

Gear Pump Units

For single-line centralized lubrication systems

MFE5-KW3-2



MFE5-KW6



MFE5-BW7



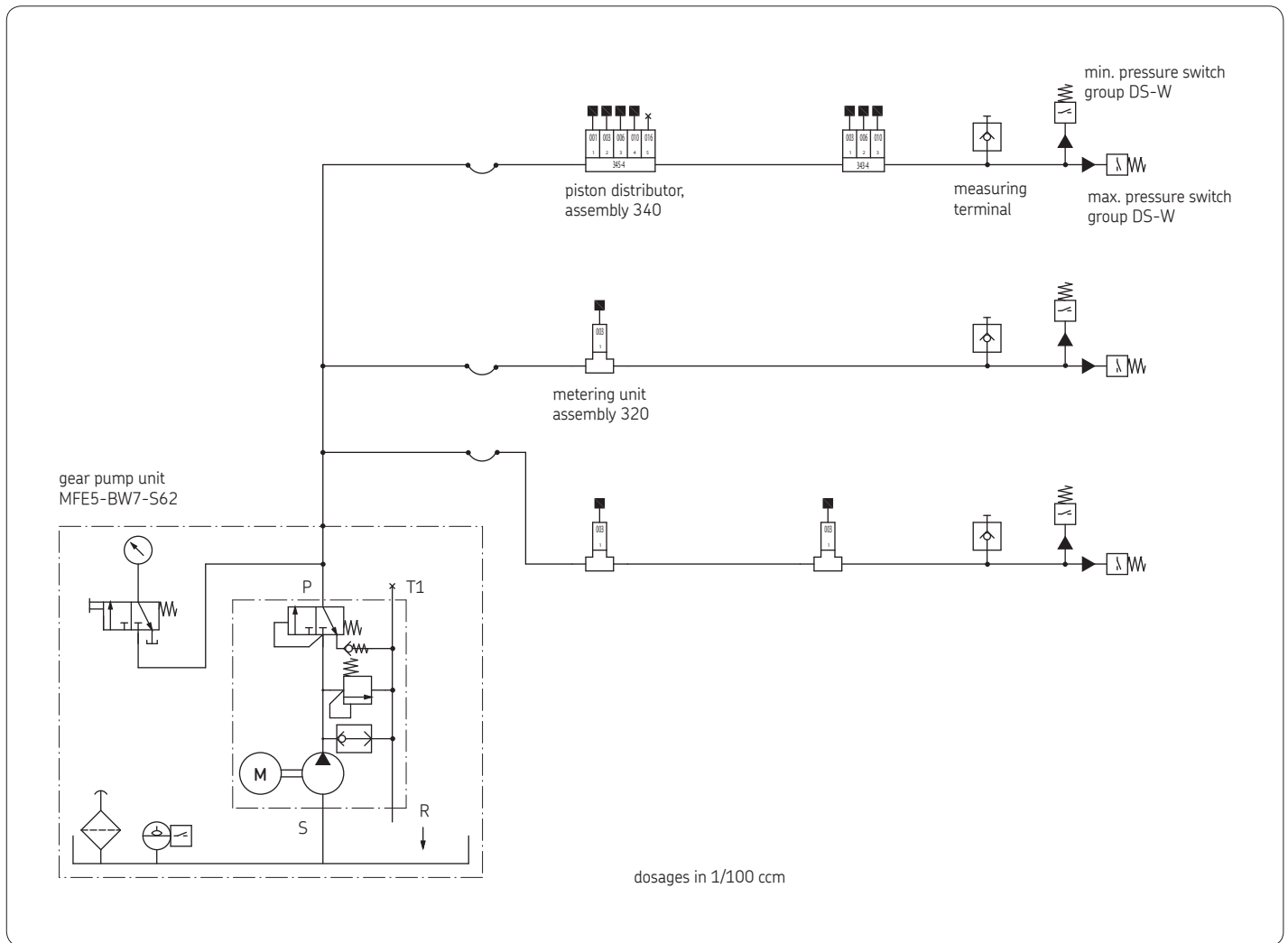
These units comprising the MFE Group are designed to supply the lubricant used in intermittently operated, single-line centralized lubrication systems.

The basic setup includes a gear pump unit with motor, a 3 or 6 liter lubricant reservoir – optionally of metal or plastic – or a 15 liter metal reservoir and float switch to monitor the minimum permissible level of lubricant.

In addition to the basic models it is also possible for the units to be outfitted with add-ons.

Special models for a wide variety of applications are listed in the overview table on page 3.

Gear pump units for single-line centralized lubrication systems



Example of a single-line central lubrication system for automobile makers

The system consists essentially of:

- a gear pump unit
- 6 liter metal reservoir
- piston distributors, assembly 340
- metering units, assembly 320
- pressure switches, group DS-W
for max. pressure build-up and relief pressure

Overview table for gear pump units

See important product usage information on the back cover.

Order No.	Reservoir capacity [liters]	Reservoir material	Design features
MFE5-KW3-2	3	Plastic	Basic version with WS32-2 float switch
MFE5-KW3-2-S4	3	Plastic	Basic version with WS35-2 float switch
MFE5-KW3-2-S9	3	Plastic	For oil as 5 mm ² /s at max. 16 bars
MFE5-KW3-S46	3	Plastic	VW version
MFE5-KW3-2-S13	3	Plastic	Unit for 50/95 weatherproofing (DIN 50015); WS32-2 float switch
MFE5-KW3-S24	3	Plastic	Motor with HAN6ES Harting connector; WS35-S30 float switch
MFE5-BW3-2	3	Metal	Basic version with WS32-2 float switch
MFE5-BW3-2-S14	3	Metal	French Automotiv version (CNOMO); WS35-2 float switch; Stäubli filler coupling
MFE5-BW3-2-S22	3	Metal	For oil as 5 mm ² /s at max. 16 bars
MFE5-BW3-S57	3	Metal	VW version
MFE5-BW3-2-S34	3	Metal	Motor UL/CSA
MFE5-BW3-2-S37	3	Metal	Basic version with WS35-2 float switch
MFE5-BW3-S41	3	Metal	Motor with HAN6ES Harting connector; WS35-S30 float switch
MFE5-KW6	6	Plastic	Basic version with WS32-2 float switch
MFE5-KW6-S1	6	Plastic	Basic version with WS35-2 float switch
MFE5-KW6-S8	6	Plastic	FKM (FPM) version, WS32-S8 float switch
MFE5-KW6-S24	6	Plastic	VW version
MFE5-KW6-S33	6	Plastic	Motor with HAN6ES Harting connector; WS35-S30 float switch
MFE5-BW7	6	Metal	Basic version with WS32-2 float switch
MFE5-BW7-CF	6	Metal	Basic version with WS35-2 float switch
MFE5-BW7-S8	6	Metal	FKM (FPM) version, WS32-S8 float switch
MFE5-BW7-S22	6	Metal	Motor UL/CSA
MFE5-BW7-S29	6	Metal	French Automotiv version (CNOMO); WS35-2 float switch; Stäubli filler coupling
MFE5-BW7-S54	6	Metal	Unit for 50/95 weatherproofing (DIN 50015); WS32-2 float switch
MFE5-BW7-S120	6	Metal	VW version
MFE5-BW7-S98	6	Metal	VW version with filler coupling
MFE5-BW7-S107	6	Metal	Motor with HAN6ES Harting connector; WS35-S30 float switch
MFE5-BW7-V57-L	6	Metal	GM / OPEL version
MFE5-BW15	15	Metal	Basic version with WS32-2 float switch; wall-mounted reservoir
MFE5-BW16	15	Metal	Basic version with WS35-2 float switch; wall-mounted reservoir
MFE5-BW15-S7	15	Metal	Basic version with WS35-2 float switch; foot-mounted reservoir
MFE5-BW16-S111	15	Metal	VW version; foot-mounted reservoir
MFE5-BW16-S93	15	Metal	Motor with HAN6ES Harting connector; WS35-S30 float switch

Gear pump unit mounted separate from oil reservoir

Order No. **ME5**

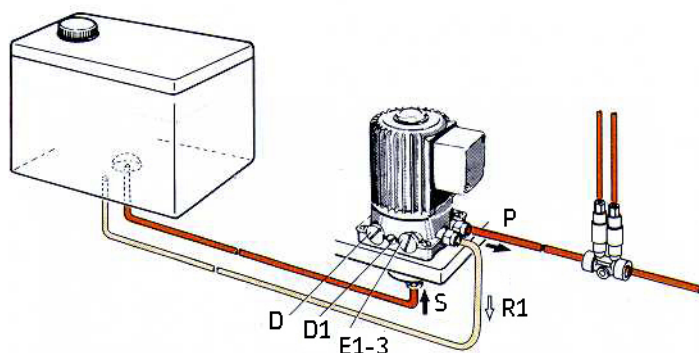


Fig. 1

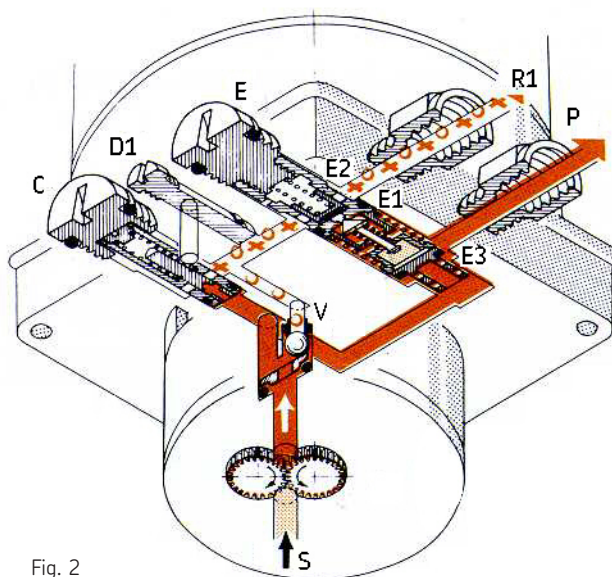


Fig. 2

Gear pump unit for flange-mounting on oil reservoir

Order No. **MFE5**

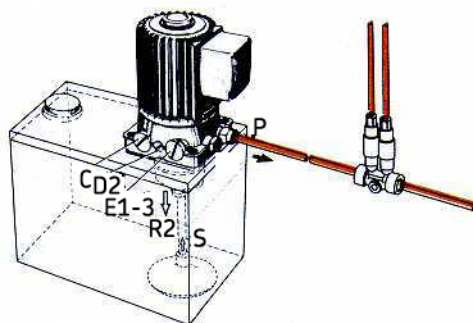


Fig. 3

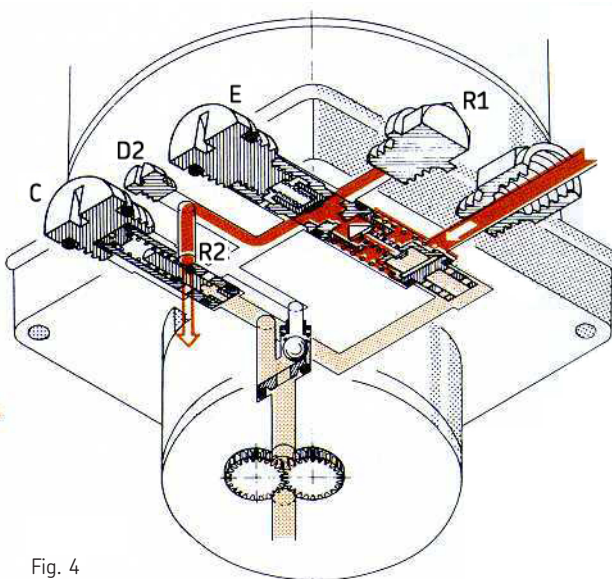


Fig. 4

Please quote voltage and frequency when ordering.

A special sealed pump must be used for horizontal flange-mounting of the unit in a position below the oil level.

Gear pump unit model MFE5 complete with metal or plastic reservoir (3, 6 and 15 liters) see pages 7–9.

Explanation of hydraulic function

Both types have the same hydraulic function.

Oil is sucked in at **S** and flows under pressure through the duct in the direction **P**. The oil pressure closes valve **V** and opens valve **E3**, at the same time closing valve **E1** against spring tension. If air is entrained (due to low oil level in the reservoir), valve **V** remains open and diverts the air or, respectively, the air-oil mixture into the return duct (see bubble (o) marking in direction **R1**). Valve **C** allows oil under overpressure to flow out into the return duct (see cross (+) marking).

When the unit stops (interval time), spring-loaded valve **E1** opens and valve **E3** simultaneously closes. The system pressure at **P** can now be released through valve **E1** – with the exception of a small amount of residual pressure determined by valve **E2**. This pressure release is required for the piston distributors to function correctly.

The pressure relief process is shown in fig. 4.

Explanation of the structural differences

In the case of model **ME5**, the long screw plug **D1** blocks flanged port **R2** of the return duct. The oil returning from valves **V**, **C** and **E1** flows via port **R1** through a tube to the separately mounted oil reservoir (see fig. 1 and 2).

In the case of model **MFE5**, the short screw plug **D2** – unlike **D1** with model **ME5** – leaves flanged port **R2** open. A plug closes off external port **R1**. – Flanged port **R2** of the return duct drains directly into the reservoir without any connection threads (see fig. 3 and 4).

MFE5 unit variants *

Order No.	Flow rate ²⁾ [l/min]	Max. back pressure ³⁾ [bars]	Design
MFE5-2000	0.5	28	Basic version, NBR, plastic terminal box
MFE5-3041	0.5	28	Basic version, NBR, metal terminal box
MFE5-2000-D	0.5	28	Installed below oil level, NBR, plastic terminal box
MFE5-3000-D	0.5	28	Installed below oil level, NBR, metal terminal box
MFE5-2008	0.5	28	Basic version, FKM (FPM), plastic terminal box
MFE5-2009	0.25	17.5	For light oil as of 5 mm ² /s, NBR
MFE5-2053	0.25	17.5	For light oil as of 5 mm ² /s, FKM
MFE5-4000	0.5	28	UL/CSA-approved, NBR
MFE5-5000	0.5	28	CCC-approved, NBR
MFE5-1001	0.5	28	HAN6ES Harting connector, NBR, Motor 180° turned
MFE5-1088	0.5	28	HAN10ES Harting connector, FKM
MFE5-S67	0.5	28	50/95 weatherproofing, NBR, metal terminal box

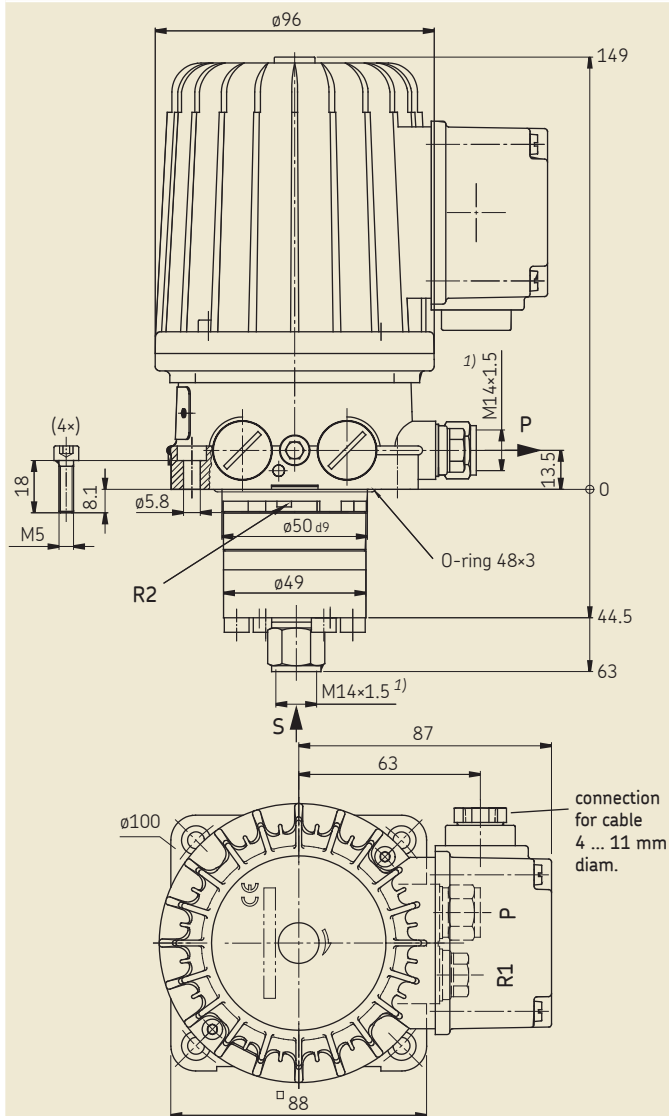
* The geometrical dimensions of the variants can deviate of Fig. 5.

²⁾ Flow rate based on an operating viscosity of 140 mm²/s, at a back pressure of $p = 5$ bars.

³⁾ The max. back pressure is equivalent to the actual value of the built-in pressure limiting valve. If the units are operated with a single-phase AC supply, only 60% of the indicated pressure is permissible, i.e. a 16-bar pressure limiting valve should be fitted to the system.

The appropriate capacitors for a frequency of 50 and 60 Hz are:
230 V ... 8 µF: order No. 179-340-007
115 V ... 30 µF: order No. 179-340-060

Fig. 5



S = inlet (suction port)
P = outlet (pressure port)
R1 (ME5) = oil return from relief and pressure limiting valve
R2 (MFE5)

¹⁾ Ports tapped for solderless 8 mm diam tube connection.

Technical data of the shown motor

Motor	Three-phase motor
Mode of operation	S1, 100%
Insulation class	F
Rated frequency [Hz]	50 60
Voltage [V] Y ⁴⁾	400 480
Rated current [A]	0.29 0.29
Rated power [kW]	0.075 0.09
Rated speed [rpm]	2700 3200
Rated flow rate [l/min]	0.5 0,6
Operating pressure [bars]	28
Operating temperature [°C]	+10 to +40
Medium	20 to 1000 mm ² /s
Type of enclosure acc. to DIN 50050	IP 54
Max. suction head [mm]	500

⁴⁾ See page 6: "Multivoltage motors"

Multivoltage motors for pump units (assembly M..)

Many export-oriented companies have to deal with voltages/frequencies that deviate from those in Germany. To make it easier for them to buy the most common pump units for centralized lubrication systems we have developed 3 multirange motors that cover a wide range of three-phase voltages and frequencies.

Pump units with or without oil reservoirs are included, provided the hydraulic power data listed in the leaflets are not exceeded (limit values).

They are the following units:

M2, MF2, MFE2, M5, MF5, MFE5, FLM12-3, FLMF12-3, M202

Limit values for

0.2 l-units (M..2-Group): 27 bars – 2000 mm²/s eff.

0.5 l-units (M..5-Group): 27 bars – 1000 mm²/s eff.

1.2 l-units FLM12-3: 6 bars – 850 mm²/s eff.

2×0.2 l-units M202: 12 bars – 850 mm²/s eff.

Our experience shows they can meet almost every need. That means simplified warehousing for our customers and shorter delivery times, since we always have these 3 types of motors in stock.

Range I

130-130 V / 173-225 V, 50 Hz

120-156 V / 208-270 V, 60 Hz

order code: 199

order code ISO-F: 19E

Range II

207-254 V / 360-440 V, 50 Hz

249-305 V / 432-528 V, 60 Hz

order code: 299

order code ISO-F: 29E

Range III

230-290 V / 398-500 V, 50 Hz

290-346 V / 500-600 V, 60 Hz

order code: 399

order code ISO-F: 39E

A tailor-made motor has to be used instead of a multirange motor in the following cases:

- when the desired operating voltage cannot be covered by one of the three voltage ranges,
- when the operating voltage, with the voltage tolerances to be expected, exceeds a defined voltage benchmark for the range,
- in the case of motors with PTC thermistor sensors,
- for dual-circuit pump unit, e.g. M205
- in the case of motors with UL/CSA version
- for units with a 4-pole motor

Voltage	Order code
230/400 V, 50 Hz	140
230/400 V, 60 Hz	640
240/415 V, 50 Hz	150
240/415 V, 60 Hz	650
255/440 V, 50 Hz	165
255/440 V, 60 Hz	665
265/460 V, 50 Hz	175
265/460 V, 60 Hz	675
265/460 V, 60 Hz, UL	563
265/460 V, 60 Hz, CSA	676
280/480 V, 60 Hz	680
280/480 V, 60 Hz, UL	562
280/480 V, 60 Hz, CSA	681
280/480 V, 60 Hz, UL/CSA	564
115 V, 50 Hz	257
115 V, 60 Hz	757
230 V, 50 Hz	263
230 V, 60 Hz	763
115 V, 50/60 Hz	429
230 V, 50/60 Hz	428

MFE5 gear pump unit
with 3 or 6 liter metal reservoir

Order No.	Flow rate [l/min]	Reservoir capacity [l]	Reservoir material	Order No. without float switch
MFE5-BW3-2	0.5	3	die-cast aluminum	MFE5-B3-2
MFE5-BW7	0.5	6	sheet steel	MFE5-B7

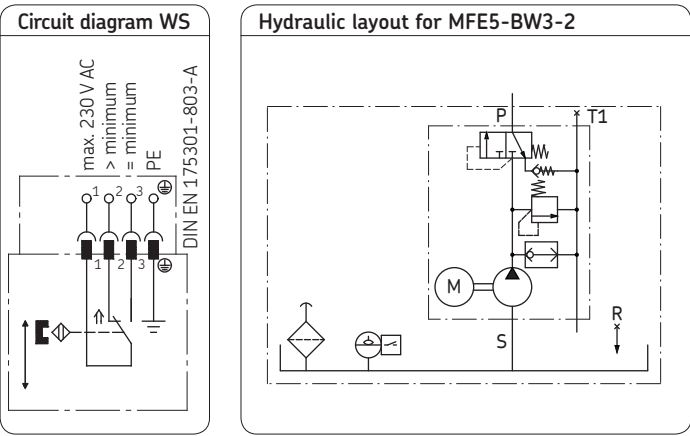
Technical data

Float switch (WS) for monitoring of minimum oil level

Type of contact 1 changeover
Max. switching voltage . . 230 V AC / 230 V DC
Max. switching current . . 1.0 A
Max. switching capacity . . 60 VA / 40 W ⁴⁾
Type of enclosure IP 65
Temperature range -10 °C to +60 °C

⁴⁾ Take appropriate measures to protect contacts
when switching inductive loads.

See page 5 for further technical details.

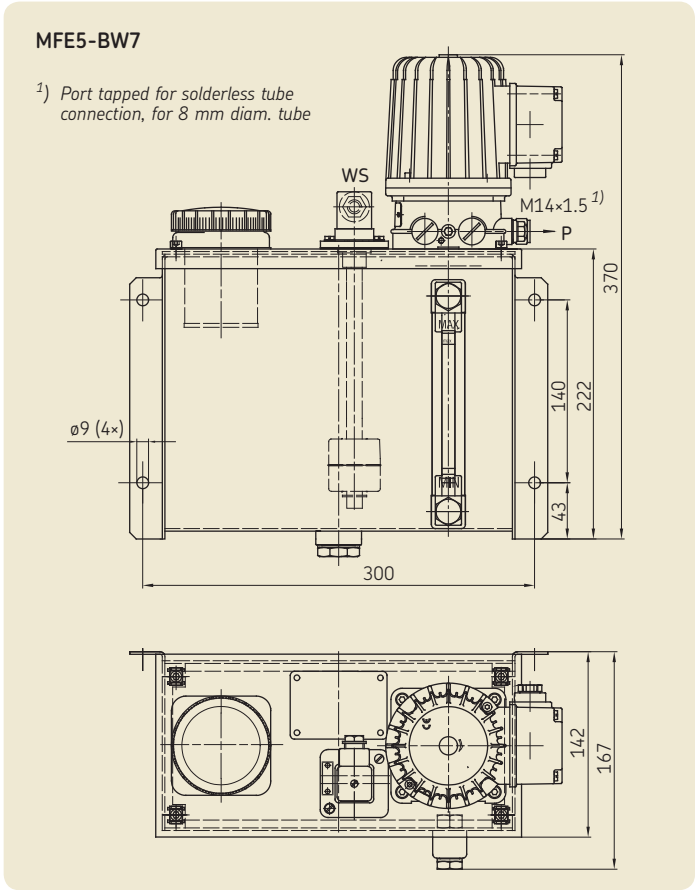
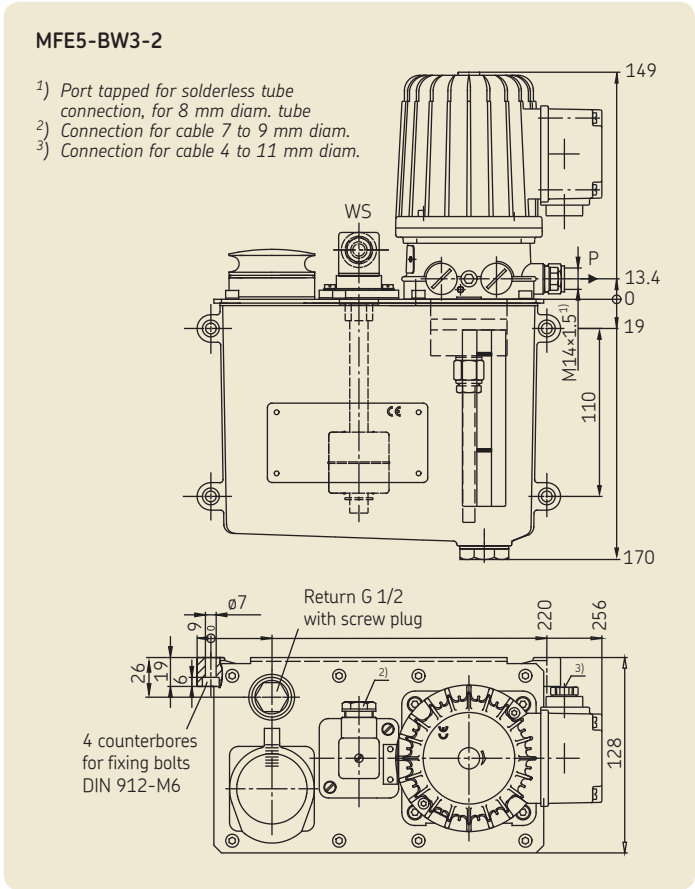


Function – float switch (WS)

When the oil drops to a minimum level, contact 1–2 opens and contact 1–3 closes.

With plug-type connector to DIN EN 175301-803-A

Depicted: full reservoir

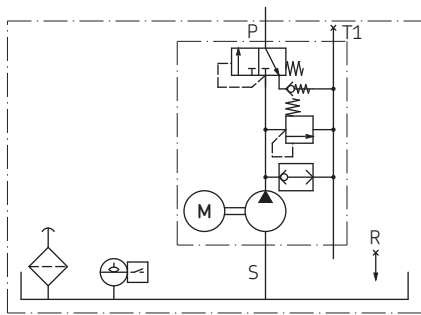


Order No.	Flow rate [l/min]	Reservoir capacity [l]	Reservoir material	Order No. without float switch
MFE5-KW3-2	0.5	3	plastic	MFE5-K3-2
MFE5-KW6	0.5	6	plastic	MFE5-K6

See page 5 for further technical details.

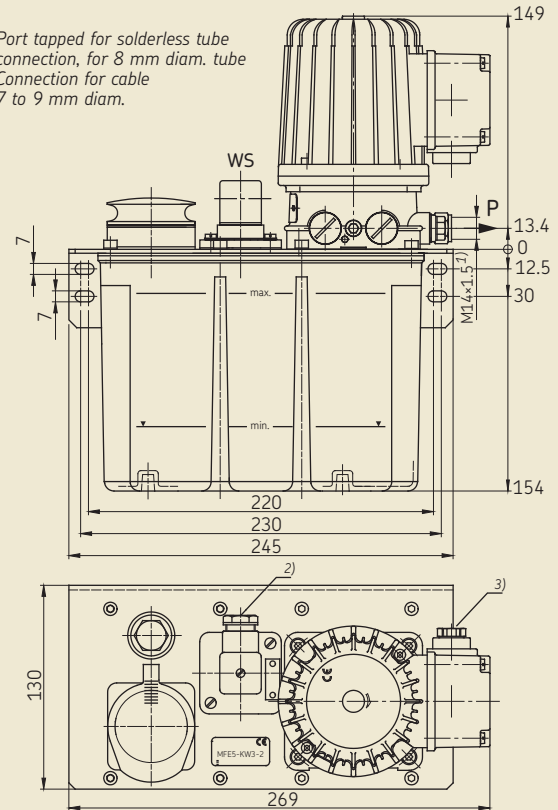
See page 7 for technical data on the float switch.

Hydraulic layout for MFE5-KW3-2



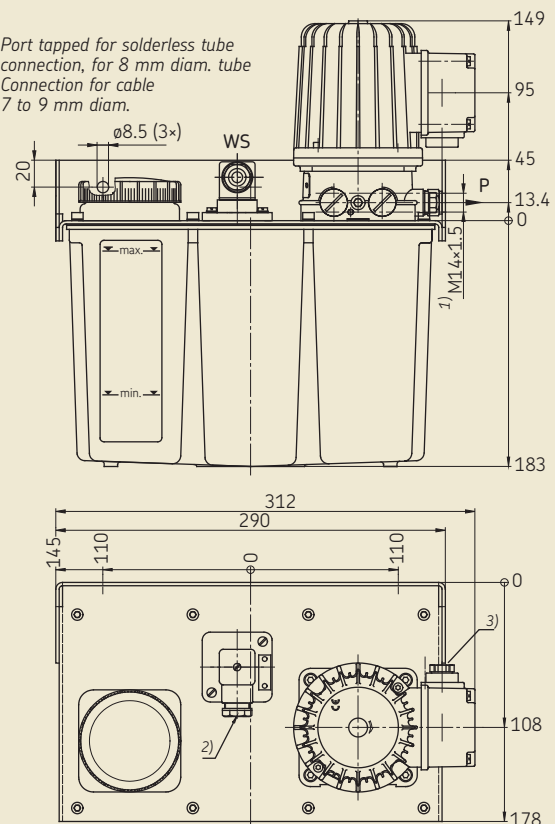
MFE5-KW3-2

- 1) Port tapped for solderless tube connection, for 8 mm diam. tube
- 2) Connection for cable 7 to 9 mm diam.



MFE5-KW6

- 1) Port tapped for solderless tube connection, for 8 mm diam. tube
- 2) Connection for cable 7 to 9 mm diam.



MFE5 gear pump unit
with 15 liter sheet steel reservoir

Order No.	Flow rate [l/min]	Reservoir capacity [l]	Reservoir material	Version
MFE5-BW16	0.5	15	sheet steel	foot-mounted reservoir
MFE5-BW15				wall-mounted reservoir

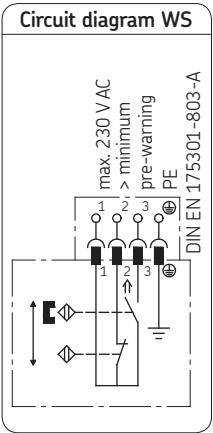
See page 5 for further technical details.

Technical data

Float switch (WS) to monitor the critical level of oil with advance warning about 25 mm before the minimum oil level is reached.

Type of contact 2 change-over contacts (reed contacts)
Max. switching voltage . . 230 V AC / 230 V DC
Max. switching current . . 0.8 A
Max. switching capacity . . 60 VA / 40 W ³⁾
Type of enclosure IP 65
Temperature range -10 °C to +60 °C

³⁾ Take appropriate measures to protect contacts when switching inductive loads.

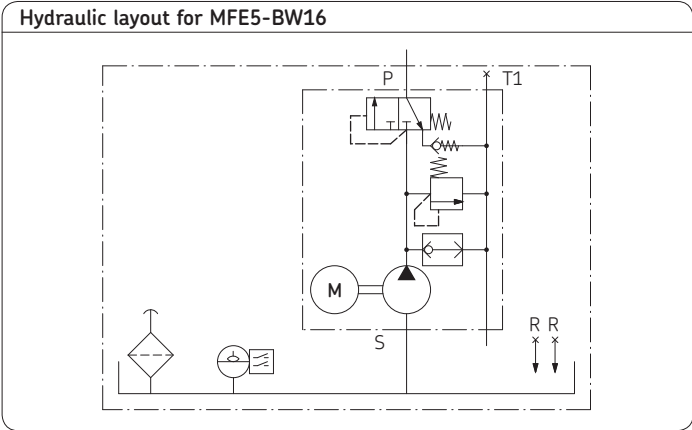


Function – float switch (WS)

About 25 mm before the minimum oil level is reached contact 1–3 closes.
When the minimum oil level is reached contact 1–2 opens in addition.

With plug-type connector to DIN EN 175301-803-A

Depicted: full reservoir



MFE5-BW16

¹⁾ Port P tapped for solderless tube connection, M14×1.5 for 8 mm diam. tube.
²⁾ Connection for cable 7 to 9 mm diam.

Bracket for wall mounting

Order No. 249-032.10

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Order No. 1-1202-EN

Subject to change without notice! (07/2009)

Important product usage information

All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.

Not all lubricants are suitable for use in centralized lubrication systems.

SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbars) by more than 0.5 bar at their maximum permissible temperature.

Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Further brochures

1-9201-EN Transport of Lubricants in Centralized Lubrication Systems

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www.skf.com/lubrication

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