



OPERATING INSTRUCTIONS FOR REGULATING VALVES

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

Table of contents

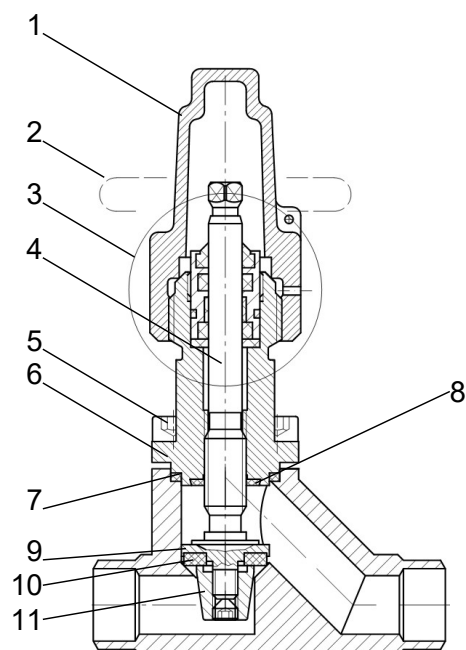
1 Overview of types	4
1.1 Type 923, 924.....	4
1.2 Type 92A, 92B	4
1.3 Threaded bush, complete	5
2 Technical characteristics	6
2.1 Operating Mediums	6
2.2 Pressure / temperature operating limits	6
2.3 Flow coefficient	6
3 Safety instructions	7
4 Application	7
5 Functional description.....	8
6 Installation.....	8
7 Maintenance	8
8 Replacing the seat seal/back seat/valve insert.....	8
9 Transport, storage and disposal.....	9
10 Warranty	9
11 Spare parts.....	9
12 Marking.....	10
13 Notice regarding residual risks in accordance with the Pressure Equipment Directive 2014/68/EU	10

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

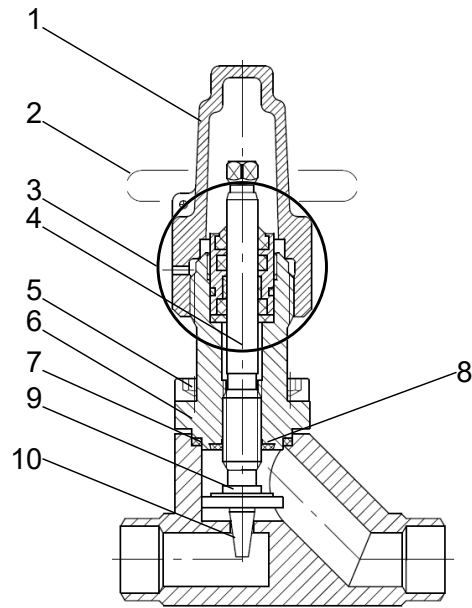
DN 6 - DN 20



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

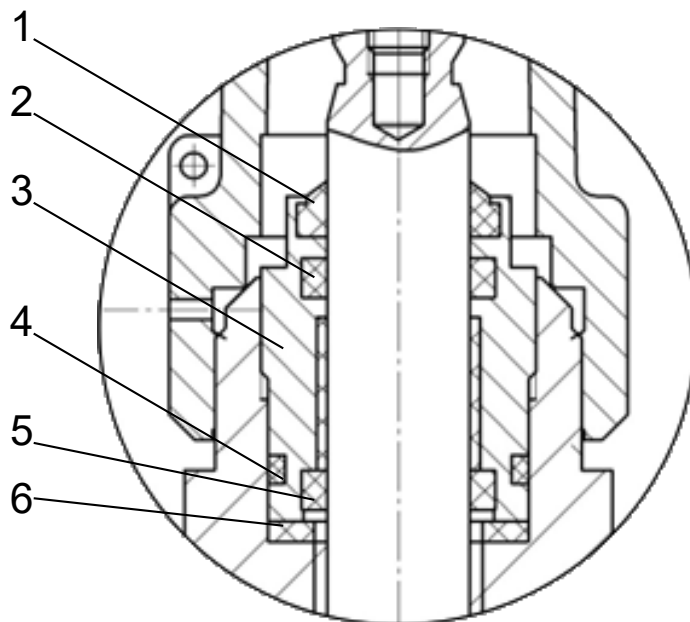
DN 15



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	P355NL1
Stainless steel	X5CrNi18-10 or equivalent

2.1 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.

2.2 Pressure / temperature operating limits

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

PN	TS (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	TS (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, stainless steel)

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

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

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

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

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

2.3 Flow coefficient

K_v-value of the valve at rated stroke (100% opening) 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	–	–	–	–	

Any installation position; the direction of flow (see arrow on nameplate) should be observed. In the event of reverse flow, the specified Kv values cannot be guaranteed.

Seat leakage: <5g refrigerant per year

3 Safety instructions

WARNING

Risk of burns at extreme temperatures!

Burns are possible.

- ▶ Operate the valve in extreme temperatures while wearing protective gloves.

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.

4 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.

5 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.

6 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 or 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 the nameplate).

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

2. Before welding, use the handwheel to move the spindle to the center position (valve half-open). **NOTICE! When using modern welding methods (e.g., TIG, CO₂ arc welding), do not remove valves intended for welding.**
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

7 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.

8 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:

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

9 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.

10 Warranty

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.

11 Spare parts

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

Nominal size	Handwheel		Cap	
	Item number	Dimensions	Item number	Thread size
DN 6-15	36302.10.5280001	Ø60 x -6/9	96300E10.3180001	M27 x 2.0
DN 20	36302.10.5280001	Ø60 x -6/9	96300E10.3180001	M27 x 2.0

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	Threaded bush (CR), complete	Seal kit (CR)	Valve insert (Steel, CR), complete	
			Type 923, 924	Type 92A, 92B
DN 6-15	96300E10.8142001	96300.10.5/00019	92300E10.5110001	92A00E10.5110001

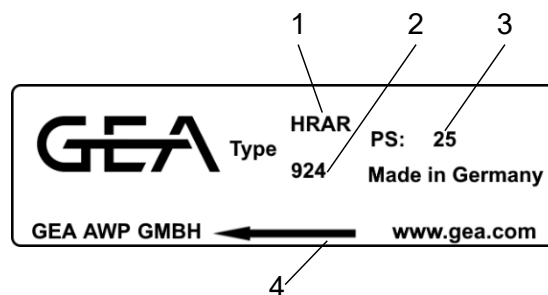
Nominal size	Threaded bush (CR), complete	Seal kit (CR)	Valve insert (Steel, CR), complete	
			Type 923, 924	Type 92A, 92B
DN 20	96300E11.8142001	96300.11.5/00019	92300E11.5110001	-

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.

12 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.

13 Notice regarding residual risks in accordance with the Pressure Equipment Directive 2014/68/EU

Residual hazards that cannot be eliminated by the manufacturer include:

NOTICE

- ▶ Do not remove the cover during operation (without authorization).
- ▶ Do not install flange connections (inlet and outlet flanges, flanged valve covers) incorrectly.
- ▶ Contaminants in the operating fluid or improper handling of components can cause damage to the seat seal.
- ▶ Failure to observe the operating limits and manufacturer's instructions as specified in these operating instructions.

GEA AWP GmbH
Armaturenstr. 2
17291 Prenzlau
Germany
phone: +49 3984 8559-0
fax: +49 3984 8559-18
e-mail: info@awpvalves.com

