GS-8-V4A to GS-40-VA

Industrial gas springs – push type

With food-grade oil according to FDA approval

Valve technology, stainless steel

Force range 10 N to 5,000 N

Stroke 20 mm to 700 mm

GS-8-V4A

GS-10-V4A

GS-12-V4A

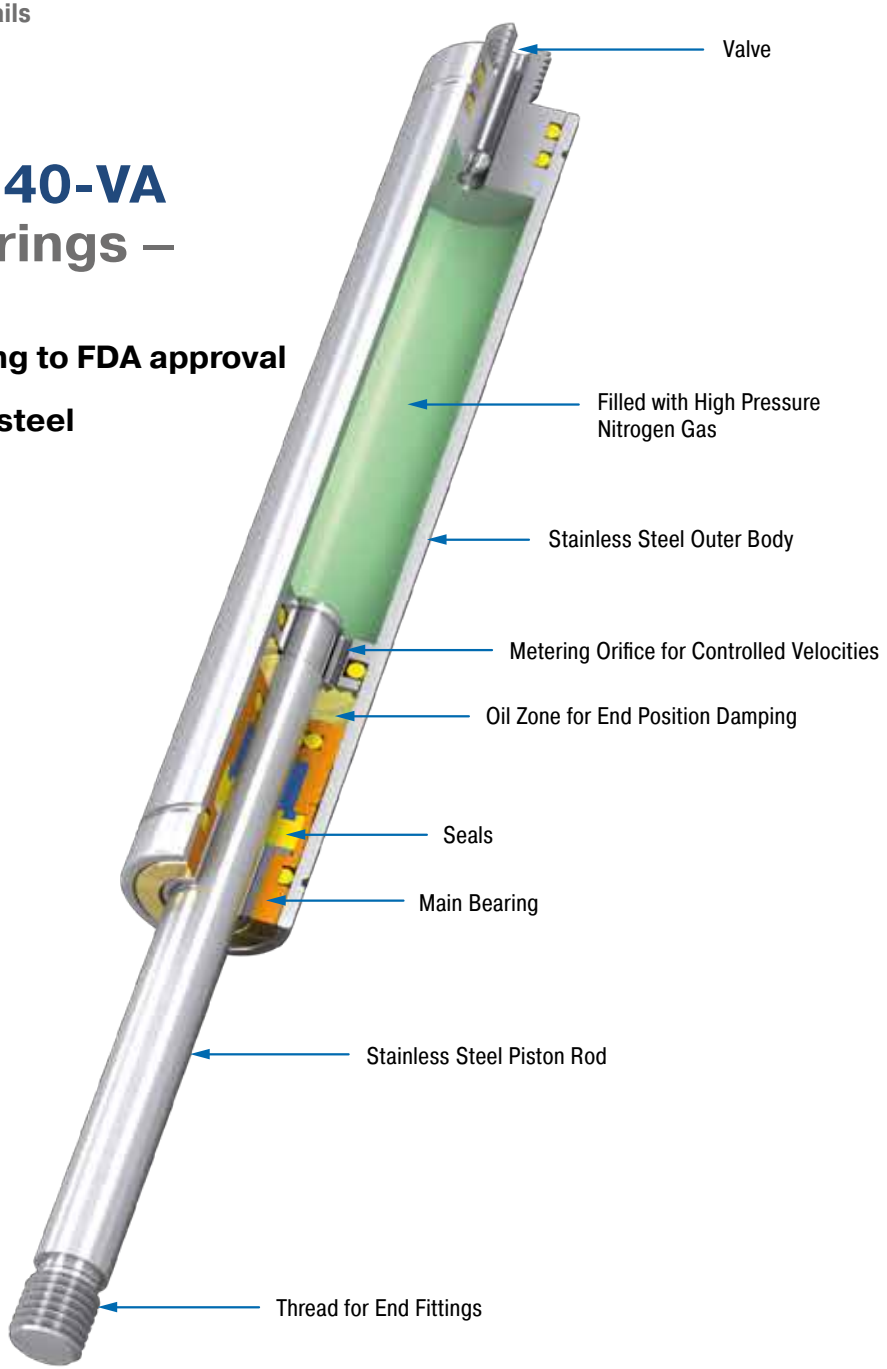
GS-15-VA

GS-19-VA

GS-22-VA

GS-28-VA

GS-40-VA



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Industrial gas springs – push type GS-8-V4A to GS-40-VA (stainless steel with valve technology)

Manual

General instructions

This manual is for the disruption-free use of the product types listed on page 1; its compliance is a prerequisite for the fulfilment of any warranty claims.

Therefore, make sure to read this manual before use.

Always maintain the limits specified in the performance table. Take into account the predominant environmental conditions and restrictions. Note the regulations of the trade association, TÜV or corresponding national, international and European regulations. Installation and commissioning only according to mounting instructions.

Safety information

WARNING

If ACE gas springs are used where a failure of the product could lead to personal injuries and/or material damage, additional safety elements must be implemented.

The flap/mass can fall down during installation of the gas springs. Secure the flap/mass to be moved against falling down.
Always install:
Push type gas springs always in extended state. Pull type gas springs in retracted state.

Intended use

ACE industrial push type gas springs are used wherever flaps or components are to be pressed, pulled, lifted, positioned or lowered by hand with the support of gas springs and without external energy.

ACE gas springs are individually filled with a certain pressure (force range F_1) according to customer requirements.

Description and function

Industrial push type gas springs are maintenance-free and ready-to-install. They are available off-the-shelf with a body diameter of 8 mm to 40 mm and forces of between 10 N and 5,000 N with a valve.

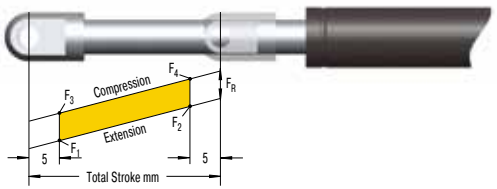
ACE push type gas springs are individually filled with a certain pressure (force range F_1) according to customer requirements. Taking into account the filling pressure, the cross-sectional area of the piston rod generates the force range F = p*A.

When inserting the piston rod, nitrogen flows through a metering orifice into the piston from the piston side to the piston rod side. The filling with nitrogen is sealed by the piston rod volume (compressed).

The increasing pressure causes the force increase (progression) of the gas springs. The force increase is dependent upon the ratio of the piston rod diameter to the outer body diameter and is approximately linear.

Calculation basis

Gas spring characteristic line in force-distance diagram



F_1 = nominal force at 20 °C (selected with orders and calculations)

F_2 = force in retracted state

Additional friction force is created by the contact pressure of the seals **during the retraction movement only**:

F_3 = force at the start of the insertion movement
F_4 = force at the end of the insertion movement

Gas springs (push type)

TYPES	[1] Progression approx. %	[2] Friction force F_R approx. in N
GS-8-V4A	18 - 31	10
GS-10-V4A	13 - 16	10
GS-12-V4A	20 - 25	20
GS-15-VA	30 - 53	20
GS-19-VA	28 - 32	30
GS-22-VA	29 - 33	30
GS-28-VA	53 - 59	40
GS-40-VA	34 - 43	50

[1] Depending on stroke
[2] Depending on filling power

Progression: Linear force increase during retraction, measured by the nominal force over the entire stroke. The specified approximate values can be changed on request.

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Filling tolerances: -20 N to +40 N or 5% to 7%. The tolerances may deviate depending on construction size and force range.

Instructions for the discharge process with valve gas springs

1. Hold gas spring with valve vertically upwards.
2. Screw DE-GAS adjustment tool onto the valve threaded pin.
3. Operate DE-GAS with light manual force until nitrogen escapes. Only press briefly so that not too much nitrogen can escape.
4. After the discharge, remove the DE-GAS, screw on the mounting element and try the gas springs in the application; if necessary, repeat the discharge process.

If 2 gas springs are installed in parallel, both gas springs should have the same force in order to avoid tilting. If necessary, send to ACE in order to have both gas springs filled to the same (averaged) force.

If too much nitrogen is discharged, this can be refilled at ACE.

DE-GAS

Calculation and design

In order to achieve an optimum force progression with minimal manual force, the gas spring must be correctly dimensioned and the suspension points optimally positioned (see figure).
The following must be determined:

- Gas spring types
- Necessary gas spring stroke
- Fastening points on flap and frame
- Maximum installation length of the gas spring
- Necessary force ranges
- Manual force to be used for all flap positions

With the free ACE calculation service you can avoid these time-consuming calculations. Using the calculation form in the catalogue or on www.ace-ace.de you can fax or mail the necessary requirements to us. Please add a sketch in side view (simple hand-drawn sketch with dimensions is sufficient) to your application. Our technical advisers can use this to determine the optimum mounting points for you.

You will receive a calculation offer with manual forces required to open and close. The mounting points on the flap and the frame are selected in such a way that they can be easily mounted to (hooked in) the completely extended gas spring with an open flap.

Delivery and storage

- After delivery please check the gas springs for any damage.
- The tension gas springs can become damaged if they fall down; remove gas springs from packaging carefully.
- Push type gas springs can generally be stored in any position. (Recommendation: Store with piston rod pointing downwards.)
- Always store push type gas springs in a dry place in order to avoid oxidation.
- The recommended maximum storage time is 1 year.
- Any protective packaging must be removed before installation.

Maintenance and care

Industrial push type gas springs are maintenance-free and ready-to-install. Regularly check the gas springs for oil loss, function and external damage.

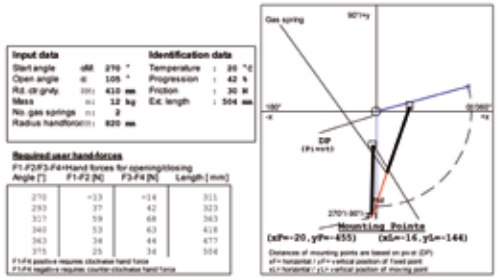
Push type gas springs are machine elements that are subject to continuous wear. Increased service life results in a reduced pushing (pulling) force. If this is no longer sufficient, the push type gas springs must be replaced or exchanged as appropriate.

Disassembly and disposal

Take account of environmental protection during disposal of the gas springs.

Push type gas springs can be given an oil filling depending on model. The corresponding data sheet is available on request. Gas springs cannot be repaired. The corresponding disposal instructions are available on request. You can return the gas springs to ACE for disposal that is free of charge.

Only remove push type gas springs in a completely extended state. This allows the gas spring to be easily unhooked.



Example: Calculation offer with mounting information

Industrial gas spring – push type GS-8-V4A (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: Install piston rod pointing downwards, then the end-position damping acts during opening and the piston rod of the gas spring is lubricated.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

M3.5x0.6 mounting accessories

GS-8-V4A

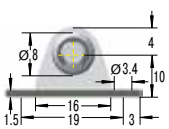
Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

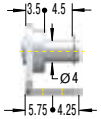
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

[1] Up to max. 180 N

NA3.5-V4A

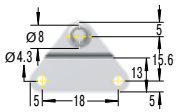


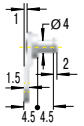


NG3.5-V4A

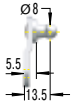
[1] Up to max. 180 N

OA3.5-V4A





OG3.5-V4A

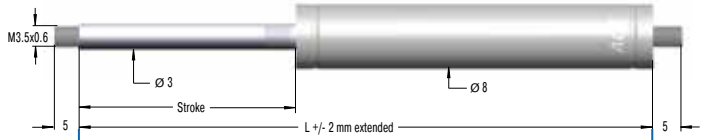


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

Valve technology, stainless steel, force range 10 N to 100 N (retracted to 131 N)

End Fitting | **Standard Dimensions** | **End Fitting**

B3.5



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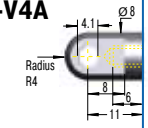
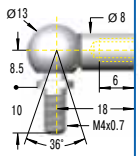
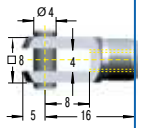


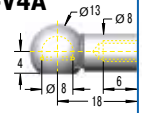
C3.5-V4A



D3.5-V4A



G3.5-V4A

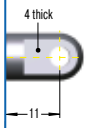


Performance data and dimensions

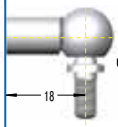
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-8-20-V4A	20	72	100	0.0144
GS-8-30-V4A	30	92	100	0.0164
GS-8-40-V4A	40	112	100	0.0166
GS-8-50-V4A	50	132	100	0.0203
GS-8-60-V4A	60	152	100	0.0200
GS-8-80-V4A	80	192	100	0.0240

Threaded pin
B3.5

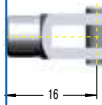
Eyelet
A3.5-V4A
up to max. 370 N



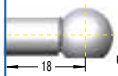
Hinge joint
C3.5-V4A
up to max. 370 N



Clevis fork
D3.5-V4A
up to max. 370 N



Angle joint
G3.5-V4A
up to max. 370 N



Discharge tool
DE-GAS-3.5

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Industrial gas spring – push type GS-10-V4A (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: Install piston rod pointing downwards, then the end-position damping acts during opening and the piston rod of the gas spring is lubricated.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

M3.5x0.6 mounting accessories

GS-10-V4A

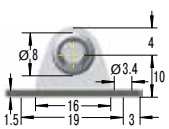
Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

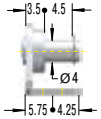
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

[1] Up to max. 180 N

NA3.5-V4A

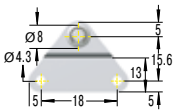


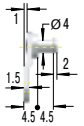


NG3.5-V4A

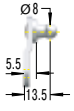
[1] Up to max. 180 N

OA3.5-V4A





OG3.5-V4A

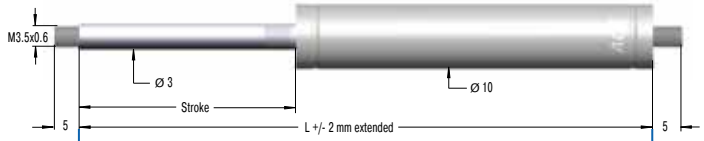


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

Valve technology, stainless steel, force range 10 N to 100 N (retracted to 116 N)

End Fitting | **Standard Dimensions** | **End Fitting**

B3.5



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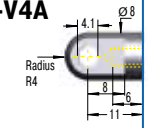
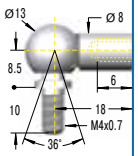
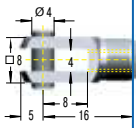


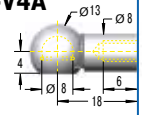
C3.5-V4A



D3.5-V4A



G3.5-V4A

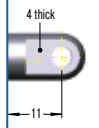


Performance data and dimensions

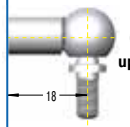
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-10-20-V4A	20	72	100	0.0167
GS-10-30-V4A	30	92	100	0.0180
GS-10-40-V4A	40	112	100	0.0200
GS-10-50-V4A	50	132	100	0.0220
GS-10-60-V4A	60	152	100	0.0260
GS-10-80-V4A	80	192	100	0.0300

Threaded pin
B3.5

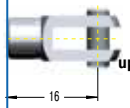
Eyelet
A3.5-V4A
up to max. 370 N



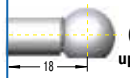
Hinge joint
C3.5-V4A
up to max. 370 N



Clevis fork
D3.5-V4A
up to max. 370 N



Angle joint
G3.5-V4A
up to max. 370 N



Discharge tool
DE-GAS-3.5

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Industrial gas spring – push type GS-12-V4A (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: Install piston rod pointing downwards, then the end-position damping acts during opening and the piston rod of the gas spring is lubricated.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

M3.5x0.6 mounting accessories

GS-12-V4A

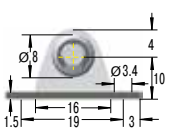
Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

[1] Up to max. 180 N

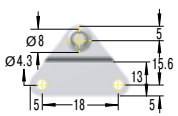
NA3.5-V4A

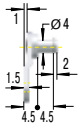


NG3.5-V4A

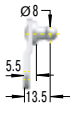
[1] Up to max. 180 N

OA3.5-V4A





OG3.5-V4A

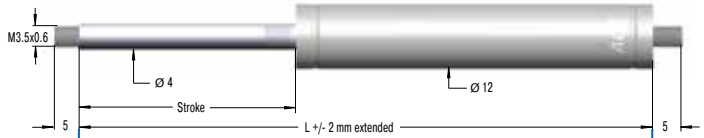


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

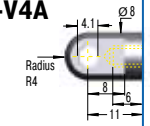
Valve technology, stainless steel, force range 15 N to 180 N (retracted to 225 N)

End Fitting | **Standard Dimensions** | **End Fitting**

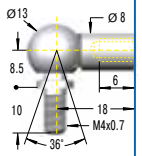
B3.5



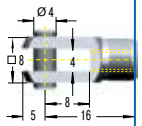
A3.5-V4A



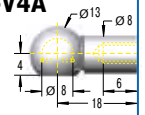
C3.5-V4A



D3.5-V4A



G3.5-V4A

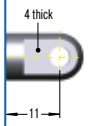


Performance data and dimensions

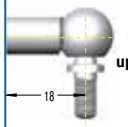
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-12-20-V4A	20	72	180	0.0261
GS-12-30-V4A	30	92	180	0.0334
GS-12-40-V4A	40	112	180	0.0338
GS-12-50-V4A	50	132	180	0.0374
GS-12-60-V4A	60	152	180	0.0440
GS-12-80-V4A	80	192	150	0.0540
GS-12-100-V4A	100	232	150	0.0605
GS-12-120-V4A	120	272	120	0.0680
GS-12-150-V4A	150	332	100	0.0800

Threaded pin
B3.5

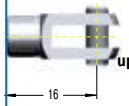
Eyelet
A3.5-V4A
up to max. 370 N



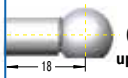
Hinge joint
C3.5-V4A
up to max. 370 N



Clevis fork
D3.5-V4A
up to max. 370 N



Angle joint
G3.5-V4A
up to max. 370 N



Discharge tool
DE-GAS-3.5

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

Industrial gas spring – push type GS-15-VA (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: In any position. Install piston rod pointing downwards, then the end-position damping acts during opening.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

M5x0.8 mounting accessories

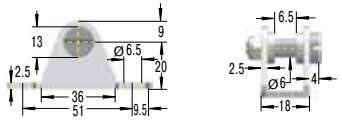
GS-15-VA

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

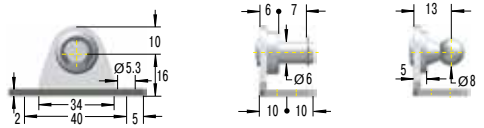
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

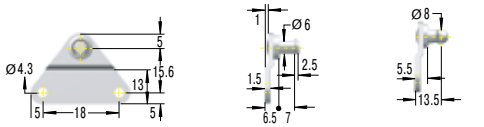
[1] Up to max. 500 N — **MA5-VA**



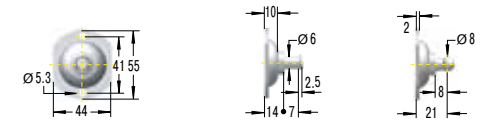
[1] Up to max. 400 N — **NA5-V4A** — **NG5-V4A**



[1] Up to max. 180 N — **OA5-V4A** — **OG5-V4A**



[1] Up to max. 500 N — **PA5-V4A** — **PG5-V4A**

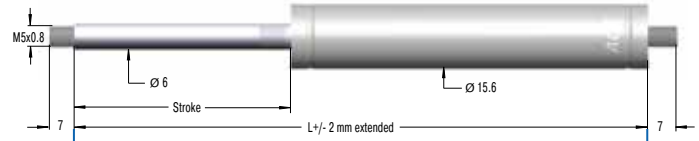


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

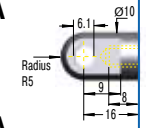
Valve technology, stainless steel, force range 40 N to 400 N (retracted to 612 N)

End Fitting — **Standard Dimensions** — **End Fitting**

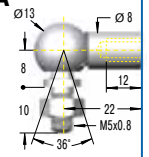
B5



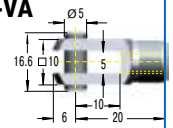
A5-VA



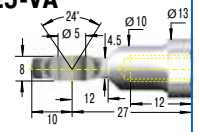
C5-VA



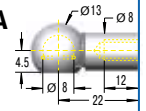
D5-VA



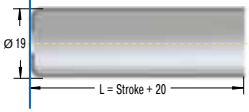
E5-VA



G5-VA



Protective tube
W5-15-VA

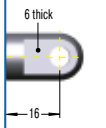


Performance data and dimensions

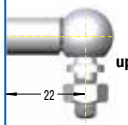
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-15-20-VA	20	74	400	0.0510
GS-15-40-VA	40	114	400	0.0655
GS-15-50-VA	50	134	400	0.0718
GS-15-60-VA	60	154	400	0.0774
GS-15-80-VA	80	194	400	0.0894
GS-15-100-VA	100	234	400	0.1010
GS-15-120-VA	120	274	400	0.1130
GS-15-150-VA	150	334	400	0.1305

Threaded pin
B5

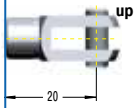
Eyelet
A5-VA
up to max. 490 N



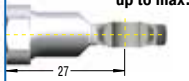
Hinge joint
C5-VA
up to max. 430 N



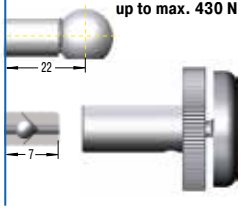
Clevis fork D5-VA
up to max. 490 N



Joint head E5-VA
up to max. 490 N



Angle joint G5-VA
up to max. 430 N



Discharge tool
DE-GAS-5

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Industrial gas spring – push type GS-19-VA (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: In any position. Install piston rod pointing downwards, then the end-position damping acts during opening.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

M8x1.25 mounting accessories

GS-19-VA

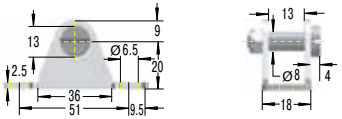
Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

[1] Up to max. 1,800 N

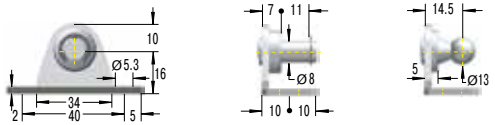
MA8-V4A



[1] Up to max. 1,000 N

NA8-V4A

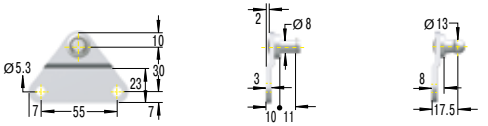
NG8-V4A



[1] Up to max. 1,200 N

OA8-V4A

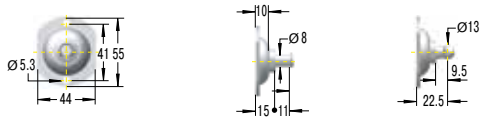
OG8-V4A



[1] Up to max. 1,200 N

PA8-V4A

PG8-V4A



[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

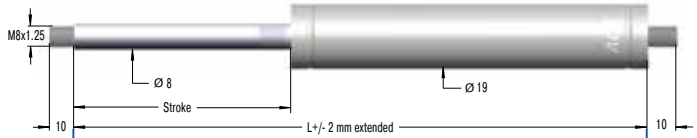
Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

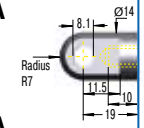
Valve technology, stainless steel, force range 50 N to 700 N (retracted to 924 N)

End Fitting | **Standard Dimensions** | **End Fitting**

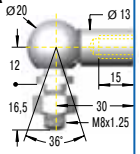
B8



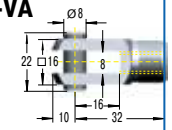
A8-VA



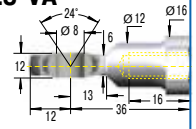
C8-VA



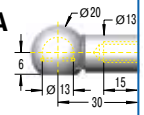
D8-VA



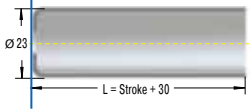
E8-VA



G8-VA



Protective tube
W8-19-VA

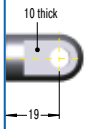


Performance data and dimensions

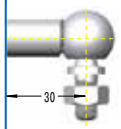
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-19-50-VA	50	164	700	0.1370
GS-19-100-VA	100	264	700	0.1995
GS-19-150-VA	150	364	700	0.2515
GS-19-200-VA	200	464	700	0.3045
GS-19-250-VA	250	564	600	0.3570
GS-19-300-VA	300	664	450	0.4115

Threaded pin
B8

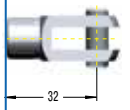
Eyelet
A8-VA
up to max. 1,560 N



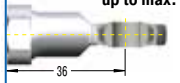
Hinge joint
C8-VA
up to max. 1,140 N



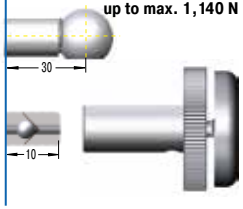
Clevis fork D8-VA
up to max. 1,560 N



Joint head E8-VA
up to max. 1,560 N



Angle joint G8-VA
up to max. 1,140 N



Discharge tool
DE-GAS-8

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Industrial gas spring – push type GS-22-VA (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: In any position. Install piston rod pointing downwards, then the end-position damping acts during opening.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

M8x1.25 mounting accessories

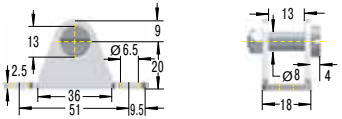
GS-22-VA

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

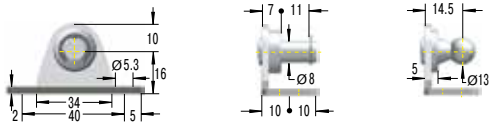
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

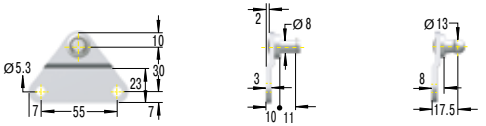
[1] Up to max. 1,800 N — **MA8-V4A**



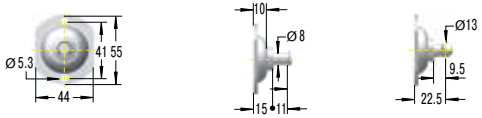
[1] Up to max. 1,000 N — **NA8-V4A** — **NG8-V4A**



[1] Up to max. 1,200 N — **OA8-V4A** — **OG8-V4A**



[1] Up to max. 1,200 N — **PA8-V4A** — **PG8-V4A**

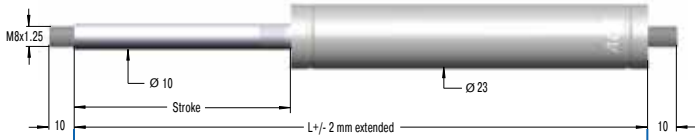


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

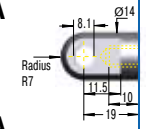
Valve technology, stainless steel, force range 100 N to 1,200 N (retracted to 1,596 N)

End Fitting — **Standard Dimensions** — **End Fitting**

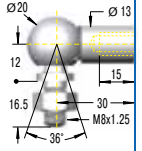
B8



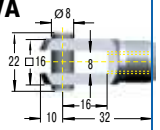
A8-VA



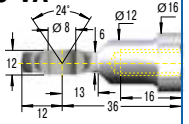
C8-VA



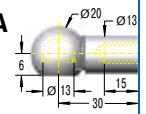
D8-VA



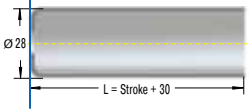
E8-VA



G8-VA



Protective tube
W8-22-VA

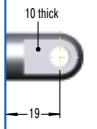


Performance data and dimensions

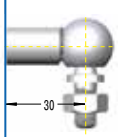
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-22-50-VA	50	164	1,200	0.2066
GS-22-100-VA	100	264	1,200	0.2790
GS-22-150-VA	150	364	1,200	0.3475
GS-22-200-VA	200	464	1,200	0.4220
GS-22-250-VA	250	564	1,200	0.4935
GS-22-300-VA	300	664	1,100	0.5685
GS-22-350-VA	350	764	850	0.6390
GS-22-400-VA	400	864	650	0.7070
GS-22-450-VA	450	964	550	0.7880
GS-22-500-VA	500	1,064	450	0.8570
GS-22-550-VA	550	1,164	400	0.9210
GS-22-600-VA	600	1,264	350	0.9936
GS-22-650-VA	650	1,364	300	1.0700
GS-22-700-VA	700	1,464	250	1.1400

Threaded pin
B8

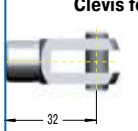
Eyelet
A8-VA
up to max. 1,560 N



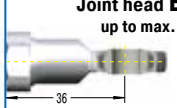
Hinge joint
C8-VA
up to max. 1,140 N



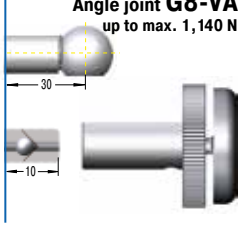
Clevis fork D8-VA
up to max. 1,560 N



Joint head E8-VA
up to max. 1,560 N



Angle joint G8-VA
up to max. 1,140 N



Discharge tool
DE-GAS-8

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Industrial gas spring – push type GS-28-VA (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: In any position. Install piston rod pointing downwards, then the end-position damping acts during opening.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

M10x1.5 mounting accessories

GS-28-VA

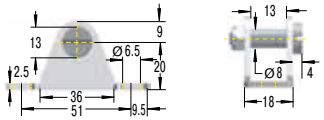
Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

[1] Up to max. 1,800 N

MA10-V4A

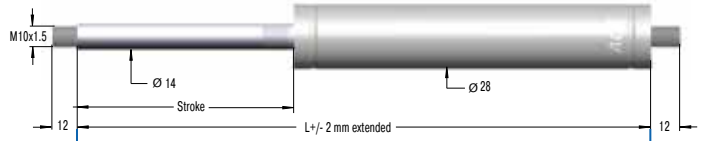


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

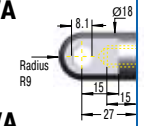
Valve technology, stainless steel, force range 150 N to 2,500 N (retracted to 3,975 N)

End Fitting | **Standard Dimensions** | **End Fitting**

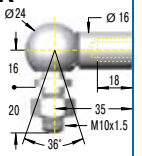
B10



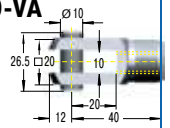
A10-VA



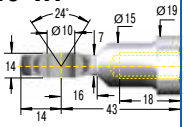
C10-VA



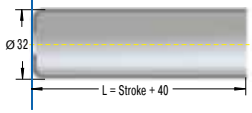
D10-VA



E10-VA



Protective tube
W10-28-VA

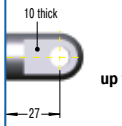


Performance data and dimensions

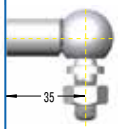
TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-28-100-VA	100	262	2,500	0.4800
GS-28-150-VA	150	362	2,500	0.6220
GS-28-200-VA	200	462	2,500	0.7400
GS-28-250-VA	250	562	2,500	0.8675
GS-28-300-VA	300	662	2,500	1.0040
GS-28-350-VA	350	762	2,500	1.1290
GS-28-400-VA	400	862	2,400	1.2550
GS-28-450-VA	450	962	1,950	1.3885
GS-28-500-VA	500	1,062	1,600	1.4907
GS-28-550-VA	550	1,162	1,350	1.6148
GS-28-600-VA	600	1,262	1,150	1.7600
GS-28-650-VA	650	1,362	1,000	1.8600

Threaded pin
B10

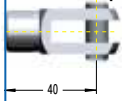
Eyelet
A10-VA
up to max. 3,800 N



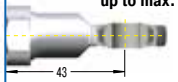
Hinge joint
C10-VA
up to max. 1,750 N

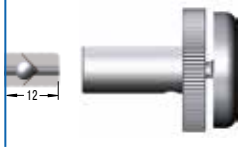


Clevis fork D10-VA
up to max. 3,800 N



Joint head E10-VA
up to max. 3,800 N





Discharge tool
DE-GAS-10

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Industrial gas spring – push type GS-40-VA (stainless steel with valve technology)

Mounting instructions and mounting accessories

Installation instructions

Gas springs are maintenance-free and ready to install. Before installation and use, check whether the identification number on the gas spring matches the respective designation on the delivery note.

Operating temperature range: -20 °C to +80 °C

Temperature effect: Due to physical restrictions the force of the gas springs changes by 3.4% every 10 °C.

Mounting: In any position. Install piston rod pointing downwards, then the end-position damping acts during opening.

Filling tolerance: -20 N to +40 N or 5% to 7%

WARNING

The flap/mass can fall down during installation of the gas springs.
Secure the flap/mass to be moved against falling down. Always install push type gas springs in extended state, pull type gas springs in retracted state.

If the temperature exceeds or falls below the maximum or minimum temperature, the gas spring may fail.
Always maintain temperature range of -20 °C to +80 °C.

Fluids, gases and dirt particles in the environment can attack or destroy the seal system of the gas spring and cause it to fail.
Protect piston rod and seal system from external materials in the environment.

Damage to the piston rod surface can destroy the seal system.
Do not grease, oil, paint piston rod, etc.; protect against dirt particles.

Tilting and lateral forces can lead to leaks from the gas spring or blocking of the piston rod.
Check installation and ensure suitable end fittings and guides. There must be no tension on mounting parts; if necessary, allow a little free play.

The body tube can become deformed.
Do not allow any transverse or lateral forces on the gas spring. Do not clamp the body tube.

End fittings can come loose from the gas spring.
Always completely screw on the end fittings and, if necessary, secure with threadlocker (Loctite).

High forces may cause the gas spring to compress or overstretch.
Apply mechanical stops.

Danger of kinking.
Avoid long stroke lengths combined with a high force range.

Max. force.
The max. forces for the mounting parts and fittings relate to the compressed gas spring. If these are exceeded there is a risk of breakage.

Packaging disposal

Please dispose of the transportation packaging in an environmentally-friendly manner. Recycling packaging materials saves raw materials and reduces waste. The packaging materials do not contain any prohibited materials.

M14x1.5 mounting accessories

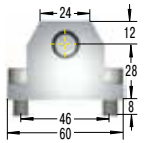
GS-40-VA

Before installation check whether the identification number on the packaging matches the respective designation on the delivery note.

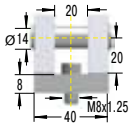
Note the dimensioning for mounting when using accessory parts. Bolts for fitting of accessories are not included.

If you have any questions, please phone +49 (0)2173 - 9226-20 for free advice.

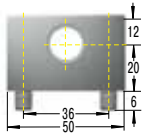
[1] Up to max. 10,000 N



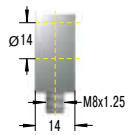
ME14-VA



[1] Up to max. 10,000 N



ND14-VA

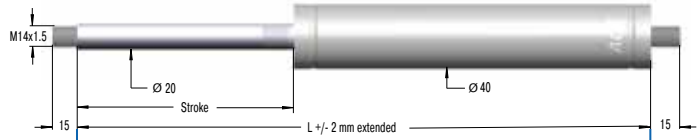


[1] Note! Max. static load in N; note force increase when pushing in (progression). Higher load possible on request.

Valve technology, stainless steel, force range 500 N to 5,000 N (retracted to 7,100 N)

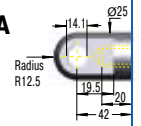
End Fitting | **Standard Dimensions** | **End Fitting**

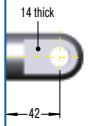
B14



Threaded pin
B14

A14-VA



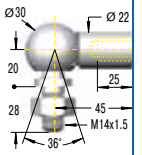


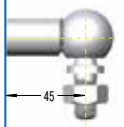
Eyelet
A14-VA
up to max. 7,000 N

Performance data and dimensions

TYPES	Stroke mm	L extended mm	Recommended force range max. N	Weight kg
GS-40-100-VA	100	317	5,000	1.1770
GS-40-150-VA	150	417	5,000	1.3950
GS-40-200-VA	200	517	5,000	1.6170
GS-40-300-VA	300	717	5,000	2.0540
GS-40-400-VA	400	917	5,000	2.4000
GS-40-500-VA	500	1,117	5,000	2.9445
GS-40-600-VA	600	1,317	4,150	3.0500

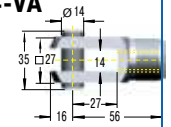
C14-VA

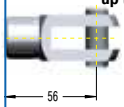




Hinge joint
C14-VA
up to max. 3,200 N

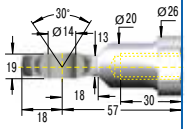
D14-VA

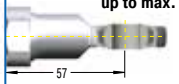




Clevis fork D14-VA
up to max. 7,000 N

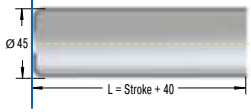
E14-VA

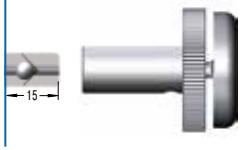




Joint head E14-VA
up to max. 7,000 N

Protective tube
W14-40-VA





Discharge tool
DE-GAS-14

The end fittings can be combined in any manner and must be secured against twisting by the customer, if necessary. See mounting accessories.

Industrial gas springs – push type GS-8-V4A to GS-40-VA (stainless steel with valve technology)

ACE
A STABILUS COMPANY

Warranty

Fundamentally, all modifications to the product by third parties lead to exclusion from the warranty.

Obvious defects must be reported to the vendor in writing immediately after delivery, no later than one week, but in any case before processing or installation, otherwise the assertion of a warranty claim is excluded. A timely dispatch is sufficient to keep the term.

The vendor is to be given an opportunity to check on site. If the complaint is justified the vendor offers warranty by repair or replacement at its own discretion. If the rectification fails, the buyer may choose to demand reduction of payment (abatement) or cancellation of the contract (withdrawal). If there is only a minor lack of conformity, particularly with only minor defects, the buyer nevertheless has a right of withdrawal.

If, after failed rectification, the buyer chooses to cancel the contract due to a defect of title or material defect, they are not entitled to additionally claim for damages.

If, after failed fulfilment, the buyer chooses compensation, the goods remain with the buyer, if this is reasonable. The compensation is limited to the difference between the purchase price and the value of the defective item. This does not apply if the vendor maliciously causes the breach of contract.

The quality of the goods is only considered as agreed upon with the product description of the vendor. Public statements, claims or advertising of the manufacturer do not represent an additional contractual specification of quality of the goods.

If the buyer receives defective mounting instructions, the buyer is only obligated to deliver defect-free mounting instructions and only if the defect to the mounting instructions prevents proper mounting.

The warranty period is two years and begins upon completion. Exchange and return of custom products are fundamentally excluded. The factory conditions of the manufacturing factory apply to parts not manufactured and processed by the vendor, which can be viewed by the orderer at the vendor at any time. Construction and installation parts are delivered according to the present standard of engineering.

Expected service life

In general, push type gas springs are machine elements that are subject to wear. Wear parts such as seals and pistons are excluded from the general warranty. The wear of seals is largely dependent upon the operating conditions and the respective application with its operating parameters.

In general, ACE push type gas springs are tested over a lifetime of approx. 70,000 to 100,000 complete strokes. This represents a lifetime of the seals of approx. 10,000 m depending on type. No more than 5% pressure may be lost in this period.

Adverse environmental and operating conditions can significantly reduce the expected service life.

Performance data

TYPES	Stroke mm	Force range min. N	Force range max. N	[1] Progression approx. %	[2] Friction force F_R approx. in N	Extension speed	End-position damping	Weight kg
GS-8-V4A	20 - 80	10	100	18 - 31	10	medium	medium	0.0144 - 0.024
GS-10-V4A	20 - 80	10	100	13 - 16	10	medium	medium	0.0167 - 0.03
GS-12-V4A	20 - 150	15	180	20 - 25	20	medium	medium	0.0261 - 0.08
GS-15-VA	20 - 150	40	400	30 - 53	20	medium	medium	0.051 - 0.1305
GS-19-VA	50 - 300	50	700	28 - 32	30	medium	medium	0.137 - 0.4115
GS-22-VA	50 - 700	100	1,200	29 - 33	30	medium	medium	0.2066 - 1.14
GS-28-VA	100 - 650	150	2,500	53 - 59	40	medium	medium	0.48 - 1.86
GS-40-VA	100 - 600	500	5,000	34 - 43	50	medium	medium	1.177 - 3.05

[1] Depending on stroke
[2] Depending on filling power

Technical data

Force range: 10 N to 5,000 N
Piston rod diameter: Ø 3 mm to Ø 20 mm
Progression: approx. 13% to 59% (depending on construction size and stroke)
Lifetime: approx. 10,000 m
Operating temperature range: -20 °C to +80 °C
Material: Outer body: **GS-8-V4A to GS-12-V4A:** V4A (1.4404/1.4571, AISI 316L/316Ti);
GS-15-VA to GS-40-VA: V2A (1.4301/1.4305, AISI 304/303);
Piston rod: **GS-8-V4A to GS-12-V4A:** V4A (1.4404/1.4571, AISI 316L/316Ti);
GS-15-VA to GS-40-VA: V2A (1.4301/1.4305, AISI 304/303);
End fittings: **GS-8-V4A to GS-12-V4A:** V4A (1.4404/1.4571, AISI 316L/316Ti);
GS-15-VA to GS-40-VA: V2A (1.4301/1.4305, AISI 304/303)
Operating fluid: Nitrogen and HLP oil according to DIN 51524, part 2, meets the requirements according to FDA 21 CFR 178.3570 (food-grade oil)
Filling tolerance: -20 N to +40 N or approx. 5% to 7%
Mounting: Install piston rod pointing downwards, then the end-position damping acts during opening and the piston rod of the gas spring is lubricated.
GS-15-V4A to GS-40-V4A: In any position. Install piston rod pointing downwards, then the end-position damping acts during opening.
End-position damping: approx. 5 mm to 30 mm (depending on stroke)
Positive stop: The customer must ensure an external positive stop at the stroke end.
Application field: Covers, flaps, machine housings, conveyor systems, switch cabinets, furniture industry, shipbuilding, food industry, pharmaceutical industry, flap elements

Note: Food-grade oil according to FDA 21 CFR 178.3570
V4A gas springs by ACE are made completely from stainless steel 1.4404/1.4571, AISI 316L/316Ti and correspond to the V2A gas springs in their dimensions. Therefore these data sheets are valid for V2A and V4A gas springs.
Gas springs with integrated wiper and integrated grease chamber: GS-15-V4A, GS-19-V4A, GS-22-V4A, GS-28-V4A and GS-40-V4A

End fittings: Can be combined in any manner and must be secured against twisting by the customer, if necessary.
Safety information: Push type gas springs should not be installed with preloading.
On request: Special oils and other special options and further accessories are available. Various end-position dampings and extension speeds. Further gas springs made from V4A available.