PRESSURE REGULATION VALV P 60-VP DN 7

Pneumatically regulated pressure regulation valve for liquid materials, preferably for highly viscous coating materials .

GRACO VERFAHRENSTECHNIK GMBH			
DUISBURGER STRASSE 7, D-33647 BIELEFELD			
DRUCKREGELVENTIL	P 60–VP DN 7		
MATERIALTEMPERATUR	MAX 80	°C	HERSTELL-NR.
MATERIALEINGANGSDRUCK	MAX 360	bar	
EINSTELLDRUCKBEREICH	5 - 60	bar	
BETÄTIGUNGSLUFTDRUCK	MAX 6	bar	

Fig. 1

The original manufacturing nameplate is on the pressure regulation valve. Please check the data and alter if necessary.

READ AND FOLLOW UP THE OPERATING AND SAFETY INSTRUCTIONS BEFORE COMMISSIONING!

KEEP FOR FUTURE USE !

Information which affects your safety

Important information for operation

CONTENTS OF USER INFORMATION

The manufacturer's declaration is attached separately

CORRECT USE

The pressure regulation valve P 60 - VP DN 7 is exclusively manufactured for the usual applications in surfacing technology or similar work.

Any other purpose above and beyond this , is considered as incorrect use. We are not responsible for any damage or injury resulting from this; the user bears the sole responsibility in such cases.

Correct use includes observing the operating, maintenance and inspection conditions and regulations laid down by us.

The pressure regulation valve P60 - VP DN 7 may only be installed, maintained and repaired by personnel familiar with, and trained to recognise the inherent dangers.

The relevant accident prevention regulations as well as safety and medical rules must be respected

Unilateral changes to the pressure regulation valve P 60 – VP DN 7 will cause us to waive our responsibility for any damage or injury caused.

The user is responsible for proper attachment/installation.

FUNCTIONAL DIAGRAM

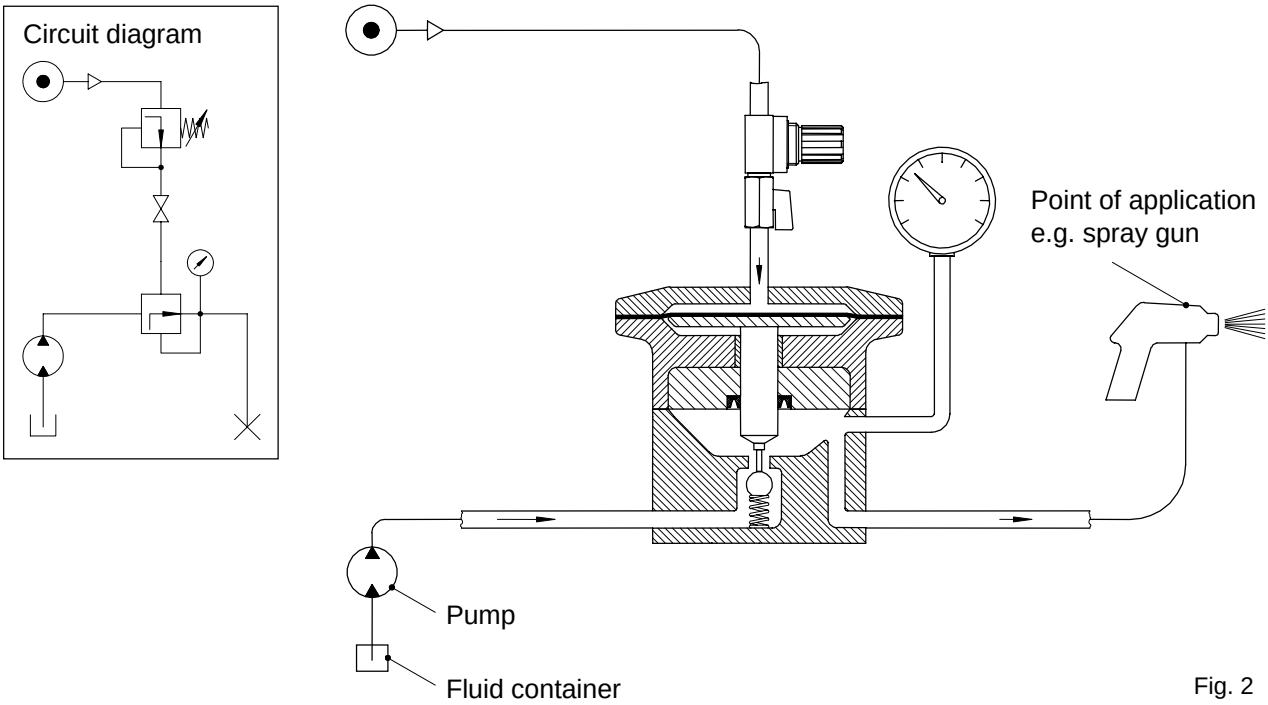
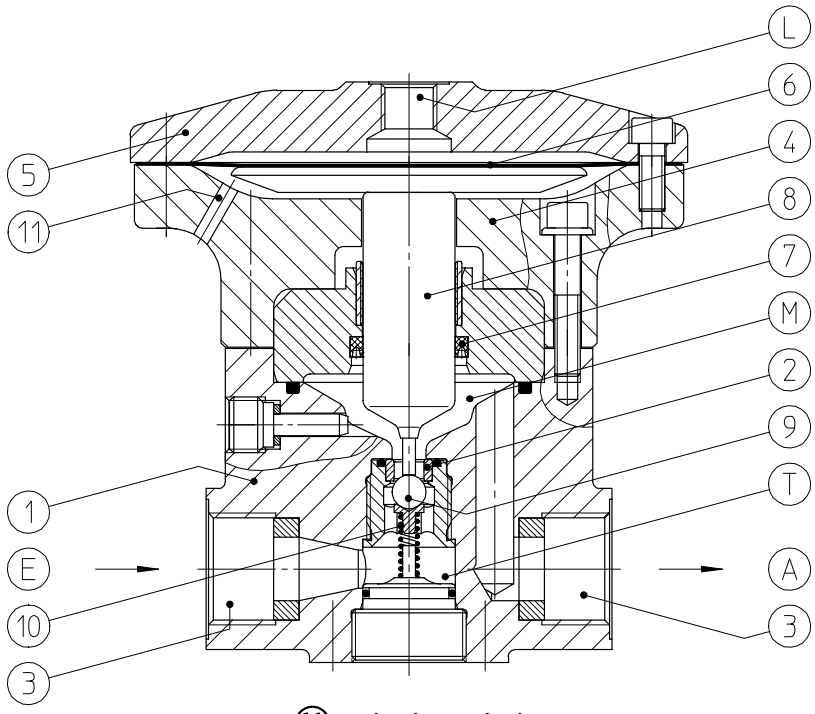


Fig. 2

A shut-off mechanism between the compressed air regulation valve and the pressure regulation valve considerably improves operation.

PRODUCT DESCRIPTION



⑪ = leakage hole

Fig. 3

The pressure regulation valve P 60-VP DN7 essentially consists of the housing bottom part ① with valve seat ② and fluid connection holes ③, the diaphragm housing ④ as well as the housing top part ⑤ with compressed air connection Ⓛ. A diaphragm ⑥ is inserted as a separation element between the housing top part and the diaphragm housing (air space/membrane space). The grooved ring ⑦ seals the fluid space from the diaphragm. The valve tappet ⑧ transmits the movement of the diaphragm to the valve ball ⑨.

During operation the fluid under pressure flows from the inlet Ⓔ via the spring-loaded ball valve (support spring ⑩) into the fluid space Ⓜ and from there to the outlet Ⓐ.
Changes in pressure caused by removal of fluid at the consumer end are transmitted via the valve tappet to the diaphragm charged with compressed air (compressed air connection Ⓛ) and have a regulatory effect through the coupling of diaphragm, diaphragm plate, valve tappet, ball and support spring.

– Valve closes when the regulated pressure is reached at the fluid outlet.
– Valve opens when the pressure drops at the fluid outlet.

The pressure regulation valve is designed for straight pipe assembly.
The fluid path in the pressure regulation valve passes from the inlet to the turbulence zone Ⓣ (in order to prevent deposits) and rises from below, via the ball valve to the outlet.

SUITABILITY, MATERIAL

Material	Suitability
Neutral	Highly suitable
Corrosive	Highly suitable
Abrasive	Suitable under certain conditions
Acidic	Suitable under certain conditions
Inflammable [1)]	Highly suitable

[1)] Pressure regulation valve connected to earth.

In the case of strongly abrasive and aggressive materials, please contact us.

Kinematic viscosity in mm^2/s			Suitability
	up to	500	must be tested
500	up to	600	suitable under certain conditions
600	up to	1500	suitable
	over	1500	suitable under certain conditions, must be tested

Solids content	Suitability
Low	highly suitable
low to 1%	suitable
1 to 3%	suitable under certain conditions
over 3%	must be tested – not suitable

TECHNICAL DATA

KEY TO DESIGNATION

Pressure regulation valve P 60 – V P DN 7

Nominal diameter	7
Operating mode	pneumatic
Action	Admission pressure (pressure regulation)
Regulation pressure max.	60 bar

DATA

Pressure regulation valves without add-on parts (basic version), Article No. 79635 018002

Fluid inlet pressure	max. allowable	360	Bar
Fluid temperature range		10-80	°C
Regulation pressure range		5-60	Bar
Operating air pressure	max. allowable	6	Bar
Volume flow	fluid-dependent		- Specification only with the processing fluid
Weight		3,8	Kg

MATERIALS OF THE AREA IN CONTACT WITH THE FLUID MATERIAL

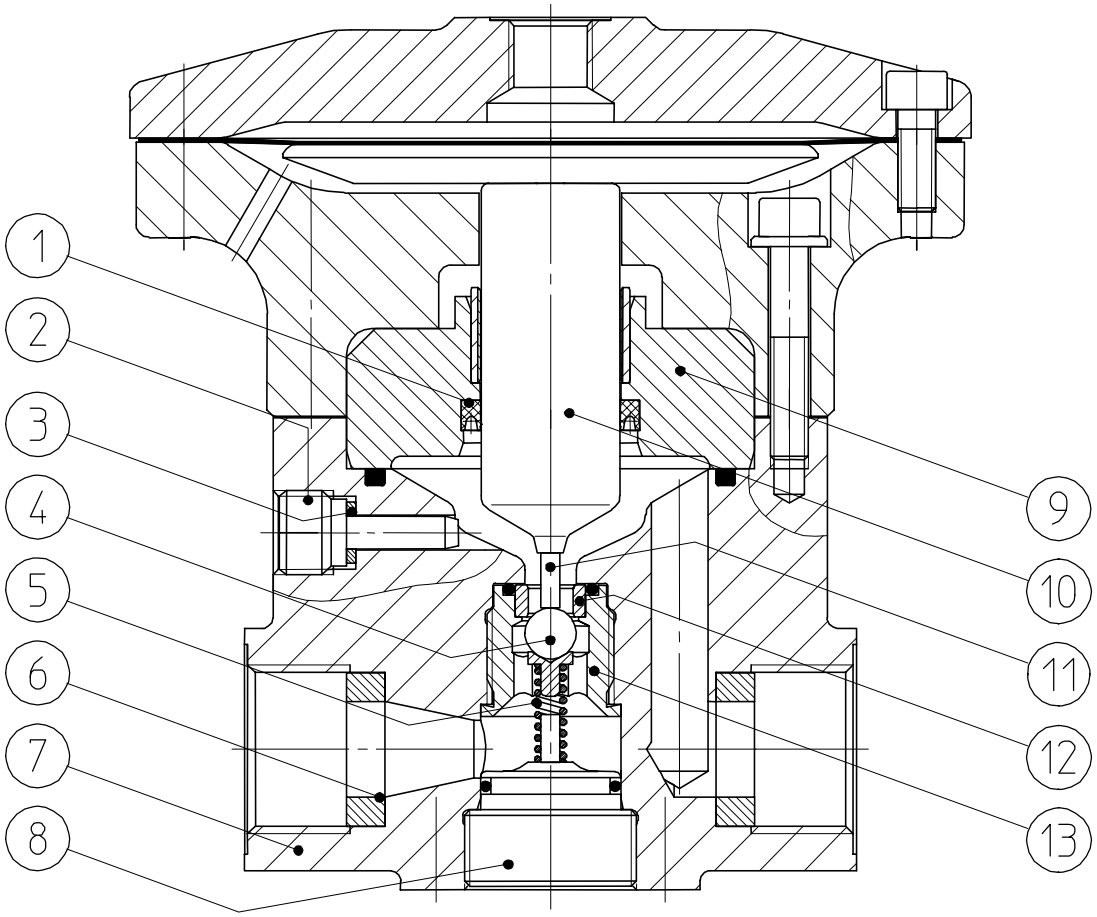


Fig. 4

Pos.	Designation	Material
1	Grooved ring	PE-UHMW
2	Set screw	SST
3	Sealing washer	POM
4	Ball	Hardened steel
5	Pressure spring	SST
6	Ring	PTFE
7	Housing bottom part	SST
8	Fixing screw	SST
9	Housing	SST
10	Valve tappet	SST
11	Parallel pin	Hardened steel
12	Valve seat	Hardened steel
13	Frame	SST
All O-Rings		FPM

The diaphragm housing and top part consist of aluminum.

Take care with fluids that contain chlorinated hydrocarbons such as trichloroethane or methylene chloride. They react with aluminum to form metallo-organic compounds.

These compounds are explosive and extremely caustic.

EARTH, CONNECTION THREAD

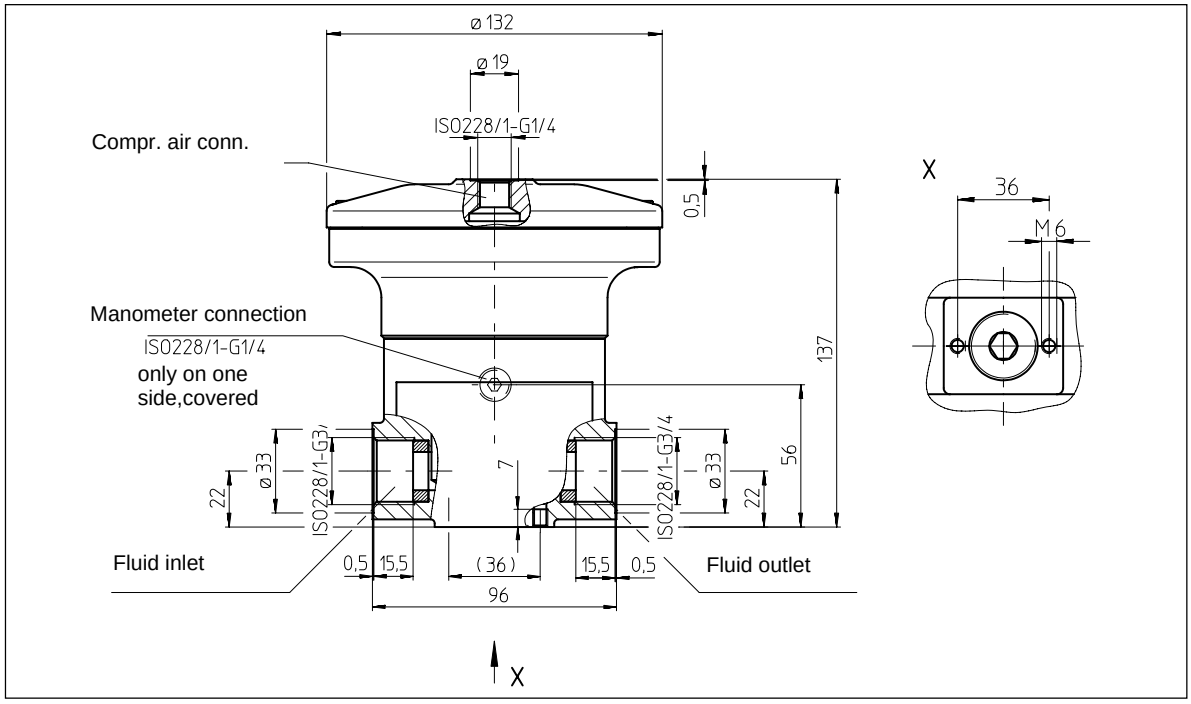


Fig. 5

Nominal diameter of the compressed air hose preferably DN 6; hose length < 1.5 m also DN 4.

BUILD-UP POSITION

Vertical – Compressed air connection at the top.

TOOL LIST

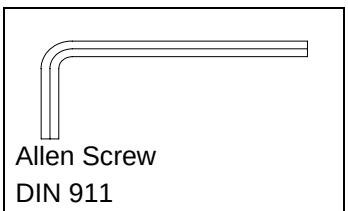


Fig. 6

F22.060.03, issued on 01.98

COMMISSIONING

Install pressure regulation valve

- The fluid connections are sealed inside in the housing bottom part
  – Gasket Article No. 76104 130001
- Note attachment position

Connect pipes, hoses

Check sealing.

Flush pressure regulation valve

All pressure regulation valves are tested for operation with an anti-corrosion liquid after factory assembly. On commissioning, the residue from this liquid as well as contaminants that may have been generated during installation must be thoroughly flushed out with solvents (detergents).

Commission pressure regulation valve

- Apply compressed air to the membrane with the fluid pressure line shut off.
  Then fill the pressure regulation valve with fluid.
  – At the same time, increase the fluid inlet pressure.
- Regulate the desired material outlet pressure. Then shut off the supply of compressed air.

The fluid inlet pressure should be at least 40 bar higher than the regulated material outlet pressure.

OPERATION

Do not exceed the specified technical data (page 4).

Before prolonged shutdown (holidays), the pressure regulation valve should be flushed and the detergent left in the system until the next time it is used.

MAINTENANCE, INSPECTION, REPAIR

– The pressure regulation valve P 60 - VP DN 7 needs little maintenance.
- Flush thoroughly before operating pauses
- Drain the condensed water every day from the filter or filter regulator when there is no automatic water drainage in the compressed air supply to the pressure regulation valve.
- Check leakage behaviour [air or Fluid escaping from the leakage hole (Pos ⑪, page 3)] at regular intervals - once a day.
  – If air is escaping, the flat diaphragm should be replaced.
  – If fluid is escaping, the grooved ring, the O-Ring between the housing and the housing bottom part and the flat diaphragm should be replaced.

- The service life of the hose lines is adversely affected, and thus shortened, by surrounding influences (oxygen in air, temperature, light, etc.), even if correctly operated. It is recommended that they undergo regular visual checks and occasional checking of performance. As a precaution the hose lines should be replaced by new ones at intervals set by the operator.
- A change in system pressure can be a sign of progressive wear and tear of the valve parts When repairing, replace the complete valve seat, the valve ball, the O-Rings, the grooved ring and the flat diaphragm.

Never at any time dismantle a pressure regulation valve which is under pressure.

Lightly grease the parts before assembly.
– We recommend grease OKS 270“ (Tube 100g, article no. 70950 003001).

TORQUE MOMENTS

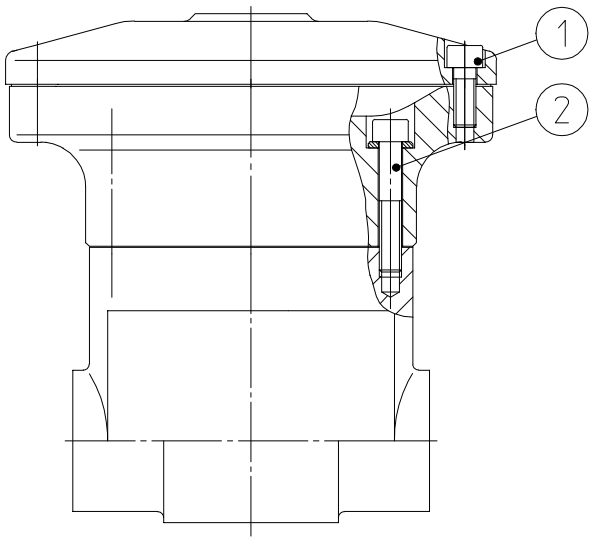


Fig. 7

Pos.	Thread	Torque Moment
1	M6 - 8.8	10 Nm
2	M6 - 10.9	12 Nm

TROUBLESHOOTING

TROUBLESHOOTING				
Component group	Nature of defect	Defect symptoms	Possible cause	Countermeasure
Flat diaphragm	Fluid - drop in pressure	Air escaping from the leakage hole	Flat diaphragm damaged	Replace flat diaphragm
Tappet sealing (grooved ring)	Fluid - drop in pressure	Fluid escaping from the leakage hole	Grooved ring worn out	Replace grooved ring
Valve parts	Fluid - pressure rises	Fluid - pressure rises with valve closed	Valve parts worn out	Replace valve parts, grooved ring and flat diaphragm
Air connection	Fluid - drop in pressure	No fluid - pressure regulation	Air supply interrupted	Check the plug connections and air hose

FOOTNOTE

The pressure regulation valve P 60 – VP DN 7 is intended to be attached/installed to/in a machine for surfacing technology and commissioning is prohibited until it can be established that the machine to/in which the pressure regulation valve is to be attached/installed, complies with the specifications of the EU directive Machines in the version 93/44/EEC.

LIST OF REPLACEMENT PARTS

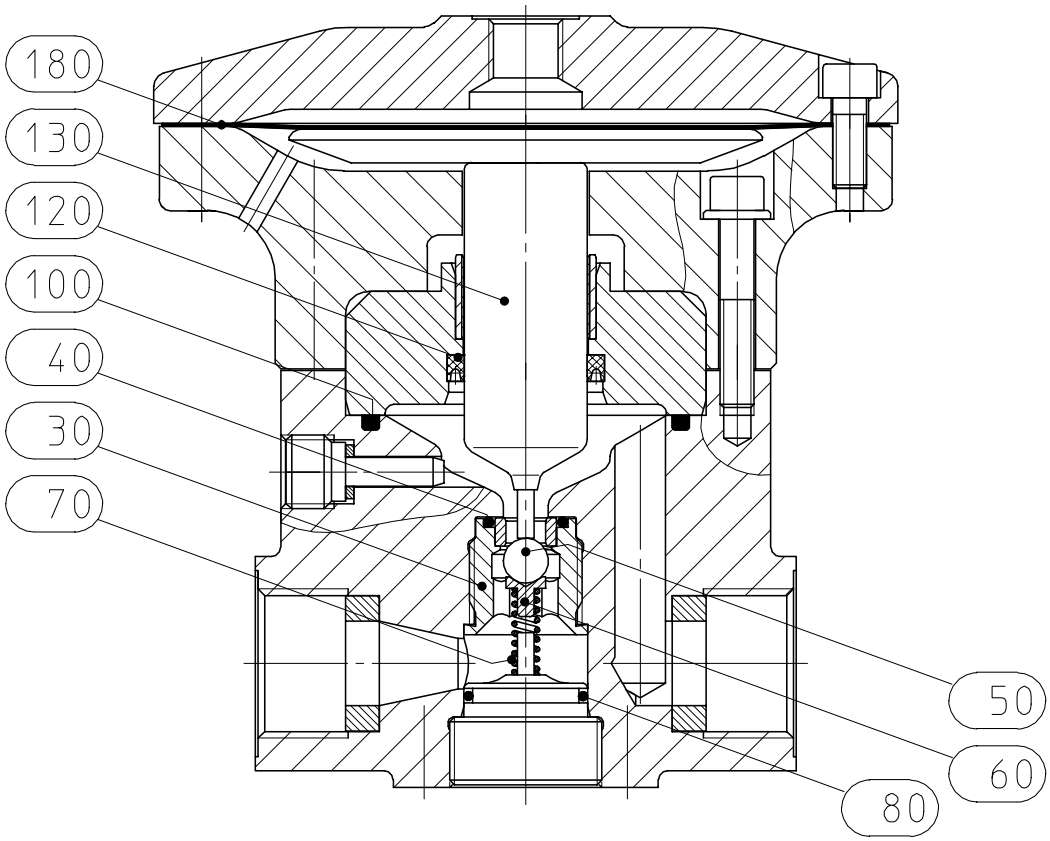


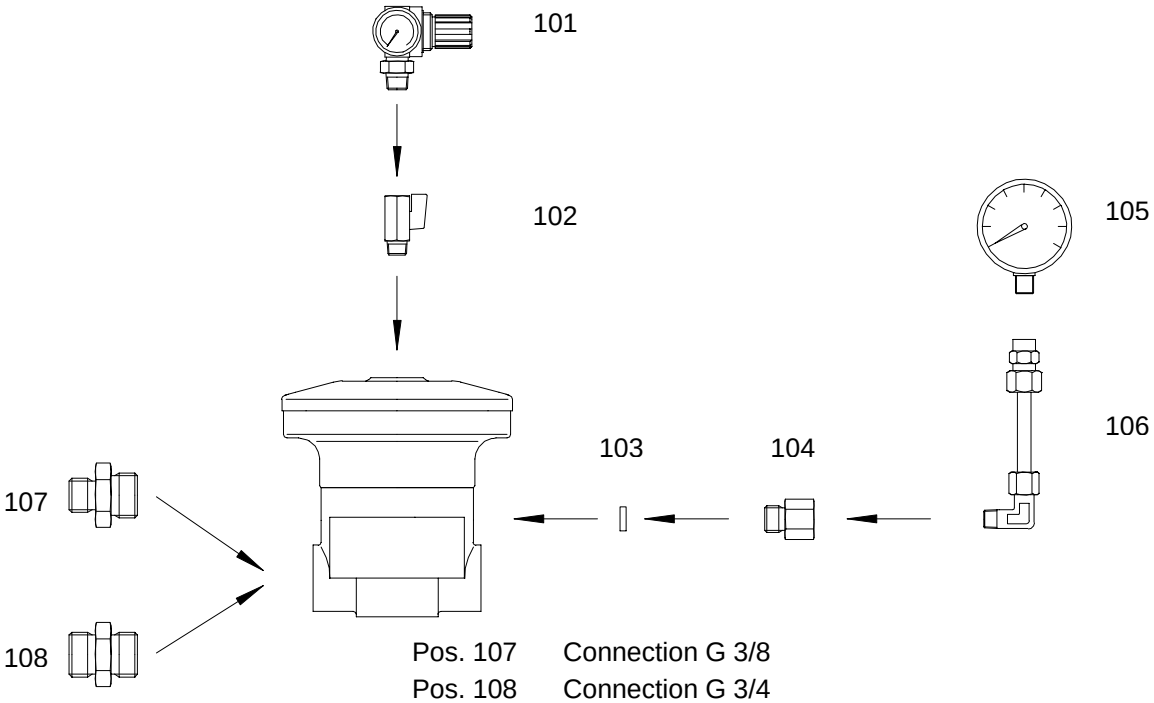
Fig. 8

Spare parts set, material valve				Article No. 79978 098001
Pos.	Number	Designation		
30	1	Valve seal complete	D 7	Hardened steel
40	1	O-ring	11 x 2 B	FPM
50	1	Ball	8 mm	Hardened steel
60	1	Ball support	10 x 2 B	FPM
70	1	Pressure spring	4.5 x 1 x 20.2	SST
80	1	O-ring	18 x 2 B	FPM

Spare parts set, valve tappet and – sealing				Article No. 79978 099001
Pos.	Number	Designation		
100	1	O-ring	52 x 3 B	FPM
120	1	Grooved ring	21.8 x 28 x 4.3	PE
130	1	Valve tappet complete		SST

Single part, flat diaphragm				Article No. 76196 073001
Pos.	Number	Designation		
180	1	Flat diaphragm	D 129 x T 0.55	NBR

ACCESSORIES



Pos. 107 Connection G 3/8
Pos. 108 Connection G 3/4

Fig.

Pos.	Designation	Notes	Article No.
101	Pressure regulation valve	G1/4 0-10 bar	75631 014002
102	Ball cock complete	PN15 G1/4	77601 005002
103	Distance ring	8 x 11.3 x 5.5	76104 144008
104	Bushing pipe reducer	RI 1/4 x 1/8	75244 002004
105	Manometer	G1/4 0-100 bar	75781 011001
106	Pipe complete	PN 100	77796 064003
107	Nipple reduction	8 - G 3/4- G 3/8	76639 021001
108	Nipple reduction	16 - G1 - G ¾	76639 045002

Please lay out each order as follows:

Designation	Pos. No.	Article No.
Ball cock complete	102	77601 005002

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GRACO STANDARD WARRANTY

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco´s written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the repaid return of equipment claimed to be defective to an authorized Graco distributor for verification of claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco´s sole obligation and buyer´s sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Graco does not extend its warranty to accessories, appliances, materials or components which are sold by Graco but are not manufactured by Graco and makes no guarantee, however implied, with regard to the brand capability and suitability for a certain purpose. These parts sold by Graco but not manufactured by Graco (such as electric motors, switches, hoses, etc.) are covered by the warranties of the respective manufacturers. Graco will support the buyer in enforcing any warranty claim with the proviso that in no event can Graco be made liable for indirect, incidental, special or consequential damages which arise from the supply of appliances by Graco under the conditions governed by these provisions, or the supply, performance or use of any products or other goods which are sold under the conditions governed by these provisions, whether as the result of breach of contract, breach of warranty, negligence on the part of Graco or for any other reason.

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