Fluid Manager

with breather filter, level and temperature monitor, return flow filter with clogging indicator, feature for taking samples of hydraulic fluid in the tank

RE 50230/12.07 1/14

Type ABZMF


H7514+7515

Component series 1X
Maximum operating pressure 10 bar *[145 psi]*

Table of contents

Features

The Fluid Manager integrates the following functions:
- Breather filter
- Level and temperature monitoring
- Return flow filter with clogging indicator
- Sample-taking of hydraulic fluid in the tank

The following ports are available:
- T1 Port G1 to return flow filter
- T2/T3 Plug screw G1 (alternative connections for return flow filter – port T1)
- X1 Pressure measurement connection M16 x 2 (with stud end connector G1/8) with mounted tube for sample-taking in the tank
- X2 Pressure measurement connection M16 x 2 (with stud end connector G1/8) for sample-taking upstream of the return flow filter
- X3 Plug screw G1/8 (alternative port to X1)
- D Clogging indicator RV2 or E2SPP

Further features:
- Return flow filter with filter element to DIN 24550
- Standardized flange pattern to DIN 24557, part 2, for float switch
- Low space requirement
- Low installation cost
- Modular design

Ordering code

ABZMF – – – / 100 – –1X /

Power unit accessories
Fluid Manager measuring instruments = **ABZMF**

Functions
Breather filter,
level and temperature monitoring
Return flow filter [1); 2)] = **NTR**
Return flow filter [2)] = **R**

Length of float switch [3)]
L = 370 mm = **370**

Function of float switch [3)]
Level: with two switching contacts (normally closed/normally open)
Temperature: with two switching outputs,
with temperature indicator and control device = **M**
Level: with resistance measuring chain
(analog output 4-20 mA)
Temperature: with resistance thermometer
(analog output 4-20 mA) = **R**

Size of return flow filter
with filter element to DIN 24550
Size 100 = **100**

Series
1X = Component series 10 to 19
(10 to 19: unchanged installation and connection dimensions)

Filter element of return flow filter
10 = Filtration rating 10 µm (standard)
03 = Filtration rating 3 µm

[4)] **Function of clogging indicator**
RV2 = Mechanical-visual
E2SPSS = Electronic

Order example:

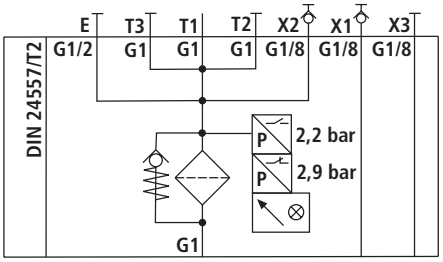
Fluid Manager with breather filter, with temperature indicator and control device, with two switching contacts (level and temperature),
electrical connection for circular plug M12 x 1,
return flow filter with mechanical-visual clogging indicator:

ABZMF-NTR-0370-M/100-10-1X/RV2
Material no. **R901186566**

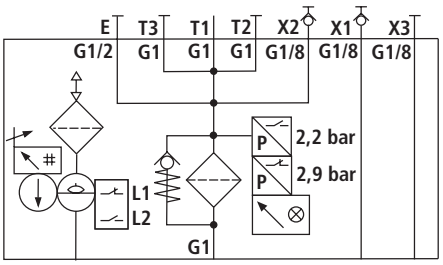
[1)] For further information, see data sheet RE 50216
[2)] For further information, see data sheet RE 50088
[3)] Not required for variant "R"
[4)] See also pages 10 and 11

Symbols

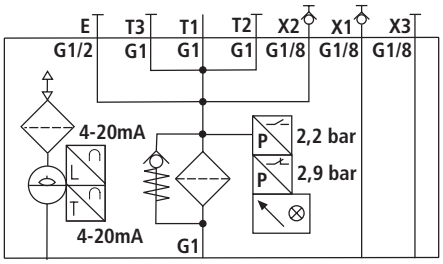
With return flow filter and electronic clogging indicator:
ABZMF-R/100-..-1X/E2SPSS



With level and temperature monitoring with 2 switching contacts, with return flow filter and electronic clogging indicator:
ABZMF-NTR-0370-M/100-..-1X/E2SPSS



With level and temperature monitoring with resistance measuring chain, with return flow filter and electronic clogging indicator: **ABZMF-NTR-0370-R/100-..-1X/E2SPSS**

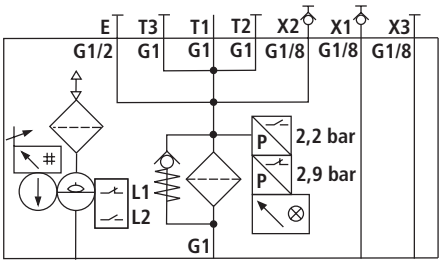


Selection table

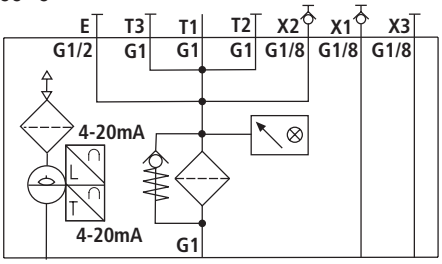
Type	Material no.
ABZMF-NTR-370-M/100-10-1X/E2SPSS	R901177245
ABZMF-NTR-370-M/100-10-1X/RV2	R901186566
ABZMF-NTR-370-R/100-10-1X/E2SPSS	R901186629
ABZMF-NTR-370-R/100-10-1X/RV2	R901186627
ABZMF-R/100-10-1X/E2SPSS	R901186638
ABZMF-R/100-10-1X/RV2	R901186637

Symbols

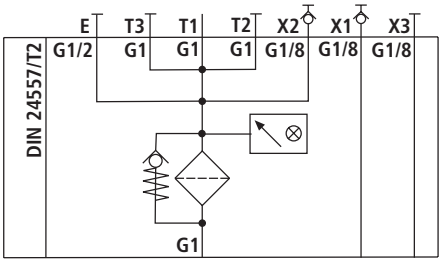
With level and temperature monitoring with 2 switching contacts, with return flow filter and mechanical-visual clogging indicator: **ABZMF-NTR-0370-M/100-..-1X/RV2**



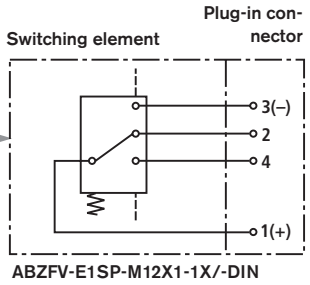
With level and temperature monitoring with resistance measuring chain, with return flow filter and mechanical-visual clogging indicator: **ABZMF-NTR-0370-R/100-..-1X/RV2**



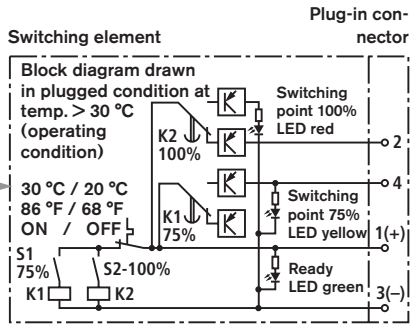
With return flow filter and mechanical-visual clogging indicator: **ABZMF-R/100-..-1X/RV2**



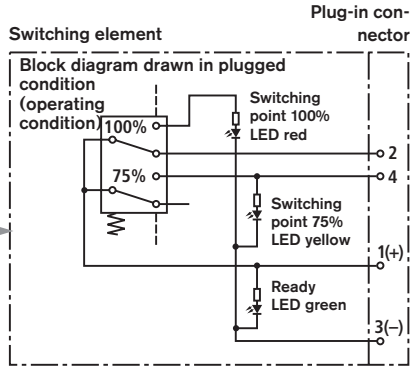
Optional: Electrical switching element for clogging indicator



ABZFV-E1SP-M12X1-1X/-DIN



ABZFV-E2SPSU-M12X1-1X/-DIN



ABZFV-E2SP-M12X1-1X/-DIN

Function

The Fluid Manager integrates the functions of a breather filter, level and temperature monitors, and a return flow filter.

The constructive design provides for flexible fitting of equipment, which allows the device to be adjusted to suit the requirements of the application at hand.

The Fluid Manager consists of a cast base plate, into which the filter head of the return flow filter is integrated.

The filter head is provided with three threaded ports, which are offset by 90°, for the variable connection of the return line.

The sample-taking port can be optionally mounted to ports X1 or X3.

In addition, a port X2 is provided in the return flow line.

The base plate is fitted with a connecting flange to DIN 24550/T2. Variant NTR includes a breather filter with level and temperature monitor. On function variant R, a breather filter or float switch can optionally connected to this connecting flange.

Technical data: Fluid Manager
(for applications outside these parameters, please consult us!)

General

Hydraulic fluid temperature range	°C *[°F]*	–20 to 80 *[–4 to 176]*
Ambient temperature range	°C *[°F]*	–20 to 80 *[–4 to 176]*
Installation position		Vertical ±20 °
Material – Base plate		GK-AlSi12
– Base plate seal		GI cork
– Plug screw		Galvanized steel, Cr-6-free
Weight (with basic equipment)	kg *[lbs]*	ca. 3.5 *[7.7]*

Hydraulic

Maximum operating pressure	bar *[psi]*	10 *[145]*		
Hydraulic fluid				
– Resistance				
• Mineral oils		Mineral oil	HLP	to DIN 51524 — Resistant
• Hardly inflammable hydraulic fluids		Emulsions	HFA-E	to DIN 24320 — Resistant
		Watery solutions	HFC	to VDMA 24317 — **Not** resistant
		Phosphate esters	HFD-R	to VDMA 24317 — **Not** resistant
		Organic esters	HFD-U	to VDMA 24317 — **Not** resistant
• Fast bio-degradable hydraulic fluids		Triglycerides (rape oil)	HETG	to VDMA 24568 — Resistant
		Synthetic esters	HEES	to VDMA 24568 — Resistant
		Polyglycols	HEPG	to VDMA 24568 — Resistant

Electrical

Type of protection to DIN EN 60529	IP 65

Technical data: Float switch – breather filter, level and temperature monitoring
(for applications outside these parameters, please consult us!)

General

Material – Sliding tube		CU alloy
– Float		1.4571
– Filter housing and flange		PA
Seal material		FKM
Switching points L1, L2	mm *[inch]*	L1 = 220 *[8.66]*; L2 = 140 *[5.51]* preset; they must be adjusted according to the operating conditions during commissioning (see data sheet RE 50216)
Hydraulic fluid – Density	g/cm³	> 0.8

Electrical

Plug-in connection	M12x1; 4-pin (material: metal)

Reed contacts of float switches with component plug M12 x 1; 4-pin

Switching voltage range	VDC	10 to 30
Max. switching current	A	0.5
Max. switching power	W	10

Technical data: Float switch – breather filter, level and temperature monitoring
(for applications outside these parameters, please consult us!)

Breather filter

Indicating range		bar	to 0.035 = 100 %
Filtration rating		µm	3 absolute
Air flow rate		l/min	650
Material:	– Housing		PA
	– Filter element		Paper

Temperature display

Temperature indicating range	°C *[°F]*	ca. –20 to +120 *[4 to 248]*
Alarm temperature adjustment range	°C *[°F]*	0 to +99 *[32 to 178]*
Max. programmable switching points		2
Housing design		PA, IP 65
Display		4-digit, 7-segment LED display
Switch-on current consumption		ca. 140 mA over 100 ms
Current consumption during operation	mA	ca. 30 to 50
Supply voltage	VDC	24 ±10 %
Output		PNP
Accuracy		1% of displayed value
Resolution	°C *[°F]*	1 *[2]*
Operation		By means of 3 keys
Temperature sensor		PT 100

Resistance measuring chain and resistance thermometer with component plug M12 x 1; 4-pin

Switching voltage range	VDC	10 to 30
Output	mA	4 to 20
Resolution of resistance measuring chain	mm	7.5
Max. load Ω		R = *UB* – 7.5 V (0.02 A)
Residual ripple content	%	1
Temperature measuring range	°C *[°F]*	0 to 100 *[32 to 212]*

Technical data: Return flow filter
(for applications outside these parameters, please consult us!)

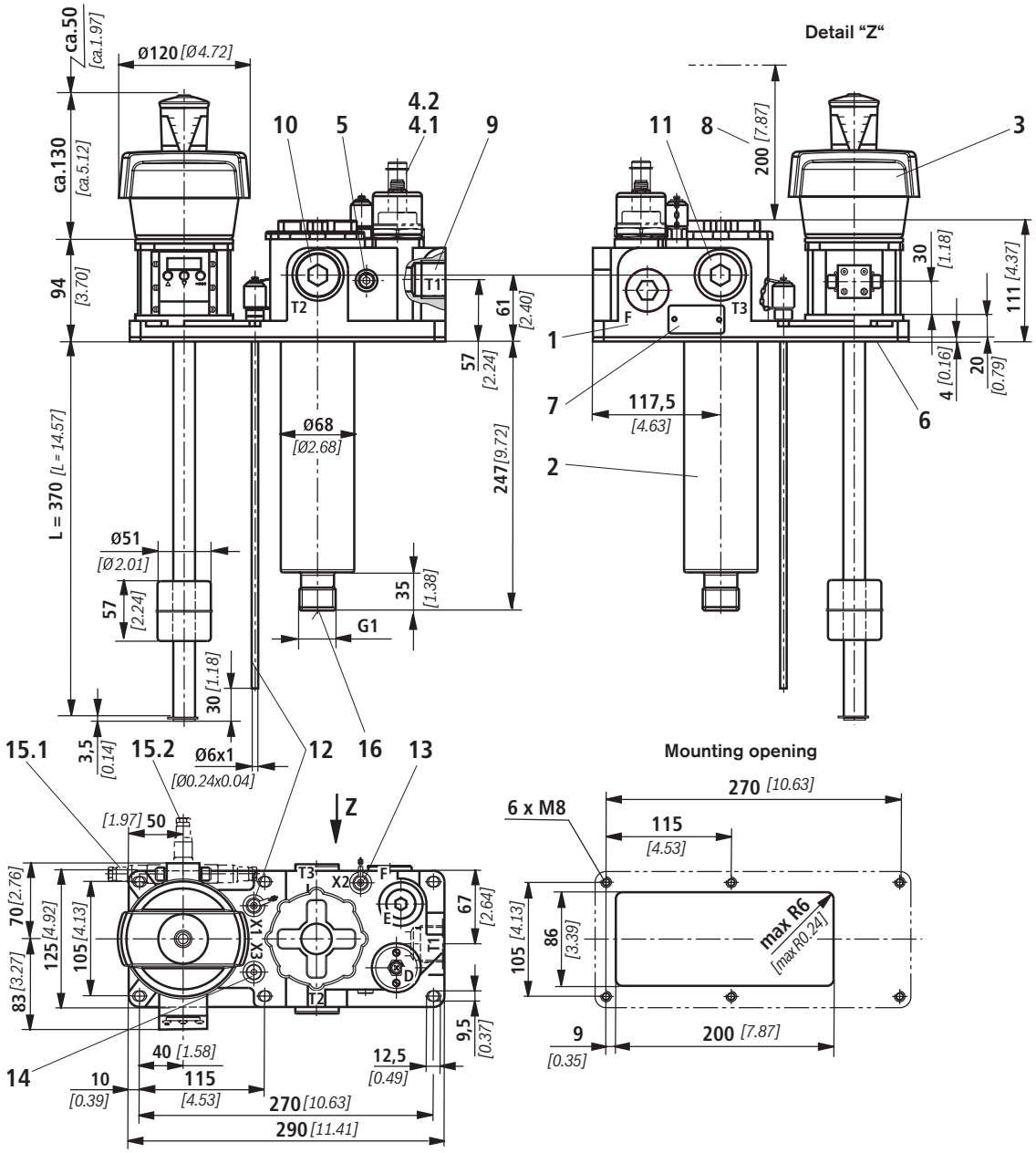
General

Direction of flow			Inlet at the side, outlet vertically downwards
Size		Size	100
Material	– Filter head		Aluminum
	– Filter bowl		Plastic
	– Filter cover		Plastic
	– Visual clogging indicator		Aluminum
	– Electrical switching element		Plastic PA6

Hydraulic

Maximum operating pressure	bar *[psi]*	10 *[145]*
Cracking pressure of by-pass valve	bar *[psi]*	3.5 ±0.35 *[50.7 ±5]*

Unit dimensions: Variant ..NTR.. (dimensions in mm *[inch]*)



1 Base plate

2 Return flow filter with filter element to DIN 24550

3 Float switch with breather filter, 2 adjustable switching contacts for level and temperature monitoring; with temperature indicator and control device, circular plug-in connection M12 x 1

4.1 Mechanical-visual clogging indicator RV2 (see page 10)

4.2 Electronic clogging indicator E2SPSS (see page 11)

5 Connection bore with plug screw G1/8

6 GI cork seal

7 Nameplate

8 Minimum space required to change element

9 Port T1 (return flow filter) G1

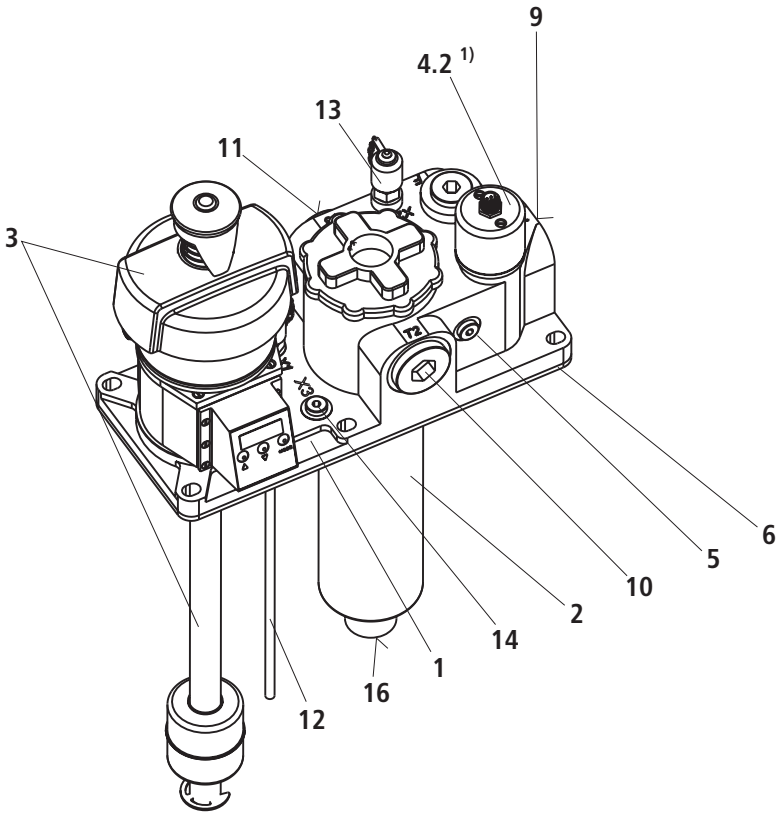
For items 10 to 16, see page 7

Unit dimensions: Variant ..NTR..

Ports

D	= Port M30 x 1.5 for clogging indicator
E	= Plug screw G1/2
F	= Plug screw M27 x 2
T1	= Free port G1 to return flow filter
T2 / T3	= Plug screw G1 (alternative ports for return flow filters – port T1)
X1	= Pressure measuring port M16 x 2 (with screwed end G1/8) with tube mounted for taking samples in the tank
X2	= Pressure measuring port M16 x 2 (with screwed end G1/8) for sample-taking upstream of the return flow filter
X3	= Plug screw G1/8 (alternative port for X1)

Ports X1 and X3 can be used individually!



10 Port T2 with plug screw G1 (alternative port to T1)

11 Port T3 with plug screw G1 (alternative port to T1)

12 X1 pressure measuring port M16 x 2 (with screwed end G1/8) with sample-taking tube

13 X2 pressure measuring port M16 x 2 (with screwed end G1/8) upstream of return flow filter

14 Port X3 with plug screw G1/8 (alternative port to X1)

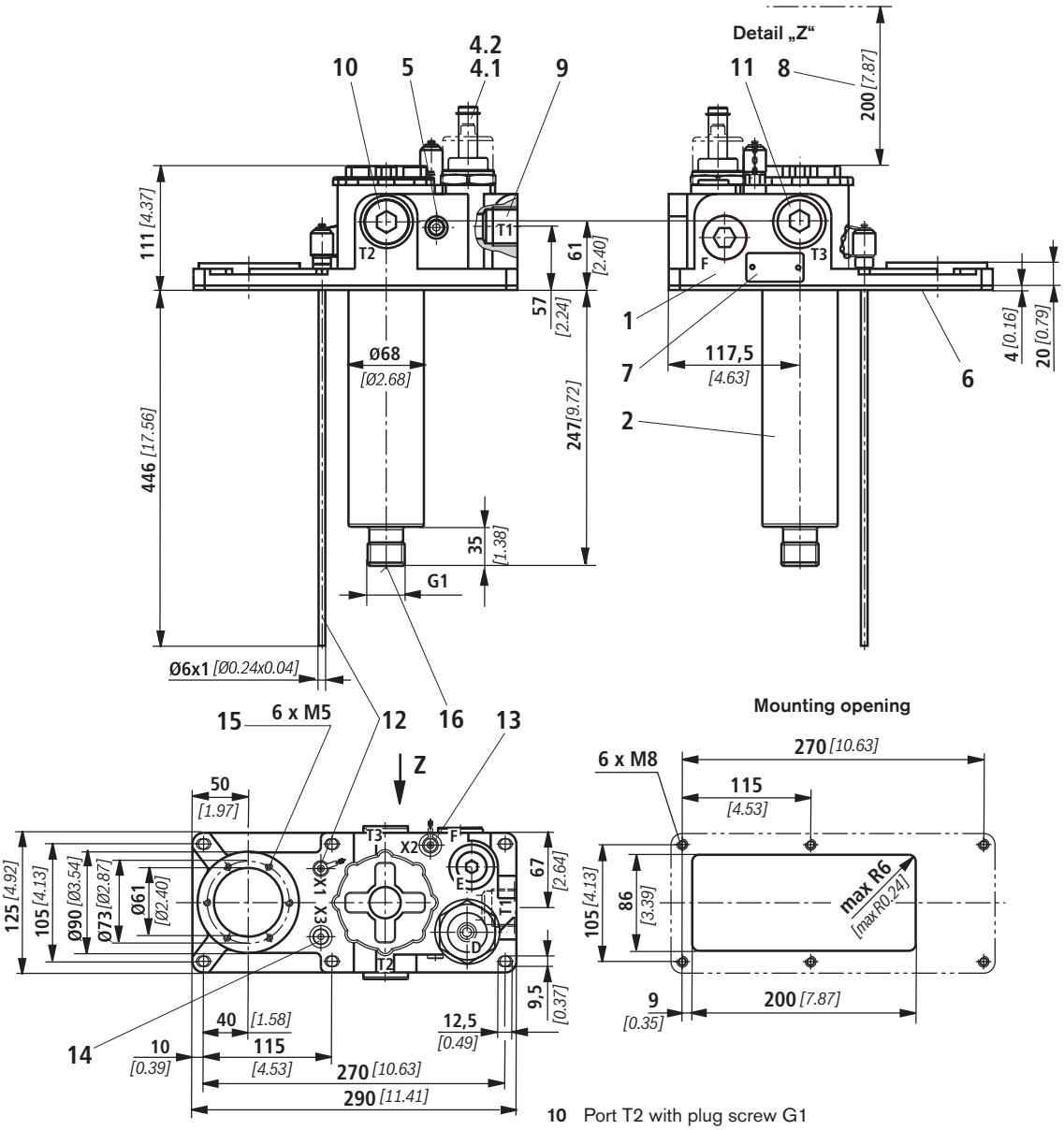
15.1 Mating connector – 2 pcs for variant “M“

15.2 Mating connector – 1 pc for variant “R”

16 Oil outlet of return flow filter

[1] Drawing shows clogging indicator E2SPSS

Unit dimensions: Variant ..R.. (dimensions in mm *[inch]*)



1 Base plate

2 Return flow filter for filter element and installation dimensions to DIN 24550

4.1 Mechanical-visual clogging indicator RV2

4.2 Electronic clogging indicator E2SPSS

5 Connection bore with plug screw G1/8

6 GI cork seal

7 Nameplate

8 Minimum space required to change element

9 Port T1 (return flow filter) G1

10 Port T2 with plug screw G1 (alternative port to T1)

11 Port T3 with plug screw G1 (alternative port to T1)

12 X1 pressure measuring port M16 x 2 (with screwed end G1/8) with sample-taking tube

13 X2 pressure measuring port M16 x 2 (with screwed end G1/8) upstream of the return flow filter

14 Port X3 with plug screw G1/8 (alternative port to X1)

15 Porting pattern to DIN 24557, part 2

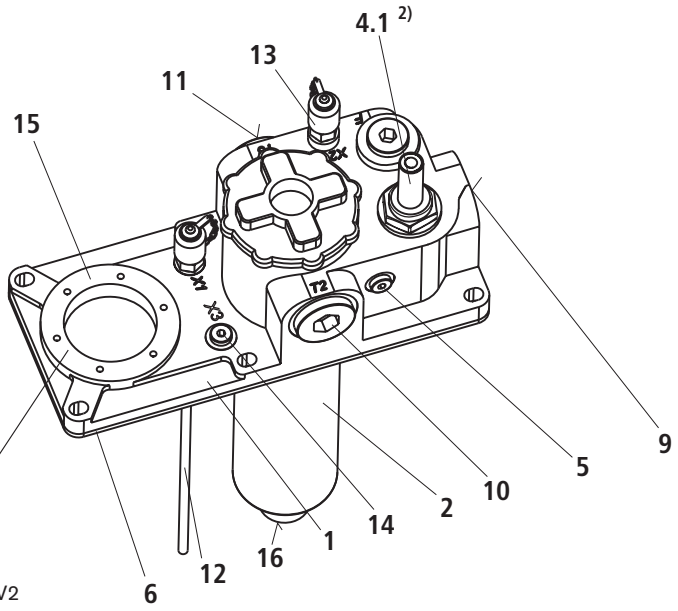
16 Oil outlet of return flow filter

Unit dimensions: Variant ..R..

Ports

D	= Port M30 x 1.5 for clogging indicator
E	= Plug screw G1/2
F	= Plug screw M27 x 2
F	= Plug screw M27 x 2
T1	= Free port G1 to return flow filter
T2 / T3	= Plug screw G1 (alternative ports for return flow filter – port T1)
X1	= Pressure measuring port M16 x 2 (with screwed end G1/8) with mounted tube for sample-taking in the tank
X2	= Pressure measuring port M16 x 2 (with screwed end G1/8) for sample-taking upstream of the return flow filter
X3	= Plug screw G1/8 (alternative port for X1)

Ports X1 and X3 can be used individually!



Porting pattern DIN 24557/T2 for optional equipment, e.g. breather filter to RE 50070, float switch to RE 50214 or float switch to RE 50216

2) Drawing shows clogging indicator RV2

Clogging indicator type ..RV2.. (dimensions in mm *[inch]*)

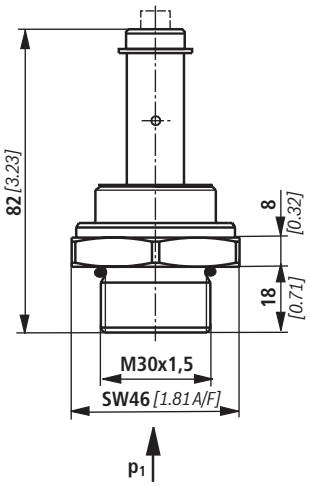
Mechanical-visual clogging indicator to data sheet RE 50088

ABZ | F | V – RV2 – 1X / M – DIN

- Rexroth plant construction accessories
- Filter
- Clogging indicator
- Mechanical-visual clogging indicator for return flow filter, Switching point 2.2 bar *[31.9 psi]* **= RV2**
- **1X =** Component series 10 to 19 (10 to 19; unchanged installation and connection dimensions)
- **M =** **Seal material** See hydraulic fluid table (page 4)
- **DIN =** Identification for DIN variant

Mechanical-visual clogging indicator	Material no
ABZFV-RV2-1X/M-DIN	R901025310

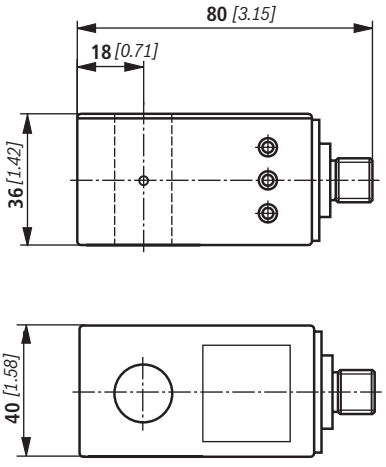
Response pressure of clogging indicator
2.2 ±0.35 bar *[31.9 ±3.6 psi]*



Electrical switching element for clogging indicator RV2 to data sheet RE 50088 (optional)

ABZ | F | V – – 1X / – DIN

- Rexroth plant construction accessories
- Filter
- Clogging indicator
- Electrical switching element with 1 switching point (changeover contact) circular plug-in connection M12 x 1 **= E1SP-M12X1**
- Electrical switching element with 2 switching points (normally closed/normally open, 75%, 100% Circular plug-in connection M12 x 1, 3 LED **= E2SP-M12X1**
- Electrical switching element with 2 switching points (normally closed/normally open, 75%, 100% Signal suppression up to 30 °C circular plug-in connection M12 x 1 . 3 LED **= E2SPSU-M12X1**
- **1X =** Component series 10 to 19 (10 to 19; unchanged installation and connection dimensions)
- **– DIN =** Identification for DIN variant



Electrical switching element	Material no.
ABZFV-E1SP-M12X1-1X/-DIN	R901025339
ABZFV-E2SP-M12X1-1X/-DIN	R901025340
ABZFV-E2SPSU-M12X1-1X/-DIN	R901025341

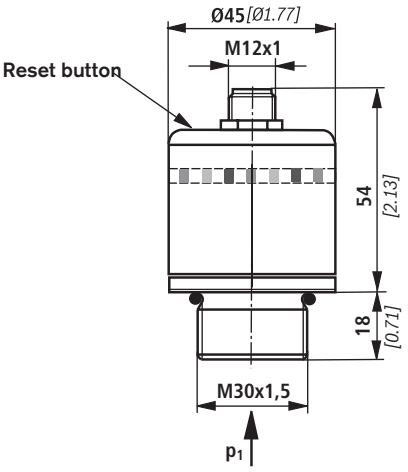
Clogging indicator type ..E2SPSS.. (dimensions in mm *[inch]*)

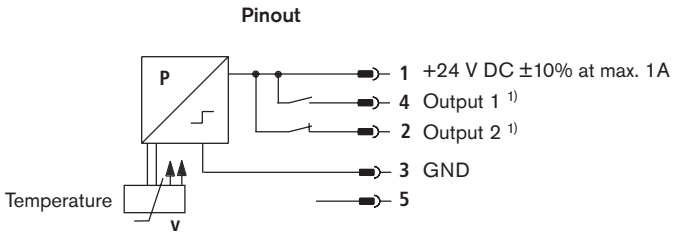
Electronic clogging indicator

ABZ | F | V – E2SPSS – 1X / M – DIN

- Rexroth plant construction accessories
- Filter
- Clogging indicator
- Electronic clogging indicator for return flow filter, 1st switching point 2.2 bar *[31.9 psi]*, 2nd switching point 2.9 bar *[42 psi]* — **= E2SPSS**
- **1X =** Component series 10 to 19 (10 to 19; unchanged installation and connection dimensions) — **Component series**
- **M =** See hydraulic fluid table (page 4) — **Seal material**
- **DIN =** Identification for DIN variant

Electronic clogging indicator	Material no.
ABZFV-E2SPSS-1X/M-DIN	R901187314





1) Output 1 = pre-warning at 2.2 bar ≙ 75 % (normally open contact for rising pressure)
Output 2 = shutdown at 2.9 bar ≙ 100 % (normally closed contact for rising pressure)

Clogging indicator type E2SPSS is a microprocessor-controlled pressure sensor. As the filter is increasingly clogged, the rising backpressure upstream of the filter element is measured.
The pressure sensor is fitted with 2 switching outputs for pre-warning at 75 % (4 yellow LEDs) and maximum clogging at 100 % (4 red LEDs).

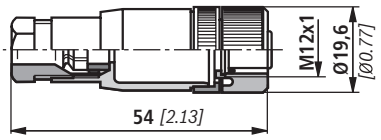
In order to avoid false alarms due to high viscosity during the cold start phase, a temperature sensor measures the oil temperature.
The device is ready at a temperature > 30 °C (4 green LEDs).

Features:

- Two switching outputs
- Signal suppression during the cold start phase and for brief pressure peaks
- Visual / electrical display
- Self-monitoring (a fault is indicated by flashing of the red LEDs and switching output 2 is activated)
- Illuminated LED circle visible all around
- Display of status and fault messages
- Circular plug-in connection M12 x 1
- Reset function

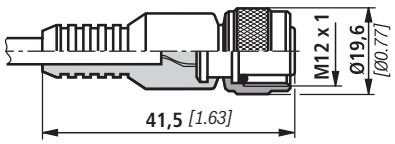
Mating connectors (dimensions in mm *[inch]*) – for detailed information, see RE 08006

Mating connector for connector plug K24



Designation	Material no.
LEITUNGSDOSE 4P Z24 SPEZ	R900031155

Mating connector for connector plug K24 with molded-on PVC cable, 3 m long



Designation	Material no.
LEITUNGSDOSE 4P Z24M12X1 +3MSPEZ	R900064381

Spare parts

Filter element
to data sheet RE 50088

ABZ | F | E – R | 0100 – – 1X / M – DIN

- Rexroth plant construction accessories
- Filter
- Filter element
- Filter element for return flow filter = **R**
- **Size**
  - Size 100 = **0100**
- **DIN =** DIN 24550
- **Seal material**
  - **M =** See hydraulic fluid table (page 4)
- **Component series**
  - **1X =** Component series 10 to 19 (10 to 19; unchanged installation and connection dimensions)
- **Filtration rating**
  - **10 =** 10 µm [1)]
  - **03 =** 3 µm [1)]

[1)] The separation capacity is measured in accordance with ISO 16889
10 µm element ≙ $\beta_{10\,(c)} > 200$
3 µm element ≙ $\beta_{5\,(c)} > 200$

Filter element, 10 µm	Material no.
ABZFE-R0100-10-1X/M-DIN	R901025293

Filter element, 3 µm	Material no.
ABZFE-R0100-03-1X/M-DIN	R901025278

Seal kit for Fluid Manager, complete

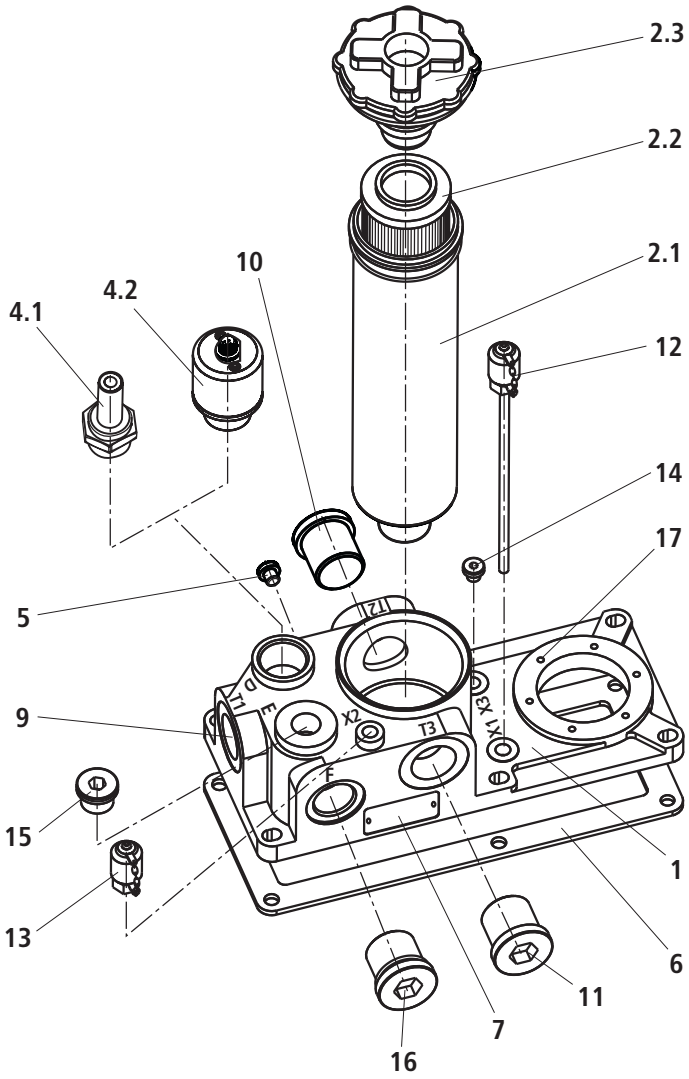
Seal kit	Material no.
DICHTUNGSSATZ ABZMF-D-1X/M	R901187367

The seal kit includes the seals E1 to E8 (see page 13).

GI cork seal for base plate

Seal	Material no.
DICHTUNG 4,0X290X125- 6X 9.5 &	R901187368

Spare parts



Seals		
E1	GI cork seal	Base plate Fluid Manager
E2	O-ring	Filter cover of return flow filter
E3	O-ring	Filter cylinder of return flow filter
E4	O-ring	Port D (RV2 or E2SPSS)
E5	ED Eolastic seal G1/8	Ports X1, X2, X3 and plug screw next to port T2
E6	ED Eolastic seal G1/2	Port E
E7	ED Eolastic seal G1	Ports T2 and T3
E8	O-ring	Port F

1 Base plate
2.1 Filter cylinder with O-ring E3
2.2 Filter element
2.3 Filter cover with O-ring E2
4.1 Port D, mechanical-visual clogging indicator RV2 with O-ring E4
4.2 Port D, electronic clogging indicator E2SPSS with O-ring E4
5 Connection bore fitted with VSTI-G1/8 plug screw, seal E5
6 GI cork seal E1
7 Nameplate
9 Port T1, free port G1 to return flow filter fitted with protective cap
10 Port T2, plug screw VSTI-G1, seal E7
11 Port T3, plug screw VSTI-G1, seal E7
12 X1 pressure measuring port M16 x 2 (with screwed end G1/8) with sample-taking tube, seal E5
13 X2 pressure measuring port M16 x 2 (with screwed end G1/8), seal E5
14 Port X3, plug screw VSTI-G1/8, seal E5
15 Port E, plug screw VSTI-G1/2, seal E6
16 Port F, plug screw M27x2 with O-ring E8
17 Mounting bore pattern to DIN 24557, part 2

Installation notes

– Ensure sufficient distance to the tank wall and components
– Ensure free access to ports for the return flow filter, sample-taking and port E
– Make sure that there is sufficient space upwards for changing the filter elements
– The return flow filter can be connected to T1, T2 or T3
– The pressure measuring fitting with the sample-taking tube can be connected to X1 or X3

Electrical connections:

– Electrical connections may only be established by specialist personnel
– Before working on electrical components, interrupt the power supply
– After having connected the circular plug-in connection M12 x 1 tighten it my means of screws
– Only connect the circular plug-in connection M12 x 1 when disconnected from the power supply
– Do not overload contacts (see Technical data)
– In the case of inductive load, provide protective circuit!

Commissioning

Before commissioning, check that
– all connections fit properly and do not show any defects,
– the base plate was mounted stress-free on the tank,
– a filter element was inserted in the return flow filter,
– a tank breather filter or a level / temperature measuring device is installed.

Port D – variants with clogging indicator:
The technical connection data for clogging indicator type ..RV2.. and
type ..E2SPSS.. can be found on pages 5, 10 and 11, and data sheet RE 50088.

Note

The electronic clogging indicator is provided with an illuminated circle of LEDs which is visible from all directions. These LEDs signal, apart from usual status messages, additional fault messages.

Green LED permanently ON	Supply voltage is applied and device is ready
Yellow LED permanently ON	Switching output 1 is closed (alarm at 2.2 bar)
Red LED permanently ON	Switching output 2 is open (alarm at 2.9 bar)
Green LED flashes about 2x per second (_ _ ■ _ _ ■ _ _)	Temperature < 30 °C (switching outputs not enabled)
Red LED flashes about 2x per second (_ ■ _ ■ _ ■ _)	Pressure or temperature sensor defective, switching output 2 is open.

If the switching outputs were activated due to excessive pressure, they can only be deactivated by switching the system off or when the hydraulic fluid temperature falls again below 20 °C.

To trigger a switching process, the pressure must have exceeded the corresponding limit value (2.2 or 2.9 bar) without any interruption. This prevents the alarm from being triggered by brief pressure peaks.

☞ **Press the reset key after each filter change!**