

Service Unit Model 3999-009.

for purifying compressed air from dirt, water and oil

General:

The reliability and efficiency of a pneumatic instrumentation and control system depends largely on the condition of the supply air. It is a condition for the functioning and reliability of the pneumatic components that the supply air is conditioned so as to meet the operational requirements.

The Service Unit Model 3999-009. cleans the compressed air of dirt, water and oil. At the same time, the air pressure is reduced to a constant output pressure.

Versions and Ordering Data:

The Service Unit Model 3999-009. is available in the following versions:

Service Unit with angle bracket, comprising:
Coarse filter, pressure reducer, pressure gauge and submicro filter, condensate drainage across float valves
Order No. 3999-0090
Condensate drainage across solenoid valves
Order No. 3999-0093

Service Unit on mounting plate, comprising:
Manual spool valve, coarse filter, pressure reducer, pressure gauge, submicro filter and pressure switch,
condensate drainage across float valves
Order No. 3999-0091
Condensate drainage across solenoid valves
Order No. 3999-0094

Service Unit on mounting plate, comprising:
Manual spool valve, coarse filter, pressure reducer, pressure gauge, submicro filter, differential pressure switch and pressure switch,
condensate drainage across float valves
Order No. 3999-0092
Condensate drainage across solenoid valves
Order No. 3999-0095

Function:

The compressed air flows across a manual spool valve ① into a coarse filter unit ② with an input pressure p_1 of 16 bar max. The air is cleaned of coarse dirt particles $> 8 \mu\text{m}$, water and oil, and the pressure is reduced to a constant output pressure p_2 of 0.5 to 10 bar by a pressure reducer ③. The output pressure is indicated on a pressure gauge ④. Subsequently, the prefiltered air flows across a submicro filter ⑤ retaining dirt particles $> 0.01 \mu\text{m}$. The function of the submicro filter is monitored by a differential pressure switch ⑥. A pressure switch ⑦ monitors the output pressure set.

The coarse filter and the submicro filter are equipped with float valves or solenoid valves. In the versions with float valves, the condensate is drained automatically when a defined liquid level is reached. In the versions with solenoid valves, time-dependent condensate drainage is effected by an external control signal. In case of failure, the condensate can be drained via a pushbutton.

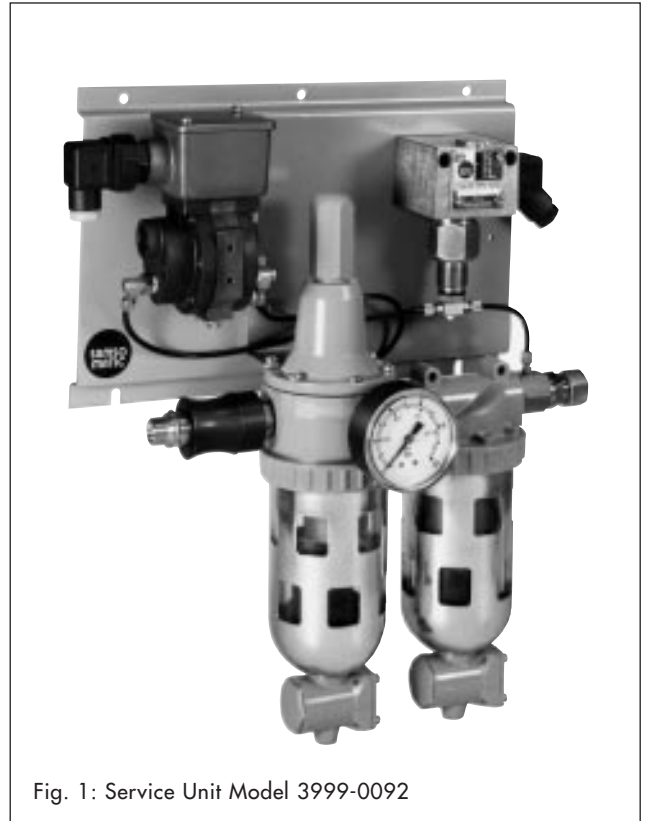
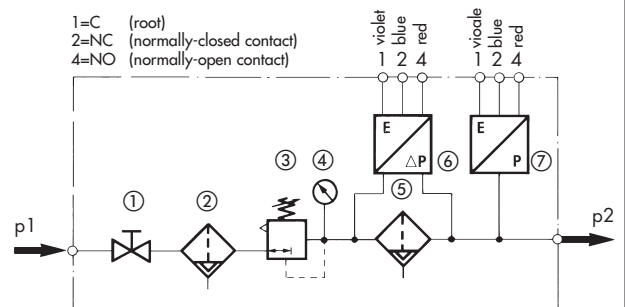


Fig. 1: Service Unit Model 3999-0092

Functional diagramm:



- ① Manual spool valve
- ② Coarse filter
- ③ Pressure reducer
- ④ Pressure gauge
- ⑤ Submicro filter
- ⑥ Differential pressure switch (with Version -0092/-0095)
- ⑦ Pressure switch (with Version -0091/-0092/-0094/-0095)

Fig. 2

Technical Data:

General Characteristics:

Installation:	Pipe or wall mounting
Mounting position:	Vertical, condensate drain downward
Ambient temperature:	5 to 50°C
Degree of protection:	IP 54
Weight:	Approx. 3.6 kg (Version -0090/0093) Approx. 5.8 kg (Version -9901/0094) Approx. 6.3 kg (Version -0092/0095)

Manual Spool Valve (with Version -0091/-0092/-0094/-0095):

Nominal size: 3/8"

Filter unit:

Construction:	Coarse filter, pressure reducer with secondary vent, pressure gauge, submicro filter
Material:	<u>Angle bracket (with Version -0090/-0093):</u> Steel, chromated <u>Mounting plate (with Version -0091/-0092/-0094/-0095):</u> Steel, powder-coated, green-beige RAL 1019 <u>Coarse filter cartridge:</u> Sintered bronze <u>Submicro filter cartridge:</u> Borosilicate <u>Condensate vessel:</u> Macrolon, clear, with metallic protecting cage, chromated
Medium:	Compressed air
Input pressure p1:	max. 16 bar
Output pressure p2:	0.5 to 10 bar, adjustable
Flow rate:	According to characteristic (Fig. 3)
Filter mesh:	<u>Coarse filter cartridge:</u> 8 µm particle size <u>Submicro filter cartridge:</u> 0.01 µm particle size
Condensate space:	2 x 65 cm ³
Condensate drainage:	Across float valves (with Version -0090/-0091/-0092), across solenoid valves (with Version -0093/-0094/-0095)
Connection:	<u>Input:</u> G 3/8 i (with Version -0090/-0093), G 3/8 a (with Version -0091/-0092/-0094/-0095) <u>Output:</u> G 3/8 i (with Version -0090/-0093), compression fitting for pipe Ø 12 mm (with Version -0091/-0092/-0094/-0095)

Differential Pressure Switch (with Version -0092/-0095):

Set point:	0.25 bar, set by manufacturer
Construction:	Floating double-throw contact
Switching capacity:	5 A, 250 V AC
Connection:	Cable gland Pg 11

Pressure Switch (with Version -0091/-0092/-0094/-0095):

Set point:	0.5 to 6 bar, adjustable
Construction:	Floating double-throw contact
Switching capacity:	5 A, 250 V AC
Connection:	Cable gland Pg 13.5

Solenoid Valve (with Version -0093/-0094/-0095):

Nominal signal:	24 V DC 24 V AC, 120 V AC, 220 V AC upon request
Connection:	Cable gland Pg 11

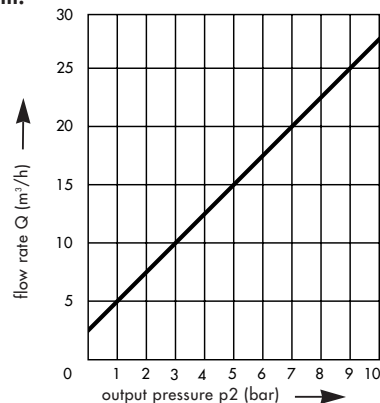
Adjustment Instructions:

The following adjustment instructions apply to the versions with pressure switch and differential pressure switch:

The differential pressure switch has been adjusted by the manufacturer to a set point of $\Delta p = 0.25$ bar which must not be changed.

The set point is adjusting on the pressure switch (Fig. 4) by means of spindle 7.2 after loosening adjusting screw 7.1. The set point adjusted is indicated on scale 7.3.

Flow rate diagram:



Flow rate Q with a differential pressure of 0.5 bar between input pressure p1 and output pressure p2

Fig. 3

Pressure switch set point adjustment:

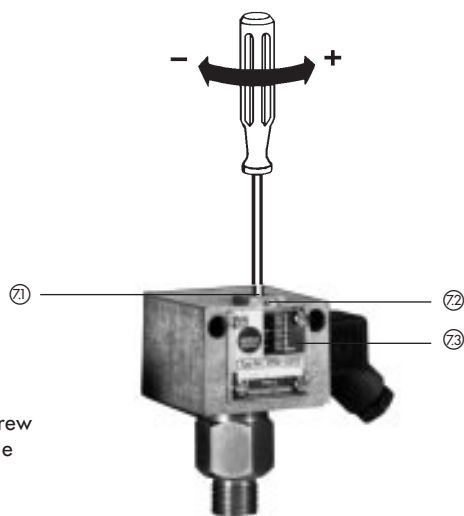


Fig. 4

Installation Instructions:

The Service Unit may be installed only in rooms with an ambient temperature of 5 to 50°C. It should be installed preferably in the coolest location in the room so that no water can condense in the output pressure pipe. The unit should be installed in the lowest point of the output pressure pipe so that condensate can flow always to the Service Unit. The output pressure piping should be adequately sized so that the pressure loss is negligible.

Operation:

During operation care shall be taken to see that the Service Unit input pressure never exceeds 16 bar.

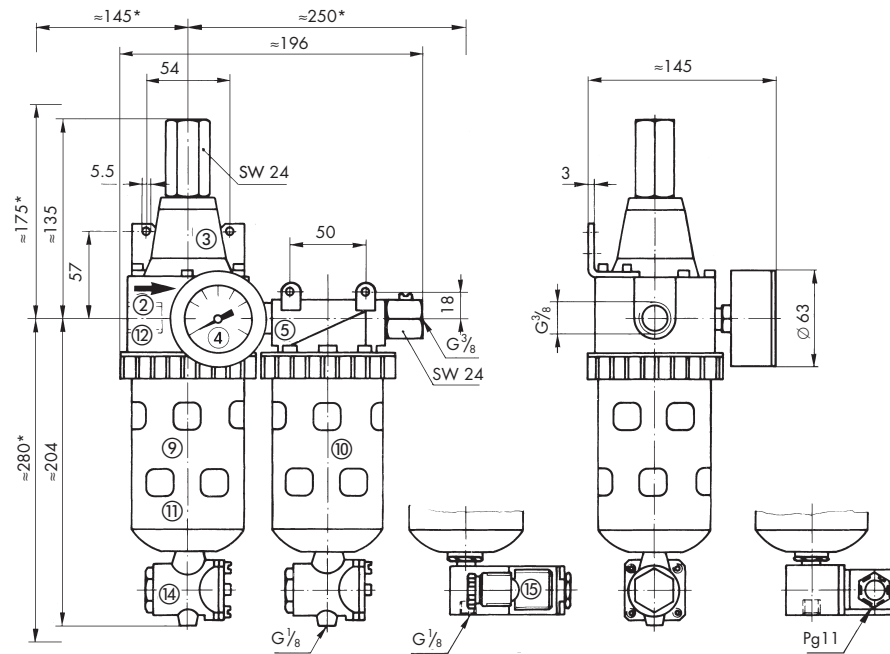
Maintenance Instructions:

The following maintenance work shall be performed at regular intervals, dependent on the degree of contamination of the compressed air (Fig. 5):

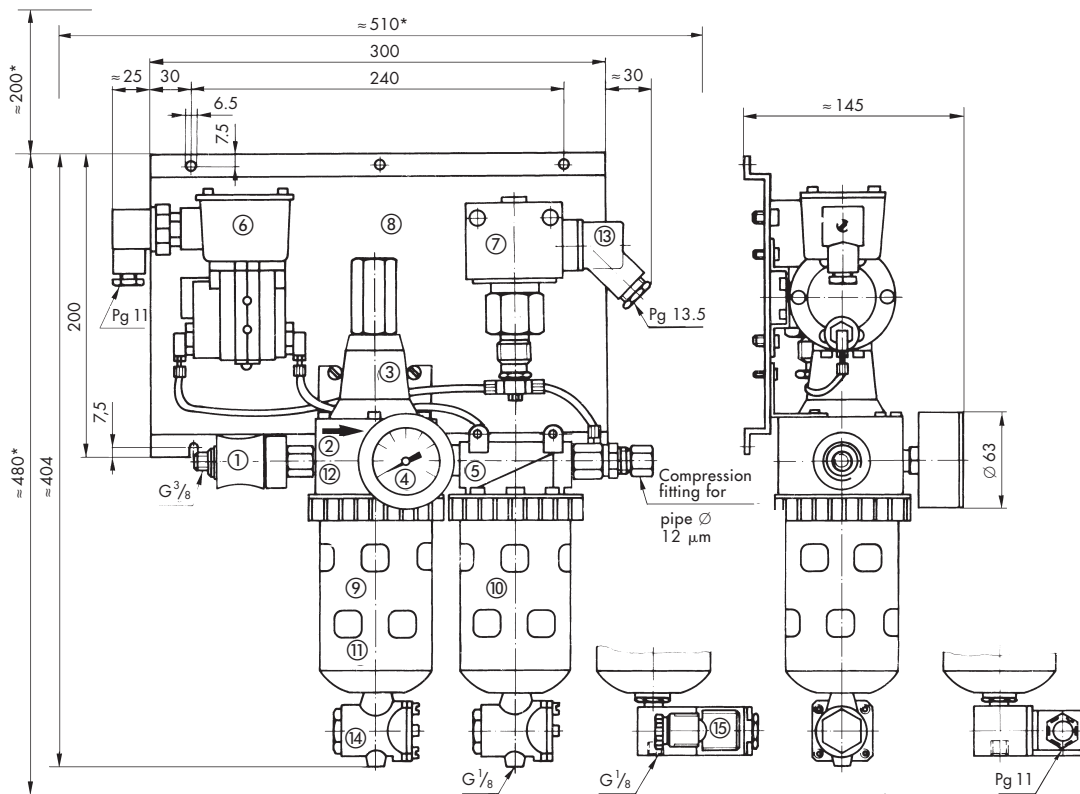
Check coarse filter cartridge ⑨ and submicro filter ⑩ for contamination and replace when heavily contaminated. In the versions with differential pressure switch contamination of the submicro filter cartridge is announced automatically.

Check functioning of the automatic drainage across float valves ⑭ or solenoid valves ⑮. In case of failure, the condensate can be drained off by operating a pushbutton.

Dimensions:



Version 3999-0090/-0093



Version 3999-0091/-0092/-0094/-0095

- | | | | |
|--------------------------------|--------------------------|-------------------------------------|--------------------------|
| ① Manual spool valve | Spare part No. 0790-6697 | ⑨ Coarse filter cartridge 8 µm | Spare part No. 0790-6691 |
| ② Coarse filter | - | ⑩ Submicro filter cartridge 0.01 µm | Spare part No. 0790-6692 |
| ③ Pressure reducer | - | ⑪ Condensate vessel | Spare part No. 0790-6693 |
| ④ Pressure gauge | Spare part No. 0790-6967 | ⑫ Diaphragm | Spare part No. 0790-6694 |
| ⑤ Submicro filter | - | ⑬ Cable socket Pg 13.5 | Spare part No. 0790-6658 |
| ⑥ Differential pressure switch | Spare part No. 0790-6659 | ⑭ Condensate drain float valve | Spare part No. 0790-6965 |
| ⑦ Pressure switch | Order No. 3994-9001 | ⑮ Condensate drain solenoid valve | Spare part No. 0790-6966 |
| ⑧ Mounting plate | Spare part No. 0790-6683 | | |

Fig. 5: Dimensions in mm (dimensions with * are clear dimensions for installation, adjustment and maintenance)

(Subject to modification)

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