



HAWIDO - REGULATING VALVES

Instruction for

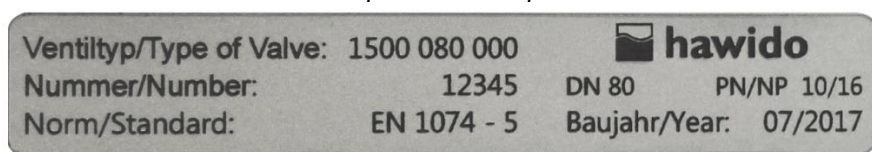
**On/Off – Valve with float control
Type 1600**

ND40 - ND200



Keep this instruction manual at the location of the valve

Example of a nameplate



Once the commissioning work has been completed, enter the following data and always specify this additional information concerning the valve type, pressure and flow ratios, whenever you consult or have reason to question the manufacture or supplier:

Year of manufacture:..... DN: NP:

Serial number:

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A. Description

1. Function

The on/off valve with float control regulates the flow of water in a tank. If the quantity in the tank should fall to a minimum level, the main valve opens completely and the tank is refilled to its maximum level. At this point, the float switches the float control valve over through the action of a stop and the main valve closes. The difference between maximum and minimum level can be set from 60 to 900 mm via the stops on the float rod. Larger level differences can be realized on request.

The closing speed can be controlled by means of the one-way flow restrictor.

Technical Characteristics

Medium:	Drinking water
Pressure levels:	PN10 (from DN200 Standard) PN16 (from DN150 Standard) PN25
Flanges:	Connecting dimensions according to DIN EN 1092-2
Manometer:	EN 837-1, accuracy class 1.0
Material Main Valve:	EN-GJS-400-15
Temperature range:	2 – 40°C

2. General safety guidelines

Prior to commissioning, this instruction is to be read with great care and also understood. In case of improper installation, operation and maintenance, it can result in material damage and/or injury to persons.

The Hawle control valve (HAWIDO) is designed for use in drinking water and industrial water supply systems. Please consult the manufacturer before using it with other media.

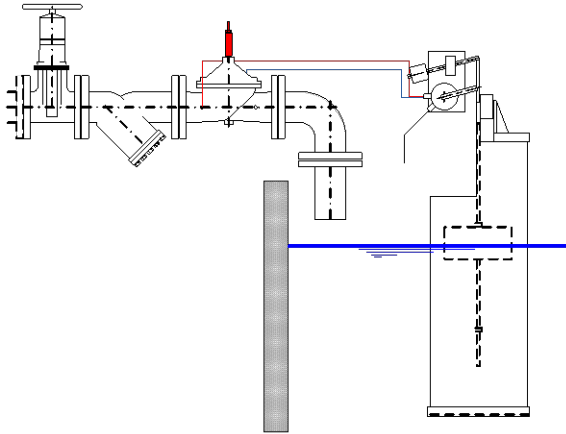
As a precondition, it is assumed that all technical regulations (e.g. SVGW, OeVGW, DVGW), codes of practice (e.g. VDE, VDI ...), laws and standards are understood, and will be adhered to and applied.

Work on electrical installations (e.g. the installation of magnetic position switches, solenoid valves, etc.) may only be carried out by personnel authorized to perform such work.

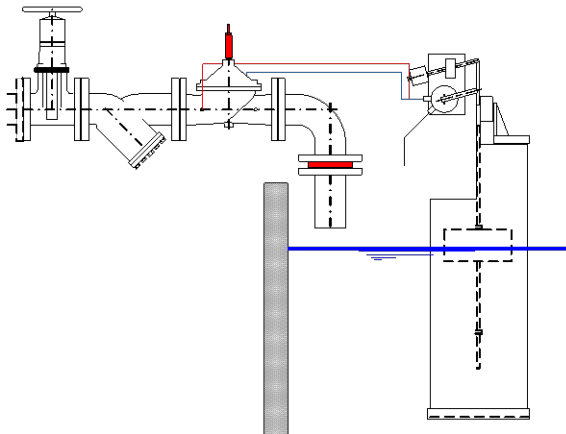
In principle, the planner, building contractor, respectively the operator, is responsible for the layout, installation position, installation and commissioning of the valves in the piping system. Design or installation errors can impair the safe functioning of the control valve and pose an appreciable danger potential. In cases of doubt, such matters are to be referred to us for advice.

3. Recommended installation

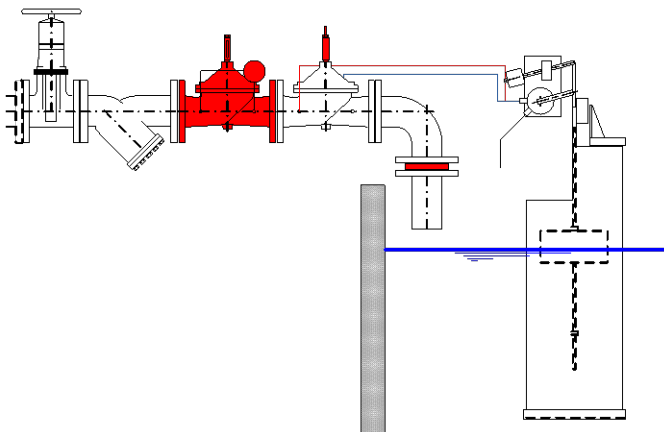
Prior to the installation of the valve, all the pipework must be purged carefully, to prevent the entry of any foreign bodies, such as pieces of wood, stones etc., in the control valve.



Inlet pressures from 1.5 to 4 bar the Hawido floating valve type 1600 can be used together with an opening limiter.



If the inlet pressure is between 4 to 9 bar, an orifice is required after the Hawido valve. The pressure will be reduced in two steps.



If the pressure is between 9 to 16 bar, a Hawido pressure reducing valve is required before the floating valve.

The HAWIDO must be installed horizontally, with the valve cover facing upwards. We recommend the fitting of a shut-off valve and a dirt trap upstream of the valve. Prior to commissioning, a check must be made to ensure that no coarse foreign bodies can enter the HAWIDO.

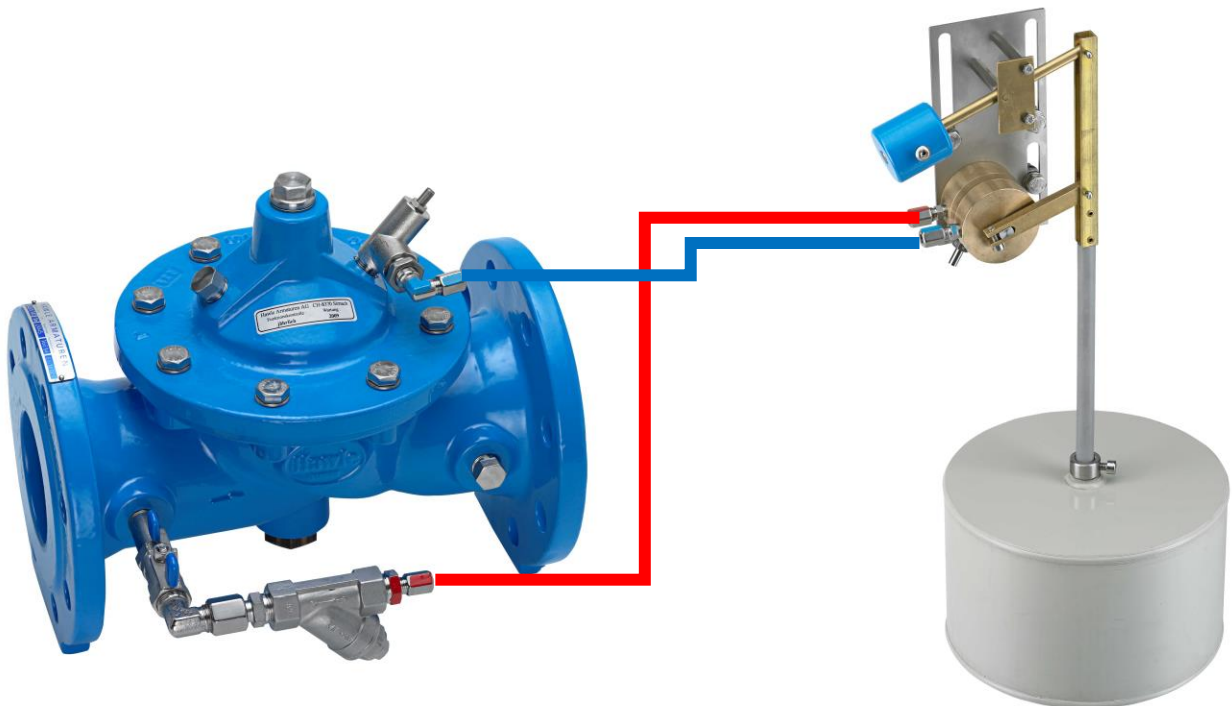
For other types of installation, please contact us for advice.

For an **inlet pressure of more than 4 bar**, we recommend the employment of a combined control system with pressure reduction and/or orifice to reduce possible cavitation damage and high pressure surges. With inlet pressures of less than 1.5 bar, we advise you to contact us.

To ensure trouble-free operation, we recommend the installation of a protective pipe for the float (available in PE or INOX).

For the assembly, you require two control lines from the main valve to the float control valve. The two control lines are attached to the screw fittings on the main valve and should therefore have an outer diameter of 6 mm. For this, use (Inox) steel pipe or compression-resistant PA-hose. A support sleeve should be employed if you decide to employ plastic hoses. The control lines must be delivered and assembled by the **building contractor**

The control line is to elevate continuously in the direction of the float control valve, but is not to exceed a length of more than 20 m. The difference between the height of the float control valve and the main valve is not to be more than 2 m.



4. Installation control valve with float

Due to the maximum possible or desired water level, the control valve is assembled in the tank.

General:

- Minimum possible difference between maximum and minimum water level: approx. 60mm
- Maximum possible difference between maximum and minimum water level: approx. 900 mm

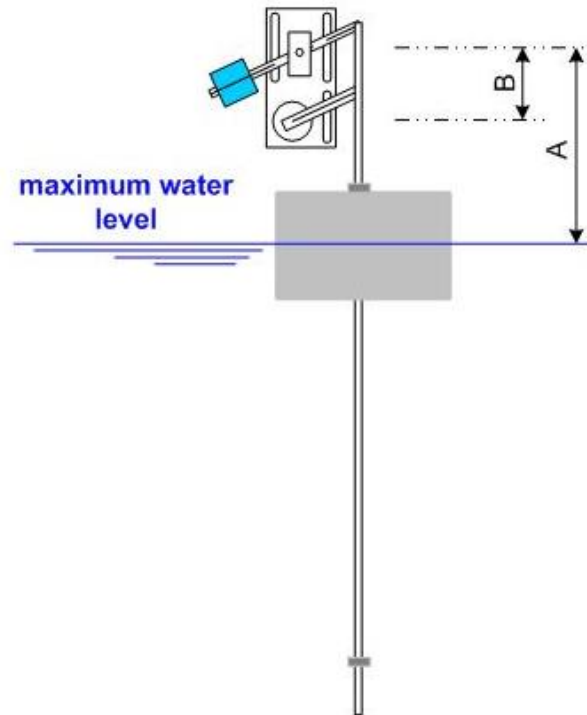
These two highest values (likewise intermediate values) can be set in each case with the setting rings on the guide bar. Special lengths available on request.

Presetting:

- The upper setting ring must be fixed at a minimum distance of 40 mm from the U-profile

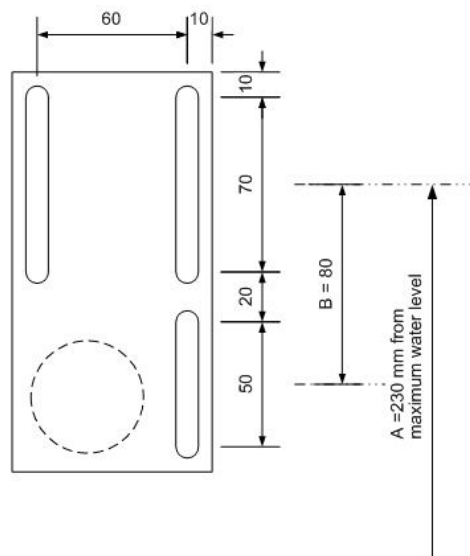
Assembly:

- Determine the highest water level in the tank. → The HAWIDO valve is closed in this position.
- The measurements A = 230 mm and B = 80 mm are to be marked for the assembly drill holes, Please observe the following pinhole pattern of the plate.



Drawn position:
HAWIDO valve closed

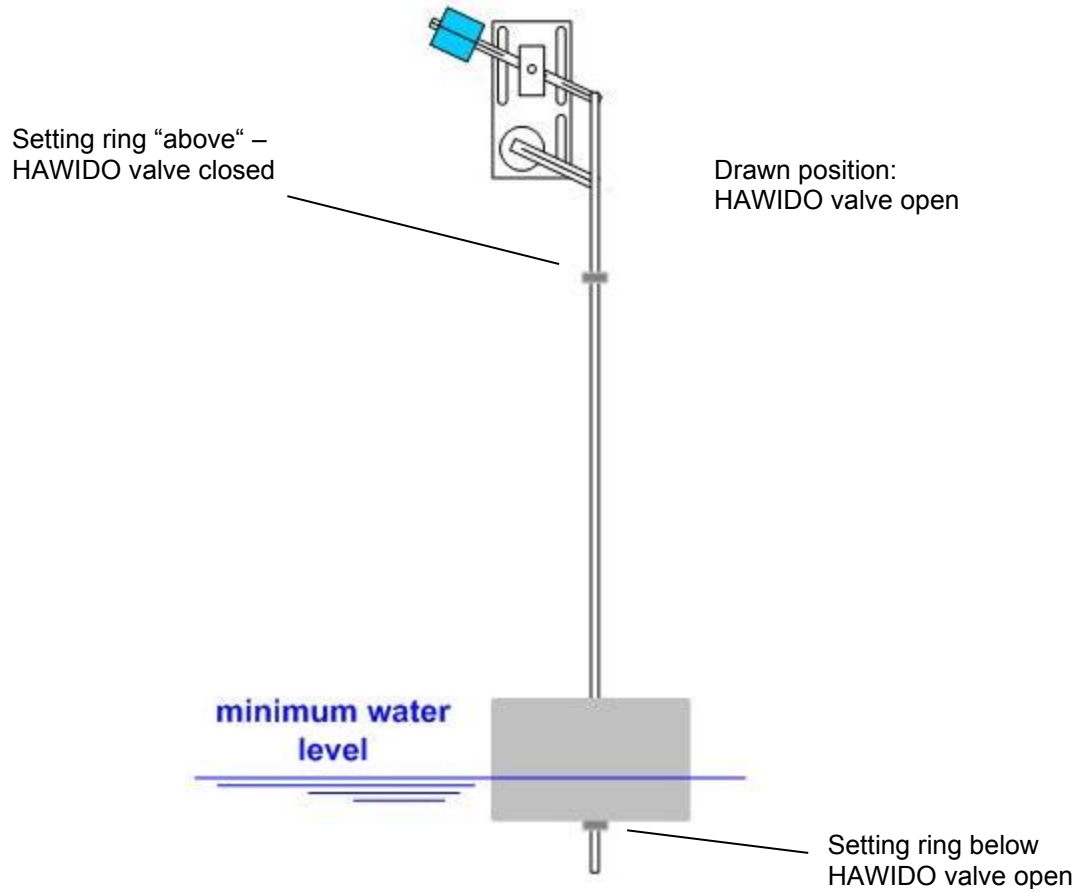
Pinhole pattern of the plate:



Slot width:
9mm for M8 screws
(use only corrosion-resistant screws)

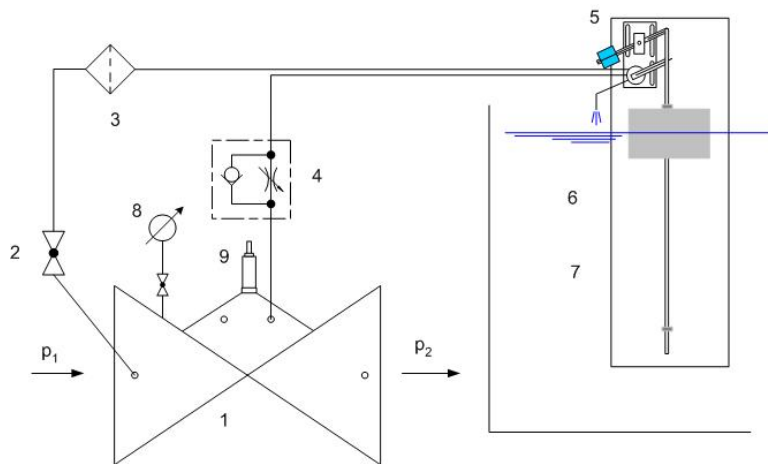
Setting the minimum and maximum water level

- The water level Maximum (HAWIDO valve closed) and the water level Minimum (HAWIDO valve open) can be preset with the setting rings. These rings may have to be adjusted during the operating mode.



B. Commissioning

1. Functional diagram



Components

- | | |
|---|---|
| 1 | Main valve 1200 |
| 2 | Ball valve |
| 3 | Filter |
| 4 | One-way flow restrictor |
| 5 | Control valve NAZ |
| 6 | Float with rod assembly |
| 7 | Float protection pipe (optional, but recommendable) |
| 8 | Pressure gauge with ball valve |
| 9 | Valve opening limiter |
| | Electric position indicator (optional) |

2. Preparation

Prior to commissioning the valve, make sure that the valve is **closed** on the inlet side and the flange connections are tightened securely.

On the valve:

- Open the ball valve (2) and undo the lock nut of the setting screw on the one-way flow restrictor (4)
- Undo the adjusting screw on the one-way flow restrictor approximately 10 turns (line in the control chamber is open)
- Loosen the opening limiter on the valve cover
- Loosen a union of the control line slightly at the highest point (approximately one full turn)

On the float valve:

- Undo the red union approximately 1 or 2 turns
- Fit the float rod with the float (6) if this has not been carried out already
- Set (or check) the minimum and maximum limit on the float rod
- Draw float rod upwards and fix (resp. check) so that it corresponds with the operating situation "maximum level attained" → Hawido valve closed)

3. Venting

Procedure:

Open the gate valve on the inlet side **slowly** and to such an extent that water flows in the valve. Once all the air in the control line has escaped following the venting of the valve, tighten the opening limiter and union again. Check all screw fittings for tightness and, if necessary, tighten securely. The valve closes, respectively must remain shut.

If the valve does not close, repeat the commissioning from the preceding chapter onwards. Particular care must be taken here to ensure that the upper valve chamber and control circuit are properly vented.

4. Functional check

Procedure:

- The valve on the inlet side is completely open. The valve must remain closed.
- Undo float, respectively lower it **slowly** downwards. Valve must open.
- Raise float **slowly** upwards. Valve must close

5. Setting the reaction speed

If the HAWIDO does not operate smoothly, or pressure surges are experienced in the line system, the one-way flow restrictor (4) must be adjusted accordingly.

Procedure:

Undo lock nut. Turn adjusting screw clockwise with screwdriver until the valve operates smoothly. And then tighten the lock nut again.

Attention

The adjusting screw must always be open at least 3-4 turns, otherwise the main valve will not open again after the closing operation.

6. Checking for leakages

HAWIDOS are tested for both leakage and functionality before they leave our works. When checking for leakages under operational conditions, particular attention must therefore be given to the tightness of the flanges, the control lines and the central screw plug on the valve cover. If necessary, ensure the tightness of the connections by tightening them further.

Notes:

C. Fault Finding

Symptoms	Possible cause	Action
Valve does not open	One-way flow restrictor blocked	Replace or screw the grub screw in and out several times until the valve functions properly
	One-way flow restrictor closed too far	Unscrew the grub screw until the valve functions properly
	Float valve blocked	Corrective maintenance by Hawle or suitably trained personnel
Valve does not close	One-way flow restrictor blocked	Replace or screw the grub screw fully in and out several times, reset
	One-way flow restrictor closed too far	Replace or screw the grub screw fully in and out several times, reset
	Filter in control circuit blocked	Clean the filter
	Air in the control circuit or valve chamber	Vent system
	Foreign matter in the main valve	Carry out service, and remove any foreign matter
	Diaphragm defect	Carry out service, and replace the diaphragm
	Valve spindle jammed through encrustation	Carry out service, and remove encrustation
Loud noises	Unfavourable operating conditions	Open or close one-way flow restrictor slightly. Contact Hawle customer service department
	Incorrect valve diameter	Calculate correct valve diameter (contact Hawle)
Erratic operation	One-way flow restrictor set incorrectly	Reset one-way flow restrictor according to this instruction Manual
Epoxy-coating damaged	Transportation damage, installation damage	Repair using Hawle two-component repair kit for coatings

D. Putting out of service and Maintenance

1. Putting out of service

The operating valve must first be shut off hydraulically as follows:

- Close the gate valve up stream of the valve slowly

This will put the valve out of service and the maintenance work can then be undertaken.

2. Maintenance and service

2.1 General

Our long experience with diaphragm regulating valves controlled by their own flow medium shows that our HAWIDOS usually function trouble-free for many years. However, continuous reliable operation can only be assured through regular maintenance.

Under normal operating conditions:

- The valve should be checked **once a year** for correct operation (functional check)
- The dirt trap upstream of the valve and the filter in the control line cleaned **once a year**
- The inner moving components checked **every 4-5 years** and any parts subject to wear replaced (maintenance)

If the operating conditions are unusual (e.g. water with high quantities of suspended matter, high pressure reduction, low flow rates etc.), the maintenance work should be carried out more frequently.

Maintenance label

Funktionskontrolle: jährlich	Wartung:	20xx
Contrôle fonctionnel: annuel	Maintenance:	
Prova di funzionamento: ogni anno	Mantenzione:	
Function check: annually	Maintenance:	

xx stands for the year.

2.2 Yearly functional checks

Cleaning of the dirt trap (Main line)

- Unscrew and remove cover
- Clean (with brush, cloth etc.) or replace the filter
- Refit filter and screw cover on again

Cleaning of the filter (Control line)

- Unscrew and remove filter cover
- Clean (with brush, cloth etc.) or replace the filter
- Refit filter and screw filter cover on again

Checking the valve

- Remove opening limiter on the valve cover
- Check that the valve spindle moves easily by raising and lowering it with the threaded rod, especially with valves where a modified counter seat is installed.

Putting the valve back into service

- See Chapter *Commissioning*

Checking the operation of the valve

- Open the valve slowly on the inlet side
- Loosen float, respectively lower it **slowly** downwards. Valve must open
- Raise float **slowly** upwards. Valve must close

2.3 Four or five yearly maintenance

Dirt trap (main line)

- Unscrew cover
- Clean or replace the filter
- Fit filter and screw cover on again

Filter (Control line)

- Unscrew filter cover
- Clean or replace filter
- Fit filter and screw filter cover on again

Main valve (see chapter: *Repair kits and spare parts*)

- Undo the fittings of the control line and lay the complete control line aside.
- Disassemble the opening limiter and replace the gaskets
- Undo the screws of the valve cover and remove this valve cover.
- Visually inspect all inner components for wear, dirt and scaling
- Clean inner components, seat and inner surfaces including the valve cover
- Disassembly the spindle guide at the housing, rinse the housing interior.
For valves from DN 40 to DN 100 built in 2012 and DN 125 to DN 200 built in 2014, the spindle guide has to be removed from inside of the housing. The guiding thread of the spindle and the base valve must be **extremely clean**. Grease the thread well (eg Food Grease Aqua, Item No. 5292, see chapter control line parts and accessories).
- Replace the diaphragm, the O-ring and if necessary also the seat seal
- Thinly grease the area around the spindle guide with an agent, which is suitable for contact with foodstuffs. Check for easy movement of the spindle in the housing guide and in the cover guide.
- Assemble the main valve (See torque table in Annex). During assembly the easy movement of the spindle must be checked **several times** by actuating the threaded rod.

Control valve (see Chapter *Repair kits and spare parts*)

- Undo the threaded fittings R and B and lay the complete control line aside
- Undo the screws behind the baseplate (Point D)
- Clean internal components and replace O-rings
- Reassemble valve (See torque table in Annex)

Functional check of the one-way flow restrictor

- Undo lock nuts
- Screw throttle screw in, and then out again up to the stop
- Screw in a few more turns; this operation must be able to be made with ease.

Putting back into service

- According to Chapter *Commissioning*

Functional check of the valve

- Open the valve **slowly** on the inlet side
- Loosen float, respectively lower it **slowly** downwards. Valve must open
- Raise float **slowly** upwards. Valve must close

3. Repair kits and spare parts

Several spare parts are required for the four or five yearly maintenance. These can be obtained as a repair kit for:

- the main valve
- for the control valve
- for the control circuit
- optical position indicator

The article numbers are shown in the parts lists and spare parts lists.

Attention:

When ordering spare parts, always specify the valve type, serial number and year of manufacture.

Important:

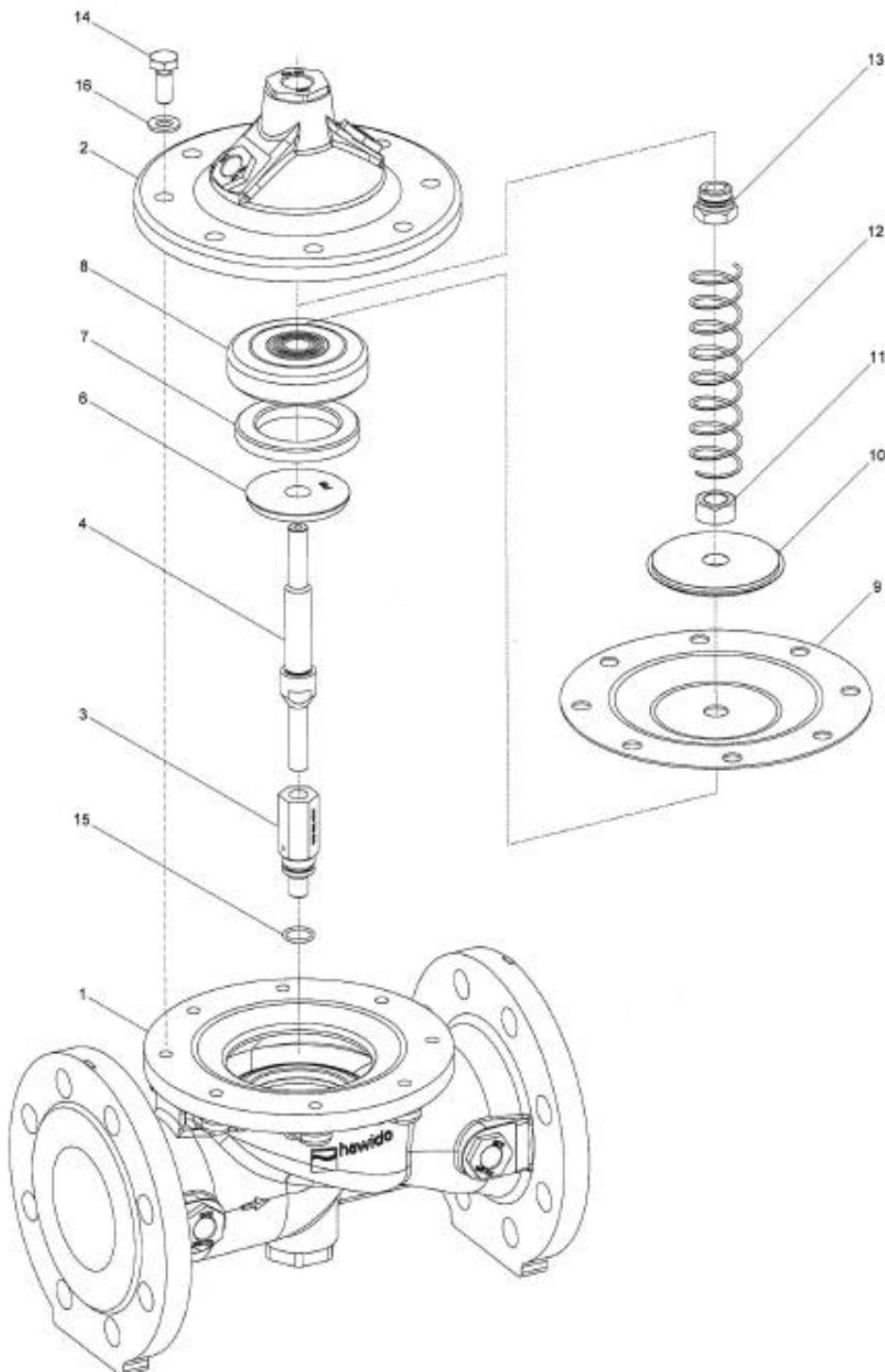
Spare parts of EPDM (membranes, seals) and NBR (O rings) have to be stored in a dark place, protected from UV radiation!

Durability in dark storage:

EPDM: eight years after production

NBR: five years after production

3.1 Main valve with stainless steel connection ND 40 to ND 200 (drawing)



08.12.2011/plü

3.2 Main valve (Parts list)

Item.	Description	Material	Article number				
			DN 40	DN 50	DN 65	DN 80	DN 100
1	Body	GGG 40	1004 040 000	1004 050 000	1004 065 000	1004 080 000	1004 100 000
2	Valve cover	GGG 40	1014 050 000	1014 050 000	1014 065 000	1014 080 000	1014 100 000
3	Spindle guide cover	INOX	1024 900 000	1024 900 001	1024 900 002	1024 900 003	1024 900 004
4	Spindle	INOX	1026 050 000	1026 050 000	1026 065 000	1026 080 000	1026 100 000
5	Seat	INOX	*	*	*	*	*
6	Counter seat	INOX	1044 040 001	1044 050 001	1044 065 001	1044 080 001	1044 100 001
7	Seal	EPDM	1022 040 000	1022 050 000	1022 065 000	1022 080 000	1022 100 000
8	Seal carrier	INOX	1027 040 200	1027 050 200	1027 065 200	1027 080 200	1027 100 200
9	Diaphragm PN10/16	EPDM	1020 050 000	1020 050 000	1020 065 000	1020 080 000	1020 100 000
	Diaphragm PN25	EPDM	1020 050 000	1020 050 000	1021 065 000	1021 080 000	1021 100 000
10	Pressure disc	INOX	1047 050 000	1047 050 000	1047 065 000	1047 080 000	1047 100 000
11	Nut	INOX	0007 710 080	0007 710 080	0007 712 080	0007 716 080	0007 716 080
12	Spring	INOX	1049 050 000	1049 050 000	1049 065 000	1049 080 000	1049 100 000
	Spring for valves installed upright position	INOX	1050 050 000	1050 050 000	1050 065 000	1050 080 000	1050 100 000
13	Spindle guide cover	INOX	1042 900 000	1042 900 000	1042 900 001	1042 900 002	1042 900 002
14	Hexagonal screw	INOX	0006 608 020	0006 608 020	0006 610 025	0006 610 025	0006 612 025
15	O-ring	NBR	0180 012 020	0180 012 020	0180 012 020	0180 016 020	0180 016 020
16	Washer	INOX	0008 208 000	0008 208 000	0008 210 000	0008 210 000	0008 212 000
17	GSK-sticker		1099 900 000	1099 900 000	1099 900 000	1099 900 000	1099 900 000
18	Maintenance sticker		9691 0xx 000	9691 0xx 000	9691 0xx 000	9691 0xx 000	9691 0xx 000
	Main valve complete	PN10/16	1201 040 000	1201 050 000	1201 065 000	1201 080 000	1201 100 000
	Main valve complete	PN25	--	--	1201 065 025	1201 080 025	1201 100 025
	Repair kit for main valve with stainless steel connection, comprising item 7, 9, 15, 18	PN10/16	1080 040 000	1080 050 000	1080 065 000	1080 080 000	1080 100 000
		PN25	1080 040 000	1080 050 000	1081 065 000	1081 080 000	1081 100 000

Item	Description	Material	Article number			
			DN 125	DN 150	DN 200°	DN 200^
1	Body	GGG 40	1004 125 000	1004 151 000	1004 200 000	1004 200 016
2	Valve cover	GGG 40	1014 125 000	1014 151 000	1014 200 000	1014 200 000
3	Spindle guide cover	INOX	1024 900 005	1024 900 005	1024 900 006	1024 900 006
4	Spindle	INOX	1026 125 000	1026 151 000	1026 200 000	1026 200 000
5	Seat	INOX	*	*	*	*
6	Counter seat	INOX	1044 125 001	1044 150 001	1044 200 001	1044 200 001
7	Seal	EPDM	1022 125 150	1022 151 000	1022 200 000	1022 200 000
8	Seal carrier	INOX	1027 125 200	1027 151 200	1027 200 200	1027 200 200
9	Diaphragm PN10/16	EPDM	1020 125 150	1020 151 000	1020 200 000	1020 200 000
	Diaphragm PN25	CR	1051 125 150	1051 151 000	--	1034 200 000
10	Pressure disc	INOX	1047 125 150	1047 151 000	1047 200 000	1047 200 000
11	Nut	INOX	0007 720 080	0007 720 080	0007 724 080	0007 724 080
12	Spring	INOX	1049 125 150	1049 151 150	1049 200 000	1049 200 000
	Spring for valves installed upright position	INOX	1050 125 150	1050 151 000	1050 200 000	1050 200 000
13	Spindle guide cover	INOX	1042 900 003	1042 900 003	1042 900 004	1042 900 004
14	Hexagonal screw	INOX	0006 616 035	0006 616 035	0006 620 045	0006 620 045
15	O-ring	NBR	0180 018 020	0180 018 020	0180 021 020	0180 021 020
16	Washer	INOX	0008 216 000	0008 216 000	0008 220 000	0008 220 000
17	GSK-sticker		1099 900 000	1099 900 000	1099 900 000	1099 900 000
18	Maintenance sticker		9691 0xx 000	9691 0xx 000	9691 0xx 000	9691 0xx 000
21	Retaining bracket	INOX	--	--	1200 900 020	1200 900 020
	Main valve complete	PN10/16	1201 125 000	1201 151 000	1201 200 000	1201 200 016
	Main valve complete	PN25	1201 125 025	1201 151 025		1201 200 025
	Repair kit for main valve with stainless steel connection, comprising item 7, 9, 15, 18	PN10/16	1080 125 150	1080 151 000	1080 200 000	1080 200 000
		PN25	1081 125 150	1081 151 000		1081 200 000

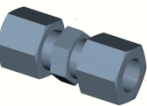
° PN10

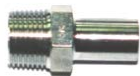
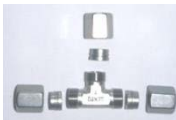
^ PN16

* not interchangeable

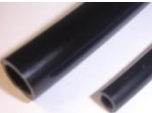
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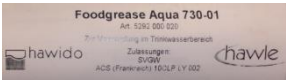
3.3 Control line and accessories

Masternumber Description	Picture	Size more sizes might be available	Art. number
0130 Composite sealing ring		stainless steel /NBR 3/8" stainless steel /NBR 1/2" stainless steel /NBR 3/4" steel/NBR 1"	0130 012 000 0130 016 000 0130 025 000 0130 032 000
0273 Single component		Fitting attachment (consisting of connecting nut and clamping ring) DN 12 stainless steel	0273 012 000
0275 Support sleeve		stainless steel d4 – 6 stainless steel d12 – 9 stainless steel d12 – 10	0275 006 004 0275 012 009 0275 012 010
0283 Clamping ring		d6 stainless steel d12 stainless steel d18 stainless steel d8 - 6 stainless steel	0283 006 000 0283 012 000 0283 018 000 0283 008 006
0284 Orifice		d12 stainless steel Ø 0.6 mm d12 stainless steel Ø 0.9 mm d12 stainless steel Ø 1.2 mm d12 stainless steel Ø 1.5 mm d12 stainless steel Ø 1.9 mm d12 stainless steel Ø 2.4 mm d12 stainless steel Ø 3.1 mm d18 stainless steel Ø 3.5 mm d18 stainless steel Ø 4.0 mm	0284 006 000 0284 009 000 0284 012 000 0284 015 000 0284 019 000 0284 024 000 0284 031 000 0284 035 010 0284 040 010
0311 Male adaptor union		d 12 - 3/8" stainless steel d 12 - 1/2" stainless steel d 6 - 1/8" stainless steel d 6 - 1/4" stainless steel d 6 - 3/8" stainless steel d18 - 1/2" stainless steel	0311 012 012 0311 012 016 0311 006 004 0311 006 008 0311 006 012 0311 018 016
0323 Straight union		DN 6 stainless steel DN 12 stainless steel	0323 006 000 0323 012 000
0324 Straight screw-on screwed fitting		d12 - 3/8" stainless steel	0324 012 012
0351 Reduction union		d6 - d12 stainless steel	0351 012 006
0361 Female adaptor		d 10 - 3/8" stainless steel d 12 - 3/8" stainless steel d 12 - 1/2" stainless steel d 18 - 1/2" stainless steel	0361 010 012 0361 012 012 0361 012 016 0361 018 016
0371 Male adaptor		DN 12 - 3/8" stainless steel	0371 012 012

0401 Sleeve		3/8" stainless steel 1/2" stainless steel 3/4" stainless steel 1" stainless steel	0401 012 000 0401 016 000 0401 025 000 0401 032 000
0411 Adjustable male adaptor		DN 6 - 1/8" stainless steel DN12 - 3/8" stainless steel	0411 006 004 0411 012 012
0431 Male adaptor elbow union		DN 6 - 1/8" stainless steel DN6 - 1/4" stainless steel DN12 - 3/8" stainless steel DN18 - 1/2" stainless steel	0431 006 004 0431 006 008 0431 012 012 0431 018 016
0431 Male adaptor elbow union with venting		DN12 - 3/8" stainless steel	0431 012 013
0451 Elbow union 90°		DN6 stainless steel DN12 stainless steel DN18 stainless steel	0451 006 000 0451 012 000 0451 018 000
0455 Female adaptor elbow union 90°		IG 3/8" stainless steel IG 1/2" stainless steel IG 3/4" stainless steel IG 1" stainless steel	0455 012 000 0455 016 000 0455 025 000 0455 032 000
0456 Female adaptor elbow union 90°		IG 3/8" - AG 3/8" stainless steel IG 1/2" - AG 1/2" stainless steel IG 3/4" - AG 3/4" stainless steel IG 1" - AG 1" stainless steel	0456 012 000 0456 016 000 0456 025 000 0456 032 000
0461 T-union		d6 stainless steel d12 stainless steel d12 - 6 - 12 stainless steel d18 stainless steel	0461 006 000 0461 012 000 0461 012 006 0461 018 000
0510 Plug		AG 3/8" konisch stainless steel AG 1/2" konisch stainless steel	0510 012 000 0510 016 000
0511 Plug aeration for Hawido		AG 1/2" stainless steel AG 3/4" stainless steel AG 1" stainless steel (hexagon socket)	0511 016 000 0511 025 000 0511 032 001
0520 Hexagonal male adaptor nipple		d 1/8" stainless steel d 1/4" stainless steel d 3/8" stainless steel d 1/2" stainless steel d 3/4" stainless steel	0520 004 000 0520 008 000 0520 012 000 0520 016 000 0520 025 000
0541 Ball valve		DN 3/8" stainless steel DN 1/2" stainless steel DN 3/4" stainless steel	0541 012 001 0541 016 000 0541 016 010

0545 Y-filter		Y-filter stainless steel IG 3/8" Single components: Filter sieve stainless steel Plug complete Seal big for Y-filter O-Ring Y-filter stainless steel 1/2"	0545 112 002 0545 900 051 0545 112 010 0545 112 011 0545 112 012 0545 116 000
0549 One-way flow restrictor & Throttle valve		Throttle valve DN 3/8" Brass nickel-plated Stainless steel IG 3/8" Typ B d 12 with a long spindle	0549 000 002 0549 000 005
0570 Non-return valve		3/8" Brass (max. 40 bar) 1/2" Brass (max. 40 bar)	0570 012 045 0570 016 045
0600 Manometer		AG 3/8" 0 - 6 bar AG 3/8" 0 - 10 bar AG 3/8" 0 - 16 bar AG 3/8" 0 - 25 bar AG 3/8" 0 - 40 bar AG 3/8" 0 - 60 bar	0600 012 006 0600 012 010 0600 012 016 0600 012 025 0600 012 040 0600 012 060
0610 Solenoid valves		Solenoid valve normally open 2/2 way valve (1795/96) 122K84 Solenoid valve normally closed 2/2 way valve (1795/96) E121K04 Solenoid valve normally open 3/2 way valve (1703 up to DN 100 1603, 1706 PN 16 all diameters) 132K04 Solenoid valve normally closed 3/2 way valve (1704 up to DN 100, 1604) E131K04 Solenoid valve normally open 2/2 way valve (1704 DN 125 and above 1304, 1404, 1504) (old version: E322 H73 06) Solenoid valve normally closed 2/2 Wegeventil (zu 1703 ab DN 125, 1303, 1403, 1503, 1706 PN 25 ab DN 125) (old version: E321 H13) Magnetventil universel 3/2 way valve (1706 PN 25 up to DN 100) ***** Spare part : Diaphragm for solenoid type 0610 510 001 and 0610 510 002 Spare parts Kit for solenoid valve type 0610 510 001	0610 122 084 0610 121 004 0610 132 004 0610 131 004 0610 510 002 0610 510 001 0610 133 005 ***** 0610 590 001 0610 590 002

0620 Coil		Coil AC voltage Indicate the voltage Coil DC voltage Indicate the voltage	0620 xxx xxx 0621 xxx xxx
0630 Appliance socket for electric coil		Appliance socket for electric coil	0630 000 000
0652, 0653 Plug module Type LBV		Plug module for solenoid valves Type LBV 24 DC = 8-14S incl. 2m cable Plug module for solenoid valves Type LBV 24, IP 65 IN: 48-230VAC/DC OUT: 48VDC incl. 2m cable 3-wire For use with 48VDC coils only	0653 024 008 0653 230 000
0670 Hexagonal overcut		AG 3/8" IG 1/8" stainless steel AG 3/8" IG 1/4" stainless steel AG 1/2" IG 3/8" stainless steel AG 3/4" IG 3/8" stainless steel AG 1" IG 1/8" stainless steel	0670 012 004 0670 012 008 0670 016 012 0670 025 012 0670 032 012
0671 Threaded connection		AG 3/8" IG 1/2" stainless steel AG 3/4" IG 1" stainless steel	0671 016 012 06710 32 025
0680 Male adaptor nipple		AG 3/8" L = 30 mm stainless steel AG 3/8" L = 40 mm stainless steel AG 3/8" L = 50 mm stainless steel AG 3/8" L = 60 mm stainless steel AG 3/8" L = 70 mm stainless steel AG 3/8" L = 80 mm stainless steel AG 3/8" L = 110 mm stainless steel	0680 012 030 0680 012 040 0680 012 050 0680 012 060 0680 012 070 0680 012 080 0680 012 110
0690 Male reduction nipple		AG 3/8" - 1/8" stainless steel AG 3/8" - 1/4" stainless steel AG 1/2" - 3/8" stainless steel AG 3/4" - 3/8" stainless steel AG 1" - 3/8" stainless steel	0690 012 004 0690 012 008 0690 016 012 0690 025 012 0690 032 012
0711 T-union		IG 3/8" egal stainless steel IG 1/2" egal stainless steel IG 3/4" egal stainless steel IG 1" egal stainless steel	0711 012 000 0711 016 000 0711 025 000 0711 032 000
0730 Seamless pipe		d6 x 1mm stainless steel d12 x 1.5 mm stainless steel d15 x 1.5 mm stainless steel d18 x 1.5 mm stainless steel	0730 006 010 0730 012 015 0730 015 015 0730 018 015
1188 Rep. Set Control line		From serial number 14252 (Januar 2003) DN40 bis 100 DN125 bis 300 From serial number 25915 (Juni 2014, Filter Typ B (0545 112 002) DN40 bis 100 DN125 bis 200	1188 065 100 1188 125 300 1188 000 000 1188 000 001
SA.0 PA-tube		Tube AD 6 mm, ID 4 mm Tube AD 12 mm, ID 9 mm	SA.0 000 060 SA.0 000 290

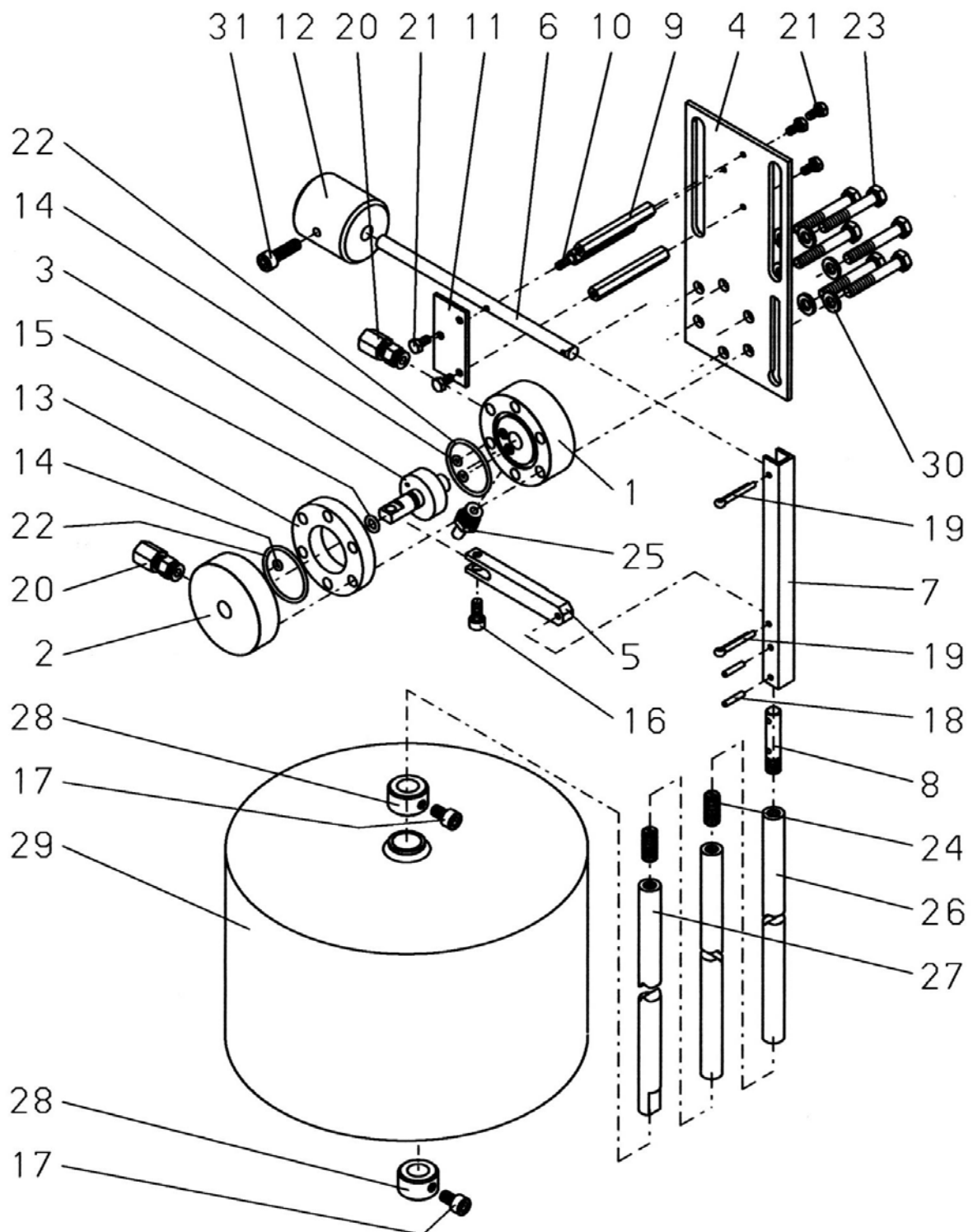
Tools and accessories			
1199 Spindel stroke tester		M5 M6	1199 000 000 1199 000 010
1199 Tool for seal holder		Key for assembling the seal holder of the pilot valve	1199 000 020
1199 Ratchet with attachment		Ratchet with attachment for the one way flow restrictor	1199 000 030
1199 Ratchet with attachment.		Ratchet with attachment for the one way flow restrictor	1199 000 040
5292 Grease		Foodgrease Aqua Tube à 175g	5292 000 020

AG: Outside thread
IG: Inside thread

AD: Outside diameter
ID: Inside diameter

02.02.2018/plü

3.4 ON/OFF control valve (drawing)



06.04.2014/tbo

3.5 ON/OFF control valve (Parts list)

Item	Description	Material	Article number
1	Body	Bronze	1940 900 000
2	Cover	Bronze	1940 900 010
3	Distributor piece	Stainless steel	1940 900 020
4	Plate	Stainless steel	1940 900 030
5	Arm	Brass	1940 900 040
6	Weight rod	Brass	1940 900 050
7*	U-connector	INOX	1940 900 060
8*	Intermediate connector	INOX	1940 900 070
9	Distance piece	Brass	1940 900 080
10	Guide fixing	Brass	1940 900 090
11	Support plate	Brass	1940 900 100
12	Counterweight	Stahl / EWS	1940 900 110
13	Intermediate piece	Bronze	1940 900 160
14	O-ring	X-Sel/NBR	0180 002 517
15	O-ring	NBR	0180 006 020
16	Recessed screw	Stainless steel	0004 505 012
17	Recessed screw	Stainless steel	0004 506 010
18*	Hollow rivet	Brass	0001 503 015
19	Split pin	Stainless steel	0010 203 020
20	Connector	Brass	0310 006 004
21	Hexagonal screw	Stainless steel	0006 404 008
22	O-ring	NBR	0180 030 020
23	Hexagonal screw	Stainless steel	0006 406 040
24	Threaded stud	Brass	0001 408 020
25	Adjuster nipple	Brass	0410 006 004
26	Float rod	PVC	1940 900 120
27	End rod	PVC	1940 900 130
28	Compression ring	Stainless steel	0010 713 022
29	Float	PVC	1940 900 150
30	U washer	Stainless steel	0008 206 000
31	Ovalhead screw	Stainless steel	0009 206 020
*	Connecting piece complete consists of pos. 7, 8 and 18		1940 900 170
	Control valve ON/OFF		1940 000 000
	Repair kit comprising items: 14, 15 and 22		1185 000 000

05.11.2014/plü

E. Annex

1. Torque table

When assembling the main valve and the pilot valve, all bolts are checked with a torque wrench according to the following list. Grease the bolts before mounting !

Main valve	Diameter DN	Hexagon bolt M	Strenght class 1)	Tightening torque	
				Reference	Max. 2)
	40 - 50	M 8	A4 / 80	22 Nm	25 Nm
	65 - 80	M 10		47 Nm	50 Nm
	100	M 12		84 Nm	87 Nm
	125 - 150	M 16		172 Nm	216 Nm
	200	M 20		285 Nm	423 Nm
	250	M 20		285 Nm	423 Nm
	300	M 20		380 Nm	423 Nm

Pilot valve	Typ	Hexagon Socket bolt	Strenght class 1)	Tightening torque	
				Reference	Max.
	DRV / DAV	M 6	A2 / A4 / 70	8 Nm	8,5 Nm
	MBV / RBS				
	Control valve	Hexagon bolt M	Strenght class 1)	Reference	Max.
	NAZ	M 6	A2 / A4 / 70	8 Nm	8,5 Nm

(Torque for bolts with term in head A2)

Main valve	Diameter DN	Hexagon bolt M	Strenght class 1)	Tightening torque	
				Reference	Max.
	40 - 50	M 8	A2 / 70	17 Nm	19 Nm
	65	M 10		33 Nm	36 Nm
	80	M 10		40 Nm	40 Nm
	100	M 12		70 Nm	72 Nm
	125 - 150	M 16		172 Nm	172 Nm
	200	M 20		280 Nm	285 Nm
	250	M 20		280 Nm	285 Nm
	300	M 20		235 Nm	240 Nm

Note: 1) = Term on bolt head A2 – 70 or A4 – 80!

2) = Maximum permissible torque according strength analysis

Bolts according SN EN ISO 4014 und SN EN ISO 4017

Stand: FO 0065, Rev. 12 / 19.12.2017

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19.08.2014-1/plü

