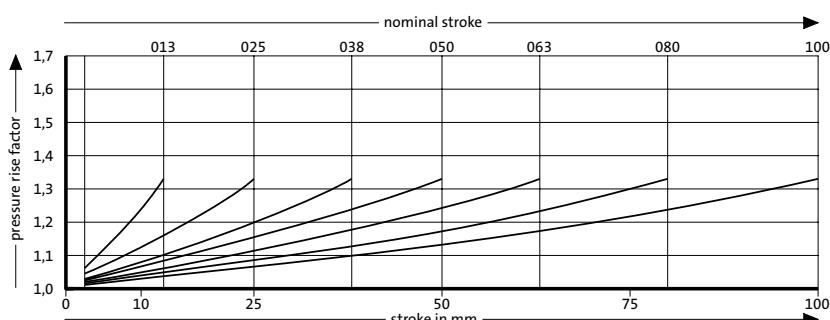
Gas spring with male fixing thread, small mounting height

Order No	Stroke _{max.}	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

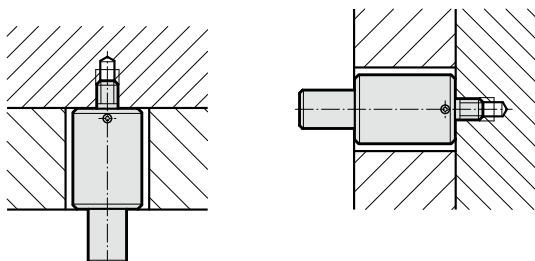


2480.00.51.05

Box spanner for assembling/disassembling
of gas springs



Mounting examples:





Gas spring with male fixing thread, POWERLINE

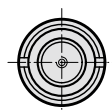
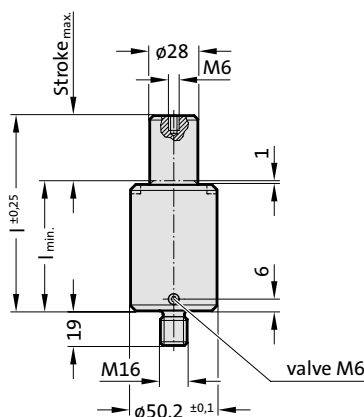
Note:

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: $\pm 0.3\%/^{\circ}\text{C}$
 Max. recommended extensions per minute:
 approx. 50 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s

2487.82.01000.

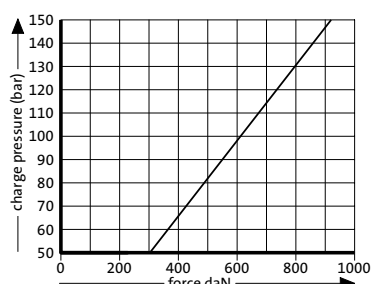


2487.82.01000.

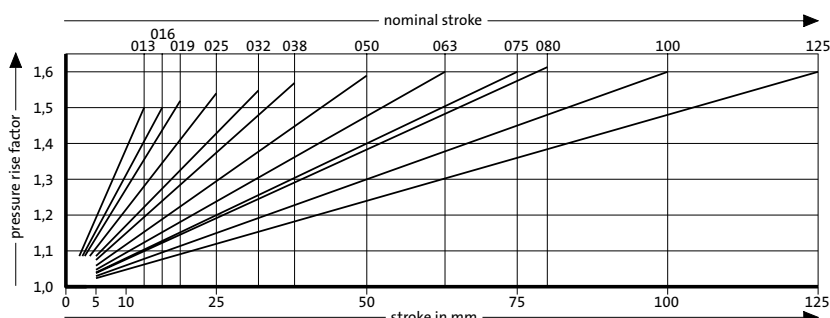
Gas spring with male fixing thread, POWERLINE

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

Initial spring force versus charge pressure

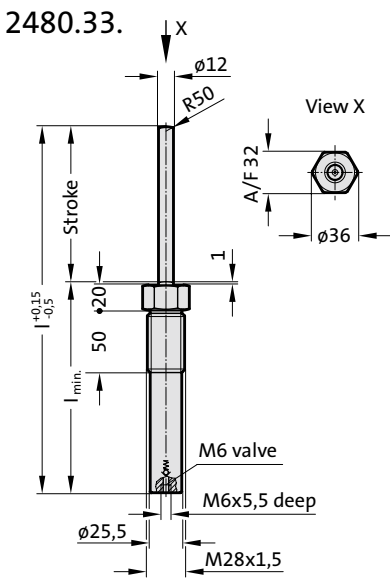


Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!

Gas spring with hexagonal flange



Description:

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

All springs, regardless of their spring force ratings, are of the same design. The differing force ratings result exclusively from the differing charge pressures. Do take into consideration the colour-coded pressure rating during repair work and recharging.

Note:

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

Order No for spare parts kit: 2480.21.00150

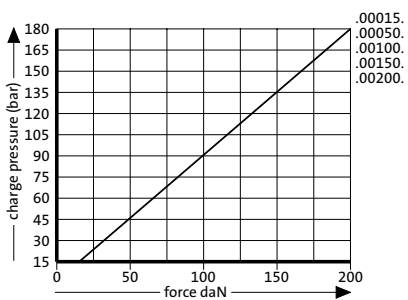
Pressure medium: Nitrogen N_2
 Max. filling pressure: 180 bar
 Min. filling pressure: 13 bar
 Working temperature: 0°C to +80°C
 Temperature related force increase: $\pm 0.3\%/^{\circ}C$
 Max. recommended extensions per minute: approx. 80 to 100 (at 20°C)
 Max. piston speed: 1.6 m/s



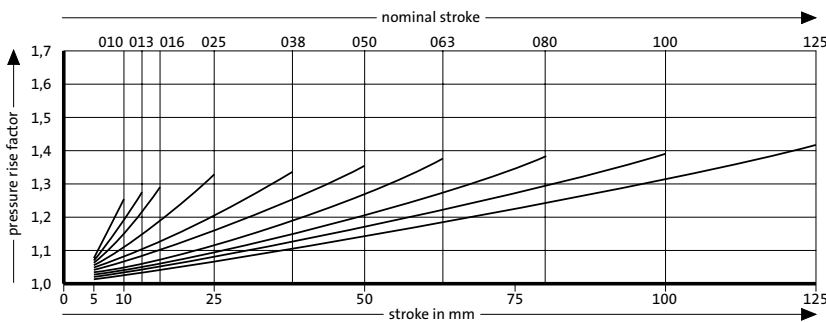
2480.33. Gas spring with hexagonal flange

Order No	Stroke _{max.}	$l_{min.}$	l	Spring force [daN] initial	Colour
2480.33.00015.125	125	167	292	15	schwarz
2480.33.00050.125	125	167	292	50	grün
2480.33.00100.125	125	167	292	100	blau
2480.33.00150.125	125	167	292	150	rot
2480.33.00200.125	125	167	292	200	gelb

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

see chapter L:
Gas springs Mould Line





**LCF gas springs,
damped**



LCF gas springs, 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 ist ein Warenzeichen der Associated Spring

LCF gas springs, damped

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- ▶ filling with gas and purging
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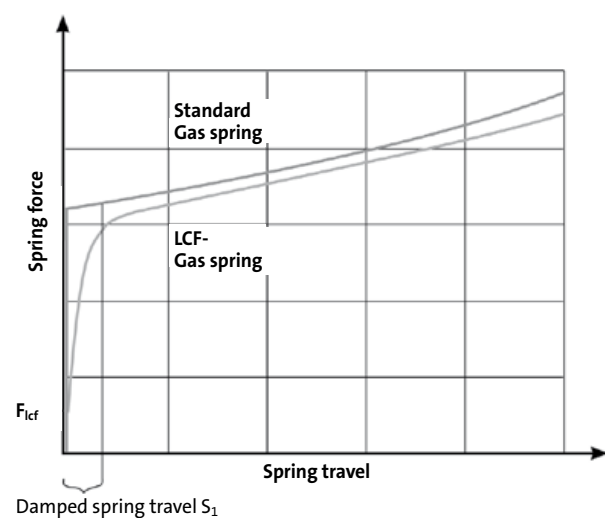
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* LCF Force Manager ist ein Warenzeichen der Associated Spring

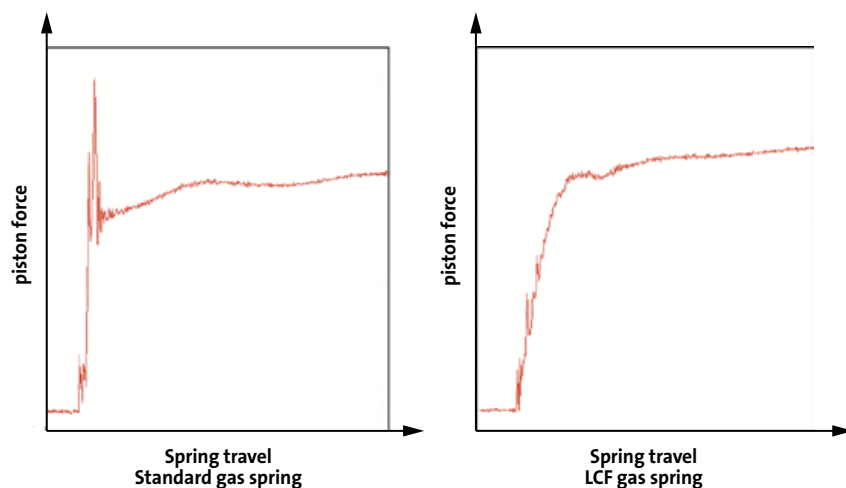
LCF gas springs, damped

2484.13. Force diagram for gas springs



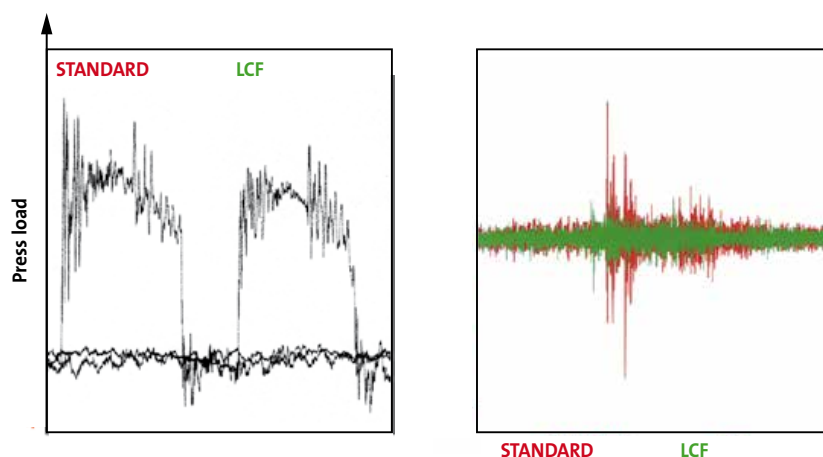
With the springs from the LCF series, the force builds up gradually and acceleration is uniform.

Measured dynamic piston force, Measured values for the 5000th series



Comparative press load diagram

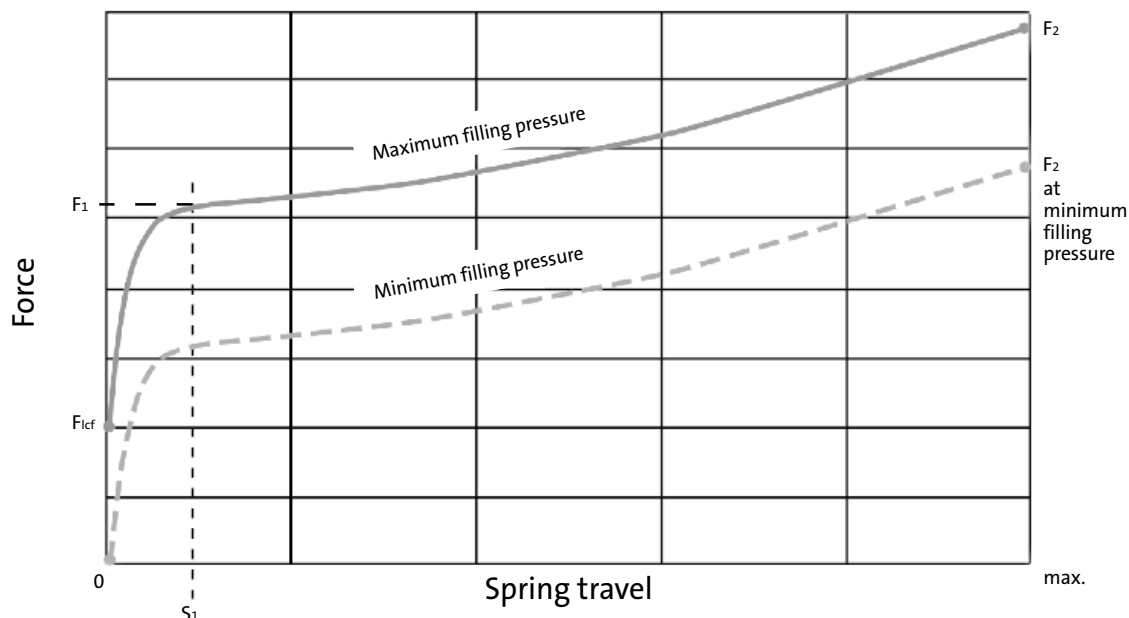
Noise reduction



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

LCF gas springs, damped

2484.13. Force diagram for gas springs



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

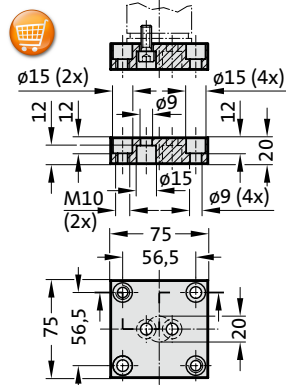
Guidelines for the use of LCF gas springs

1. After the damped spring travel (S₁) the LCF gas spring achieves the same initial spring force (F₁) and pressure build up as the standard gas spring (to ISO).
2. The spring force (F_{lcf}) 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).

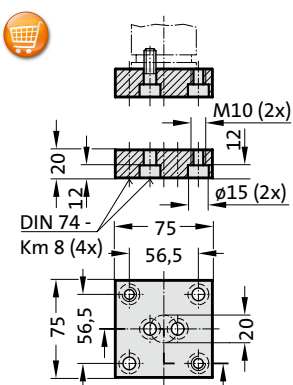
Spring Size	F _{lcf} bei 150 bar in daN	Damped spring travel S ₁	Minimum filling pressure in bar
2484.13.00750.	470	3,1	70
2484.12.01500.	700	4,6	105
2484.13.03000.	1600	3,8	69
2484.13.05000.	2500	7,7	76
2484.13.07500.	3000	10,4	90

LCF gas spring, damped Mounting variations

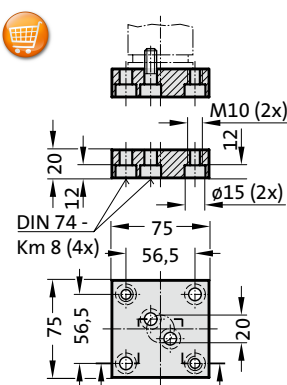
2480.011.00750.3



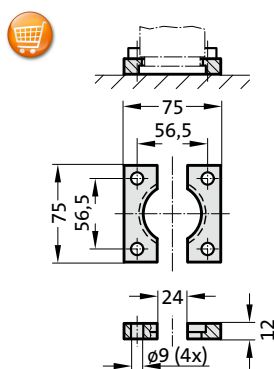
2480.011.00750



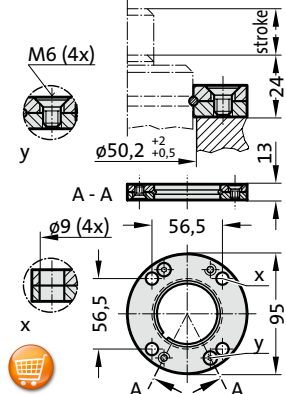
2480.011.00750.1



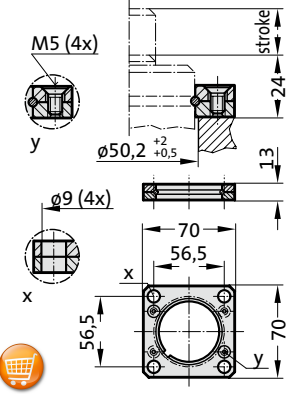
2480.022.00750



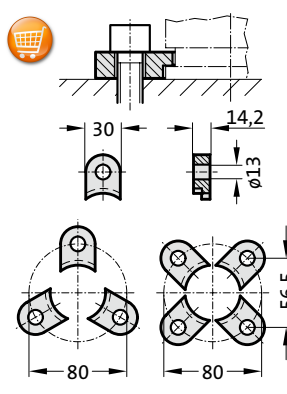
2480.055.00750



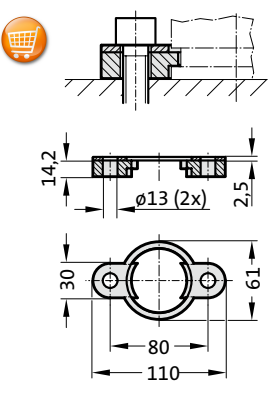
2480.057.00750



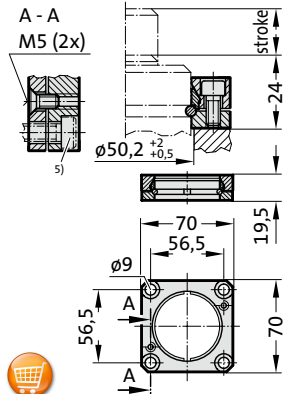
2480.007.00750



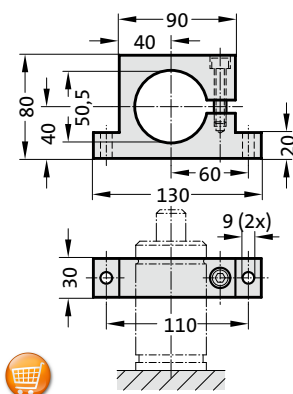
2480.008.00750³⁾



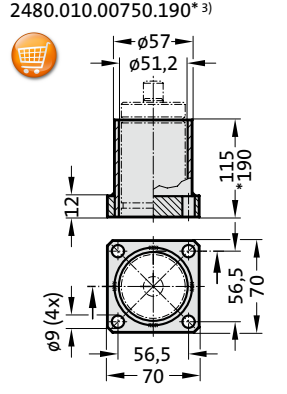
2480.064.00750⁴⁾



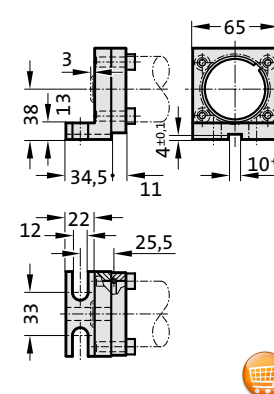
2480.044.00750²⁾



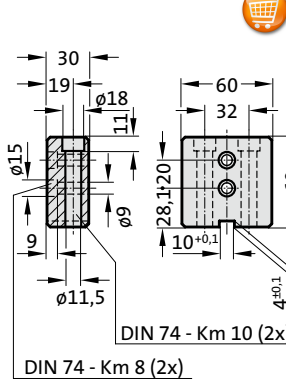
2480.010.00750.115³⁾
2480.010.00750.190³⁾



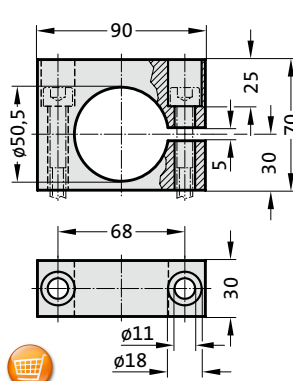
2480.045.00750²⁾



2480.047.00750²⁾



2480.044.03.00750²⁾



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 LCF, damped

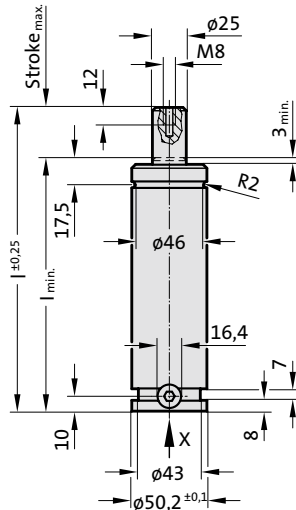
Note:

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

Order No for spare parts kit: 2484.13.00750

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 70 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

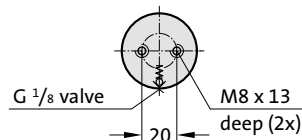
2484.13.00750.



2484.13.00750.

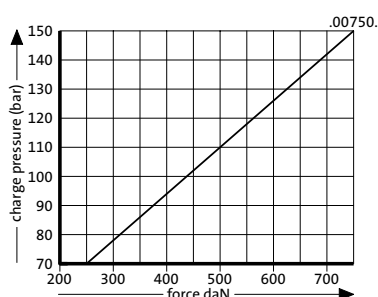
Gas spring LCF, damped

View X - Gas spring

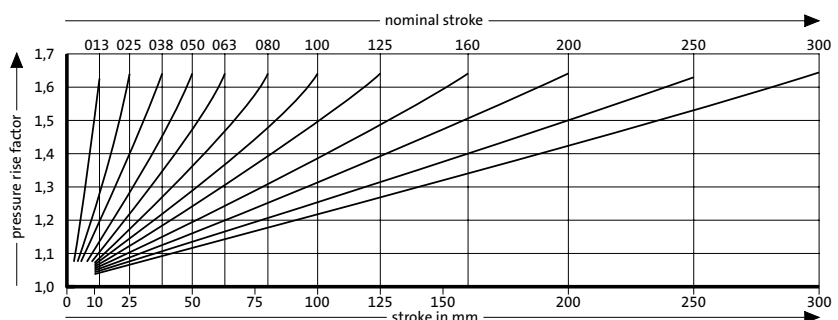


Order No	Stroke _{max}	l _{min}	l
2484.13.00750.013	12.7	107.7	120.4
2484.13.00750.025	25	120	145
2484.13.00750.038	38.1	133.1	171.2
2484.13.00750.050	50	145	195
2484.13.00750.063	63.5	158.5	222
2484.13.00750.080	80	175	255
2484.13.00750.100	100	195	295
2484.13.00750.125	125	220	345
2484.13.00750.160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

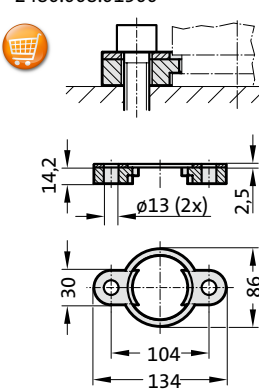
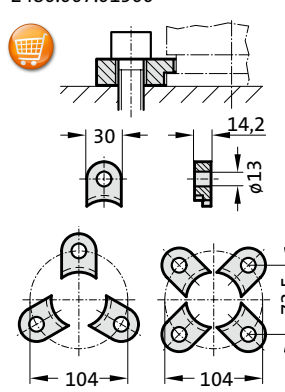
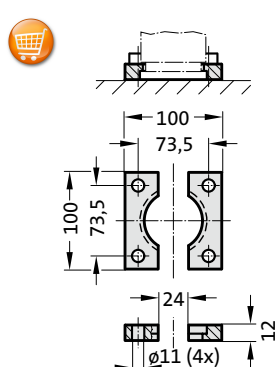
Initial spring force versus charge pressure



Spring force Diagram displacement versus stroke rise



Pressure rise factor accounts for displacement but not external influences!



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 LCF, damped

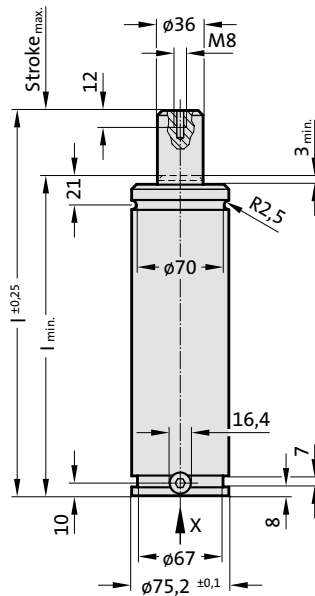
Note:

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

Order No for spare parts kit: 2484.12.01500

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 105 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

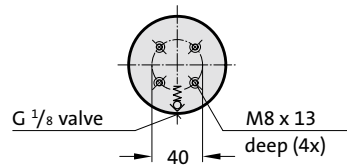
2484.12.01500.



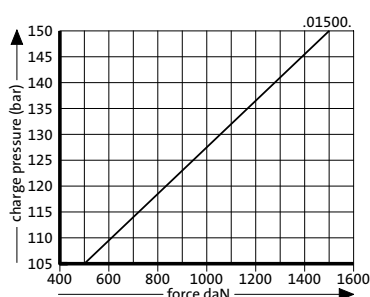
2484.12.01500.

Gas spring LCF, damped

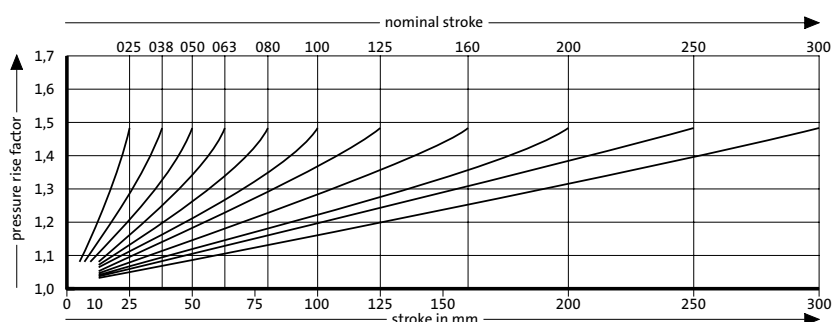
View X - Gas spring



Initial spring force versus charge pressure



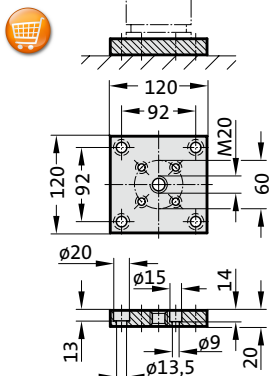
Spring force Diagram displacement versus stroke rise



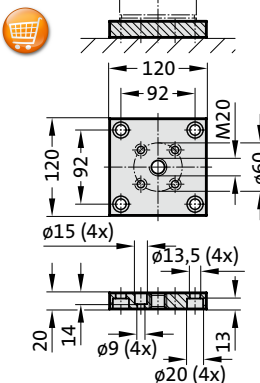
Pressure rise factor accounts for displacement but not external influences!

LCF gas spring, damped Mounting variations

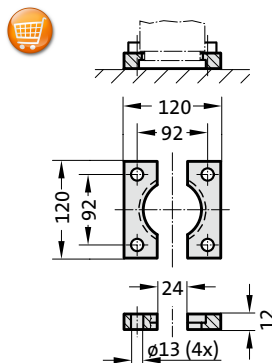
2480.011.03000



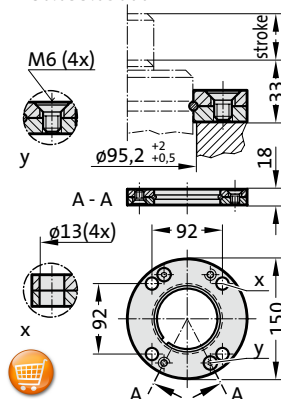
2480.011.03000.2



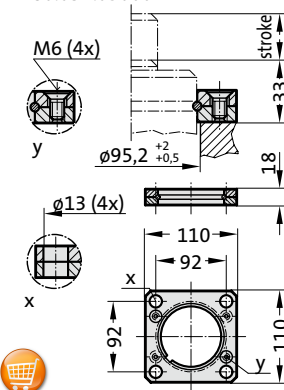
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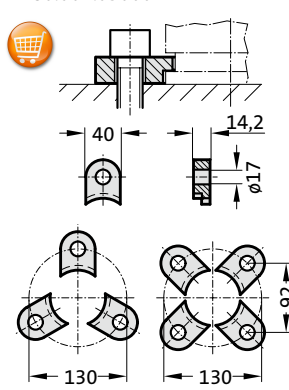
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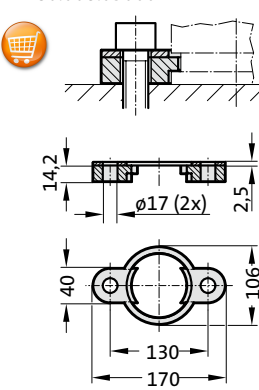
2480.057.03000



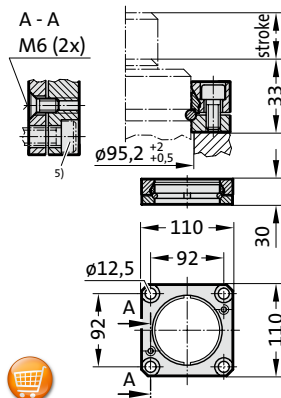
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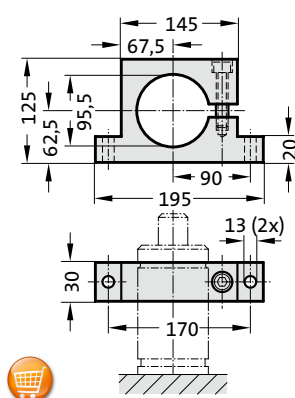
2480.008.03000³⁾



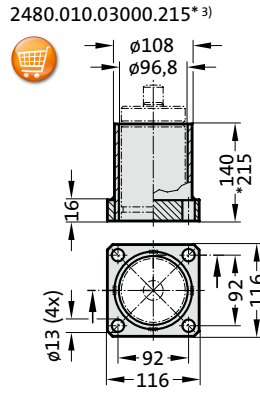
2480.064.03000⁴⁾



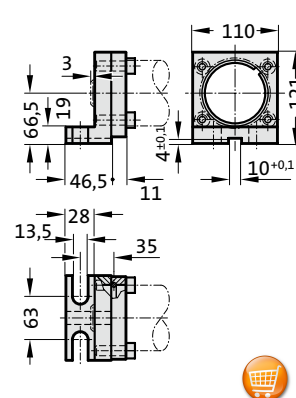
2480.044.03000²⁾



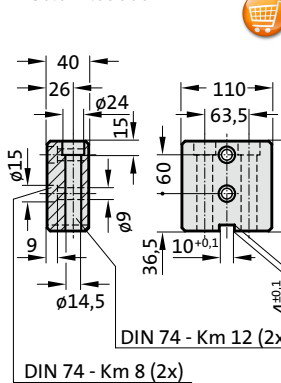
2480.010.03000.140³⁾
2480.010.03000.215³⁾



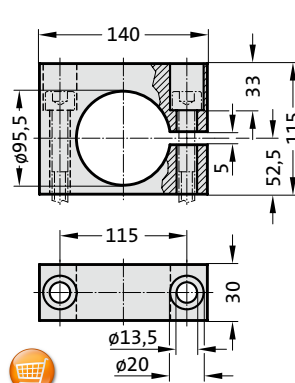
2480.045.03000²⁾



2480.047.03000²⁾



2480.044.03.03000²⁾



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 LCF, damped

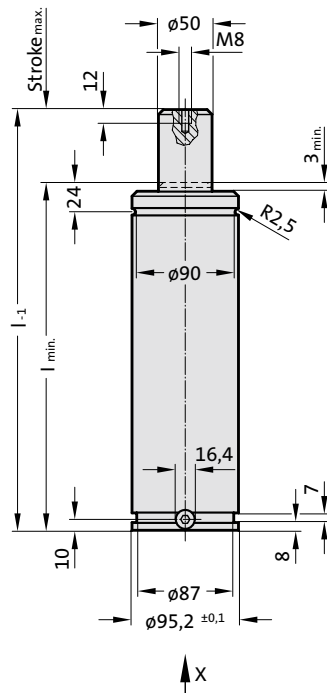
Note:

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

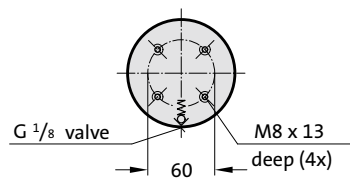
Order No for spare parts kit: 2484.13.03000

Pressure medium: Nitrogen N₂
 Max. filling pressure: 150 bar
 Min. filling pressure: 68 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

2484.13.03000.



View X - Gas spring

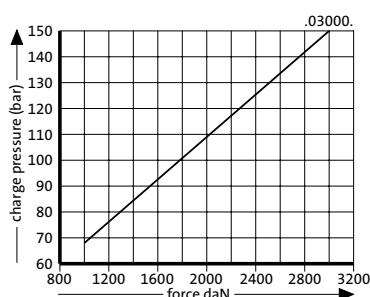


2484.13.03000.

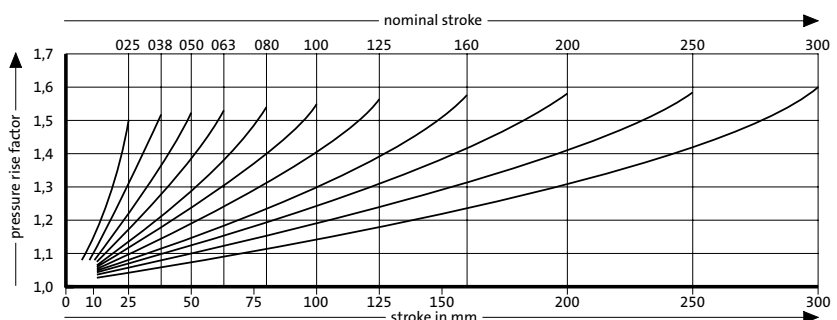
Gas spring LCF, damped

Order No	Stroke _{max}	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



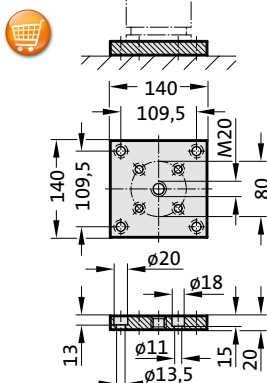
Spring force Diagram displacement versus stroke rise



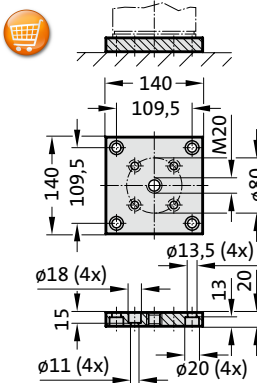
Pressure rise factor accounts for displacement but not external influences!

LCF gas spring, damped Mounting variations

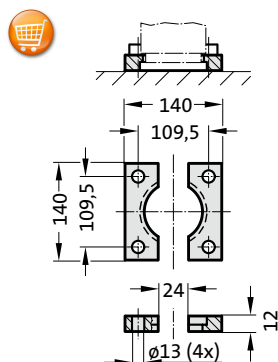
2480.011.05000



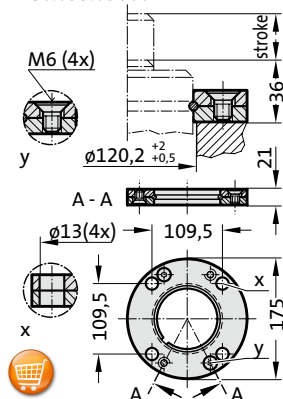
2480.011.05000.2



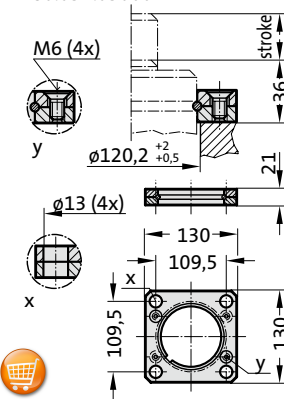
2480.022.05000



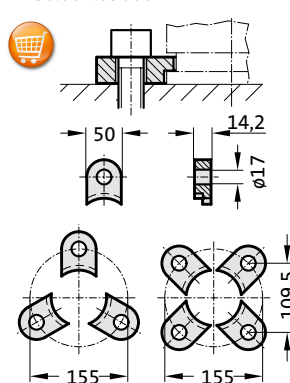
2480.055.05000



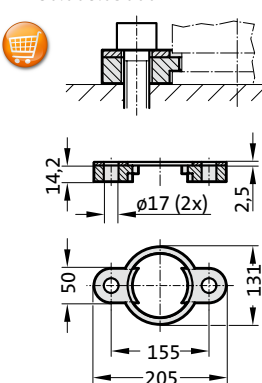
2480.057.05000



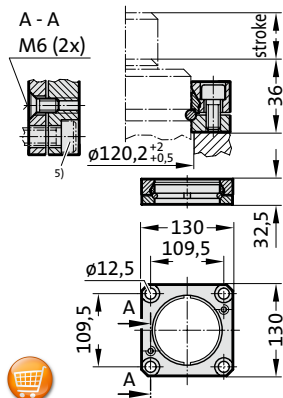
2480.007.05000



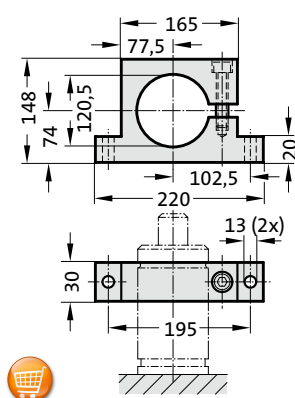
2480.008.05000³⁾



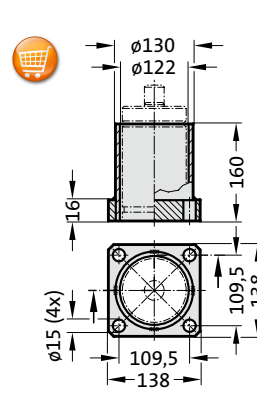
2480.064.05000⁴⁾



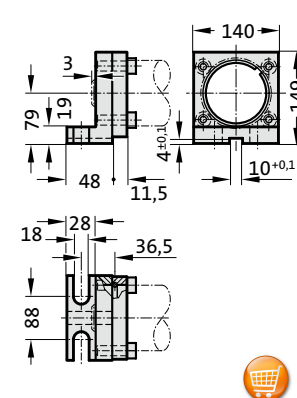
2480.044.05000²⁾



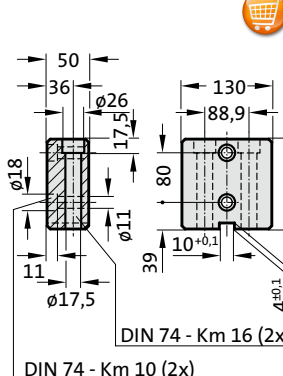
2480.010.05000.160³⁾



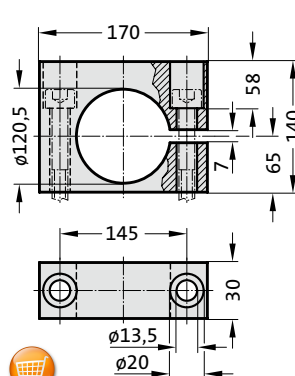
2480.045.05000²⁾



2480.047.05000²⁾



2480.044.03.05000²⁾



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 LCF, damped

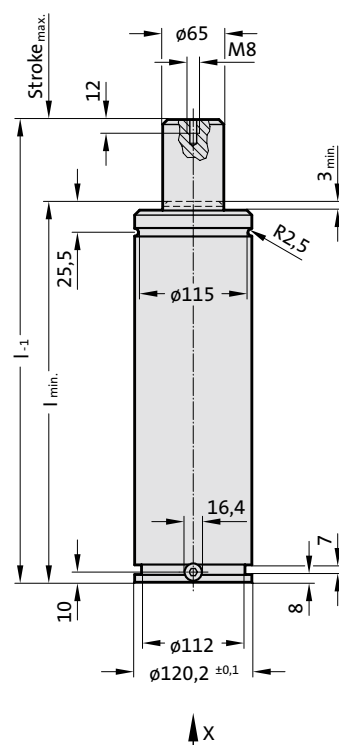
Note:

Initial spring force F_{lcf} at 150 bar = 2500 daN
Full spring force after 7.7 mm damped spring travel

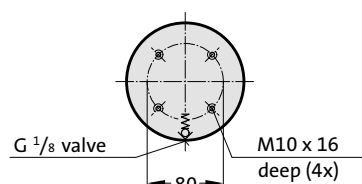
Order No for spare parts kit: 2484.13.05000

Pressure medium: Nitrogen N_2
Max. filling pressure: 150 bar
Min. filling pressure: 75 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

2484.13.05000.



View X - Gas spring

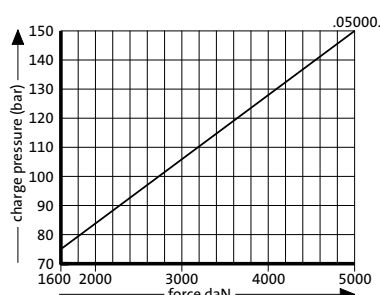


2484.13.05000.

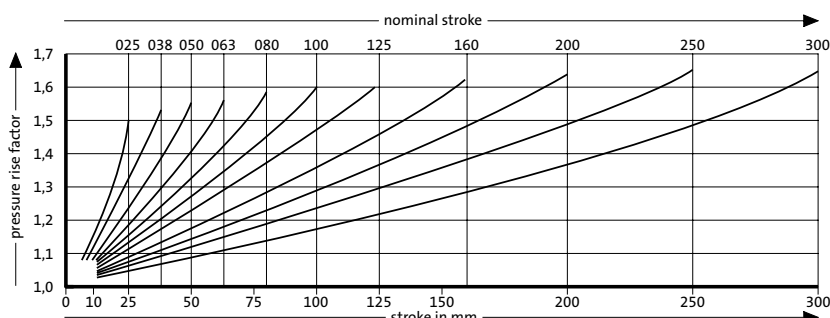
Gas spring LCF, damped

Order No	Stroke _{max.}	<i>l</i> _{min.}	<i>l</i>
2484.13.05000.025	25	165	190
2484.13.05000.038	38.1	178.1	216.2
2484.13.05000.050	50	190	240
2484.13.05000.063	63.5	203.5	267
2484.13.05000.080	80	220	300
2484.13.05000.100	100	240	340
2484.13.05000.125	125	265	390
2484.13.05000.160	160	300	460
2484.13.05000.200	200	340	540
2484.13.05000.250	250	390	640
2484.13.05000.300	300	440	740

Initial spring force
versus charge pressure



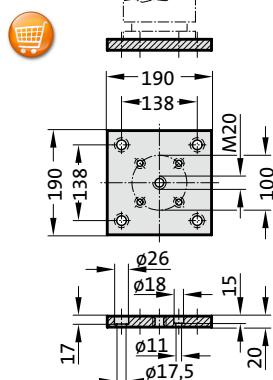
Spring force Diagram displacement versus stroke rise



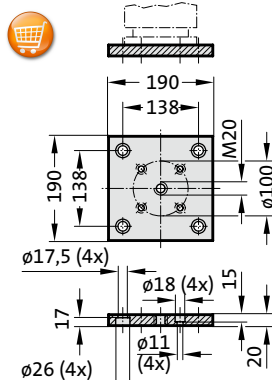
Pressure rise factor accounts for displacement but not external influences!

LCF gas spring, damped Mounting variations

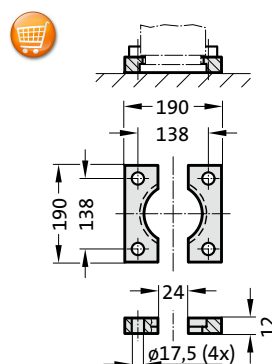
2480.011.07500



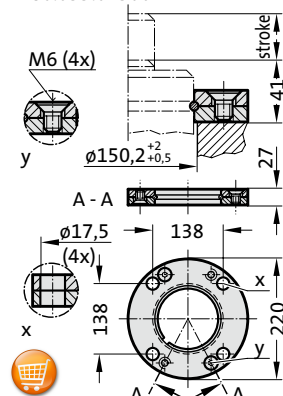
2480.011.07500.2



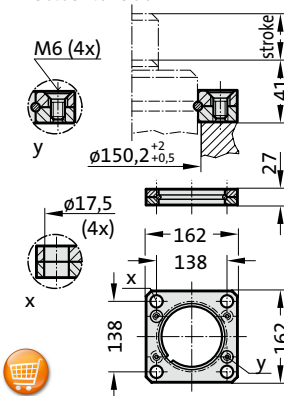
2480.022.07500



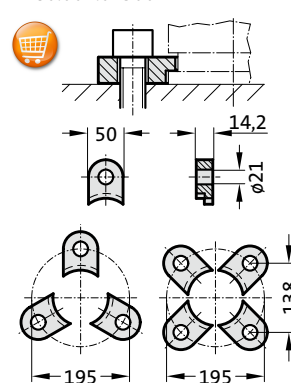
2480.055.07500



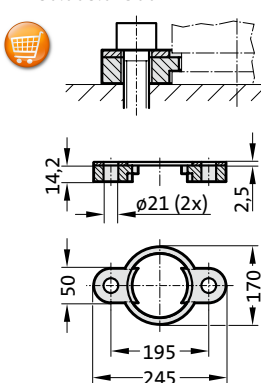
2480.057.07500



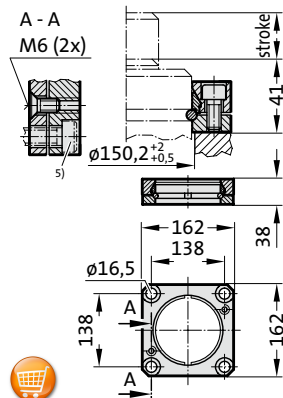
2480.007.07500



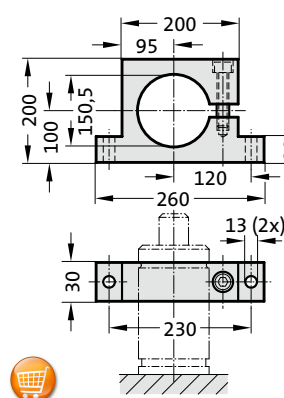
2480.008.07500³⁾



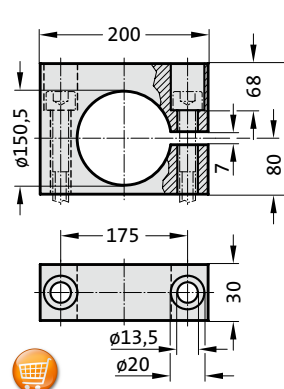
2480.064.07500⁴⁾



2480.044.07500²⁾



2480.044.03.07500²⁾



Note:

- ²⁾ Attention:
The spring force must be absorbed by the stop surface.
- ³⁾ Note:
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 LCF, damped

Note:

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

Order No for spare parts kit: 2484.13.07500

Pressure medium: Nitrogen N_2

Max. filling pressure: 150 bar

Min. filling pressure: 89 bar

Working temperature: 0°C to +80°C

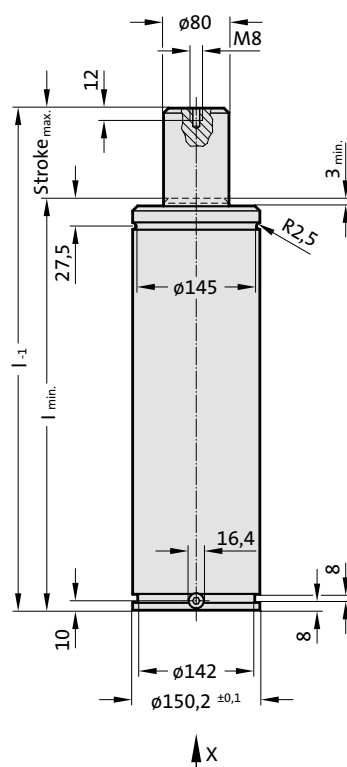
Temperature related force increase: $\pm 0.3\%/^{\circ}C$

Max. recommended extensions per minute:

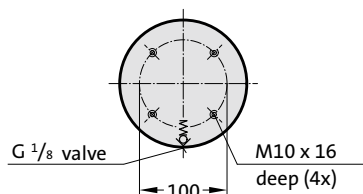
approx. 15 to 40 (at 20°C)

Max. piston speed: 1.6 m/s

2484.13.07500.



View X - Gas spring

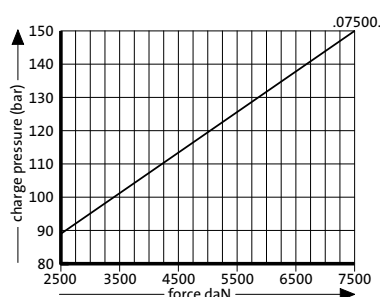


2484.13.07500.

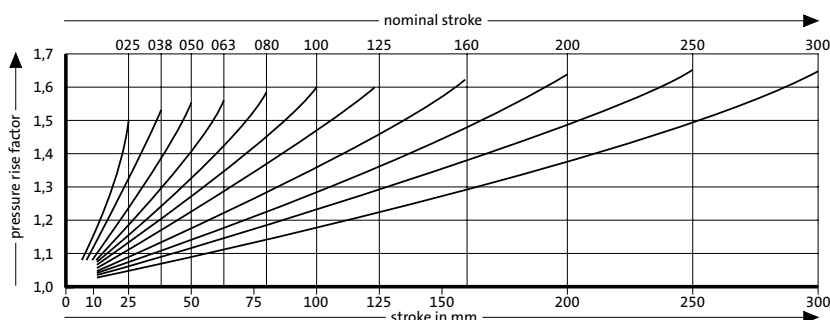
Gas spring LCF, damped

Order No	Stroke _{max.}	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





Manifold- systems

Please request your catalogue





Composite plates

Please request your catalogue





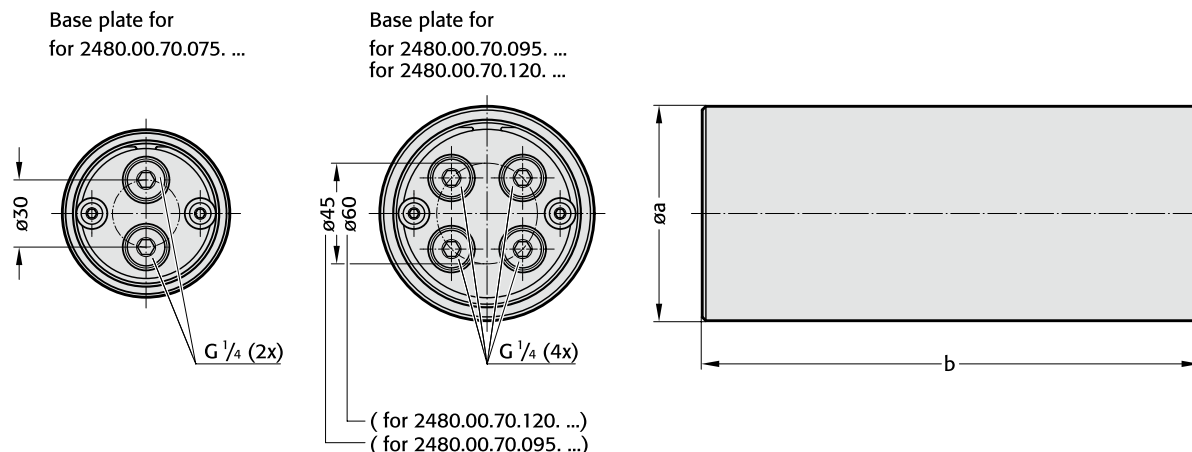
Gas spring Accessories



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 als 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 G $\frac{1}{4}$ " 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 reservoir

Order No.	Volume in l [litres]	Øa	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 reservoir	=	2480.00.70.
Øa = 75 mm	=	075.
b = 170 mm	=	0170
Order No.	=	2480.00.70.075.0170

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

Calculating the isothermic increase in pressure*

(*by approximation)

$$\text{Pressure increase} = \frac{V_a + (n \times V_g^{1})}{V_a + (n \times (V_g^{1}) - \text{Stroke} \times A)}$$

V_a	[l]	Volume of pressure reservoir, see table
$V_g^{1)}$	[l]	Gas volume of gas springs, appropriate spring types
¹⁾ Note: When designing gas volume of spring types, please contact us at FIBRO.		
Stroke	[dm]	Travel of gas springs, appropriate spring types
A	[dm ²]	For area of piston rods of the gas spring, see table
n		Number of gas springs

Calculation example:

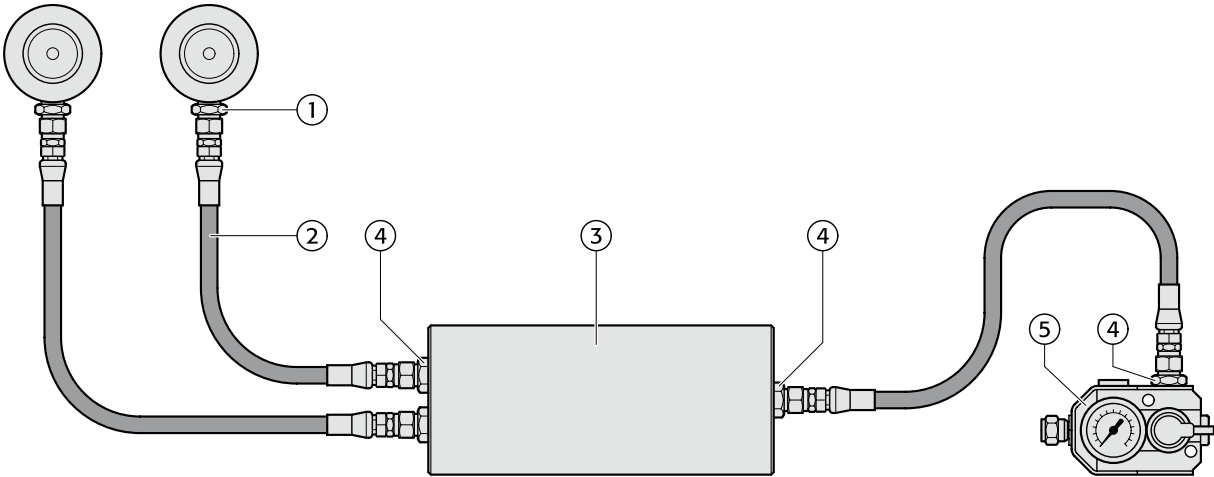
10 gas springs, type 248.13.05000.050 with a travel of 50 mm (0,5 dm) are connected to a system with an 8 litres pressure reservoir.

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

Pressure reservoir for reduced pressure rise



2480.00.70. Installation example: 24°-cone-system

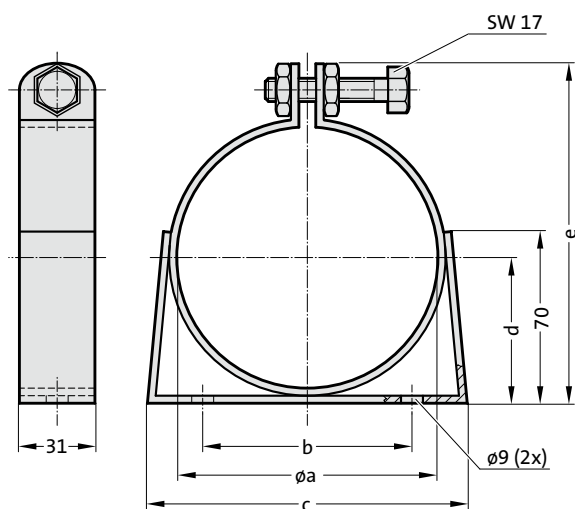


Item	Quantity	Description	Order No.
1	2	Connection thread G ¹ / ₈	2480.00.26.03
2	3	24°-cone-hose	2480.00.25.01.□ □ □ □
3	1	Pressure reservoir	2480.00.70. □ □ □ □ □ □ □ □
4	4	Connection thread G ¹ / ₄	2480.00.26.04
5	1	Monitoring unit	2480.00.31.01

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.

Important:

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.

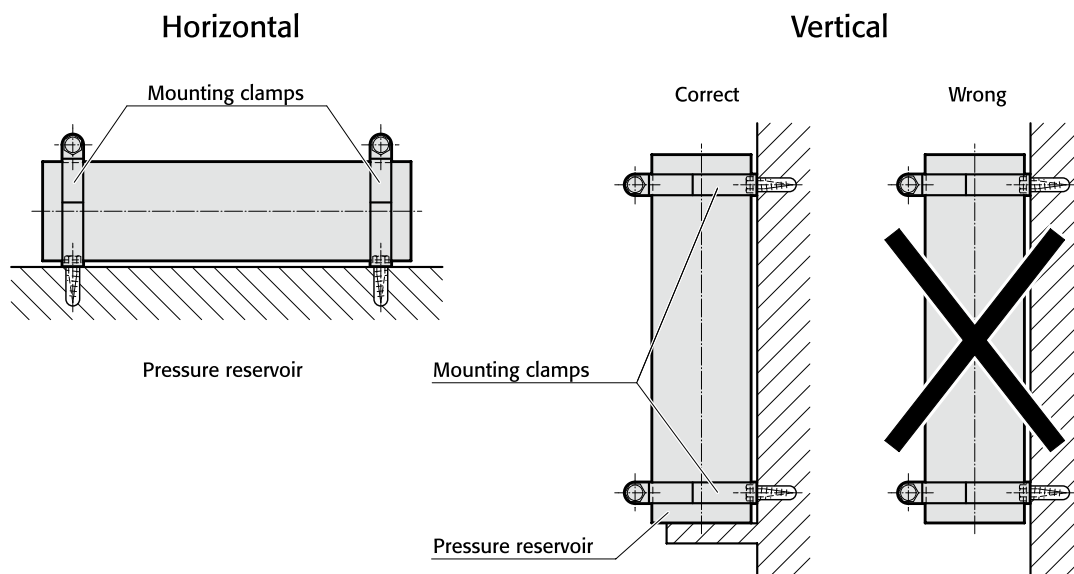
Ordering Code (example):

Mounting clamp (1)	= 2480.00.70.
for pressure reservoir	= 075
Order No.	= 2480.00.70.075

2480.00.70. Mounting clamp

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

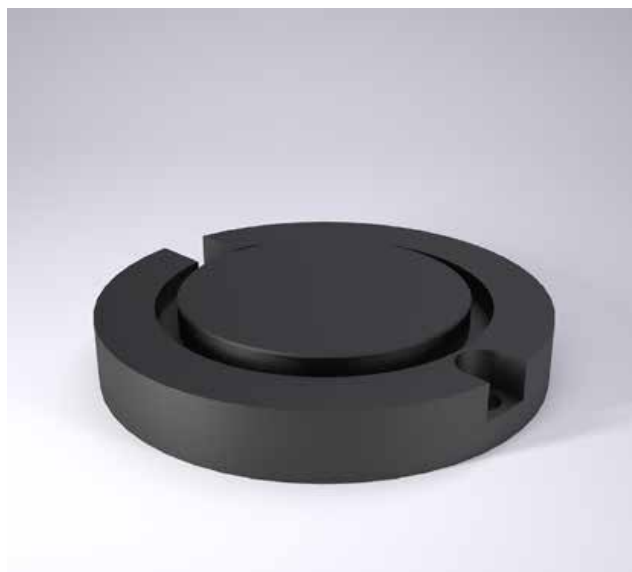
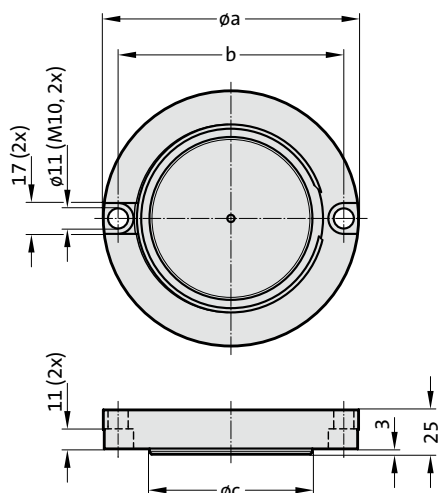
Installation Example:





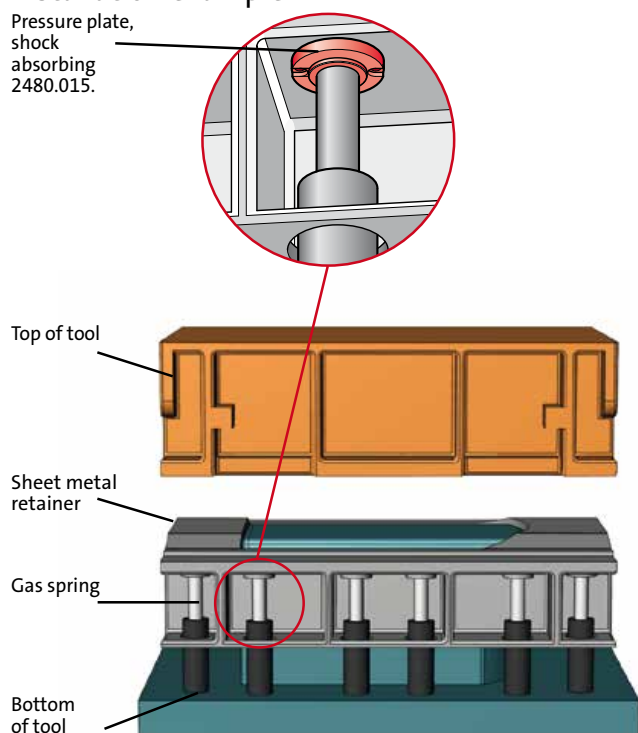
Pressure plate, shock absorbing

2480.015.



Installation example

Pressure plate, shock absorbing 2480.015.



2480.015. Pressure plate

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.

A specially designed shock absorbing unit is designed to reduce:

- extreme impact loads
- consequent high costs for press maintenance
- high noise levels
- risk of production of lower quality parts.

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.

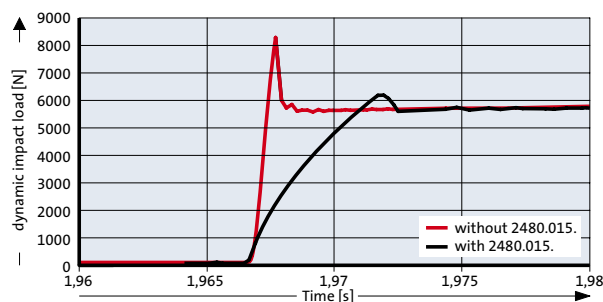
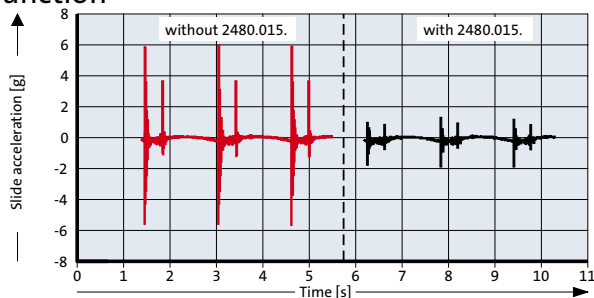
Material:

Steel, nitride
Polyurethane

Note:

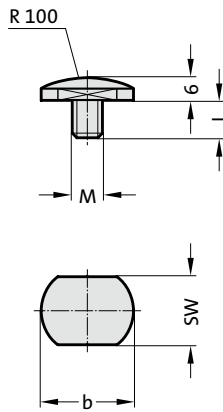
Working temperature: 0 °C to 80 °C
Recommended max. strokes/min: 20
Max. press speed: 1.6 m/s
Max. shock absorbing travel: 3 mm

Function



Thrust Pad Thrust plate

2480.004.



2480.004. Thrust Pad

Socket
cap screw
DIN EN

Order No	ISO 4762	A/F	b	l
2480.004.06	M6	17	20	6
2480.004.08	M8	19	22.5	11

Description:

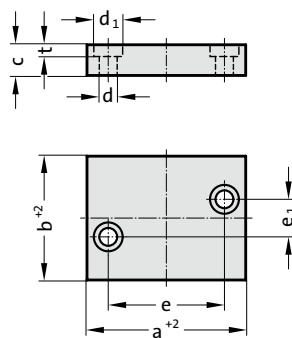
Thrust pad for gas springs with M6 and M8 thread in the piston rod, not for 2480.13.00500.□□□

Material:

No 1.7131, case-hardened



2480.009.



2480.009. Thrust 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	-	10
2480.009.00750	25	70	35	15	9	15	48	14	9
2480.009.00750.1	36	65	50	16	9	15	47	-	10
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	-	10
2480.009.05000	65	100	80	20	11	18	72	56	11
2480.009.05000.1	65	80	80	16	9	15	62	-	10
2480.009.07500	80	110	100	20	11	18	85	75	11
2480.009.07500.1	80	100	100	16	9	15	82	-	10

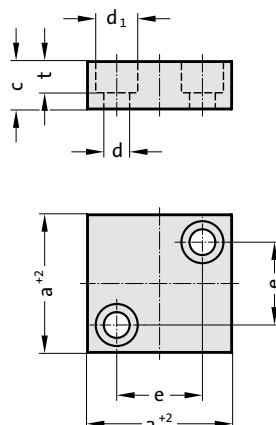
*Execution .1 to Volvo standard

Material:

No 1.2842, hardened



2480.018.



2480.018. Thrust 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



Thrust plate

Thrust plate to Renault standard

2480.019. Thrust plate

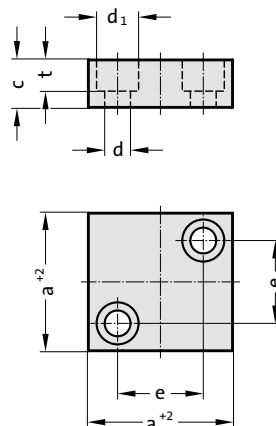
2480.019.

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	15	40	15	7	11	24	7
2480.019.00750	25	56	20	11	18	32	13
2480.019.03000	50	71	20	11	18	48	13
2480.019.03000.2	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
2480.019.07500	95	140	20	11	18	110	13

*Execution .2 to VDI 3003

Material:

No 1.2842, hardened



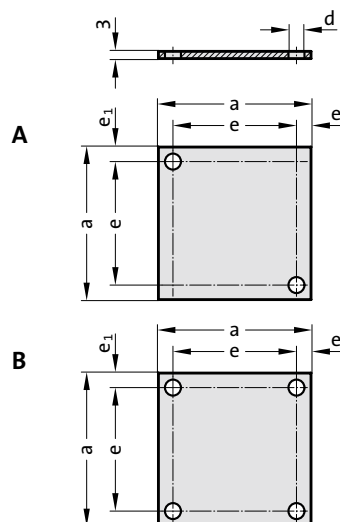
2480.019.45. Thrust plate to Renault standard

2480.019.45.

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



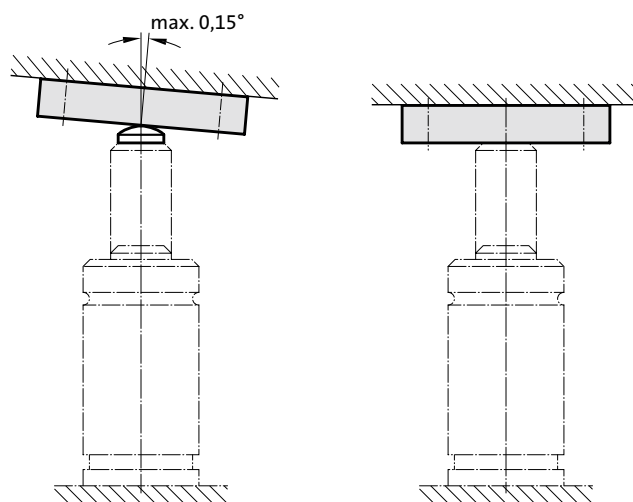
Description:

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!



Concertina shrouds

Description:

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

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

The concertina shroud is internally (cylinder tube side) fastened and is free of any obstructing contours, such as externally mounted tube clamps. This enables fastening and installation of the gas spring inside the tool without any restrictions.

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



Technical data

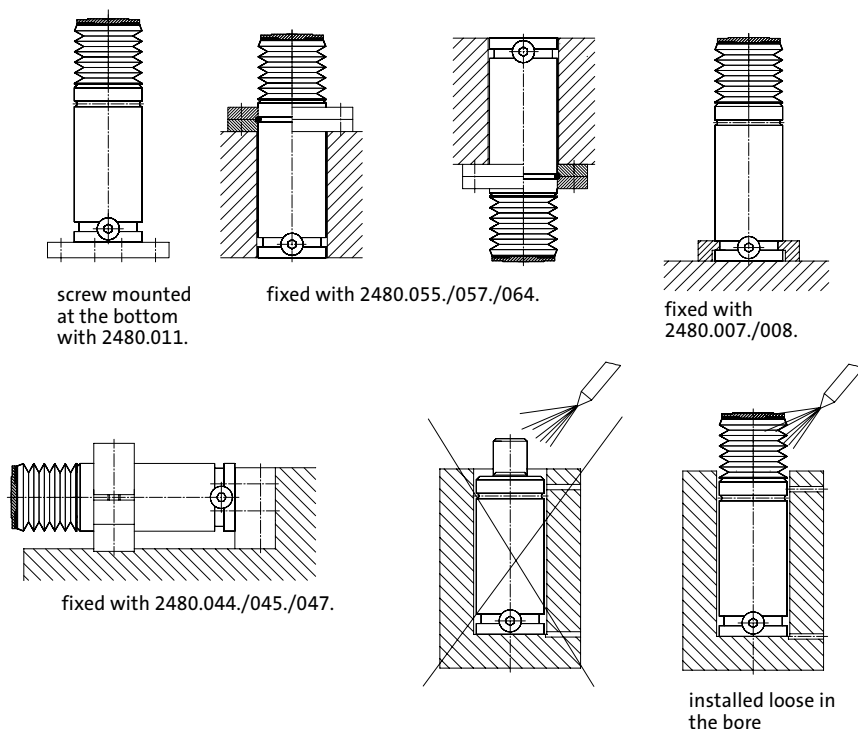
Material	Concertina shroud:	CSM-Rubber 65 ±3 Shore A
	Disc:	Steel burnished
	Ring:	stainless Steel
Temperature range:		0-90 °C
Chemical resistance	Acids:	very good
	Alkaline solutions:	very good
	Solvents:	sufficient
Weather resistance	Sun light (UV):	good
	Ozone:	very good
	Water:	sufficient
Oil resistance	Mineral:	good
	Synthetic:	sufficient

Delivery:

Concertina shroud incl. rotatable disk and countersunk screw.

Custom dimensions/materials available on request.

Mounting examples: Concertina shroud

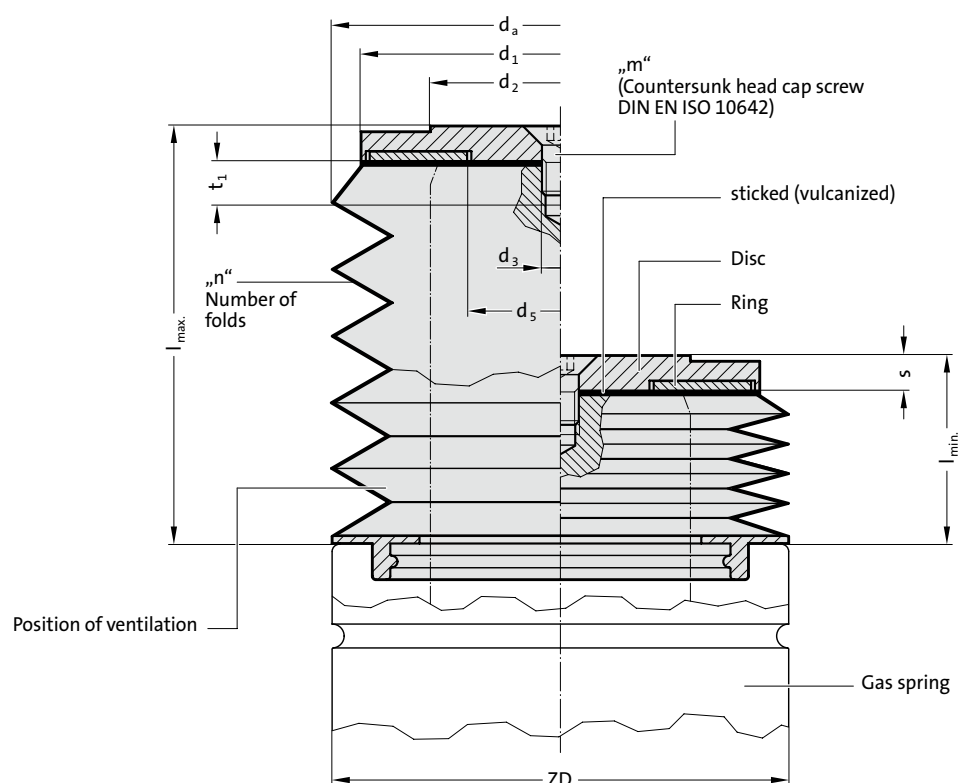


More mounting examples for gas springs see page „Mounting directions for gas springs“



Concertina shroud

2480.080.



2480.080. Concertina shroud

Type of Gas spring	2487.12.00350.	2487.12.00500.	2480.12.00500.	2487.12.00750.1	2480.13.00750.	2487.12.01000.1	2488.12.01000.	2487.12.01500.	2488.13.01500.	2480.12.01500.	2487.12.02400.	2488.13.02400.	2480.13.03000.	2487.12.04200.	2488.13.04200.	2480.13.05000.	2487.12.06600.	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	120	150	150	150	150	150	150	
d _a	45	50	50	55	55	65	65	75	75	95	95	120	120	120	150	150	150	150	150	150	
d ₁	32	38	45	45	50	50	63	75	75	95	95	120	120	120	150	150	150	150	150	150	
d ₂ / KD	16	20	20	25	25	28	36	36	45	50	60	65	75	80	90	90	90	90	90	90	
s	6	6	6	6	6	6	6	6	6	6	6	6	6	9	9	9	9	9	9	9	
d ₃	6.6	6.6	6.6	6.6	9	6.6	6.6	9	6.6	9	9	9	9	9	17	17	17	17	17	17	
d ₅	10	14	14	17	17	20	28	28	37	42	51	57	66	71	81	81	81	81	81	81	
t ₁	5	5	10	5	10	5	5	10	5	10	5.5	10	5.5	10	5.5	20	20	20	20	20	
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	M8×12	M8×12	M16×25	M8×12	M8×12	M8×12	M8×12	
Stroke	125 (Stroke ≤ 125)																				
l _{min.}	28	28	28	28	28	28	28	28	28	28	28	28	28	23	23	24	24	24	24	21	
l _{max.}	133	133	133	133	134	134	134	134	134	134	134	134	134	134	134	137	137	137	137	134	
n	10	10	10	10	10	10	10	10	10	10	8	8	6	6	6	5	5	5	5	5	
Stroke	300 (Stroke > 125), not for 2487.12.*																				
l _{min.}	-	-	-	-	52	--*/52	--*/52	52	--*/52	54	--*/54	41	--*/41	37	--*/34	37	--*/34	37	--*/34	37	
l _{max.}	-	-	-	-	309	309	309	309	309	309	309	309	309	309	309	402	402	402	402	309	
n	-	-	-	-	22	--*/22	--*/22	22	--*/22	19	--*/19	14	--*/14	11	--*/11	11	--*/11	11	--*/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

Gas spring connection systems

Introduction

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 seal and robustness after repeated assembly and disassembly.

Minimes system 2480.00.23./24.

- + Small external hose diameter \varnothing 5 mm
- + Small bending radius $R_{\min} = 20$
- + 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 11, black, dimpled
Hose fitting:	free cutting steel, galvanised
Measurement couplings:	free cutting steel, galvanised
Adapter:	steel, gunmetal finish
Max. pressure:	630 bar
Temperature range:	0–100 °C

Recommended application:

Most used system for all gas springs with $G^{1/8}$ gas connection.
Not suitable for use with a pressure reservoir because of the small internal diameter which reduces the flow.

Compression fitting 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 $R_{\min} = 40$
- 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 fitting:	steel, galvanised
Adapter:	steel, galvanised
Max. pressure:	380 bar
Temperature range:	0–100 °C

Recommended application:

For all gas springs with $G^{1/8}$ 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 $R_{\min} = 40$
- Not suitable for gas springs with M6 connection thread

Technical data:

Hose:	polyurethane/polyamide, black, dimpled
Hose fitting:	steel, galvanised
Adapter:	steel, galvanised
Max. pressure:	315 bar
Temperature range:	0–100 °C

Recommended application:

For all gas springs with $G^{1/8}$ gas connection.
Mainly used for connection to pressure reservoir.

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

- + small external hose diameter \varnothing 5 mm
- + hose: small bending radius $R_{\min} = 20$ mm
- + pipe: Min. bending radius = 12 mm (3x da)
- + high pressure resistance
- + small connection adapter
- + vibration-safe due to O-ring seal
- + tightly pressed, non-detachable hose fitting
- not suitable for use with a pressure reservoir
- limited suitability for gas springs with thread connection $G^{1/8}$

Technical data:

Hose:	Polyamide 11, black, dimpled
Hose adapter:	free cutting steel, galvanised
Adapter:	steel, galvanised
Max. perm. pressure:	475 bar
Temperature range:	0 to +80 °C
Pipe:	steel
Pipe external diameter (da):	\varnothing 4 mm
Pipe internal diameter (di):	\varnothing 2 mm
max. dynamic pressure:	430 bar
Temperature range:	0 to +100 °C

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

Recommended application:

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

Instruction for hose assembly

Mounting arrangement

for gas springs in the Minimes system

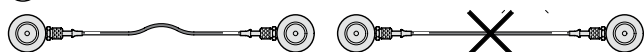
Never exceed the maximum pressures and temperatures for the hoses.

Ensure that all hoses and adaptors are perfectly clean prior to assembly.

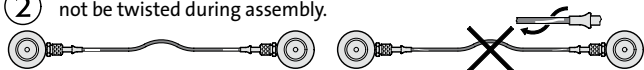
To be suitable for use with compressed gas the hose sheath must be perforated. We recommend the use of the 24°-cone-hose system for pressure reservoir to ensure an unrestricted gas flow.

Follow the instructions below to ensure functionality and maximum service life for the hose connection:

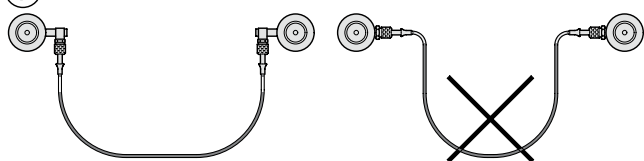
- ① Select a hose length to provide a certain amount of play.



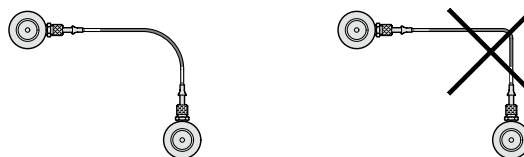
- ② The longitudinal marking on the hose must not be twisted during assembly.



- ③ Use only hose fittings which prevent kinks forming in the hose.



- ④ Any bends in the hose must always have the recommended minimum radius, as detailed in the catalogue.



- ⑤ The hose must be connected correctly to avoid mechanical damage.



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

Warning:

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. Example 1:

Direct connection for group

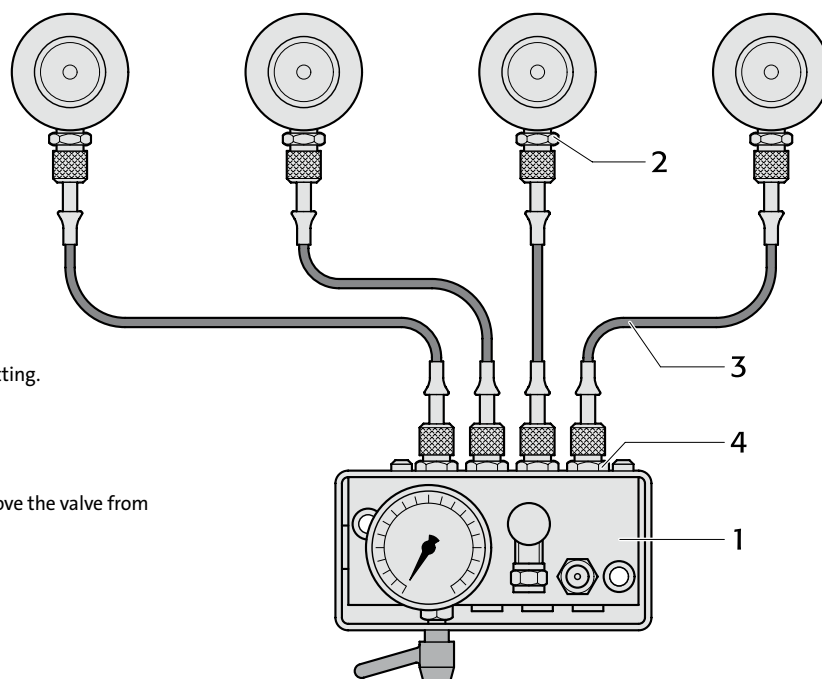
Function:

Each spring has a direct connection with the control fitting. They are not interconnected and form a pressure zone

See control fitting 2480.00.30

Note:

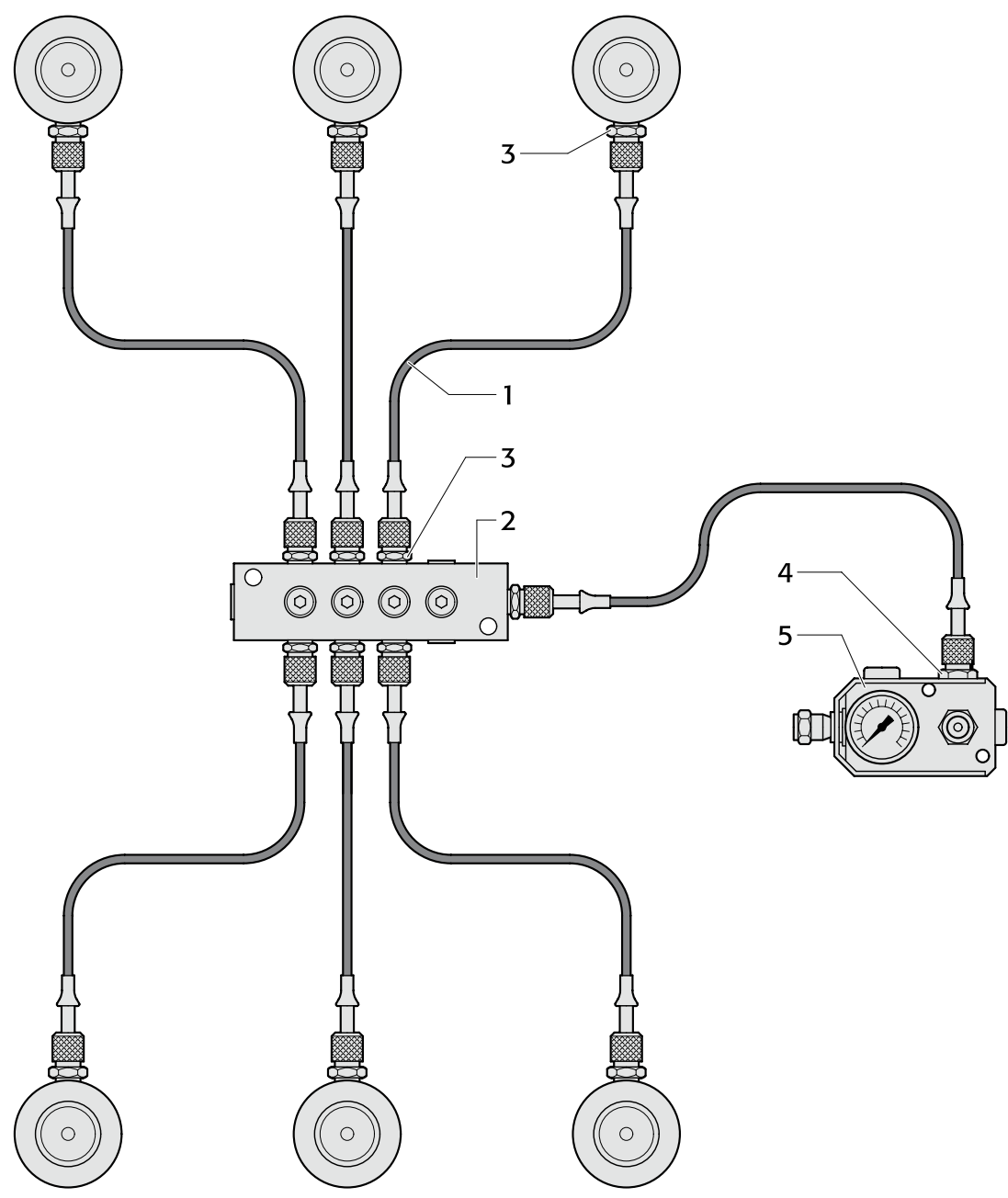
When installing gas springs in the system always remove the valve from the gas spring.



Item	Designation	Number	Order No.	Comment
1	Control fitting	1	2480.00.30.01	Optionally with diaphragm pressure switch 2480.00.30.02
2	Gauging coupling	4	2480.00.24.01	
3	Measuring 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 Minimes system

2480. Example 2:
Group series connection



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

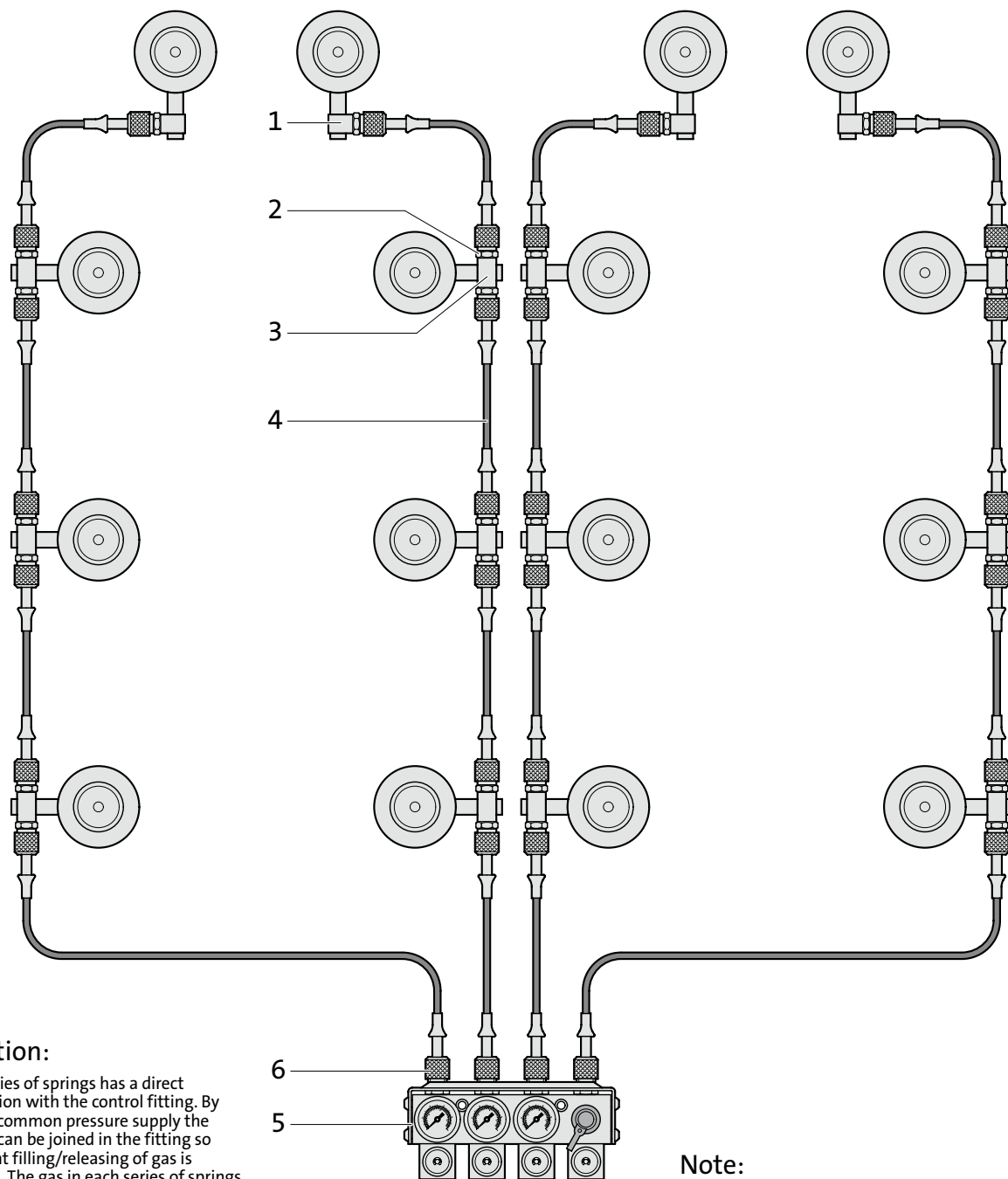
Note:
When installing gas springs in the system always remove the valve from the gas spring.

Position	Designation	Number	Order No.	Comment
1	Measuring 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	

Mounting arrangement for gas springs in the Minimes system

2480. Example 3:

Multiple connections with independent functioning



Function:

Each series of springs has a direct connection with the 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 control fitting
2480.00.39.05.04

Note:

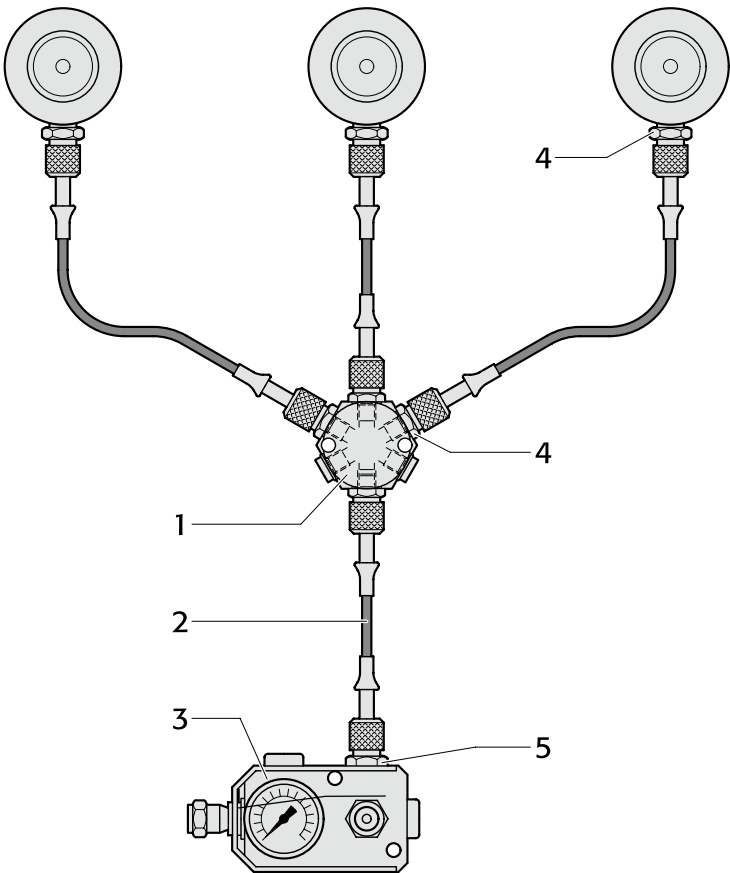
When installing gas springs always remove the valve from the gas spring.

Item	Designation	Number	Order No.	Comment
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	Multi adapter	12	2480.00.24.11	Choice of "long" or "very long" depending on the specific mounting arrangements.
4	Measuring hose	16	2480.00.23.□□.□□□□	Type of connection and length as required
5	Multi control fitting	1	2480.00.39.05.04	
6	Gauging coupling	4	2480.00.24.01	

Mounting arrangement for gas springs in the Minimess system

2480. Example 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	Designation	Number	Order No.	Comment
1	Coupling	1	2480.00.24.31	
2	Measuring hose	4	2480.00.23.□□.□□□	Type of connection and length as required
3	Control fitting	1	2480.00.31.01	
4	Gauging coupling	7	2480.00.24.01	
5	Gauging coupling	1	2480.00.24.02	

2480. Example 4.2:

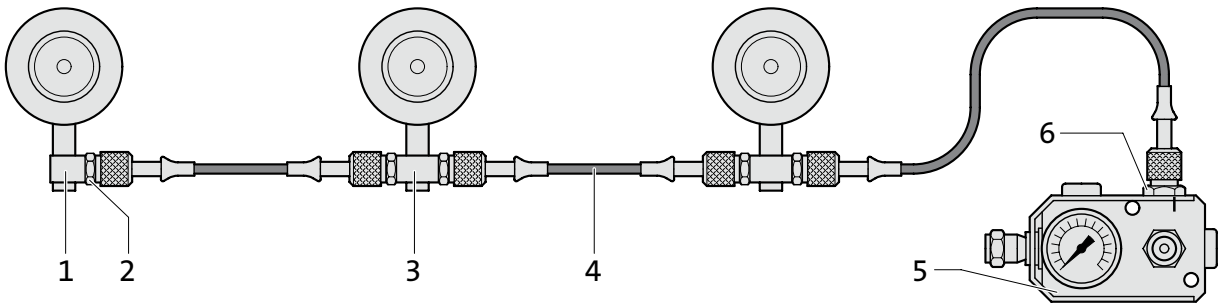
Group series connection

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.

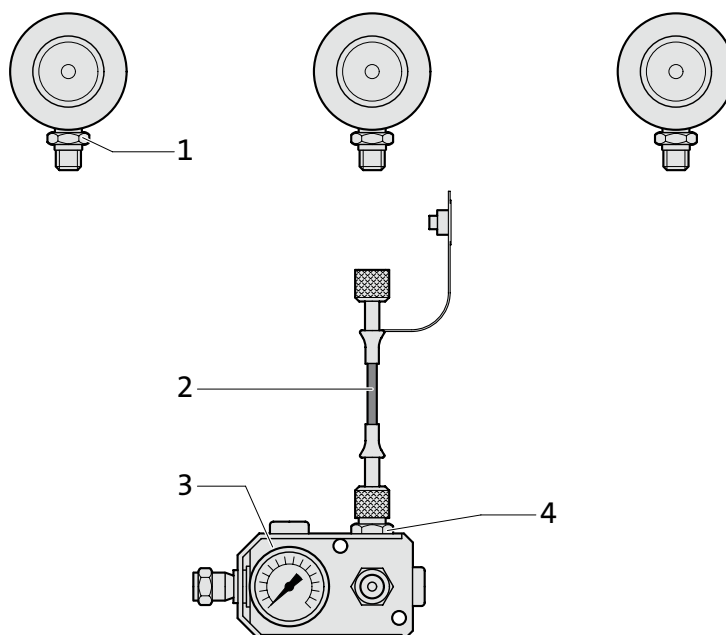


Item	Designation	Number	Order No	Comment
1	Simple adaptor, short	1	2480.00.24.17	Choice of "long" or "very long" depending on the specific mounting arrangements.
2	Gauging coupling	5	2480.00.24.01	
3	Multi adaptor	2	2480.00.24.11	Choice of "long" or "very long" depending on the specific mounting arrangements.
4	Measuring hose	3	2480.00.23.□□.□□□	Type of connection and length as required
5	Control fitting	1	2480.00.31.01	
6	Gauging coupling	1	2480.00.24.02	

Mounting arrangement for gas springs in the Minimes system

2480. Example 5:

Independent test connection



Function:

The springs work independently and have a gauging coupling (2480.00.24.01) with valve.

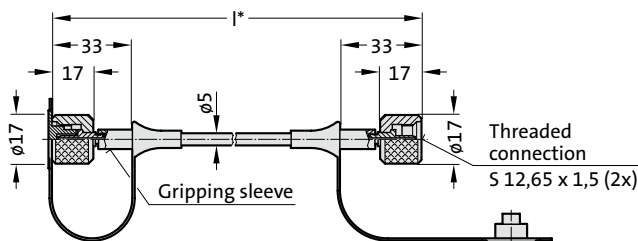
If required the springs can be tested and pressure adjusted individually. A control fitting (2480.00.31.01) is used for the purpose.

Item	Designation	Number	Order No	Comment
1	Gauging coupling	3	2480.00.24.01	
2	Measuring hose	1	2480.00.23.□□.□□□□	Type of connection and length as required
3	Control fitting	1	2480.00.31.01	
4	Gauging coupling	1	2480.00.24.02	

Gas spring accessories Minimess – Compound threaded joints

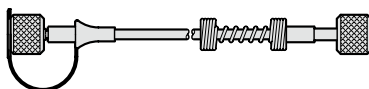
2480.00.23.01.

Gauging hose -
both ends straight



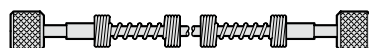
2480.00.23.01.----.1

Antikink spiral, at one end



2480.00.23.01.----.2

Antikink spiral, at both ends



2480.00.23.01.

Order No	l*
2480.00.23.01.0200	200
2480.00.23.01.0300	300
2480.00.23.01.0400	400
2480.00.23.01.0500	500
2480.00.23.01.0630	630
2480.00.23.01.0800	800
2480.00.23.01.1000	1000
2480.00.23.01.1200	1200
2480.00.23.01.1500	1500
2480.00.23.01.2000	2000
2480.00.23.01.2500	2500
2480.00.23.01.3000	3000

* other lengths available in 5 mm steps,
shortest factory lengths:

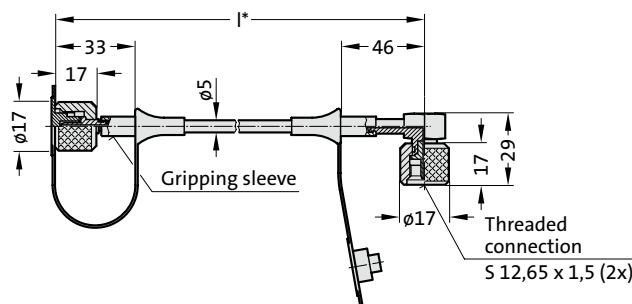
without antikink protection: 90 mm

antikink protection at one end: 150 mm

antikink protection at both ends: 300 mm

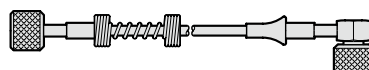
2480.00.23.02.

Gauging hose -
one end straight
90°-angle



2480.00.23.02.----.1

Antikink spiral, at one end, straight



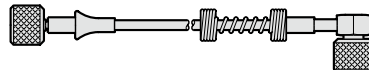
2480.00.23.02.----.2

Antikink spiral, at both ends



2480.00.23.02.----.3

Antikink spiral, at one end, 90°



2480.00.23.02.

Order No	l*
2480.00.23.02.0200	200
2480.00.23.02.0300	300
2480.00.23.02.0400	400
2480.00.23.02.0500	500
2480.00.23.02.0630	630
2480.00.23.02.0800	800
2480.00.23.02.1000	1000
2480.00.23.02.1200	1200
2480.00.23.02.1500	1500
2480.00.23.02.2000	2000
2480.00.23.02.2500	2500
2480.00.23.02.3000	3000

* other lengths available in 5 mm steps,
shortest factory lengths:

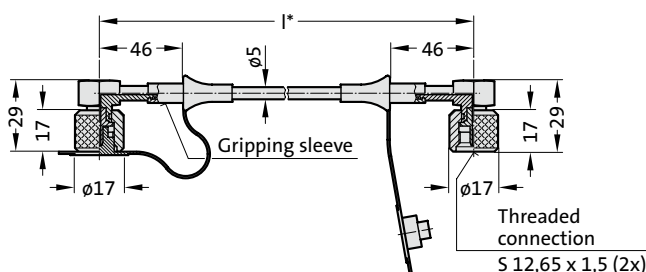
without antikink protection: 90 mm

antikink protection at one end: 150 mm

antikink protection at both ends: 300 mm

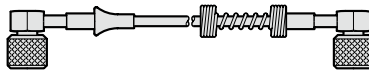
2480.00.23.03.

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



2480.00.23.03.

Order No	l*
2480.00.23.03.0200	200
2480.00.23.03.0300	300
2480.00.23.03.0400	400
2480.00.23.03.0500	500
2480.00.23.03.0630	630
2480.00.23.03.0800	800
2480.00.23.03.1000	1000
2480.00.23.03.1200	1200
2480.00.23.03.1500	1500
2480.00.23.03.2000	2000
2480.00.23.03.2500	2500
2480.00.23.03.3000	3000

* other lengths available in 5 mm steps,
shortest factory lengths:

without antikink protection: 105 mm

antikink protection at one end: 150 mm

antikink protection at both ends: 300 mm

Gas spring accessories

Minimess – Compound threaded joints

Gauging coupling

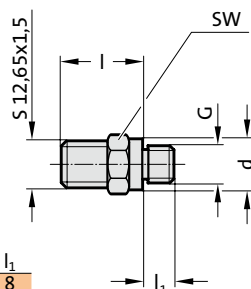
2480.00.24.01 with valve
2480.00.24.03 without valve
 for connection to gas spring

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 = A/F - width across flats



Note:

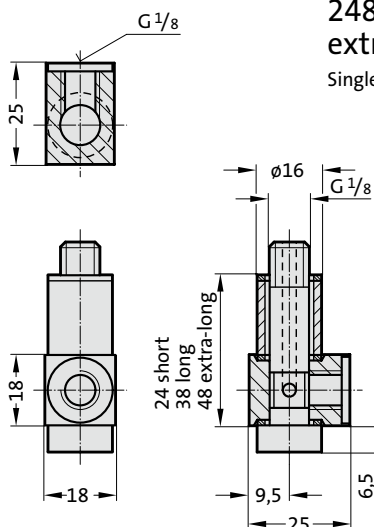
The gauging coupling with valve is used in standard permanent connections. The valveless gauging coupling is used in systems where changes to the filling pressure are necessary on a regular basis (e.g. die cushions).

2480.00.24.16 long

2480.00.24.17 short

2480.00.24.18
 extra-long

Single adapter

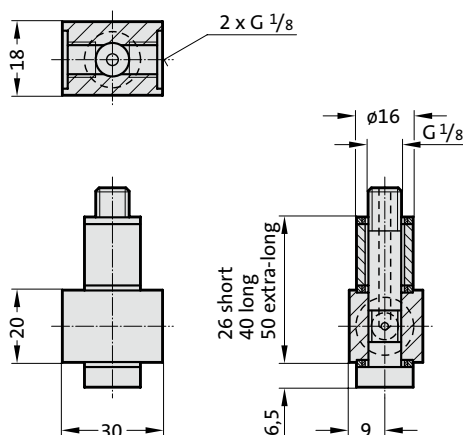


2480.00.24.13 long

2480.00.24.14 short

2480.00.24.15
 extra-long

Dual adapter

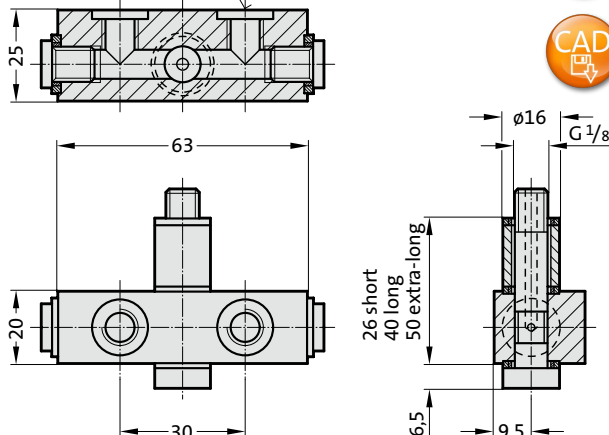


2480.00.24.10 long

2480.00.24.11 short

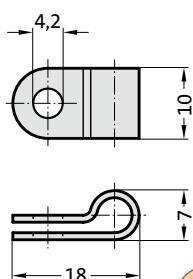
2480.00.24.12
 extra-long

Multiple adapter



2480.00.23.12.01

Hose clamp for gauging hose DN2
 (Ø5 mm)

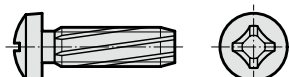


Material: Polyamide

Note:
 Supplied without screws

2192.50.04.012

self-tapping screw
 A M4x12 DIN 7516



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 in mm
2480.00.23.13.0001	1000
2480.00.23.13.0002	2000
2480.00.23.13.0005	5000
2480.00.23.13.0010	10000

Material:
 Polyamide

Description:

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

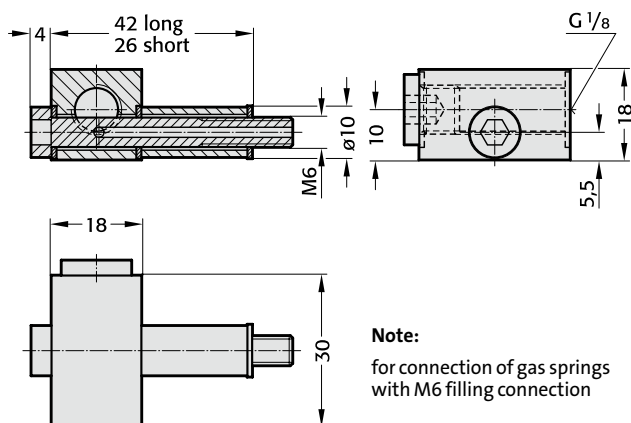
Inner-Ø	7 mm
For hose/tubing	
outer-Ø	max. 5-11 mm
Temperature range	-30 °C to +100 °C

Gas spring accessories
Minimess - Compound threaded joints

2480.00.24.53 horizontal, long
2480.00.24.54 horizontal, short



Double adapter

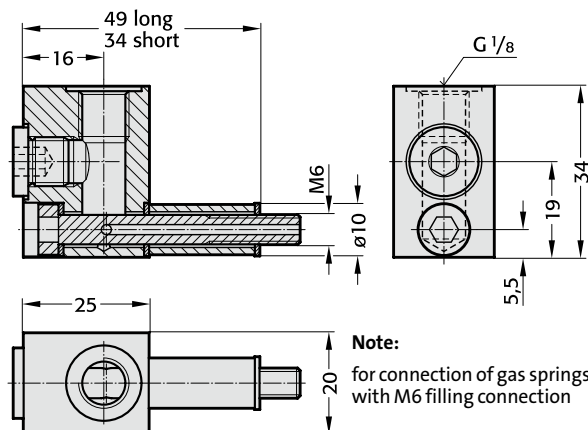


Note:
for connection of gas springs
with M6 filling connection

2480.00.24.56 vertical, long
2480.00.24.57 vertical, short

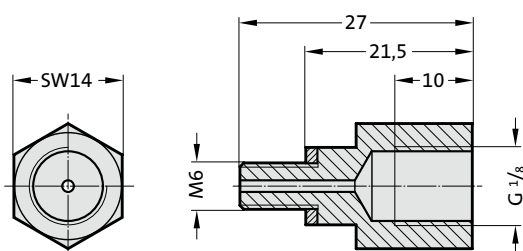


Double adapter

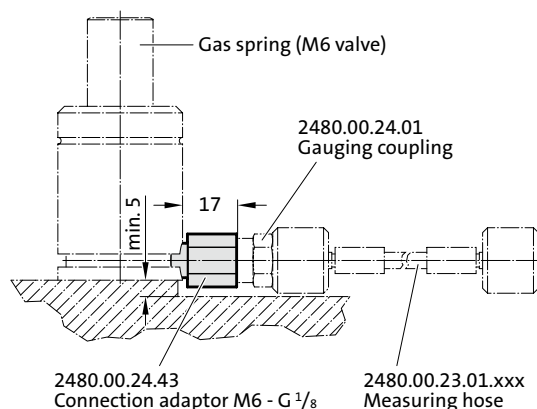


Note:
for connection of gas springs
with M6 filling connection

2480.00.24.43
Connection adaptor M6 - G¹/₈



Mounting example:

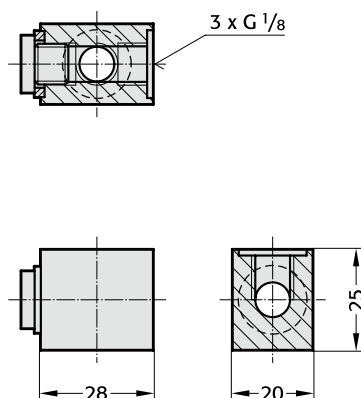


Gas spring accessories

Minimess – Compound threaded joints

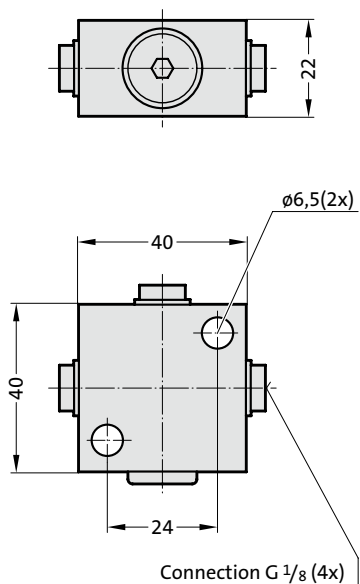
2480.00.24.30

Distributor block G $\frac{1}{8}$
3 ports



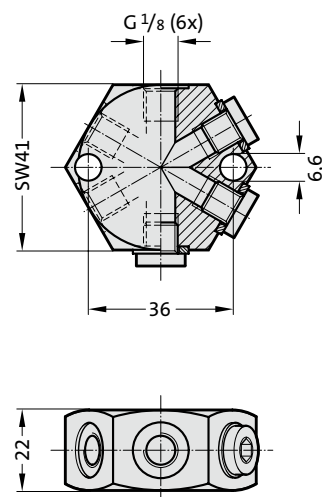
2480.00.24.34

Distributor block G $\frac{1}{8}$
4 ports



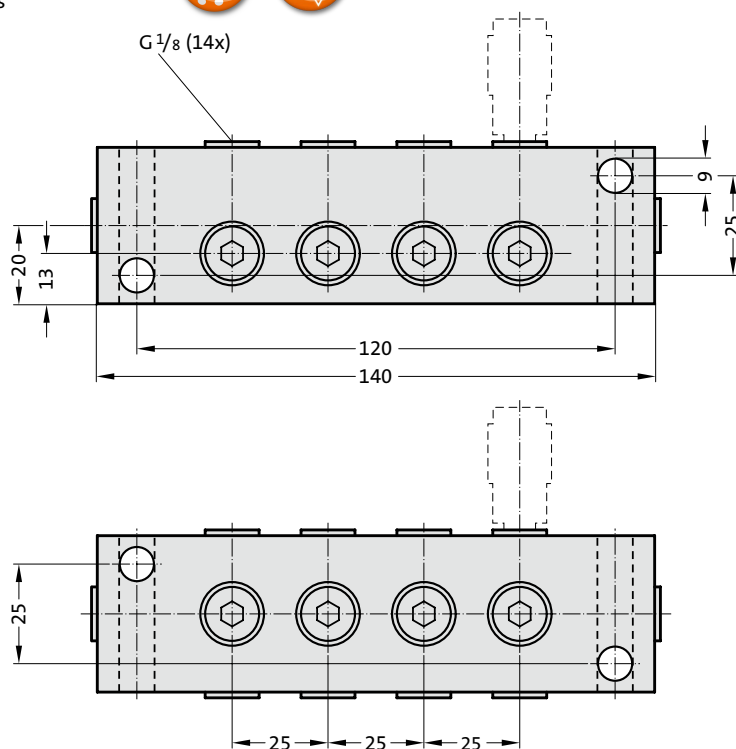
2480.00.24.31

Distributor block G $\frac{1}{8}$
6 ports



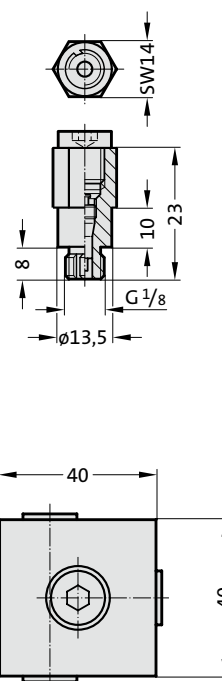
2480.00.24.33

Distributor G $\frac{1}{8}$
14 ports



2480.00.40

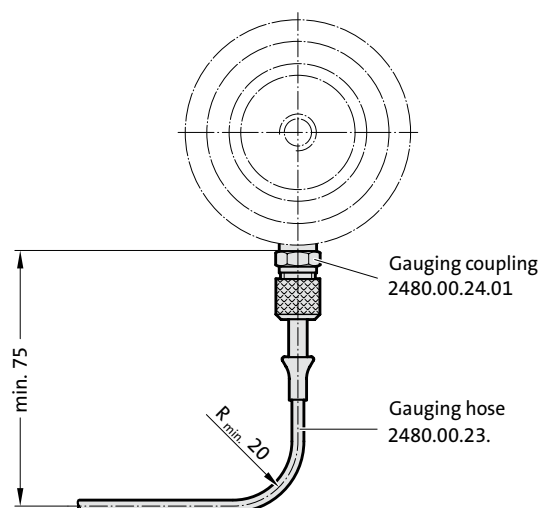
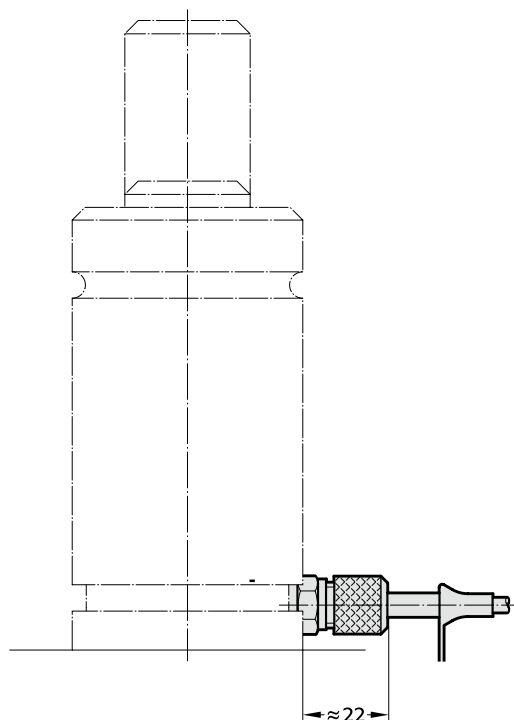
Charging adapter



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

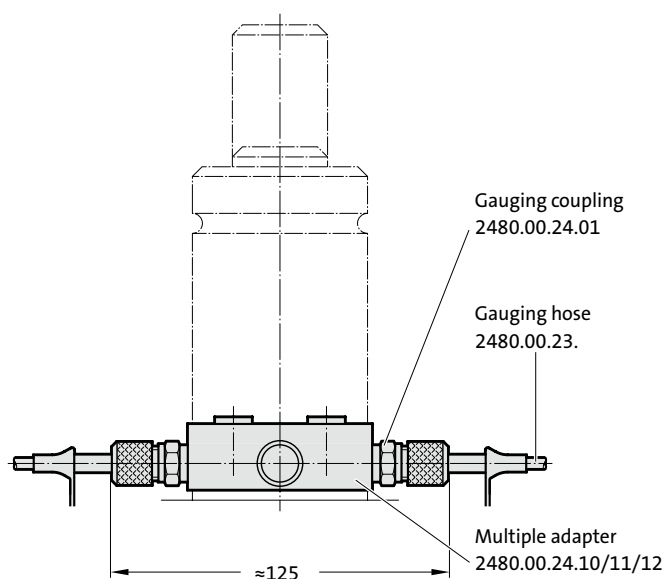
Multiple adapter with two gauging couplings



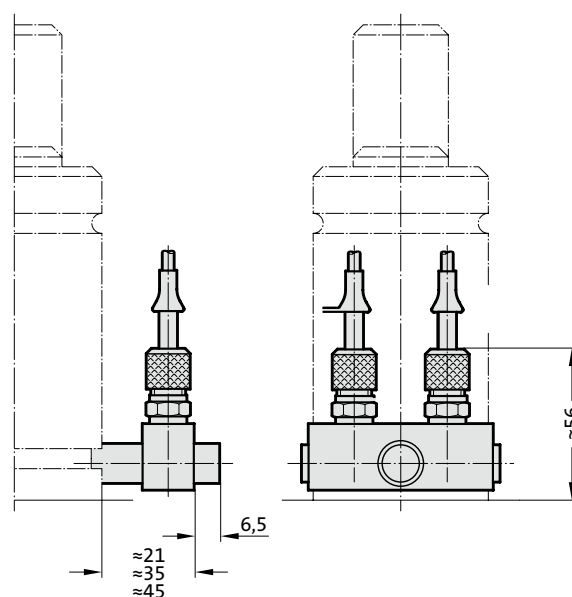
Note:

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

connected horizontally



connected vertically

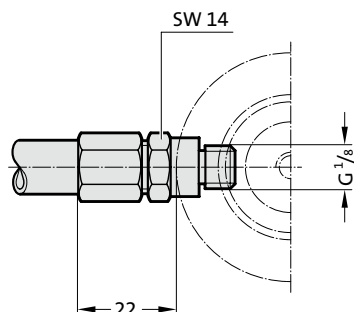


Gas spring accessories

Compression fitting – Compound threaded joints

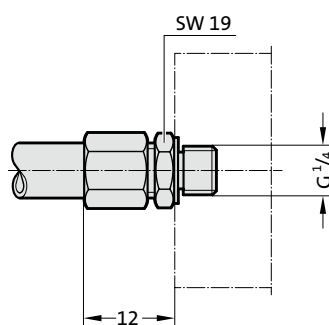
2480.00.10.01

Direct connector to gas spring



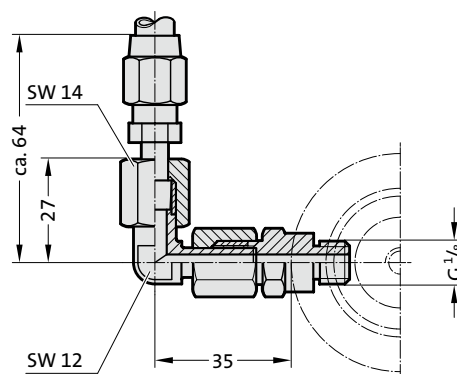
2480.00.10.03

Direct connector to control fitting



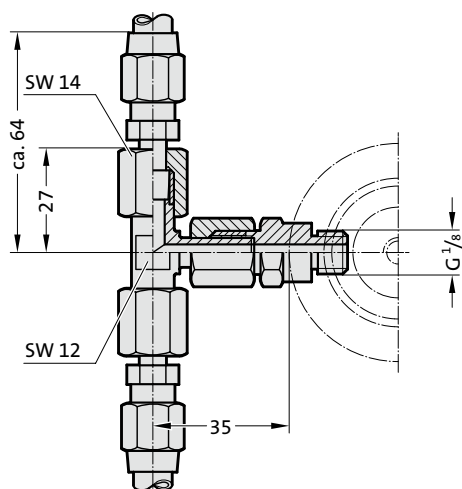
2480.00.10.10

angle connector, adjustable



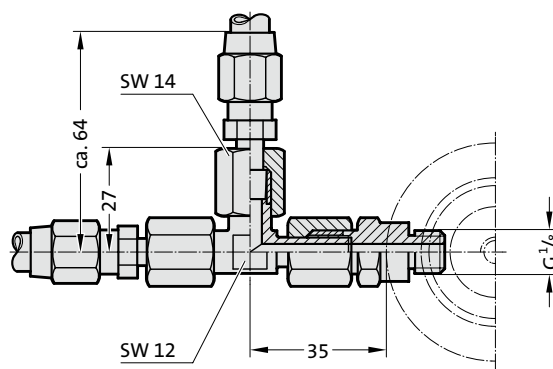
2480.00.10.11

T-connector, adjustable



2480.00.10.12

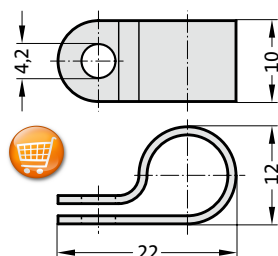
L-connector, adjustable



Gas springs accessoires Compression fitting – Compound threaded joints

2480.00.10.20.12.01

Hose clamp for gauging hose DN4 (Ø 9 mm)



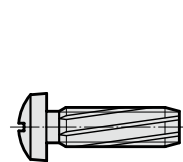
Material: Polyamide

Note: Supplied without screws



2192.50.04.012

self-tapping screw
A M4x12 DIN 7516



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	l in mm
2480.00.23.13.0001	1000
2480.00.23.13.0002	2000
2480.00.23.13.0005	5000
2480.00.23.13.0010	10000

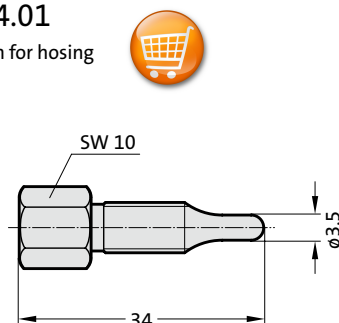
Material:
Polyamide

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

Inner-Ø 7 mm
For hose/tubing outer-Ø max. 5-11 mm
Temperature range -30 °C to +100 °C

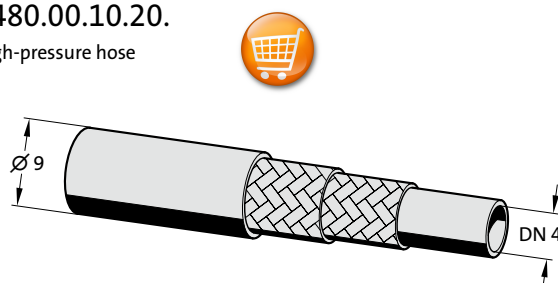
2480.00.54.01

Expansion punch for hosing



2480.00.10.20.

High-pressure hose

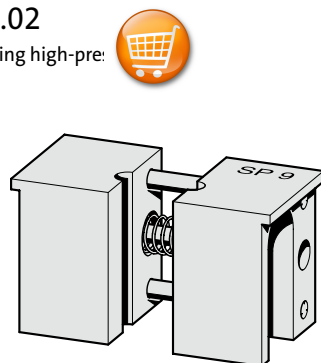


Ordering Code (example):

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

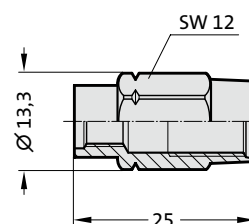
2480.00.54.02

Vice jaws for holding high-pre:



2480.00.10.21

Hose screw fitting (female)



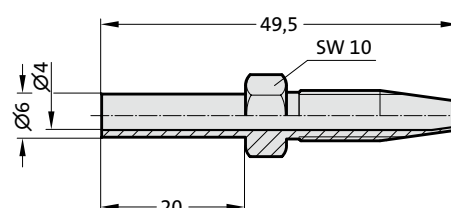
2480.00.54.03

Hose shears

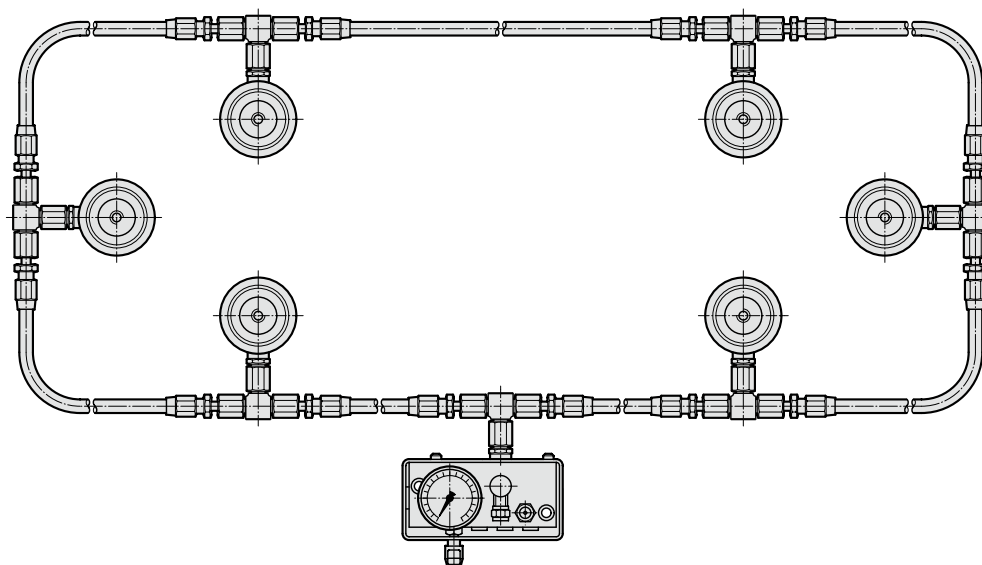
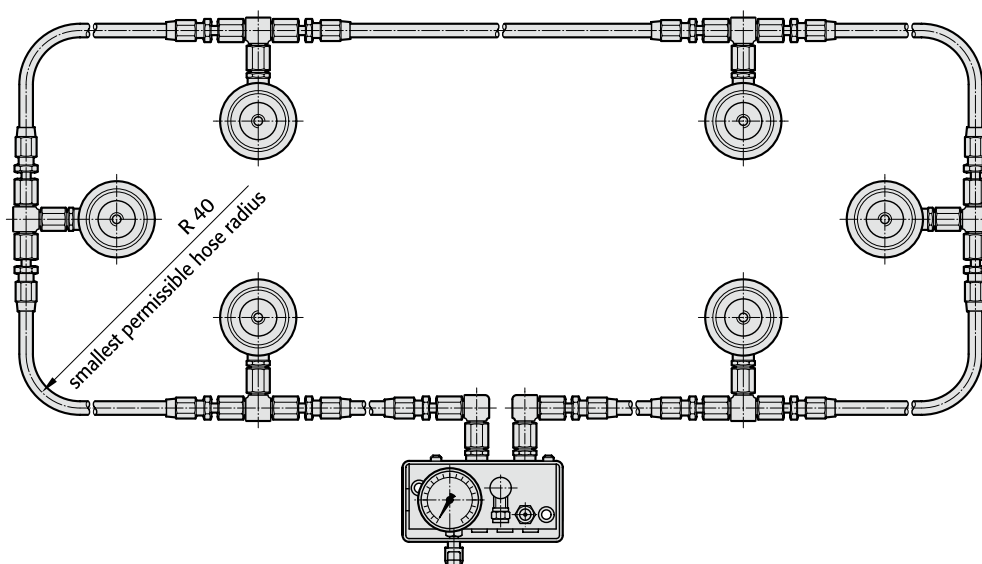
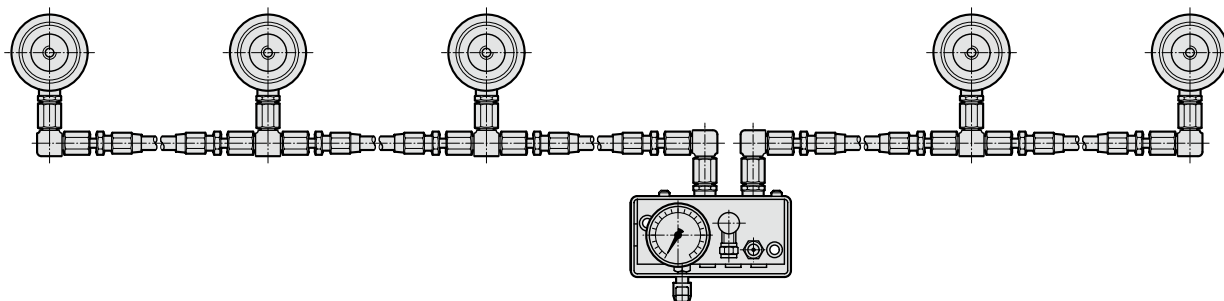


2480.00.10.22

Hose screw fitting (male)



Assembly arrangement of gas springs in servial connection compression fitting

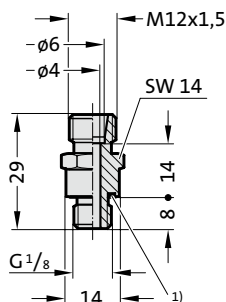


Note: When installing gas springs always remove the valve from the gas spring.

Gas spring accessories 24°-cone-threaded Joints (DIN 2353 / DIN EN ISO 8434-1)

2480.00.26.03

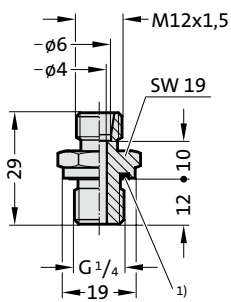
Threaded Joint G¹/₈



1) Elastisc-Seal ED

2480.00.26.04

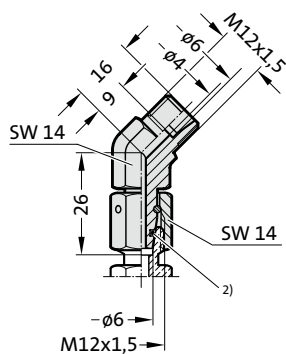
Threaded Joint G¹/₄



1) Elastisc-Seal ED

2480.00.26.21

Adjustable threaded joint
45°, complete

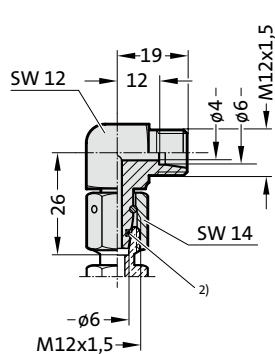


2) O-ring



2480.00.26.22

Adjustable threaded joint
90°, complete

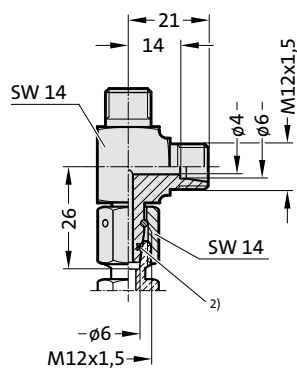


2) O-ring



2480.00.26.23

Adjustable L-Coupling,
complete

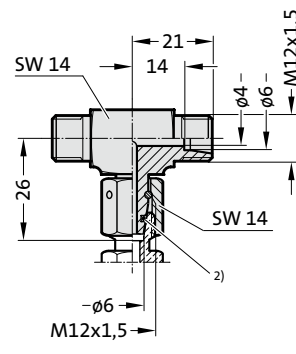


2) O-ring



2480.00.26.24

Adjustable T-Coupling,
complete

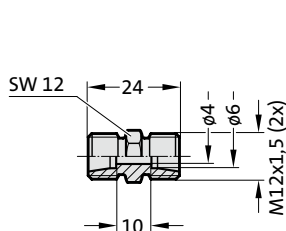


2) O-ring



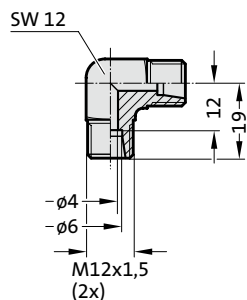
2480.00.26.25

Adapter straight,
hose to hose



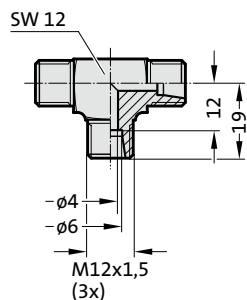
2480.00.26.26

Adapter, 90°,
hose to hose



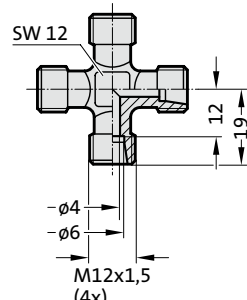
2480.00.26.27

Adapter, T,
hose to hose



2480.00.26.28

Adapter, K,
hose to hose



Gas springs accessories

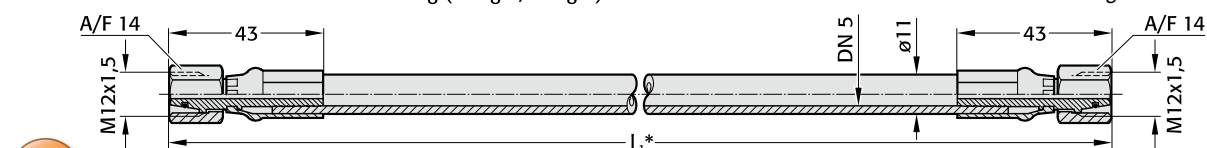
Connecting hoses with 24° cone

(DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.01.

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

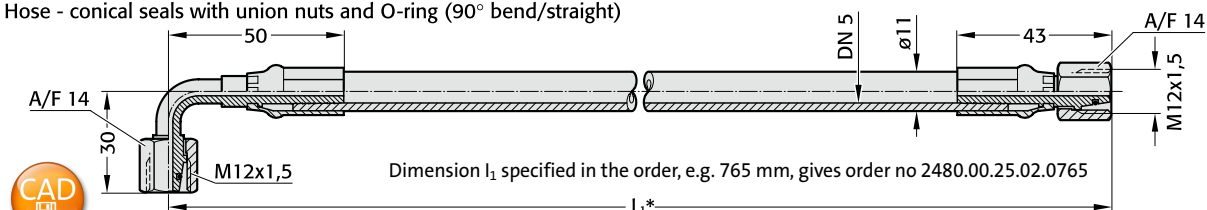
* Shortest factory lengths: 140 mm
minimum bending radius R40



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

2480.00.25.02.

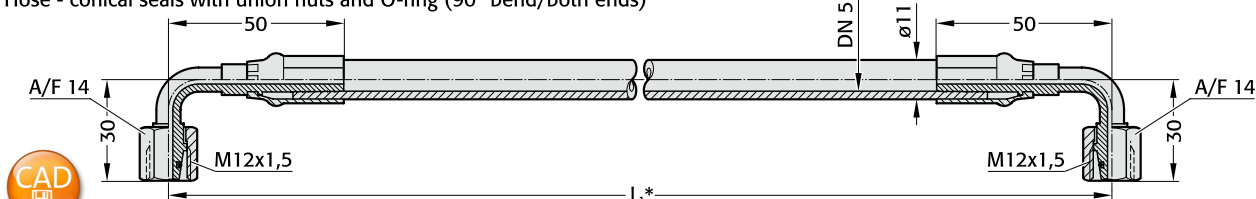
Hose - conical seals with union nuts and O-ring (90° bend/straight)



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

2480.00.25.03.

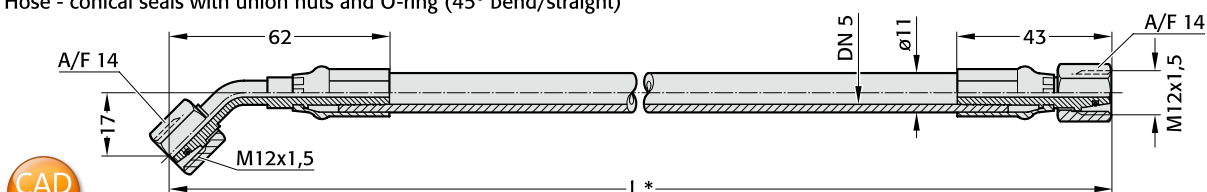
Hose - conical seals with union nuts and O-ring (90° bend/both ends)



Dimension I_1 specified in the order, e.g. 765 mm, gives order no 2480.00.25.03.0765

2480.00.25.04.

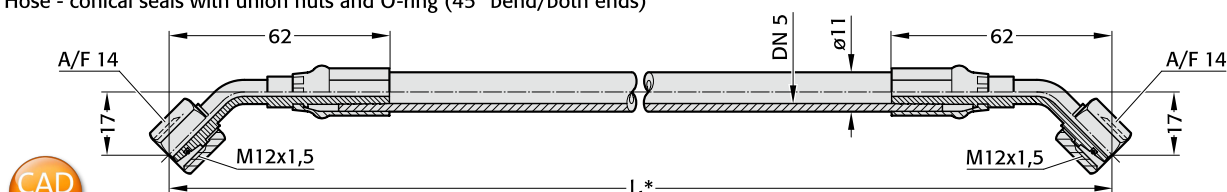
Hose - conical seals with union nuts and O-ring (45° bend/straight)



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

2480.00.25.05.

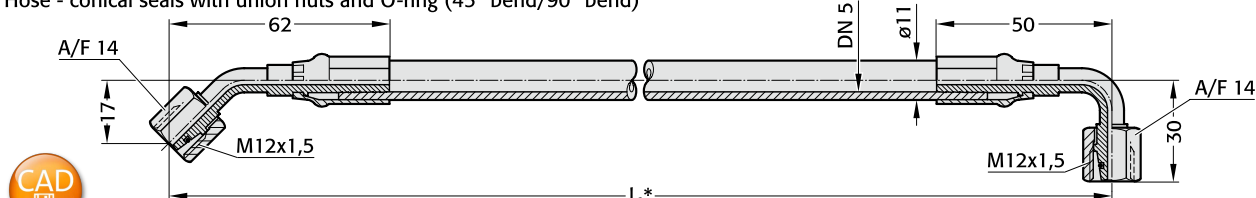
Hose - conical seals with union nuts and O-ring (45° bend/both ends)



Dimension I_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)

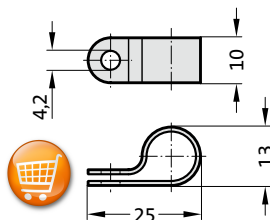


Dimension I_1 specified in the order, e.g. 765 mm, gives order no 2480.00.25.06.0765

Gas springs accessories Direct connection dimensions 24°-cone threaded joint (DIN 2353 / DIN EN ISO 8434-1)

2480.00.25.12.01

Hose clamp for gauging hose DN5 (Ø11 mm)



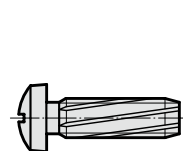
Material: Polyamide

Note: Supplied without screws



2192.50.04.012

self-tapping screw
A M4x12 DIN 7516



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 in mm
2480.00.23.13.0001	1000
2480.00.23.13.0002	2000
2480.00.23.13.0005	5000
2480.00.23.13.0010	10000

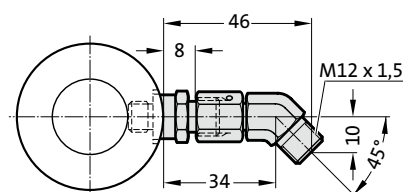
Inner-Ø 7 mm
For hose/tubing
outer-Ø max. 5-11 mm
Temperature range -30 °C to +100 °C

Material:
Polyamide

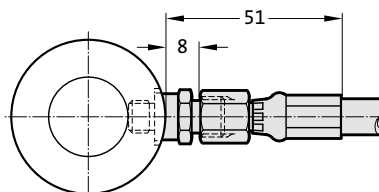
Description:
The anti-scuff spiral is used to
protect against abrasion, is resis-
tant to air, water, oil, hydraulic
fluids petrol and other liquids.



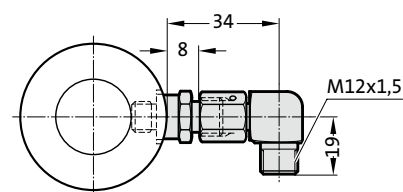
Direct connection
with 45°-elbow adaptor
2480.00.26.21



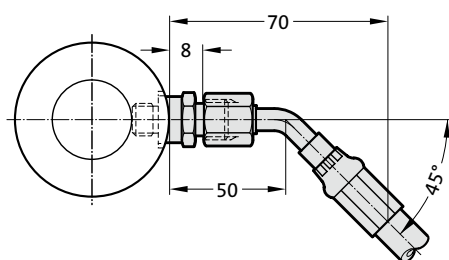
Direct connection
hose straight
adaptor 2480.00.26.03



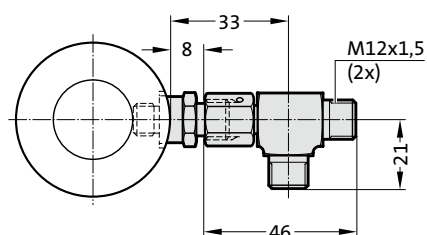
Direct connection
with 90°-elbow adaptor
2480.00.26.22



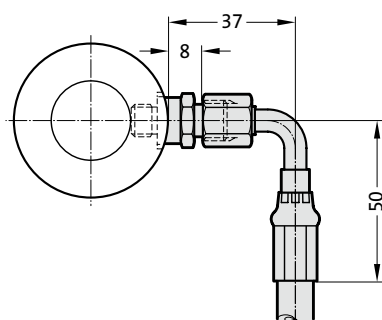
Direct connection
45° hose with
adaptor 2480.00.26.03



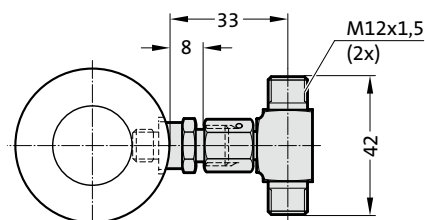
Direct connection
with L-coupling
2480.00.26.23



Direct connection
90° hose with
adaptor 2480.00.26.03



Direct connection
with T-coupling
2480.00.26.24



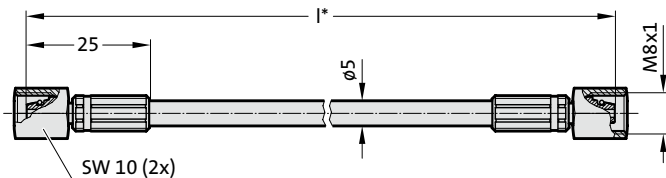
Gas spring accessories

Connector system, 24° conus micro

2480.00.27.01.

Min. bending radius R20 mm

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



2480.00.27.01.

Order No	l*
2480.00.27.01.0200	200
2480.00.27.01.0300	300
2480.00.27.01.0400	400
2480.00.27.01.0500	500
2480.00.27.01.0630	630
2480.00.27.01.0800	800
2480.00.27.01.1000	1000
2480.00.27.01.1200	1200
2480.00.27.01.1500	1500
2480.00.27.01.2000	2000
2480.00.27.01.2500	2500
2480.00.27.01.3000	3000

* other lengths available in 5mm steps.

Shortest factory lengths:	
without antikink protection	90 mm
antikink protection at one end	150 mm
antikink protection at both ends	300 mm

2480.00.23.13.

Anti-scuff spiral
for subsequent installation over hoses and tubing



Order No	l in mm
2480.00.23.13.0001	1000
2480.00.23.13.0002	2000
2480.00.23.13.0005	5000
2480.00.23.13.0010	10000

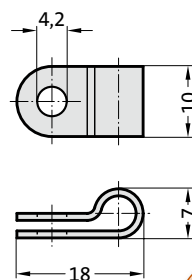
Inner-Ø 7 mm
For hose/tubing
outer-Ø max. 5-11 mm
Temperature range -30 °C to +100 °C

Material:
Polyamide

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

2480.00.23.12.01

Hose clamp for gauging hose DN2
(Ø5 mm)



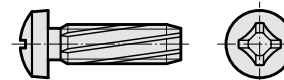
Material: Polyamide

Note:
Supplied without screws



2192.50.04.012

self-tapping screw
A M4x12 DIN 7516



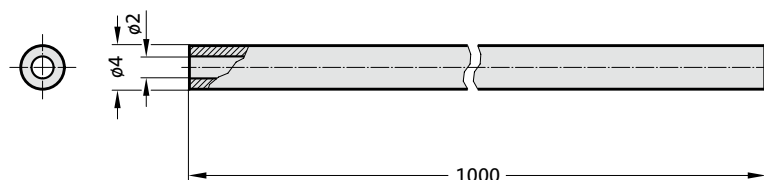
Note: self-tapping
Diameter of hole for self-tapping screw = 3,6 mm

Gas spring accessories Connector system, 24° conus micro

2480.00.27.11

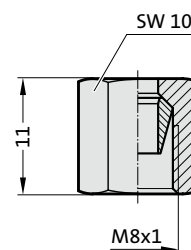
Pipe for 24° conus micro
Delivery length: 1 m

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



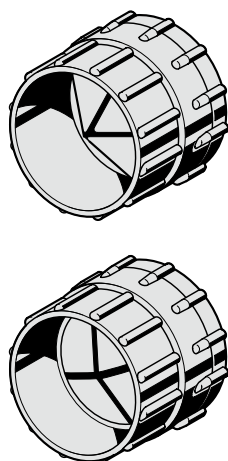
2480.00.27.11.01

Cutting ring screw connection, 24° conus micro



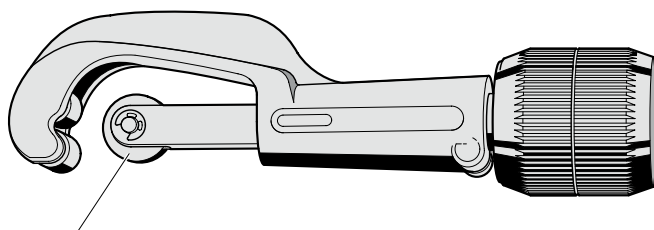
2480.00.27.00.01

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

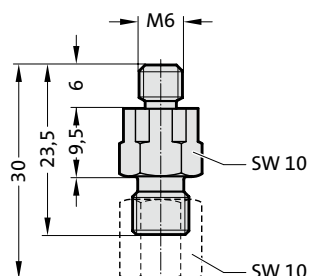


Gas spring accessories

Connector system, 24° conus micro

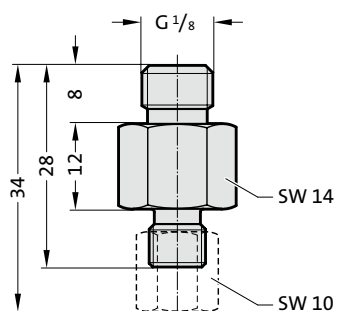
2480.00.28.01

Screw connection GE-M6-24° conus micro



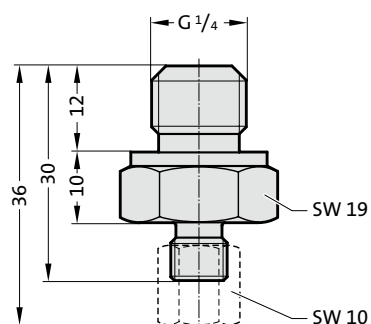
2480.00.28.02

Screw connection GE-G¹/₈ 24° conus micro



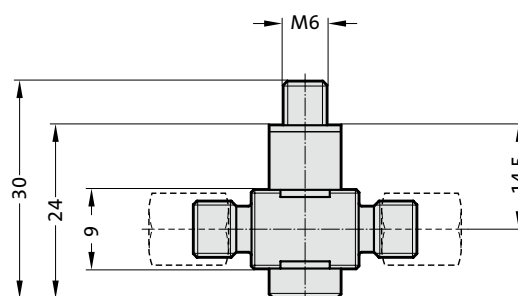
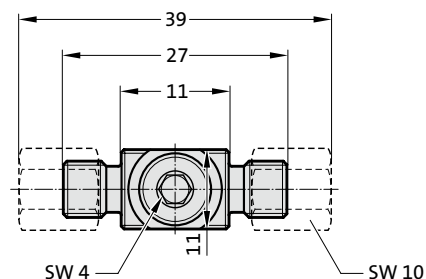
2480.00.28.03

Screw connection GE-G¹/₄ 24° conus micro



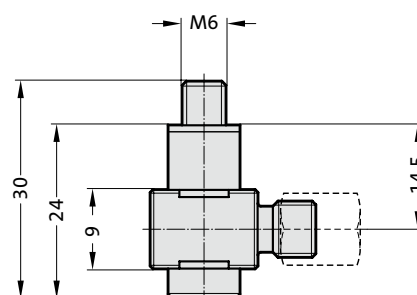
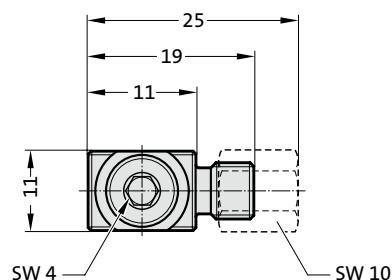
2480.00.28.14

Screw connection T-24° conus micro



2480.00.28.17

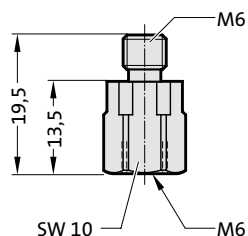
Screw connection W-24° conus micro



Gas spring accessories Connector system micro

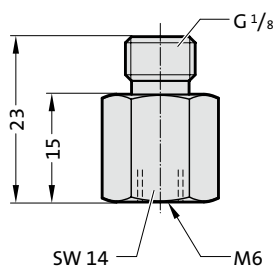
2480.00.22.06.06

Screw connection, GE-M6-M6 micro for connection to gas spring with divided wheel flange 2480.022.



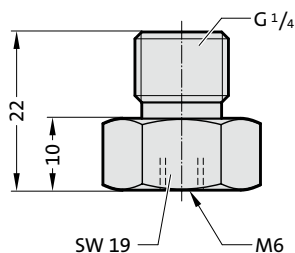
2480.00.22.18.06

Screw connection, GE-G¹/₈-M6 micro for 2480.00.28.14 / 2480.00.28.17



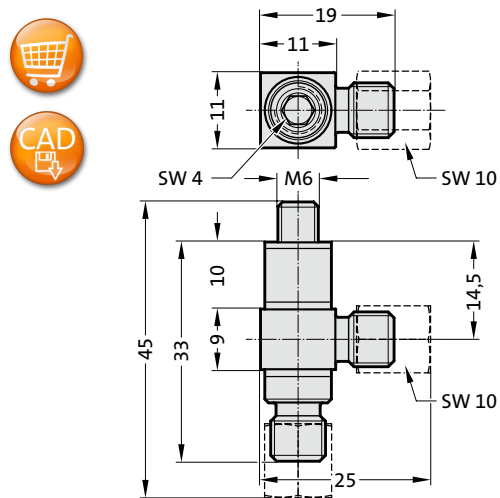
2480.00.22.14.06

Screw connection, GE-G¹/₄-M6 micro for 2480.00.28.14 / 2480.00.28.17



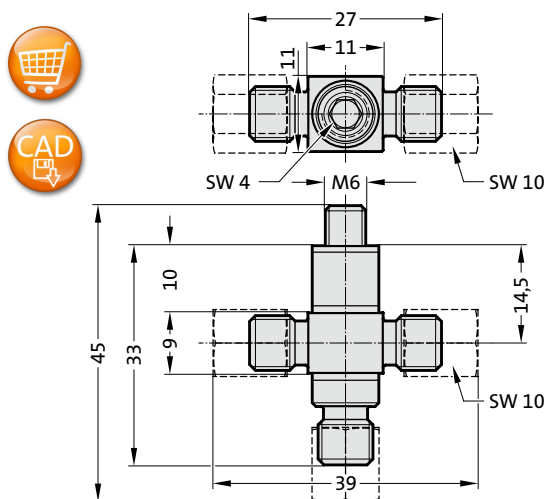
2480.00.28.15

Screw connection, L-24° conus micro



2480.00.28.16

Screw connection, K-24° conus micro

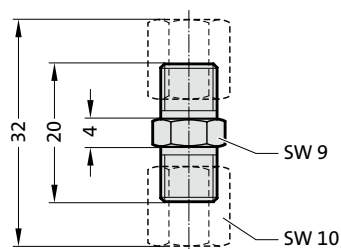


Gas spring accessories

Connector system, 24° conus micro

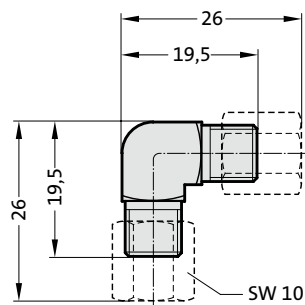
2480.00.28.25

Adapter, GE-24° conus micro
hose – hose



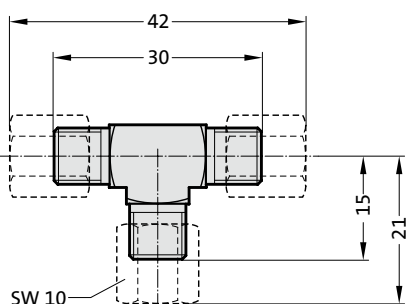
2480.00.28.26

Adapter, W-24° conus micro
hose – hose



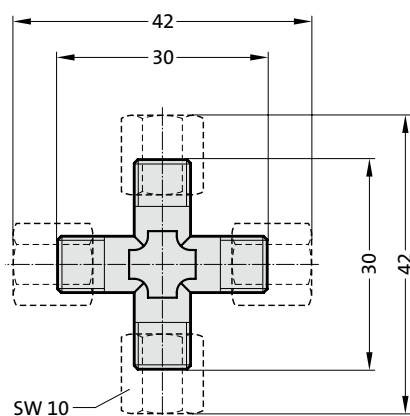
2480.00.28.27

Adapter, T-24° conus micro
hose – hose



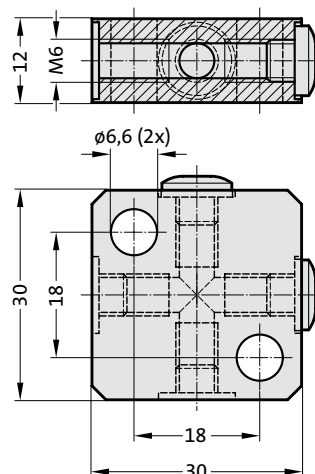
2480.00.28.28

Adapter, K-24° conus micro
hose – hose



2480.00.28.34

Distributor block M6, 4 ports



Micro control fitting without pressure relief with pressure relief

Description:

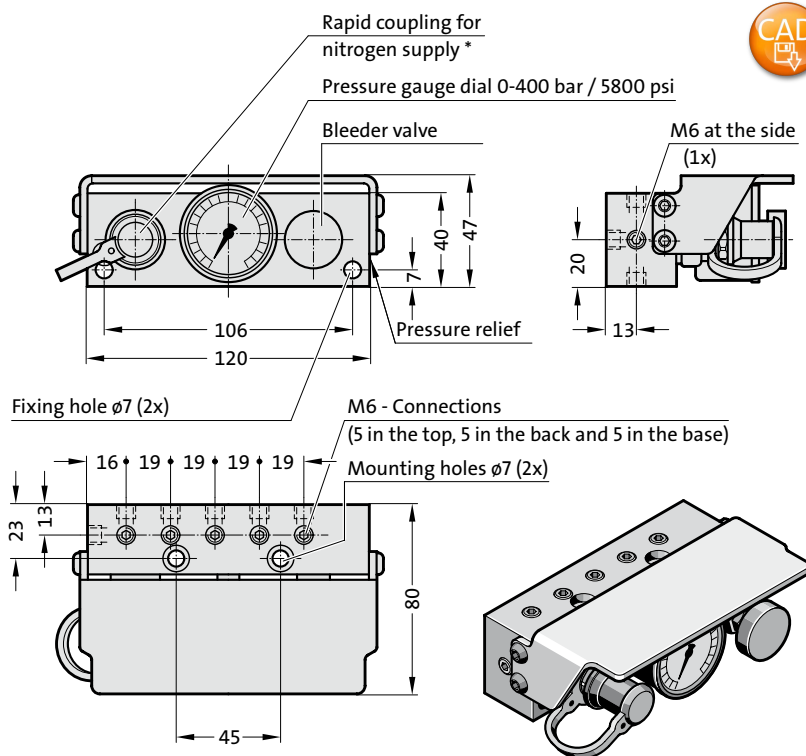
The micro control fitting 2480.00.34.11/13 is used to constantly monitor the charge pressure of one or more Gas Springs (3x5 connections M6, top, bottom, back and 1x at the side).

Note:

* 2 m long filling hose with rapid coupling, shut-off valve and gas bottle connector
Order no: 2480.00.31.02 (to be ordered separately)

2480.00.34.11 without pressure relief

2480.00.34.13 with pressure relief



Control fitting for gas springs

2480.00.30.01 without pressure switch, without pressure relief
 2480.00.30.02 with pressure switch, without pressure relief
 2480.00.30.03 without pressure switch, with pressure relief
 2480.00.30.04 with pressure switch, with pressure relief

Description:

The control fitting 2480.00.30.01/02/03/04 serves to control the charge pressure of up to eight connected gas springs.

Pressure checks during operation can be effected in two ways:

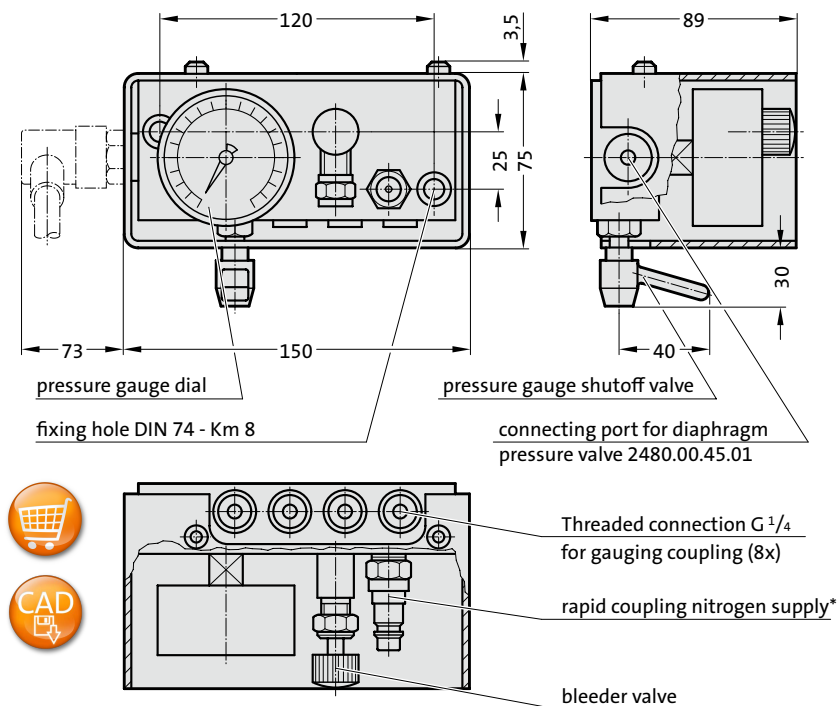
- by visual monitoring of the gauge dials.
- automatically, by means of diaphragm pressure switch 248.00.15 The switch will stop the associated machine as soon as the charge pressure drops below the value set.

Note:

The shutoff valve may be open or closed during operation.

The closing of the pressure gauge shutoff valve ensures that no pressure peaks from the gas spring act on the pressure gauge.

* 2-m long filling hose with rapid coupling, shutoff valve and gas bottle connector, Order No. 2480.00.31.02 (to be ordered separately)



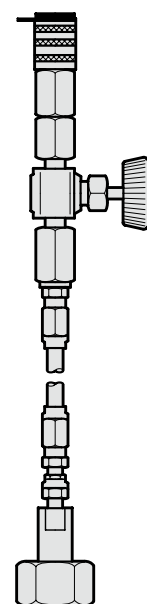
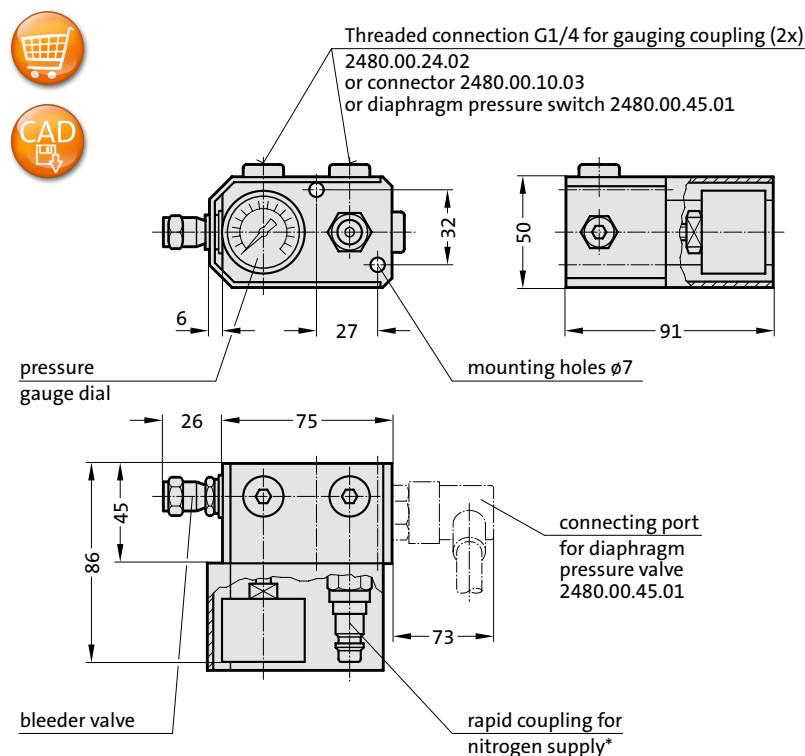
2480.00.31.01 without pressure switch
 2480.00.31.06 with pressure switch
 2480.00.31.07 without pressure switch and with pressure relief

Description:

The control fitting 2480.00.31.01 performs the same function as the control armature 2480.00.30.01.

Note:

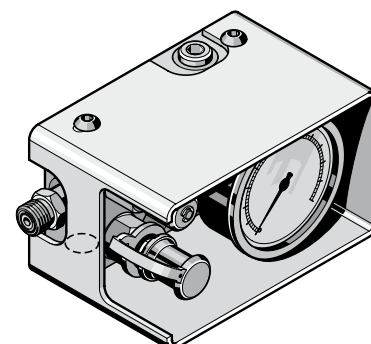
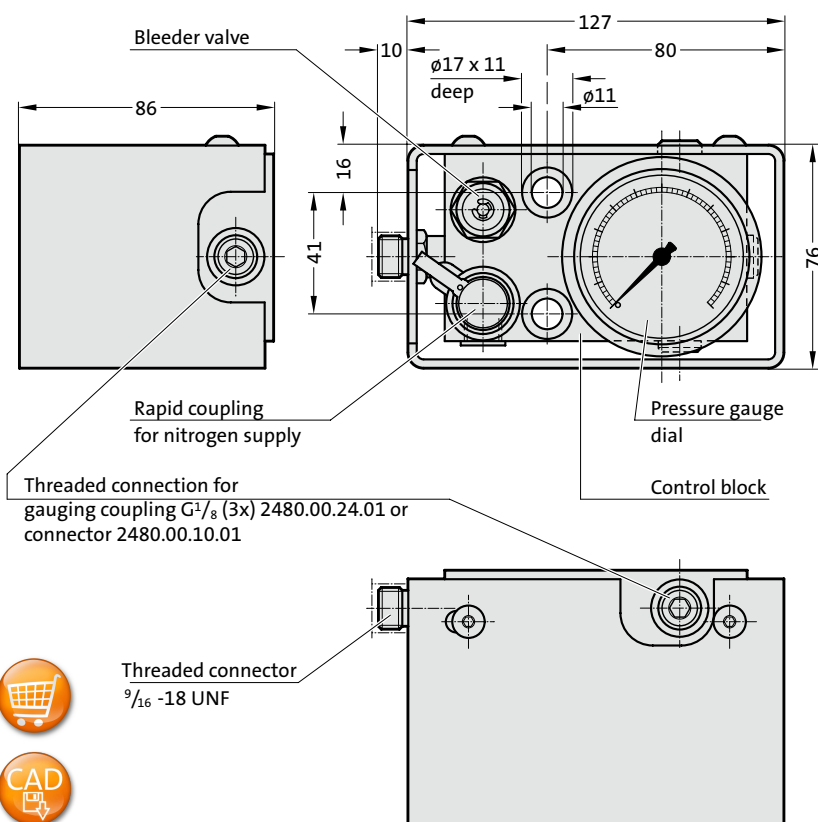
* 2-m long filling hose with rapid coupling, shutoff valve and gas bottle connector, Order No. 2480.00.31.02 (to be ordered separately)



Control fitting without pressure switch, including pressure relief

2480.00.30.13 without pressure switch, with pressure relief

2480.00.30.13



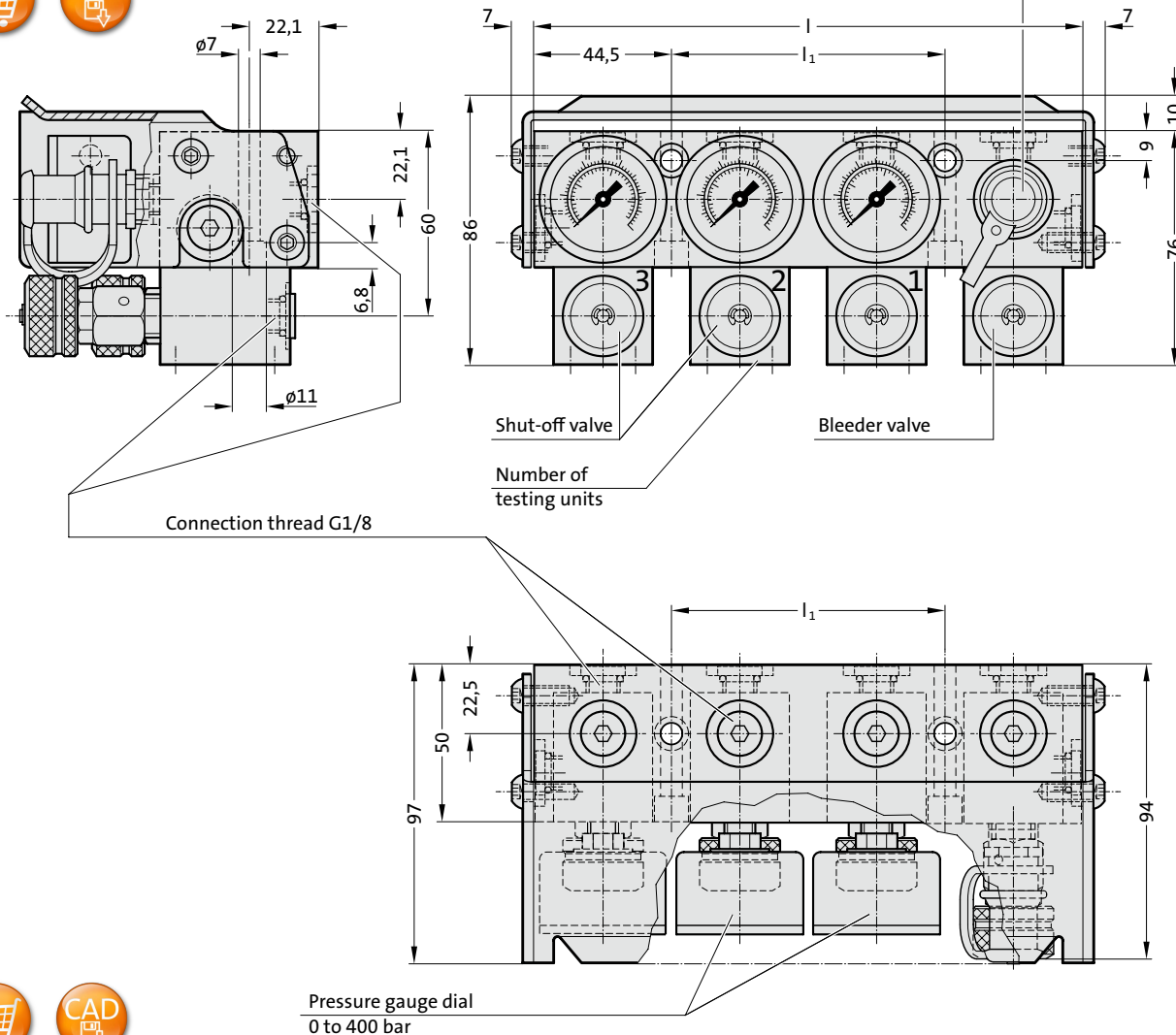
Description:

The control fitting 2480.00.30.13 is used to constantly monitor the filling pressure of one or more gas springs. The control fitting is equipped with rapid coupling for nitrogen supply and a bleeder valve. There are three $G^{1/8}$ ports for simultaneous pressure checking at the control fitting.

Measuring range from
0 - 400 bar / 5800 psi.

Multiple control fitting

2480.00.39.05. Multiple control fitting



Description:

The multiple control fitting is required if it is necessary to check or set the filling pressure of each spring or spring assembly individually.

The filling of the springs is done at a central position using the rapid coupling for nitrogen supply. Each testing unit is provided with three threaded connections for the optional hose connection.

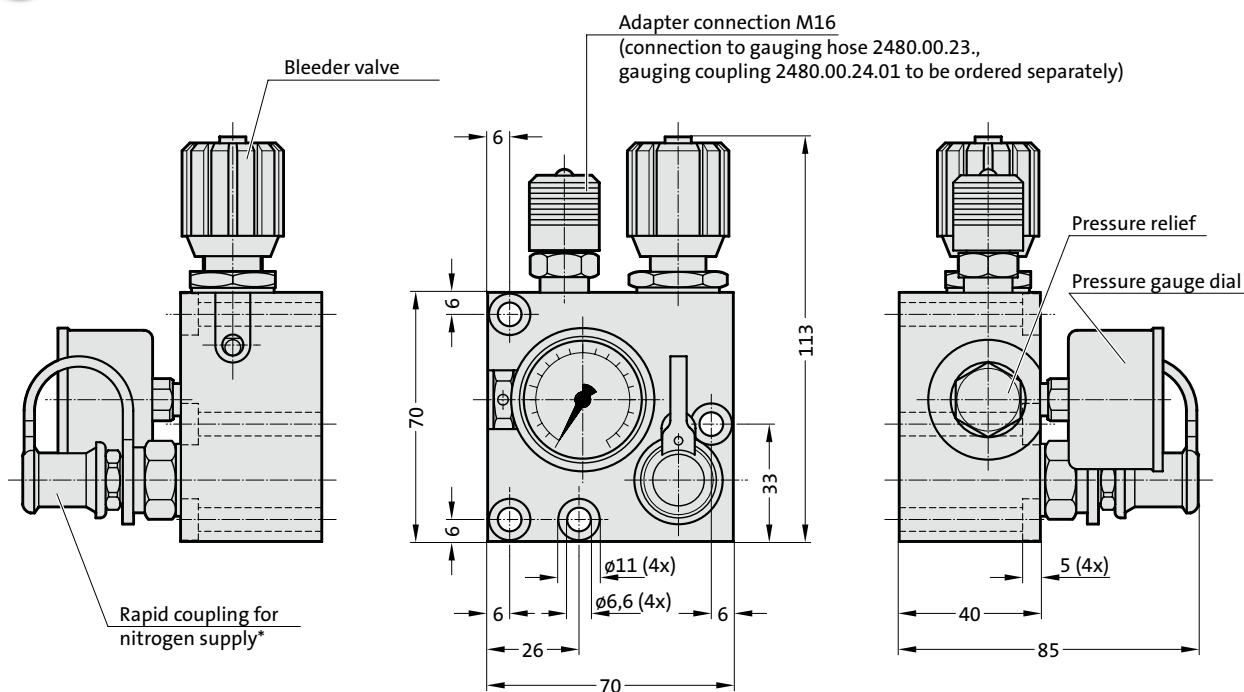
The cover protects against mechanical damages.

2480.00.39.05. Multiple control fitting

Order No	Quantity of testing units	I_1	I_2
2480.00.39.05.02	2	133.5	44.5
2480.00.39.05.03	3	178.0	89.0
2480.00.39.05.04	4	222.5	133.5
2480.00.39.05.05	5	267.0	178.0
2480.00.39.05.06	6	311.5	222.5
2480.00.39.05.08	8	400.5	311.5
2480.00.39.05.10	10	489.5	400.5

Control fitting with pressure relief

2480.00.31.11



Description:

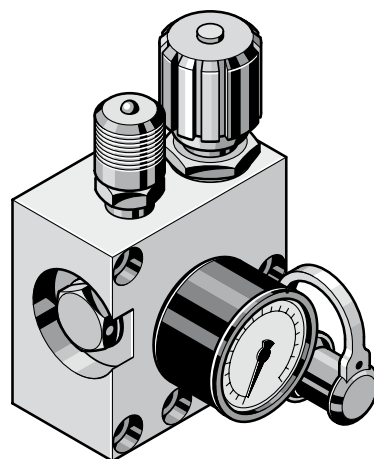
The control fitting with pressure relief 2480.00.31.11 (Faure) is used for continuous monitoring of the filling pressure of one or more gas springs (one connection G¹/₈-M16). During operation the pressure can be checked by visual monitoring of the pressure gauge.

Note:

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

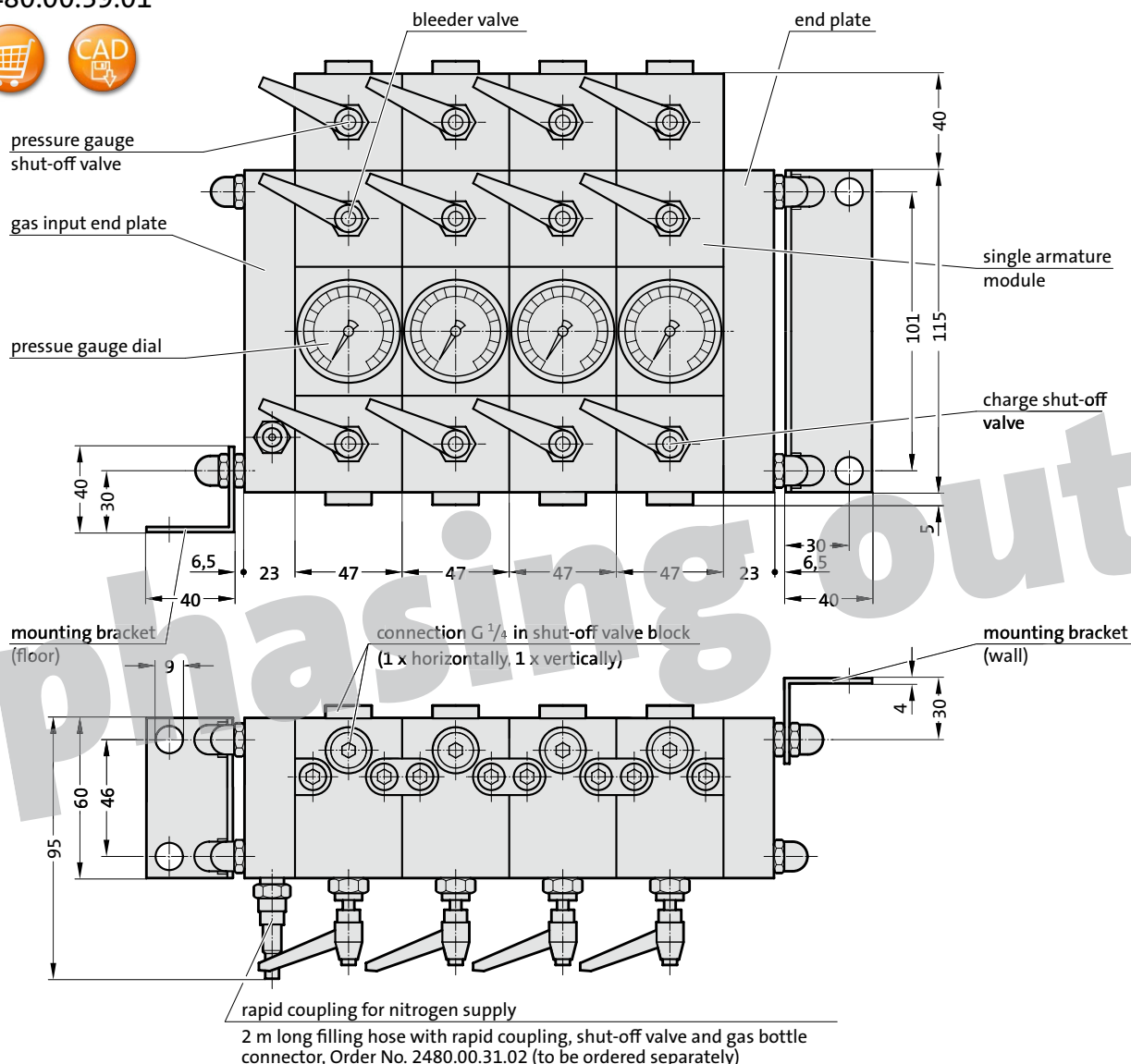
When installing gas springs always remove the valve from the gas spring.

* 2 m long filling hose with rapid coupling, shut-off valve and gas bottle connector, Order no. 2480.00.31.02 (to be ordered separately)



Stacked control fitting for individual control

2480.00.39.01



Description:

Stacked control fittings are required where it is necessary to control the charge pressure of each gas spring individually. The fitting models can be stacked together ad libitum.

Recharging of any to the spring units connected can be effected centrally via the rapid couplings and the appropriate charging valves. Each stack is equipped with an input end plate with rapid coupling, and an end plate sealing off the opposite side. The number of armature modules depends on the number of gas springs in question. The stack can be supplied for wall mounting or for installation on the floor.

Note:

When all charge valves are opened the springs are interconnected with one another.

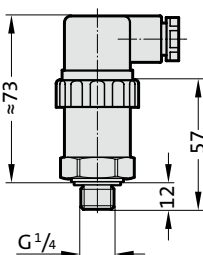
Ordering Code (example):

Stacked control fitting	=	2480.00.39.01.
5 modules	=	005.
with floor-mount	=	1
with wall-mount	=	2
Order No	=	2480.00.39.01.005.1 or 2

Diaphragm pressure switch Adapter block Screw connection GE - G 1/8 - G 1/4



2480.00.45.01
2480.00.45.02



Technical data of Diaphragm pressure switch

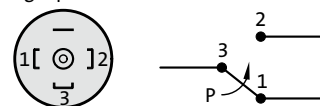
2480.00.45.01
switching range, adjustable 20-250 bar
switching tolerance ±5.0 bar
overpressure protection 350 bar
voltage (max.) 250 V

2480.00.45.02
switching range, adjustable 10-80 bar
switching tolerance ±1.6 bar
overpressure protection 350 bar
voltage (max.) 250 V

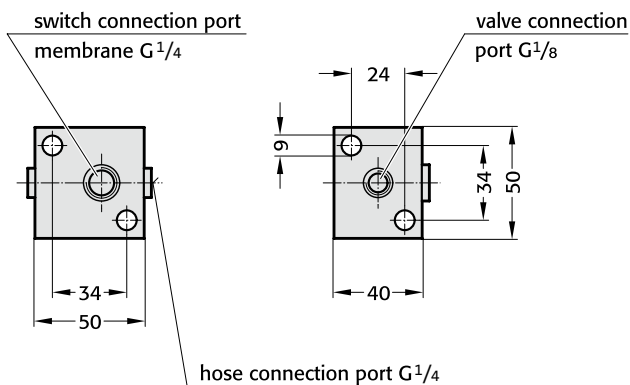
Note:

for monitoring pressure of single gas springs
see adapter 2480.00.45.10

Circuit diagram for
diaphragm pressure switch

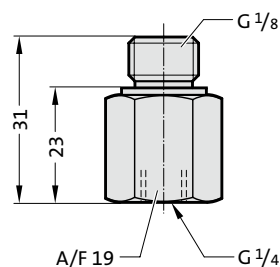


2480.00.45.10

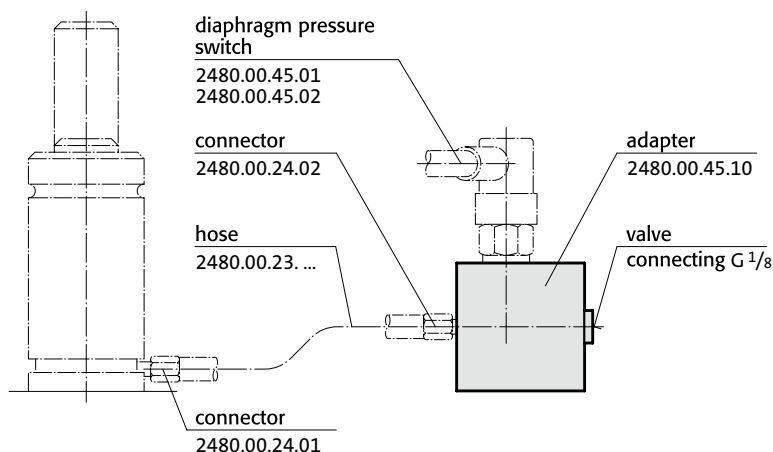


2480.00.45.00.01.18.14

Screw connection GE - G 1/8 - G 1/4 for
Control fitting with connection thread G 1/8



Installation example:



Description:

In conjunction with diaphragm pressure switch 2480.00.45.01 or .02, the adapter 2480.00.45.10 permits the monitoring of the charge pressure: if the pressure drops below a set value, the diaphragm pressure switch operates and emits a signal or stops the machine.

Gas spring with male fixing thread, POWERLINE

Mounting variations



2480.00.51.05

Box spanner for assembling/disassembling
of gas springs



Mounting examples:

