The units in the MKx product series are used in SKF MonoFlex single-line systems and include a pre-installed pressure regulating valve and pressure relief valve.

The units in the MKx product series can be supplied with an optional pressure gauge for visual monitoring of pressure changes in the main line. Electrical pressure monitoring can be carried out by an integrated pressure switch. Fill level monitoring is also possible if required.

The units are controlled externally via the machine control system or via an integrated control unit. Furthermore, units can be supplied with a pushbutton allowing interim lubrication to be activated manually at any time.

All important functions are integrated into the lid. A plastic cap protects the electrical components from environmental influences such as dirt and dust.

The modular structure of the units of the MKx product series makes them attractive to machine manufacturers as well as to end users and dealers.
Important information on product usage

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 (1 013 mbar) 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.

CAD models for products shown in this brochure can be downloaded at: skf-lubrication.partcommunity.com
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Description of the models

Gear pump unit MKU

Units from the MKU product series are suitable for pumping oil with a viscosity range of 20 to 1500 mm²/s.

The units are available in the following reservoir designs:
- 2 liter plastic reservoir
- 3 liter plastic reservoir
- 3 liter metal reservoir
- 6 liter plastic reservoir

The units can be fitted with an optional pressure switch and/or fill level switch. Electrical connections are made using DIN built-in connectors or cable fittings.

Units with reservoir capacity of 3 or 6 liters can be supplied with an optional integrated control unit.

Gear pump unit MKF

Units of the MKF product series are suitable for pumping fluid grease of NLGI Grades 000, 00.

The units are available in the following reservoir designs:
- 2 liter plastic reservoir
- 3 liter plastic reservoir
- 6 liter plastic reservoir

The units can be fitted with an optional pressure switch and/or fill level switch. Electrical connections are made using DIN built-in connectors or cable fittings.

Units with reservoir capacity of 3 or 6 liters can be supplied with an optional integrated control unit.

Gear pump unit MKL

Units from the MKL product series are suitable for pumping oil with a viscosity range of 20 to 1500 mm²/s.

The units are available in the following reservoir designs:
- 3 liter plastic reservoir
- 3 liter metal reservoir
- 6 liter plastic reservoir

The units come fitted with a pressure switch and fill level switch. The signals of these switches are processed by an integrated control unit.

The control unit also provides the option of processing the signals of an external air pressure switch to monitor the oil+air system.

Electrical connections are made using DIN built-in connectors or cable fittings.
SKF MonoFlex system structure

Prelubrication, relubrication, and oil+air distributor system

SKF MonoFlex single-line centralized lubrication systems with single-line distributors generally consist of a lubrication unit, the single-line distributors, and the lubrication lines. The pressure regulating valve and pressure relief valve required for the single-line centralized lubrication system’s operation are integrated into the lubrication unit.

If pressure losses of greater than 10 bar are expected in the single-line centralized lubrication system, for example due to a wide expansion of the system or due to the viscosity of the lubricant (depending on the ambient temperature), a pressure switch should be mounted to monitor the system at the end of the main line, if possible. If such a switch is mounted in this location, there is no need for a pressure switch in the unit. The pressure switch monitors the required pressure build-up during the lubrication cycle.

The lubrication unit run time specified by the control unit or machine control system ensures pressure build-up in the single-line centralized lubrication system. Pressure in the main line must be relieved after the lubrication unit is switched off in order to ensure proper functioning of the single-line distributors. This is performed by the pressure relief valve integrated into the lubrication unit.

See the following illustrations for examples of single-line centralized lubrication systems with prelubrication and relubrication distributors.
SKF MonoFlex gear pump unit

Diagram of the various combination options for the MKU product series

- **Connector types**
  - Rectangular connector as per DIN 175301-803A
  - Circular connector M12×1

- **Cable fittings / plugs**

- **Gear pumps**
  - Delivery rate
    - 0.1 l/min
    - 0.2 l/min
    - 0.5 l/min

- **Control units**

- **Unit with 2 liter plastic reservoir**

- **Unit with 3 liter plastic reservoir**

- **Unit with 3 liter metal reservoir**

- **Unit with 6 liter plastic reservoir**

- **Pressure gauge**

- **Pressure switch**

- **Fill level switch for min. oil level**

- **Terminal strip**

- **Rectangular connector as per DIN 175301-803A**

- **Circular connector M12×1**

- **Cable fittings / plugs**

- **Gear pumps**
  - Delivery rate
    - 0.1 l/min
    - 0.2 l/min
    - 0.5 l/min

- **Control units**

- **Unit with 2 liter plastic reservoir**

- **Unit with 3 liter plastic reservoir**

- **Unit with 3 liter metal reservoir**

- **Unit with 6 liter plastic reservoir**

- **Pressure gauge**

- **Pressure switch**

- **Fill level switch for min. oil level**

- **Terminal strip**
# Gear pump unit, product series MKU

## Configurator

### Order code

<table>
<thead>
<tr>
<th>M</th>
<th>K</th>
<th>U</th>
<th>1</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>+</th>
</tr>
</thead>
</table>

- **Product series MKx**
  - U = oil lubricant

- **Delivery rate**
  - 1 = 0.1 l/min
  - 2 = 0.2 l/min
  - 5 = 0.5 l/min

### Lubricant reservoir, control

<table>
<thead>
<tr>
<th>Control</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = no control, with terminal strip</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B = no control, with terminal strip and pushbutton</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C = IG38-30-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>D = IZ38-30-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>E = IGZ36-20-56-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

1) If control C, D, or E is selected, monitoring C must be selected.
2) If control E is selected, electrical connection 1 must be selected.

For description of control units, see page 16–17.

### Monitoring

<table>
<thead>
<tr>
<th>Fill level switch</th>
<th>X</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fill level switch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NC contact (detection of wire breakage)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NO contact (no detection of wire breakage)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Pressure switch 20 bar

<table>
<thead>
<tr>
<th>Without pressure switch</th>
<th>X</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pressure switch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Electrical connection

<table>
<thead>
<tr>
<th>Control</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = 2 cable fittings</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1 = 1 cable fitting: 1 rectangular connector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2 = 1 circular connector M12×1: 1 rectangular connector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3 = 1 sealing plug: 1 cable fitting</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4 = 1 sealing plug: 1 rectangular connector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Only for design without control.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Frequency</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>924 V DC</td>
<td>-</td>
<td>A, B, E</td>
</tr>
<tr>
<td>428 V AC</td>
<td>50/60 Hz</td>
<td>A, B, C, D, E</td>
</tr>
<tr>
<td>429 V AC</td>
<td>-</td>
<td>A, B, C, D, E</td>
</tr>
</tbody>
</table>

1) Only possible with delivery rates 0.1 and 0.2 l/min

### Order example

MKU1-11AC10000+924

- Gear pump unit for oil
- Delivery rate 0.1 l/min
- 1st generation
- 2 liter plastic reservoir
- No control, with terminal strip
- NC fill level switch
- NO pressure switch
- With pressure gauge
- 2 cable fittings
- Voltage 24 V DC
SKF MonoFlex gear pump unit

Diagram of the various combination options for the MKF product series

- **Connector types**
  - Rectangular connector as per DIN 175301-803A
  - Circular connector M12x1

- **Cable fittings / plugs**

- **Gear pumps**
  - Delivery rate
    - 0.1 l/min
    - 0.2 l/min

- **Control units**

- **Unit with 2 liter plastic reservoir**

- **Unit with 3 liter plastic reservoir**

- **Unit with 6 liter plastic reservoir**

- **Pressure gauge**

- **Pressure switch**

- **Fill level switch for min. fluid grease level**

- **Terminal strip**
# Gear pump unit, product series MKF

## Configurator

### Order code

<table>
<thead>
<tr>
<th>M</th>
<th>K</th>
<th>F</th>
<th>1</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>+</th>
</tr>
</thead>
</table>

**Product series MKx**

F = fluid grease lubricant

### Delivery rate

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 l/min</td>
<td>0.2 l/min</td>
</tr>
</tbody>
</table>

### Lubricant reservoir, control

<table>
<thead>
<tr>
<th>Lubricant reservoir</th>
<th>1</th>
<th>2</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 liters, plastic</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>3 liters, plastic</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>6 liters, plastic</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

#### Control

- **A** = no control, with terminal strip
- **B** = no control, with terminal strip and pushbutton
- **C** = IG38-30-1\(^1\)
- **D** = IZ38-30-1\(^1\)
- **E** = IGZ36-20-56-1\(^{1,2}\)

1. If control C, D, or E is selected, monitoring C must be selected.
2. If control E is selected, electrical connection 1 must be selected.

For description of control units, see page 16–17.

#### Monitoring

<table>
<thead>
<tr>
<th>Fill level switch</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fill level switch</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>NC contact (detection of wire breakage)</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>NO contact (no detection of wire breakage)</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressure switch 20 bar</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without pressure switch</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>NO contact</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

### Voltage key

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Frequency</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>924</td>
<td>24 V DC</td>
<td>A, B, E</td>
</tr>
<tr>
<td>428</td>
<td>230 V AC</td>
<td>A, B, C, D, E</td>
</tr>
<tr>
<td>429</td>
<td>115 V AC</td>
<td>50/60 Hz</td>
</tr>
</tbody>
</table>

### Electrical connection

<table>
<thead>
<tr>
<th>Control</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B, C</td>
<td>X, A, B, C, C</td>
</tr>
</tbody>
</table>

### Electrical connection

- **0** = 2 cable fittings
- **1** = 1 cable fitting; 1 rectangular connector
- **2** = 1 circular connector M12×1; 1 rectangular connector\(^4\)
- **3** = 1 sealing plug; 1 cable fitting
- **4** = 1 sealing plug; 1 rectangular connector

4. Only for design without control.

### Pressure gauge

- **0** = without pressure gauge
- **1** = with pressure gauge

### Order example

MKF1-11AC10000+924

- Gear pump unit for fluid grease
- Delivery rate 0.1 l/min
- 1st generation
- 2 liter plastic reservoir
- No control, with terminal strip
- No fill level switch, NO pressure switch
- With pressure gauge
- 2 cable fittings
- Voltage 24 V DC
SKF MonoFlex gear pump unit

Diagram of the various combination options for the MKL product series

Connector type
- Rectangular connector as per DIN 175301-803A

Cable fittings

Gear pumps
- Delivery rate: 0.1 l/min, 0.2 l/min, 0.5 l/min

Control

Unit with 3 liter plastic reservoir

Unit with 3 liter metal reservoir

Pressure gauge

Pressure switch

Fill level switch for min. oil level

Unit with 6 liter plastic reservoir

Delivery rate
- 0.1 l/min
- 0.2 l/min
- 0.5 l/min
Gear pump unit, product series MKL

Configurator

Order code

| M | K | L | - | F | C | 1 | 0 | 0 | 0 | + |

Product series MKx
L = oil+air

Delivery rate

1 = 0.1 l/min
2 = 0.2 l/min
5 = 0.5 l/min

Lubricant reservoir, control, monitoring, pressure gauge, electrical connection

Lubricant reservoir

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 liters, plastic</td>
<td>3 liters, metal</td>
<td>6 liters, plastic</td>
</tr>
</tbody>
</table>

F = control unit IG54-20-S4-1

C = monitoring with fill level switch (NC contact) and pressure switch 20 bar (NO contact)

Pressure gauge

0 = without pressure gauge
1 = with pressure gauge

Electrical connection

1 = 1 cable fitting; 1 rectangular connector

Voltage key

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC</td>
<td>-</td>
</tr>
<tr>
<td>230 V AC</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>115 V AC</td>
<td></td>
</tr>
</tbody>
</table>

(2) Only possible with delivery rates 0.1 and 0.2 l/min

Bestellbeispiel

MKL2-12FC11000+428

- Gear pump unit for oil+air
- Delivery rate 0.2 l/min
- 1st generation
- 3 liter plastic reservoir
- With control
- NC fill level switch, NO pressure switch
- With pressure gauge
- 1 cable fitting;
  1 rectangular connector
- Voltage 230 V AC

1) For description of the control unit, see page 17.
SKF MonoFlex gear pump unit

Technical Data

Reservoir capacity .................. 2, 3, and 6 liters

**Dry weight**

- Unit with 2 liter plastic reservoir ........ 3.4 kg
- Unit with 3 liter plastic reservoir ........ 4.2 kg
- Unit with 3 liter metal reservoir ........ 5 kg
- Unit with 6 liter plastic reservoir ........ 5.6 kg

**Delivery rate**

MKU, MKL .......................... 0.1; 0.2; 0.5 l/min
MKF ................................... 0.1; 0.2 l/min

**Max. operating pressure .................. 30 bar**

**Operating temperature .................. +10 to 40 °C**

**Protection class per DIN EN 60529 (VDE 0470-1) .................. IP 54**

**Pumped media**

MKU, MKL .......................... Mineral oil or synthetic oil
MKF ................................... Fluid grease NLGI Grade 000 or 00

**Operating viscosity .................. 20 – 1500 mm²/s**

Compatible with plastics, NBR elastomers, copper and copper alloys

**AC motor**

- Rated frequency .................. 50 Hz, 60 Hz
- Rated voltage .................. 115/230 V, 115/230 V
- Rated current .................. 1.06/0.53 A, 1.36/0.68 A
- Rated output .................. 60 W, 75 W

**Duty type as defined by DIN EN 60034-1 VDE 0530-1) .................. S3, 20% (1.25 to 25 min)**

With integrated temperature switch

Recommended fuse protection (line protection) according to DIN EN 60898 .................. B 6A

**DC motor**

- Rated voltage .................. 24 V DC
- Rated current .................. 1.6 A
- Starting current .................. 4 A
- Rated output .................. 39 W

Duty type as defined by DIN EN 60034-1 (VDE 0530) .................. S3, 20% (1.25 to 25 min)

Integrated fuse for motor

Cartridge fuse link (5 x 20 mm)

according to DIN EN 60127-2 (VDE 0820-2) standard sheet 3 .................. T2 A

Recommended fuse protection (line protection) according to DIN EN 60898 .................. B 6A or C 4A

**Fill level switch for oil** (contact opens when level is too low)

Switched voltage range .................. 10 to 36 V DC/10 to 25 V AC
Switching current (resistive load) .................. ≤ 0.25 A
Switching capacity (resistive load) .................. ≤ 3 W/VA

**Fill level switch for fluid grease** (contact opens when level is too low)

Switched voltage range .................. 10 to 36 V DC/10 to 25 V AC
Switching current (resistive load) .................. ≤ 0.25 A
Switching capacity (resistive load) .................. ≤ 3 W/VA

**Fill level switch for oil** (contact closes when level is too low)

Switched voltage range .................. 10 to 36 V DC/10 to 25 V AC
Switching current (resistive load) .................. ≤ 0.25 A
Switching capacity (resistive load) .................. ≤ 3 W/VA

**Fill level switch for fluid grease** (contact opens when level is too low)

Operating voltage range .................. 10 to 36 V DC
Output current (resistive load) .................. ≤ 10 mA (24 V), ≤ 15 mA (36 V)
Power consumption without output load .................. 4 W
Short circuit and polarity reversal protection .................. Yes

**Pressure switch** (NO contact)

- Rated pressure .................. 20 bar
- Switched voltage range .................. 10 to 36 V DC/10 to 25 V AC
- Switching current (resistive load) .................. ≤ 1 A
- Switching capacity (resistive load) .................. ≤ 10 W/VA

**Additional input power on units with control unit**

- IG38-30 / IZ38-30 .................. 4 W
- IG54-20 / IGZ36-20 .................. 8 W

---

1) Based on an operating viscosity of 140 mm²/s (cSt) at a back pressure of p = 5 bar.

2) Mode S3 (periodic intermittent operation) describes the ratio between the pump cycle and the subsequent down time. The following limit values result from a relative ON-time of 20% and a cycle time of 1.25 to 25 min:

   - Min. cycle time: 1.25 min × 0.2 = 0.25 min. Pump cycle with subsequent down time of 1 min.
   - Max. cycle time: 25 min × 0.2 = 5 min. Pump cycle with subsequent down time of 20 min.

3) When switching inductive loads, take suitable measures to protect the contacts.

4) Minimum short-circuit current of 6A must be ensured.
SKF MonoFlex gear pump unit

Product series MKx

**MKx unit with 2 liter plastic reservoir for oil and fluid grease**

![MKx unit with 2 liter plastic reservoir](image1)

**Minimum mounting dimensions (2 liter reservoir)**

<table>
<thead>
<tr>
<th>A</th>
<th>width</th>
<th>350 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>height</td>
<td>380 mm</td>
</tr>
<tr>
<td>C</td>
<td>depth</td>
<td>140 mm</td>
</tr>
</tbody>
</table>

**Recommended fastening hardware**

- Hexagon head bolts (2x) acc. to ISO 4017-M8x25-8.8
- Washers (4x) acc. to ISO 7090-8-200-HV
- Hexagon nuts (2x) acc. to ISO 4032-M8-8

**Tightening torque** 25 Nm

**MKx unit with 3 liter plastic reservoir for oil, fluid grease, and oil+air**

![MKx unit with 3 liter plastic reservoir](image2)

**Minimum mounting dimensions (3 liter reservoir)**

<table>
<thead>
<tr>
<th>A</th>
<th>width</th>
<th>390 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>height</td>
<td>400 mm</td>
</tr>
<tr>
<td>C</td>
<td>depth</td>
<td>140 mm</td>
</tr>
</tbody>
</table>

**Recommended fastening hardware**

- Hexagon head bolts (2x) acc. to ISO 4017-M6x25-8.8
- Washers (4x) acc. to ISO 7090-6-200-HV
- Hexagon nuts (2x) acc. to ISO 4032-M6-8

**Tightening torque** 10 Nm

---

*Figures 1 and 2 provided for visual reference.*
SKF MonoFlex gear pump unit

Product series MKx

**Fig. 3**
MKx unit with 3 liter metal reservoir for oil and oil+air

**Fig. 4**
MKx unit with 6 liter plastic reservoir for oil and fluid grease

**Minimum mounting dimensions (3 liter reservoir)**
- A = width 390 mm
- B = height 400 mm
- C = depth 140 mm

**Recommended fastening hardware**
- Hexagon head bolts (2x) acc. to ISO 4017-M6x25-8.8
- Washers (4x) acc. to ISO 7090-6-200-HV
- Hexagon nuts (2x) acc. to ISO 4032-M6-8

Tightening torque 25 Nm

**Minimum mounting dimensions (6 liter reservoir)**
- A = width 390 mm
- B = height 440 mm
- C = depth 190 mm

**Recommended fastening hardware**
- Hexagon head bolts (2x) acc. to ISO 4017-M8x25-8.8
- Washers (4x) acc. to ISO 7090-8-200-HV
- Hexagon nuts (2x) acc. to ISO 4032-M8-8

Tightening torque 25 Nm
## SKF MonoFlex gear pump unit

### Example hydraulic layout of product series MKU

<table>
<thead>
<tr>
<th>Hydraulic layout 4</th>
<th>Hydraulic layout 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKU unit without pressure gauge, without fill level switch and pressure switch, no control (MKUx-1xAX000+xxx)</td>
<td>MKU unit with pressure gauge, with fill level switch and pressure switch, control E (MKUx-1xEC1x000+xxx)</td>
</tr>
</tbody>
</table>

### Example hydraulic layout of product series MKF

<table>
<thead>
<tr>
<th>Hydraulic layout 6</th>
<th>Hydraulic layout 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKF unit without pressure gauge, without fill level switch and pressure switch, no control (MKFx-1xAX000+xxx)</td>
<td>MKF unit with pressure gauge, with fill level switch and pressure switch, control C (MKFx-1xEC1x000+xxx)</td>
</tr>
</tbody>
</table>

### Example hydraulic layout of product series MKL

<table>
<thead>
<tr>
<th>Hydraulic layout 8</th>
<th>Hydraulic layout 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKL unit without pressure gauge, with fill level switch and pressure switch, control F (MKLx-1xF01000+xxx)</td>
<td>MKL unit with pressure gauge, with fill level switch and pressure switch, control F (MKLx-1xFC11000+xxx)</td>
</tr>
</tbody>
</table>
Electrical connection / control

Types A + B with and without monitoring

The pump units of types A + B come equipped with a pressure switch and/or fill level switch, as desired.

The pump units are controlled by the machine control system, which also processes the signals from the monitoring functions (for pressure build-up and lubricant fill level). Electrical connections are made using DIN built-in connectors or cable fittings.

If cable fittings are used, the power cables are connected directly to the terminal strip located under the cover cap, as shown on the applicable terminal diagram.

Key to wiring diagrams 1–7

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>pump motor</td>
</tr>
<tr>
<td>C</td>
<td>capacitor</td>
</tr>
<tr>
<td>L1/S/N</td>
<td>connection for operating voltage</td>
</tr>
<tr>
<td>PE</td>
<td>protective earth connection</td>
</tr>
<tr>
<td>WS</td>
<td>lubricant level switch</td>
</tr>
<tr>
<td>D5</td>
<td>pressure switch</td>
</tr>
<tr>
<td>DK</td>
<td>pressure switch for interim lubrication</td>
</tr>
<tr>
<td>SL</td>
<td>indicator lamp (green) “Operation”</td>
</tr>
<tr>
<td>SL1</td>
<td>indicator lamp (green) “Operation”</td>
</tr>
<tr>
<td>SL2</td>
<td>indicator lamp (red) “Fault”</td>
</tr>
<tr>
<td>XS1</td>
<td>plug connector as per DIN EN 175301-803 A</td>
</tr>
<tr>
<td>XS2</td>
<td>plug connector M12×1</td>
</tr>
<tr>
<td>X1</td>
<td>terminal strip</td>
</tr>
<tr>
<td>MK</td>
<td>machine contact</td>
</tr>
<tr>
<td>DL</td>
<td>compressed-air circuit-breaker</td>
</tr>
<tr>
<td>Y1</td>
<td>compressed air valve</td>
</tr>
</tbody>
</table>

Example: MKU1.. no control, with pushbutton DK, 2 plug connectors, fill level switch opens at min.

1) Optional
2) Optional, contact closes at min. fill level

Example: MKU1.. no control, 2 cable fittings, fill level switch opens at min.

1) Optional
2) Optional, contact closes at min. fill level

Example: MKF2.. no control, with pushbutton DK, 2 plug connectors, fill level switch opens at min.

1) Optional
2) Optional, contact closes at min. fill level

Example: MKU2.. no control, with pushbutton DK, 2 cable fittings, fill level switch opens at min.

1) Optional
2) Optional, contact closes at min. fill level

Wiring diagram 1

Wiring diagram 2

Wiring diagram 3

Wiring diagram 4
Electrical connection / control

Types C + D with control unit IG/IZ38-30-I

Description
For control of intermittently operated single-line centralized lubrication systems, the compact pump units with 3 or 6 liter reservoirs can be fitted with an electronic control unit.

Either:
- IG38-30-I, timer operation for time-dependent control¹)
- IZ38-30-I, counter operation for load-dependent control²)

Functions
- Adjustable interval duration
- Non-adjustable pump dwell time
- Non-adjustable pressure build-up monitoring time
- Pump run time limitation
- Prelubrication (lubrication when the supply voltage is switched on)
- Fill level monitoring with detection of wire breakage (WS switch contact opens when level is too low)
- Operation with 3-wire proximity switch possible

Preset parameters

IG38-30-I
- Interval time 1 minute (for time-dependent control)
- Monitoring time 60 seconds
- Pump dwell time 15 seconds

IZ38-30-I
- Interval time 1 pulse (for load-dependent control)
- Monitoring time 60 seconds
- Pump dwell time 15 seconds

Lubrication interval duration
¹) In minutes
²) In number of pulses of the external machine contact MK

Wiring diagram 5
Electrical connection / control

Type E with control unit IGZ36-20-S6-I

Modes of operation
The control unit IGZ36-20-S6-I can be utilized as a pulse generator\(^1\) or pulse counter\(^2\).

Functions
- Adjustable interval duration
- Adjustable pump dwell time
- Adjustable pressure build-up monitoring time
- Pump run time limitation
- Prelubrication (lubrication when the supply voltage is switched on)
- Fill level monitoring with detection of wire breakage (WS switch contact opens when level is too low)
- Operation with 3-wire proximity switch possible

Preset parameters
- Mode of operation B (time-dependent control)
- Interval time 10 minutes
- Monitoring time 60 seconds
- Pump dwell time 15 seconds

Lubrication interval duration
\(^1\) In minutes
\(^2\) In number of pulses of the external machine contact MK

---

Wiring diagram 6

Terminal diagram IGZ36-20-S6-I

1) Machine contact MK only required with counter operation (mode of operation D).
2) Control unit can be set to either 230 V AC or 115 V AC. The pump motor’s voltage setting cannot be changed.

X1: 16 malfunction
X1: 14 normal operation
Electrical connection / control

Type F with control unit IG54-20-S4-I

Modes of operation
The control unit IG54-20-S4 can only be utilized as a pulse generator 1).

Functions
- Adjustable interval time
- Adjustable number of prelubrication cycles
- Adjustable pump dwell time
- Non-adjustable monitoring time for oil pressure build-up
- Pump run time limitation
- Compressed air monitoring
- Non-volatile memory (EEPROM) for operation without prelubrication cycles
- Fill level monitoring (NC contact)
- Additional output d3 for compressed-air valve Y1

Preset parameters
- Mode of operation B (time-dependent control)
- Interval time 10 minutes
- Monitoring time 60 seconds
- Pump dwell time 5 seconds
- Number of prelubrication cycles 10

Lubrication interval duration
1) In minutes
2) In number of pulses of the external machine contact MK

Fig. 7

Fig. 7: Wiring diagram 7

Terminal diagram IG54-20-S4-I

1) Can be connected by the customer: compressed air switch DL / compressed air valve Y1.
2) Control unit can be set to either 380V AC or 230 V AC. The pump motor’s voltage setting cannot be changed.
**Accessories**

**Filling device**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Filling device, complete with banjo fitting (Fig. 8)</td>
<td>995-000-800</td>
</tr>
<tr>
<td>2</td>
<td>Coupling socket (for topping-up connection)</td>
<td>995-001-500</td>
</tr>
<tr>
<td>3</td>
<td>Sealing ring</td>
<td>DIN 7603-A14x18-CU</td>
</tr>
<tr>
<td>4</td>
<td>Hose socket for connection to coupling socket d ø13</td>
<td>857-760-007</td>
</tr>
<tr>
<td></td>
<td>d ø16</td>
<td>857-870-002</td>
</tr>
</tbody>
</table>

**Fig. 8**

Filling device complete with banjo fitting

**Fig. 9**

Filling device with quick-action coupling

**Main line connections**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sealing ring</td>
<td>508-108</td>
</tr>
<tr>
<td>2</td>
<td>Adapter</td>
<td>406-054</td>
</tr>
<tr>
<td>3</td>
<td>Reinforcing socket</td>
<td>406-603</td>
</tr>
<tr>
<td>4</td>
<td>Socket union</td>
<td>406-612</td>
</tr>
<tr>
<td>5</td>
<td>Tapered sleeve</td>
<td>406-611</td>
</tr>
<tr>
<td>6</td>
<td>Socket union</td>
<td>406-002</td>
</tr>
<tr>
<td>7</td>
<td>Double tapered ring</td>
<td>406-001</td>
</tr>
<tr>
<td>8</td>
<td>Plug connector, straight</td>
<td>406-054-VS</td>
</tr>
<tr>
<td>9</td>
<td>Plug connector, pivoted</td>
<td>506-143-VS</td>
</tr>
</tbody>
</table>

**Fig. 10**

Main line connections for pipe ø6

See also brochure fittings and accessories 1-0103-EN
Accessories

Electrical plug-in connections

Topping-up pump for fluid grease
Only original spare parts from SKF Lubrication Systems Germany GmbH may be used. Unauthorized alterations to products and the use of non-original spare parts and accessories are not permitted.

Dismantling of the product or individual parts within the statutory warranty period is not permitted and voids any claims.

Repair work must be performed only by the Service department of SKF Lubrication Systems Germany GmbH. For inquiries concerning assembly or maintenance, contact SKF Lubrication Systems Germany GmbH or an authorized SKF dealer or Service Partner.
<table>
<thead>
<tr>
<th>Item</th>
<th>Units</th>
<th>Material number</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>996-000-947</td>
<td>Pressure regulating valve 32 bar</td>
<td>For oil</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>996-002-197</td>
<td>Pressure regulating valve 30 bar</td>
<td>For fluid grease</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>MKF.U012</td>
<td>Pressure relief, compl., for fluid grease</td>
<td>For fluid grease</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MU.K012</td>
<td>Pressure relief, compl., for oil</td>
<td>For oil</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>MKF.U013</td>
<td>Pressure gauge for fluid grease</td>
<td>For fluid grease (without throttle)</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>MKU.U013</td>
<td>Pressure gauge for oil</td>
<td>For oil (with throttle)</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>MKF..U5+924</td>
<td>Motor with shaft 24 V DC for 2 and 3 liter fluid grease units</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKF2.U1+XXX</td>
<td>Motor with shaft for 2 and 3 liter fluid grease units</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKF2.U2+XXX</td>
<td>Motor with shaft for 6 liter fluid grease units</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU1.U5+924</td>
<td>Motor with shaft 24 V DC for 2 and 3 liter oil units</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU2.U2+XXX</td>
<td>Motor with shaft for 2 and 3 liter oil units</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU2.U3+XXX</td>
<td>Motor with shaft for 6 liter oil units</td>
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</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU2.U5+924</td>
<td>Motor with shaft 24 V DC for 6 liter oil units</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>WVN501-32.2x3</td>
<td>O-ring Seal between motor and lid</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>911-204-122</td>
<td>Cheese-head screw</td>
<td>Motor fastening</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>WVN501-5.28x1.78</td>
<td>O-ring</td>
<td>Seal between pump and flange pipe</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>ZP110-2</td>
<td>Gear pump</td>
<td>Delivery rate 0.1 l/min.</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>ZP120-2</td>
<td>Gear pump</td>
<td>Delivery rate 0.2 l/min.; 0.1 l/min. at 24 V DC</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>ZP150-2</td>
<td>Gear pump</td>
<td>Delivery rate 0.5 l/min.; 0.2 l/min. at 24 V DC</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>834-240-018</td>
<td>Screw M3×25 Tx10</td>
<td>Fastening for ZP110-2 and ZP120-2</td>
</tr>
<tr>
<td>2</td>
<td>834-250-034</td>
<td>Screw M3×30</td>
<td>Fastening for ZP150-2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>179-340-090</td>
<td>Capacitor 4 UF/450 V</td>
<td>Capacitor for 230 V AC (+428)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>179-340-091</td>
<td>Capacitor 16 UF/220 V</td>
<td>Capacitor for 115 V AC (+429)</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>176-112-020</td>
<td>Pressure switch 20 bar</td>
<td>NO-contact function</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>WVN501-10.5x1.5</td>
<td>O-ring</td>
<td>Seal for pressure switch</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>MKF.U016</td>
<td>Level switch, compl.</td>
<td>For fluid grease in 2 and 3 liter units (NC contact)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKF.U116</td>
<td>Level switch, compl.</td>
<td>For fluid grease in 6 liter units (NC contact)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU.U015</td>
<td>Fill level switch, compl.</td>
<td>For oil in 2 and 3 liter units (NO contact)</td>
</tr>
<tr>
<td>1</td>
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<td>MKU.U115</td>
<td>Fill level switch, compl.</td>
<td>For oil in 2 and 3 liter units (NC contact)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU.U116</td>
<td>Fill level switch, compl.</td>
<td>For oil in 6 liter units (NO contact)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU.U116</td>
<td>Fill level switch, compl.</td>
<td>For oil in 6 liter units (NC contact)</td>
</tr>
<tr>
<td>14</td>
<td>4</td>
<td>911-205-161</td>
<td>Cheese-head screw</td>
<td>Reservoir fastening for 2 liter</td>
</tr>
<tr>
<td>6</td>
<td>911-205-181</td>
<td>Cheese-head screw Z1</td>
<td>Reservoir fastening for 3 and 6 liter</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>993-000-169</td>
<td>Reservoir, compl.</td>
<td>2 liter plastic reservoir with seal</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>B3.U180</td>
<td>Reservoir, 3 liter</td>
<td>3 liter metal reservoir with seal</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>BK3.U147</td>
<td>Reservoir, 3 liter</td>
<td>3 liter plastic reservoir with seal</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>BK6.U180</td>
<td>Reservoir, 6 liter</td>
<td>6 liter plastic reservoir with seal</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>898-660-056</td>
<td>Cap</td>
<td>Cap for 2 liter unit</td>
</tr>
<tr>
<td>1</td>
<td>898-660-052</td>
<td>Cap</td>
<td>Cap for 3 and 6 liter units</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>MKU.U009</td>
<td>Filler socket compl.</td>
<td>for oil (with strainer)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKU.U019</td>
<td>Filler socket compl.</td>
<td>for oil (with strainer), 3 liter lid</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKF.U009</td>
<td>Filler socket compl.</td>
<td>for fluid grease (without strainer)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>MKF.U019</td>
<td>Filler socket compl.</td>
<td>for fluid grease (without strainer), 3 liter lid</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>IG38-30-I+XXX</td>
<td>Control unit</td>
<td>For time-dependent control (for 3 and 6 liter units only)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>IZ38-30-I+XXX</td>
<td>Control unit</td>
<td>For load-dependent control (for 3 and 6 liter units only)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>IGZ36-20-56-I+XXX</td>
<td>Control unit</td>
<td>Pulse generator/pulse counter (for 3 and 6 liter units only)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>IG54-20-S4-I+XXX</td>
<td>Control unit</td>
<td>Pulse generator (for MKL units only)</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>179-990-033</td>
<td>Cable socket</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>179-990-206</td>
<td>Fuse</td>
<td>for 24 V DC units</td>
</tr>
</tbody>
</table>

1) Not shown
2) Add the voltage key to the part number when ordering. 230 V AC (+428); 115 V AC (+429)
3) Add the voltage key to the part number when ordering. 230/115 V AC (+471); 24 V DC (+472)
The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF’s global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

Important information on product usage

SKF and Lincoln 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 (1 013 mbar) by more than 0.5 bar at their maximum permissible temperature.

Additional brochures:

1-0103-EN Fittings and Accessories
1-1700-3-EN Control Units for Oil+Air Lubrication
1-1700-4-EN Control Units for Single-Line Systems
1-1730-EN Electrical Plug-In Connections
1-9201-EN Transport of Lubricants in Centralized Lubrication Systems
951-170-223-EN Assembly instructions product series MKx

This brochure was presented to you by:

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This brochure replaces brochure 1-0016-EN