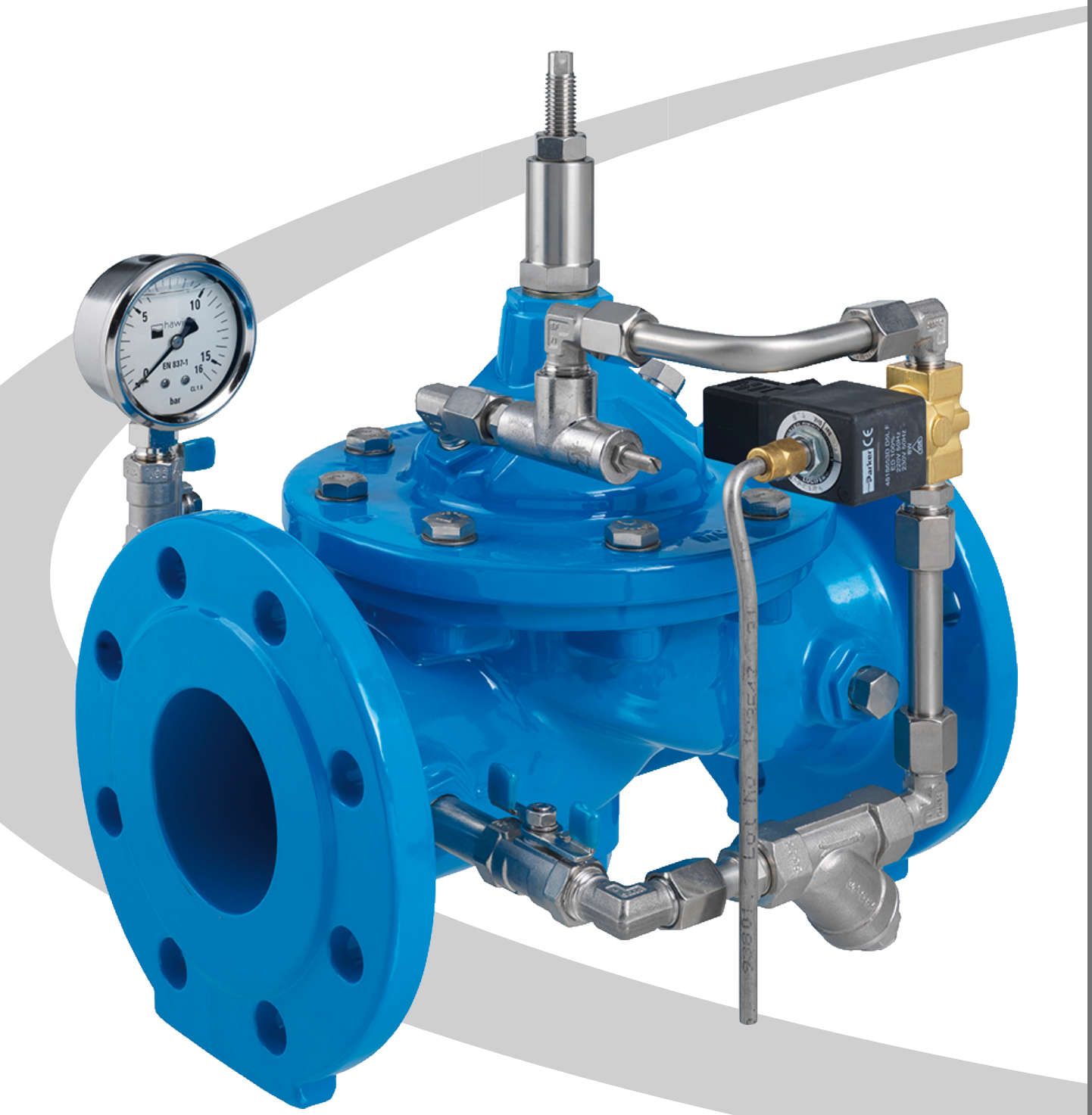
manual



On/Off valve for electrical remote control - closed without current®

HAWIDO - REGULATING VALVES

Instruction for

On/Off valve for electrical drive
Type 1703/04

DN40 - DN100



Keep this instruction manual at the location of the valve!

The following manufacturer's recommended inspection intervals apply from the date of commissioning:

1. Control valves up to PN 25: annual functional check
2. Control valves up to PN 25: overhaul max. every 5 years

An overhaul is recommended max. every 5 years. However, this interval may vary depending on water quality, installation situation, and pressure conditions.

1. Control valves from PN 40: annual functional check and overhaul

Please mark the year of the next overhaul on the maintenance label.
Professional functional checks and overhauls are offered by the manufacturer.
We would be happy to provide you with a quote.
Functional checks and overhauls must only be carried out by trained personnel.
Please feel free to contact us if you have any questions.

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: …… PN: ……..

Serial number: .....

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E. ANNEX 17

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F. HAWLE IN EUROPE 18

A. Description

1. Function

The HAWIDO 1703 and HAWIDO 1704 are valve units with an electrical solenoid valve. The filling or emptying of the control chamber of the main valve (1) are controlled by the electrical solenoid valve (5). The pressure of its own medium therefore closes or opens the valve. Depending on the electrical solenoid valve type (5), the valve can be positively or negatively controlled, i.e. the main valve (1) is normally-closed and opens under voltage (HAWIDO 1703), or it is normally open and closes when under voltage (HAWIDO 1704).
The closing speed can be adjusted using the one-way flow restrictor (4).

Technical features:

Medium:	Drinking water
Pressure stages:	PN 10 (from DN 200 Standard) PN16 (up to DN150 Standard) PN25
Flanges:	Connection dimensions according to DIN 1092 -2
Pressure gauge:	EN 837-1; Accuracy class 1.0
Main valve material:	EN-GJS-400-15
Temperature range:	2 – 40 °C

2. General safety instructions

These instructions must be read through carefully and understood before starting the commissioning. Damage to property and injuries to persons could occur as a result of improper installation, commissioning, operation and maintenance.

The Hawle regulating valve (HAWIDO) has been designed for use in drinking and process water supplies. Other application media only after consultation with the manufacturer.

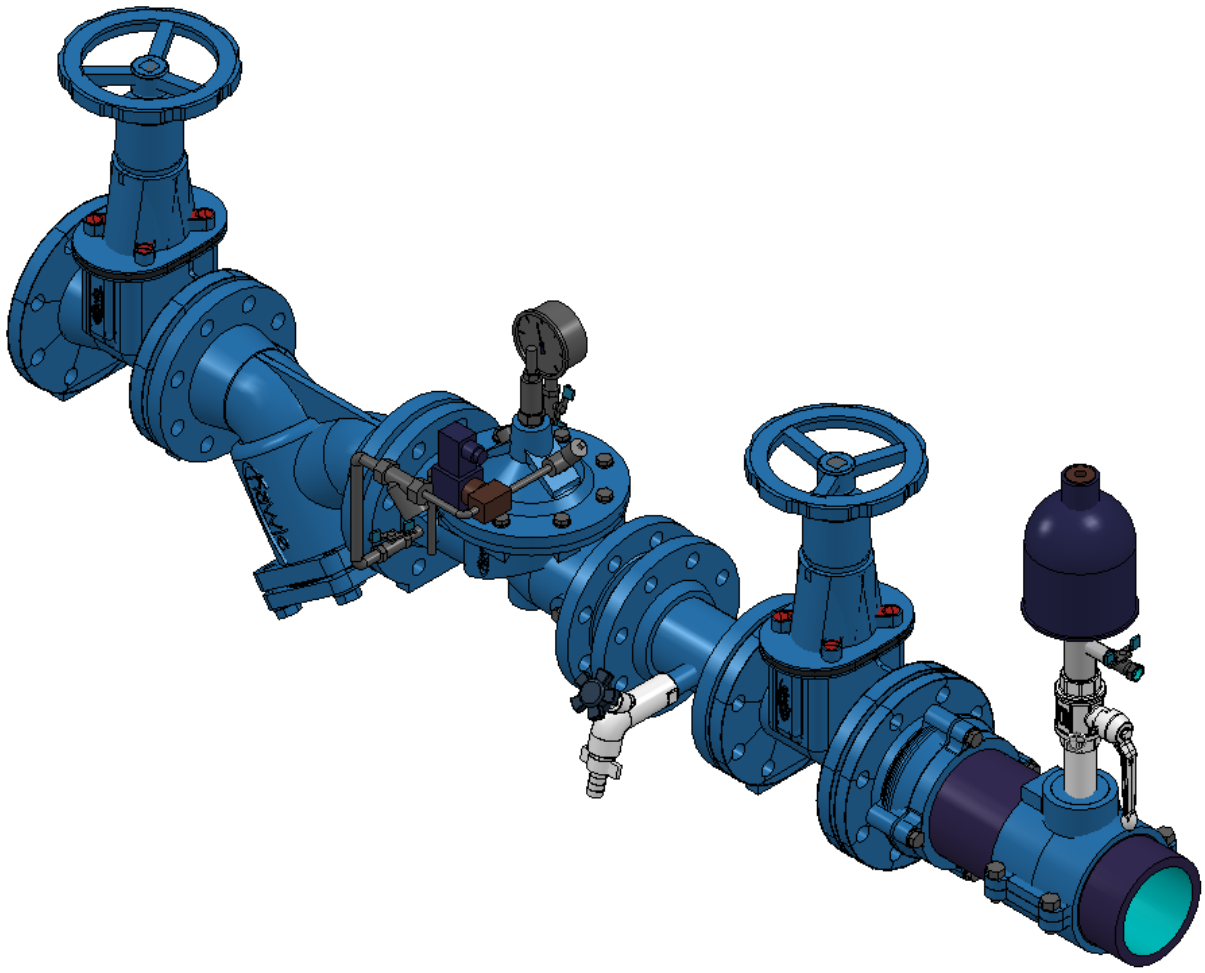
The technical regulations (e.g. SVGW, ÖVGW, DVGW...) and codes of practice (e.g. VDE, VDI ...), laws and standards are taken as a minimum standard, and must be adhered to and applied.

Work on electrical installations (e.g. installation of magnetic position switches, solenoid valves, etc.) may only be carried out by personnel authorised for this work.

In principle, the responsibility for the layout, the installation position, the installation and the commissioning of the fittings in the pipe work lies with the designer, the installation company and/or the operator. Design or installation errors can adversely affect the safe operation of the regulating valve, and can represent a significant risk. Please consult us in case of doubt.

3. Recommended installation

Before the installation of the fitting, the pipe lines must be carefully blown or flushed through to prevent any foreign material, such as pieces of wood, stones etc., from entering the regulating valve.



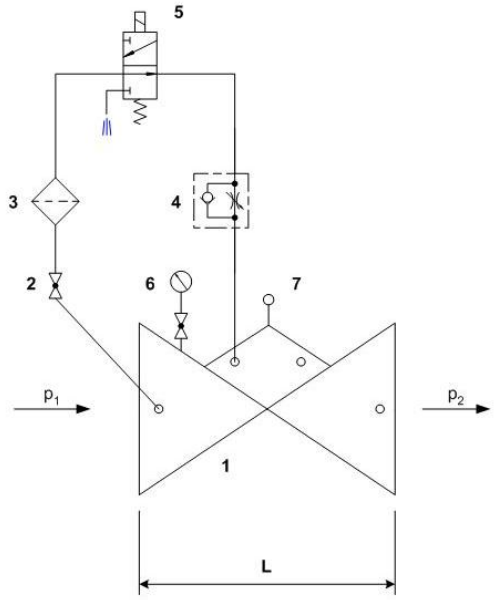
The HAWIDO must be installed horizontally with the valve cover upwards (other models available on request). We recommend that a gate valve and a dirt trap be fitted in front of the valve, as well as the mounting of a gate valve at the outlet.
During maintenance, the valve must be decommissioned. A by-pass installation should be considered here in order to ensure the supply.
Before the installation, check that no coarse foreign objects can penetrate into the HAWIDO.

Please contact us for other types of installation.

Installation note:
The water will be drained out of the valve chamber when the solenoid valve is switched (5). This water must be led to the sewage system in accordance with local situation.

B. Commissioning

1. Functional diagram (1703)



Components

1 Main valve 1200
2 Ball valve
3 Filter
4 One-way flow restrictor (flow control valve)
Solenoid valve (drawn for Hawido Valve 1703, for Hawido Valve 1704 solenoid valve no flow without power)
6 Pressure gauge with ball valve
7 Valve opening limiter
electrical position indicator (optional)

2. Preparatory work

Before commissioning the valve, check that the gate valves on the inlet and outlet sides of the valve are **closed** and that the flange connections have been correctly tightened and sealed.

Attention: Electrical work may only be carried out by qualified specialist personnel!

On the valve:

- The ball valve (2A) must be opened and the lock nut of the adjusting screw on the one-way flow restrictor (4) must be loosened
- Unscrew the adjusting screw on the one-way flow restrictor (4) by approximately 10 turns. (The line to the control chamber is open).
- Loosen the threaded pin in the central plug on the position indicator by a few turns.
- Slightly loosen a union of the control line at its highest point (approximately one turn).
- The solenoid valve (5) - must be free from voltage for the Hawido ***1703*** or - must have voltage for the Hawido ***1704***

3. Venting

Procedure:
Loosen the threaded pin of the optical position indicator 2 – 3 turns with a screwdriver (caution: Do not completely unscrew the threaded pin!)
Slowly open the inlet gate valve on the inlet side until water flows into the valve. The valve fills with water and the air escapes through the slightly open screw connection and the vent hole in the plug.

Once the valve venting procedure has caused all the air to be expelled from the control line, retighten the plug screw and the loosened union. Check that all the fittings are properly sealed, and re-tighten if necessary.

Slowly open the inlet gate valve completely.

Check: If the shut-off gate valve on the outlet side is slightly opened, the valve should close or remain closed. Then close the shut-off gate valve again.

If the valve does not close, the commissioning procedure must be repeated from the previous chapter. Particular care must then be taken to ensure that the upper valve chamber and control lines are properly vented.

4. Setting-up

Procedure:

- **Slowly** and gradually open the shutoff gate valve on the outlet side.
- After opening the shut-off gate valve on the outlet side, completely open the shut-off gate valve on the inlet side. The valve must remain closed.
- The solenoid valve (5) - is to have power applied to it (the main valve opens) on the Hawido 1703 or - is to have power removed from it on the Hawido 1704 (the main valve opens).

5. Setting the reaction speed

If the HAWIDO does not operate quietly, or if pressure shocks occur in the supply network, this can be corrected by the corresponding adjustment of the one-way flow restrictor (4).

Procedure:
Loosen the locknut. Screw in the set screw clockwise with a screwdriver until the valve operates quietly. Then retighten the locknut.

Caution The setting screw must always remain at least 2 -3 turns open, otherwise the valve will not re-open quickly enough after the closing sequence.
A special setting is necessary for very high inlet pressures.

6. Checking for leakage

HAWIDO valves are tested at the factory for both leakage and function before delivery. When checking for leakage under operational conditions, particular attention must therefore be given to the seals of the flange connections, the control line and the central plug screw on the valve cover. Where necessary, ensure the seal by retightening the connections.

7. Emergency manual operation 1703

If the valve has to be opened manually during a power failure, proceed as described below:

- Slowly close the ball valve (2)
- Slightly loosen the plug (or corresponding accessories such as: opening limiter, valve position indicator etc.) on the valve cover ➔ the valve cover chamber drains itself and the valve opens.
- Put back into operation as described in the *Commissioning* chapter

Notes:

C. Fault finding

Symptoms	Possible cause	Action
Valve does not open	One-way flow restrictor blocked	Replace or unscrew the set screw several times until the valve functions properly
	One-way flow restrictor closed too far	Screw the set screw in and out until the valve functions properly
	Solenoid valve does not work	Check the function (electrical work may only be carried out by specialist personnel)
Valve does not close	One-way flow restrictor blocked	Replace, or screw the set screw fully in and out several times and then re-set
	Filter in the control line blocked	Clean the filter
	Air in the control line / upper valve chamber	Vent
	Foreign matter in the main valve	Carry out service and remove any foreign matter
	Diaphragm defective	Carry out a service. Replace the diaphragm
	Valve spindle jammed by encrustation	Carry out service and remove any encrustation
	Solenoid valve does not work	Check the function (electrical work may only be carried out by specialist personnel)
Loud noise	Unfavourable operating conditions	Slightly open or close the one-way flow restrictor; Inform Field Service
	Wrong valve size	Have the correct valve size calculated (contact Hawle)
Erratic operation	One-way flow restrictor incorrectly set	Re-set as described in the *Setting the Reaction Speed* chapter
EWS coating damaged	Transportation damage, installation damage	Repair with Hawle two-component repair set for coatings

D. Putting out of service and maintenance

1. Putting out of service

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

Attention: Electrical work may only be carried out by qualified specialist personnel!

- **Slowly** close the gate valves before and after the valve

In order to be able to carry out maintenance work on the valve, the solenoid valve must be disconnected from the power. The electrical supply must be disconnected.

The valve has now been taken out of operation, and a service can be carried out.

2. Maintenance and service

2.1 General information

Through our many years of experience with diaphragm valves that are controlled by the flow medium, we know that our HAWIDOs normally function trouble-free for many years. Regular maintenance is a precondition for this, however.

Under normal operating conditions, the following should be carried out:

- The valve should be checked for correct operation once a year (functional check)
- The dirt trap upstream of the valve and the filter in the control line should be cleaned once a year
- The inner working components should be checked and worn parts be replaced every four to five years (maintenance).

Under unusual operating conditions (e.g. with water that contains quantities of suspended matter, very high pressure reduction, small flow rates etc.), the functional checks and the service work should be carried out more frequently.

Maintenance sign:



Maintenance intervals are indicated by perforation or colored marking with a permanent marker

2.2 Annual functional checks

Cleaning the dirt trap in the main line

- Unscrew the lid
- Clean the filter with a brush or cloth etc., or replace it
- Install the filter and screw the lid back on

Cleaning the filter in the control line

- Unscrew the lid of the filter
- Clean the filter with a brush or cloth etc., or replace it
- Re-install the filter and screw the filter lid back on.

Checking the valve

- Remove the optical position indicator on the valve.
- Check that the valve spindle moves easily by raising and lowering it with the threaded rod. Increased attention should be paid to this check, above all for valves with modified counter seats.
- Re-installation of the optical position indicator.

Putting back into service

- as described in the *Commissioning* paragraph

Functional check of the valve

- **Valve 1703:**
  Solenoid valve (5) inactive (➔ solenoid valve has flow) HAWIDO closes
  Solenoid valve (5) has power (➔Solenoid valve closed) HAWIDO opens
- **Valve 1704:**
  Solenoid valve (5) has power (➔ solenoid valve has flow) HAWIDO closes
  Solenoid valve (5) inactive (➔Solenoid valve closed) HAWIDO opens

2.3 4 to 5-year maintenance

Dirt trap (main line)

- Unscrew the lid
- Clean or replace the filter
- Install the filter and screw the lid back on

Filter (control line)

- Unscrew the lid of the filter
- Clean or replace the filter mesh
- Re-install the filter and screw the filter lid back on

Optical position indicator

- Dismount the optical position indicator.
- Clean the glass with a clean cloth
- Replace the seals (5)
- Reassembly; screw the double nipple and the screw plug together down to the stop

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

- Loosen the screw connections and remove the complete control line.
- Dismantle the optical position indicator or assembled accessories and replace the gaskets.
- Undo the screws of the valve cover and remove the cover.
- Visually inspect all inner components for wear, dirt and scaling
- Clean the inner components, the seat and the inner surfaces, including the cover
- Dismantle the spindle guide in the housing, flush the body interior
  For valves DN 40 to DN 100 the spindle guide is dismantled from the inside. Here the thread of the spindle guide and the base valve must be **extremely clean**. Grease the thread thoroughly (e.g. Foodgrease Aqua, Art. no. 5292, see chapter "Control line individual parts and accessories").
- Replace the diaphragm, the O-ring and, if necessary, the seat seal
- Grease the spindle guide area with a grease suitable for contact with food (e.g. Foodgrease Aqua). Check the easy movement of the spindle.
- Reassemble the base valve (see table in the annex for torques). During the assembly, the easy movement of the spindle must be checked **several times** by actuating the threaded rod

Functional check of the one-way flow restrictor

- Undo the locknut
- Screw in the throttle screw, and then unscrew it as far as it goes
- Screw in again a few turns. This process must be easy and meet little resistance

Putting back into operation and functional check

- In accordance with the Putting into Operation and Functional Check chapter and the previous chapter

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

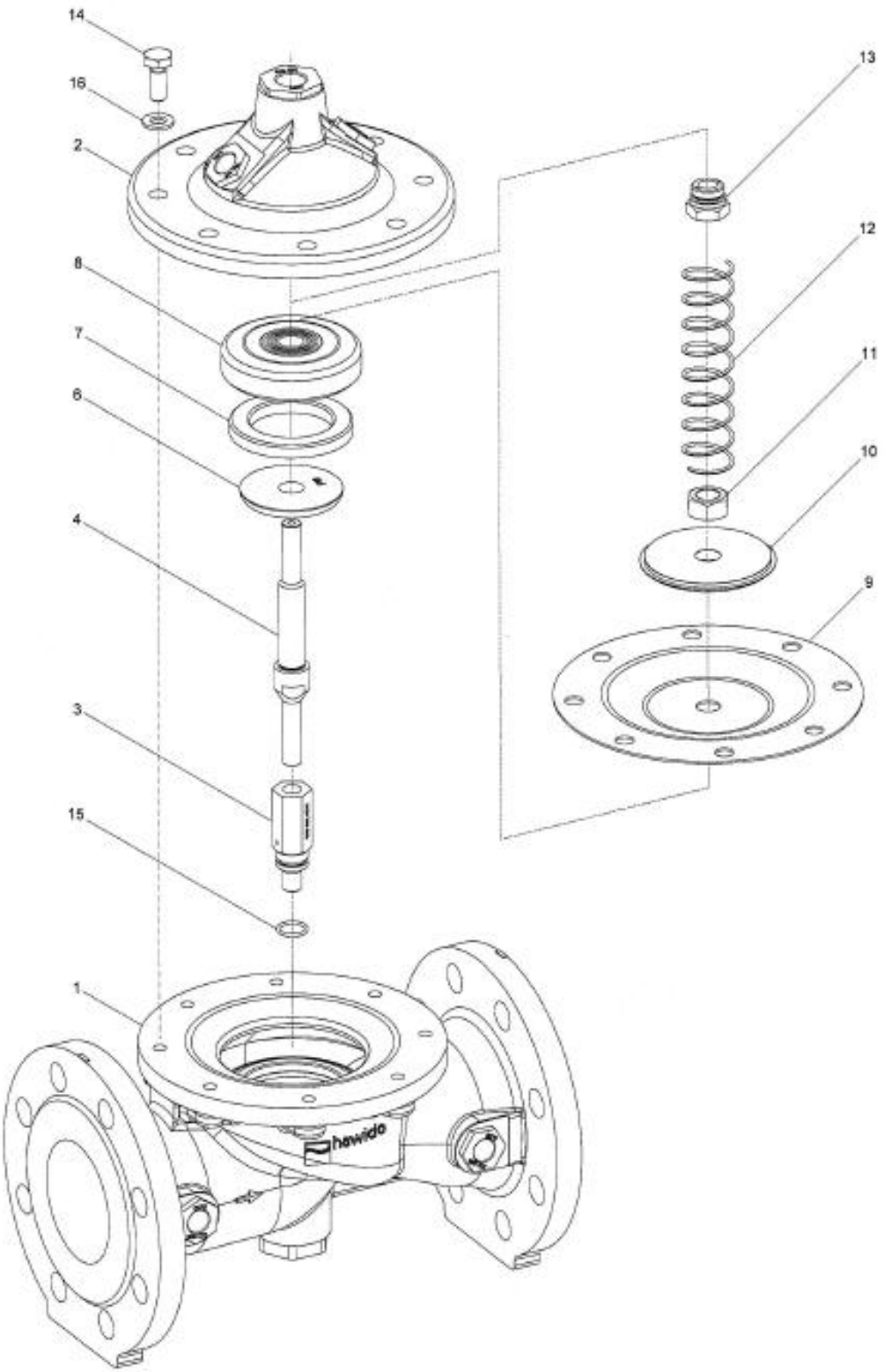
The article numbers are shown in the parts lists and spare parts lists.

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

Important:
Spare parts of EPDM (membranes, seals, o- rings) have to be stored in a dark place, protected from UV radiation!

Durability in dark storage:
EPDM: eight years after production

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



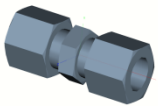
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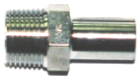
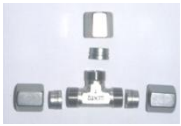
3.2 Main valve (Parts list)

Item.	Description	Material	Article number				
			DN 40	DN 50	DN 65	DN 80	DN 100
1	Body °	GJS-400	1004 040 000	1004 050 000	1004 065 000	1004 080 000	1004 100 000
2	Valve cover	GJS-400	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	EPDM	1021 050 001	1021 050 001	1021 065 001	1021 080 001	1021 100 001
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 608 025	0006 608 025	0006 610 025	0006 610 025	0006 612 030
15	O-ring	EPDM	0170 012 020	0170 012 020	0170 012 020	0170 016 020	0170 016 020
16	Washer	INOX	0008 208 000	0008 208 000	0008 210 000	0008 210 000	0008 212 000
	Main valve complete	PN10 - 25	1200 040 000	1200 050 000		1200 080 000	
	Main valve complete	PN10/16	--	--	1200 065 000		1200 100 000
	Main valve complete	PN25			1200 065 025		1200 100 025
	Repair kit for main valve with stainless steel connection, comprising item 7, 9, 15, 18	PN10 - 25	1080 040 000	1080 050 000	1080 065 000	1080 080 000	1080 100 000

° Pressure stage / check flange

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 Union nut (without clamping ring)	 0273 012 000 0274 xxx xxx
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 025 000

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**		Stainless steel IG 3/8" Typ B d 12 with a long spindle	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“ IG1/2“ 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
0731 **PA-tube**		Tube AD 6 mm, ID 4 mm Tube AD 12 mm, ID 9 mm	0731 006 004 0731 012 009

1188 **Rep. Set** **Control line**		From serial number14252 (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

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
5292 **Grease**		Hawle Typ: Klübersynth VR 69-252 Tube à 90 g	5292 000 000

AG: Outside thread
IG:Inside thread

AD: Outside diameter
ID: Inside diameter

18.09.2025

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 !

	Diameter DN	Hexagon bolt M	Streng class	Tightening torque
Main valve	**40 - 50**	M 8 x 25	**A4 / 80**	25 Nm
	65	M 10 x 25		50 Nm
	80	M 10 x 25		50 Nm
	100	M 12 x 30		90 Nm
	125	M 16 x 35		200 Nm
	150	M 20 x 35		275 Nm
		M 16 x 35		*200 Nm*
	200	M 20 x 45		400 Nm
	250	M 20 x 45		400 Nm
	300	M 20 x 60		400 Nm

	Typ	Hexagon bolt M	Streng class	Tightening torque
Pilot valve	**DRV / DAV**	M 6	**A2 / A4 / 70**	8 Nm
	MBV / RBS			
	NAZ	M 6		



Valves manufactured before 2018 may have cover screws in strength class A2-70.



When replacing the new membrane type 1021 xxx 001, these screws must be replaced with screws of strength class A4 – 80.

Bolts according SN EN ISO 4014 und SN EN ISO 4017
Stand: FO 0065, Rev. 16/26.08.2025

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