OPERATING INSTRUCTIONS FOR CHECK VALVES

RVA (993, 994)

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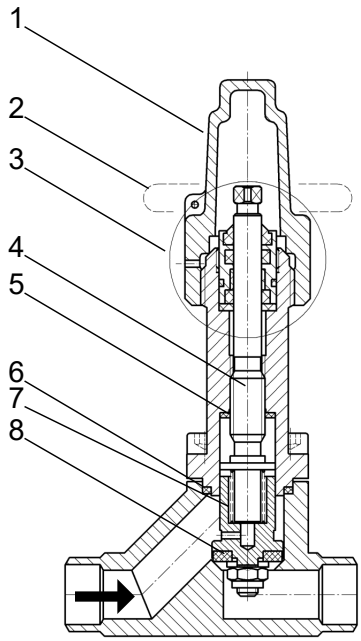
1 Overview of types

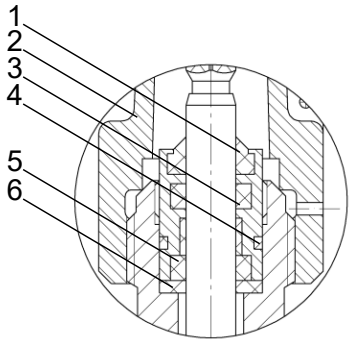
1.1 Type 993 00, 994 00

DN 6 - DN 20



1	Cap	2	Handwheel
3	Threaded bush, complete	4	Stem
5	Flat sealing ring R	6	Flat sealing ring K
7	Compression spring	8	Flat sealing ring S

1.2 Threaded bush, complete



1	Wiper ring	2	Flat gasket SB
3	Cap	4	Cap
5	Cap	6	Cap

2 Technical characteristics

Body material (selection acc. to AD-2000 Series W):

Steel	P235GH, S355J2 St: P235GH, S355J2
Low-temperature steel	P215NL, P255QL, P355NL1 TT: P215NL, P255QL, P355NL1
NIRO	X5CrNi18-10 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

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

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

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

4 Operating Mediums

Suitable for operation with refrigerants acc. to EN 378 Part 1, e.g. NH^3, R22, R134a or mixtures with refrigeration oil, as well as for neutral gaseous and liquid media and glycol-based cooling brine.

5 Flow coefficient

DN	6	8	10	15	20
993 00	1.5	2.15	2.4	2.4	8.6
994 00	2.1	2.2	2.3	2.3	8.9

Installation position: horizontal and vertical with flow from bottom to top. External leakage, seat <5g refrigerant per year at p=10 bar above valve disc

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.

7 Anwendung

AWP-Rückschlagventile sind geeignet für den Einsatz in Kältemittelkreisläufen von Industrie-Kälteanlagen. Sie werden sowohl auf der Druck- als auch auf der Saugseite des Verdichters eingesetzt bzw. in Rohrleitungen, in denen nur eine Strömungsrichtung zugelassen ist.

8 Functional description

AWP check valves are self-acting shut-off devices. They are opened by the pressure of the operating medium beneath the valve disc. In the event of standstill or flow reversal, the check valve closes automatically. Additionally, the valve can be closed manually via the rising stem using the handwheel. The valves are closed by turning the handwheel clockwise and opened by turning it anti-clockwise as seen looking towards the handwheel.
Due to the presence of a damping device, this type is particularly suitable for strongly fluctuating capacity requirements. To ensure perfect functional behaviour, ensure that the actual minimum flow rate (e.g. at partial load) is never less than 20% of the maximum nominal valve capacity based on a pressure loss of 0.1 bar. The tightness of the seal depends decisively on the differential pressure across the valve disc. The valves are equipped with a back seat (flat sealing ring R). When the valve is fully open, the sealing elements (O-rings A, B, PTFE rings) 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).
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. Befestigungsschrauben und -muttern über Kreuz und gleichmäßig anziehen.
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).

Zur Demontage des Ventileinsatzes ist genügend Platz auf der Seite, auf der sich der Ventildeckel befindet, freizuhalten – siehe folgende Tabelle.

DN	6-15	20
mm	25	30

10 Wartung

AWP-Rückschlagventile arbeiten wartungsfrei. Treten Mängel im Funktionsverhalten auf, ist eine Reparatur möglich. Während der Garantiezeit dürfen Reparaturen nur durch den Hersteller (AWP) bzw. mit dessen Einverständnis durch geschultes Instandhaltungspersonal des Betreibers der Anlage vorgenommen werden.

10.1 Changing the stem seal

1. Unscrew the cap! Use a wrench with the size specified in the following table.

DN	SW
6-20	19

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:
5. Remove O-rings A, B, PTFE ring 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 (flat gasket S and R)

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.**

DN	SW
6-20	19

2. Unscrew bonnet bolts and pull out the bonnet including internal parts by the handwheel.
3. Unscrew the handwheel from the stem and unscrew the stem from the bonnet.
4. Remove and replace flat sealing ring R.
5. Remove valve disc with compression spring from the body.
6. Unscrew the nut from the valve disc, pull off the washer and replace the flat sealing ring S.
7. Clean all individual valve parts before assembly. Grease the stem and bonnet.
8. Then insert flat sealing ring K, fit the bonnet and tighten evenly in a crosswise pattern with the screws.

DN	6-15	20
M	6 x 18	8 x 20
	EN 4762 8.8	
SW	5	6
Tightening torque [Nm] (8.8)	10	25
Tightening torque [Nm] (A2 - 70)	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

	Threaded bush	Compression spring	Valve disc
DN	Order number		
6-15	963 00E10.8 142 001	983 00.10.8 233 00 3	983 00E10.5 125 00 1
20	963 00E11.8 142 001	983 00.10.8 233 00 3	983 00E11.5 125 00 1

DN	O-ring A Order number	Dimensions	O-ring B Order number	Dimensions
6-15	73 75 52	⦸ 8 x 3	73 75 12	⦸ 14 x 1.5
20	73 74 98	⦸ 10 x 3	73 77 14	⦸ 14 x 2

DN	PTFE ring Order number	Dimensions	Wiper ring NBR85 Order number	Dimensions
6-15	72 84 05	⦸ 8 x 13 / 3.9	73 98 36	⦸ 8 x 14 x 5
20	73 84 16	⦸ 10 x 14.5 / 3.6	73 98 35	⦸ 10 x 16 x 5

DN	Handwheel Order number	Dimensions	Cap Order number	Dimensions
6-15	363 02.10.5 280 00 3	⦸ 60 x 6/9	96300E10.3 180 01 3	M27 x 2
20	363 02.10.5 280 00 3	⦸ 60 x 6/9	96300E10.3 180 01 3	M27 x 2

DN	Flat sealing ring SB AFM30 Order number	Dimensions	Flat sealing ring K AFM30 Order number	Dimensions
6-15	363 02. 10.4 143 00 3	⦸ 8.1 x 16.3 x 2.0	57 36 61	21 x 26 x 1.5
20	963 00E11.4 143 00 3	⦸ 17.8 x 12.1 x 2.0	73 74 92	26 x 31 x 2.0

DN	Flat sealing ring R PTFE Order number	Dimensions	Flat sealing ring S TFE Order number	Dimensions
6-15	363 02.10.2 145 00 3	⦸ 10 x 16 x 2.0	963 00E10.2 144 00 3	9 x 19 x 3.0
20	963 00E11.2 145 00 3	⦸ 12 x 18 x 2.0	963 00E11.2 144 00 3	12 x 23 x 3.0

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 check valves is carried out in accordance with Pressure Equipment Directive 2014/68/EU.

- DN - Nominal diameter (from DN 20 upwards)
- PS (MWP) - Permissible pressure (from DN 20 upwards)
- Material number
- Identification and batch no. of the forge
- Type no. (993 or 994)
- Valve - type (RVA)
- Manufacturer (AWP)
- Flow arrow

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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