



OPERATING INSTRUCTIONS FOR REGULATING VALVES

HRAR (923, 924, 92A, 92B)

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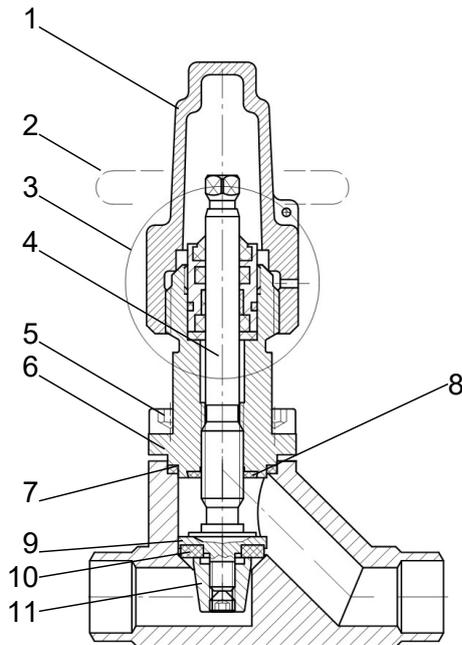
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1 Overview of types

923	Straight-way regulating valve
924	Angle control valve
92A	Straight-way needle valve
92B	Angle needle valve

1.1 Type 923, 924

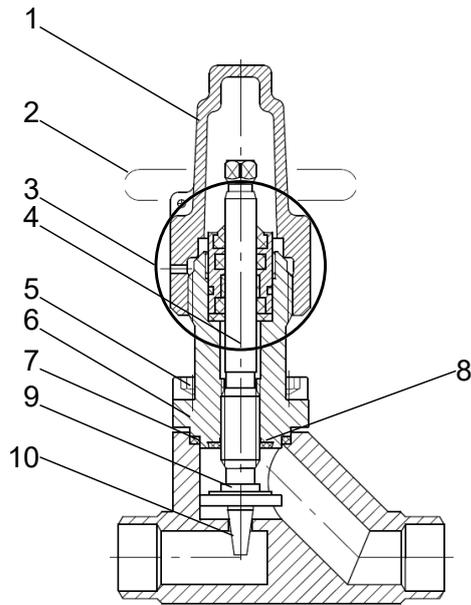
DN 6 - DN 20



1 Cap	2 Handwheel (optional)
3 Threaded bush, complete	4 Stem
5 Bonnet screws	6 Bonnet
7 Bonnet gasket (flat gasket K)	8 Back seal (flat gasket R)
9 Valve disc	10 Seat seal (flat gasket S)
11 Regulating cone	

1.2 Type 92A, 92B

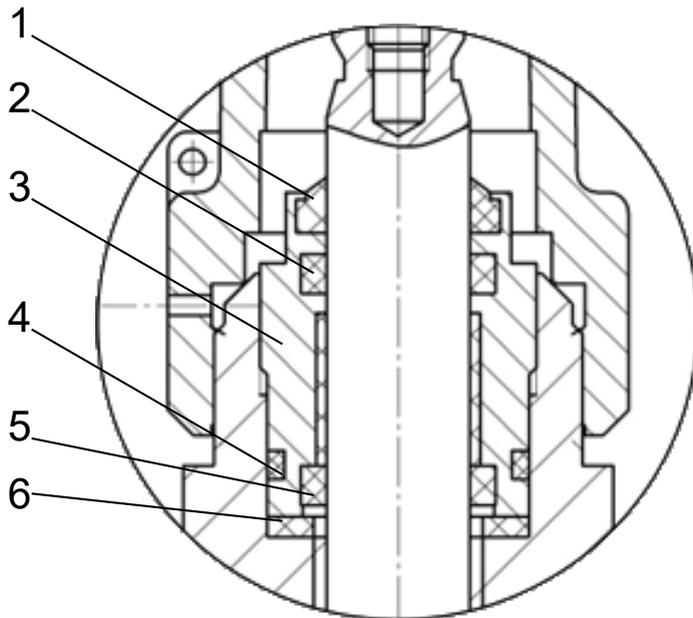
DN 15



1 Cap	2 Handwheel (optional)
3 Threaded bush, complete	4 Stem
5 Bonnet screws	6 Bonnet
7 Bonnet gasket (flat gasket K)	8 Back seal (flat gasket R)
9 Valve disc	10 Regulating cone

1.3 Threaded bush, complete

Item 3 in preceding overviews.



1 Wiper ring	2 O-ring A
3 Threaded bush	4 O-ring B
5 PTFE ring	6 Flat gasket SB

2 Technical characteristics

Body material	Selection acc. to AD-2000 Series W
Steel	P235GH, S355J2
Low-temperature steel	P215NL, P255QL, P355NL1
NIRO	X5CrNi18-10 or equivalent

3 Pressure / temperature operating limits

When using screws of property class 8.8, the following values apply:

PN	TB (MWT) [°C]	-60 ²⁾	-40 ²⁾	-25 ²⁾	-10	+50	+150
25	PS (MWP) [bar]	6.25	12.5	18.7	25	25	25
40		10	20	30	40	40	40
63		15.75	31.5	47.2	63	63	63 ³⁾

When using screws of property class A2-70, the following values apply:

PN	TB (MWT) [°C]	-60 ²⁾	-60 ¹⁾	-10	+50	+150
25	PS (MWP) [bar]	18.7	25	25	25	25
40		30	40	40	40	40
63		47.2	63	63	63	63 ³⁾

1) Load case I (low-temperature steel, NIRO)

2) Load case II (acc. to AD2000-W10) (Steel)

3) G20Mn5QT = 43bar/ GXCrNiMoNb19-11-2 = 50bar

Permissible ambient temperature range: -50 to +50 °C

The following values apply to control valves for heating technology (types 223...HT, 22G...HT, 224...HT) (for both valves with 8.8 and A2-70 screws):

PN	TB (MWT) [°C]	-10	+50	+150	+200
25	PS (MWP) [bar]	25	25	25	25
40		40	40	40	40
63		63	63	63	63

Permissible ambient temperature range: -50 to +50 °C

4 Operating Mediums

Suitable for operation with refrigerants acc. to EN 378 Part 1, e.g. NH₃, R22, R134a or mixtures with refrigeration oil, as well as for neutral gaseous and liquid media and glycol-based cooling brine.

5 Flow coefficient

K_v-Wert des Ventils bei Nennhub (100 % Öffnungsgrad) in m³/h

Type	PN (types 92...)	PN (types 92...HT)	DN 6	DN 8	DN 10	DN 15	DN 20
923	PN25; PN40(8.8)	PN25(8.8)	1.4	1.8	2.2	2.5	5.2
	PN40(A2-70); PN63	PN25(A2-70), PN40; PN63	3.3	3.8	4.3	4.8	
924	PN25; PN40(8.8)	PN25(8.8)	2.1	2.4	2.65	2.8	6.4
	PN40(A2-70); PN63	PN25(A2-70), PN40; PN63	4.3	4.5	4.7	5.0	

Type	PN (types 92...)	PN (types 92...HT)	DN 6	DN 8	DN 10	DN 15	DN 20
92A	PN25; PN40(8.8)	PN25(8.8)	–	–	–	0.92	–
	PN40(A2-70); PN63	PN25(A2-70), PN40; PN63	–	–	–	–	–
92B	PN25; PN40(8.8)	PN25(8.8)	–	–	–	0.94	–
	PN40(A2-70); PN63	PN25(A2-70), PN40; PN63	–	–	–	–	–

Installation position: any; observe the direction of flow (see arrow on nameplate). Leakage at valve seat: <5 g refrigerant per year

6 Safety instructions

WARNING

Verbrennungsgefahr bei extremen Temperaturen!

Verbrennungen möglich.

- ▶ Ventil bei extremen Temperaturen mit Schutzhandschuhen bedienen.

NOTICE

Danger from improper handling!

Risk of property damage.

- ▶ Do not install valves with transport or storage damage.
- ▶ Valves must be free of axial forces, bending moments, and torsional moments and must not serve as fixed points for pipework.
- ▶ In the event of oxy-fuel welding or brazing, the flame must not touch the valve.
- ▶ Keep the interior of the valves free of contamination.
- ▶ Opening or closing the valves with a valve wheel wrench or other lever-extending objects is not permissible.
- ▶ Only dismantle valves when the pipework is depressurised, evacuated, and sufficiently ventilated.

NOTICE

Danger from impermissible pressure rise!

Risk of property damage.

- ▶ Avoid operating the valve against trapped liquid.
- ▶ Close shut-off valves in liquid lines in sequence towards a vessel with a gas volume.

7 Application

AWP control valves are suitable for use in refrigerant circuits for industrial refrigeration systems. They close the pipework by lowering the valve disc onto the valve seat. The regulating cone under the valve disc enables regulation of the medium flow. The stem is sealed via a threaded bush with a spring-energised PTFE ring.

8 Functional description

AWP control valves are actuated by a handwheel. Turning the handwheel clockwise causes the valve disc to lower onto the valve seat, thereby closing the pipework. Turning the handwheel anti-clockwise causes the valve disc to lift from the valve seat, thereby opening the pipework.

These valves are both regulating and shut-off valves. At maximum lift, the regulating cone clears the regulating nozzle. The diameter of the regulating nozzle corresponds to the nominal diameter. The valves are equipped with a back seat (flat gasket R). When the valve is fully open, the sealing elements (O-rings A and B, PTFE ring) on the stem can be safely replaced by unscrewing the threaded bush.

9 Installation

1. Clean pipework and system components before installation.

NOTICE! The deviation from parallelism or perpendicularity of the welding ends or flange facings must not exceed 1°. Connecting flanges must be axially aligned. Components with transport and storage damage must not be installed. After removing the pipe plugs, the component can be welded in or installed. Observe the direction of flow (see arrow on nameplate).

Reverse flow direction is permissible; however, the performance specifications do not apply in this case.

2. Vor dem Schweißen die Spindel mittels eines Handrades in Mittelstellung bringen (Ventil halb geöffnet).

NOTICE! Bei Anwendung moderner Schweißverfahren (z. B. WIG, CO₂-Lichtbogenschweißen) Ventile zum Einschweißen nicht demontieren.

3. Tighten fastening screws and nuts crosswise and evenly.
4. After installation, check the smoothness of the stem throughout the entire lift range.

⇒ The thread for screwing on the cap must remain free of paint and must be greased (e.g. with RENOLIT UNITEMP 2).

To dismantle the valve insert, sufficient clearance must be kept free on the side where the bonnet is located! See the following table:

Nominal size	DN 6-15	DN 20
Distance [mm]	25	30

10 Maintenance

AWP control valves operate maintenance-free. If functional defects occur, repair is possible. During the warranty period, repairs may only be carried out by AWP or, with their consent, by the system operator's trained maintenance personnel.

10.1 Changing the stem seal

1. Unscrew the cap! Use a wrench with size 19 for this.
2. Bring the stem to the uppermost position using the handwheel.
3. Unscrew the threaded bush anti-clockwise. **NOTICE! Watch out for any residual refrigerant escaping! Leave the threaded bush loose in the bonnet until pressure is completely equalised. Only unscrew it after this.**
4. Then unscrew it completely. To unscrew the threaded bush, use a wrench with the sizes specified in the following table:

Nominal size	DN 6-15	DN 20
Wrench size	19	17

5. Remove O-rings A, B, and the wiper ring and replace them with new ones.
6. Remove the flat gasket SB from the installation space in the bonnet.
7. Clean the stem and insert a new flat gasket SB into the bonnet.

8. Grease the threaded bush with refrigeration grease (e.g. RENOLIT UNITEMP 2) and tighten hand-tight.
9. To check for leaks, bring the stem to the middle position and brush the bonnet area with a foaming agent.

10.2 Replacing the seat seal/back seat/valve insert

1. Open the valve up to the stop and loosen the bonnet bolts. **NOTICE! Watch out for any residual refrigerant escaping! Leave the bonnet bolts loose in the bonnet until pressure is completely equalised. Only unscrew it after this.**
2. To unscrew, use a wrench or screwdriver with the sizes specified in the following table:

Nominal size	DN 6-15	DN 20
Bonnet screws	M6x18	M8x20
Wrench size	5	6

3. After pressure equalisation, unscrew all bonnet bolts completely and pull out the bonnet, including all internal parts attached to it, by the handwheel.
4. Unscrew the handwheel from the stem and unscrew the stem from the bonnet.
5. Remove the back seat gasket (flat gasket R) from the installation space on the underside of the bonnet and replace it with a new one.
6. For nominal diameter DN 6 to DN 20, the seat seal (flat gasket S) is screwed onto the valve disc. Remove the seat seal by unscrewing the valve disc nut.
7. Insert new seat seal (flat gasket S) and secure with washer and valve disc nut.
8. Clean all individual parts before assembly. Grease the stem and bonnet.
9. Then insert a new bonnet gasket (Flat gasket K).
10. Put on the bonnet and tighten bonnet bolts evenly and crosswise. See the following table for this:

Nominal size	DN 6-15	DN 20
Bonnet screws	M6x18	M8x20
	ISO 4762	
Wrench size	5	6
Tightening torque for 8.8 screws		
Torque [Nm]	10	25
Tightening torque for A2-70 screws		
Torque [Nm]	6	16

11 Transport, storage and disposal

AWP components are transported protected against impact and covered with foil.

- Storage must take place in dry rooms.
- Ensure that the connection ports are sealed intact.
- Contamination of any kind must be kept away from the interior.
- The external surfaces are provided with a corrosion protection coating for dry storage at room temperature, which is effective for at least 1 year.
- The corrosion protection coating CELEROL® Reaktionsgrund 918 is a good adhesion promoter for 1- and 2-component top coats.
- Dismantle for disposal.

- Collect lubricants during dismantling. The materials must be separated from one another and disposed of in accordance with local regulations.

12 Garantie

Unless agreed otherwise, the statutory warranty provisions apply. For further information, please also refer to our General Terms and Conditions, available on our website awpvalves.com.

13 Spare parts

The following spare parts are available for AWP control valves in accordance with the overviews in Overview of types.

Nominal size (DN)	Handwheel		Cap	
	Item number	Dimensions	Item number	Thread size
25	16300E13.5280001	Ø120-11/14	16402.13.3180001	M36 x 2.0
32	16300E13.5280001	Ø120-11/14	16402.13.3180001	M36 x 2.0
40	16300E15.5280001	Ø140-12/16	16402.15.3180001	M52 x 3.0
50	16300E15.5280001	Ø140-12/16	16402.15.3180001	M52 x 3.0
65	16300E15.5280001	Ø140-12/16	16402.15.3180001	M52 x 3.0
80	16300E18.5280001	Ø175-14/20	16402.19.3180001	M60 x 3.0
100	16300E18.5280001	Ø175-14/20	16402.19.3180001	M60 x 3.0
125	16301.20.5280001	Ø315-22/28	16402.21.3180001	M76 x 3.0
150	16301.21.5280001	Ø400-22/28	16402.21.3180001	M76 x 3.0
200	16301.23.5280001	Ø630-28/46	16402.23.3180001	M80 x 3.0
250	16301.23.5280001	Ø630-28/46	16402.23.3180001	M80 x 3.0

A washer and a screw/nut for attachment to the stem are included in the scope of delivery of the handwheels. An O-ring for sealing is included in the scope of delivery of the caps.

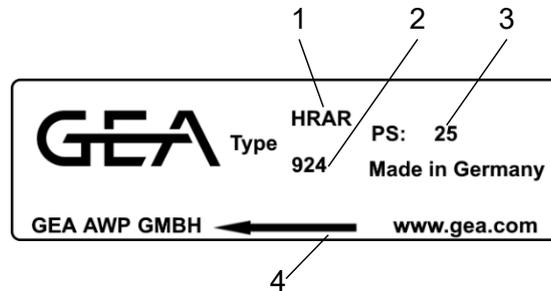
Nominal size (DN)	Threaded bush (CR), complete	Seal kit (CR)	Valve insert (Steel, CR), complete
25	16300E13.8142001	26302.12.5/00019	22300E13.5110001
32	16300E13.8142001	26302.13.5/00019	22300E13.5110001
40	16300E15.8142001	26302.14.5/00019	22300E14.5110001
50	16300E15.8142001	26302.15.5/00019	22300E15.5110001
65	16300E15.8142001	26302.17.5/00019	22300B17.5110001
80	16300E18.8142001	26302.18.5/00019	22300E18.5110001
100	16300E18.8142001	26302.19.5/00019	22300E19.5110001
125	16300E21.8142001	26302.20.5/00019	22300E20.5110001
150	16300E21.8142001	26302.21.5/00019	22300E21.5110001
200	16300E23.8142001	26302.23.5/00019	22300E23.5110001
250	16300E23.8142001	26302.24.5/00019	22300E24.5110001

A seal kit contains all O-rings and flat sealing rings shown in the Overview of types suitable for the respective nominal diameter. A valve insert contains all internal parts including seals, i.e. stem, valve disc, threaded bush plus bonnet with screws and nameplate (with new serial number!), as well as cap, pre-assembled. All spare parts mentioned above refer to the standard design of the valves, i.e. body material = steel, pressure rating = PS 25, O-ring material = CR, with cap, for valves WITHOUT bonnet extension (i.e. without extended stem). Different spare part numbers apply to valves with a design deviating from this!

In case of doubt, please contact our Sales Support either via our website awpvalves.com/contact or by email to info@awpvalves.com. The most reliable method to correctly identify the required spare part is to send a photo of the nameplate on which the serial number of the valve is clearly visible.

14 Marking

The marking of AWP control valves is carried out in accordance with Pressure Equipment Directive 2014/68/EU by means of a nameplate on the side edge of the bonnet.



1 Type designation	2 Type no.
3 Max. permissible operating pressure	4 Flow direction

Additionally, the following information is stamped on the valve body:

- Nominal diameter (DN) (from DN 20 upwards)
- Material number
- Identification and batch number of the forge

Serial numbers are not indicated on valves up to and including DN 20 as standard.

15 Hinweis auf Restgefahren entsprechend Druckgeräterichtlinie 2014/68/EU

Residual risks that cannot be avoided by the manufacturer exist due to:

NOTICE

- ▶ Do not loosen bonnets (without authorisation) during operation.
- ▶ Do not incorrectly assemble flange connections (inlet and outlet flanges, flanged bonnets).
- ▶ Contamination in the operating medium or improper handling of internal components can lead to damage to the seat seal.
- ▶ Non-compliance with the operating limits and manufacturer's regulations according to these operating instructions.

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