



**FIDEMA**

**PNEUMATICA**



**PROFESSIONAL GAS SPRINGS FOR MARINE INDUSTRY**

**FULL AISI 316L**  
Gas Springs  
& Fittings  
Catalogue



[fidema.com](http://fidema.com)

## SYNERGY OF SKILLS

FIDEMA GROUP is an Italian-based company born from the merging of MEG Industry and Fidema Progetti that for more than 25 years worked together in the field of cruise ships and yachting.

The group is divided into several sections that mainly work in:

- Naval Engineering
- Design and production of hydraulic and electrical moving systems
- Components for the nautical sector
- Prototyping and production through 3D printing technologies for the nautical sector. Our reference sectors are cruise and yachting. In more than 25 years of activity, both with the MEG Industry and the Pressmair brand (which we acquired in 2016), we cooperated with the most known names in the Yacht Market, as Fidema Progetti we boast collaborations with many important cruise shipyards and owners.

The strength of the Group lies in the possibility of providing a 360° service starting from the design and calculation, passing to the structural modifications, turnkey supply of hydraulic and electric movement systems (launch cranes, platforms, bathing platforms, tender launch sleds, garage doors) up to the individual components and spare parts (cylinders, valves, gas springs, locking pins).

The components we design and supply are often studied together with the Customer through precise technical and construction specifications and they are manufactured according to the main construction standards also in collaboration with the various Registers and Flags with which we maintain daily reports.



## PROFESSIONAL GAS SPRINGS FOR MARINE INDUSTRY

### HOW THEY WORK

A gas spring is essentially composed by a pipe case perfectly dry sealed, pressurized; inside the pipe case, a rod can move alternatively; a "pseudo-piston" is fixed to the rod; its function is only to avoid the exit of the rod from the pipe case, when it is pushed by the pressured gas. The gas spring's working force can be calculated as the result of the gas pressure on the sole rod section. The gas spring rod always performs the total theoretical stroke, unless stopped before by a mechanical block. This option is also available.

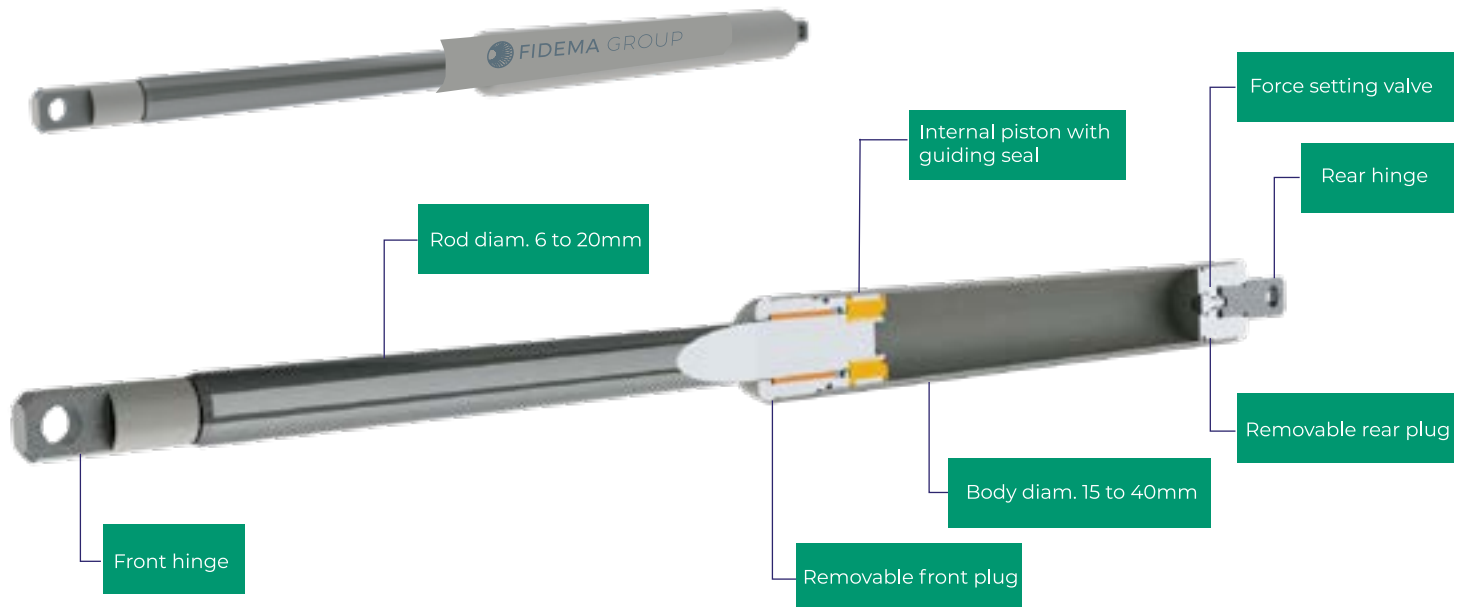
### DIMENSIONING

Gas spring can only PUSH along the rod axis (which can only push to exit but can not pull to enter, unless installed with a special cinematic mechanism); the force changes along the stroke. Gas springs can be used to balance a force (e.g. a weight force) acting along the rod's axis; the following pictures show how the difference from all involved forces and distances of application points of each force compared with the rotation fulcrum, it is possible to reach different equilibrium situations.

Gas Spring's Force changes with the rod position, because when the rod is positioned inside the Gas Spring body, internal pressure rises and so Gas Spring force increase, as per following table:

*F1* = Force with inside position rod  
*F2* = Force with rod totally external

GAS SPRING TYPE	FORCE VALUE
MGX15.....	F1 = F2 x 1,3
MGX19.....	F1 = F2 x 1,4
MGX25.....	F1 = F2 x 1,5
MGX30.....	F1 = F2 x 1,5
MGX40.....	F1 = F2 x 1,5



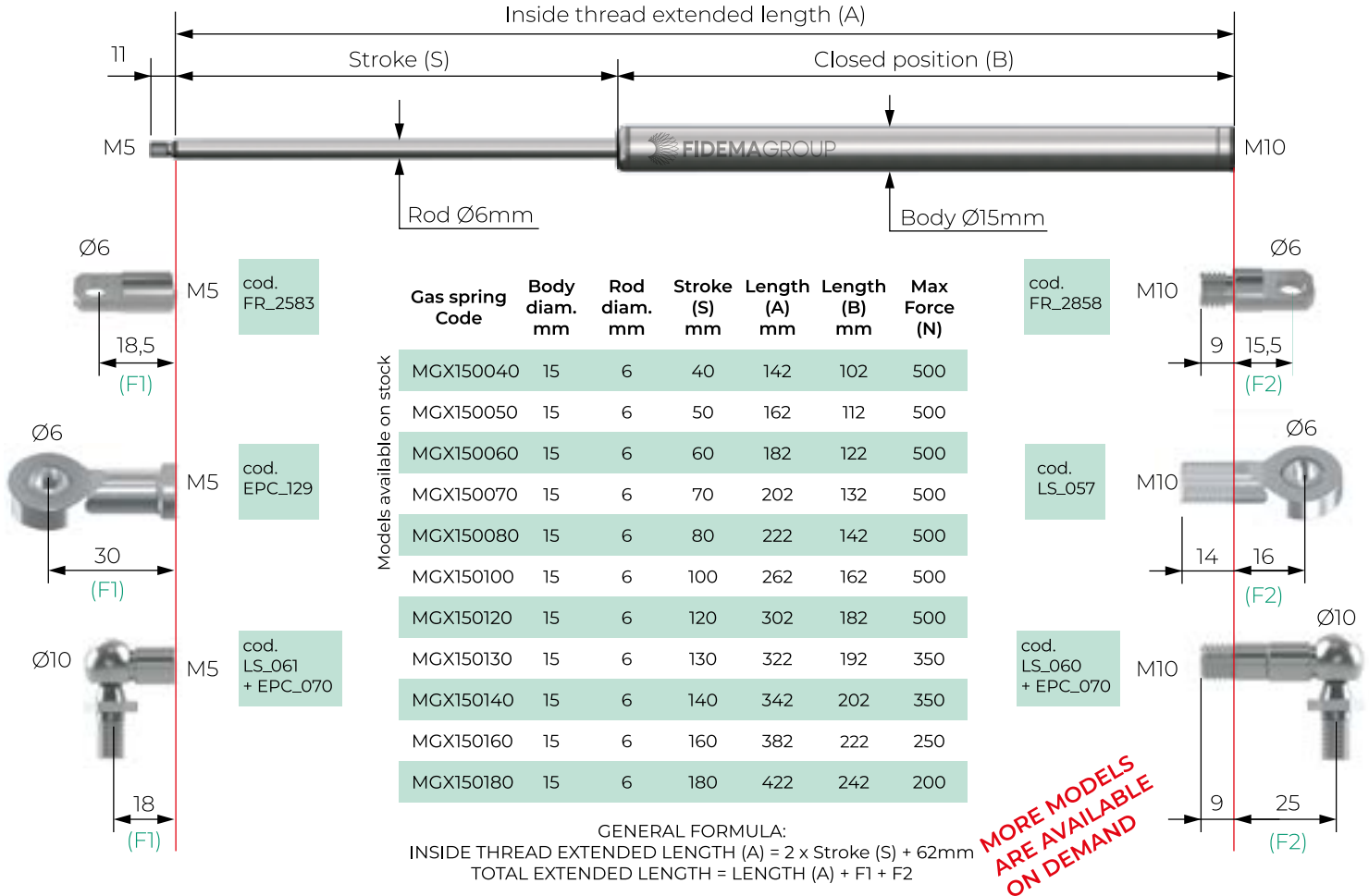
### IMPORTANT NOTES:

- 1) Gas Springs can work in a range of temperature between -30°C to + 70°C
- 2) Gas Springs are filled with pure Nitrogen. Nitrogen is an inert gas, not flammable, not poisonous. All Gas Springs content high pressure gas (up to 200 Bar). Never try to open it, if you do not use the correct tool supplied by the producer.
- 3) Garbage disposal: Gas Springs are mainly made with metal components. They can go directly to the garbage disposal, provided that they must be cleared of the internal pressured gas.
- 4) All Gas Springs have a sticker showing the warning message "Do not open: High pressure-Protect from heat sources" and a second sticker with the item code. If you can not read this latter sticker for any reason, we will not accept any warranty compliance and we will not be responsible for any damage.
- 5) Gas Springs should be installed with downward rod orientation: only with this expedient it is possible to have the best cushioning action on extended rod end.
- 6) Gas Springs should be installed without any banding or lateral force: please check the proper fixation device, eventually equipped with the ball ring.
- 7) Gas Springs do not need any maintenance if installed in a clean site; do not grease or lubricate.
- 8) Please protect the Gas Spring's rod from knocks, scratches, filth and accidental paint. Seals can be damaged.
- 9) Please stock Gas Springs in a cool dry place; do not expose them to the sun ray. If properly stocked, Gas Springs will not loose their force. After a long time in stock, it is possible to have some seals stick-slip problems: it will be solved with the first Gas Spring action.
- 10) All Gas Springs are assembled on request; for this reason after the construction it is possible modify the force only, but not any external dimension. We can not accept any return.
- 11) We are open to let you have our suggestions and/or calculations to help you for the Gas Spring selection, but in any case the customer is the sole responsible for the choice.
- 12) Length tolerance is +/- 2,5 mm

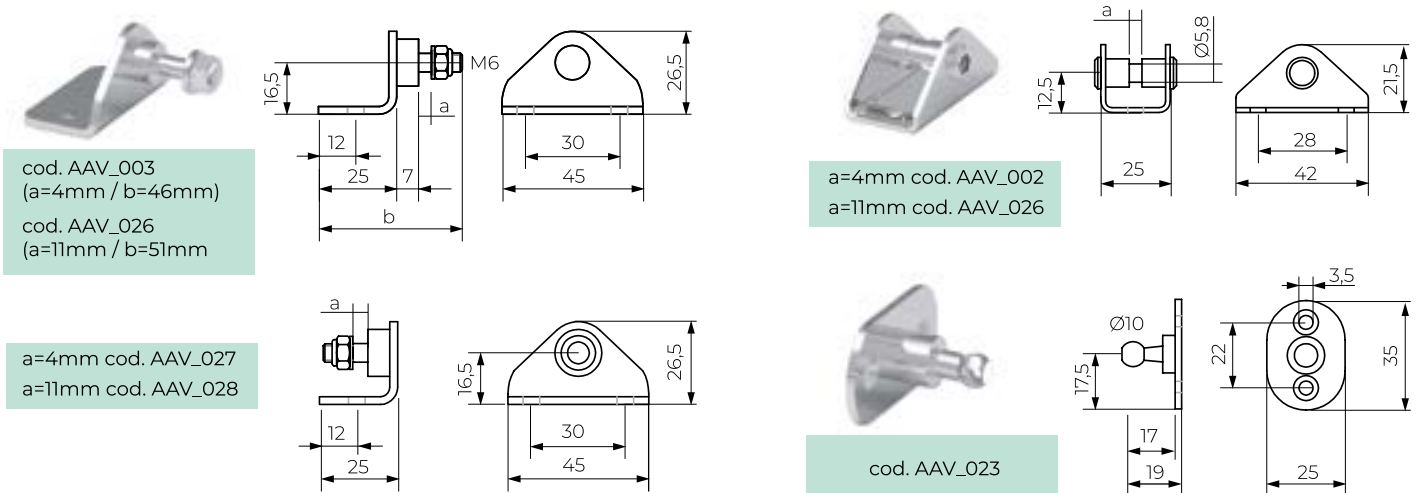


A complete range of full AISI 316L fittings available for all the gas springs series

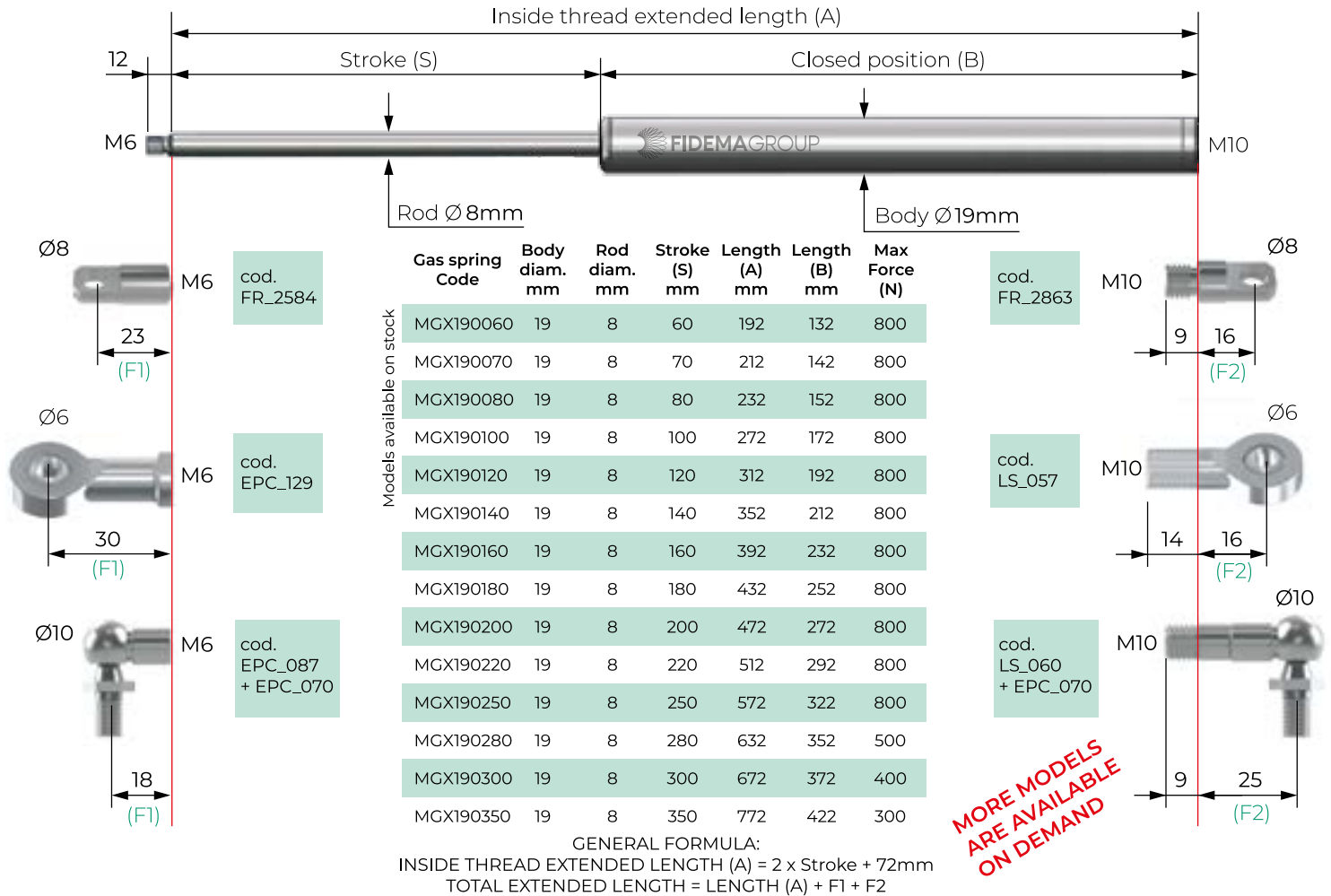
## MGX15 - Bore 15mm AISI 316L Gas Springs



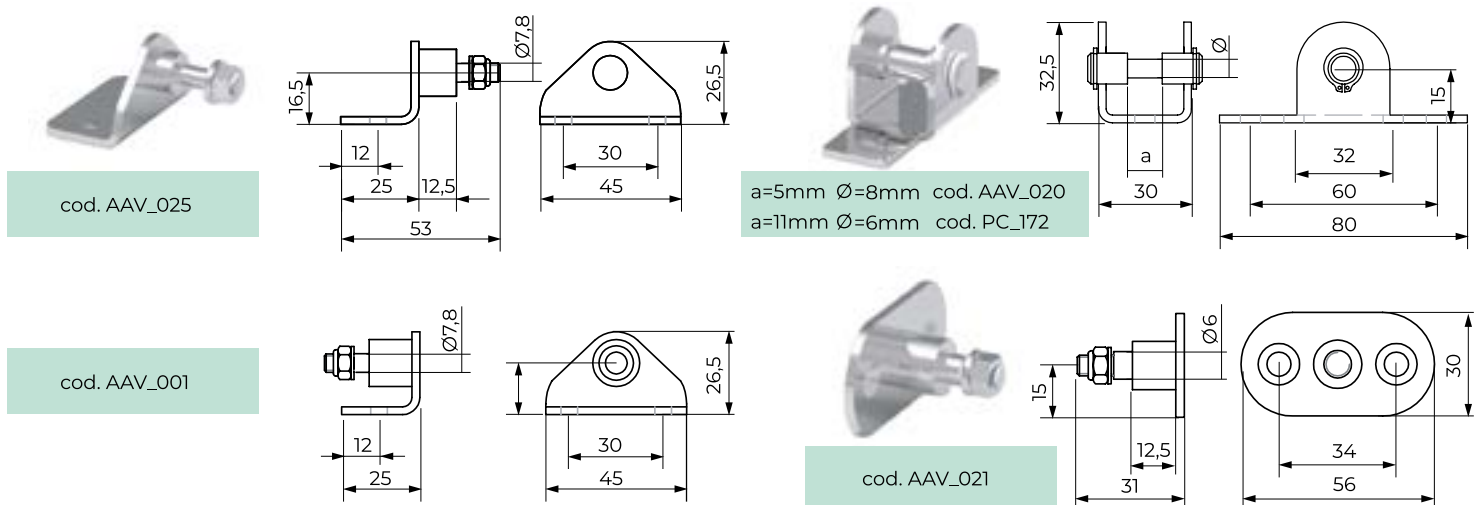
## MGX15 - Full AISI 316L Fittings



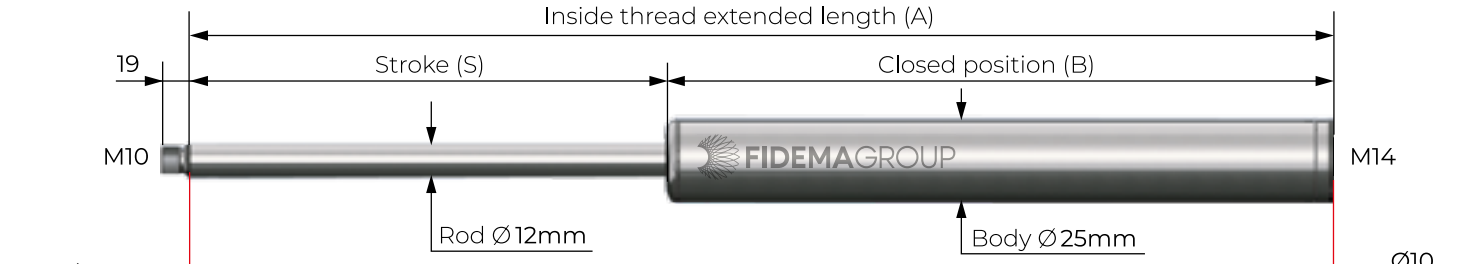
## MGX19 - Bore 19mm AISI 316L Gas Springs



## MGX19 - AISI 316L Fittings



## MGX25 - Bore 25mm AISI 316L Gas Springs



Gas spring Code	Body diam. mm	Rod diam. mm	Stroke (S) mm	Length (A) mm	Length (B) mm	Max Force (N)
MGX250070	25	12	70	226	156	1800
MGX250080	25	12	80	246	166	1800
MGX250100	25	12	100	286	186	1800
MGX250120	25	12	120	326	206	1800
MGX250140	25	12	140	366	226	1800
MGX250160	25	12	160	406	246	1800
MGX250180	25	12	180	446	266	1800
MGX250190	25	12	190	466	276	1800
MGX250200	25	12	200	486	286	1800
MGX250220	25	12	220	526	306	1800
MGX250250	25	12	250	586	336	1800
MGX250280	25	12	280	646	366	1800
MGX250300	25	12	300	686	386	1800
MGX250350	25	12	350	786	436	1400
MGX250400	25	12	400	886	486	1000
MGX250500	25	12	500	1086	586	650

Models available on stock

cod. FR\_2840 (F1) 35

cod. EPC\_092 (F1) 43

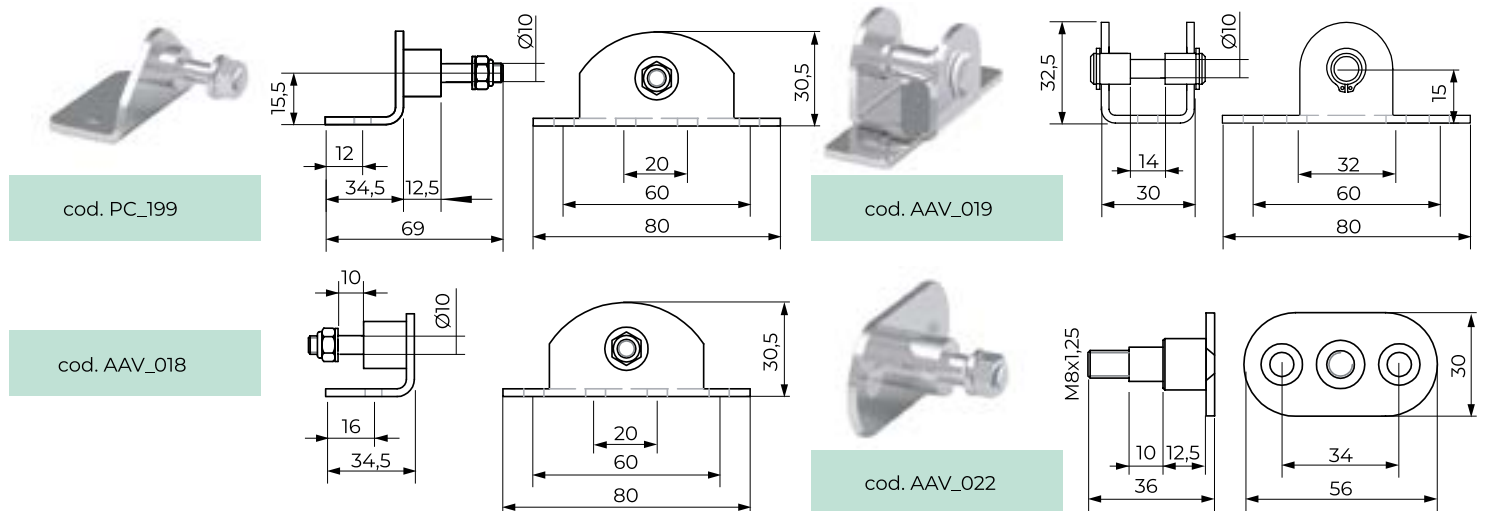
cod. FR\_2855 (F2) 20, 23

cod. LS\_055 (F2) 20, 23

GENERAL FORMULA:  
 INSIDE THREAD EXTENDED LENGTH (A) = 2 x Stroke + 89mm  
 TOTAL EXTENDED LENGTH = LENGTH (A) + F1 + F2

**MORE MODELS ARE AVAILABLE ON DEMAND**

## MGX25 - AISI 316L Fittings



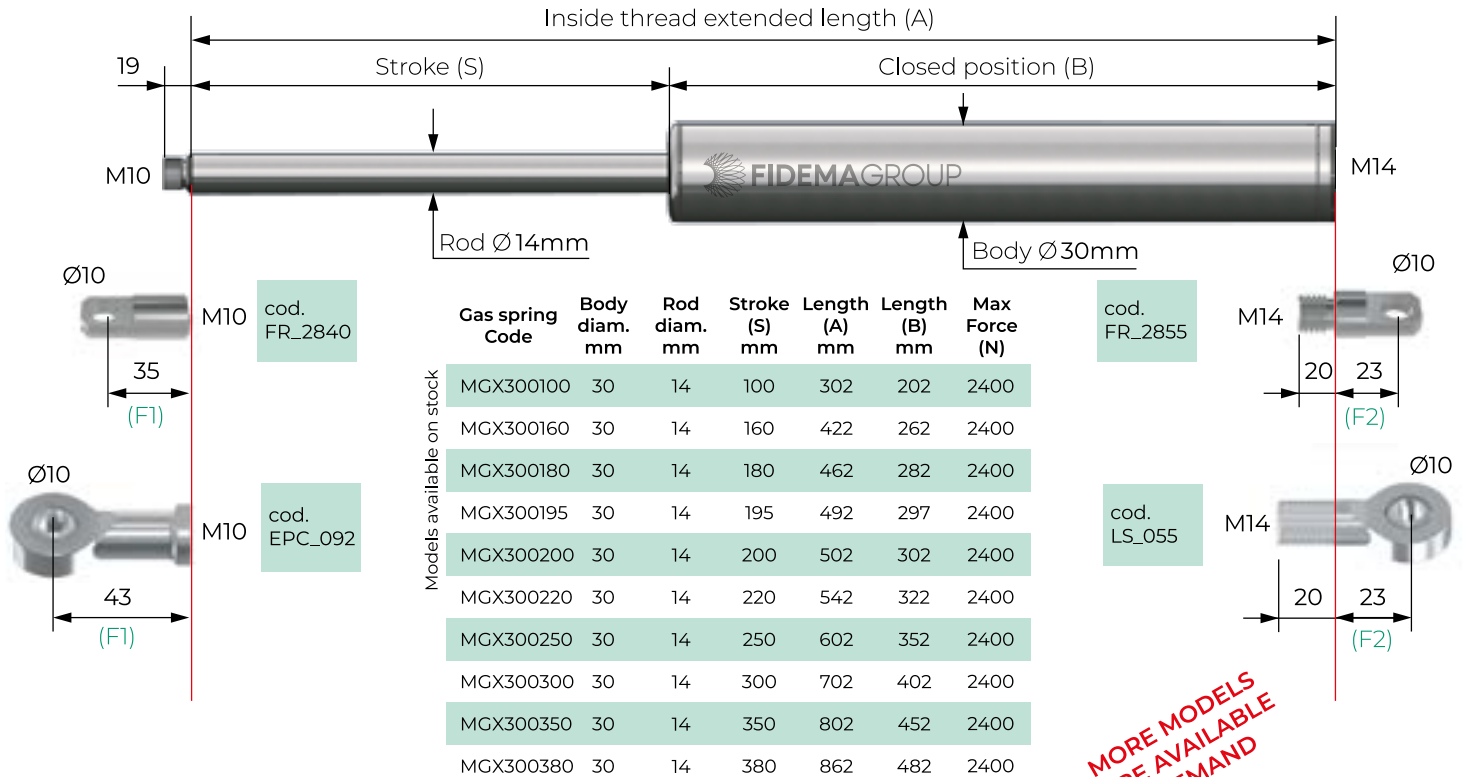
cod. PC\_199

cod. AAV\_018

cod. AAV\_019

cod. AAV\_022

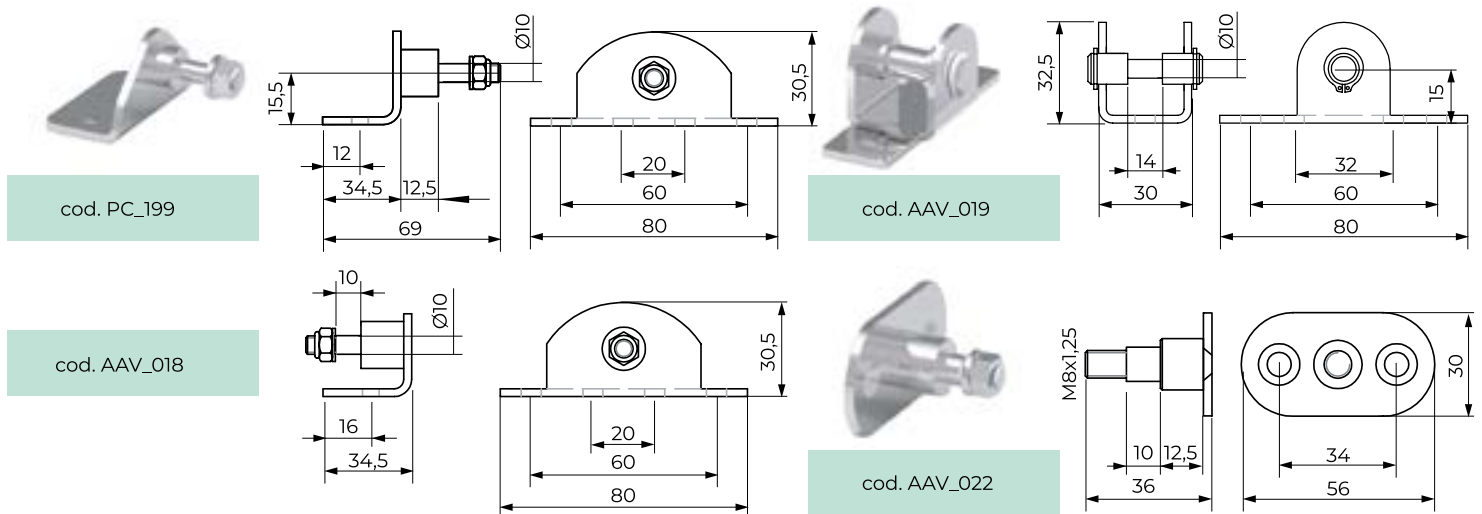
## MGX30 - Bore 30mm AISI 316L Gas Springs



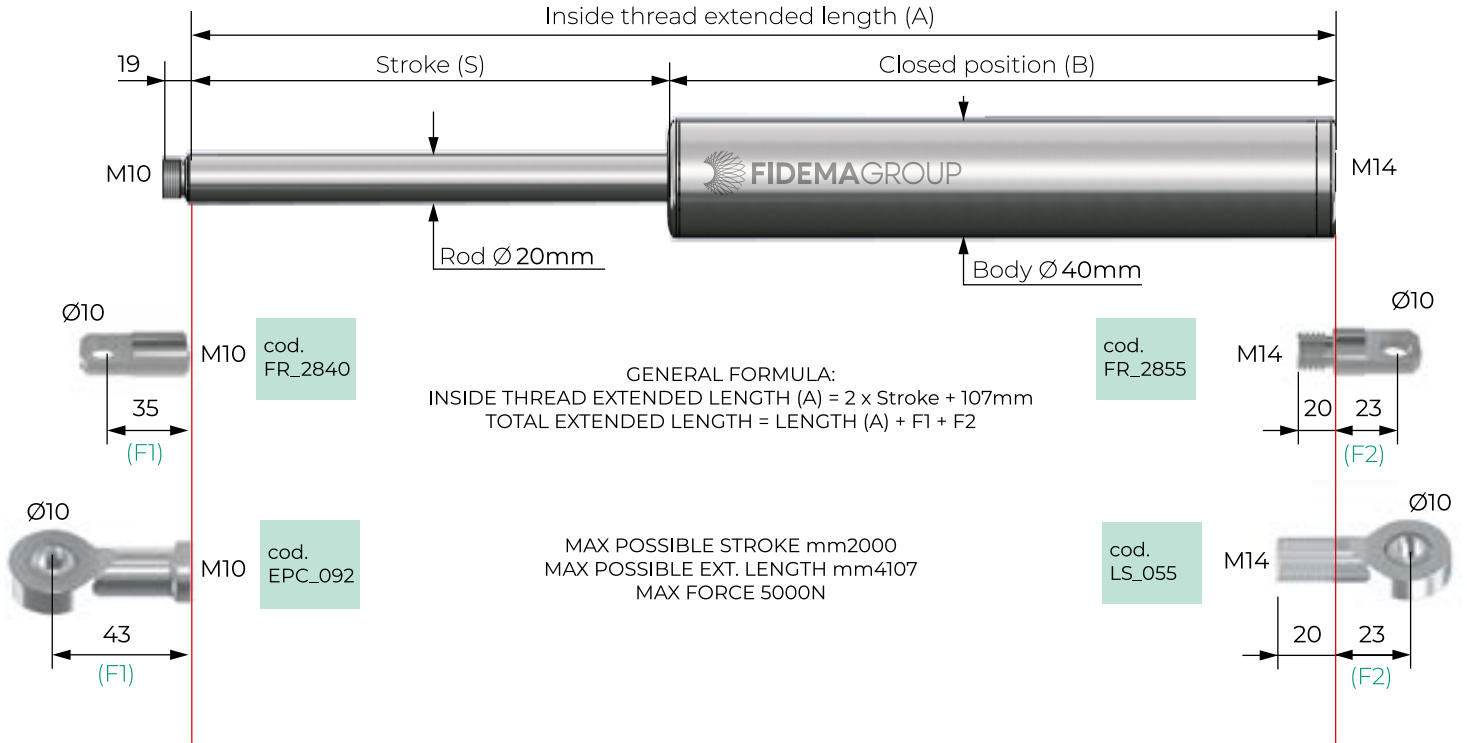
GENERAL FORMULA:  
 INSIDE THREAD EXTENDED LENGTH (A) = 2 x Stroke + 102mm  
 TOTAL EXTENDED LENGTH = LENGTH (A) + F1 + F2

**MORE MODELS ARE AVAILABLE ON DEMAND**

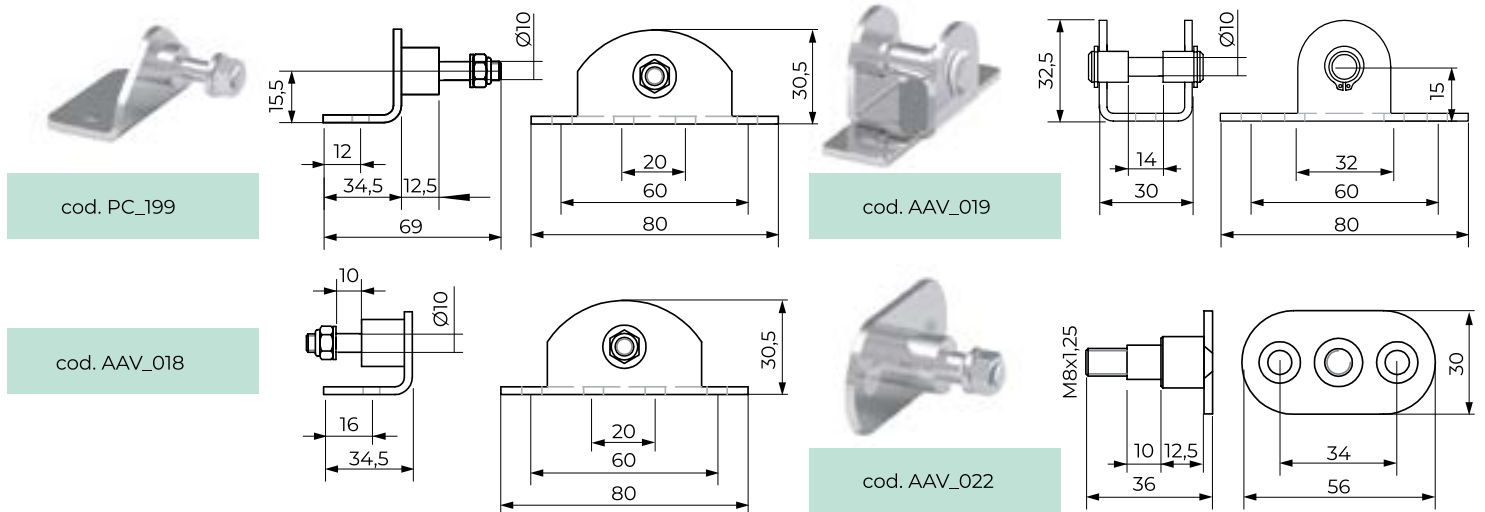
## MGX30 - AISI 316L Fittings



## MGX40 - Bore 40mm AISI 316L Gas Springs



## MGX40 - AISI 316L Fittings







FIDEMA

PNEUMATICA

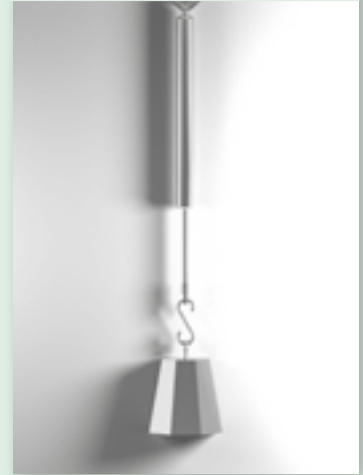
## AISI 316L SPECIAL GAS SPRINGS

### Tension Gas Springs

The AISI 316L tension gas springs are based on the functional principle opposite to the compression ones. Their use is ideal in places where there is no space for traditional compression gas springs so this type of gas spring finds its main application in opening systems such as doors, windows, shelves, opening downwards. Stroke and force can be customized according to the customer use.

#### Technical features:

Body diameter: mm25  
Rod diameter: mm8  
Maximum Force: 1000N



### Telescopic Gas Springs

The AISI 316L telescopic gas spring allows to save a lot of space in closing position while giving the possibility to have a very long stroke in working position without losing operative force.

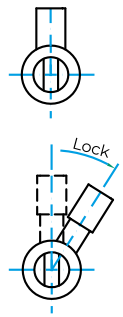
#### Technical features:

Body diameter: mm25 to mm19  
Rod diameter: mm8  
Maximum Force: 1000N



### Gas springs with rod locking system

Gas Spring Bore: 19 mm  
Equipped with Rod Locking System  
Max Lockable force: 300 N  
Totally interchangeable with the standard type  
All dimensions remain unchanged.



### Double-effect Gas Springs

The special AISI 316L double-effect springs are suitable for heavy hatches with a large opening angle, which are characterised by a low starting and a high final force. These springs have two pressure cylinders that can be filled differently that are able to cover two force ranges. The double-effect gas springs allow a very light and smooth opening of the hatch and a very easy closing of the same.

#### Technical features:

No limits of body diameters, rod diameters, force and stroke

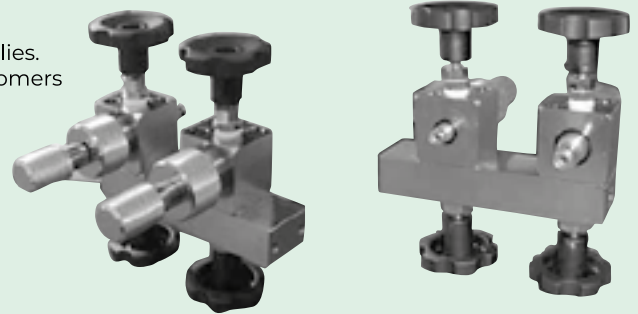




## SERVICES

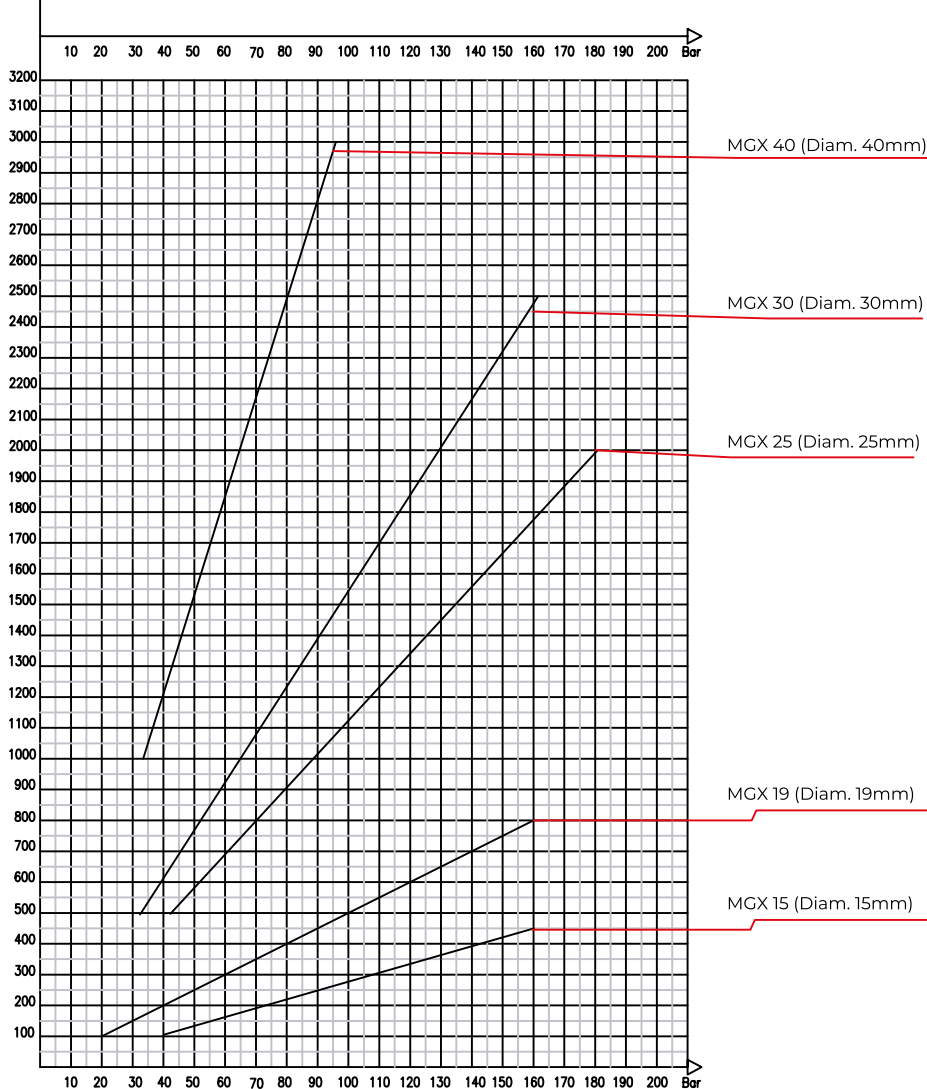
### Gas Springs Re-charge

After years of use the gas springs can suffer a force loss. Fidema Group provides a re-charge service to all the gas springs it supplies. A gas springs re-charge/setting tool is also available for our customers following these codes:  
LP/04306 - Special valve for charge and set-up  
51685 - Pressure regulator I.P. 200 Bar - O.P. 10 Bar  
51526 - Connecting flexible pipe



### Force / Pressure Diagram

Force N  $\Delta$  Charge Pressure



### Engineering Service:

Fidema Group provides a complete support in the engineering of your opening system. Please contact us for any doubt or request you may have while using gas springs for your projects, we can suggest the best possible solution providing drawings and calculation to help you and your ideas.

Write to:

[sales@fidema.com](mailto:sales@fidema.com)

MGX15 Diam. 15 1Bar = 2,83N    MGX19 Diam. 19 1Bar = 5N    MGX25 Diam. 25 1Bar = 11,3N    MGX30 Diam. 30 1Bar = 15,4N    MGX40 Diam. 40 1Bar = 31,4N

## SOME INFORMATION

### GAS SPRING FORCE APPROXIMATE CALCULATION

#### Moment's balance:

$$F1 \times b = P \times a$$

$$F1 = \frac{P \times a}{b \times n} \times 9,8$$

Where:

P = Contrast Force (kg)

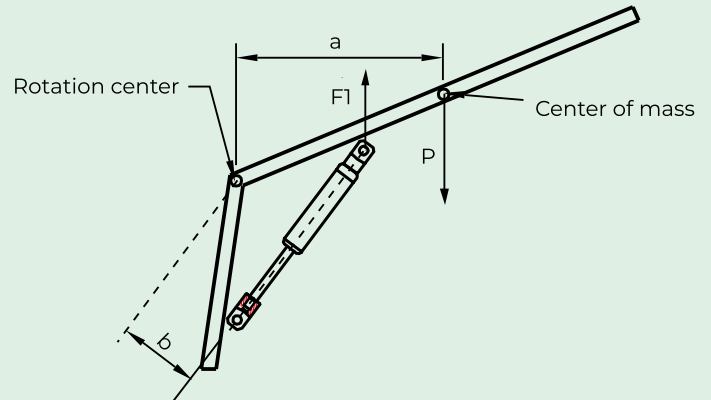
a = Usefull lever arm for contrast force (mm)

F1 = Gas Spring Force with extended rod (N)

b = Usefull lever arm for gas spring (mm)

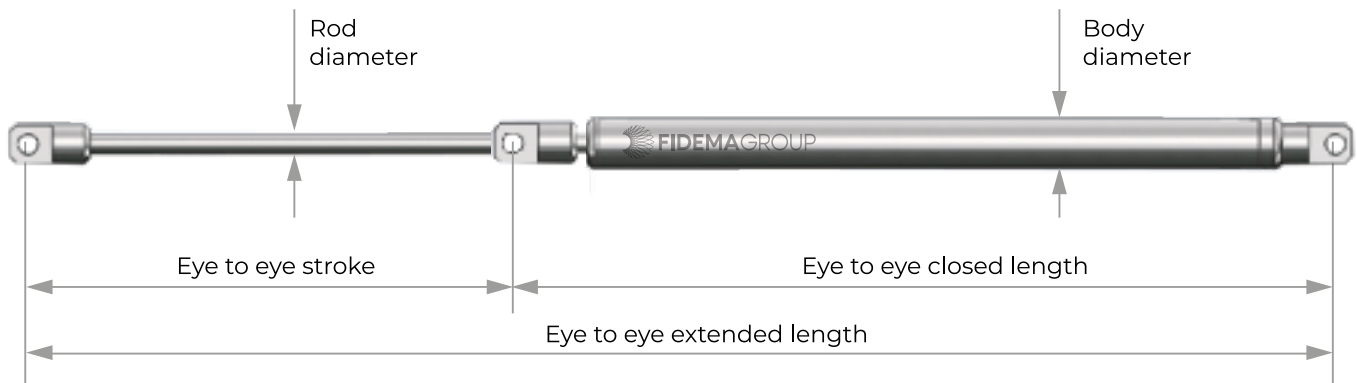
n = Number of used gas springs

9,8 = kg to N conversion value



### Need to replace a gas spring?

FIDEMA GROUP gas springs are compatible with all the other brands. If you need to replace a gas spring just provide these info including the force expressed in Newton (N) or kg.



### Need to replace an old gas spring of our production?

All our gas springs are labeled with all the information you have to send to receive your spare parts. Please provide the information you will find on the label so to receive your brand new gas spring. Send your inquiry to [sales@fidema.com](mailto:sales@fidema.com)



FIDEMA

**PNEUMATICA**

YOUR GLOBAL SOLUTIONS FOR YACHTING



NAVAL  
DESIGN



INDUSTRIAL  
DESIGN



FEM & CFD  
ANALYSIS



HYDRAULICS  
& PNEUMATICS



AUXILIARY  
MACHINERY



COMMISSIONING



3D PRINTING

[WWW.FIDEMA.COM](http://WWW.FIDEMA.COM)

