The SKF MultiFlex multi-line pump is a positive-displacement pump with multiple utilizable outlets. The displacement is continuously variable.

Special characteristics
The SKF MultiFlex multi-line pump is constructed as a radial piston pump in a modular design. Up to five pump elements, each with one, two, or four outlets, can be “combined” so that the number of outlets can be adapted to current requirements in the best possible way.

This simple stacking design also allows for subsequent expansion or reduction of the number of pump outlets.

The displacement of a pump element’s outlets is continuously variable (stepless adjustment) from outside.

Continuous variability and an extended speed range result in an extremely broad spectrum of delivery rates. This makes the pump highly attractive as a feed pump in circulating lubrication systems with low circulation rates (up to 30 cm$^3$/min per outlet) or as a multi-circuit pump to supply multiple independent lubrication zones.

The pump can be driven in either direction of rotation as desired.

Its operating pressure is max. 63 bar, with up to 100 bar for short periods.

The design of the RA/RAB multi-line pump permits it to pump both mineral-based and synthetic-based oils and greases.
Contents

Special characteristics ........................................ 1
Mode of operation ............................................ 3
Design ................................................................... 3
Displacement ........................................................ 4

MultiFlex designs
  Rotary drive, coaxial ........................................... 5
  Rotary drive with coaxial gear ............................. 6
  Rotary drive with bevel gear ............................... 7
  Electric motor drive, coaxial ............................... 8
  Electric motor drive with coaxial gear .................. 9
  Electric motor drive with bevel gear .................... 10
  Rotary drive with bevel gear and reservoir ............ 11
  Electric motor drive with coaxial gear and reservoir 12
  Electric motor drive with bevel gear and reservoir 14
  Electric motor drive with 3, 7, or 15 liter reservoir 16

Fill level switch ...................................................... 18

Accessories ............................................................ 19

Spare parts ............................................................ 20
Design
In its basic design, the SKF MultiFlex multi-line pump is comprised of a drive, spacer ring with lubricant inlet, at least one pump element, and a cap.

The pump element shown in Figure 1 in its pressure phase is comprised of the pump ring (1), the pump shaft (2) with the two radial pump pistons (3), and the track ring with elliptical inner contour (4) which is permanently joined to the adjusting plate (5). The pump ring (1) houses the suction grooves and the pressure bores. The pump shaft, which also acts as the drive shaft for the next pump element via the embedded coupling, is designed as a rotary valve. The two pump pistons are pressed against the inner side of the track ring by the spring (6).

Mode of operation

Suction phase
As the pump shaft turns, the two pump pistons move apart due to the spring loading, until the outer dead center (following a track ring) is reached. Until the outer dead center is reached, the control bore in the pump shaft connects the space between the two pump pistons with a lubricant inlet in the spacer ring.

Pressure phase
Due to the elliptically shaped track ring, the pump pistons move together against the spring force as the pump shaft continues to turn, until the inner dead center is reached. Until this reached, the control bore (7) in the pump shaft connects the space between the two pump pistons with a lubricant outlet in the pump ring.

The displacement can be varied continuously (steplessly) with the adjusting plate using the phase control method, meaning that the track ring position is changed relative to the position of the control bore in the pump shaft. The stroke of the two pistons remains the same in every phase variation; it is fully effective or only partially effective, depending on the setting. This means that a part of the stroke volume is fed back in the outlet bolt, which reduces the effective displacement.

CAUTION
The important information on product usage located on the back cover applies to all systems described in this brochure.
Displacement

The displacement of the RA multi-line pump series for oils and greases (reference viscosity 140 mm$^2$/s) as a function of drive speed and step-down ratio is shown in Diagram 1.

Diagram 2 illustrates the achievable continuous operating pressure as a function of operating viscosity and piston stroke rate.

\[
\text{Piston stroke rate } z = \frac{\text{Drive speed } [\eta]}{\text{Step-down ratio } [l]}
\]

The maximum achievable operating pressure varies according to the operating viscosity of the lubricating medium and the given piston stroke rate.

Restrictions apply to the permitted operating viscosity at piston stroke rates > 50 rpm.

The individual pump elements can be set to no less than $\frac{1}{3}$ capacity.

Setting $0 = \frac{1}{3}$ capacity
Rotary drive, coaxial

Technical data

**General**
- Mounting position: Any
- Ambient temperature: –15 to +80°C

**Pump**
- Type: Radial piston pump
- Operating pressure: 63 bar\(^1\)
- Short-term pressure: 100 bar
- Number of combinable pump elements: Max. 5
- Outlets per pump element: 1, 2 or 4
- Displacement variability per pump element: Continuously variable
- Displacement per outlet and revolution of the pump shaft: Max. 0.02 cm\(^3\)
- Drive speed: 10 to 1500 rpm
- Direction of rotation: Clockwise or counterclockwise\(^2\)

**Lubricant**
- Mineral oils\(^3\)
- Temperature range: –15 to +80°C
- Operating viscosity: 25 to 2500 mm\(^2\)/s
- Suction height: 500 mm
- Intake tube inside diameter: \(\geq 4\) mm

**Weight with pump element**
- 1: 2.74 kg
- 2: 1.59 kg
- 3: 1.97 kg
- 4: 2.36 kg
- 5: 2.74 kg

Explanation or order codes

**Type**
- Radial piston pump RA

**Drive**
- 1UA = rotary, coaxial

**Step-down ratio**
- 00 = 1:1

**Number of outlet ports per pump element**
- \(1 = 1\) outlet
- \(2 = 2\) outlets
- \(4 = 4\) outlets
- 1 to 5 pump elements (counted from drive)

**Direction of rotation**
- \(R\) = Standard: clockwise
- \(L\) = counterclockwise

**Design key**
- 0001

Order example

SKF MultiFlex multi-line pump consisting of a radial piston pump (RA), rotary drive, coaxial (1UA), step-down ratio 1:1 (00), with 4 pump elements, with a total of 11 outlets, consisting of:
- pump element 1 with 4 outlets,
- pump element 2 with 4 outlets,
- pump element 3 with 2 outlets and
- pump element 4 with 1 outlet (4421),
direction of rotation clockwise (R) and design key (0001).

Order No. RA 1UA 00 / 4421 R 0001

---

\(^1\) Max. operating pressure – see page 4, diagram 2.
\(^2\) Standard: clockwise.
\(^3\) For synthetic lubricants on request.
Rotary drive with coaxial gear

Fig. 3

Technical data

General
Mounting position . . . . . . . . . . . . . . . . . . . . . . Any
Ambient temperature . . . . . . . . . . . . . . . . . . . –15 to +80°C

Pump
Type . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . Radial piston pump
Operating pressure . . . . . . . . . . . . . . . . . . . . 63 bar
Short-term pressure 1) . . . . . . . . . . . . . . . . . . . 100 bar
Number of combinable pump elements . . . . . . . . . Max. 5
Outlets per pump element . . . . . . . . . . . . . . . 1, 2 or 4
Displacement variability per pump element . . . . . . . Continuously variable
Displacement per outlet and revolution of the pump shaft . . Max. 0.02 cm³
Drive speed . . . . . . . . . . . . . . . . . . . . . . . . . . . Up to 3600 rpm
Direction of rotation . . . . . . . . . . . . . . . . . . . . . Clockwise or counterclockwise 2)

Lubricant
Mineral oils 3)
Temperature range . . . . . . . . . . . . . . . . . . . . –15 to +80°C
Operating viscosity . . . . . . . . . . . . . . . . . . . . 25 to 2500 mm²/s
Suction height . . . . . . . . . . . . . . . . . . . . . . . . 500 mm
Intake tube inside diameter ≥ 4 mm

Gearbox
Step-down ratio . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 5:1, 15:1, 25:1, 75:1, 125:1

Weight with pump element
1 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2.24 kg 1)
2 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 2.63 kg 1)
3 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3.01 kg 3)
4 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3.40 kg 3)
5 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 3.78 kg 3)

Explanation of order codes

Type
Radial piston pump RA

Drive
2UB = rotary with coaxial gear

Step-down ratio
5:1 = 15:1 = 25:1 = 75:1 = 125:1

Number of outlet ports per pump element
1 = 1 outlet 2 = 2 outlets 4 = 4 outlets
1 to 5 pump elements (counted from drive)

Cap prelubrication
D = with cap prelubrication
(direction of rotation can only be set to clockwise)
/ = without cap prelubrication

Direction of rotation
R = Standard: clockwise
L = counterclockwise

Design key
0001

Order example

SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), rotary drive with coaxial gear (2UB), step-down ratio 15:1 (15), with 3 pump elements, with a total of 10 outlets, consisting of:
- pump element No. 1 with 4 outlets,
- pump element No. 2 with 4 outlets
- pump element No. 3 with 2 outlets (442)
cap prelubrication (D), direction of rotation clockwise (R)

Order No. RA 2UB 15 / 442 D R 0001

Note
For accessories and spare parts – see pages 19–20.

1) Max. operating pressure – see page 4, diagram 2.
2) For synthetic lubricants on request.
3) Weight is increased by 100 g with cap prelubrication.

1 Hand crank is included in scope of delivery and comes with the pump on delivery.
Rotary drive with bevel gear

Technical data

General
Mounting position ........................................ Any
Ambient temperature .................................... –15 to +80 °C

Pump
Type ......................................................... Radial piston pump
Operating pressure ................................. 63 bar\(^1\)
Short-term pressure .................................. 100 bar\(^1\)
Number of combinable
pump elements ......................................... Max. 5
Outlets per pump element ...................... 1, 2 or 4
Displacement variability per
pump element ........................................ Continuously variable
Displacement per outlet and
revolution of the pump shaft .................. Max. 0.02 cm\(^3\)
Drive speed ........................................... 10 to 1800 rpm
Direction of rotation \(\ldots\) Clockwise or \(\ldots\) counterclockwise\(^2\)
Lubricant .................................................. Mineral oils\(^3\)
Operating viscosity ................................. 25 to 2500 mm\(^2\)/s
Suction height ......................................... 500 mm
Intake tube inside diameter ..................... \(\geq\) 4 mm

Gearbox
Drive position ........................................ A or B

Weight with pump element
1 ........................................ 1.69 kg
2 ........................................ 2.07 kg
3 ........................................ 2.46 kg
4 ........................................ 2.84 kg
5 ........................................ 3.23 kg

\(^1\) Max. operating pressure – see page 4, diagram 2.
\(^2\) Standard: clockwise.
\(^3\) Synthetic lubricants can be provided on request.

Explanation of order codes

RA 3UA 01 A 42441 R 0001

Type
Radial piston pump RA

Drive
3UA = rotary with bevel gear

Step-down ratio
01 = 10.5:1

Drive position
A or B

Number of outlet ports per pump element
1 = 1 outlet 2 = 2 outlets 4 = 4 outlets
1 to 5 pump elements (counted from drive)

Direction of rotation
R = Standard: clockwise
L = counterclockwise

Design key
0001

Order example
SKF MultiFlex multi-line pump, consisting of a
radial piston pump (RA), rotary drive with bevel gear (3UA),
step-down ratio 10.5:1 (01), drive position A (A),
with 5 pump elements, with a total of 15 outlets, consisting of:
pump element 1 with 4 outlets,
pump element 2 with 2 outlets,
pump element 3 with 4 outlets,
pump element 4 with 4 outlets and
pump element 5 with 1 outlet (42441),
direction of rotation clockwise (R) and design key (0001).

Order No. RA 3UA 01 A 42441 R 0001

Note
For accessories and spare parts – see pages 19–20.
Electric motor drive, coaxial

Technical data

**General**
- Mounting position: Any
- Ambient temperature: –15 to +80°C

**Pump**
- **Type**: Radial piston pump
- **Operating pressure**: 63 bar\(^1\)
- **Short-term pressure**: 100 bar
- **Number of combinable pump elements**: Max. 5
- **Outlets per pump element**: 1, 2 or 4
- **Displacement variability per pump element**: Continuously variable
- **Displacement per outlet and motor speed of 1360 rpm**: Approx. 27.2 cm\(^3\)/min
- **Lubricant**: Mineral oils\(^2\)
- **Temperature range**: –15 to +80°C
- **Operating viscosity**: 25 to 2500 mm\(^2\)/s
- **Suction height**: 500 mm
- **Intake tube inside diameter**: \(\geq 4\) mm

**Motor**
- **Type/size**: IM B34/63 C 90
- **Type of voltage**: 3-phase AC voltage
- **Weight**: 5.2 kg
- **Weight with pump element**:
  - 1: 7.05 kg
  - 2: 7.44 kg
  - 3: 7.82 kg
  - 4: 8.21 kg
  - 5: 8.59 kg

\(^1\) Max. operating pressure – see page 4, diagram 2.
\(^2\) Synthetic lubricants can be provided on request.

---

**Table 1**

<table>
<thead>
<tr>
<th>Rated speed (rpm)</th>
<th>Frequency (Hz)</th>
<th>Rated output (kW)</th>
<th>Rated voltage (V)</th>
<th>Rated current (A)</th>
<th>Order code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>230/400</td>
<td>1.13/0.65</td>
<td>AF</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>290/500</td>
<td>0.90/0.52</td>
<td>AK</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>400/690</td>
<td>0.65/0.38</td>
<td>AO</td>
</tr>
</tbody>
</table>

**Order example**

SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), electric motor drive, coaxial (1M), step-down ratio 1:1 (00), with 5 pump elements, with a total of 15 outlets, consisting of: pump element No. 1, No. 2 and No. 3 with 4 outlets each, pump element No. 4 with 2 outlets and pump element No. 5 with 1 outlet (44421), direction of rotation clockwise (R) and design key (0001), motor values at 1500 rpm, 230/400 V AC, 1.13/0.65 A (AF), with protection class IP55 (07).

Order No. RA 1M 00 / 44421 R 0001 AF 07

**Note**

The motor specifications refer to three-phase motors from VEM. There may be differences with motors from other manufacturers. For accessories and spare parts – see pages 19–20.
Electric motor drive with coaxial gear

Technical data

See page 8

Displacement per outlet and motor speed of 1360 rpm ............... See Table 2

Gearbox
Step-down ratio .................. 5:1; 15:1; 25:1; 75:1; 125:1

Weight with pump element
1 ................. 8.34 kg\(^1\)
2 ................. 8.73 kg\(^1\)
3 ................. 9.11 kg\(^1\)
4 ................. 9.50 kg\(^1\)
5 ................. 9.88 kg\(^1\)

\(^1\) Weight is increased by 100 g with cap prelubrication.

Order example

SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), electric motor drive with coaxial gear (2M), step-down ratio 15:1 (15), with 3 pump elements, with a total of 7 outlets, consisting of:
- pump element No. 1 with 4 outlets,
- pump element No. 2 with 2 outlets and
- pump element No. 3 with 1 outlet (421),
cap prelubrication (D), default direction of rotation clockwise (R),
design key (0001), motor values of 1500 rpm, 230/400 V AC, 1.13/0.65 A, (AF),
with protection class IP55 (07).

Order No. RA 2M 15/421 DR 0001 AF 07

Note

The motor specifications refer to three-phase motors from VEM. There may be differences with motors from other manufacturers.

For accessories and spare parts – see pages 19–20.

Fig. 6

Outlet G

Inlet G

Cap prelubrication

Table 2

<table>
<thead>
<tr>
<th>Step-down ratio</th>
<th>Length L1 [mm]</th>
<th>Length L2 [mm]</th>
<th>Displacement [cm³/min]</th>
<th>Pressure max. [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:1</td>
<td>110.5</td>
<td>131.5</td>
<td>Approx. 1.8 to approx. 5.44</td>
<td>63</td>
</tr>
<tr>
<td>15:1</td>
<td>120.5</td>
<td>141.5</td>
<td>Approx. 0.6 to approx. 1.81</td>
<td>63</td>
</tr>
<tr>
<td>25:1</td>
<td>120.5</td>
<td>141.5</td>
<td>Approx. 0.36 to approx. 1.09</td>
<td>50</td>
</tr>
<tr>
<td>75:1</td>
<td>131</td>
<td>152</td>
<td>Approx. 0.12 to approx. 0.36</td>
<td>20</td>
</tr>
<tr>
<td>125:1</td>
<td>131</td>
<td>152</td>
<td>Approx. 0.07 to approx. 0.21</td>
<td>10</td>
</tr>
</tbody>
</table>

Explanation of order codes

Type
- RA  Radial piston pump
- 2M  Electric motor with coaxial gear

Drive
- 2M = Electric motor with coaxial gear

Step-down ratio
- 05 = 5:1, 15 = 15:1, 25 = 25:1,
- 75 = 75:1, 13 = 125:1

Number of outlet ports per pump element
- 1 = 1 outlet
- 2 = 2 outlets
- 4 = 4 outlets

1 to 5 pump elements (counted from drive)

Cap prelubrication
- D = with cap prelubrication
- / = without cap prelubrication

Direction of rotation
- R = Standard; clockwise
- L = counterclockwise

Design key
- 0001

Motor order code
- AF, AK, AO (see Table 1, "Motor ratings")

Motor protection class
- 07 = Protection class IP55 (EEEx design on request)
Electric motor drive with bevel gear

Technical data

General
Mounting position . Any
Ambient temperature . –15 to +80°C

Pump
Type . Radial piston pump
Operating pressure . 63 bar
Short-term pressure . 100 bar
Number of combinable pump elements . Max. 5
Outlets per pump element . 1, 2 or 4
Displacement variability per pump element . Continuously variable
Displacement per outlet and motor speed of 1360 rpm . Approx. 2.59 cm³/min
Lubricant . Mineral oils
Temperature range . –15 to +80°C
Operating viscosity . 25 to 2500 mm²/s
Suction height . 500 mm
Intake tube inside diameter . ≥ 4 mm

Motor
Type/size . IM B34/63 C 90
Type of voltage . 3-phase AC voltage

Weight with pump element
1 . 6.90 kg
2 . 7.28 kg
3 . 7.67 kg
4 . 8.05 kg
5 . 8.44 kg

1) Max. operating pressure – see page 4, diagram 2.
2) Synthetic lubricants can be provided on request.

Explanation of order codes

Type
RA
Radial piston pump RA

Drive
3M = Electric motor with bevel gear

Step-down ratio
01 = 10.5:1

Number of outlet ports per pump element
1 = 1 outlet
2 = 2 outlets
4 = 4 outlets

1 to 5 pump elements (counted from drive)

Design key
0001

Motor order code
AF, AK, AO (see Table 3, “Motor ratings”)

Motor protection class
07 = Protection class IP55
(EEx design on request)

Note
The motor specifications refer to three-phase motors from VEM. There may be differences with motors from other manufacturers. For accessories and spare parts – see pages 19–20.

Table 3

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>1500</td>
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<td>0.18</td>
<td>230/400</td>
<td>1.13/0.65</td>
<td>AF</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>290/500</td>
<td>0.90/0.52</td>
<td>AK</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>400/690</td>
<td>0.65/0.38</td>
<td>AO</td>
</tr>
</tbody>
</table>

Order example
SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), electric motor drive with bevel gear (3M), step-down ratio 10.5:1 (01), with 5 pump elements, with a total of 15 outlets, consisting of:
pump element No. 1 with 4 outlets,
pump element No. 2 with 4 outlets,
pump element No. 3 with 4 outlets,
pump element No. 4 with 2 outlets and
pump element No. 5 with 1 outlet (44421)
design key (0001), motor values of 1500 rpm, 230/400 VAC, 1.13/0.65 A (AF), with protection class IP55 (07)

Order No. RA 3M 01 / 44421 / 0001 AF 07
Rotary drive with bevel gear and reservoir

**Technical data**

**General**
- Reservoir capacity: 2 or 4.5 kg
- Mounting position: Vertical
- Ambient temperature: –15 to +80°C
- Filling: From above (through reservoir cover) or via filler socket
- Fill level control: With or without fill level switch

**Pump**
- Type: Radial piston pump
- Operating pressure: 63 bar
- Number of combinable pump elements: Max. 3
- Displacement variability per pump element: Continuously variable
- Displacement per outlet and revolution of the pump shaft: Approx. 0.02 cm³
- Drive speed: 100 to 1800 rpm
- Direction of rotation: Drive position A, counterclockwise; drive position B, clockwise
- Lubricant: Greases based on mineral oil
- Temperature range: –15 to +80°C

**Gearbox**
- Step-down ratio: 10.5:1
- Drive position: A or B

**Weight for 4.5 kg reservoir with pump element**
1. 6.11 kg
2. 6.50 kg
3. 6.88 kg

---

**Explanation of order codes**

<table>
<thead>
<tr>
<th>RA 20 F 3UA 01 B 442 / 0001</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td><strong>Reservoir capacity</strong></td>
</tr>
<tr>
<td><strong>Fill level switch</strong></td>
</tr>
<tr>
<td><strong>Drive</strong></td>
</tr>
<tr>
<td><strong>Step-down ratio</strong></td>
</tr>
<tr>
<td><strong>Drive position</strong></td>
</tr>
<tr>
<td><strong>Number of outlet ports per pump element</strong></td>
</tr>
<tr>
<td><strong>Design key</strong></td>
</tr>
</tbody>
</table>

---

**Order example**

SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), 2 kg reservoir (20), with fill level switch (F), rotary drive with bevel gear (3UA), step-down ratio 10.5:1 (01), drive position B (B), with 3 pump elements, with a total of 10 outlets, consisting of: pump element No. 1 with 4 outlets, pump element No. 2 with 4 outlets and pump element No. 3 with 2 outlets. 442, design key (0001).

**Order No. RA 20 F 3UA 01 B 442 / 0001.**

---

**Note**

For fill level switch, accessories and spare parts – see pages 18–20.
Electric motor drive with coaxial gear and reservoir

Technical data

General
Reservoir capacity ............................................. 2 or 4.5 kg
Mounting position .............................................. Vertical
Ambient temperature ........................................... –15 to +60°C
Filling .............................................................. From above (through reservoir cover) or via filler socket
Fill level control ................................................ With or without fill level switch

Pump
Type ............................................................... Radial piston pump
Operating pressure ............................................. 63 bar
Short-term pressure ............................................. 100 bar
Number of combinable pump elements .................. Max. 3
Outlets per pump element .................................... 1, 2 or 4
Displacement variability per pump element .......... Continuously variable
Displacement per outlet at motor speed of 1 360 rpm . See Table 5

Lubricant ........................................................ Greases based on mineral oil
Temperature range ............................................. –15 to +80°C
Penetration as per NLGI ........................................ ≤ 2

Motor
Type/size ........................................................ IM B34/63 C 90
Type of voltage .................................................. 3-phase AC voltage

Gearbox
Step-down ratio .................................................. 5:1; 15:1; 25:1; 75:1; 125:1

Weight for 4.5 kg reservoir with pump element
1 ................................................................. 12.77 kg
2 ................................................................. 13.15 kg
3 ................................................................. 13.54 kg

1) Max. operating pressure – see page 4, diagram 2.
2) Synthetic lubricants can be provided on request.
3) Weight is reduced by 300 g with a 2 kg reservoir.

Table 4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
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<tbody>
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<td>1 500</td>
<td>50</td>
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<td>230/400</td>
<td>1.13/0.65</td>
<td>AF</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>290/500</td>
<td>0.90/0.52</td>
<td>AK</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>400/690</td>
<td>0.65/0.38</td>
<td>AO</td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>Step-down ratio</th>
<th>L1 [mm]</th>
<th>L2 [mm]</th>
<th>L3 [mm]</th>
<th>Displacement [cm³/min]</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:1</td>
<td>171.5</td>
<td>444</td>
<td>519</td>
<td>Approx. 1.63 to 4.89</td>
</tr>
<tr>
<td>15:1</td>
<td>181.5</td>
<td>454</td>
<td>529</td>
<td>Approx. 0.54 to 1.62</td>
</tr>
<tr>
<td>25:1</td>
<td>181.5</td>
<td>454</td>
<td>529</td>
<td>Approx. 0.32 to 0.97</td>
</tr>
<tr>
<td>75:1</td>
<td>192</td>
<td>464.5</td>
<td>539.5</td>
<td>Approx. 0.10 to 0.32</td>
</tr>
<tr>
<td>125:1</td>
<td>192</td>
<td>464.5</td>
<td>539.5</td>
<td>Approx. 0.06 to 0.19</td>
</tr>
</tbody>
</table>

Note
The motor specifications refer to three-phase motors from VEM. There may be differences with motors from other manufacturers. For fill level switch, accessories and spare parts – see pages 18–20.
Electric motor drive with coaxial gear and reservoir

Order example

SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), 2 kg reservoir (20), with fill level switch (F), electric motor drive with coaxial gear (2M), step-down ratio 5:1 (05), with 3 pump elements, with a total of 10 outlets, consisting of:
- pump element No. 1 with 4 outlets,
- pump element No. 2 with 4 outlets and
- pump element No. 3 with 2 outlets, (442),
design key (0001), motor values of 1500 rpm, 230/400 V AC, 1.13/0.65 A (AF), with protection class IP 55 (07)

Order No. RA 20 F 2M 05 / 442 / 0001 AF 07
Electric motor drive with bevel gear and reservoir

Technical data

General
Reservoir capacity: 2 or 4.5 kg
Mounting position: Vertical
Ambient temperature: –15 to +60 °C
Filling: From above (through reservoir cover) or via filler socket
Fill level control: With or without fill level switch

Pump
Type: Radial piston pump
Operating pressure: 63 bar
Short-term pressure: 100 bar
Number of combinable pump elements: Max. 3
Outlets per pump element: 1, 2 or 4
Displacement variability per pump element: Continuously variable
Displacement per outlet at motor speed of 1360 rpm: Approx. 2.33 cm³/min
Lubricant: Greases based on mineral oil
Temperature range: –15 to +80 °C
Penetration as per NLGI: ≤ 2

Motor
Type/size: IM B34/63 C 90
Type of voltage: 3-phase AC voltage

Gearbox
Step-down ratio: 10.5:1

Weight for 4.5 kg reservoir with pump element:
1. 11.37 kg
2. 11.76 kg
3. 12.14 kg

Note
The motor specifications refer to three-phase motors from VEM. There may be differences with motors from other manufacturers. For fill level switch, accessories and spare parts – see pages 18–20.

Table 6

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>230/400</td>
<td>1.13/0.65</td>
<td>AF</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>290/500</td>
<td>0.90/0.52</td>
<td>AK</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>400/690</td>
<td>0.65/0.38</td>
<td>AO</td>
</tr>
</tbody>
</table>
Electric motor drive with bevel gear and reservoir

Order example

SKF MultiFlex multi-line pump, consisting of a radial piston pump (RA), 2 kg reservoir (20), with fill level switch (F), electric motor drive with bevel gear (3M), step-down ratio 10.5:1 (01), with 3 pump elements, with a total of 7 outlets, consisting of:
- pump element No. 1 with 1 outlet,
- pump element No. 2 with 2 outlets and
- pump element No. 3 with 4 outlets, (124),
design key (0001), motor values of 1500 rpm, 230/400 V AC, 1.13/0.65 A (AF), with protection class IP 55 (07)

Order No. RA 20 F 3M 01 / 124 / 0001 AF 07
### Technical data

#### General
- Mounting position: Horizontal
- Ambient temperature: –15 to +60°C
- Filling: Via filler cap
- Fill level control: With or without fill level switch

#### Pump
- Type: Radial piston pump
- Operating pressure: See Table 8
- Short-term pressure: 100 bar
- Number of combinable pump elements: Max. 5
- Displacement variability per pump element: Continuously variable
- Displacement per outlet at motor speed of 1360 rpm: See Table 7

#### Lubricant
- Mineral oil
- Temperature range: –15 to +80°C
- Operating viscosity: 25 to 2500 mm²/s

#### Motor
- Type/size: IM B34/63 C 90
- Type of voltage: 3-phase AC voltage

#### Gearbox
- Step-down ratio: 1:1; 5:1; 10.5:1; 15:1; 25:1; 75:1; 125:1

#### Reservoir
- Capacity: 3, 7, or 15 liters
  - Design for 3 and 7 liters: Polyamide, transparent
  - Design for 15 liters: Aluminum

#### Note
The motor specifications refer to three-phase motors from VEM. There may be differences with motors from other manufacturers. For fill level switch, accessories and spare parts – see pages 18–20.

### Table 7

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>230/400</td>
<td>1.13/0.65</td>
<td>AF</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>290/500</td>
<td>0.90/0.52</td>
<td>AK</td>
</tr>
<tr>
<td>1500</td>
<td>50</td>
<td>0.18</td>
<td>400/690</td>
<td>0.65/0.38</td>
<td>AO</td>
</tr>
</tbody>
</table>

### Order example

SKF MULTIFLEX multi-line pump consisting of a radial piston pump RA installed on a reservoir (RAB), 7 liter reservoir (07), with fill level switch (V), electric motor drive, coaxial (1M), without step-down ratio 0:0 (00), pump mounted on the right side of reservoir (A), with 5 pump elements, with a total of 13 outlets, consisting of:
- pump element 1 with 2 outlets,
- pump element 2 with 1 outlet,
- pump element 3 with 4 outlets
- pump element 4 with 2 outlets and
- pump element 5 with 4 outlets (21424),
without cap prelubrication (DR), design key (0001), motor values of 1500 rpm, 230/400 V AC, 1.13/0.65 A (AF), with protection class IP55 (07).

Order No. RAB 07 V 1M 00/21424/0001 AF 07

### Explanation of order codes

<table>
<thead>
<tr>
<th>Type</th>
<th>Radial piston pump RA installed on reservoir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir capacity</td>
<td>03 = 3 liters; 07 = 7 liters; 15-2 = 15 liters</td>
</tr>
<tr>
<td>Fill level switch</td>
<td>X = none; V = with fill level switch for min. (reed contact) (see page 18)</td>
</tr>
<tr>
<td>Drive type</td>
<td>1M = Electric motor, coaxial; 2M = Electric motor with coaxial gear; 3M = Electric motor with bevel gear</td>
</tr>
<tr>
<td>Step-down ratio</td>
<td>00 = 1:1 (1M); 01 = 10.5:1 (3M); 05 = 5:1 (2M); 15 = 15:1 (2M); 25 = 25:1 (2M); 75 = 75:1 (2M); 13 = 125:1 (2M)</td>
</tr>
<tr>
<td>Attachment location</td>
<td>A = on right side of reservoir (3M pump pointing upwards); J = on right side of reservoir (1M, 3M)</td>
</tr>
<tr>
<td>Number of outlet ports per pump element</td>
<td>1 = 1 outlet 2 = 2 outlets 4 = 4 outlets 1 to 5 pump elements (counted from drive)</td>
</tr>
<tr>
<td>Cap prelubrication</td>
<td>DR = with cap prelubrication, direction of rotation can only be set to clockwise (2M); J = none (1M, 2M)</td>
</tr>
<tr>
<td>Design key</td>
<td>0001</td>
</tr>
<tr>
<td>Motor order code</td>
<td>AF, AK, AO (see Table 7, “Motor ratings”)</td>
</tr>
<tr>
<td>Motor protection class</td>
<td>07 = Protection class IP55 (EEEx design on request)</td>
</tr>
</tbody>
</table>

Note: Synthetic lubricants can be provided on request.
Electric motor drive with 3, 7, or 15 liter reservoir

### Table 8

<table>
<thead>
<tr>
<th>Step-down ratio</th>
<th>Length L [mm]</th>
<th>Displacement per outlet [cm³/min.]</th>
<th>Max. operating pressure [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>87.5</td>
<td>Approx. 27.2</td>
<td>63</td>
</tr>
<tr>
<td>10.5:1</td>
<td>–</td>
<td>Approx. 2.59</td>
<td>63</td>
</tr>
<tr>
<td>5:1</td>
<td>110.5</td>
<td>Approx. 5.44</td>
<td>63</td>
</tr>
<tr>
<td>15:1</td>
<td>120.5</td>
<td>Approx. 1.81</td>
<td>63</td>
</tr>
<tr>
<td>25:1</td>
<td>120.5</td>
<td>Approx. 1.09</td>
<td>50</td>
</tr>
<tr>
<td>75:1</td>
<td>131</td>
<td>Approx. 0.36</td>
<td>20</td>
</tr>
<tr>
<td>125:1</td>
<td>131</td>
<td>Approx. 0.22</td>
<td>10</td>
</tr>
</tbody>
</table>

### Table 9

**Weights**

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 liter reservoir</td>
<td>1.7</td>
</tr>
<tr>
<td>7 liter reservoir</td>
<td>2.76</td>
</tr>
<tr>
<td>15 liter reservoir</td>
<td>8</td>
</tr>
</tbody>
</table>

**Motor**

- Drive type 1M ......... 1.48 kg
- Drive type 2M .......... 2.76 kg
- Drive type 3M .......... 1.33 kg

**Cap prelubrication**

- 0.1 kg

**Pump design**

- Fill level switch ........ 0.135 kg
- per pump element ........ 0.385 kg

---

For 3, 7 and 15 liters on request with oil return G/3
Fill level switch for grease

Technical data

Fill level switch E
Design ........................................ Reed contact
Switch design .............................. 1 switching point min. (changeover)
Switching capacity, max. ............. 60 W/VA
Switching voltage, max. ............... 230 V AC/DC
Connector plug ......................... DIN EN 175301-803-A
Protection class of plug/socket ......... IP 65

Fill level switch F
Design ........................................ Reed contact
Switch design .............................. 2 switching points (min. - max.)
Switch current, max. ................. 1 A with AC/DC
Switching voltage, max. ............... 42 V AC/DC
Connector plug ......................... DIN EN 175301-803-A
Protection class of plug/socket ......... IP 65

Fill level switch V
Design .......................................... Min. monitoring
Contact voltage ............................ 10 - 42 V AC/DC
Rated contact current ................. 1 A
Load contact ......................... Changeover\(^1\)
Connector plug ......................... DIN EN 175301-803-A
Protection class of plug/socket ......... IP 65

\(^1\) Other specification available on request.

Fill level switch for oil

Technical data

Fill level switch V
Design .......................................... Min. monitoring
Contact voltage ............................ 10 - 42 V AC/DC
Rated contact current ................. 1 A
Load contact ......................... Changeover\(^1\)
Connector plug ......................... DIN EN 175301-803-A
Protection class of plug/socket ......... IP 65

\(^1\) Other specification available on request.
## Accessories

<table>
<thead>
<tr>
<th>Accessories (ordered separately)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Designation</strong></td>
</tr>
<tr>
<td>Union nut</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Double tapered ring</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Straight connector</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Banjo fitting</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>GE screw union with check valve</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Banjo fitting with check valve</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Banjo fitting 1)</td>
</tr>
<tr>
<td>Pressure regulating valve 2)</td>
</tr>
<tr>
<td>Pressure regulating valve 3)</td>
</tr>
</tbody>
</table>

1) With additional connection thread for directly screwing pressure regulating valves.
2) Up to 90 bar, without pipe connection for RA pumps operated for short periods.
3) Up to 60 bar, with pipe connection for continuous duty.

### SKF plug connector with cylindrical internal thread

<table>
<thead>
<tr>
<th>SKF plug connector with cylindrical internal thread</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Designation</strong></td>
</tr>
<tr>
<td>Adapter</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Banjo fitting</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Elbow</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

---

**Note**

For further detailed information about SKF plug connectors and related tools, see our brochure on connector systems, brochure **No. 1-0103-EN**.
## Spare parts (ordered separately)

For rotary drive, coaxial, with coaxial and bevel gear

### Electric motor drive, coaxial

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rotary drive</strong></td>
<td></td>
</tr>
<tr>
<td>Coaxial 1:1</td>
<td>24-0701-3000</td>
</tr>
<tr>
<td>Coaxial 5:1</td>
<td>24-0701-3070</td>
</tr>
<tr>
<td>Coaxial 5:1 with prelubrication</td>
<td>24-0701-3080</td>
</tr>
<tr>
<td>Coaxial 15:1</td>
<td>24-0701-3071</td>
</tr>
<tr>
<td>Coaxial 15:1 with prelubrication</td>
<td>24-0701-3081</td>
</tr>
<tr>
<td>Coaxial 25:1</td>
<td>24-0701-3072</td>
</tr>
<tr>
<td>Coaxial 25:1 with prelubrication</td>
<td>24-0701-3082</td>
</tr>
<tr>
<td>Coaxial 75:1</td>
<td>24-0701-3073</td>
</tr>
<tr>
<td>Coaxial 75:1 with prelubrication</td>
<td>24-0701-3083</td>
</tr>
<tr>
<td>Coaxial 125:1</td>
<td>24-0701-3074</td>
</tr>
<tr>
<td>Coaxial 125:1 with prelubrication</td>
<td>24-0701-3084</td>
</tr>
<tr>
<td><strong>Bevel gear</strong></td>
<td></td>
</tr>
<tr>
<td>Drive position A (10.5:1)</td>
<td>24-0701-3001</td>
</tr>
<tr>
<td>Drive position B (10.5:1)</td>
<td>24-0701-3002</td>
</tr>
<tr>
<td>Spacer ring (only at 1:1)</td>
<td>24-1721-2000</td>
</tr>
<tr>
<td><strong>Pump element</strong></td>
<td></td>
</tr>
<tr>
<td>With 1 outlet</td>
<td>24-1557-3520</td>
</tr>
<tr>
<td>With 2 outlets</td>
<td>24-1557-3521</td>
</tr>
<tr>
<td>With 4 outlets</td>
<td>24-1557-3522</td>
</tr>
<tr>
<td><strong>Stud bolt for step-down ratios 1:1, 10.5:1, 15:1, 25:1 and 75:1</strong></td>
<td></td>
</tr>
<tr>
<td>For 1 pump element</td>
<td>44-0717-2060</td>
</tr>
<tr>
<td>For 2 pump elements</td>
<td>44-0717-2061</td>
</tr>
<tr>
<td>For 3 pump elements</td>
<td>44-0717-2062</td>
</tr>
<tr>
<td>For 4 pump elements</td>
<td>44-0717-2063</td>
</tr>
<tr>
<td>For 5 pump elements</td>
<td>44-0717-2064</td>
</tr>
<tr>
<td><strong>Stud bolt for step-down ratios 5:1 and 125:1</strong></td>
<td></td>
</tr>
<tr>
<td>For 1 pump element</td>
<td>44-0717-2069</td>
</tr>
<tr>
<td>For 2 pump elements</td>
<td>44-0717-2070</td>
</tr>
<tr>
<td>For 3 pump elements</td>
<td>44-0717-2071</td>
</tr>
<tr>
<td>For 4 pump elements</td>
<td>44-0717-2072</td>
</tr>
<tr>
<td>For 5 pump elements</td>
<td>44-0717-2073</td>
</tr>
<tr>
<td>Washer</td>
<td>DIN125-B6.4-ST</td>
</tr>
<tr>
<td>Nut</td>
<td>DIN934-M6-8</td>
</tr>
<tr>
<td>Cap</td>
<td>44-0413-2610</td>
</tr>
<tr>
<td>Cap nut</td>
<td>95-0006-0917</td>
</tr>
<tr>
<td>Hand crank</td>
<td>24-0801-2070</td>
</tr>
</tbody>
</table>

1) Two required per pump.

## Spare parts (ordered separately)

For electric motor drive with coaxial and bevel gear and reservoir

### Electric motor

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order code AF 1)</td>
<td>84-1700-4790</td>
</tr>
<tr>
<td>Order code AK 1)</td>
<td>84-1700-4808</td>
</tr>
<tr>
<td>Order code AO 1)</td>
<td>84-1700-4786</td>
</tr>
<tr>
<td>Cheese-head screw 2)</td>
<td>DIN 912-M5×16-8.8</td>
</tr>
</tbody>
</table>

### 2 kg reservoir

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fill level switch</td>
<td>24-0254-2312</td>
</tr>
<tr>
<td>With fill level switch E</td>
<td>24-0254-2334</td>
</tr>
<tr>
<td>With fill level switch F</td>
<td>24-0254-2330</td>
</tr>
</tbody>
</table>

### 4.5 kg reservoir

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without fill level switch</td>
<td>24-0254-2310</td>
</tr>
<tr>
<td>With fill level switch E</td>
<td>24-0254-2335</td>
</tr>
<tr>
<td>With fill level switch F</td>
<td>24-0254-2331</td>
</tr>
</tbody>
</table>

### Rotary drive with bevel gear and reservoir

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bevel gear  (10.5:1)</td>
<td>24-0701-3003</td>
</tr>
<tr>
<td>Spacer ring (only at 1:1)</td>
<td>24-1721-2001</td>
</tr>
<tr>
<td><strong>Pump element</strong></td>
<td></td>
</tr>
<tr>
<td>With 1 outlet</td>
<td>24-1557-3520</td>
</tr>
<tr>
<td>With 2 outlets</td>
<td>24-1557-3521</td>
</tr>
<tr>
<td>With 4 outlets</td>
<td>24-1557-3522</td>
</tr>
<tr>
<td><strong>Stud bolt</strong></td>
<td></td>
</tr>
<tr>
<td>For 1 pump element</td>
<td>44-0717-2060</td>
</tr>
<tr>
<td>For 2 pump elements</td>
<td>44-0717-2061</td>
</tr>
<tr>
<td>For 3 pump elements</td>
<td>44-0717-2062</td>
</tr>
<tr>
<td>For 4 pump elements</td>
<td>44-0717-2063</td>
</tr>
<tr>
<td>For 5 pump elements</td>
<td>44-0717-2064</td>
</tr>
<tr>
<td>Washer 3)</td>
<td>DIN125-B6.4-ST</td>
</tr>
<tr>
<td>Nut 3)</td>
<td>DIN934-M6-8</td>
</tr>
</tbody>
</table>

1) Protection class IP 55
2) Four required per pump.
3) Two required per pump.
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.

Further brochures

1-0103-EN  Fittings and Accessories
1-9201-EN  Transport of Lubricants in Centralized Lubrication Systems

SKF Lubrication Systems Germany GmbH
Hockenheim Plant
2. Industriestrasse 4
68766 Hockenheim
Germany

Tel. +49 (0)6205 27-0
Fax +49 (0)6205 27-100