HYDRAULIC VALVE 2/2-WAY DN 4

Pneumatically operated hydraulic valve

for fluid materials preferably 2K

components

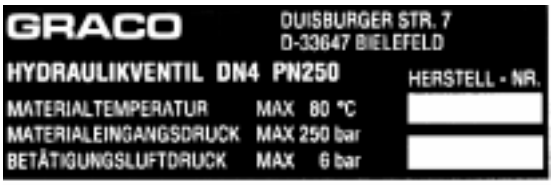

Fig. 1

Fig. 2

The original nameplate is on the hydraulic valve.

Please compare the specifications and complete if necessary.

Information regarding personal safety

Important information for operation

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

KEEP FOR FUTURE USE !

CONTENT

The following documents are included separately : Test certificate (Final acceptance)

Manufacturer’s declaration

Prepared	12.10.99	USER INFORMATION - OPERATING INSTRUCTIONS -	Issued 10.99
Checked	19.10.99 Kuhn		B.13.50.01-B

CORRECT USE

The 2/2-way hydraulic valve DN 4 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 liable for any damage or injury resulting from this; the user will bear sole liability in such cases.

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

The 2/2-way hydraulic valve DN 4 may only be installed, maintained and repaired by personnel familiar with, and trained to recognize the inherent dangers.

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

Unilateral changes to the 2/2-way hydraulic valve DN 4 will cause us to waive our responsibility for any damage or injury caused.

The user is responsible for correct attachment/installation.

FUNCTIONAL DIAGRAM

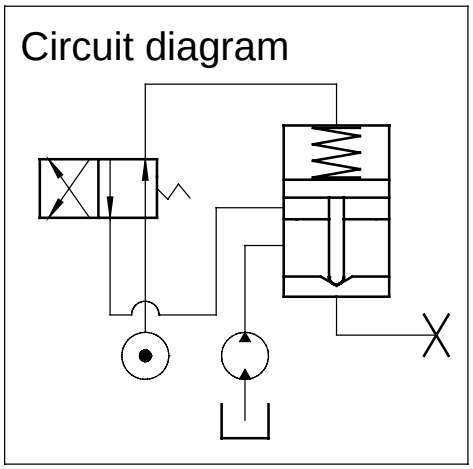

Fig. 3

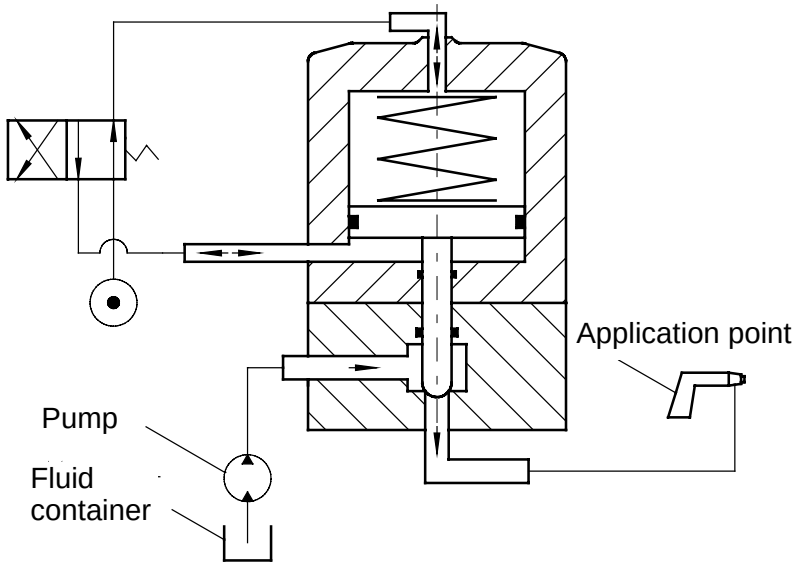

Fig. 4

PRODUCT DESCRIPTION

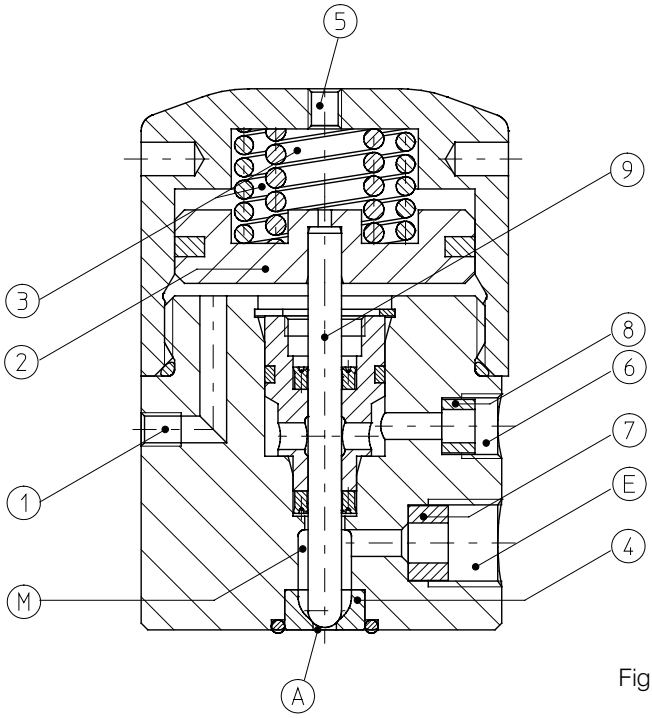

Fig. 5

The 2/2-way hydraulic valve DN 4 is operated pneumatically. The control air is fed via the connection ① underneath the piston ②, the fluid valve opens against the force of the pressure springs ③. The fluid flows from the inlet **(E)** into the fluid space **(M)** and through the valve seat ④ to the outlet **(A)**. When the control air is added at piston top connection ⑤, the fluid valve closes due to the force of the air and the spring. The control air is alternately switched on and off.
The fluid connection and the connection of the fluid supply unit ⑥ are provided with internal sealing rings ⑦, ⑧ on the inside. The valve needle ⑨ and valve seat ④ are made of hardened steel or hardened austenitic stainless steel.
The area in contact with the fluid is suitable for water-based paints (stainless steel).

COMPATIBILITY, MATERIAL

Fluid	Compatibility
Neutral	highly suitable
Corrosive	highly suitable
Abrasive	suitable under certain conditions
Caustic	suitable under certain conditions
Inflammable [1)]	suitable

[1)] Hydraulic must be properly valve grounded

Please consult us when processing highly abrasive and aggressive materials.

Kinematic viscosity in mm^2/s	Compatibility
up to 500	highly suitable
500 to 750	suitable
over 750	suitable under certain conditions must be tested

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

TECHNICAL DATA

KEY TO DESIGNATION

Hydraulic valve 2/2-way DN 4

- 4 → Nominal diameter
- 2/2-way → Action

DATA

Hydraulic valve 2/2-way DN 4 without attachments, Part nbr. 77584 009002 and 77584 009003

Fluid inlet pressure	max. allowable	250	Bar
Fluid temperature	max. allowable	80	°C
Operating air pressure	max. allowable	6	Bar
Recommended switching frequency	not above	300	Strokes/min
Weight		1.75	kg
Test pressure		375	Bar

MATERIALS IN CONTACT WITH THE FLUID MATERIAL

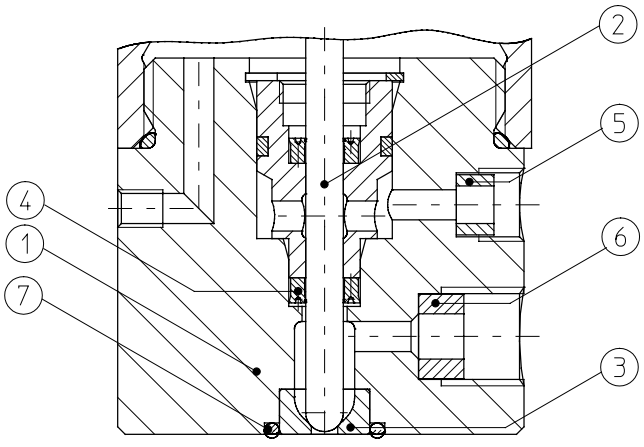

Fig. 6

Ref.	Description	Material
1	Valve housing	SST 1.4305
2	Valve needle	Hardened steel[1)]
3	Frame	Hardened steel[1)]
4	Grooved rings	PE
5/6	Sealing rings	POM
7	O-ring	FPM

[1)] or hardened austenitic stainless steel.

Take care with attachments.

Materials that contain chlorinated hydrocarbons such as trichloro-ethane or methylene chloride react with aluminum to form metal-organic compounds.

These compounds are explosive and extremely caustic.

GROUNDING, CONNECTION THREAD

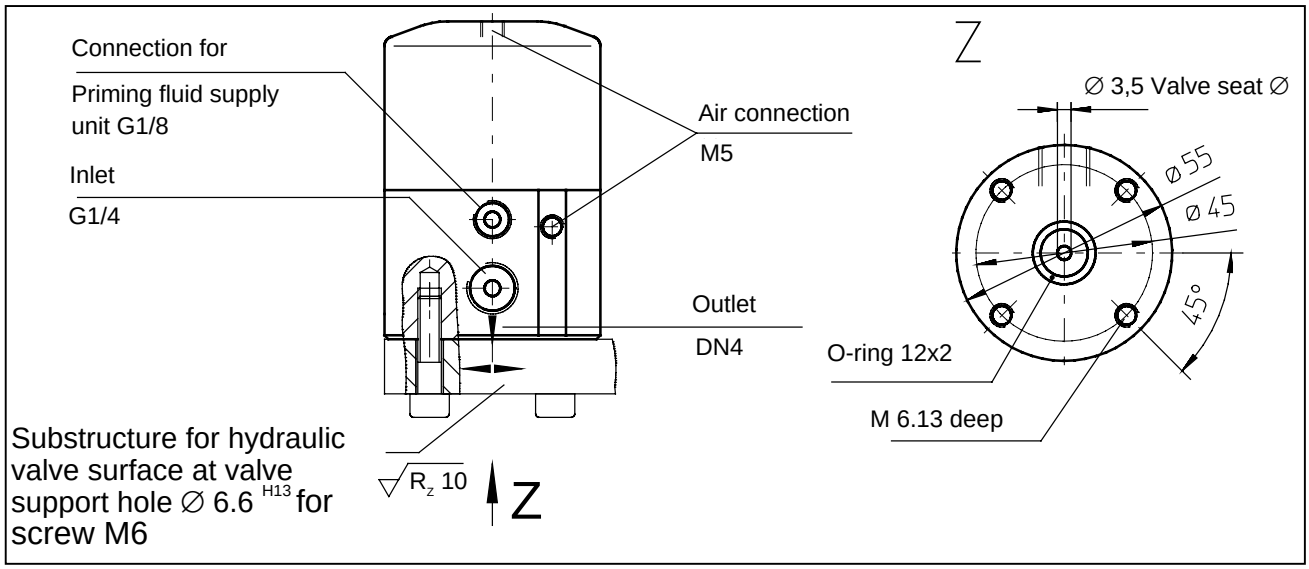

Fig. 7

Nominal diameter of the air pressure hoses preferred DN3; hose length ≤ 10 m

CONSTRUCTION AND MOUNTING

The 2/2-way hydraulic valve DN 4 requires a substructure for the fluid outlet (see Fig. 7) for its correct use. If this substructure has not been supplied by us to the manufacturer, the following specifications must be observed.

The fixing is carried out using 4 cheese-head screws M6-8.8 in accordance with DIN 912 (the length of the screws depends on the substructure, for determination of the length see accessories Fig.15).

The construction specifications for the surface quality of the substructure and the holes should be taken from the sketch in Fig. 7.

Depending on the control capacity, several valves can be connected in series.

ATTACHMENT POSITION

Vertical – air pressure connection at the top.

LIST OF TOOLS

Assembly tools for the 2/2-way hydraulic valve DN 4

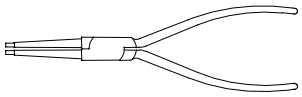			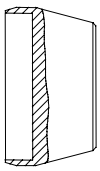
Pliers for locking ring DIN 5254-A	Drift for cap Part nbr. 70641 003002	Drift for grooved ring Part nbr. 70641 006002	Assembly cone for O-Ring 42x2 Part nbr. 70643 001002

Fig. 8

Assembly tools for the accessories

Open-end spanner DIN 895	SW 8	Plug connection air pressure
	SW 14	Angular union
	SW 17	Level indicator
	SW 17/19	Connection GE 8-PLR
	SW 19	Connection WE 8-PLR
	SW 22	Connector
Allen Screw DIN 911	SW 5	Cheese-head screw M6

START UP

Install hydraulic valve

- The fluid connections in the valve housing (Fig. 6) are sealed from the inside.
  – Sealing ring Part nbr. 76188 010004 (1x), Part nbr. 76188 010003 (1x)
- Note attachment position.

Connect connection parts and hose lines

- Check that there are no leaks.

Flush the hydraulic valve

- All hydraulic valves are tested for operation with an anti-corrosion liquid after factory assembly. On start up, the residue from this liquid must be thoroughly flushed out with solvents (detergents).

Any detergent used must be compatible with materials to be used later; we recommend to consult your material supplier.

Start up the hydraulic valve

- Before starting up fill with the priming fluid. Operating the hydraulic valve without the priming fluid can lead to premature wear of the grooved rings (valve needle seal).

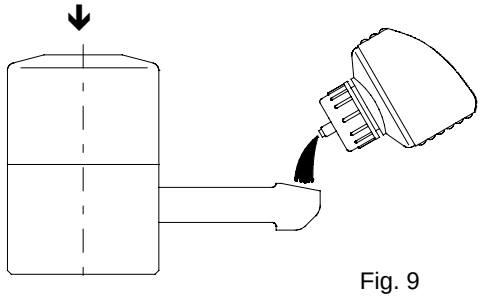

Fig. 9

⚠ Do not use nitro thinners or solvents as flushing agents.

- First apply air pressure to the hydraulic valve ↓ then fluid pressure.

OPERATION

- Do not exceed the specified technical data (page 4).
- Before prolonged shutdown (holidays), the hydraulic valve should be flushed and the detergent left in the system until it is used the next time.

⚠ With prolonged operating pauses and/or shut off, no energy potential (fluid and/or air pressure) may be present at the hydraulic valve.

MAINTENANCE, INSPECTION, REPAIR

- The hydraulic valve 2/2-way DN 4 requires 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 air pressure supply to the hydraulic valve.
- Check the leakage behavior (air or fluid escaping from the leakage hole and/or from the priming fluid supply unit) of the hydraulic valve at regular intervals, at least once a day.
  - If there is air escaping replace the grooved ring in the bushing.
  - If fluid is escaping replace the grooved ring. (Page 8)
- Regularly check the level of the fluid priming supply unit and top up if necessary.
- 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.

⚠ Repairs must be carried out by professionals. (VGB87)

- Use only genuine repair parts. Our obligation to replace equipment for the hydraulic valves is forfeited when non-genuine repair parts are used.

Before dismantling remove pressure from the hydraulic valve on both the fluid and air side.

Lightly grease the parts before assembly.
– We recommend grease OKS 270 (Tube 100g, Part nbr. 70950 003001).

ASSEMBLY OF THE GROOVED RINGS

Do not assemble the grooved rings with tools that have sharp edges – danger of damage.

Place the grooved ring ① on the drift ② – Part nbr. 70641 003002- , and press it into the bushing ③ as far as it will go. (Fig. 10)

Place the grooved ring ① on the drift ②, and press it into the valve housing ④ as far as it will go. (Fig. 11)

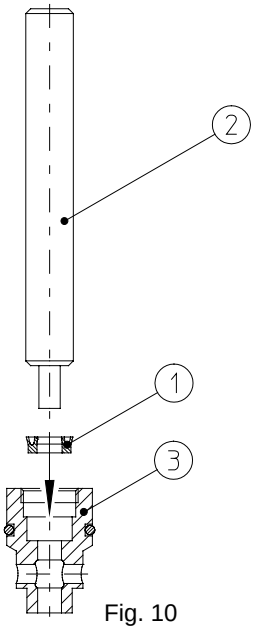

Fig. 10

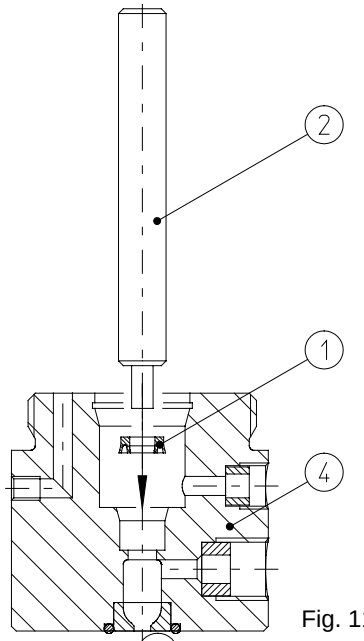

Fig. 11

Note the direction of sealing (position of the sealing lip).

O-RING ASSEMBLY

Place the assembly cone ⑤ - Part nbr. 70643 001002- on the thread of the valve housing ④. Pull the O-ring ⑥ over the assembly cone until it snaps into the groove of the valve housing.

- First lightly grease the cone to facilitate assembly.
(Fig. 12)

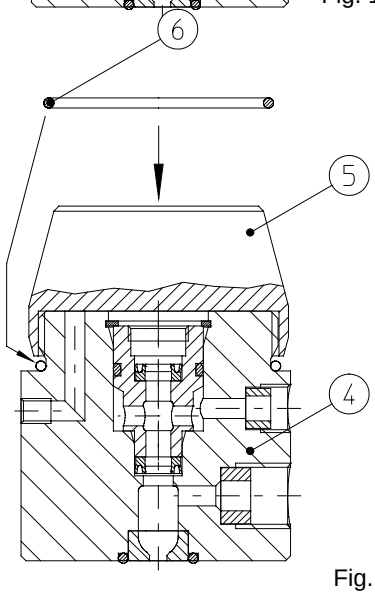

Fig. 12

TIGHTENING TORQUE

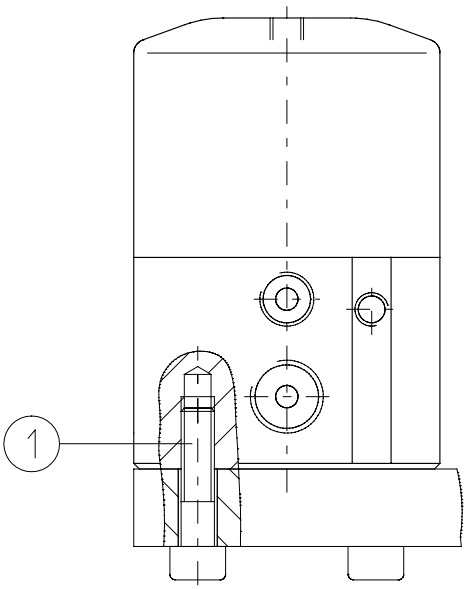

Fig. 13

Ref.	Thread	Material	Tightening torque
1	M6	8.8	10.5 Nm

TROUBLESHOOTING

BREAKDOWN ANALYSIS				
Component group	Nature of defect	Defect symptoms	Possible cause	Counter measure
Hydraulic valve	Loss of fluid at the hydraulic valve	Fluid escaping from the leakage hole.	Grooved ring / valve needle worn	Replace grooved ring / valve needle
	Loss of air at the hydraulic valve	Air escaping from the leakage hole	O-ring at the bushing or grooved ring at the valve needle defective	Replace O-ring or grooved ring
	The hydraulic valve does not open	Air escaping from the venting system of the control valve	Piston – seal defective	Piston – replace seal
	Loss of air at the hydraulic valve	Air escaping at the cap	O-ring seal defective	Replace O-Ring
	Hydraulic valve does not close	Flow of fluid in the closed valve position	Valve seat and/or valve needle defective	Replace valve seat and valve needle
Air pressure pipeline	Hydraulic valve does not open	The fluid does not flow	Foreign bodies or kink in the air hose	Check the air hoses, remove the fault

REMARK

The 2/2-way hydraulic valve DN 4 is intended for attachment/installation in a machine and start up is prohibited until it has been established, that the machine to/in which the hydraulic valve is to be attached/installed conforms to the regulations of the EU Machine directive 89/392/EEC.

REPLACEMENT PARTS

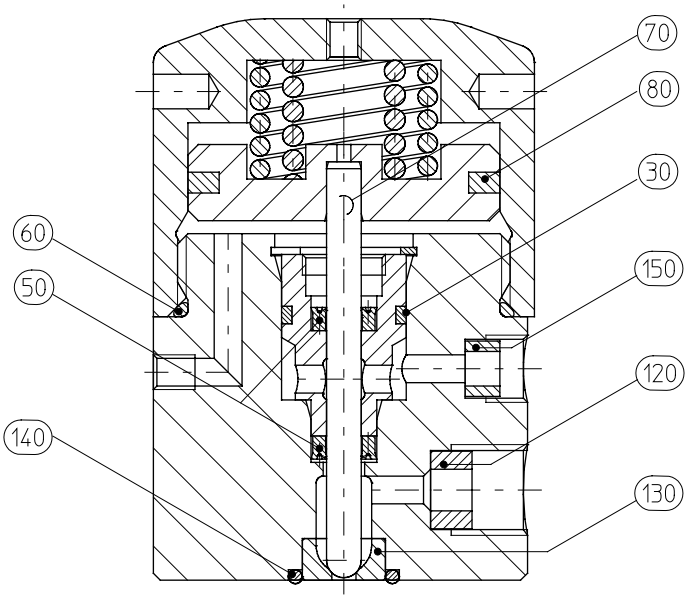

Fig. 14

Repair kit: fluid valve (hardened steel).			Part nbr. 79978 584004
Repair kit fluid valve (hardened stainless steel)			Part nbr. 79978 584005
Ref.	Quantity	Designation 1	Designation 2
30	1	O-ring	14x2 B
50	2	Grooved ring	5x9.5x3.35
60	1	O-ring	42x2 B
70	1	Valve needle complete	D5 L62.5
80	1	Piston seal	PK 45x2.8
130	1	Valve seat	D3,5
140	1	O-ring	12x2 B

Repair kit: seals			Part nbr. 79978 584006
Ref.	Quantity	Designation 1	Designation 2
30	1	O-ring	14x2 B
50	2	Grooved ring	5x9.5x3.35
60	1	O-ring	42x2 B
80	1	Piston seal	PK 45x2.8
120	1	Seal	6x11.2x7
140	1	O-ring	12x2 B
150	1	Seal	5x7.5x5

ACCESSORIES

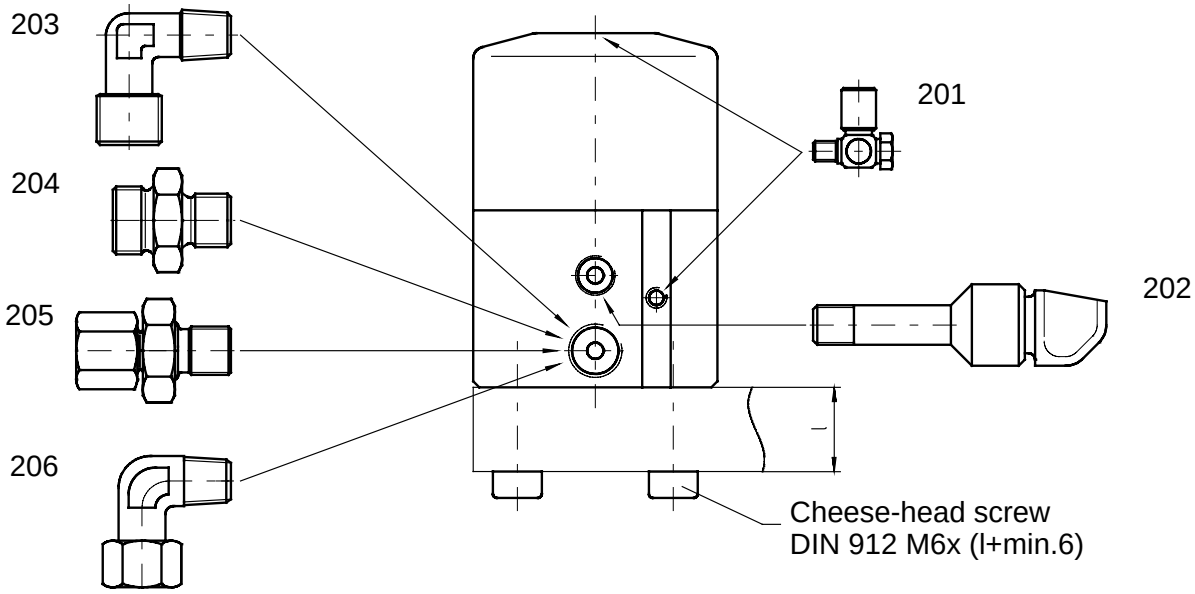

Fig. 15

Ref.	Description	Material	Notes	Part nbr.	
201	Plug	Ms	M5 – 4	75210 001002	
202	Level indicator	SST	G 1/8	77875 002002	a)
203	Angular union	SST	R1/4tap. – G1/4	75214 002001	
204	Nipple	SST	6-G3/8-G1/4	76639 039002	
205	Adapter union	SST	GE 8-PLR	75204 009126	
206	Adapter union	SST	WE 8-PLR	75205 026114	

a) Repair O-Ring Part nbr. 74186 023020 for Ref. 202

Order Example

Please lay out each order as follows:

Designation	Pos. No.	Item ID
Plug	201	75210 001002

GRACO N.V.
Industrieterrein “Oude Bunders”
Loc. 2206 - Slakweidestraat 31
3630 Maasmechelen - Belgium
Tel.: 32 89 770 700 Fax: 32 89 770 777

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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