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General characteristics of Q.R.V. (Quick Release Valves)

General characteristics Rotorseals

The Gummi Rotorseal, is a rotary joint that allows the transfer of gases or liquids under pressure or vacuum into and out of the open or exposed end of a rotating shaft or body. It is primarily designed to transport compressed air or hydraulic fluid to control the clutches or brakes at starting.

Other applications include the transfer of cutting fluid to machine tools, lubrication of different elements such as shaft mounted components and for the circulation of water or oil for cooling systems. The rotating seal is made by non-metallic ring, held on the end of the shaft by the force of a light spring. The sealant ring is specifically designed so that the pressure by the media acts on both ends, which reduces the force on the sealing surface.

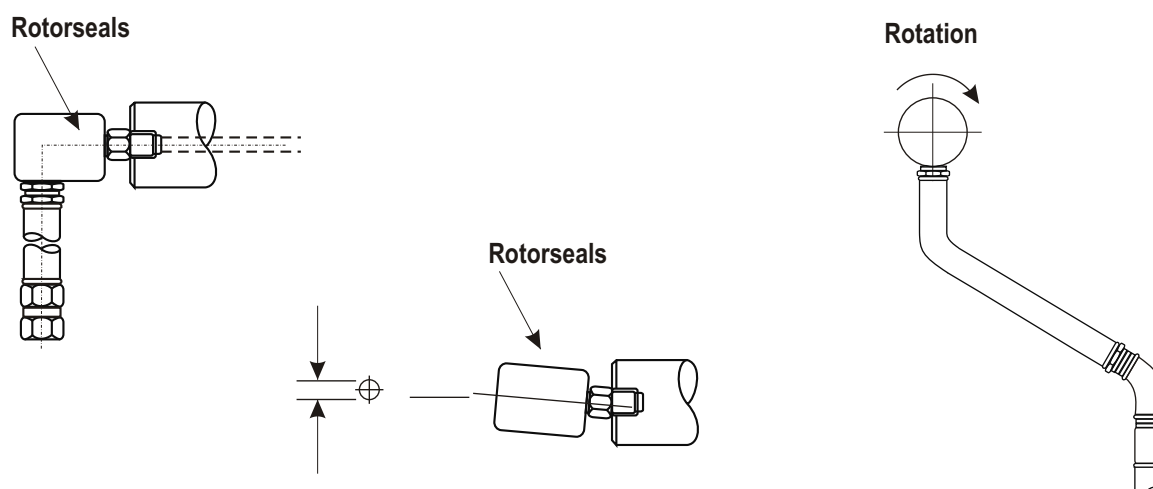
This results in ample protection against leakage and compensates for wear on the seal. Ball bearings are used between the stationary and the moving part to provide rigid ness to the assembly and to reduce the running torque.

The Rotorseals are available in single, double and triple passage, in various sizes and models in order to fulfill a variety of requirements. The Rotorseals with a single passage, when used in a pneumatic installation can be provided with a quick release valve at the inlet port to assure a rapid exhaust.

In the majority of the cases the Rotorseals must be mounted at the end of a shaft. It is very important that axis of the rotorseal rotation be concentric between with the axis of the rotating member's axis to avoid and minimize wobble.

Model Connection

To allow for eccentricities, a flexible connection should be utilized between the Rotorseal and the media supply. A rigid connection pre-loads the bearings, minimizing their operating life. The flexible connection should not be installed tense or too tight, and should incorporate a union and 45° elbow as the design shows.



It is important to make the flexible connection between pipe and rotorseal prior to mounting the rotorseal to the rotating body. These will help avoid seal and bearing damage. The connection to the supply line by the union should be done last.

Temperature

The operating temperature of the Rotorseal is dependent upon the sealant "O" rings, the grommet rubber compounds of the sealant rings, and the kind of bearing used in each design.

The following temperatures are not to be exceeded:

Type	220° F (104° C)
B-2G YC-2G	130° F (54° C)

Pressure and speed

The pressure recommended for each model is determined by bursting strengths of each sealant ring. The maximum rpm is determined by the kind of bearing being used within the rotorseal. It is important to avoid operation at maximum speed and pressure. In order to obtain an ideal performance and a good seal, operating pressure and speed should fall within the following:

$$K C1.n + C2.n.Po$$

Where

K = 18,000 for air.

K = 50,000 for liquids

n = rpm operation

Po = pressure of operation psi (bar)

C1 and C2 = constant according to the table.

Rotorseal Type	C ₁	C ₂	
		English	SI
B-2G	4.80	0.070	1.421
C-2G	9.04	0.113	1.015
D-2G	10.25	0.143	0.639
R-1G y R-2G	11.68	0.165	2.393
R-3G y R-4G	52.04	0.237	3.437
DP-2G	1.14	0.162	2.349
DP-3G	1.14	0.162	2.349
TP-3G	2.25	2.250	0.754

Example

If we must install a B-2G Rotorseal to transmit air to a 1200 rpm shaft, which would be the maximum allowable pressure to obtain a suitable operating life of the sealant ring?

K= 18.000

C1= 4.8

C2= 0.070 (1.421)

n= 1200

C1.n + C2.n.Po = K

4800 . 1200 + 0.070 . 1200 . Po = 18.000

84 . Po = 18.000 5760

Po = 145 psi (10 bar).

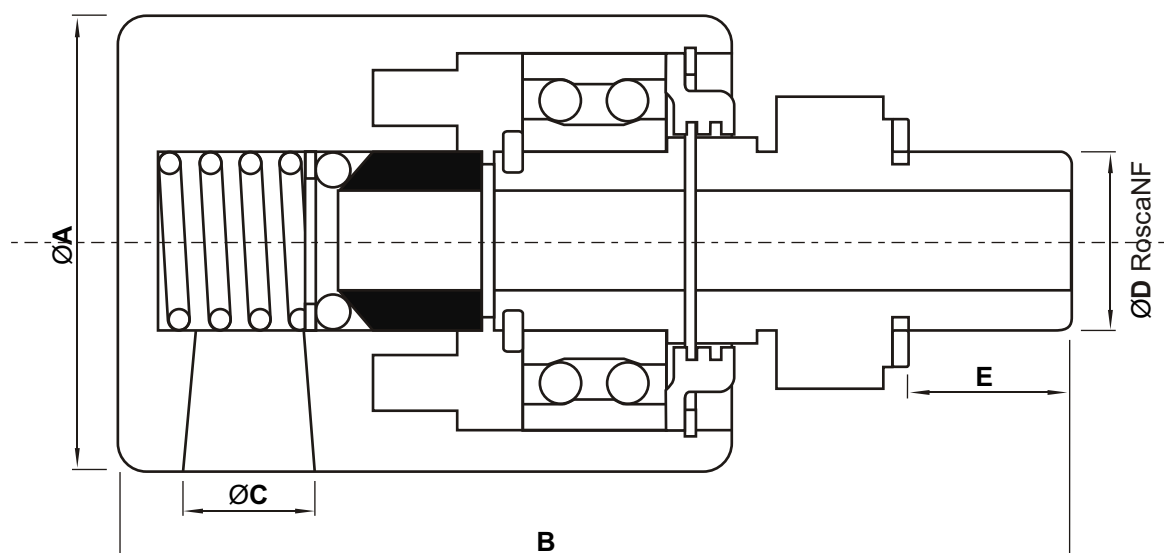
Compatibility

The flow of the media used for the Gummi Rotorseals, must be compatible with the rotorseal materials it contacts. They are made of aluminum alloy body; the shafts and spring are steel while the seals are made of carbon. The components susceptible most affected by the chemical components and/or temperature fluctuations are O' rings and grommets.



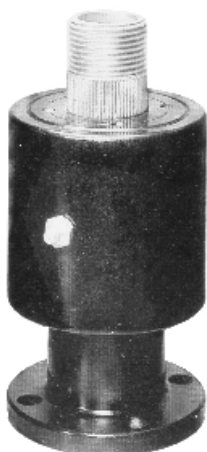
For most of the applications where its is required to transmit only one fluid with high speed and pressure, the rotary unions B-2G, B-3G, C-2G and D-2G are the obvious choices.

The external (male) threads on the seal shaft, and standard pipe threads on the inlet port facilitate its installation.

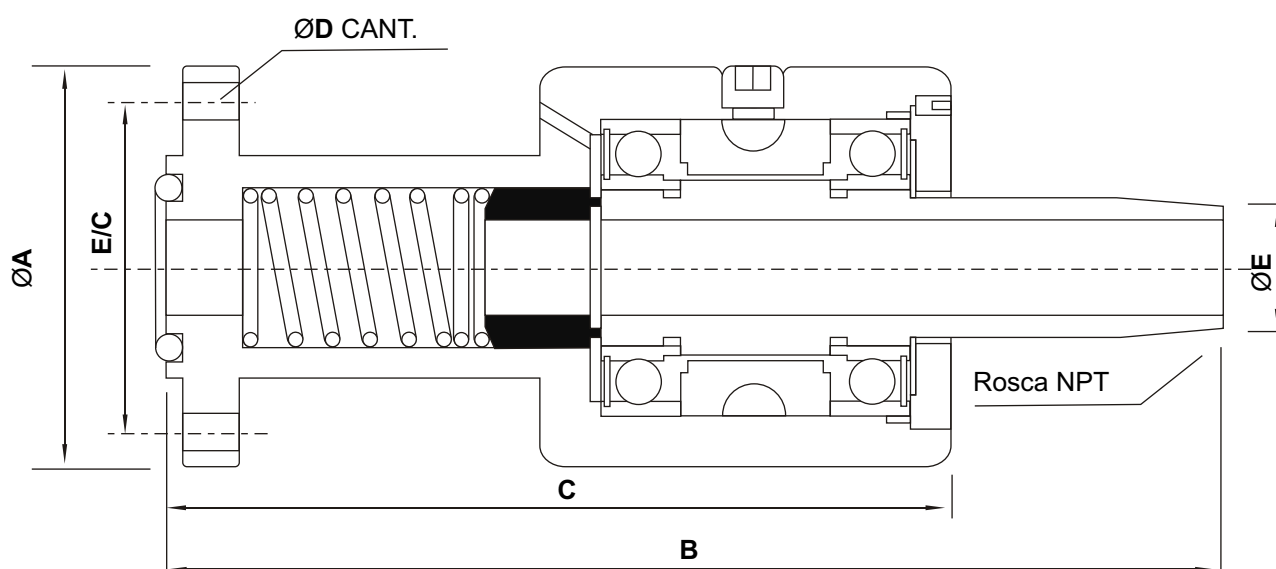


Ø & Lengths shown in mm, while threads shown in inches (")

Type	Max R.P.M.	Max Presure	ØA	B	ØC	ØD	E
B-2G	3000	10 Kg./cm ²	41,5	86	1/4"	5/8"	10
C-2G	2000	10 Kg./cm ²	63,5	110	1/2"	1"	16,5
D-2G	1000	10 Kg./cm ²	89	146	3/4"	1 1/2"	20



When a large volume of flow is required within a Single Passage Rotorseals, the types R-2G and R-3G solve this problem. Their design provides flange assembly that facilitates the mounting to the shaft of the machine or the assembly. These types are available in several sizes to facilitate its connection to the supply line.

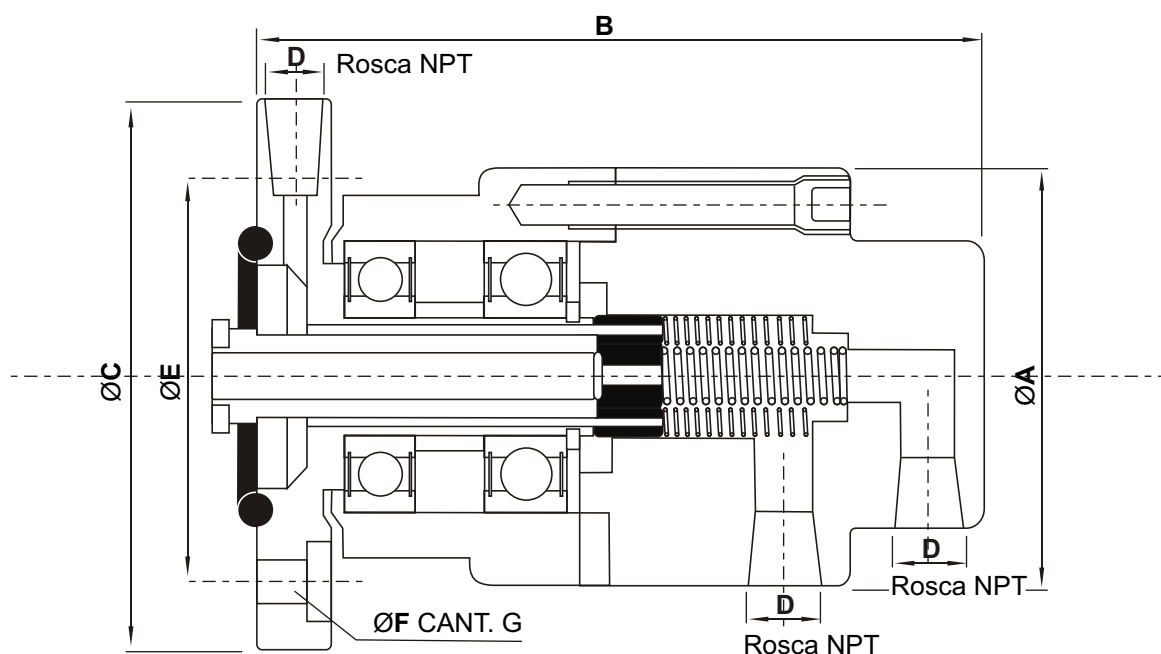


Ø & Lengths shown in mm, while threads shown in inches (")

Type	Max R.P.M.	Max Pres	ØA	B	C	ØD	Cant	E/C	E
R-1G ¾"	3000	10 Kg./cm ²	76,2	153,9	112	8,7	4	60,32	¾"
R-2G 1"	3000	10 Kg./cm ²	82,5	168,2	130	10,5	4	66,60	1"
R-3G 1 ¼"	2000	10 Kg./cm ²	95,2	189,0	143	10,5	4	79,30	1" ¼"
R-4G 1 ½"	2000	10 Kg./cm ²	101,6	199,6	146	10,5	4	85,7	1" ½"



The Rotorseals type Dp-2G and Dp-3G allow for the transfer of media thru two separate shaft passages that are located on the same shaft end. Each passage can be used for a different medium, operating at continuous or intermittently with high speeds, in one or various directions. Both the inlet and outlet ports have American National Pipe Threads.



Ø & Lengths shown in mm, while threads shown in inches (")

Type	ØA	B	ØC	D	ØE	ØF	G
DP-2G	82	123	108	1/4"	90,5	10,5	4
DP-3G	95	160	108	1/2"	90,5	10,5	4

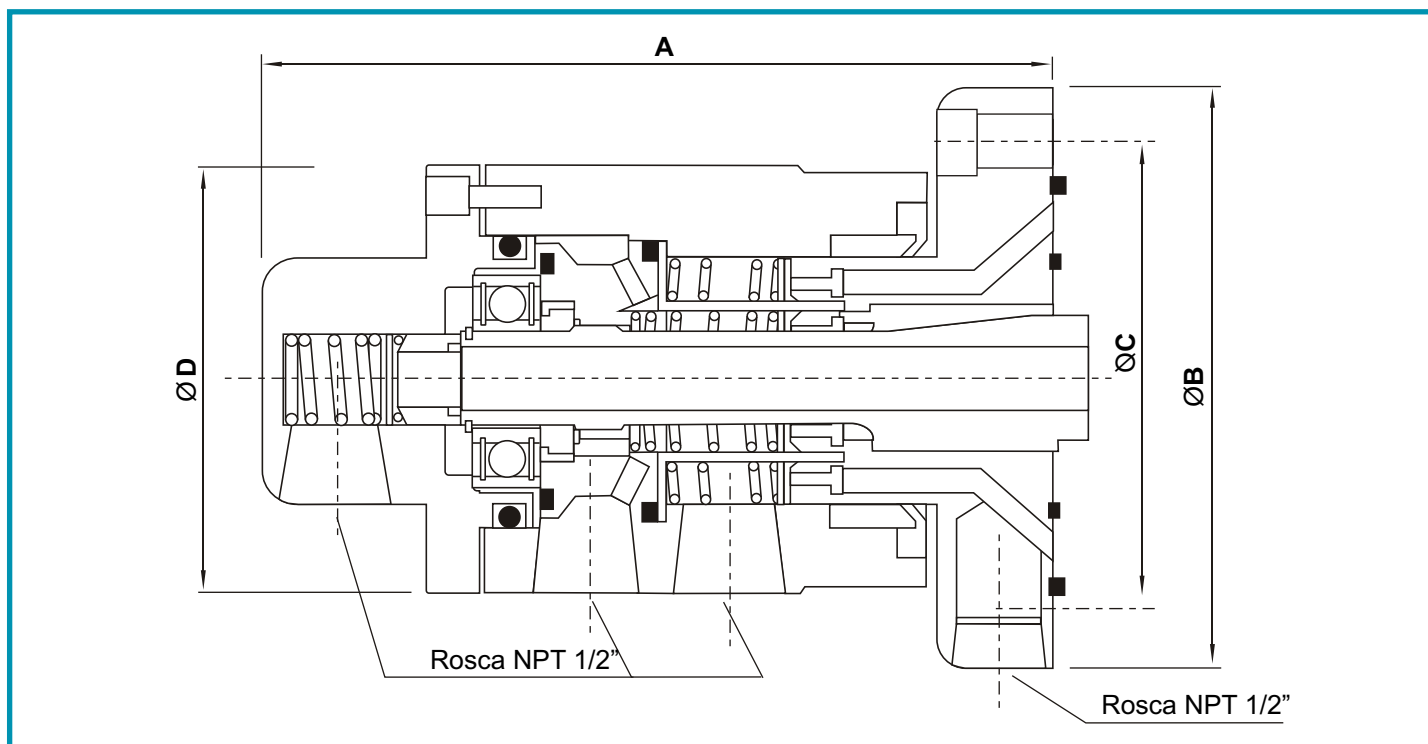
Type	Max R.P.M.	Max Presure
DP-2G	3000	10 Kg./cm ²
DP-3G	1500	10 Kg./cm ²



The Rotorseal Tp-3G type allows the simultaneous transfer of up to three different fluids.

On the sides of the stationary Rotorseal, three ½-14 American National Pipe Thread inlet ports provides a gateway to the concentric fluid passage. These passages can also directly release the media directly into the rotating shaft of the machine. The mounting flange simplifies its installation to the shaft end.

A threaded hole of ½ -14 " through the mounting flange, can be used as optional exit for the outermost passage.



Ø & Lengths shown in mm, while threads shown in inches (")

Type	A	ØB	ØC	ØD	ØF	G
TP-3G	171,5	123,8	104,8	92	8,5	4

Type	Max R.P.M.	Max Pressure
TP-3G	1000	10 Kg./cm ²

The Gummi quick release valves (Q.R.V.), works as three way inline valve, designed to automatically close upon pressurization and to fully open when a pressure drop occurs in the supply line, providing for and immediate air release. Gummi has two different models of QRV. The Type FK which has adapted to be directly installed on the clutches and brakes type FK, FKT, DX and the Type W which is best suited for piping and disc clutches applications.

(1) The final result is a reduced delayed time between the signal to exhaust and response. Other benefits are:

Much Quicker Cyclic Rates.

Reduction or complete elimination of overlap.

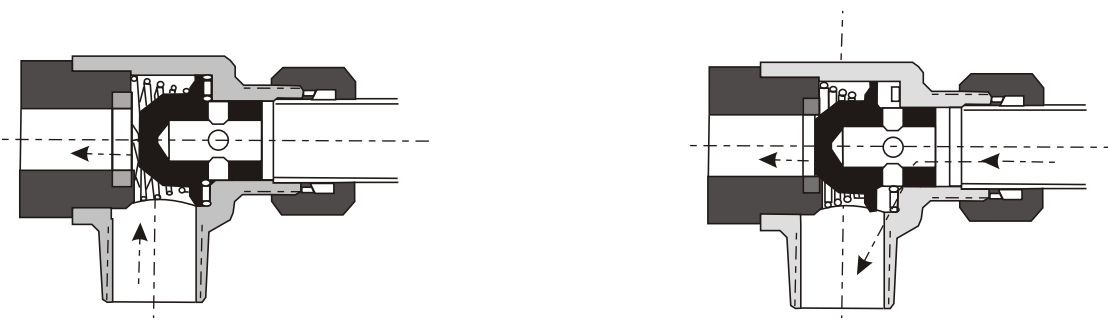
Reduced wear and tear of drive components.

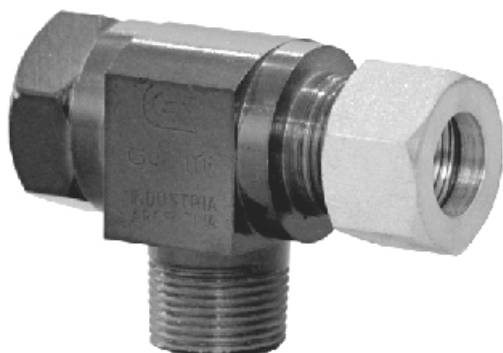
It facilitates the cyclical operation.

DIAPHRAGM Type QRV



SPRING AND PLUNGER Type QRV



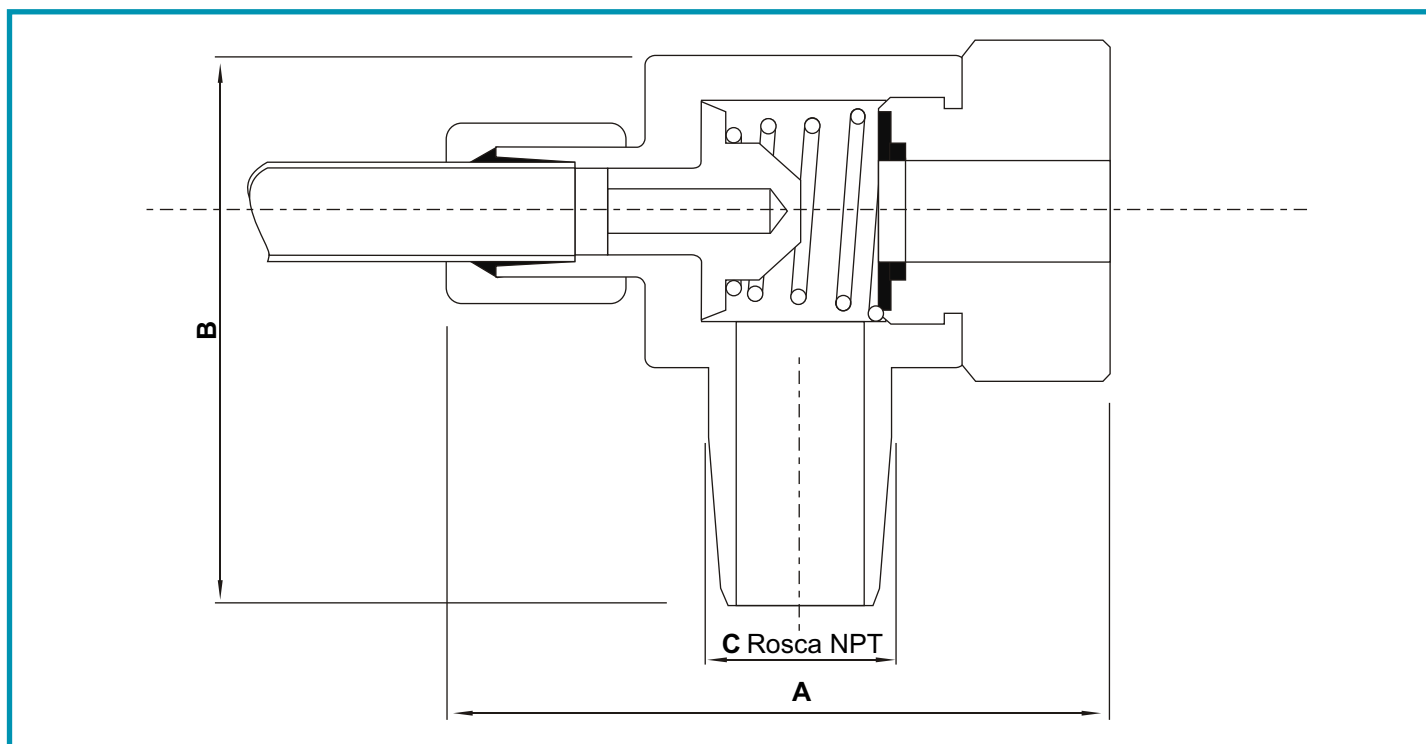


The quick release valve FK type provides for an immediate positive release of the compressed air. They are designed with a piston of low weight that allows for a fast action that assures a long operating life of the valve.

The unit is auto-adjustable and it does not need lubrication.

Sizes of available threads: 3/8", 1/2" and 3/4".

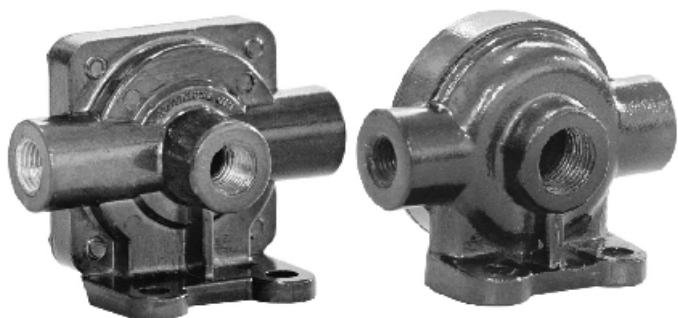
They plumbed into the inlets on the Brake and Clutch.



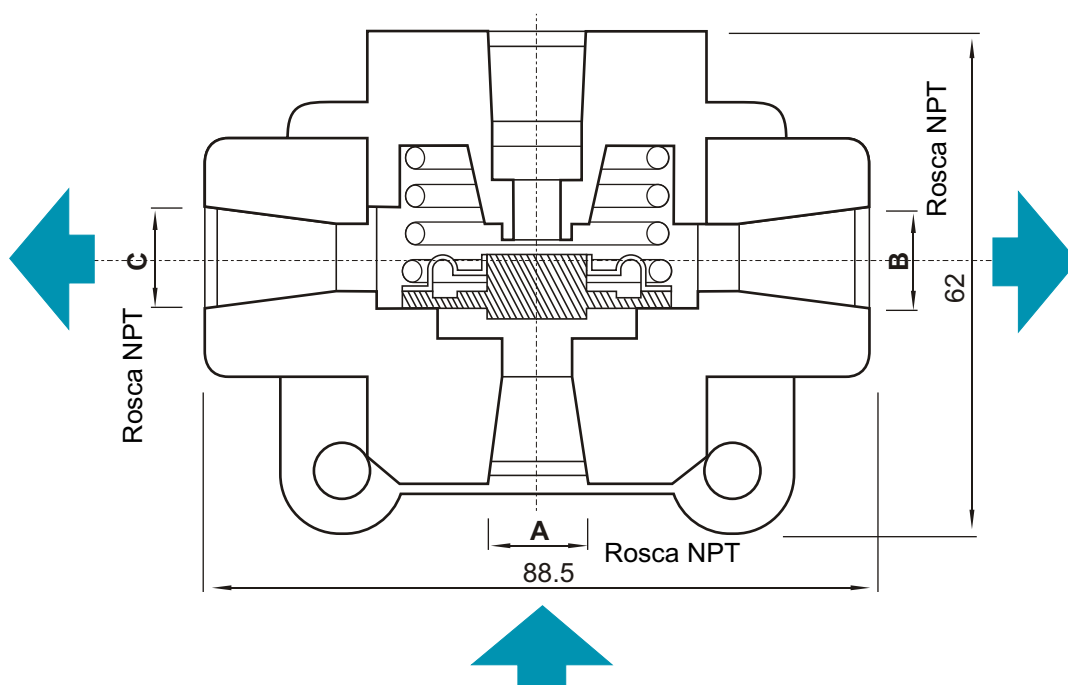
Ø & Lengths shown in mm, while threads shown in inches (")

Type	A	B	C
FK 3/8"	58	46	3/8"
FK 1/2"	70	56,75	1/2"
FK 3/4"	78	57,75	3/4"

Max Pressure: 10 Kg./cm²



The quick release valve W type reduces the required time for the air relief under pressure of a cylinder or pneumatic device, exhausting it directly into the atmosphere. This kind of design is connected to the air pipe medium, generally located before the Rotorseal.



Ø & Lengths shown in mm, while threads shown in inches (")

Type	ROSCAS		
	A	B	C
G-16033	1/4"	3/8"	1/4"
G-16087	1/4"	1/2"	1/4"
G-16088	3/8"	3/8"	3/8"
G-16092	1/2"	1/2"	1/2"

Max Pressure: 10 Kg./cm²

The information displayed in this catalog is subject to modifications without warning.

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