OPERATING INSTRUCTIONS FOR SUCTION FILTERS

SFCS 54L

Engineering for a better world.

GEA.com

Table of contents

1 Overview of types 4

2 Technical characteristics 4

3 Pressure/temperature operating limits 4

4 Operating Mediums 5

5 Flow coefficient 5

6 Safety instructions 5

7 Application 5

8 Functional description 6

9 Installation 6

10 Maintenance 6

11 Transport, storage and disposal 7

12 Garantie 7

13 Spare parts 7

14 Marking 8

15 Note on residual hazards in accordance with Pressure Equipment Directive 2014/68/EU 9

1 Overview of types

1	Inlet	2	Valve disc
3	Compression spring	4	Guide bush
5	Seat seal	6	Tapped holes for hexagonal bolts
7	Thread	8	Bonnet
9	Stem	10	Cap
11	Strainer insert	12	Bonnet gasket (O-ring)
13	Bonnet bolts (hexagonal bolts)	14	Outlet to the compressor

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
Mesh size of strainer insert [µm]	63 – 500, according to customer request
Strainer material	X5CrNi 18-10

3 Pressure/temperature operating limits

When using screws of property class A2-70:

PN	TB (MWT) [°C]	-60[2)]	-60[1)]	-10	+50	+120
25	PS (MWP) [bar]	18.7	25	25	25	25
40		30	40	40	40	40

1) Load case I (TT, NIRO)

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

PN TB (MWT) [°C]	-60[2)]	-60[1)]	-10	+50	+120
Permissible ambient temperature range: -50 to +50 °C					

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

K_v-Wert des Ventils bei Nennhub (100 % Öffnungsgrad) in m^3/h

Type	DN 150	DN 250	DN 400	DN 500
54L	506	1061	2310	2772

Opening pressure of the the check valve [bar]: 0.02 to 0.04 (fully open 0.1 to 0.15)
Horizontal installation position, the direction of flow must be observed.
External leakage: <15g
Seat: <15g (at p = 10 bar above the valve disc)
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 filters with transport or storage damage.
- ▶ Filters 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 filter.
- ▶ Keep the interior of the filter free of contamination.
- ▶ Opening or closing the filter with a valve wheel wrench or other lever-extending objects is not permitted.
- ▶ Only dismantle the filter when the pipework is depressurised, evacuated, and sufficiently ventilated.

7 Application

AWP suction filters with shut-off function are primarily mounted on the suction connection of the screw compressor units. They protect the compressor from contamination. When the compressor unit is switched off, the integrated check valve prevents the compressor from rotating backwards. Closing of the check valve is supported by a spring. AWP suction filters with shut-off function can be provided with bypass and test connections according to customer request.

8 Functional description

AWP suction filters with shut-off function are equipped with a check valve and a replaceable strainer insert made of stainless metal mesh. The check valve is fixed by screws in the base of the suction filter body. It is maintenance-free. The strainer insert centres itself automatically in the body. Flow through the strainer is from the inside to the outside.
In the event of standstill or reversal of flow, the integrated check valve closes and thus prevents reverse rotation of the compressor screw. The shut-off function is operated by a handwheel. The suction filters are closed by turning the handwheel clockwise and opened by turning anti-clockwise. Suction filters with shut-off function must only be operated in the "Open" or "Closed" position.

9 Installation

AWP suction filters with shut-off function are generally intended for installation on the suction connection of the compressor. To remove the internal parts, sufficient space must be kept clear on the side where the bonnet is located – see table:

DN	150	250	400	500
mm	330	480	680	890

The installation position is horizontal. Observe the direction of flow.

1. Befestigungsschrauben und -muttern über Kreuz und gleichmäßig anziehen.
2. 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).

10 Maintenance

AWP suction filters with shut-off function work maintenance-free. If functional defects occur, repair is possible. During the warranty period, repairs may only be carried out by the manufacturer or, with their consent, by the system operator's trained maintenance personnel. The degree of contamination of the strainer insert is evident from the system behaviour. If increased pressure losses occur on the suction side and the refrigeration capacity is not reached at the intended evaporation temperature, the strainer insert must be disassembled and cleaned. To do this, the refrigerant must be recovered from the suction filter body.**NOTICE! Bypass valves must be closed! Ensure the safety valve does not trigger!**

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

DN	150	250	400	500
SW	50	60	90	90

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:

DN	150	250	400	500
SW	46	55	55	55

5. Loosen the bonnet bolts. **NOTICE! Watch out for any residual refrigerant escaping!**
6. To unscrew, use a wrench or screwdriver with the sizes (SW) specified in the table below:

DN	150	250	400	500
M	24	30	30	30

DN	150	250	400	500
	ISO 4017			
SW	36	46	46	46

7. After loosening the hexagon bolts, remove the bonnet. **NOTICE! Pay attention to the residual pressure!**
8. Carefully pull out the strainer insert and clean it. **NOTICE! To change the check valve, leave the strainer insert in the body to prevent accidental falling of the screws / nuts.**
9. Optional: Check the degree of contamination of the PTFE seal in the valve disc. To do this, loosen hexagon bolts (M10) with wrench size (SW) 16.
10. Carefully remove the check valve at the guide bush together with the compression spring and the valve disc.
11. Assembly is carried out in reverse order, i.e. first the check valve is installed.
12. Then the strainer insert is firmly centred over the check valve in the body. Then the O-ring is replaced with a new one and placed in the groove with a little low-temperature grease (e.g. RENOLIT UNITEMP 2).
13. Then the bonnet is put on and tightened evenly and crosswise with the hexagon bolts.

Suction filter bonnet	DN150	DN250	DN400	DN500
M	24	30	30	30
	ISO 4017			
Tightening torque (A2-70) [Nm]	423	845	845	845

11 Transport, storage and disposal

AWP suction filters with shut-off function are transported protected against impact and covered with foil. Storage must take place in dry rooms. The suction filters can be stored and transported in a horizontal position on Euro pallets, secured against slipping. Ensure that the connection ports are sealed intact. Contamination of any kind must be kept away from the interior. The external surfaces of the valves 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 the valves for disposal. Collect lubricants during dismantling. The valve 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 suction filters according to the **Overview of types [▶ 4]**.

Nominal size (DN)	Strainer insert[1)]	Valve disc	Compression spring	O-ring (CR70)	
				Item number	Dimensions
150	54400E21.83400X1	54LC0B21.5125001	-	-	-
250	54400E24.83400X1	54LC0B24.5125001	54LC0E24.8233003	737583	380 x 8

Nominal size (DN)	Strainer insert[1)]	Valve disc	Compression spring	O-ring (CR70)	
400	54LC0E27.83400X1	54LC0B27.5125001	562032	737587	530 x 8
500	54LC0E28.83400X1	54LC0B28.5125001	562032	737589	640 x 10

Mesh size of strainer insert (µm)	[1)] Index X in item number of the strainer insert
25	B
40	A
63	9
80	8
100	7
120	C
135	6
150	5
200	4
250	D
500	3

14 Marking

1	Type designation	2	Material number
3	Serial number	4	Flow direction
5	Nominal size (DN)	6	Max. permissible operating pressure (PS)

7 Operating temperature associated with the operating pressure

8 Volume [litres] - content of the pressure vessel

DN	150	250	400	500
Volume (litres)	25	80	410	415

15 Note on residual hazards in accordance with Pressure Equipment Directive 2014/68/EU

NOTICE

- ▶ Do not loosen the bonnet (without authorisation) during operation or when under internal pressure.
- ▶ There may be defects in weld seams that could not be detected in previous inspections.
- ▶ Do not incorrectly assemble flange connections (inlet and outlet flanges, bonnets).
- ▶ Contamination in the operating medium or improper handling of internal components can lead to damage to gaskets.
- ▶ Observe operating limits and manufacturer's instructions in accordance with these operating instructions.

Engineering for a better world.

GEA.com

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

Latest revision: 02.02.2026
©All rights reserved. Subject to modifications. Printed in Germany.