

Oil circulation lubrication systems

Product catalogue



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Two leading brands



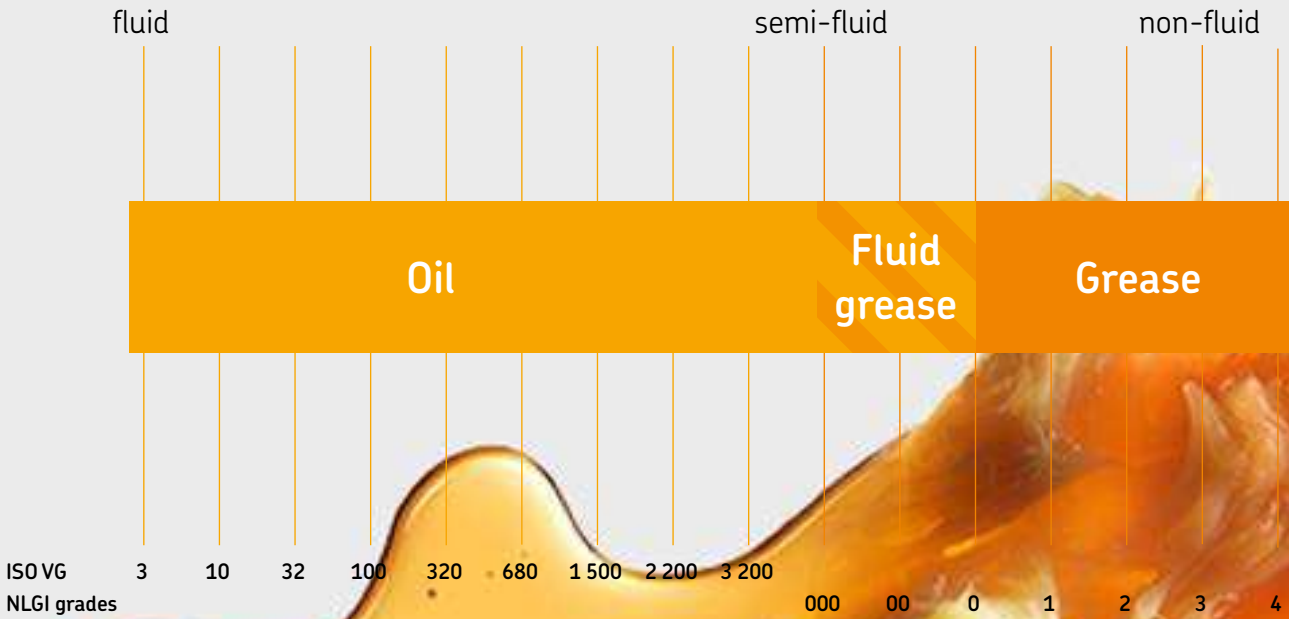
One global leader

SKF and Lincoln have joined forces to provide you with the world's most complete portfolio of innovative lubrication solutions – from manual lubricators and tools, to the most advanced centralized and automatic lubrication systems available.

In addition to traditional lubrication products and systems, we offer customized solutions for many industries such as pulp and paper, steel, mining, agriculture, marine, rail, wind, construction, machine tool and automotive. SKF engineering and technical specialists partner with OEMs and end-users to develop system solutions based on customer requirements. We also offer a variety of control and monitoring equipment for ease of use and to help ensure proper lubrication.

Both SKF and Lincoln systems are available through our global network of lubrication experts, offering you world-class installation and ongoing support on a local level – today and into the future. With the power of this network, and more than 200 years of combined friction management experience, we can help you improve machine reliability, reduce maintenance, increase productivity, enhance safety and optimise manpower resources.

Lubricants suitable for lubrication systems



Oil and fluid grease

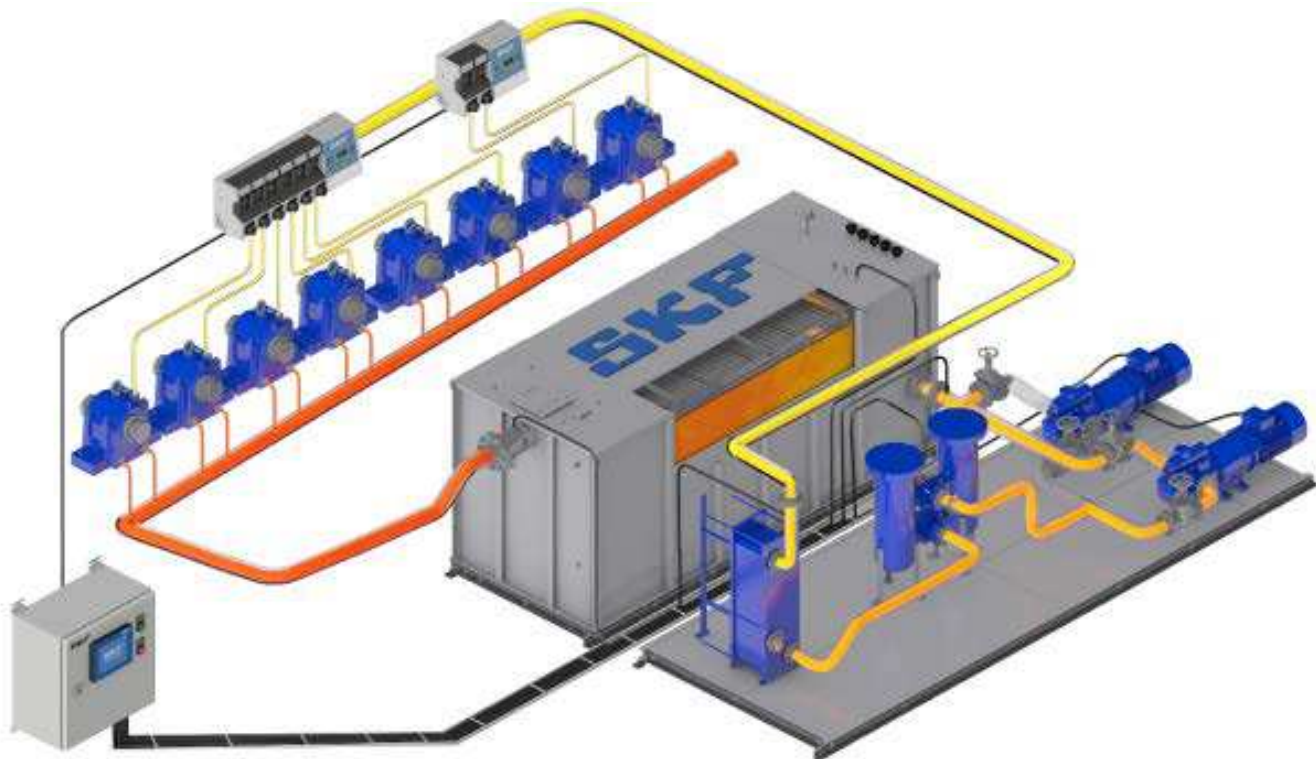
The viscosity is an expression of a fluid's internal friction. Oils are classified in ISO VG viscosity classes from 2 to 3 200. NLGI grade 000, 00 and 0 greases are called fluid greases. Different types of oils are available, including mineral oils, organic oils and synthetic oils. A compatibility check is recommended prior to using any oil with SKF lubrication systems.



Grease

Greases are consistent lubricants (NLGI grade 1–6). They are soft to hard, triple-component mixtures of a base oil as the lubricating fluid, a thickening agent and additives. In most instances, greases of NLGI grade 1 up to 3 are suitable for use in a lubrication system. A compatibility check should be made prior to using any grease with SKF lubrication systems.

Oil circulation lubrication systems



System description

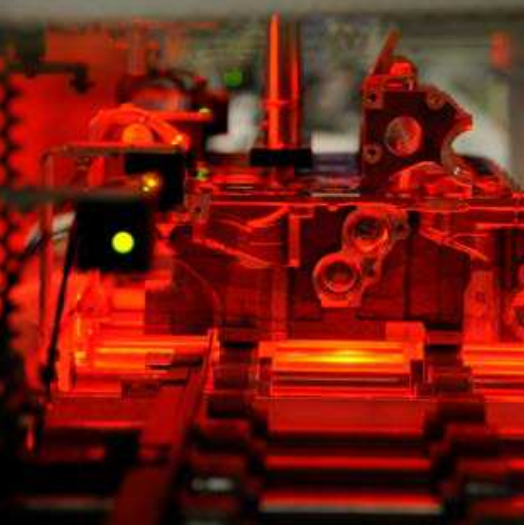
SKF CircOil systems are designed primarily for oil circulation lubrication to lubricate as well as cool highly stressed bearings in nearly every size of machine. Additionally, the returning oil removes and filters out wear particles from friction points and prevents corrosion damage by removing air and water from bearings. Thus, a continuous oil flow is necessary. SKF CircOil systems include a wide range of customized and turnkey solutions for flow rates from 0,1–3 000 l/min. They are simple to service and feature a modular design that can be expanded easily. Our patented tank design with the SKF plate separator technology increases operating efficiency to up to 90%. An oil supply system delivers the lubricant to the adjustment valves with individual settings. Flow rates can be controlled visually or electronically. Monitoring systems with a flow rate read-out function and individual warning levels are available for a more predictive maintenance approach.

Oil circulation lubrication systems are used in pulp and paper and printing industry, as well as in many other industries. They also are used in heavy industries like marine or tunnel boring. In addition, SKF offers a range of oil circulation EEX components and systems specially designed for operations in harsh conditions and explosive atmospheres like mining or cement mills.

SKF oil circulation system consist of the following components:

- An oil supply unit with oil reservoir and pump unit/station (optionally equipped with filters and oil conditioning units)
- A control device
- One or several monitoring devices
- One or several flow metering devices
- One or several sump units
- Fittings and pipes

When planning a lubrication system, ambient conditions must be determined first. The number of lubrication points, back pressures at the lubrication points, operating temperature range, the feed pump's drive energy, control and monitoring etc. must be defined correctly. Attention also must be given to bearing or lubrication point information. The sum of all the quantities metered out by the system's metering devices needs to be completed by safety margin and expansion and compressibility loss. SKF application engineers as well as SKF sales partners and distributors, are experts in designing lubrication systems according to these specifications. A lubrication system laid out by SKF and partners ensures the supply of the correct amount of lubricant at the best time to lubricate. This reduces wear and minimizes pollution caused by over-lubrication.



System advantages

- Cools highly stressed bearings
- Removes particles from bearings
- Durable pump series designed for 24/7 operation
- Oil reservoir sizes from 3 to 40 000 liters; (0.79 to 10 567 gal)
- High operating efficiency
- Easy expansion of the lubrication system
- Able to pump long distances and within a wide temperature range

Applications

SKF CircOil lubrication systems are suitable for various industries that operate 24/7. While cooling is the predominant task of these systems, they equally supply bearings and gearboxes with clean oil at the correct temperature and viscosity. Small, highly efficient oil reservoirs provide a high level of machine availability and save money at the same time.

A large variety of flow meters allows for fit-for-purpose solutions and offers state-of-the-art monitoring and digitalization of flow information. Tailor-made controllers support stand-alone operation of SKF oil circulation lubrication systems.

- Pulp and paper industry
- Metals
- Automobile presses
- Automation
- Printing
- Food and Beverage
- ATEX
- API

Recommended product combinations

Product combination matrix

| | Oil supply units | | | | | Pumps | | | | | | | | | |
|------------------------------|------------------|------|--------|-----|----------|------------|------|--------------|----|------------------|------------------|-------------------|-------------------|---------|--------------------|
| | MF | FLMF | SM-100 | OCU | Flowline | Streamline | M/MF | FLM/ FLMF | ZP | ZM ¹⁾ | ZM ²⁾ | 143 ³⁾ | 143 ⁴⁾ | 143 EEX | ZPU 09/ ZPU 09A |
| Adjustable metering valves | | | | | | | | | | | | | | | |
| Variolub | - | - | - | - | - | • | - | - | - | - | - | • | • | - | - |
| Safeflow | - | - | • | - | • | - | - | - | - | - | - | • | • | - | - |
| Flowline monitor | - | - | • | - | • | - | - | - | - | - | - | • | • | - | - |
| Flow restrictors | | | | | | | | | | | | | | | |
| VD | • | • | - | - | - | - | • | • | • | • | - | - | - | - | - |
| 242 | • | • | - | - | - | - | • | • | • | • | - | - | - | - | - |
| Progressive metering devices | | | | | | | | | | | | | | | |
| PSG 1 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| PSG 2 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| PSG 3 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| VP | - | - | - | - | - | - | - | - | - | - | - | • | • | • | - |
| Flow dividers | | | | | | | | | | | | | | | |
| SMT | - | - | - | - | - | • | - | • | • | • | - | • | • | • | - |
| Flow limiters | | | | | | | | | | | | | | | |
| SMB 3 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| SMB 6 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| SMB 8 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| SMB 9 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| SMB 10 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| SMB 13 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| SMB 14 | - | - | - | - | - | • | - | - | - | - | - | • | • | • | - |
| Control units | | | | | | | | | | | | | | | |
| ST-2240-Circ | - | - | • | - | • | • | - | - | - | - | - | - | - | - | - |
| PGA 3 | - | - | - | - | - | • | - | - | - | - | - | - | - | - | - |
| Flowline Software | - | - | - | - | • | - | - | - | - | - | - | - | - | - | - |
| Variolub Software | - | - | - | - | - | • | - | - | - | - | - | - | - | - | - |
| Monitoring devices | | | | | | | | | | | | | | | |
| WS 32/33/35 | • | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| WS63-2/68 | • | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 171-210 | • | - | - | - | - | - | • | • | • | • | • | - | - | - | - |
| IPM 12 | - | - | - | - | - | • | - | - | - | - | - | - | - | - | - |
| SFZ | • | • | - | • | • | • | • | • | • | • | - | • | • | • | - |
| Accessories | | | | | | | | | | | | | | | |
| 169-460-... | • | • | - | - | - | - | • | • | • | • | • | • | • | • | • |

1) ZM (single-circuit)

2) ZM (multi-circuit)

3) 143 without motor

4) 143 with motor

Examples for oil circulation system configurations

| System | Oil supply unit | Metering device | Monitoring device | Control unit |
|-------------------------|------------------------------|---------------------|-------------------|--------------|
| Flow limiter system | Streamline | SMB, PSG, SMT | IPM-12 | ST-2240-Circ |
| Variolub system | Streamline, Flowline | SMD Variolub | IPM-12 | ST-2240-Circ |
| Safeflow system | Flowline, Streamline, SM-100 | SF Safeflow | included | ST-2240-Circ |
| Flowline monitor system | Flowline, Streamline, SM-100 | FL Flowline monitor | included | ST-2240-Circ |
| 242 series system | SM-100 | 242 | - | ST-2240-Circ |

System component highlights



Streamline

The customized solution from SKF for circulating oil lubrication systems with flow rates up to 4 000 l/min and steel and stainless steel tank sizes up to 40 000 l → Page 22



Flowline

Pressure oil station for flow rates up to 1 200 l/min with innovative stainless steel and steel tank for optimal water and air separation with a tank size reduced by 2/3 → Page 20



SM-100

Compact, small pressure oil station for flow rates up to 7 l/min, which supplies all lubrication points from one or two small machines with clean and well-tempered oil → Page 16



Flowline monitor (FL)

Adjustable flow meters for flow rates from 0,1 to 100 l/min with easy-to-use interface and remote monitoring function, also as control panel installation → Page 58



Safeflow

Adjustable flow meter for flow rates from 0,04 to 56 l/min for monitoring oil circulation systems

→ Page 56



SKF VarioLub (SMD)

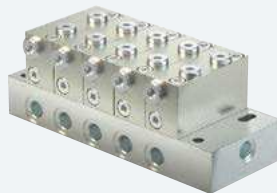
Adjustable flow meters in modular design with bypass function that allow visual and electronic monitoring of flow rates from 0,05 to 40 l/min

→ Page 54



SMB

Flow limiters for flow rates from 0,08 to 8 l/min, which divide the main oil flow into parallel, individual flows while compensating typical system pressure fluctuations → Page 68



PSG

Progressive distributor for flow rates of up to 6 l/min, for the cost-efficient distribution of the supplied oil flow to up to 20 individual outlets

→ Page 80



ST-2240-Circ

Independent control for SKF oil circulation lubrication systems with a touchscreen and remote control and monitoring function

→ Page 90



Overview of oil circulation supply units

| Oil supply units | | | | | | | | | |
|-------------------|-------------------------------------|-------------------------|-----------|---------------------|------------|----------------|--------------|---|------|
| Product | Lubricant mineral and synthetic oil | Flow rate ¹⁾ | | Ambient temperature | | Reservoir size | | Reservoir material | Page |
| | | viscosity ISO VG | l/min | pts/min | °C | °F | l | | |
| MF | 5–2 000 | 0,12–0,5 | 0.23–1.06 | 10 to 40 | 50 to 104 | 2,7–50 | 5.7–105 | plastic/metal | 12 |
| FLMF | 20–850 | 1,2–2,4 | 2.5–5.0 | 10 to 40 | 50 to 104 | 2,7–50 | 5.7–105 | metal | 14 |
| SM-100 | 30–1 000 | 2–7 | 4.2–14.8 | 0 to +70 | +32 to 158 | 100 | 211 | steel | 16 |
| OCU | 15–800 | 5–30 | 10.5–63.4 | -10 to 40 | 14 to 104 | – | – | – | 18 |
| | | | | | | | | | |
| Product | viscosity ISO VG | l/min | gal/min | Ambient temperature | | Reservoir size | | Reservoir material | Page |
| | | | | °C | °F | l | gal | | |
| Flowline | 20–1 000 | 30–1 200 | 8–317 | 10 to 40 | 50 to 104 | 300–2 × 6 000 | 80–2 × 1 585 | stainless steel AISI 304, 316 | 20 |
| Streamline | 20–1 000 | 30–4 000 | 8–1 056 | 10 to 40 | 50 to 104 | 1 000–40 000 | 264–10 566 | carbon steel or stainless steel AISI 304, 316 | 22 |

¹⁾ Valid for operating viscosity of 140 mm²/s

Gear pump unit

MF



Description

MF single-circuit gear pump units are used in small oil circulation lubrication systems with pressure ranges up to 65 bar (940 psi) and high viscosities up to 2 000 mm²/s. The pump is vertically mounted on the reservoir.

MF gear pumps come with integrated pressure relief and venting valves that feed into the internal return oil connection in the adapter flange. In case of trapped air, the venting valve opens. In case of excess pressure, oil is relieved to the return oil connection via the pressure relief valve.

Features and benefits

- Designed for 24/7 operation
- Inexpensive solution
- High viscosity range
- Compact, rugged and reliable design
- Low noise level
- Integrated pressure relief valve and venting valve

Applications

- Machine tools
- Automotive
- Automation
- Textile machinery
- Metal and plastic forming machinery
- Printing

Technical data

| | |
|---------------------------|--|
| Function | electrically operated gear pump unit; single circuit |
| Lubricant | environmentally friendly mineral and synthetic oils; viscosity 5–2 000 mm ² /s |
| Flow rate | 0.12–0.5 l/min; 0.25–1.06 pts/min |
| Number of outlets | 1 |
| Ambient temperature | +10 to 40 °C; +50 to 104 °F |
| Oil temperature | +10 to 65 °C; +50 to 149 °F |
| Operating back pressure | max. 65 bar; max. 940 psi |
| Suction height | 500 mm; 19.68 in |
| Drive speed | 2 600–2 700 min ⁻¹ |
| Motor ¹⁾ | 3-phase motor |
| Voltage | 220–240/380–420 V AC at 50 Hz |
| Rated power | 0.075–0.18 kW |
| Pressure connection | M 14 × 1,5 for Ø 8 mm |
| Seal material | NBR, FPM |
| Reservoir | 2,7l; 6l; 15 l; 50l; 5.7pts; 12.7 pts; 31.7 pts; 105 pts |
| Reservoir material | plastic, metal |
| Protection class | IP 54 |
| Dimensions | min. 131 × 88 × 209 mm max. 131 × 88 × 220 mm min. 5.16 × 3.54 × 8.23 in max. 5.16 × 3.54 × 8.66 in |
| Mounting position | horizontal ²⁾ or vertical |
| Approvals (dep. on model) | CE, UL, CSA |

¹⁾ Further motor designs available on request.

²⁾ with special seal design



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1204-2-EN, 951-170-001 EN, 951-170-002 EN

Gear pump unit

MF

MF pump unit with reservoir

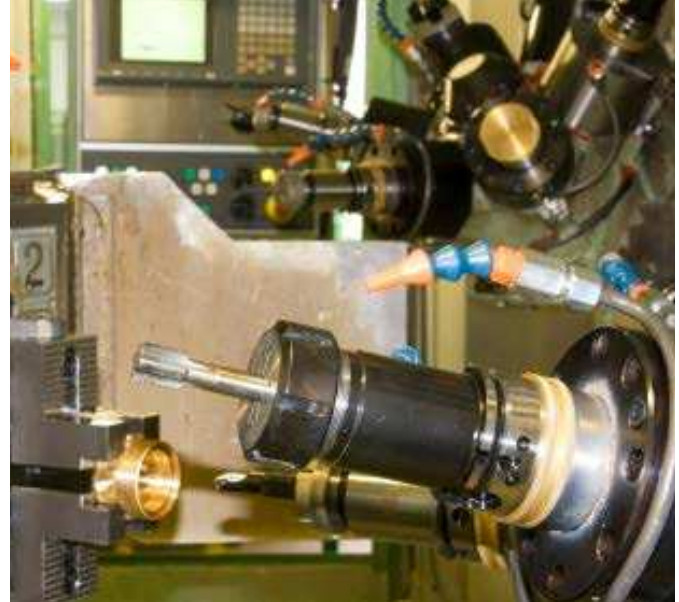
| Order number ¹⁾ | Viscosity | Flow rate ²⁾ | | Reservoir size | | material | design | level sensor | filter | gauge |
|----------------------------|-----------|-------------------------|-------|----------------|------|----------|---------------|----------------------------------|-----------------|-------|
| | | mm ² /s | l/min | pts/min | l | | | | | |
| MF1-BW3-S20+1FV | 20–2 000 | 0,12 | 0.25 | 2,7 | 5,7 | metal | wall mounting | min. fill level warning | – | – |
| MF1-KW3-S15+1FX | 20–1 000 | 0,12 | 0.25 | 2,7 | 5,7 | plastic | wall mounting | min. fill level warning | – | yes |
| MF2-BW7+299 | 20–1 000 | 0,20 | 0.42 | 6 | 12.7 | metal | wall mounting | min. fill level warning | – | – |
| MF2-KW6-S8+299 | 20–2 000 | 0,20 | 0.42 | 6 | 12.7 | plastic | wall mounting | – | pressure filter | – |
| MF5-BW7+140 | 20–1 000 | 0,50 | 1.0 | 6 | 12.7 | metal | wall mounting | min. fill level warning | – | – |
| MF5-KW6+299 | 20–1 000 | 0,50 | 1.0 | 6 | 12.7 | plastic | foot design | min. fill level warning | – | – |
| MF5-BW16-S223+299 | 20–1 000 | 0,50 | 1.0 | 15 | 31.7 | metal | foot design | min. and max. fill level warning | – | – |
| MF5-BW51-S22+29G | 20–1 000 | 0,50 | 1.0 | 50 | 105 | metal | foot design | min. and max. fill level warning | pressure filter | yes |

¹⁾ Recommended oil filtration for MF pumps: According to ISO 440620/17/14, NAS code (1638) class 8, SAW AS 4059 class 8

²⁾ On an operating viscosity of 140 mm²/s and 5 bar back pressure

Vane pump unit

FLMF



Description

The SKF FLM vane pump unit is a simple and reliable solution suitable for usage in small oil circulation systems with low pressure and low viscosity range. Because of its high suction capacity of up to 3 m (the SKF FLM pump unit is often used as a sump pump). SKF vane pumps can deliver both oil and oil/air mixtures and provide a higher suction capability than gear pump units. Two different pump designs of the pump unit are available: one allows the pump to be mounted separately from the reservoir (FLM) and the other allows the pump to be flange-mounted on the reservoir (FLMF) both vertically and horizontally. When installed on the side (horizontally), ensure that the unit is mounted above the maximum lubricant level. Special designs with a sealed flange for mounting below the lubricant level are available on request.

Features and benefits

- Simple, reliable and cost-effective solution
- Low-wear and low-maintenance
- High suction capacity (3 m)
- Designed for 24/7 operation
- Delivers oil and air mixtures
- Fail safe running functions

Applications

- General Industry
- Machine Tools
- Automotive
- Automation

Technical data

| | |
|------------------------------|---|
| Function | electrically operated vane pump unit |
| Lubricant | oil, viscosity 20–850 mm ² /s |
| Flow rate | 1,2–2,4 l/min; 2,5–5,0 pts/min |
| Number of outlets | 1 |
| Ambient temperature | +10 to 40 °C; +50 to 104 °F |
| Oil temperature | +10 to 65 °C; +50 to 149 °F |
| Operating back pressure | max. 6 bar, max. 87 psi |
| Suction height ¹⁾ | max. 3 000 mm; 118.1 in |
| Drive speed | 2 700 min ⁻¹ |
| Motor ²⁾ | 3-phase motor |
| Voltage | 220–240/380–420 V AC at 50 Hz |
| Rated power | 0,075 kW |
| Suction connection | M16×1,5 |
| Pressure connection | M14×1,5 |
| Reservoir | 2,7–50 l; 5,7–105 pts |
| Reservoir material | plastic, metal |
| Protection class | IP 54 |
| Dimensions | max. 216 × 88 × 134,5 mm max. 8,5 × 3,46 × 5,29 in |
| Mounting position | horizontal |

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

²⁾ Further motor designs available on request.

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1204-2-EN, 951-170-001 –EN, 951-170-002 –EN



3D

skf-lubrication.partcommunity.com/3d-cad-models

Vane pump unit

FLMF

FLMF with reservoir

| Order number ¹⁾ | Viscosity | | Flow rate ²⁾ | | Back pressure | | Reservoir size | | Suction height | | design | level sensor |
|----------------------------|--------------------|-------|-------------------------|-----|---------------|-----|----------------|-------|----------------|---------------|--------------------------|--------------|
| | mm ² /s | l/min | pts/min | bar | psi | l | pts | mm | in | | | |
| FLMF12-BW3-2+299 | 20–850 | 1,2 | 2.5 | 6 | 87 | 2,7 | 5.7 | 3 000 | 118 | wall mounting | min. and fill level | |
| FLMF12-BW7+299 | 20–850 | 1,2 | 2.5 | 6 | 87 | 6 | 12.6 | 3 000 | 118 | wall mounting | min. and fill level | |
| FLMF12-BW16+299 | 20–850 | 1,2 | 2.5 | 6 | 87 | 15 | 31.7 | 3 000 | 118 | foot design | min. and fill level | |
| FLMF24-BW51-S2+MWZ | 20–500 | 2,4 | 5.0 | 3 | 44 | 50 | 105 | 1 000 | 40 | foot design | min. and max. fill level | |

¹⁾ Recommended oil filtration for MF pumps: According to ISO 440620/17/14, NAS code (1638) class 8, SAW AS 4059 class 8

²⁾ On an operating viscosity of 140 mm²/s and 5 bar back pressure

Gerotor pump unit

SM-100



Description

SM-100 is a complete small oil circulation system. The unit can provide oil for one or two small machines with a total flow rate of 7 l/min. The system pressure level is adjusted by variable speed drives (VFD). Other typical systems utilize an overflow valve leading to energy losses, component wear and oil degradation. The reservoir is equipped with a heater to control oil viscosity at start up. An optional cooler is furnished to reduce the filtered oil temperature supplied to the bearings. The filter cartridge can be changed during operation, using a by-pass valve. For even larger fans, SKF has Flowline, a full oil circulation system family with necessary customized designs to fulfill customer requirements.

Features and benefits

- Energy saving compact oil supply unit for one or two pumps
- Easy to use, to locate and to install
- Efficient air cooler, special application without cooler
- Compact power supply unit with frequency converters (VFD), available also without power supply
- Compact electronic control system, available also without control


Applications

- Fans, gears, refiners, washers, gear boxes, motors
- Presses, rolls, pumps, chippers
- Etc.

Technical data

| | |
|---|---|
| Function | electrically operated gerotor pump unit |
| Lubricant | lubrication and hydraulic oils; 30 to 1 000 mm ² /s |
| Flow rate | 2 to 7 l/min (6.8 l/min at 950 min ⁻¹); 4, 2 to 14.8 pts/min |
| Number of outlets ¹⁾ | 1–10 |
| Ambient temperature | +10 to 40 °C; +50 to 104 °F |
| Oil temperature | +10 to 70 °C; +50 to 158 °F |
| Operating pressure | max. 10 bar; max. 145 psi |
| Reservoir | 100 l; 211 pts |
| Reservoir material | carbon steel (painted) |
| Thermostat controlled heater for oil tank | 20 to 50 °C in 6 h; 68 to 122 °F in 6 h |
| Oil filtering rate | 5 micron |
| Voltage | 400 VAC/50 Hz |
| Pressure connection | G / NPT 1/2; G / NPT 1; G / NPT 1 1/4 |
| Protection class | IP 54 |
| Dimensions | 1 200 × 550 × 840 mm; 47.25 × 21.65 × 33 in |
| Mounting position | vertical |

¹⁾ Number of outlets is depending on the design of the selected SKF Flowline Monitor.

 **NOTE**

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

6633EN

Gerotor pump unit

SM-100

Supply units

| Order number | Designation | Number of pumps | Number of filters | Reservoir material | Cooler type | Control unit |
|-----------------|------------------------|-----------------|-------------------|--------------------|-------------|---------------------------------|
| 13141098 | SM-30-1P-1F-PNTST-XX | 1 | 1 | Painted | No | Relay control with power supply |
| 13141099 | SM-30-1P-1F-PNTST-WAC | 1 | 1 | Painted | Water | Relay control with power supply |
| 13141100 | SM-30-1P-1F-PNTST-AIC | 1 | 1 | Painted | Air | Relay control with power supply |
| 13143400 | SM-100-1P-1F-PNTST-XX | 1 | 1 | Painted | No | ST-2240 |
| 13143410 | SM-100-2P-1F-PNTST-XX | 2 | 1 | Painted | No | ST-2240 |
| 13143450 | SM-100-1P-1F-PNTST-WAC | 1 | 1 | Painted | Water | ST-2240 |
| 13143420 | SM-100-1P-1F-PNTST-AIC | 1 | 1 | Painted | Air | ST-2240 |
| 13143460 | SM-100-2P-1F-PNTST-WAC | 2 | 1 | Painted | Water | ST-2240 |
| 13143430 | SM-100-2P-1F-PNTST-AIC | 2 | 1 | AISI 304 | Air | ST-2240 |
| 13143461 | SM-100-1P-2F-SS-XX | 1 | 2 (Duplex) | AISI 304 | No | ST-2240 |
| 13143462 | SM-100-2P-2F-SS-XX | 2 | 2 (Duplex) | AISI 304 | No | ST-2240 |
| 13143463 | SM-100-1P-2F-SS-WAC | 1 | 2 (Duplex) | AISI 304 | Water | ST-2240 |
| 13143464 | SM-100-1P-2F-SS-AIC | 1 | 2 (Duplex) | AISI 304 | Air | ST-2240 |
| 13143465 | SM-100-2P-2F-SS-WAC | 2 | 2 (Duplex) | AISI 304 | Water | ST-2240 |
| 13143466 | SM-100-2P-2F-SS-AIC | 2 | 2 (Duplex) | AISI 304 | Air | ST-2240 |
| 13143470 | SM-200-1P-2F-SS-xx | 1 | 2 (Duplex) | AISI 304 | No | ST-2240 |
| 13143471 | SM-200-2P-2F-SS-xx | 2 | 2 (Duplex) | AISI 304 | No | ST-2240 |
| 13143472 | SM-200-1P-2F-SS-WAC | 1 | 2 (Duplex) | AISI 304 | Water | ST-2240 |
| 13143473 | SM-200-1P-2F-SS-AIC | 1 | 2 (Duplex) | AISI 304 | Air | ST-2240 |
| 13143474 | SM-200-2P-2F-SS-WAC | 2 | 2 (Duplex) | AISI 304 | Water | ST-2240 |
| 13143475 | SM-200-2P-2F-SS-AIC | 2 | 2 (Duplex) | AISI 304 | Air | ST-2240 |

Gear pump unit

OCU



Description

OCU (Oil Conditioning Unit) is an electrically operated oil pumping, cooling and filtration system. It removes contamination and allows to condition oil temperature and contributes greatly to optimum lubrication with correct oil viscosity. There are three different OCU models available: without cooler, with air cooler or with water cooler. All models work in a side stream (kidney loop) configuration. The units are installed directly on the machine. Access ports should be located on opposing sides of the oil sump, so that suitable oil circulation is possible. Once installed the system is ready for continuous operation.

Features and benefits

- Continuous lubricant cooling and filtration to extend machine life
- Eliminates wear and premature failures efficiently
- Optional available with frequency converter, electrical clogging indicator, temperature transmitter, pressure transmitter, gauge, shut-off valve, flowmeter, moisture transmitter or thermostat
- Dust proof cabinet with cooling or heating design on request
- Virtually maintenance free
- Easy to use and install

Applications

- Large bearing houses
- Compressors
- Turbine systems
- Vacuum pumps
- Gearboxes

Technical data

| | |
|---------------------------------|--|
| Function | electrically operated gear pump unit |
| Lubricant | lubrication and hydraulic oils; 15 to 800 mm ² /s |
| Flow rate | 5 to 30 l/min, 10.5 to 63 pts/min |
| Number of outlets | 1-2 |
| Ambient temperature | -10 to +40 °C; 14 to 104 °F |
| Oil temperature | -10 to +80 °C; 14 to 176 °F |
| Operating pressure | 10 bar; 145 psi |
| Lubricant viscosity at start-up | 2 000 mm ² /s |
| Oil filtering rate | 20 micron |
| Voltage | 400/690 VAC/50 Hz 460 VAC/60 Hz |
| Inlet connection | G3/4 |
| SKF-OCU-5 | G1 1/2 |
| SKF-OCU-10, 30 | G1 |
| Pressure connection | G1 |
| Protection class | IP55 |
| Dimensions | min. 570 × 345 × 378 mm max. 570 × 800 × 920 mm min. 22.4 × 13.6 × 14.9 in max. 22.4 × 31.5 × 36.2 in |
| Mounting position | horizontal |

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

10160/2 EN

Gear pump unit

OCU

OCU models

| Order number | Designation | Cooler | Flow rate | | Rated power kW | Drive speed min ⁻¹ | Dimensions mm | Weight kg |
|--------------|----------------------|--------------|-----------|---------|-------------------|----------------------------------|------------------|--------------|
| | | | l/min | pts/min | | | | |
| 13140907 | SKF-OCU-5-P-400-XX | – | 5 | 10.5 | 0,55 | 935 | 360×600×470 | 35 |
| 13140908 | SKF-OCU-10-P-400-XX | – | 10 | 21 | 0,75 | 1 450 | 360×600×470 | 33 |
| 13140909 | SKF-OCU-30-P-400-XX | – | 30 | 63 | 1,1 | 1 450 | 360×600×470 | 45 |
| 13140911 | SKF-OCU-5-P-400-AIC | Air cooler | 5 | 10.5 | 0,55 | 935 | 1 000×620×620 | 46 |
| 13140912 | SKF-OCU-10-P-400-AIC | Air cooler | 10 | 21 | 0,75 | 1 450 | 1 000×620×621 | 44 |
| 13140913 | SKF-OCU-30-P-400-AIC | Air cooler | 30 | 63 | 1,1 | 1 450 | 1 030×620×622 | 83 |
| 13140901 | SKF-OCU-5-P-400-WAC | Water cooler | 5 | 10.5 | 0,55 | 935 | 360×600×590 | 38 |
| 13140904 | SKF-OCU-10-P-400-WAC | Water cooler | 10 | 21 | 0,75 | 1 450 | 360×600×591 | 38 |
| 13140906 | SKF-OCU-30-P-400-WAC | Water cooler | 30 | 63 | 1,1 | 1 450 | 360×600×592 | 50 |

¹⁾ Other flow rates or motor voltages available on request.

Screw pump unit

Flowline



Description

SKF Flowline oil supply units provide superior water and air separation properties. Their cylindrical stainless steel reservoirs typically require only one-third of the tank volumes of traditional oil tanks. Advanced technology and the unique SKF tank design guarantee the highest possible oil quality and condition. The compact and modular SKF Flowline oil circulation lubrication system product family consists of the following components: Flowline pumping unit, ST-2240 control centre, Flowline monitor flow meters and sump units.

Features and benefits

- Increased machine availability due to optimal oil treatment
- Cost savings on oil purchasing, handling and disposal
- Energy savings
- Less environmental impact
- 50% reduction in reservoir size compared to traditional oil tanks
- 80% more air and water removal than traditional oil tanks
- 90% tank efficiency
- Short lead times

Applications

- Pulp and paper industry
- Metals
- Mining
- Industrial gearboxes
- Industrial fans

Technical data

| | |
|-------------------------|---|
| Function | electrically operated screw pump unit |
| Lubricant | lubrication and hydraulic oils; viscosity 20 to 1 000 mm ² /s |
| Flow rate | 30 to 1 200 l/min; 8 to 317 gal/min |
| Ambient temperature | +10 to 40 °C; +50 to 104 °F |
| Oil temperature | +10 to 70 °C; +50 to 158 °F |
| Operating back pressure | max. 10 bar max. 145 psi |
| Motor | 3-phase, according to DIN IEC 60038 |
| Rated power | 1,1 to 30 kW |
| Reservoir | 300 up to 2 × 6 000 l 80 up to 2 × 1 585 gal |
| Material reservoir | stainless steel AISI 304 or AISI 316 |
| Dimensions | depending on unit size |
| Mounting position: | |
| FL 300C to FL 2 000C | pump skid attached to the reservoir |
| FL 1 000 to FL 9000 | pump skid on separate base frame |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions are available on SKF.com/lubrication:

17150 EN



Screw pump unit

Streamline



Description

SKF Streamline oil supply units are SKF's customized solution when it comes to oil circulation lubrication systems. They come with reservoir sizes of up to 40 000 liters in both carbon steel and stainless steel and provide equally superior water and air separation properties compared with the SKF Flowline product series. These reservoirs have a rectangular shape and typically require only one-third of the tank volumes of traditional oil tanks. Advanced technology and the unique SKF tank design guarantee the highest possible oil quality and condition.

Features and benefits

- Increased machine availability due to optimal oil treatment
- Cost savings on oil purchasing, handling and disposal
- Energy savings
- Less environmental impact
- 50% reduction in reservoir size compared to traditional oil tanks
- 80% more air and water removal than traditional oil tanks
- 90% tank efficiency
- Dimensions can be adapted to machine footprint

Applications

- Pulp and paper industry
- Metals
- Mining
- Industrial gearboxes

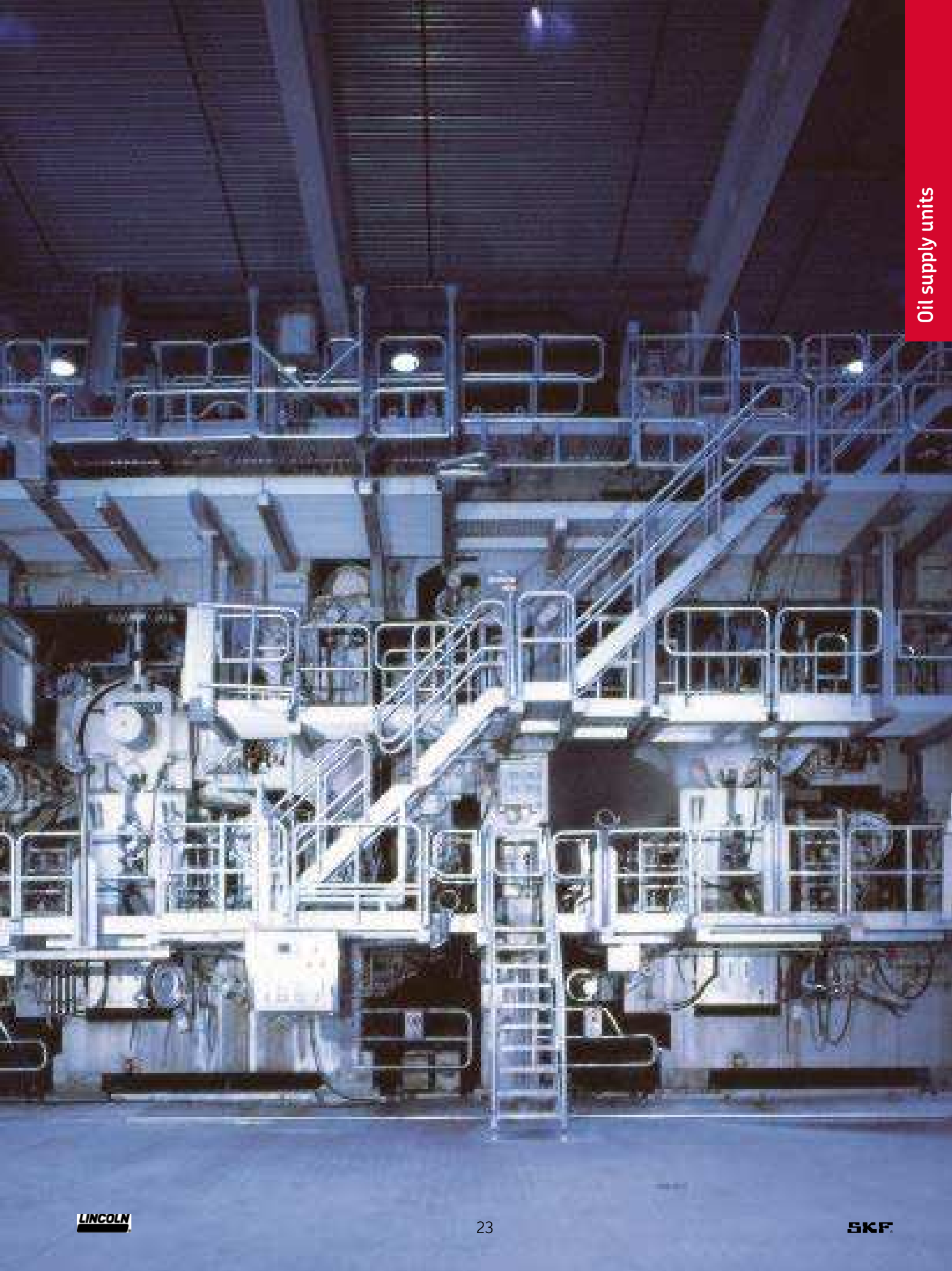
Technical data

| | |
|-------------------------|---|
| Function | electrically operated screw pump unit |
| Lubricant | hydraulic and lubricating oils; viscosity 20 to 1 000 mm ² /s |
| Flow rate | 30 to 4 000 l/min; 8 to 1 057 gal/min |
| Ambient temperature | 0 to +70 °C; +32 to 158 °F |
| Oil temperature | +10 to 70 °C; +50 to 158 °F |
| Operating back pressure | max. 25 bar max. 363 psi |
| Rated power | 1.1 to 75 kW |
| Reservoir | 1 000–40 000 l 264–10 566 gal |
| Material reservoir | carbon steel or stainless steel AISI 304 or AISI 316 |
| Dimensions | depending on unit size |
| Mounting position | pump skid mounting on separate base frame |



NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, please contact your local SKF sales representative.





Overview of oil circulation pumps

Single-circuit oil pumps

| Product | Function type | Outlets | Flow rate ¹⁾ max. | | Operating back pressure max. | | Suction height max. | | Page |
|----------------------------|---------------|---------|------------------------------|---------|------------------------------|-----|---------------------|-------|------|
| | | | l/min | pts/min | bar | psi | mm | inch | |
| M/MF | gear pump | 1 | 0,5 | 1.06 | 65 | 942 | 500 | 19.7 | 22 |
| FLM/FLMF | vane pump | 1 | 2,4 | 5.0 | 6 | 87 | 3 000 | 118.1 | 28 |
| ZP | gear pump | 1 | 2,5 | 5.3 | 25 | 363 | 1 000 | 39,4 | 30 |
| ZM (single-circuit) | gear pump | 1 | 2,5 | 5.3 | 30 | 435 | 1 000 | 39.4 | 32 |
| 143 | gerotor pump | 1 | 50 | 105.7 | 50 | 725 | 1 000 | 39.4 | 36 |
| 143 EEX | gerotor pump | 1 | 50 | 105.7 | 50 | 725 | 1 000 | 39.4 | 38 |

¹⁾ Valid for operating viscosity of 140 mm²/s

Multi-circuit oil pumps

| Product | Function type | Outlets | Flow rate ¹⁾ max. | | Operating back pressure max. | | Suction height max. | | Page |
|---------------------------|---------------|---------|------------------------------|---------|------------------------------|-----|---------------------|------|------|
| | | | l/min | pts/min | bar | psi | mm | inch | |
| ZM (multi-circuit) | gear pump | 2-20 | 0,45 | 0.951 | 20 | 290 | 500 | 19.7 | 40 |

¹⁾ Valid for operating viscosity of 140 mm²/s

Hydrostatic oil pumps

| Product | Function type | Outlets | Flow rate ¹⁾ max. | | Operating back pressure max. | | Page |
|-------------------|---------------|---------|------------------------------|---------|------------------------------|-------|------|
| | | | l/min | pts/min | bar | psi | |
| ZPU 09/09A | piston pump | 1-2 | 0,13 | 0.27 | 400 | 5 800 | 42 |

¹⁾ Valid for operating viscosity of 140 mm²/s

Gear pump

M/MF



Description

MF single-circuit gear pump units are used in small oil circulation lubrication systems with pressure ranges up to 65 bar (940 psi) and high viscosities up to 2 000 mm²/s. The pump is vertically mounted on the reservoir.

MF gear pumps come with integrated pressure relief and venting valves that feed into the internal return oil connection in the adapter flange. In case of trapped air, the venting valve opens. In case of excess pressure, oil is relieved to the return oil connection via the pressure relief valve.

Features and benefits

- Designed for 24/7 operation
- Inexpensive solution
- High viscosity range
- Compact, rugged and reliable design
- Low noise level
- Integrated pressure relief valve and venting valve

Applications

- Machine tools
- Automotive
- Automation
- Textile machinery
- Metal and plastic forming machinery
- Printing

Technical data

| | |
|---------------------------|--|
| Function | electrically operated gear pump; single circuit |
| Lubricant | environmentally friendly mineral and synthetic oils; viscosity 5–2 000 mm ² /s |
| Flow rate | 0,12–0,5 l/min; 0,25–1,06 pts/min |
| Outlet | 1 |
| Operating temperature | +10 to 40 °C; +50 to 104 °F |
| Operating back pressure | max. 65 bar; max. 940 psi |
| Suction height | 500 mm; 19.68 in |
| Drive speed | 2 600–2 700 min ⁻¹ |
| Motor ¹⁾ | 3-phase motor |
| Voltage | 220–240/380–420 V AC at 50 Hz |
| Rated power | 0,075–0,18 kW |
| Pressure connection | M 14 × 1,5 for Ø 8 mm |
| Suction connection | M 14 × 1,5 or M 16 × 1,5 |
| Seal material | NBR, FPM |
| Protection class | IP 54 |
| Dimensions | min. 131 × 88 × 209 mm max. 131 × 88 × 220 mm min. 5.16 × 3.54 × 8.23 in max. 5.16 × 3.54 × 8.66 in |
| Mounting position | horizontal ²⁾ or vertical |
| Approvals (dep. on model) | CE, UL, CSA |

¹⁾ Further motor designs available on request.

²⁾ with special seal design



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1204-2-EN, 951-170-001 EN, 951-170-002 EN

Gear pump

M/MF

M pumps for mounting separate from reservoir

| Order number ¹⁾ | Viscosity | | Flow rate ²⁾ | | Operating back pressure max. | | Drive speed min ⁻¹ | Rated power kW | Suction port thread mm | Weight | |
|----------------------------|--------------------|-------|-------------------------|-----|------------------------------|-------|----------------------------------|-------------------|---------------------------|--------|--|
| | mm ² /s | l/min | pts/min | bar | psi | kg | | | | lbs | |
| M1-2000+299 | 20–2 000 | 0,12 | 0.253 | 28 | 406 | 2 700 | 0,075 | M14×1,5 | 3,15 | 6.94 | |
| M2-2004+299 | 20–2 000 | 0,2 | 0.423 | 12 | 174 | 2 700 | 0,075 | M14×1,5 | 3,18 | 7.01 | |
| M2-2000+299 | 20–2 000 | 0,2 | 0.423 | 28 | 406 | 2 700 | 0,075 | M14×1,5 | 3,16 | 6.96 | |
| M2-S14+299 | 20–1 000 | 0,2 | 0.423 | 65 | 940 | 2 700 | 0,075 | M14×1,5 | 3,16 | 6.96 | |
| M2-2127+299 | 20–2 000 | 0,2 | 0.423 | 70 | 1 015 | 2 700 | 0,075 | M14×1,5 | 3,16 | 6.96 | |
| M5-2000+299 | 20–1 000 | 0,5 | 1.06 | 28 | 406 | 2 700 | 0,075 | M14×1,5 | 3,40 | 7.49 | |
| M5-2024+299 | 20–2 000 | 0,5 | 1.06 | 25 | 362 | 2 700 | 0,075 | M14×1,5 | 3,37 | 7.43 | |
| M5-2013+299 | 5–500 | 0,5 | 1.06 | 16 | 230 | 2 700 | 0,075 | M14×1,5 | 3,20 | 7.05 | |
| M5-S12+299 | 35–500 | 0,5 | 1.06 | 60 | 870 | 2 700 | 0,120 | M14×1,5 | 3,40 | 7.49 | |
| M10-2002+299 | 10–500 | 1,0 | 2.12 | 15 | 217 | 2 700 | 0,075 | M16×1,5 | 3,57 | 7.87 | |

MF pumps for flange-mounting on reservoir

| | | | | | | | | | | |
|-----------------------|-----------|------|-------|----|-----|-------|-------|---------|------|------|
| MF1-2000+299 | 20–2 000 | 0,12 | 0.253 | 28 | 406 | 2 700 | 0,075 | M14×1,5 | 3,13 | 6.90 |
| MF1-2006+299 | 20–2 000 | 0,12 | 0.253 | 6 | 87 | 2 700 | 0,075 | M14×1,5 | 3,15 | 6.94 |
| MF2-2000+299 | 20–2 000 | 0,2 | 0.423 | 28 | 406 | 2 700 | 0,075 | M14×1,5 | 3,17 | 6.98 |
| MF2-S12+299 | 20–1 000 | 0,2 | 0.423 | 65 | 940 | 2 800 | 0,120 | M14×1,5 | 3,17 | 6.98 |
| MF2-2127+299 | 140–1 000 | 0,2 | 0.423 | 60 | 870 | 2 700 | 0,075 | M14×1,5 | 3,20 | 7.05 |
| MF5-2000+299 | 20–1 000 | 0,5 | 1.06 | 28 | 406 | 2 700 | 0,075 | M14×1,5 | 3,19 | 7.03 |
| MF5-2014+299 | 5–500 | 0,5 | 1.06 | 12 | 174 | 2 700 | 0,075 | M14×1,5 | 3,23 | 7.12 |
| MF5-S12+299 | 140–1 000 | 0,5 | 1.06 | 60 | 870 | 2 800 | 0,075 | M14×1,5 | 3,06 | 6.75 |
| MF10-2001+299 | 20–1 000 | 1,0 | 2,11 | 12 | 174 | 2 700 | 0,075 | M14×1,5 | 3,23 | 7.12 |
| MF10-S12+1FV | 20–1 000 | 1,0 | 2,11 | 28 | 406 | 2 800 | 0,120 | M16×1,5 | 3,57 | 7.87 |
| MF210-2001+299 | 20–150 | 2,0 | 4.22 | 15 | 217 | 2 700 | 0,075 | M16×1,5 | 3,57 | 7.87 |

¹⁾ Recommended oil filtration for MF pumps: According to ISO 440620/17/14, NAS code (1638) class 8, SAW AS 4059 class 8

²⁾ On an operating viscosity of 140 mm²/s and 5 bar back pressure

Vane pump

FLM/FLMF



Description

The SKF FLM vane pump unit is a simple and very reliable solution suitable for usage in small oil circulation systems with low pressure and low viscosity range. Because of its high suction capacity of up to 3 m (the SKF FLM pump unit is often used as a sump pump). SKF Vane pumps can deliver both oil and oil/air mixtures and provide a higher suction capability than gear pump units. Two different pump designs of the pump unit are available, one allows the pump to be mounted separately from the reservoir (FLM) or the other allows the pump to be flange-mounted on the reservoir (FLMF) both vertically and horizontally. When installed on the side (horizontally), ensure that the unit is mounted above the maximum lubricant level. Special designs with a sealed flange for mounting below the lubricant level are available on request.

Features and benefits

- Simple, reliable and cost-efficient solution
- Low-wear and low-maintenance
- High suction capacity (3 m)
- Designed for 24/7 operation
- Delivers oil and air mixtures
- Fail safe running functions

Applications

- General industry
- Machine tools
- Automotive
- Automation

Technical data

| | |
|------------------------------|---|
| Function | electrically operated vane pump |
| Lubricant | mineral and synthetic oils; viscosity 20–850 mm ² /s |
| Flow rate | 1,2–2,4 l/min; 2,5–5,0 pts/min |
| Operating temperature | +10 to 40 °C; +50 to 104 °F |
| Operating back pressure | max. 3–6,6 bar; 44–87 psi |
| Suction height ¹⁾ | 1 000–3 000 mm; 39.4–118.1 in |
| E-motor drive | 3 phase motor |
| Drive speed | 2 700 min ⁻¹ |
| Motor ²⁾ | 3-phase motor |
| Voltage | 220–240/380–420 V AC at 50 Hz |
| Rated output | 0,075 kW |
| Suction connection | M16×1,5 |
| Pressure connection | M14×1,5 |
| Protection class | IP 54 |
| Dimensions | max. 216 × 88 × 134,5 mm max. 8.5 × 3.46 × 5.29 in |
| Mounting position | separate or flanged to reservoir |
| Options | with shaft butt, with slotted coupling, left or right rotating pumps |

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

²⁾ Further motor designs available on request.



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1204-2-EN, 951-170-001 –EN, 951-170-002 –EN



3D

skf-lubrication.partcommunity.com/3d-cad-models

Vane pump

FLM/FLMF

FLM / FLMF without reservoir

| Order number | | Flow rate ¹⁾ | | Suction height | | Operating back pressure max. | | Viscosity |
|------------------------|-----------------------|-------------------------|---------|----------------|-------|------------------------------|-----|--------------------|
| flange-mounting | separate mounting | l/min | pts/min | mm | inch | bar | psi | mm ² /s |
| FLMF12-2000+299 | FLM12-2000+299 | 1,2 | 2.5 | 3 000 | 118.1 | 6,6 | 95 | 2–850 |
| FLMF24-2000+299 | FLM24-2000+299 | 2,4 | 5.0 | 3 000 | 118.1 | 3 | 44 | 2–500 |
| FLMF24-S10+299 | FLM24-S10+299 | 2,4 | 5.0 | 1 000 | 39.4 | 3 | 44 | 2–500 |

¹⁾ Recommended oil filtration for FLM/FLMF pumps: According to ISO 4406 20/17/14, NAS code (1638) class 8, SAWAS 4059 class 8
²⁾ On an operating viscosity of 140 mm²/s and 5 bar back pressure

Gear pump

ZP



Description

ZP gear pumps are manufactured for clockwise (ZP12-2; ZP1) or counterclockwise (ZP1-S1) rotation, with constant direction of delivery. The indicated delivery rates apply to an operating viscosity of 140 mm²/s and a back pressure of 5 bars (72 psi). They allow direct drive. ZP operated by electrical motors are ZM pumps.

Features and benefits

- Designed for 24/7 operation
- Wide viscosity range
- Compact, rugged and reliable design
- Low noise level
- Integrated pressure relief valve and venting valve

Applications

- Machine tools
- General industry
- Printing
- Metal forming

Technical data

| | |
|--------------------------------|--|
| Function | gear pump |
| Lubricant | mineral and synthetic oils; viscosity 20–1 000 mm ² /s |
| Flow rate: | |
| ZP12-2 | 1,2 l/min; 2,5 pts/l/min |
| ZP1; ZP1-S1 | 2,5 l/min; 5,3 pts/min |
| Operating temperature | +10 to +80 °C; +50 to 175 °F |
| Operating back pressure: | |
| ZP12-2 | max. 25 bar; max. 363 psi |
| ZP1; ZP1-S1 | max. 20 bar; max. 290 psi |
| Suction height: ¹⁾ | |
| ZP12-2 | 500 mm; 19,7 in |
| ZP1; ZP1-S1 | 1 000 mm; 39,4 in |
| Drive direction: ²⁾ | |
| ZP12-2; ZP1 | clockwise |
| ZP1-S1 | counterclockwise |
| Connection suction | M12×1 |
| Pressure connection | M12×1 |
| Dimensions | min. 60 × 60 × 85 mm max. 70 × 70 × 82 mm min. 2.36 × 2.36 × 3.35 in max. 2.76 × 2.76 × 3.23 in |
| Designs | with shaft butt, with slotted coupling, clockwise or counterclockwise rotating pumps |

¹⁾ At 1 400 min⁻¹

²⁾ Viewing on drive shaft



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1200-EN



3D

skf-lubrication.partcommunity.com/3d-cad-models

Gear pump

ZP

ZP

| Order number | Flow rate ¹⁾ at 1 400 min ⁻¹ | | Back pressure max. | | Suction head ¹⁾ | | Direction of rotation ²⁾ |
|-----------------------------|---|---------|-----------------------|-----|----------------------------|------|--|
| | l/min | pts/min | bar | psi | mm | in | |
| ZP12-2 ³⁾ | 1,2 | 2.5 | 25 | 363 | 500 | 19.7 | right |
| ZP1 ³⁾ | 2,5 | 5.3 | 20 | 290 | 1 000 | 39.4 | right |
| ZP1-S1 ³⁾ | 2,5 | 5.3 | 20 | 290 | 1 000 | 39.4 | left |

¹⁾ with open main line at 1 400 min⁻¹ and oil viscosity of 140 mm²/min

²⁾ viewing on the drive shaft

³⁾ order adapter with ports tapped for solderless tube connection separately

Gear pump

ZM (single-circuit)



Description

ZM single-circuit gear pump units are used in small oil circulation lubrication systems with pressure ranges up to 30 bar (435 psi) and high viscosities up to 2 000 mm²/s. They consist of a gear pump, a flange, a coupling and an electric motor. The pump design suits mounting separately from the reservoir or vertically on top of the reservoir. Horizontal flange mounting below lubricant level is not allowed. ZM gear pump units come without integrated pressure relief and venting valves.

Features and benefits

- High viscosity range
- Low noise operation
- High operating back pressure
- Easy system planning

Applications

- Machine tools
- Metal and plastic forming machinery
- General industry

Technical data

| | |
|--------------------------|---|
| Function | electrically operated gear pump |
| Lubricant | mineral and synthetic oils; viscosity: 20–2 000 mm ² /s |
| Flow rate | |
| ZM12: | 1,2 l/min; 2,5 pts/min |
| ZM25: | 2,5 l/min; 5,3 pts/min |
| Outlets | 1 |
| Operating temperature | +10 to 40 °C; +50 to 104 °F |
| Operating back pressure: | |
| ZM12 | max. 30 bar; max. 435 psi |
| ZM25 | max. 20 bar; max. 290 psi |
| Suction height: | |
| ZM12 | 500 mm; 19.7 in |
| ZM25 | 1 000 mm; 39.4 in |
| Drive speed | 1 350 min ⁻¹ |
| Motor ¹⁾ | 3-phase motor |
| Voltage | 220–240/380–420 V AC at 50 Hz |
| Rated power | 0,18 kW |
| Pressure connection | G 1/4; M14×1,5 |
| Suction connection | G 1/4; M16×1,5 |
| Protection class | IP 54 |
| Dimensions: | |
| ZM12 | 299 × 164 × 125 mm; 11.77 × 6.45 × 4.92 in |
| ZM25 | 283 × 123 × 162 mm; 11.14 × 4.84 × 6.37 in |
| Mounting position | horizontal or vertical |

¹⁾ Further motor designs available on request.



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:
1-1204-2-EN; 951-170-002 EN

Gear pump

ZM (single-circuit)

ZM single-circuit¹⁾

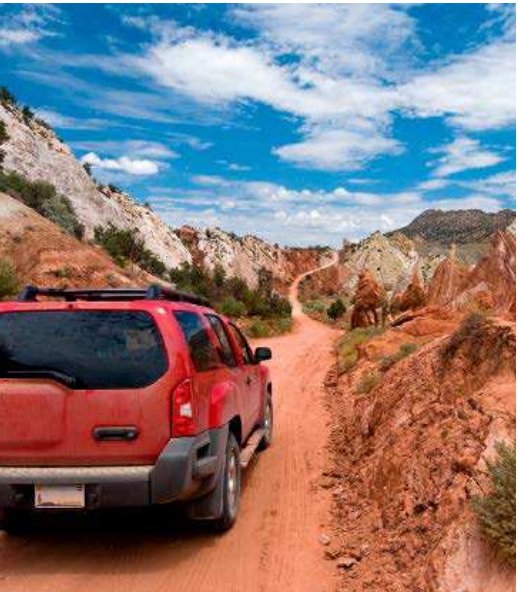
| Order number | Design | Mounting position | Flow rate ²⁾ | | Operating back pressure max. | |
|------------------------|-----------------------------------|----------------------|-------------------------|----------------|------------------------------|------------|
| | | | <i>l/min</i> | <i>pts/min</i> | <i>bar</i> | <i>psi</i> |
| ZM12-21+1FV | foot design, CE Europe | horizontal, separate | 1.2 | 2.5 | 30 | 435 |
| ZM12-31+1FV | flange design, CE Europe | vertical, flanged | 1.2 | 2.5 | 30 | 435 |
| ZM12-21-S11+1HM | foot design, UL/CSA (USA, Canada) | horizontal, separate | 1.2 | 2.5 | 30 | 435 |
| ZM25-2+1FV | foot design, CE Europe | horizontal, separate | 2.5 | 5.3 | 20 | 290 |

¹⁾ Recommended filtration for ZM single-circuit pumps according to: ISO 4406 20/17/14; NAS code (1638); class 8 SAW AS 4059 class 8

²⁾ On an operating viscosity of 140 mm²/s and 5 bar back pressure

Gerotor pump

143 without motor



Description

Gerotor pump series 143 are self-priming positive-displacement pumps with fixed displacement and high efficiency. They are suitable for a variety of applications, such as hydraulic, hydrostatic, cooling as well as circulating-oil and total-loss lubrication systems. SKF gerotor pump units of product series 143 are highly efficient and operate in a flow range between 0,85 to 50 l/min at pressure up to 50 bar. They are characterized by very smooth running, low noise generation and good suction capability.

Features and benefits

- Flexible pump delivery range
- Wide viscosity range
- Smooth running
- Low-noise operation
- Good suction characteristics
- Simplified ordering

Applications

- Marine and offshore industry
- Pulp and paper and printing industries
- Commercial vehicles
- Heavy industry

Technical data

| | |
|----------------------------|--|
| Function | gerotor pump |
| Lubricant | lubrication and hydraulic oils; viscosity 20 to 1 000 mm ² /s |
| Flow rate | 0,85–50 l/min; 1.8–105.7 pts/min |
| Operating temperature | 0 to +40 °C; +32 to 104 °F |
| Operating back pressure | max. 50 bar; max. 725 psi |
| Outlet | 1 |
| Suction height | max. 1 000 mm; 39.4 in |
| Drive speed | 1 400–2 800 min ⁻¹ |
| Connecting thread pressure | G 1/4 to G 1 BSPP |
| Connecting thread suction | G 1/4 to G 1 1/4 BSPP |
| Material | hydraulic cast, steel, sintered material, low-deformation case-hardened steels, NBR or FPM |
| Dimensions | depending on the model: min. 289 × 184 × 126 mm max. 656 × 264 × 280 mm min. 11.37 × 7.3 × 4.96 in max. 25.82 × 10.4 × 11 in |
| Mounting position | horizontal or vertical; foot or flange mounting. |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:
1-1204-3-EN, 951-170-222-EN

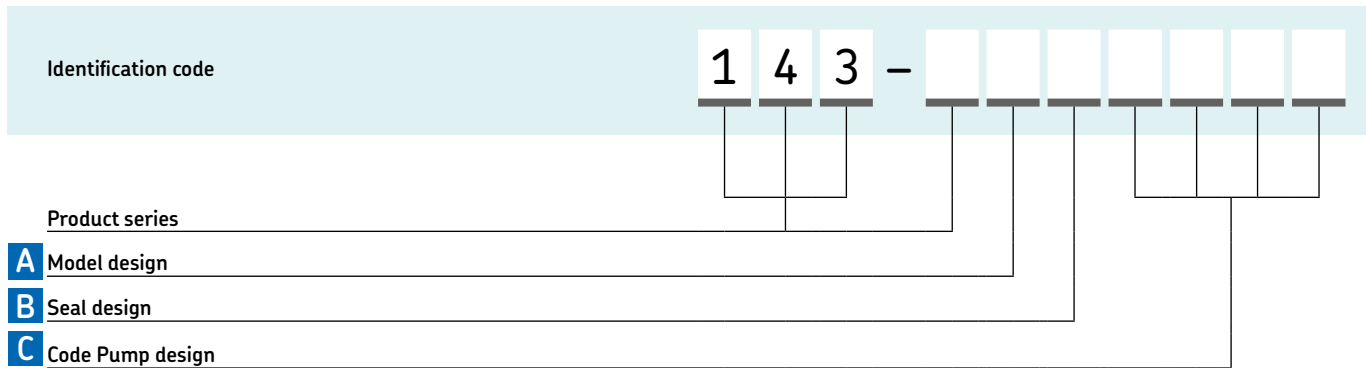


3D

skf-lubrication.partcommunity.com/3d-cad-models

Gerotor pump

143 without motor



Model design

- A 3 gerotor pump+pump flange+ shaft coupling
- 4 gerotor pump only

Seal design

- B N NBR
- F FKM

Pump design

| C | Code | Flow rate ¹⁾ | | Operating back pressure max. | | Code | Flow rate ¹⁾ | | Operating back pressure max. | |
|---|------|-------------------------|---------|------------------------------|-----|------|-------------------------|---------|------------------------------|-----|
| | | l/min | pts/min | bar | psi | | l/min | pts/min | bar | psi |
| | D03 | 1.7 | 3.6 | 30 | 435 | M05 | 12,5 | 26.4 | 50 | 725 |
| | F02 | 2.5 | 5.3 | 20 | 290 | P02 | 19 | 40.1 | 20 | 290 |
| | F05 | 2.5 | 5.3 | 50 | 725 | R02 | 30 | 63.4 | 20 | 290 |
| | H02 | 5.25 | 11.1 | 20 | 290 | R03 | 30 | 63.4 | 30 | 435 |
| | H05 | 5.25 | 11.1 | 50 | 725 | T02 | 40 | 84.5 | 20 | 290 |
| | K02 | 9 | 19 | 20 | 290 | T03 | 40 | 84.5 | 30 | 435 |
| | K05 | 9 | 19 | 50 | 725 | V02 | 50 | 105.7 | 20 | 290 |
| | M02 | 12.5 | 26.4 | 20 | 290 | V03 | 50 | 105.7 | 30 | 435 |

¹⁾ Valid for operating viscosity of 140 mm²/s

Accessories

Pressure relief valves

| Order number | Flow rate | |
|--------------|----------------|-------------------------|
| | l/min | pts/min |
| WVN200-10 | 1,7; 2,5; 5,25 | 3,6; 5,3; 11,1 |
| 161-218-000 | 9; 12,5 | 19; 26,4 |
| 161-228-051 | 19; 30; 40; 50 | 40,2; 63,4; 84,5; 105,7 |

Gerotor pump

143 with motor



Description

Gerotor pump series 143 are self-priming positive-displacement pumps with fixed displacement and high efficiency. They are suitable for a variety of tasks and applications, such as circulating-oil and total-loss lubrication systems. SKF gerotor pumps operate in a flow range between 0,85 to 50 l/min at pressure up to 50 bar. They are characterized by very smooth running, low noise generation and good suction capability.

Features and benefits

- Flexible pump delivery range
- Wide viscosity range
- Smooth running
- Low-noise operation
- Good suction characteristics
- Simplified ordering

Applications

- Marine and offshore industry
- Pulp and paper and printing industries
- Heavy industry

Technical data

| | |
|----------------------------|--|
| Function | electrically operated gerotor pump |
| Lubricant | lubrication and hydraulic oils; viscosity 20 to 1 000 mm ² /s |
| Flow rate | 0,85–50 l/min; 1,8–105 pts/min |
| Operating temperature | 0 to +40 °C; +32 to 104 °F |
| Operating back pressure | max. 50 bar; max. 725 psi |
| Outlet | 1 |
| Suction height | max. 1 000 mm; 39,4 in |
| Operating voltage | 3-phase, acc. to DIN IEC 60038 |
| Drive speed | 1 400–2 800 min ⁻¹ |
| Connecting thread pressure | G 1/4 to G 1 BSPP |
| Connecting thread suction | G 1/4 to G 1 1/4 BSPP |
| Rated power | 0,18 to 5,5 kW |
| Protection class | IP 54 (motor) |
| Material | hydraulic cast, steel, sintered material, low-deformation case-hardened steels, NBR or FPM |
| Dimensions | depending on the model: min. 289 × 184 × 126 mm max. 656 × 264 × 280 mm min. 11,37 × 7,3 × 4,96 in max. 25,82 × 10,4 × 11 in |
| Mounting position | horizontal or vertical; foot or flange mounting |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1204-3-EN

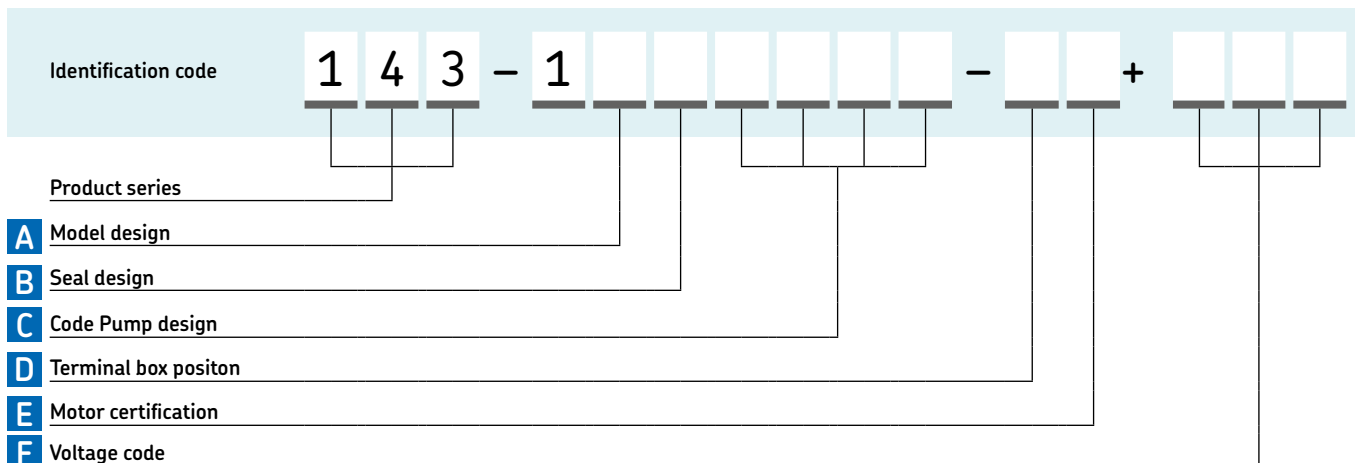


3D

skf-lubrication.partcommunity.com/3d-cad-models

Gerotor pump

143 with motor



Model design

- A** 1 Motor foot (IBM34)
- 2 Motor flange (IBM14)
- 3 Gerotor pump+pump flange+ shaft coupling (without motor)
- 4 only gerotor pump (without motor)

Seal design

- B** N NBR
- F FKM

Terminal box position

as seen from shaft extension of drive side (not applicable on design without motor)

- D** R right, (standard, not on motor 1.1; 1.5, and 4 kW)
- O top (standard, on motor 1.1, 1.5, and 4 kW)
- X on motor flange design (IMB14), terminal box position on suction port side of pump

(others available on request)

Motor certification

- E** A CE (Europe)
 - B UL/CSA (USA/Canada)
- (others available on request)

Pump design

| C Code | Metering quantity ¹⁾ | Operating pressure | Motor drive | Operating viscosity | Size | Poles |
|--------|---------------------------------|--------------------|-------------|---------------------|------|-------|
| | l/min | max. bar | kW | mm ² /s | | |
| B03C | 0,85 | 30 | 0,18 | 20-1 000 | 63 | 4 |
| D03E | 1,7 | 30 | 0,37 | 20-1 000 | 71 | 2 |
| F02D | 2,5 | 20 | 0,25 | 20-1 000 | 71 | 4 |
| F05F | 2,5 | 20 | 0,55 | 20-1 000 | 80 | 4 |
| H02F | 5,25 | 20 | 0,55 | 20-1 000 | 80 | 4 |
| H05J | 5,25 | 50 | 1,1 | 20-1 000 | 90 | 4 |
| K02H | 9 | 20 | 0,75 | 20-1 000 | 80 | 4 |
| K05J | 9 | 50 | 1,1 | 20-1 000 | 90 | 4 |
| M02H | 12,5 | 20 | 0,75 | 20-1 000 | 80 | 4 |
| M05K | 12,5 | 50 | 1,5 | 20-1 000 | 90 | 4 |
| P02K | 19 | 20 | 1,5 | 20-1 000 | 90 | 4 |
| R02M | 30 | 20 | 3 | 20-1 000 | 100 | 2 |
| R03M | 30 | 30 | 3 | 20-750 | 100 | 2 |
| R03N | 30 | 30 | 4 | 20-1 000 | 112 | 2 |
| T02M | 40 | 20 | 3 | 20-750 | 100 | 2 |
| T03N | 40 | 30 | 4 | 20-1 000 | 112 | 2 |
| V02N | 50 | 20 | 4 | 20-1 000 | 112 | 2 |
| V03N | 50 | 30 | 4 | 20-750 | 112 | 2 |
| V03P | 50 | 30 | 5,5 | 20-1 000 | 132 | 2 |

¹⁾ Nominal flow rate at motor speed 1 400/2 800 min⁻¹ according to number of motor pins.

Voltage Code V AC

| | |
|---------------|--|
| F +1GP | 220/380 ¹⁾ , 255/440 ^{2) 3)} |
| +1GD | 230/400 ¹⁾ ; 265/460 ^{2) 3)} |
| +1GQ | 240/415 ¹⁾ ; 280/480 ^{2) 3)} |
| +1HQ | 290/500 ¹⁾ ; 330/575 ^{2) 3)} |
| +1GH | 380/660 ¹⁾ ; 440 ^{2) 3)} |
| +1GK | 400/690 ¹⁾ ; 460 ^{2) 3)} |
| +1GL | 415/720 ¹⁾ ; 480 ^{2) 3)} |
| +1KG | 400 ¹⁾ ; 460 ^{2) 3)} |
| +1KS | 240/415 ²⁾ |
| +1LL | 500/575 ^{1) 2)} |
| +1GF | 200/345 ^{1) 3)} |
| +1GG | 200/345 ^{2) 3)} |
| +MDP | 220/380 ^{2) 3)} |
| +MFN | 255/440 ¹⁾ |
| +1GR | 230/400 ^{2) 3)} |
| +MMP | 305/525 ^{1) 3)} |
| +1FX | 220-240/380-420 ^{1) 4)} 254-240/440-480 ^{2) 4)} |
| +1HM | 220-240/380-420 ^{1) 4)} 254-280/440-480 ^{2) 4)} |

¹⁾ 50 Hz
²⁾ 60 Hz
³⁾ ±10 %
⁴⁾ ±5 %

Gerotor pump

143 EEX



Description

The SKF 143 EEX product series was designed for centralized lubrication systems in explosive environments. It offers a high degree of protection in explosive atmospheres. Pump, motor, coupling and seals comply with ATEX requirements. SKF Gerotor pumps of the 143 series are self-priming positive displacement pumps with a fixed displacement and high efficiency. They are suitable for lubrication, hydraulic, hydrostatic and cooling applications as well as for oil circulation lubrication systems.

Features and benefits

- Safe operation in explosive environments (Zone 1, 2, 21, 22)
- Work with standard mineral and synthetic lubrication and hydraulic oils
- Smooth running
- Good suction characteristic
- Low noise

Applications

- Marine and offshore industry
- Pulp and paper and printing industries
- Wood industry
- Heavy industry
- Agriculture

Technical data

| | |
|----------------------------|--|
| Function | electrically operated gerotor pump |
| Lubricant | lubrication and hydraulic oils; viscosity 20 to 1 000 mm ² /s |
| Flow rate | 0,85–50 l/min; 1.8–105 pts/min |
| Operating temperature | 0 to 40 °C; 32 to 104 °F |
| Operating back pressure | depending on model; max. 50 bar; max. 725 psi |
| Outlet | 1 |
| Suction height | max. 1 000 mm; 39.4 in |
| Motor | 3-phase, acc. to DIN IEC 60038 |
| Output rated | 0,18–5,5 kW |
| Drive speed | 1 400–2 800 min ⁻¹ |
| Connecting thread pressure | G 1/4 to G 1 BSPP |
| Connecting thread suction | G 1/4 to G 1 1/4 BSPP |
| Rated power | 0,25 to 5,5 kW |
| Protection class | IP 54 |
| Material | hydraulic cast, steel, sintered material, low-deformation case-hardened steels, NBR or FPM |
| Dimensions | depending on the model: min. 289 × 184 × 126 mm max. 656 × 264 × 280 mm min. 11.37 × 7.3 × 4.96 in max. 25.82 × 10.4 × 11 in |
| Mounting position | horizontal or vertical; foot or flange mounting. |
| ATEX gas | II 2G c IICT 4 Gb |
| ATEX dust | II 2D c IIIC T120° C Db |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

17345 EN; 915-170-002

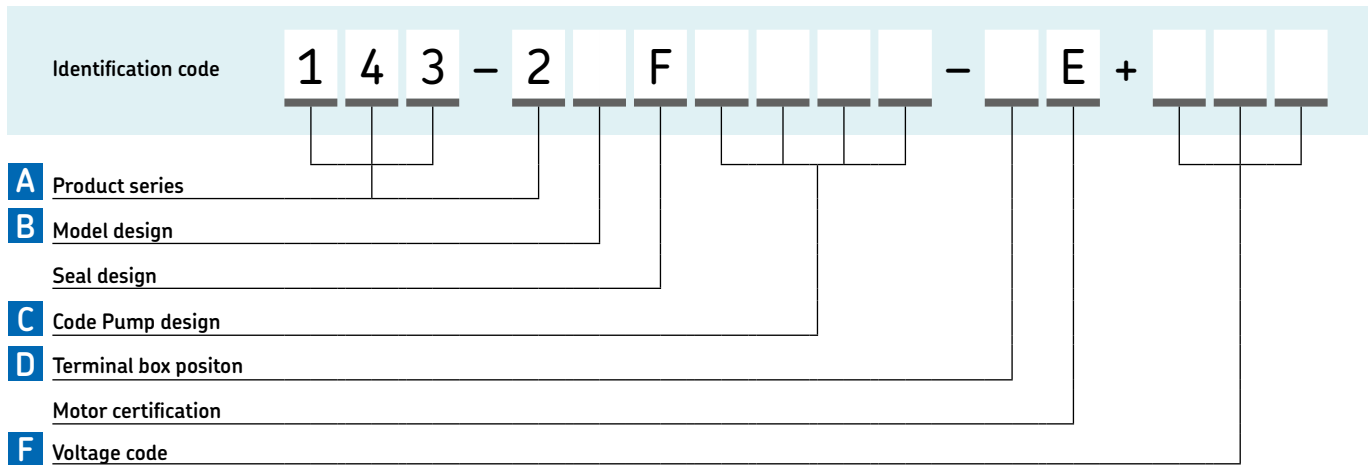


3D

skf-lubrication.partcommunity.com/3d-cad-models

Gerotor pump

143 EEX



Model design

- A** 1 motor foot (IBM34)
- 2 motor flange (IBM14)

Seal design

- B** F FKM

Terminal box position

as seen from shaft extension of drive side

- D** R right, (standard, not on motor 1.1; 1.5, and 4 kW)
- O top (standard, on motor 1.1, 1.5, and 4 kW)
- X on motor flange design (IMB14), terminal box position on suction port side of pump

(others available on request)

Motor certification

- E** E ATEX; IECEx

Pump design

| C Code | Flow rate ¹⁾ | Operating pressure | Motor drive | Operating viscosity | Size | Poles |
|--------|-------------------------|--------------------|-------------|---------------------|------|-------|
| | l/min | max. bar | kW | mm ² /s | | |
| B03C | 0,85 | 30 | 0,18 | 20–1 000 | 63 | 4 |
| D03E | 1,7 | 30 | 0,37 | 20–1 000 | 71 | 2 |
| F02D | 2,5 | 20 | 0,25 | 20–1 000 | 71 | 4 |
| F05F | 2,5 | 20 | 0,55 | 20–1 000 | 80 | 4 |
| H02F | 5,25 | 20 | 0,55 | 20–1 000 | 80 | 4 |
| H05J | 5,25 | 50 | 1,1 | 20–1 000 | 90 | 4 |
| K02H | 9 | 20 | 0,75 | 20–1 000 | 80 | 4 |
| K05J | 9 | 50 | 1,1 | 20–1 000 | 90 | 4 |
| M02H | 12,5 | 20 | 0,75 | 20–1 000 | 80 | 4 |
| M05K | 12,5 | 50 | 1,5 | 20–1 000 | 90 | 4 |
| P02K | 19 | 20 | 1,5 | 20–1 000 | 90 | 4 |
| R02M | 30 | 20 | 3 | 20–1 000 | 100 | 2 |
| R03M | 30 | 30 | 3 | 20–750 | 100 | 2 |
| R03N | 30 | 30 | 4 | 20–1 000 | 112 | 2 |
| T02M | 40 | 20 | 3 | 20–750 | 100 | 2 |
| T03N | 40 | 30 | 4 | 20–1 000 | 112 | 2 |
| V02N | 50 | 20 | 4 | 20–1 000 | 112 | 2 |
| V03N | 50 | 30 | 4 | 20–750 | 112 | 2 |
| V03P | 50 | 30 | 5,5 | 20–1 000 | 132 | 2 |

¹⁾ Nominal delivery rate at motor speed 1 400/2 800 min⁻¹ according to number of motor pins.

Voltage Code VAC

- F** +1GP 220/380 ¹⁾, 255/440 ^{2) 3)}
- +1GD 230/400 ¹⁾; 265/460 ^{2) 3)}
- +1GQ 240/415 ¹⁾; 280/480 ^{2) 3)}
- +1HQ 290/500 ¹⁾; 330/575 ^{2) 3)}
- +1GH 380/660 ¹⁾; 440 ^{2) 3)}
- +1GK 400/690 ¹⁾; 460 ^{2) 3)}
- +1GL 415/720 ¹⁾; 480 ^{2) 3)}
- +1KG 400 ¹⁾; 460 ^{2) 3)}
- +1GF 200/345 ^{1) 3)}
- +1GG 200/345 ^{2) 3)}
- +MDP 220/380 ^{2) 3)}
- +1GR 230/400 ^{2) 3)}
- +MMP 305/525 ^{1) 3)}
- +1FX 220–240/380–420 ^{1) 4)}
- 254–240/440–480 ^{2) 4)}
- +1HM 220–240/380–420 ^{1) 4)}
- 254–280/440–480 ^{2) 4)}

¹⁾ at 50 Hz
²⁾ at 60 Hz
³⁾ ±10 %
⁴⁾ ±5 %

Gear pump

ZM (multi-circuit)



Description

ZM multi-circuit gear pump units are self-priming and valveless pumps. They are used in oil circulation lubrication systems with 2 to 20 separate delivery circuits. Unused outlets must be returned to the reservoir. The pumps consists of an electric motor, adapter flange, coupling and a gear pump. The pump can be mounted separately from the reservoir or as a flanged pump on the reservoir. A special design with seals for horizontal mounting below lubricant level is available. The fluids to be pumped must have enough lubricity for the pump to lubricate itself.

Some of these distribution pumps require an attached, single-circuit priming pump that operates separately. The priming pump restricts differential pressure within the multicircuit pumps and helps to provide uniform delivery rates. It is advisable to filter the oil upstream of the distribution pump inlet.

Features and benefits

- High viscosity range
- Flexible due to up to 20 circuits per pump
- Suitable for hydrostatic operation
- Easy system planning
- Space-saving pump design

Applications

- Machine tools
- Metal and plastic forming machinery
- General industry

Technical data

| | |
|-------------------------|--|
| Function | electrically operated, self-priming gear pump |
| Lubricant | mineral and synthetic oils; viscosity depending on model: 20–2 000 mm ² /s |
| Flow rate | depending on model: min. 0,015 l/min; 0.032 pts/min max. 0,45 l/min; 0.951 pts/min |
| Outlets | 2–20 |
| Operating temperature | +10 to 40 °C; +50 to 104 °F |
| Operating back pressure | max. 20 bar; max. 290 psi |
| Suction height | 500 mm; max. 19.7 in |
| Drive speed | 670 to 1 400 min ⁻¹ |
| Motor | 3-phase motor |
| Voltage | 220–240/380–420 V AC at 50 Hz |
| Rated power | 0,18–0,37 kW |
| Pressure connection | G 1/8 or M10×1 |
| Suction connection | G 1/2 or M14×1,5 |
| ZM21 , ZM50 ... : | M14×1,5 for Ø12 mm |
| ZM10 ... : | G 1/2 |
| Material sealing | NBR, FPM |
| Protection class | IP 54 |
| Dimensions | min. 325 × 152 × 125 mm max. 460 × 208 × 160,5 mm min. 12.79 × 5.98 × 4.92 in max. 18.11 × 8.18 × 6.32 in |
| Mounting position | horizontal, or flanged to reservoir ¹⁾ |

¹⁾ Only flange design version with separate seal



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1204-2-EN, 951-170-002 EN

Gear pump

ZM (multi-circuit)

ZM multi-circuit pump, self-priming ¹⁾

| Order number | Circuits ⁴⁾ (Outlets) | Flow rate ⁶⁾ V _a | | V _b | | Back pressure | | Drive speed min ⁻¹ | Operating viscosity mm ² /s |
|----------------------------|-------------------------------------|---|---------|----------------|---------|---------------|-----|----------------------------------|--|
| | | l/min | pts/min | l/min | pts/min | bar | psi | | |
| ZM212-21+1FV ²⁾ | 2 | 1×0,12 | 1×0.253 | 1×0,12 | 1×0.253 | 12 | 174 | 1 300 | 20–2 000 |
| ZM212-31+1FV ³⁾ | 2 | 1×0,12 | 1×0.253 | 1×0,12 | 1×0.253 | 12 | 174 | 1 300 | 20–2 000 |
| ZM502+1FV ²⁾ | 5 | 5×0,2 | 5×0.423 | - | - | 20 | 290 | 670 | 20–2 000 |
| ZM502-3+1FV ³⁾ | 5 | 5×0,2 | 5×0.423 | - | - | 20 | 290 | 670 | 20–2 000 |
| ZM505+1FV ²⁾ | 5 | 5×0,45 | 5×0.951 | - | - | 10 | 145 | 670 | 20–500 |
| ZM505-3+1FV ³⁾ | 5 | 5×0,45 | 5×0.951 | - | - | 10 | 145 | 670 | 20–500 |
| ZM1002+1FV ²⁾ | 10 | 5×0,2 | 5×0.423 | 5×0,2 | 5×0.423 | 20 | 290 | 690 | 20–1 000 |
| ZM1002-3+1FV ³⁾ | 10 | 5×0,2 | 5×0.423 | 5×0,2 | 5×0.423 | 20 | 290 | 690 | 20–1 000 |
| ZM1005+1FV ²⁾ | 10 | 5×0,45 | 5×0.951 | 5×0,45 | 5×0.951 | 10 | 145 | 690 | 20–250 |
| ZM1005-3+1FV ³⁾ | 10 | 5×0,45 | 5×0.951 | 5×0,45 | 5×0.951 | 10 | 145 | 690 | 20–250 |
| ZM1025+1FV ²⁾ | 10 | 5×0,2 | 5×0.423 | 5×0,45 | 5×0.951 | 15 | 218 | 690 | 20–500 |
| ZM1025-3+1FV ³⁾ | 10 | 5×0,2 | 5×0.423 | 5×0,45 | 5×0.951 | 15 | 218 | 690 | 20–500 |

ZM multi-circuit pump for operation with a separate priming pump ¹⁾

| Order number | Circuits ⁴⁾ (Outlets) | Flow rate ⁶⁾ V _a | | V _b | | Pump inlet P ₁ ⁵⁾ | | Drive speed min ⁻¹ | Operating viscosity mm ² /s |
|------------------------------|-------------------------------------|---|----------|----------------|---------|--|-----|----------------------------------|--|
| | | l/min | pts/min | l/min | pts/min | bar | psi | | |
| ZM402-2-S2+1FV ²⁾ | 4 | 4×0,2 | 4×0.423 | - | - | 50 | 725 | 690 | 20–500 |
| ZM405-2-S2+1FV ²⁾ | 4 | 4×0,45 | 4×0.951 | - | - | 50 | 725 | 690 | 20–500 |
| ZM502-S2+1FV ²⁾ | 5 | 5×0,2 | 5×0.423 | - | - | 30 | 435 | 690 | 20–500 |
| ZM505-S2+1FV ²⁾ | 5 | 5×0,45 | 5×0.951 | - | - | 30 | 435 | 690 | 20–500 |
| ZM802-2-S2+1FV ²⁾ | 8 | 4×0,2 | 4×0.423 | 4×0,2 | 4×0.423 | 50 | 725 | 690 | 20–500 |
| ZM805-2-S2+1FV ²⁾ | 8 | 4×0,45 | 4×0.951 | 4×0,45 | 4×0.951 | 50 | 725 | 690 | 20–500 |
| ZM1002-S2+1FV ²⁾ | 10 | 5×0,2 | 5×0.423 | 5×0,2 | 5×0.423 | 30 | 435 | 690 | 20–500 |
| ZM1005-S2+1FV ²⁾ | 10 | 5×0,45 | 5×0.951 | 5×0,45 | 5×0.951 | 30 | 435 | 690 | 20–500 |
| ZM2101-1+1FV ²⁾ | 20 | 20×0,015 | 20×0.032 | - | - | 30 | 435 | 1 400 | 20–1 000 |
| ZM2102-1+1FV ²⁾ | 20 | 20×0,03 | 20×0.063 | - | - | 30 | 435 | 1 400 | 20–1 000 |
| ZM2103-1+1FV ²⁾ | 20 | 20×0,05 | 20×0.105 | - | - | 30 | 435 | 1 400 | 20–1 000 |
| ZM2104-1+1FV ²⁾ | 20 | 20×0,1 | 20×0.211 | - | - | 30 | 435 | 1 400 | 20–1 000 |

ZM pump with built-in priming pump and adjustable pressure restriction valve ¹⁾

| Order number | Circuits ⁴⁾ (Outlets) | Flow rate ⁶⁾ | | Pump inlet P ₁ | | Pump inlet P ₂ | | Drive speed min ⁻¹ |
|--------------------------|-------------------------------------|-------------------------|----------|------------------------------|-----|------------------------------|-----|----------------------------------|
| | | l/min | pts/min | bar | psi | bar | psi | |
| ZM1035+1FV ²⁾ | 10 | 10×0,45 | 10×0.951 | 16 | 232 | 20 | 290 | 1 400 |
| ZM2201+1FV ²⁾ | 20 | 20×0,025 | 20×0.052 | 18 | 260 | 20 | 290 | 680 |
| ZM2202+1FV ²⁾ | 20 | 20×0,035 | 20×0.074 | 18 | 260 | 20 | 290 | 915 |
| ZM2103+1FV ²⁾ | 20 | 20×0,05 | 20×0.105 | 18 | 260 | 20 | 290 | 1 360 |

¹⁾ Recommended filtration between multicircuit pump and priming pump. According to: ISO 4406 20/17/14, NAS code (1638) class 8, SAW AS 4059 class 8

²⁾ Foot-mounted pumps for separate mounting from reservoir

³⁾ Flange-mounted pumps with special seal design

⁴⁾ Non used pump delivery ports must be returned to the oil reservoir and must **not** be blanked off

⁵⁾ P2 outlet pressure corresponds P1 ± 5 bar; 72,5 psi

⁶⁾ Valid for an operation viscosity of 140 mm²/min and a drive speed of 1 400 min⁻¹

Piston pump

ZPU 09/09A



Description

The ZPU 09/09A high-pressure pumps are designed for use in hydrostatic and hydrodynamic (start-up phase) lubrication systems. They also may be used in oil supply systems, blocking oil systems and regulation and control oil systems. The pump is suitable for oils with viscosity of 20 to 460 mm²/s. The pump shows a housing, of 8 l (16.9 pts) capacity, with a pump element and a flange with outlets and return lines, all connected to a 3-phase, multi-range or 500 V motor. The pump can be delivered with one or two outlets.

Features and benefits

- Reliable
- With one or two outlets
- Simple to service
- Built-in check-valve for ZPU 09
- Return line from pressure relief valve
- Housing integrated oil level indicator

Applications

- Turbines
- Steel mills
- Gears
- Paper machines
- Power stations

Technical data

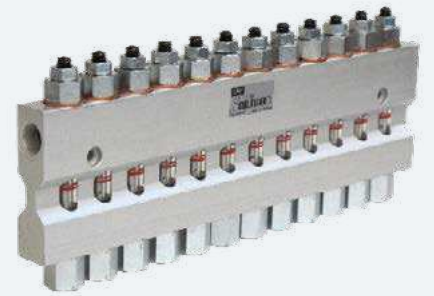
| | |
|--------------------------------|---|
| Function | electrically operated piston pump |
| Operating temperature | -20 to +80 °C; -4 to +176 °F |
| Operating back pressure | max. 400 bar; max. 5 800 psi |
| Lubricant | mineral and synthetic oils; viscosity 20–460 mm ² /s |
| Number of outlets | |
| ZPU09 | 1 |
| ZPU09A | 2 |
| Flow rate | |
| ZPU09 | 0,13 l/min, 0.27 pts/min |
| ZPU09A | 2 × 0,06 l/min, 2 × 0.13 pts/min |
| Voltage | 380–415, 420–480 V AC / 50 Hz, ±5% to ±10% 500 V AC / 50 Hz, ±10% |
| Outlet connection filling line | G 3/8 BSPP |
| Direction of rotation drive | optional |
| Protection class | IP 54 |
| Dimensions | 650 × 410 × 465 mm 25.59 × 16.14 × 16.31 in |
| Mounting position | vertical |

Piston pump

ZPU 09/09A

ZPU 09/09A

| Order number | Designation | Number of outlets | Flow rate per outlet | | Motor |
|--------------|---------------------------------|-------------------|----------------------|---------|--|
| | | | l/min | pts/min | |
| 605-27545-1 | ZPU 09 / 08 GT-380-415, 420-480 | 1 | 0,13 | 0.27 | 3-phase gear motor, 380-415 / 420-480 V AC |
| 605-27546-1 | ZPU09 / 08GT-500 | 1 | 0,13 | 0.27 | 3-phase gear motor, 500 V AC |
| 605-27547-1 | ZPU09A / 08GT-380-415,420-480 | 2 | 0,6 | 0.13 | 3-phase gear motor, 380-415 / 420-480 V AC |
| 605-27548-1 | ZPU09A / 08GT-500 | 2 | 0,6 | 0.13 | 3-phase gear motor, 500 V AC |
| 605-28166-1 | ZPU09 / 08GT-000 | 1 | 0,13 | 0.27 | without motor |



Overview of oil circulation metering devices

Flow restrictor

| Product | Lubricant viscosity | Flow rate | | Outlets | Operating pressure max. | | Operating temperature | | Page |
|-----------|---------------------|--------------------|------------|---------|-------------------------|----------|-----------------------|-----------|------|
| | | mm ² /s | l/min | | pts/min | bar | psi | °C | |
| VD | 10–1 000 | 0,001–0,23 | 0.002–0.49 | 1 | max. 10 | max. 145 | 0 to 60 | 32 to 140 | 48 |

Flow divider

| Product | Lubricant viscosity | Flow rate | | Outlets | Operating pressure max. | | Operating temperature | | Page |
|------------|---------------------|--------------------|----------|---------|-------------------------|-------|-----------------------|-----------|------|
| | | mm ² /s | l/min | | pts/min | bar | psi | °C | |
| SMT | 50–1 300 | 0,5–6,0 | 1.1–12.7 | 2 | 100 | 1 450 | 0 to +100 | 32 to 212 | 50 |

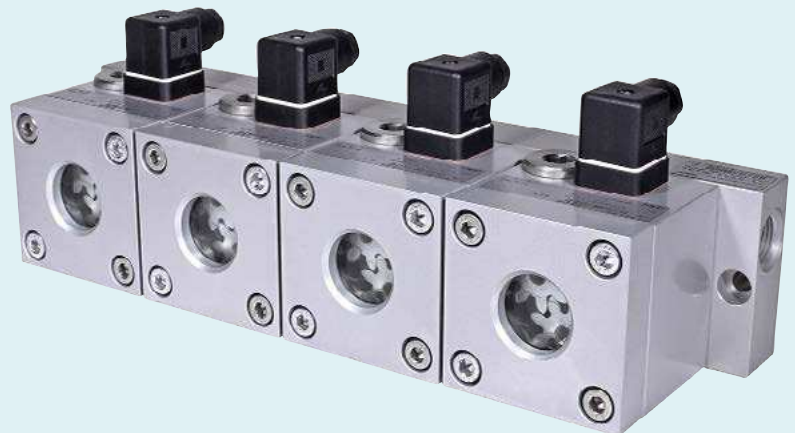
Adjustable metering valve with visual flow indication

| Product | Lubricant viscosity | Flow rate | | Outlets | Operating pressure max. | | Operating temperature | | Page |
|-------------------|---------------------|--------------------|----------|-------------|-------------------------|-----|-----------------------|-----------|------|
| | | mm ² /s | l/min; | | pts/min | bar | psi | °C | |
| 242 type A | 10–1 000 | 0–0,01 | 0–0.02 | 1, 2, 5, 14 | 10 | 145 | 0 to 60 | 32 to 140 | 52 |
| 242 type B | 10–1 000 | 0,01–1,0 | 0.02–2.1 | 2–6, 10, 12 | 10 | 145 | 0 to 60 | 32 to 140 | 52 |
| 242 type C | 10–1 000 | 0,01–2,0 | 0.02–4.2 | 2–6 | 10 | 145 | 0 to 60 | 32 to 140 | 52 |

Adjustable metering valve with flow meter

| Product | Lubricant viscosity | Flow rate | | Outlets | Operating pressure max. | | Operating temperature | | Page | |
|-------------------------------------|---------------------|--------------------|------------------------|-------------------------|-------------------------|-----|-----------------------|----------|-----------|----|
| | | mm ² /s | l/min | | pts/min | bar | psi | °C | | °F |
| SMD 1B (SKF VarioLub) | | 50–650 | 0,05–1,0 | 0.1–2.1 | 2 | 16 | 230 | 0 to 70 | 32 to 158 | 54 |
| SMD 2 (SKF VarioLub) | | 50–650 | 0,1–8,0 | 0.2–16.9 | 2 | 16 | 230 | 0 to 70 | 32 to 158 | 54 |
| SMD 3 (SKF VarioLub) | | 50–650 | 4,0–40 | 8.5–85 | 1 | 16 | 230 | 0 to 70 | 32 to 158 | 54 |
| SF05A (SKF SafeFlow) | 1) | 30–1 000 | 0,04–0,7 ¹⁾ | 0.08–1.5 ¹⁾ | 1, 2, 4, 6, 8, 10 | 15 | 215 | max. 70 | max. 158 | 56 |
| SF10A (SKF SafeFlow) | 1) | 30–1 000 | 0,1–3,0 ¹⁾ | 0.2–6.3 ¹⁾ | 1, 2, 4, 6, 8, 10 | 15 | 215 | max. 70 | max. 158 | 56 |
| SF15A (SKF SafeFlow) | 1) | 30–1 000 | 0,2–7,2 ¹⁾ | 0.4–15.2 ¹⁾ | 1, 2, 4, 6, 8, 10 | 15 | 215 | max. 70 | max. 158 | 56 |
| SF20A (SKF SafeFlow) | 1) | 30–1 000 | 0,6–17 ¹⁾ | 1.3–35.9 ¹⁾ | 1, 2, 4, 6 | 15 | 215 | max. 70 | max. 158 | 56 |
| SF30A (SKF SafeFlow) | 1) | 30–1 000 | 2,5–56 ¹⁾ | 5.3–118.3 ¹⁾ | 1 | 15 | 215 | max. 70 | max. 158 | 56 |
| FL15 (SKF Flowline Monitor) | | 32–1 000 | 0,1–15 | 0.2–32 | 2, 4, 6, 8, 10 | 10 | 145 | 0 to +65 | 32 to 150 | 58 |
| FL50 (SKF Flowline Monitor) | | 32–1 000 | 15–50 | 32.0–106 | 1 | 10 | 145 | 0 to +65 | 32 to 150 | 58 |
| FL100 (SKF Flowline Monitor) | | 32–1 000 | 50–100 | 106–211 | 1 | 10 | 145 | 0 to +65 | 32 to 150 | 58 |

¹⁾ depending on the operating viscosity



Overview of oil circulation metering devices

Pressure-compensated flow limiter with optional monitoring

| Product | Lubricant viscosity | Flow rate | | Outlets | Operating pressure | | Operating temperature | | Page |
|---------------|---------------------|--------------------|------------|---------|--------------------|----------|-----------------------|-----------|------|
| | | mm ² /s | l/min | | pts/min | bar | psi | °C | |
| SMB 3 | 20–600 | 6,0–38 | 12.7–80 | 1 | 5–200 | 73–2 900 | 0 to 100 | 32 to 212 | 60 |
| SMB 6 | 20–600 | 25–132 | 53–279 | 1 | 5–200 | 73–2 900 | 0 to 100 | 32 to 212 | 62 |
| SMB 8 | 20–600 | 0,08–8 | 0.17–17 | 1–6 | 5–200 | 73–2 900 | 0 to 100 | 32 to 212 | 64 |
| SMB 9 | 20–600 | 0,08–8 | 0.17–17 | 1–6 | 6–50 | 87–725 | 0 to 70 | 32 to 158 | 68 |
| SMB 10 | 20–600 | 0.21–8.15 | 0.44–17.2 | 1–6 | 7–50 | 100–725 | 0 to 70 | 32 to 158 | 72 |
| SMB 13 | 20–600 | 6,0–30 | 12.7–63.4 | 1 | 6–50 | 87–725 | 0 to 70 | 32 to 158 | 76 |
| SMB 14 | 20–600 | 25–132 | 52.8–278.9 | 1 | 6–50 | 87–725 | 0 to 70 | 32 to 158 | 78 |

Modular progressive metering devices

| Product | Lubricant viscosity | Flow rate | | Outlets | Operating pressure max. | | Operating temperature | | Page |
|-------------|---------------------|--------------------|--------|---------|-------------------------|-------|-----------------------|-------------|------|
| | | mm ² /s | l/min | | pts/min | bar | psi | °C | |
| PSG1 | > 12 | 0–0,8 | 0–1.7 | 6–20 | 200 | 2 900 | -15 to +110 | 5 to 230 | 80 |
| PSG2 | > 12 | 0–2,5 | 0–5.3 | 6–20 | 200 | 2 900 | -15 to +110 | 5 to 230 | 82 |
| PSG3 | > 12 | 0–6 | 0–12.7 | 6–20 | 200 | 2 900 | -15 to +110 | 5 to 230 | 84 |
| VP | > 12 | 0–1 | 0–2.1 | 6–20 | 200 | 2 900 | -25 to +90 | -13 to +194 | 86 |

Screw-in restrictor

VD



Description

SKF screw-in flow restrictors VD are used to deliver relatively small amounts of oil to lubrication points. Four types of SKF VD are available, differing in tube diameter, flow rate and functionality. VD1 and VD4 restrictors can be combined and fit to manifolds, while VD2 and VD3 can be screwed directly into the ports of individual lubrication points. Screw-in restrictors VD3 and VD4 also come with a check valve to prevent leaks. These inexpensive flow restrictors are sensitive to dirt. Therefore, it is recommended to use a filter size of 10 µm.

Features and benefits

- Easy planning and flow rate regulation
- Flow rate dependent on pressure and viscosity
- Check valve to prevent leaks (VD3, VD4)
- Fitting to manifolds and combination of screw-in restrictors possible (VD1, VD4)
- Direct threading into ports of individual lubrication points possible (VD2, VD3)

Applications

- Machine tools
- Metal industry
- Presses
- Automation
- Industrial transmissions
- Automotive industry
- Heavy industry

Technical data

| | |
|------------------------|--|
| Function | screw-in restrictor |
| Outlets | 1 |
| Lubricant | mineral and PAO oils; viscosity 10–1 000 mm ² /s |
| Flow rate | 0,001–0,23 l/min 0,002–0,49 pts/min |
| Operating temperature | 0 to +60 °C; +32 to 140 °F |
| Operating pressure | 10 bar; 145 psi |
| Filter | < 10 µm |
| Material | steel, brass |
| Main line connections: | |
| VD 1 | M10×1 |
| VD 2 | M10×1 for tube Ø6 mm |
| VD 3 | DIN 3862 fitting for tube Ø4 mm |
| VD 4 | M8×1 |
| Outlet connections: | |
| VD 1 | M8×1 for tube Ø4 mm |
| VD 2 | M10×1 (direct lub. point mounting) |
| VD 3 | M10×1 tap (direct lub. point mounting) |
| VD 4 | DIN 3862 fitting for tube Ø4 mm M8 or M10 |
| Length: | |
| VD 1 | 30 mm; 1.18 in |
| VD 2 | 32 mm; 1.26 in |
| VD 3 | 32 mm; 1.26 in |
| VD 4 | 34 mm; 1.34 in |
| Mounting position | any |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-5006-EN



3D

skf-lubrication.partcommunity.com/3d-cad-models

Screw-in restrictor

VD

| Order number | Tube Ø mm | Flow rate 1) | | | | | | Description 2) | Code |
|----------------|--------------|--------------|---------|----------|---------|----------|---------|---|------|
| | | at 2 bar | | at 4 bar | | at 6 bar | | | |
| | | ml/min | pts/min | ml/min | pts/min | ml/min | pts/min | | |
| VD1-102 | 4 | 1 | 0.0021 | 2,8 | 0.0059 | 4 | 0.0085 | M10×1 for manifold mounting, washer 504-019 | 2 |
| VD1-103 | 4 | 2,8 | 0.0059 | 5,5 | 0.0116 | 8 | 0.0169 | M10×1 for manifold mounting, washer 504-019 | 3 |
| VD1-104 | 4 | 5 | 0.0106 | 10 | 0.0211 | 15 | 0.0317 | M10×1 for manifold mounting, washer 504-019 | 4 |
| VD1-105 | 4 | 7,5 | 0.0158 | 15 | 0.0317 | 23 | 0.0486 | M10×1 for manifold mounting, washer 504-019 | 5 |
| VD1-106 | 4 | 15 | 0.0317 | 28 | 0.0592 | 40 | 0.0845 | M10×1 for manifold mounting, washer 504-019 | 6 |
| VD1-107 | 4 | 35 | 0.0739 | 68 | 0.1437 | 100 | 0.2113 | M10×1 for manifold mounting, washer 504-019 | 7 |
| VD1-108 | 4 | 58 | 0.1226 | 112 | 0.2367 | 170 | 0.3592 | M10×1 for manifold mounting, washer 504-019 | 8 |
| VD1-109 | 4 | 77 | 0.1627 | 155 | 0.3276 | 230 | 0.4860 | M10×1 for manifold mounting, washer 504-019 | 9 |
| VD2-102 | 6 | 1 | 0.0021 | 2,8 | 0.0059 | 4 | 0.0085 | M10×1 for mounting direct into lubrication point | 2 |
| VD2-103 | 6 | 2,8 | 0.0059 | 5,5 | 0.0116 | 8 | 0.0169 | M10×1 for mounting direct into lubrication point | 3 |
| VD2-104 | 6 | 5 | 0.0105 | 10 | 0.0211 | 15 | 0.0317 | M10×1 for mounting direct into lubrication point | 4 |
| VD2-105 | 6 | 7,5 | 0.0159 | 15 | 0.0317 | 23 | 0.0486 | M10×1 for mounting direct into lubrication point | 5 |
| VD2-109 | 6 | 77 | 0.1627 | 155 | 0.3276 | 230 | 0.4860 | M10×1 for mounting direct into lubrication point | 9 |
| VD3-099 | 4 | 0,15 | 0.0003 | 0,28 | 0.0006 | 0,4 | 0.0008 | M10×1 tab for mounting direct into lubrication point | 00 |
| VD3-100 | 4 | 0,3 | 0.0006 | 0,68 | 0.0014 | 1 | 0.0021 | M10×1 tab for mounting direct into lubrication point | 0 |
| VD3-101 | 4 | 0,5 | 0.0011 | 1 | 0.0021 | 1,5 | 0.0032 | M10×1 tab for mounting direct into lubrication point | 1 |
| VD3-102 | 4 | 1 | 0.0021 | 2 | 0.0042 | 3 | 0.0063 | M10×1 tab for mounting direct into lubrication point | 2 |
| VD4-099 | 4 | 0,15 | 0.0003 | 0,28 | 0.0006 | 0,4 | 0.0008 | M8×1 for manifold mounting, washer DIN 7603-A8x11,5-CU | 00 |
| VD4-100 | 4 | 0,3 | 0.0006 | 0,68 | 0.0014 | 1 | 0.0021 | M8×1 for manifold mounting, washer DIN 7603-A8x11,5-CU | 0 |

1) The shown flow rates are valid for an operating viscosity of 140 mm²/s. Flow rates change at the same time system pressure or lubricant viscosity change. Further details on request.
2) Washer not included, but can be ordered separately

Accessories - manifold

Order code V L -

Product series


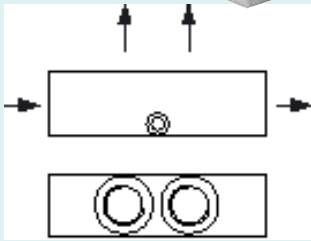
Number of ports
01 = 1 port **03** = 3 ports **05** = 5 ports **08** = 8 ports
02 = 2 ports **04** = 4 ports **06** = 6 ports **10** = 10 ports

Design of outlet thread
D = Small profile, M8×1 with counterbore for flat washer (can only be selected for main line connection M3)
F = Normal profile, M8×1 with counterbore for flat washer
G = Normal profile, M10×1 with counterbore for flat washer

Material
A = Aluminum;
E = Stainless steel (only for outlet threads A, B, E, G)

Design of main line connection
G1 = G 1/8 to DIN 3852-2, Form X, small
G2 = G 1/4 to DIN 3852-2, Form X, small
M1 = M10×1 to DIN 3852-1, Form X, small
M2 = M14×1.5 to DIN 3852-1, Form X, small
M3 = M10×1 with counterbore for solderless pipe connection per DIN 3862
M4 = M14×1.5 with counterbore for solderless pipe connection per DIN 3862

Order example

VL-02FAM3

- Product series VL
- 2 ports
- Normal profile made of aluminum
- M8×1 internal thread with counterbore for flat washer
- M10×1 main line connection with counterbore for solderless pipe connection per DIN 3862

Flow divider

SMT



Description

The SKF flow divider SMT 1 splits the flow rate into two equal flows or into two individual flows at a specific ratio. Different defined dividing ratios are available from 1:1 to 1:4. Because the SMT 1 flow divider regulates itself, varying back pressures have negligible impact on the dividing accuracy. The SMT 1 is distinguished by its simple and compact design for installation near the lubrication point. Due to its corrosion-resistant material, it also can be utilized in aggressive environments. Additionally, this flow divider can be used with a wide range of viscosities from 50–1 300 mm²/s.

Features and benefits

- Compact design for installation near lubrication point
- High accuracy due to self-regulating feature
- Corrosion resistant
- Easy flow adjustment (nozzle exchange)
- Inexpensive monitoring through upstream pressure switch or flow controller possible

Applications

- Automotive
- Pulp and paper industry
- On-off road
- Machine tools
- Metal fabrication
- Power plants

Technical data

| | |
|-----------------------|--|
| Function | flow divider |
| Outlets | 2 |
| Operating temperature | 0 to +100 °C; +32 to 212 °F |
| Operating pressure | 100 bar; 1 450 psi |
| Lubricant | mineral and synthetic oils; viscosity 50–1 300 mm ² /s |
| Flow rate | 0,5–6,0 l/min 1,05–12,7 pts/min |
| Dividing ratios | 1:1; 1:1,5; 1:2; 1:2,5; 1:3; 1:3,5; 1:4 |
| Dividing accuracy | ≥ 95 % |
| Material | aluminium, anodized |
| Dimensions | 30 × 69 × 58 mm 1,18 × 2,72 × 2,28 in |
| with inline strainer | 87 × 69 × 108 mm 3,43 × 2,72 × 4,25 in |
| Mounting position | any |



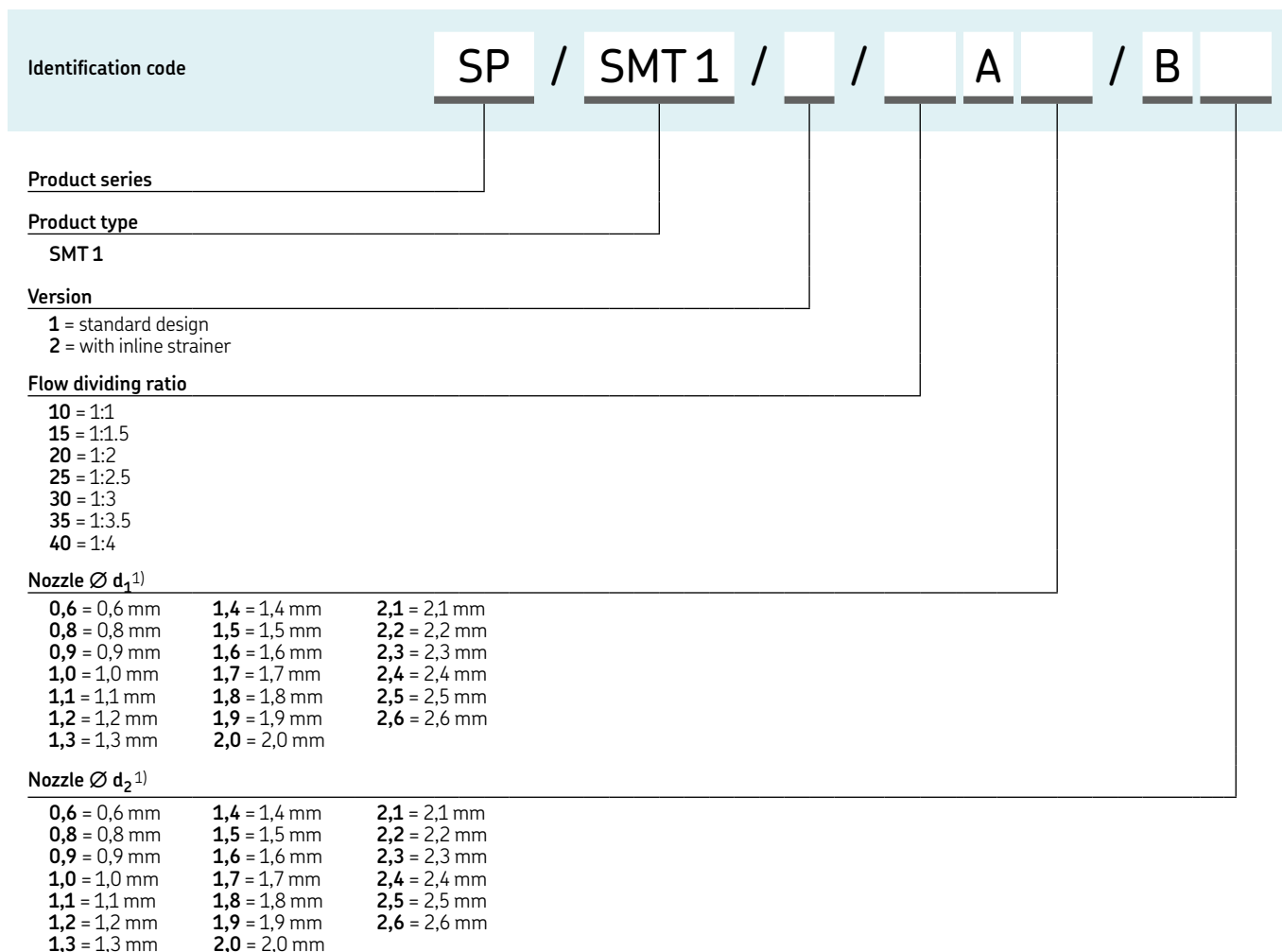
NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-5017-EN; 1-5006-EN

Flow divider

SMT



¹⁾ Nozzle diameters d1 and d2 need to be determined using a diagram, see brochure 1-5017. Identification code positions A and B are three-digit numbers representing the nozzle sizes. The code for the example would be: d1 (0.9 mm) = 090 and for d2 (1.4 mm) = 140

Adjustable restrictor

242



Description

The SKF adjustable restrictors 242 are used if a subsequent adjustment of the flow rate is required. The restrictors come in three versions, differing in metering quantity, visual flow indication and number of outlets. Type A flow rates are within the drop-feed range of 0 to 0,01 l/min (0 to 0.02 pts). The adjustable restrictor 242 offers 1 to 14 outlets and a sight-glass for flow rate monitoring. Type B offers continuous metering quantity from 0,01 to 1,0 l/min (0.02 to 2.11 pts) and comes with 2 to 12 outlets. Type C metering quantity ranges from 0,01 to 2,0 l/min (0.02 to 4.23 pts). Depending on the distributor, 2 to 6 outlets are available. Types B and C offer a spring-loaded metal pin in the sight-glass for visual oil flow monitoring.

Features and benefits

- Easy adjustable
- Easy planning and quantity regulation
- Cost-effective visual oil flow monitoring
- Individual regulation of flow range for each lubrication point
- Wide viscosity range

Applications

- Oil and Gas
- Machine tools
- Metal fabrication
- Metal forming
- Textiles

Technical data

| | |
|-----------------------|---|
| Function | adjustable restrictor |
| Lubricant | mineral and synthetic oils; viscosity 10–1 000 mm ² /s |
| Outlets: | |
| A | 1, 2, 5, 14 |
| B | 2, 3, 4, 5, 6, 10, 12 |
| C | 2 to 6 |
| Metering quantity: | |
| A | 0 to 0.01 l/min; 0 to 0.02 pts/min |
| B | 0.01 to 1.0 l/min; 0.02 to 2.11 pts/min |
| C | 0.01 to 2.0 l/min; 0.02 to 4.23 pts/min |
| Operating temperature | 0 to +60 °C; +32 to 140 °F |
| Operating pressure | max. 10 bar max. 145 psi |
| Filter | < 10 µm |
| Material | steel |
| Connection: | |
| A + B | M10×1 for tube 6 mm |
| C | M16×1,5 for tube 10 mm |
| Dimension: | |
| depending on model | min. 93 × 16 × 32 mm max. 97 × 25 × 253 mm min. 3.66 × 0.63 × 1.29 in max. 3.82 × 0.98 × 9.96 in |
| Mounting position: | any |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-5006-EN



3D

skf-lubrication.partcommunity.com/3d-cad-models

Adjustable restrictor

242



242-026.00

242 Type A

Metering quantity: 0–10 cm³; 0–0.6 in³

| Order number | Outlets |
|--------------|---------|
| 242-016.00 | 1 |
| 242-026.00 | 2 |
| 242-056.00 | 5 |
| 242-146.00 | 14 |



242-124.00

242 Type B

Metering quantity: 10–1 000 cm³; 0.6–61 in³

| Order number | Outlets |
|--------------|---------|
| 242-024.00 | 2 |
| 242-034.00 | 3 |
| 242-044.00 | 4 |
| 242-054.00 | 5 |
| 242-064.00 | 6 |
| 242-104.00 | 10 |
| 242-124.00 | 12 |

Indicating at 110 mm²/s; start at 10, end at 1 000 or 2 000 cm³/min



242-044.004

242 Type C

Metering quantity: 10–2 000 cm³; 0.6–122 in³

| Order number | Outlets |
|--------------|---------|
| 242-025.00 | 2 |
| 242-035.00 | 3 |
| 242-045.00 | 4 |
| 242-055.00 | 5 |
| 242-065.00 | 6 |

Indicating at 110 mm²/s; start at 10, end at 1 000 or 2 000 cm³/min

Accessories

242 Type A and B, main tube connector and accessories

| Order number | Designation | Tube |
|--------------|---------------------|------|
| | | Ø mm |
| 406-162 | main tube connector | 6 |
| 408-162 | main tube connector | 8 |
| 410-162 | main tube connector | 10 |
| 408-211 | screw plug | – |
| 508-215-CU | washer | – |

242 Type C, main tube connector and accessories

| Order number | Designation | Tube |
|-------------------|---------------------|------|
| | | Ø mm |
| 410-018 | main tube connector | 10 |
| 412-018 | main tube connector | 12 |
| 412-011 | screw plug | – |
| DIN7603-A18x22-CU | washer | – |

Flow meter

SKF VarioLub



Description

SKF VarioLub SMD flow meters are designed to meter and monitor the flow in oil circulation lubrication systems. They are offered in three different versions covering a flow rate of 0,05 to 40 l/min. The flow meters can be adjusted by a built-in adjustment valve. The meters provide visual and electronic monitoring, and the by-pass system allows adjustment and service, even while the system is running. Due to their modular design, SMD flow meters can be easily replaced, adapted and expanded. They are suitable for machines with several hundred lubrication points and provide reliability and flexibility.

Features and benefits

- High accuracy and robust design
- Easy maintenance and reduced downtime due to bypass system
- Modular system enables flow rate changes and system extension
- Many industry interfaces available
- Monitoring by SKF IPM12 pulse meter
- Programming and set up by SKF PGA3 or SKF VarioLub software

Applications

- Pulp and paper industry
- Machine tools
- Metal industry
- Heavy industry

Technical data

| | |
|-----------------------|---|
| Function | gear wheel flow meter |
| Outlets | SMD 1B, SMD 2: 2 SMD 3: 1 |
| Lubricant | mineral and synthetic oils; viscosity 50–650 mm ² /s |
| Flow rate | |
| SMD 1B: | 0,05–1,0 l/min; 0.1–2.1 pts/min |
| SMD 2: | 0,1–8,0 l/min; 0.2–16.9 pts/min |
| SMD 3: | 4,0–40,0 l/min; 8.5–84.5 pts/min |
| Operating temperature | 0 to +70 °C +32 to 158 °F |
| Operating pressure | 16 bar 232 psi |
| Material | housing: anodized aluminium lid: PMMA gear wheels: GPR SMD3 :GPR / aluminium |
| Inlet connection | G 3/4 BSPP; G 1 1/16-12 UN |
| Outlet connection | |
| SMD 1B, SMD2: | G 3/8 BSPP; G 9/16-18 UN |
| SMD3: | G 3/4 BSPP; G 1 1/16-12 UN |
| Protection class | IP 65 |
| Dimensions | |
| SMD 1B/SMD 2 | 90 × 70 × 150 mm 3.54 × 2.7 × 5.91 in |
| SMD 3 | 110 × 130 × 150 mm 4.33 × 5.1 × 5.91 in |
| Mounting position | any |
| Options | connection block, shut-off block, flushing port |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3021-EN

Flow meter

SKF VarioLub

Variolub SMD

| Type | Designation | Outlets | Flow rate | | Order number | |
|---------------|---|---------|----------------------------|-----------------------------|---------------------------|---------------------|
| | | | l/min | pts/min | Connection thread BSPP | UN / UNF |
| SMD 1B | 2 very fine adjustment valves | 2 | 2 × 0,05–1,0 | 2 × 0.1–2.1 | 24-2581-2650 | 24-2581-2651 |
| SMD 2 | 2 fine adjustment valves | 2 | 2 × 0,1–4,4 | 2 × 0.2–9.3 | 24-2581-2656 | 24-2581-2615 |
| SMD 2 | 2 coarse adjustment valves | 2 | 2 × 4,0–8,0 | 2 × 8.5–16.9 | 24-2581-2657 | 24-2581-2617 |
| SMD 2 | 1 fine adjustment valve (top) 1 coarse adjustment valve (down) | 2 | 1 × 0,1–4,4 1 × 4,0–8,0 | 1 × 0.2–9.3 1 × 8.5–16.9 | 24-2581-2658 | 24-2581-2616 |
| SMD 3 | 1 very coarse adjustment valve | 1 | 1 × 4,0–40 | 1 × 8.5–84.5 | 24-2581-2652 | 24-2581-2693 |

Variolub SMD bank mounting components

| Type | Designation | Order number | |
|---------------------|--|---------------------------|---------------------|
| | | Connection thread BSPP | UN / UNF |
| SMD 1B/SMD 2 | connection block complete | 24-1503-2103 | 24-1503-2104 |
| SMD 1B/SMD 2 | shut-off block complete | 24-1503-2102 | on request |
| SMD 1B/2/3 | plug screws G 3/4 BSPP; DIN 908 1.1/16–12 UN | 95-0034-0908 | – |
| SMD 1B/2/3 | seal A27 × 32 DIN 7603 Cu | 95-2721-7603 | – |

Variolub SMD Accessories

| Type | Designation | Order number | |
|---------------------|----------------------------------|----------------------------|----------------------------|
| | | Connection thread BSPP | UN / UNF |
| SMD 1B | spare part kit | 24-9909-0184 | 24-9909-0184 |
| SMD 2 | spare part kit | 24-9909-0178 | 24-9909-0178 |
| SMD 3 | spare part kit | 24-9909-0179 | 24-9909-0179 |
| SMD 1B/SMD 2 | seal kit | 24-0404-2520 | 24-0404-2520 |
| SMD 3 | seal kit | 24-0404-2521 | 24-0404-2521 |
| SMD 1B/SMD 2 | mounting screw 4 × ¹⁾ | DIN912-M6×60-8.8D2R | DIN912-M6×60-8.8D2R |
| SMD 3 | mounting screw 4 × ¹⁾ | DIN912-M6×45-8.8D2R | DIN912-M6×45-8.8D2R |

¹⁾ Mounting screw is included in delivery of SMD 1B and SMD 2

Flow meter

SKF Safeflow



Description

SKF Safeflow flow meters control and indicate the flow rate in oil circulation lubrication systems. Each flow meter can be calibrated individually according to oil viscosity and desired flow. SKF Safeflow covers a flow rate of 0,04 to 56 l/min (0.08–118 pts/min) per lubrication point and can be banked (up to 10 units wide) to reduce piping and simplify installation. These flow meters offer excellent readability and visual monitoring due to their operating principle of straight glass flow tubes with internal calibration cones.

Features and benefits

- Easy and individual calibration of flow meters with adjustable flow rate
- SF05A, SF10A and SF15A can be combined in same module
- Common or individual electronic alarms available

Applications

- Pulp and paper industry
- Metal industry
- Power plants
- Mining

Technical data

| | |
|-----------------------|---|
| Function Lubricant | variable area flow meter mineral and synthetic oils; viscosity 30–1 000 mm ² /s |
| Flow rate | 0,04–56 l/min; 0.08–118 pts/min |
| Operating temperature | 0 to +70 °C; +32 to 158 °F |
| Operating pressure | 15 bar; 217 psi |
| Outlets | 1–10 |
| Material | aluminum, glass |
| Electrical alarm: | |
| Power supply | 24V DC (22–36 V DC) or 24V AC (18–27 V AC RMS) |
| Power consumption | max. 150 mA |
| Alarm output | dry contact relay output max. load 50 VAC/DC, 1A |
| Protection class | IP65 |
| Dimensions: | |
| SF05A/10A/15A | min. 170 × 97 × 170 mm max. 170 × 97 × 566 mm min. 6.69 × 3.82 × 6.69 in max. 6.69 × 3.82 × 22.28 in |
| SF20 | min. 250 × 94 × 74 mm max. 250 × 94 × 324 mm min. 9.84 × 3.70 × 2.91 in max. 9.84 × 3.70 × 13.46 in |
| SF30 | 275 × 100 × 129 mm 10.83 × 3.94 × 5.08 in |
| Mounting position | horizontal |

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication: **6409/2**

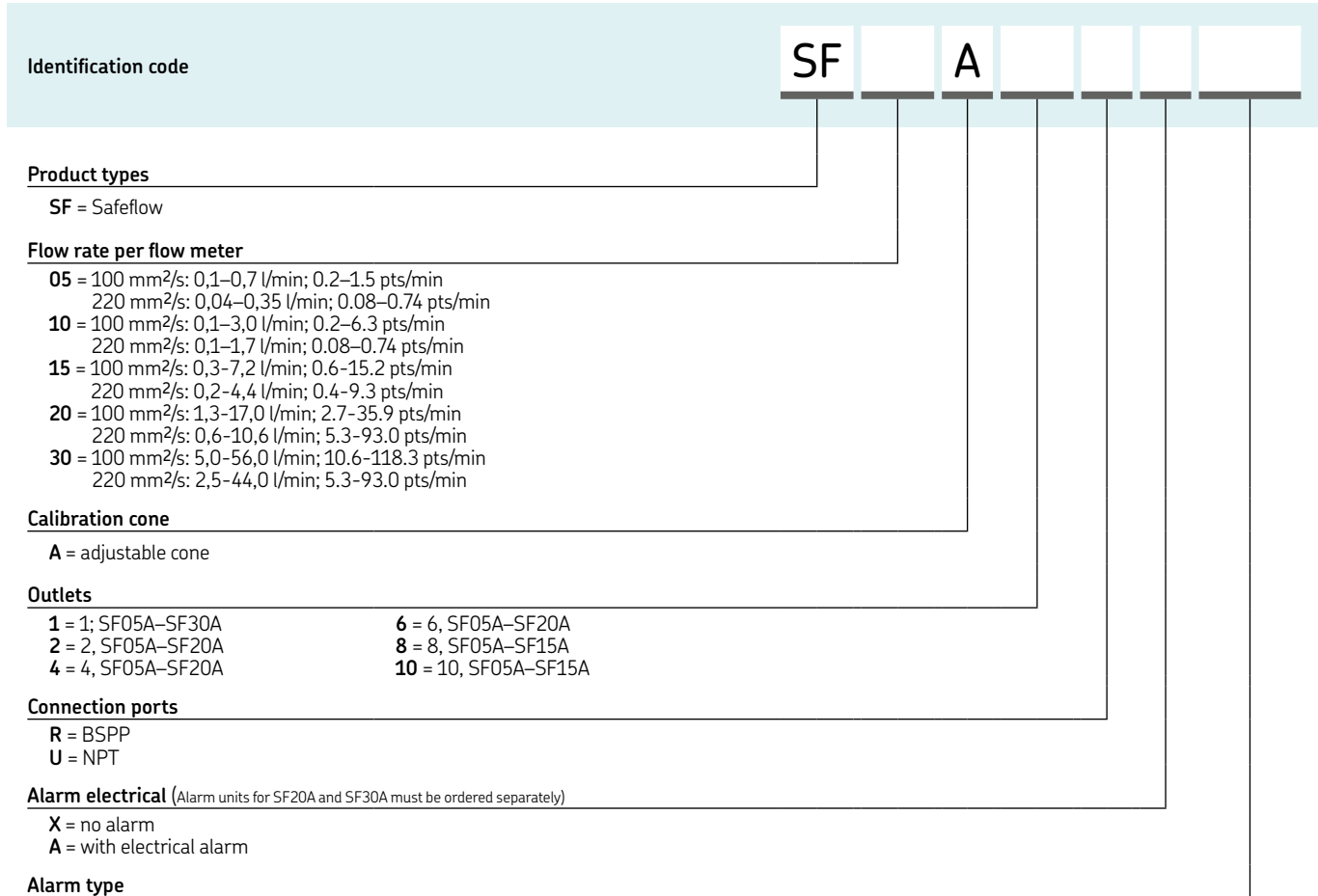


3D

skf-lubrication.partcommunity.com/3d-cad-models

Flow meter

SKF Safeflow



Alarm units for Safeflow SF20A and SF30A¹⁾

| Order number | Designation |
|--------------|------------------|
| BSC-12030 | common alarm |
| BSS-12030 | individual alarm |

¹⁾ Must be ordered separately



Safeflow connections

| Products | Outlets | Connection inlet | | Outlet connection |
|----------|-------------------|------------------|-----------------|-------------------|
| | | group size 1 | group size 2-10 | |
| | | BSPP / NPT | BSPP / NPT | BSPP / NPT |
| SF05A | 1, 2, 4, 6, 8, 10 | 1/2 | 1 | 1/2 |
| SF10A | 1, 2, 4, 6, 8, 10 | 1/2 | 1 | 1/2 |
| SF15A | 1, 2, 4, 6, 8, 10 | 1/2 | 1 | 1/2 |
| SF20A | 1, 2, 4, 6 | 1/2 | 1 | 3/4 |
| SF30A | 1 | 1 1/4 | 1 | 1 1/4 |

Flow meter

SKF Flowline Monitor



Description

The SKF Flowline Monitor is used to divide, measure and control the flow rate in oil circulation lubrication systems. Three different flow meter sizes enable control and monitoring of 0,1 to 100 l/min flows with operating viscosities from 32 to 1 000 mm²/s. The flow meters operate individually and can be programmed and adjusted separately. Regardless of oil temperature and viscosity changes, the SKF Flowline Monitor provides accurate results. Computer configuration and remote monitoring are possible. Monitoring modules are available offering common alarms, individual alarms for each lubrication point and interfaces to process controls.

Features and benefits

- Minimal pressure loss due to turbine-based monitoring and adjusting-valve technology
- Easy-to-use interface
- Indication of flow accuracy of each lubrication point
- Modular monitoring capabilities
- Panel mounting possible

Applications

- Pulp and paper industry
- Metal industry
- Mining
- Power plants
- Other industries and applications

Technical data

| | |
|-----------------------|--|
| Function | turbine flow meter |
| Lubricant | mineral, synthetic or environmentally friendly oils with a viscosity of 32–1 000 mm ² /s |
| Flow meters: | |
| FL15 | 2, 4, 6, 8, 10 |
| FL50, FL 100 | 1 |
| Flow rate: | |
| FL15 | 0,1–15 l/min; 0,2–32 pts/min |
| FL50 | 15–50 l/min; 32–105 pts/min |
| FL100 | 50–100 l/min; 105–210 pts/min |
| Operating temperature | 0 to + 65 °C; + 32 to 150 °F |
| Operating pressure | max. 10 bar; 145 psi |
| Power supply | 20–36 V DC 24 V AC (-20 to + 5%) |
| Power consumption | 5 W |
| Alarm relay | potential free contact; max. load 30 V DC / 1 A, 120 V AC / 1 A, resistive load |
| Inlet connection | depending on model |
| Outlet connection | G / NPT 1; G / NPT 2x1 G / NPT 1/2; G / NPT 1 1/4 |
| Protection class | IP 65 |
| Dimensions | min. 150 × 106 × 226 mm max. 150 × 230 × 618 mm min. 5.9 × 4.17 × 8.9 in max. 5.9 × 9.05 × 24.33 in |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

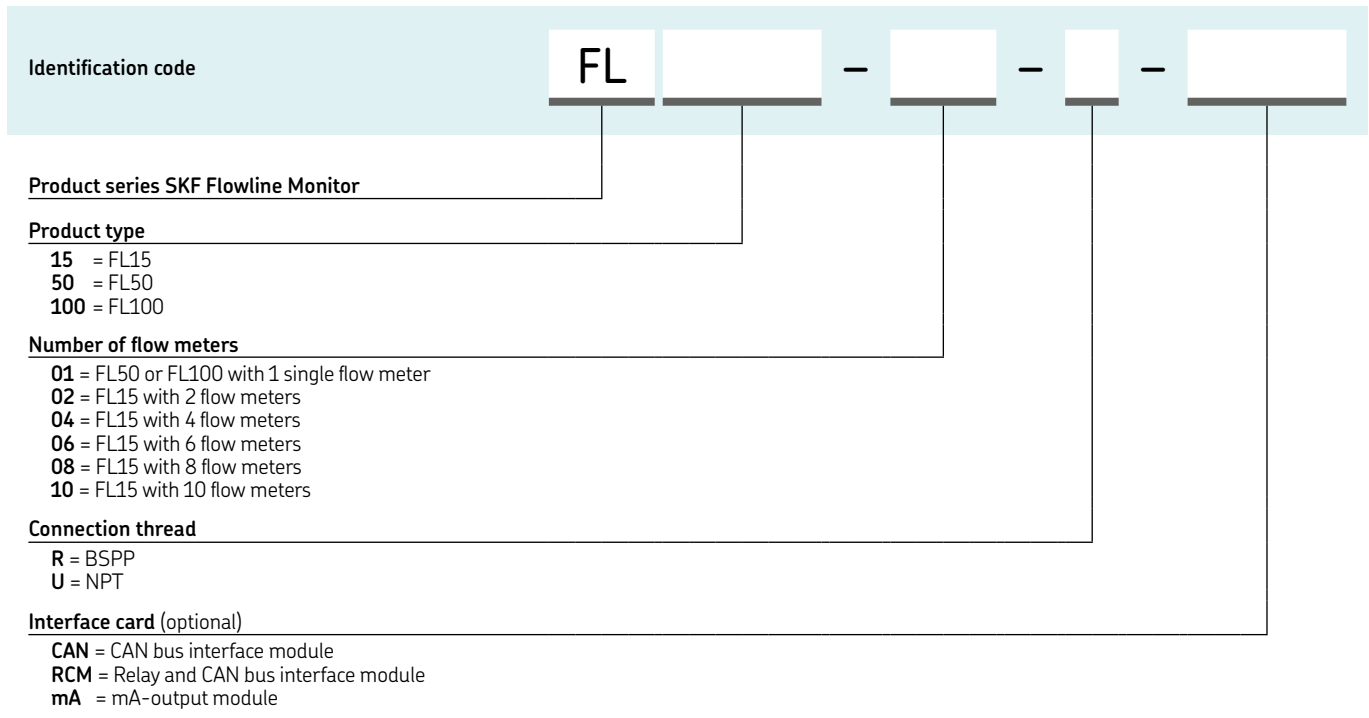
17075 EN



3D

skf-lubrication.partcommunity.com/3d-cad-models

SKF Flowline Monitor



| Order numbers | | Order numbers | | Order numbers | |
|---|--------------------------|--|----------------------------|--------------------------|-----------------|
| Order number | Flow meter type | Order number | Flow meter type | Order number | Flow meter type |
| FL with BSPP connection thread (R) | | FL with NPT connection thread (U) | | FL with mA module | |
| 13120202 | FL15-02-R | 13120222 | FL15-02-U | 13120362 | FL15-02-R-mA |
| 13120204 | FL15-04-R | 13120224 | FL15-04-U | 13120364 | FL15-04-R-mA |
| 13120206 | FL15-06-R | 13120226 | FL15-06-U | 13120366 | FL15-06-R-mA |
| 13120208 | FL15-08-R | 13120228 | FL15-08-U | 13120368 | FL15-08-R-mA |
| 13120210 | FL15-10-R | 13120230 | FL15-10-U | 13120370 | FL15-10-R-mA |
| 13120300 | FL50-R | 13120320 | FL50-U | 13120372 | FL15-02-U-mA |
| 13127800 | FL100-01-R | 13127810 | FL100-01-U | 13120374 | FL15-04-U-mA |
| 13120180 | connection block G 1 1/4 | 13120182 | connection block NTP 1 1/4 | 13120376 | FL15-06-U-mA |
| FL with CAN module | | FL with relay and CAN module | | 13120378 | FL15-08-U-mA |
| 13120212 | FL15-02-R-CAN | 13120342 | FL15-02-R-RCM | 13120380 | FL15-10-U-mA |
| 13120214 | FL15-04-R-CAN | 13120344 | FL15-04-R-RCM | 13120314 | FL50-R-mA |
| 13120216 | FL15-06-R-CAN | 13120346 | FL15-06-R-RCM | 13120334 | FL50-U-mA |
| 13120218 | FL15-08-R-CAN | 13120348 | FL15-08-R-RCM | 13127804 | FL100-01-R-mA |
| 13120220 | FL15-10-R-CAN | 13120350 | FL15-10-R-RCM | 13127816 | FL100-01-U-mA |
| 13120232 | FL15-02-U-CAN | 13120352 | FL15-02-U-RCM | | |
| 13120234 | FL15-04-U-CAN | 13120354 | FL15-04-U-RCM | | |
| 13120236 | FL15-06-U-CAN | 13120356 | FL15-06-U-RCM | | |
| 13120238 | FL15-08-U-CAN | 13120358 | FL15-08-U-RCM | | |
| 13120240 | FL15-10-U-CAN | 13120360 | FL15-10-U-RCM | | |
| 13120310 | FL50-R-CAN | 13120312 | FL50-R-RCM | | |
| 13120330 | FL50-U-CAN | 13120331 | FL50-U-RCM | | |
| 13127808 | FL100-01-R-CAN | 13127802 | FL100-01-R-RCM | | |
| 13127818 | FL100-01-U-CAN | 13127812 | FL100-01-U-RCM | | |

Flow limiter

SMB 3



Description

The SKF SMB 3 flow limiter is designed to divide the main line flow into parallel, individual flows. The flow is generated independently of system pressure changes and virtually independently of viscosity, guaranteeing a constant flow. The SMB 3 provides a flow rate from 6 to 38 l/min (12.6–80.3 pts/min) and a pressure range of up to 200 bar. The flow limiter offers oil flow monitoring with a signal transmitter or piston detector. These indicators create a fault signal when the flow rate drops to approximately 85%.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Easy start-up with fixed flow rate via pre-selected nozzle sizes
- Adaptation of flow rate possible (nozzle exchange)
- High operating temperature up to +100 °C
- Optional ATEX version Ex II 3 cII CT6

Applications

- Oil and Gas
- Machine tools
- Metal forming
- Industrial transmissions

Technical data

| | |
|----------------------------------|--|
| Function | flow limiter |
| Outlets | 1 |
| Lubricant | environmentally friendly mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Flow rate ¹⁾ | 6–38 l/min; 12.6–80.3 pts/min |
| Operating temperature | 0 to +100 °C; +32 to 212 °F |
| Operating pressure ²⁾ | 5–200 bar 72–2 900 psi |
| Differential pressure | >5 bar >72 psi |
| Material | gray cast iron, zinc coated |
| Connection | M12×1; 4-poles coupler socket |
| Protection class | IP 65 |
| Signal sensors E4/E5 | 24 V to 230 V AC/DC |
| Proximity switch E6 | 12 to 36 VDC; IP 67 |
| Dimensions | min. 40 × 90 × 138 mm max. 40 × 90 × 245 mm min. 1.57 × 3.54 × 5.43 in max. 1.57 × 3.54 × 9.63 in |
| Mounting position | any, preferably vertical |

¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system.

²⁾ See further details under monitoring SMB3/6/8



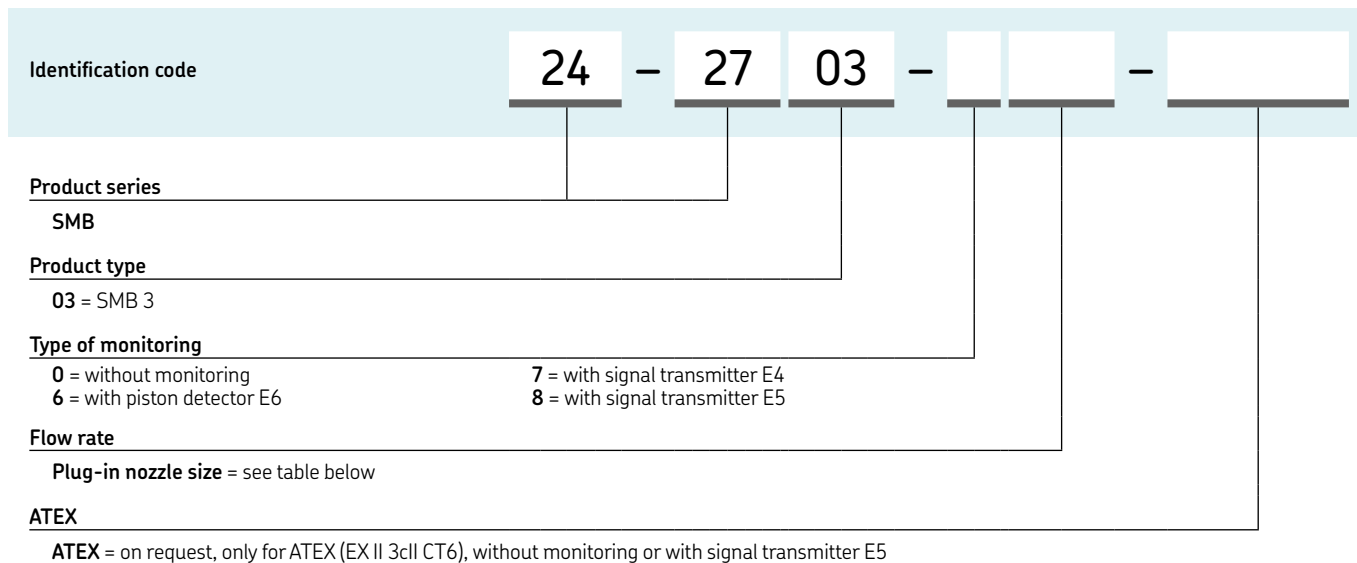
NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3001-EN

Flow limiter

SMB 3



| SMB 3 plug-in nozzle | | | | SMB 3 plug-in nozzle | | | |
|----------------------|-------------------------|---------|--------|----------------------|-------------------------|---------|--------|
| Order number | Flow rate ¹⁾ | | Nozzle | Order number | Flow rate ¹⁾ | | Nozzle |
| | l/min | pts/min | Ø mm | | l/min | pts/min | Ø mm |
| 250 | 6,00 | 12.6 | 2,50 | 430 | 16,00 | 33.8 | 4,30 |
| 260 | 6,50 | 13.7 | 2,60 | 440 | 16,75 | 35.4 | 4,40 |
| 270 | 6,75 | 14.2 | 2,70 | 450 | 17,50 | 36.9 | 4,50 |
| 280 | 7,00 | 14.8 | 2,80 | 460 | 18,00 | 38.0 | 4,60 |
| 290 | 7,50 | 15.9 | 2,90 | 470 | 18,75 | 39.6 | 4,70 |
| 300 | 8,00 | 16.9 | 3,00 | 480 | 19,50 | 41.2 | 4,80 |
| 310 | 8,75 | 18.5 | 3,10 | 490 | 20,25 | 42.8 | 4,90 |
| 320 | 9,25 | 19.5 | 3,20 | 500 | 21,00 | 44.3 | 5,00 |
| 330 | 9,75 | 20.6 | 3,30 | 510 | 21,75 | 45.9 | 5,10 |
| 340 | 10,50 | 22.1 | 3,40 | 520 | 22,50 | 47.5 | 5,20 |
| 350 | 11,00 | 23.2 | 3,50 | 530 | 23,25 | 49.1 | 5,30 |
| 360 | 11,50 | 24.3 | 3,60 | 540 | 24,00 | 50.7 | 5,40 |
| 370 | 12,00 | 25.3 | 3,70 | 550 | 25,00 | 52.8 | 5,50 |
| 380 | 12,75 | 26.9 | 3,80 | 570 | 26,50 | 56.0 | 5,70 |
| 390 | 13,50 | 28.5 | 3,90 | 580 | 28,00 | 59.1 | 5,80 |
| 400 | 14,00 | 29.5 | 4,00 | 600 | 30,00 | 63.4 | 6,00 |
| 410 | 14,75 | 31.1 | 4,10 | 650 | 34,00 | 71.8 | 6,50 |
| 420 | 15,50 | 32.7 | 4,20 | 690 | 38,00 | 80.3 | 6,90 |

¹⁾ at an operating viscosity of 300 mm²/s

| SMB 3 accessories | | SMB 3 accessories | |
|-------------------|---|-------------------|--|
| Order number | Designation | Order number | Designation |
| 24-0404-2119 | Seal kit | 24-1884-2282 | E6 piston detector |
| 24-1072-2113 | E4 signal transmitter | 179-990-371 | piston detector |
| 24-1072-2115 | signal transmitter without coupler socket | 179-990-372 | socket straight, 4-pole, M12×1 |
| | signal transmitter with coupler socket | 179-990-600 | socket angled, 4-pole, M12×1 |
| | with LED 24 V DC | | socket straight, 4-pole, |
| 24-1882-2151 | coupler socket with LED 24 V DC | 179-990-601 | M12×1 with orange cable, 5 m |
| | E5 signal transmitter | | socket angled, 4-pole, |
| 24-1072-2113 | signal transmitter without coupler socket | | M12×1 with orange cable, 5 m |
| 24-1072-2114 | signal transmitter with coupler socket | 84-8011-0369 | Monitoring |
| | without LED 230 V AC/DC | 24-1883-2081 | group monitoring unit |
| 24-1882-2121 | coupler socket without LEDs | | Flow limiter |
| | | | without nozzle, without signal transmitter |

For further information on monitoring extensions, see IPM 12

Flow limiter

SMB 6



Description

The SMB 6 flow limiter is designed to divide the main line flow into parallel, individual, flows. The flow is generated independently of system pressure changes and virtually independently of viscosity, guaranteeing a constant flow. The SMB 6 provides a flow rate from 25 to 132 l/min (52.8–279 pts/min) and a pressure range of up to 200 bar (2 900 psi). The flow limiter offers oil flow monitoring with a signal transmitter or piston detector. These indicators create a fault signal when the flow rate drops to approximately 85%.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Easy start-up with fixed flow rate via pre-selected nozzle sizes
- Adaptation of flow rate possible (nozzle exchange)
- High operating temperature up to +100 °C
- Optional ATEX version Ex II 3 cII CT6

Applications

- Metal forming
- Pulp and paper industry
- Automotive
- Presses
- Heavy industry



Technical data

| | |
|----------------------------------|--|
| Function | flow limiter |
| Outlets | 1 |
| Lubricant | environmentally friendly, mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Flow rate ¹⁾ | 25–132 l/min 52.8–279 pts/min |
| Operating temperature | 0 to +100 °C; +32 to 212 °F |
| Operating pressure ²⁾ | 5–200 bar 72–2 900 psi |
| Differential pressure | >5 bar >72 psi |
| Material | gray cast iron, zinc coated |
| Connection | M12×1; 4-poles coupler socket |
| Protection class | IP 65 |
| Signal sensors E4/E5 | 24 V to 230 V AC/DC; IP 65 |
| Proximity switch E6 | 12 to 36 VDC; IP 67 |
| Dimensions | min. 40 × 90 × 138 mm max. 40 × 90 × 245 mm min. 1.57 × 3.54 × 5.43 in max. 1.57 × 3.54 × 9.63 in |
| Mounting position | any, preferably vertical |

- ¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system. Higher metering quantities available on request
²⁾ See further details under monitoring SMB3/6/8



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3001-EN

Flow limiter

SMB 6

| | |
|---------------------|---|
| Identification code | 24 - 27 06 - - - |
| Product series | SP/SMB |
| Product type | 06 = SP/SMB 6 |
| Type of monitoring | 0 = without monitoring 6 = with piston detector E6 7 = with signal transmitter E4 8 = with signal transmitter E5 |
| Flow rate | Plug-in nozzle size = see table below |
| ATEX | ATEX = on request, only for ATEX (EX II 3cll CT6), without monitoring or with signal transmitter E5 |

SMB 6 plug-in nozzle

| Order number | Flow rate ¹⁾ | | Nozzle | Order number | Flow rate ¹⁾ | | Nozzle |
|--------------|-------------------------|---------|--------|--------------|-------------------------|---------|--------|
| | l/min | pts/min | Ø mm | | l/min | pts/min | Ø mm |
| 570 | 25 | 52.8 | 5,70 | 000 | 70 | 147.9 | 10,00 |
| 630 | 30 | 63.4 | 6,30 | 040 | 75 | 158.5 | 10,40 |
| 680 | 35 | 73.9 | 6,80 | 080 | 80 | 169.0 | 10,80 |
| 730 | 40 | 84.5 | 7,30 | 170 | 90 | 190.2 | 11,70 |
| 780 | 45 | 95.1 | 7,80 | 270 | 100 | 211.3 | 12,70 |
| 820 | 50 | 105.7 | 8,20 | 310 | 105 | 221.9 | 13,10 |
| 870 | 55 | 116.2 | 8,70 | 350 | 110 | 232.5 | 13,50 |
| 910 | 60 | 126.8 | 9,10 | 400 | 116 | 245.1 | 14,00 |
| 960 | 65 | 137.4 | 9,60 | 440 | 120 | 253.6 | 14,40 |
| | | | | 530 | 132 | 278.9 | 15,30 |

¹⁾ at an operating viscosity of 300 mm²/s

Accessories

SMB 6 accessories

| Order number | Designation | Order number | Designation |
|------------------------------|---|--|--|
| 24-0712-6050 | Flow limiter without nozzle, without signal transmitter | 24-1072-2113 24-1072-2114 | E5 signal transmitter signal transmitter without coupler socket signal transmitter with coupler socket without LED 230 V AC/DC coupler socket without LEDs |
| 24-0404-2155 | Seal kit | 24-1882-2121 | E6 piston detector piston detector socket straight, 4-pole, M12×1 socket angled, 4-pole, M12×1 socket straight, 4-pole, M12×1 with orange cable, 5 m socket angled, 4-pole, M12×1 with orange cable, 5 m |
| 84-8011-0369 | Monitoring group monitoring unit | 24-1884-2282 179-990-371 179-990-372 179-990-600 179-990-601 | |
| 24-1072-2113 24-1072-2115 | E4 signal transmitter signal transmitter without coupler socket signal transmitter with coupler socket with LED 24 V DC | | |
| 24-1882-2151 | coupler socket with LED 24 V DC | | |

For further information for monitoring extensions IPM 12

Flow limiter

SMB 8



Description

The SMB 8 flow limiter is designed to divide the main line flow into parallel, individual flows. The flow is generated independently of system pressure changes and virtually independently of viscosity, guaranteeing a constant flow. The SMB 8 provides a flow rate from 0,08 to 8 l/min (0.16–16.9 pts/min) and a pressure range of up to 200 bar (2 900 psi). The flow limiter offers oil flow monitoring with a signal transmitter or piston detector. These indicators create a fault signal when the flow rate drops to approximately 70%. Up to six SMB 8 can be combined on a mounting plate, providing a simple, space-saving installation and compact construction with only one inlet.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Easy start-up with fixed flow rate via pre-selected nozzle sizes
- Adaptation of flow rate possible (nozzle exchange)
- Optional ATEX version Ex II 3 dI CT6
- Available as attachment to PSG2, PSG3 and VP on the same mounting plate

Applications

- Metal forming and presses
- Heavy industry
- Pulp and paper industry
- Industrial transmissions
- Automation

Technical data

| | | |
|----------------------------------|---|-------------------|
| Function | 2-way flow limiter | |
| Outlets | 1–6 on mounting plate | |
| Lubricant | environmentally friendly mineral and synthetic oils; viscosity 20–600 mm ² /s | |
| Flow rate ¹⁾ | 0,08–8 l/min; | 0.16–16.9 pts/min |
| Operating temperature | 0 to +100 °C | +32 to 212 °F |
| Operating pressure ²⁾ | 5–200 bar | 72–2 900 psi |
| Differential pressure | >5 bar | >72 psi |
| Material | AlCuPb F38, neutrally anodized | |
| Connection | M12×1; 4-poles coupler socket | |
| Protection class | IP 65 | |
| Signal sensors E4/E5 | 24 V to 230 V AC/DC; IP 65 | |
| Proximity switch E6 | 12 to 36 VDC; IP 67 | |
| Dimensions | min. 40 × 45 × 78,5 mm max. 40 × 45 × 185 mm min. 1.57 × 1.77 × 3.09 in max. 1.57 × 1.77 × 7.28 in | |
| Mounting position | any, filter always in upright position | |

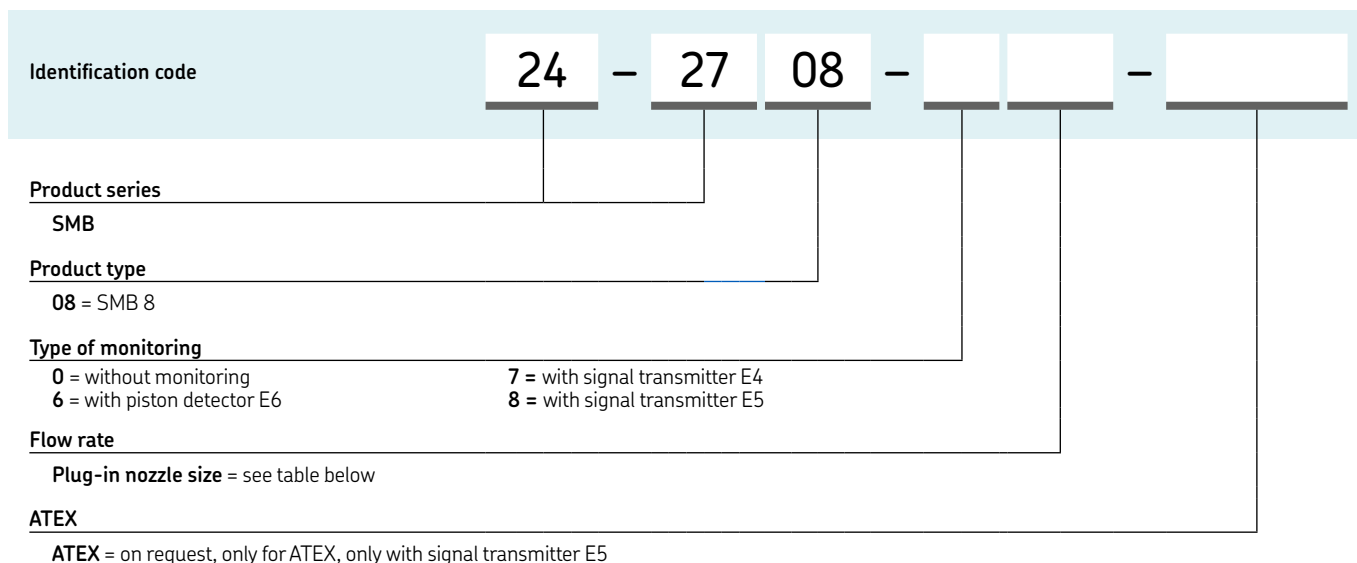
¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system.
²⁾ See further details under monitoring SMB3/6/8

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:
1-3028-EN

Flow limiter

SMB 8



SMB 8 plug-in nozzle

| Order number | Flow rate ¹⁾ | | Nozzle Ø mm | Order number | Flow rate ¹⁾ | | Nozzle Ø mm |
|--------------|-------------------------|---------|----------------|--------------|-------------------------|---------|----------------|
| | l/min | pts/min | | | l/min | pts/min | |
| 050 | 0,08 | 0.16 | 0,50 | 190 | 2,80 | 5.91 | 1,90 |
| 055 | 0,12 | 0.25 | 0,55 | 195 | 2,98 | 6.29 | 1,95 |
| 060 | 0,15 | 0.31 | 0,60 | 200 | 3,16 | 6.68 | 2,00 |
| 065 | 0,21 | 0.44 | 0,65 | 205 | 3,30 | 6.97 | 2,05 |
| 070 | 0,25 | 0.52 | 0,70 | 210 | 3,43 | 7.24 | 2,10 |
| 075 | 0,29 | 0.61 | 0,75 | 215 | 3,58 | 7.57 | 2,15 |
| 080 | 0,35 | 0.74 | 0,80 | 220 | 3,79 | 8.00 | 2,20 |
| 085 | 0,41 | 0.87 | 0,85 | 225 | 3,98 | 8.41 | 2,25 |
| 090 | 0,47 | 0.99 | 0,90 | 230 | 4,18 | 8.83 | 2,30 |
| 095 | 0,56 | 1.18 | 0,95 | 235 | 4,37 | 9.24 | 2,35 |
| 100 | 0,65 | 1.37 | 1,00 | 240 | 4,57 | 9.66 | 2,40 |
| 105 | 0,73 | 1.54 | 1,05 | 245 | 4,80 | 10.1 | 2,45 |
| 110 | 0,79 | 1.67 | 1,10 | 250 | 5,00 | 10.5 | 2,50 |
| 115 | 0,88 | 1.86 | 1,15 | 255 | 5,19 | 10.9 | 2,55 |
| 120 | 0,98 | 1.88 | 1,20 | 260 | 5,37 | 11.3 | 2,60 |
| 125 | 1,09 | 2.30 | 1,25 | 265 | 5,55 | 11.7 | 2,65 |
| 130 | 1,18 | 2.49 | 1,30 | 270 | 5,77 | 12.1 | 2,70 |
| 135 | 1,30 | 2.74 | 1,35 | 275 | 5,99 | 12.7 | 2,75 |
| 140 | 1,43 | 3.02 | 1,40 | 280 | 6,22 | 13.1 | 2,80 |
| 145 | 1,56 | 3.29 | 1,45 | 285 | 6,49 | 13.7 | 2,85 |
| 150 | 1,67 | 3.53 | 1,50 | 290 | 6,74 | 14.2 | 2,90 |
| 155 | 1,79 | 3.78 | 1,55 | 295 | 6,95 | 14.7 | 2,95 |
| 160 | 1,92 | 4.06 | 1,60 | 300 | 7,15 | 15.1 | 3,00 |
| 165 | 2,07 | 4.37 | 1,65 | 305 | 7,31 | 15.4 | 3,05 |
| 170 | 2,21 | 4.67 | 1,70 | 310 | 7,48 | 15.8 | 3,10 |
| 175 | 2,36 | 4.98 | 1,75 | 315 | 7,72 | 16.3 | 3,15 |
| 180 | 2,52 | 5.32 | 1,80 | 320 | 7,98 | 16.9 | 3,20 |
| 185 | 2,67 | 5.64 | 1,85 | | | | |

¹⁾ Up to a nozzle diameter of 1.45 are based at an operational viscosity of 300 mm²/s and 20 bar differential pressure, for nozzle diameters of 1.5 and above are valid without correction over the entire viscosity range from 150 to 600 mm²/s and differential pressures of 20 to 150 bar.

Accessories

SMB 8



24-0714-3480

SMB 8 mounting plate

| Order number | Designation | Flow limiter(s) |
|--------------|---|-----------------|
| 24-0714-3477 | SMB 8 mounting plate | 1 |
| 24-0714-3478 | SMB 8 mounting plate | 2 |
| 24-0714-3479 | SMB 8 mounting plate | 3 |
| 24-0714-3480 | SMB 8 mounting plate | 4 |
| 24-0714-3481 | SMB 8 mounting plate | 5 |
| 24-0714-3482 | SMB 8 mounting plate | 6 |
| 24-0711-2403 | blind element, to blank off unused mounting | |



24-0714-3474

SMB 8 mounting plates with extension for oil filter mounting ¹⁾

| Order number | Designation | Flow limiter(s) |
|--------------|---|-----------------|
| 24-0714-3471 | SMB 8 mounting plate | 1 |
| 24-0714-3472 | SMB 8 mounting plate | 2 |
| 24-0714-3473 | SMB 8 mounting plate | 3 |
| 24-0714-3474 | SMB 8 mounting plate | 4 |
| 24-0714-3475 | SMB 8 mounting plate | 5 |
| 24-0714-3476 | SMB 8 mounting plate | 6 |
| 24-0711-2403 | blind element, to blank off unused mounting | |

¹⁾ please order oil filter separately



24-0714-3470

SMB 8 interchangeable strainer

for single base plates only

| Order number | Designation |
|--------------|--|
| 24-1874-2106 | interchangeable strainer; 300 µm |
| 24-0404-2117 | seal kit for interchangeable strainer |
| 24-0714-3470 | mounting plate with interchangeable strainer |

SMB 8 flow limiter

| Order number | Designation |
|--------------|--|
| 24-1883-3005 | flow limiter SMB 8, without nozzle, without signal transmitter |
| 24-0404-2339 | seal kit |

Oil filter

| Order number | Designation |
|--------------|--------------------------------|
| 24-0651-3041 | oil filter with shut-off valve |
| 24-2104-2009 | valve insert with hand wheel |
| 24-0651-2200 | filter insert, 100 µm |
| 24-0404-2293 | seal kit for filter |

Accessories

SMB 3/6/8

Technical data monitoring extension E4/E5/E6

| | E4 signal transmitter | E5 signal transmitter | E6 piston detector |
|-------------------------|---|---|--|
| Function | magnetic switch | magnetic switch | inductive PNP |
| Operating temperature | 0 to +90 °C; 32 to 194 °F | 0 to +90 °C; 32 to 194 °F | 0 to +80 °C; 32 to 176 °F |
| Operating pressure | 5–85 bar; 72–1 233 psi | 5–85 bar; 72–1 233 psi | 5–200 bar; 72–2 900 psi |
| Material | AlCuMgPb F38, neutrally anodized, connector polyamide | AlCuMgPb F38, neutrally anodized, connector polyamide | AlCuMgPb F37, PBTP, AISI 316Ti connector polyamide |
| Switching voltage | 24 V DC | 24–230 V DC | 12–36 V DC |
| Switching voltage ATEX | - | 30 V DC | - |
| ATEX | - | II 3 cII CT6 | - |
| Visual monitoring (LED) | green-yellow | - | - |
| Dimension length | 105 mm; 4.13 in | 105 mm; 4.13 in | 53 mm; 2.09 in |

SMB 3/6/8 monitoring

| Order number | Designation |
|---------------------|--|
| 24-1072-2113 | E4 signal transmitter |
| 24-1072-2115 | signal transmitter without coupler socket |
| 24-1882-2151 | signal transmitter with coupler socket with LED 24 V DC coupler socket with LED 24 V DC |
| 24-1072-2113 | E5 signal transmitter |
| 24-1072-2114 | signal transmitter without coupler socket |
| 24-1882-2121 | signal transmitter with coupler socket without LED 230 VAC/DC coupler socket without LEDs |
| 24-1884-2282 | E6 piston detector |
| 179-990-371 | piston detector |
| 179-990-372 | socket straight, 4-pole, M12×1 |
| 179-990-600 | socket angled, 4-pole, M12×1 |
| 179-990-601 | socket straight, 4-pole, M12×1 with orange cable, 5 m |
| | socket angled, 4-pole, M12×1 with orange cable, 5 m |

SMB 3/6/8 group monitoring unit

| Order number | Designation |
|---------------------|--|
| 84-8011-0369 | group monitoring unit for SMB 3, 6 and 8 |

Flow limiter

SMB 9



Description

The SMB 9 flow limiter is designed to divide the main line flow into parallel, individual flows. The flow is generated independently of system pressure changes and virtually independently of viscosity, guaranteeing a constant flow. The SMB 9 provides a flow rate from 0,08 to 8 l/min (0.16–16.9 pts/min) and a pressure range of up to 50 bar (725 psi). The product has a built-in, gear-wheel-type flow indicator for electronic and visual monitoring of oil flow. Every rotation creates a signal offering information about the flow rate. The SMB 9 can be used in combination with the SKF IPM 12. Also, up to six SMB 9s can be combined on a mounting plate, providing a simple, space-saving installation and compact construction with only one inlet. Various extension options are available.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Reliable product with self-adjusting metering
- Visual and electronic monitoring with real flow indication
- Easy start-up with fixed flow rate via pre-selected nozzle sizes
- Adaptation of flow rate possible (nozzle exchange)

Applications

- Mining and mineral processing
- Cement
- Pulp and paper industry
- Metal forming; metal fabrication

Technical data

| | |
|-------------------------|---|
| Function | flow limiter, gear wheel monitoring |
| Outlets | 1–6 on mounting plate |
| Lubricant | environmentally friendly mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Flow rate ¹⁾ | 0,08–8 l/min; 0.16–16.9 pts/min |
| Operating temperature | 0 to +70 °C; +32 to 158 °F |
| Operating pressure | 6–50 bar; 87–725 psi |
| Differential pressure | >6 bar; >87 psi |
| Electrical connection | hall sensor; |
| Voltage | 24 VDC ±10%; 20mA |
| Material | AlCuPb F38, neutrally anodized |
| Connection | plug, DIN 43 650 |
| Protection class | IP 65 |
| Dimensions | 80 × 80 × 120 mm 3.15 × 3.15 × 4.72 in |
| Mounting position | any, filter in upright position |
| Options | ATEX version for Ex II 2G c TX Gb, Ex II 2D c TX Db |

¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system.



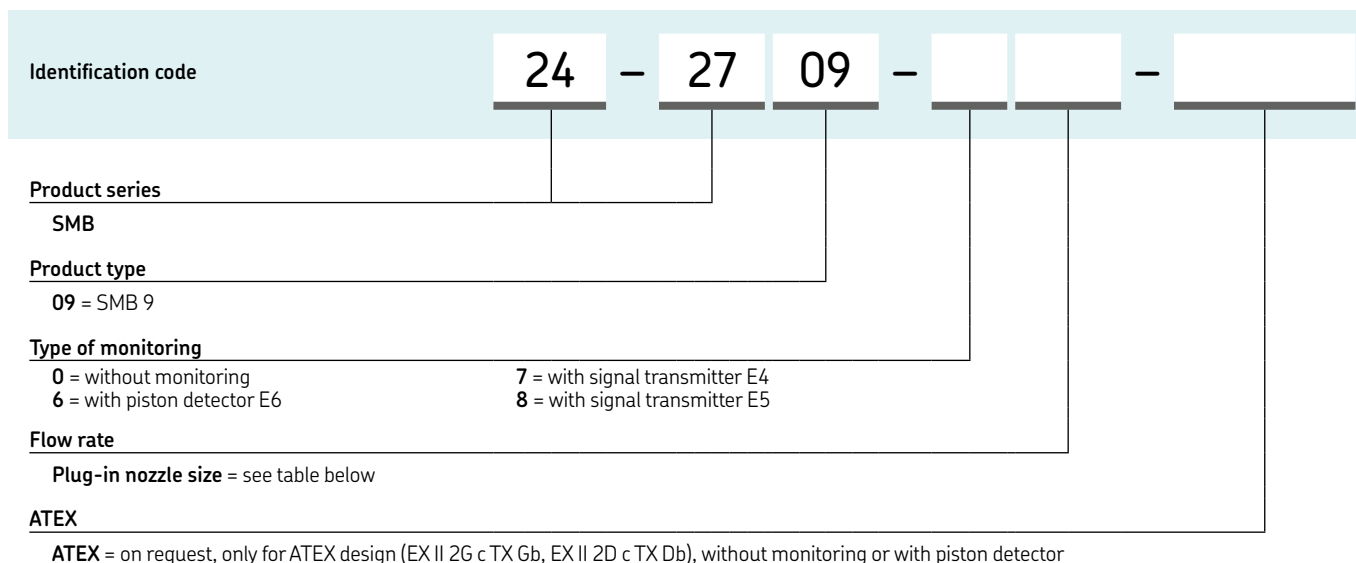
NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3002 EN; 951-180-072 EN

Flow limiter

SMB 9



SMB 9 plug-in nozzle

| Order number | Flow rate ¹⁾ | | Nozzle Ø mm | Order number | Flow rate ¹⁾ | | Nozzle Ø mm |
|--------------|-------------------------|---------|----------------|--------------|-------------------------|---------|----------------|
| | l/min | pts/min | | | l/min | pts/min | |
| 050 | 0,08 | 0.16 | 0,50 | 190 | 2,80 | 5.91 | 1,90 |
| 055 | 0,12 | 0.25 | 0,55 | 195 | 2,98 | 6.29 | 1,95 |
| 060 | 0,15 | 0.31 | 0,60 | 200 | 3,16 | 6.68 | 2,00 |
| 065 | 0,21 | 0.44 | 0,65 | 205 | 3,30 | 6.97 | 2,05 |
| 070 | 0,25 | 0.52 | 0,70 | 210 | 3,43 | 7.24 | 2,10 |
| 075 | 0,29 | 0.61 | 0,75 | 215 | 3,58 | 7.57 | 2,15 |
| 080 | 0,35 | 0.74 | 0,80 | 220 | 3,79 | 8.00 | 2,20 |
| 085 | 0,41 | 0.87 | 0,85 | 225 | 3,98 | 8.41 | 2,25 |
| 090 | 0,47 | 0.99 | 0,90 | 230 | 4,18 | 8.83 | 2,30 |
| 095 | 0,56 | 1.18 | 0,95 | 235 | 4,37 | 9.24 | 2,35 |
| 100 | 0,65 | 1.37 | 1,00 | 240 | 4,57 | 9.66 | 2,40 |
| 105 | 0,73 | 1.54 | 1,05 | 245 | 4,80 | 10.1 | 2,45 |
| 110 | 0,79 | 1.67 | 1,10 | 250 | 5,00 | 10.5 | 2,50 |
| 115 | 0,88 | 1.86 | 1,15 | 255 | 5,19 | 10.9 | 2,55 |
| 120 | 0,98 | 1.88 | 1,20 | 260 | 5,37 | 11.3 | 2,60 |
| 125 | 1,09 | 2.30 | 1,25 | 265 | 5,55 | 11.7 | 2,65 |
| 130 | 1,12 | 2.49 | 1,30 | 270 | 5,77 | 12.1 | 2,70 |
| 135 | 1,30 | 2.74 | 1,35 | 275 | 5,99 | 12.7 | 2,75 |
| 140 | 1,43 | 3.02 | 1,40 | 280 | 6,22 | 13.1 | 2,80 |
| 145 | 1,56 | 3.29 | 1,45 | 285 | 6,49 | 13.7 | 2,85 |
| 150 | 1,67 | 3.53 | 1,50 | 290 | 6,74 | 14.2 | 2,90 |
| 155 | 1,79 | 3.78 | 1,55 | 295 | 6,95 | 14.7 | 2,95 |
| 160 | 1,92 | 4.06 | 1,60 | 300 | 7,15 | 15.1 | 3,00 |
| 165 | 2,07 | 4.37 | 1,65 | 305 | 7,31 | 15.4 | 3,05 |
| 170 | 2,21 | 4.67 | 1,70 | 310 | 7,48 | 15.8 | 3,10 |
| 175 | 2,36 | 4.98 | 1,75 | 315 | 7,72 | 16.3 | 3,15 |
| 180 | 2,52 | 5.32 | 1,80 | 320 | 7,98 | 16.9 | 3,20 |
| 185 | 2,67 | 5.64 | 1,85 | | | | |

¹⁾ Up to a nozzle diameter of 1.45 are based at an operational viscosity of 300 mm²/s and 20 bar differential pressure, for nozzle diameters of 1.5 and above are valid without correction over the entire viscosity range from 150 to 600 mm²/s and differential pressures of 20 to 150 bar.

Accessories

SMB 9



SMB 9 mounting plates

| Order number | Designation | Flow limiter(s) |
|--------------|----------------------|-----------------|
| 24-0714-3171 | SMB 9 mounting plate | 1 |
| 24-0714-3172 | SMB 9 mounting plate | 2 |
| 24-0714-3173 | SMB 9 mounting plate | 3 |
| 24-0714-3174 | SMB 9 mounting plate | 4 |
| 24-0714-3175 | SMB 9 mounting plate | 5 |
| 24-0714-3176 | SMB 9 mounting plate | 6 |



SMB 9 mounting plates with extension for oil filter mounting ¹⁾

| Order number | Designation | Flow limiter(s) |
|--------------|----------------------|-----------------|
| 24-0714-3181 | SMB 9 mounting plate | 1 |
| 24-0714-3182 | SMB 9 mounting plate | 2 |
| 24-0714-3183 | SMB 9 mounting plate | 3 |
| 24-0714-3184 | SMB 9 mounting plate | 4 |
| 24-0714-3185 | SMB 9 mounting plate | 5 |
| 24-0714-3186 | SMB 9 mounting plate | 6 |

¹⁾ please order oil filter separately



Oil filter

| Order number | Designation |
|--------------|---------------------------------------|
| 24-0651-3041 | oil filter with shut-off valve |
| 24-2104-2009 | valve insert with hand wheel |
| 24-0651-2200 | filter insert, filter fineness 100 µm |
| 24-0404-2293 | seal kit set for filter |

Accessories

SMB 9

SMB 9 interchangeable strainer

| Order number | Designation |
|---------------------|---|
| 24-1874-2104 | interchangeable strainer SMB 9 |
| 24-0404-2117 | seal kit set for interchangeable strainer |
| 24-0714-3180 | mounting plate for a flow limiter with interchangeable strainer |

SMB 9 blind element

to blank off unused positions

| Order number | Designation |
|---------------------|--|
| 24-0711-2405 | blind element, SMB 9 |
| 95-0038-0908 | screw plug G $\frac{3}{8}$ for SMB 9 ¹⁾ |

¹⁾ One screw plug for dummy element has to be ordered

SMB 9 spare parts

| Order number | Designation |
|---------------------|---|
| 24-1883-3012 | SMB 9 without nozzle, without electrical monitoring |
| 24-1883-3010 | SMB 9 without nozzle, with electrical monitoring |
| 24-0404-2340 | seal kit for SMB 9 |
| 179-990-033 | Socket |

SMB 9 group monitoring

| Order number | Designation |
|---------------------|---|
| 84-8011-0380 | IPM 12 pulse meter for SMB 9, 10, 13 and 14 |
| 84-8011-0390 | IPM 12 pulse meter with connection socket for PGA 3 |



IPM 12

Flow limiter

SMB 10



Description

The SMB 10 flow limiter is designed to divide the main line flow into parallel, individual flows. The flow is generated independently of system pressure changes and virtually independently of viscosity, guaranteeing a constant flow. The SMB 10 provides a flow rate from 0,21 to 8 l/min (0.44–17.2 pts) and a pressure range of up to 50 bar (725 psi). The SMB 10 can reduce the starting flow to 25% to prevent cold bearings from overflowing. The change-over can be done with a hydraulic or electric change-over valve. Up to six SMB 10s can be combined on a mounting plate, providing a simple, space-saving installation and compact construction with only one inlet. Various extension options are available. For visual and electronic monitoring of oil flow, the SMB 10 has a built-in, gear-wheel-type flow indicator. Every rotation creates a signal offering information about the flow rate. The SMB 10 can be used in combination with the SKF IPM 12 pulse meter.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Reliable product with self-adjusting metering
- Visual and electronic monitoring with real flow indication
- Adaptation of flow rate possible (nozzle exchange)
- Optional ATEX version for Ex II 2G c T4 Gb

Applications

- Pulp and paper industry
- Metal industry
- Heavy industry

Technical data

| | |
|-------------------------|--|
| Function | changeover 2-way flow limiter with volumetric flow control |
| Outlets | 1–6 on mounting plate |
| Lubricant | environmentally friendly mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Flow rate ¹⁾ | 0,21–8,15 l/min; 0.44–17.2 pts/min |
| Operating temperature | 0 to +70 °C; +32 to 158 °F |
| Operating pressure | 7–50 bar; 102–725 psi |
| Differential pressure | >7 bar; >101 psi |
| Electrical connection | Hall sensor |
| Voltage | 24 V DC ±10%; 20mA |
| Material | AlCuPb F38, neutrally anodized |
| Connection | plug, DIN 43 650 |
| Protection class | IP 65 |
| Dimensions | 80 × 80 × 120 mm 3.15 × 3.15 × 4.72 in |
| Mounting position | any, filter in vertical position |

¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system.



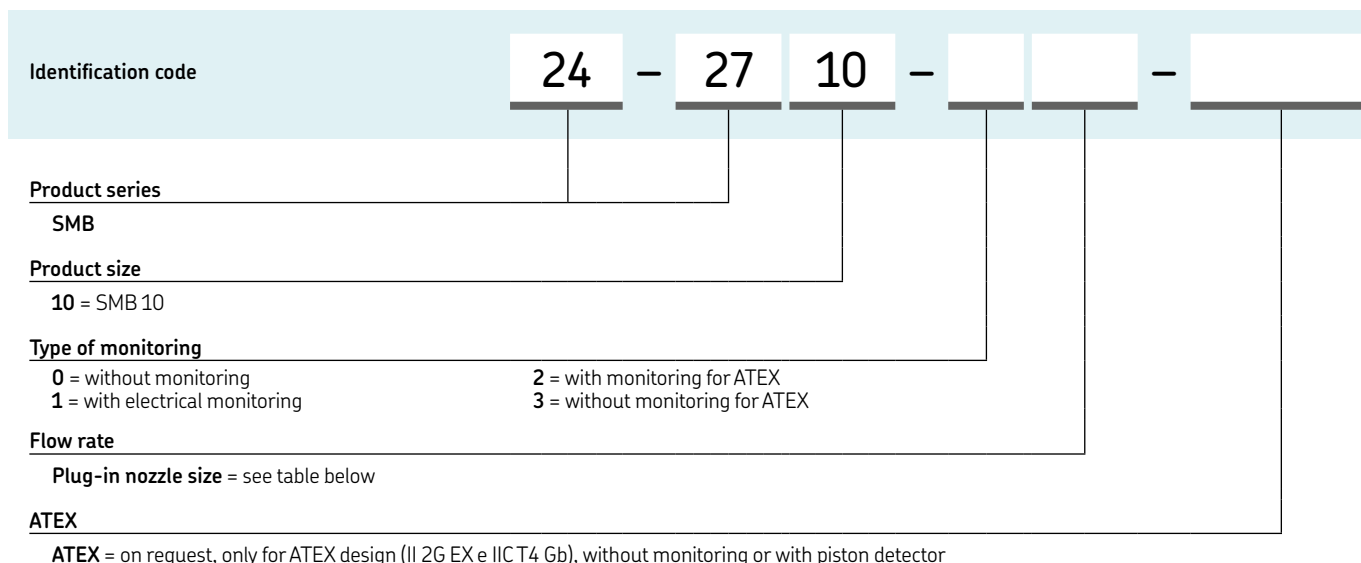
NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3003-EN; 951-180-072 EN

Flow limiter

SMB 10



SMB 10 with a starting operating volumetric flow ratio 1:4

| Order number | Flow rate ¹⁾ | | Nozzle Ø mm | Order number | Flow rate ¹⁾ | | Nozzle Ø mm |
|--------------|-------------------------|-------------|----------------|--------------|-------------------------|---------|----------------|
| | l/min | pts/min | | | l/min | pts/min | |
| 003 | 0,21 : 0,85 | 0.44 : 1.79 | 0,55-1,10 | 120 | 0,98 | 2.07 | 5,5-1,20 |
| 004 | 0,26 : 1,02 | 0.55 : 2.16 | 0,55-1,10 | 125 | 1,09 | 2.30 | 5,5-1,25 |
| 005 | 0,30 : 1,22 | 0.63 : 2.58 | 0,60-1,20 | 130 | 1,18 | 2.49 | 5,5-1,30 |
| 006 | 0,36 : 1,43 | 0.76 : 3.02 | 0,65-1,30 | 135 | 1,30 | 2.75 | 5,5-1,35 |
| 007 | 0,41 : 1,66 | 0.87 : 3.50 | 0,70-1,40 | 140 | 1,43 | 3.02 | 5,5-1,40 |
| 008 | 0,48 : 1,91 | 1.01 : 4.04 | 0,75-1,50 | 145 | 1,56 | 3.30 | 5,5-1,45 |
| 009 | 0,54 : 2,17 | 1.14 : 4.59 | 0,80-1,60 | 150 | 1,67 | 3.53 | 5,5-1,50 |
| 010 | 0,61 : 2,45 | 1.29 : 5.18 | 0,85-1,70 | 155 | 1,79 | 3.78 | 5,5-1,55 |
| 011 | 0,69 : 2,75 | 1.46 : 5.81 | 0,90-1,80 | 160 | 1,92 | 4.06 | 5,5-1,60 |
| 012 | 0,76 : 3,06 | 1.60 : 6.47 | 0,95-1,90 | 165 | 2,07 | 4.37 | 5,5-1,65 |
| 013 | 0,85 : 3,39 | 1.79 : 7.16 | 1,00-2,00 | 170 | 2,21 | 4.67 | 5,5-1,70 |
| 014 | 0,93 : 3,74 | 1.97 : 7.90 | 1,05-2,10 | 175 | 2,36 | 4.99 | 5,5-1,75 |
| 015 | 1,02 : 4,10 | 2.16 : 8.66 | 1,10-2,20 | 180 | 2,52 | 5.33 | 5,5-1,80 |
| 016 | 1,12 : 4,49 | 2.37 : 9.49 | 1,15-2,30 | 185 | 2,67 | 5.33 | 5,5-1,85 |
| 017 | 1,22 : 4,88 | 2.58 : 10.3 | 1,20-2,40 | 190 | 2,80 | 5.64 | 5,5-1,90 |
| 018 | 1,32 : 5,30 | 2.79 : 11.2 | 1,25-2,50 | 195 | 2,985 | 5.92 | 5,5-1,95 |
| 019 | 1,43 : 5,73 | 3.02 : 12.1 | 1,30-2,60 | 200 | 3,16 | 6.30 | 5,5-2,00 |
| 020 | 1,55 : 6,18 | 3.27 : 13.0 | 1,35-2,70 | 205 | 3,306 | 6.68 | 5,5-2,05 |
| 021 | 1,66 : 6,65 | 3.50 : 14.0 | 1,40-2,80 | 210 | 3,43 | 6.97 | 5,5-2,10 |
| 022 | 1,78 : 7,13 | 3.76 : 15.0 | 1,45-2,90 | 215 | 3,58 | 7.25 | 5,5-2,15 |
| 023 | 1,91 : 7,63 | 4.03 : 16.1 | 1,50-3,00 | 220 | 3,79 | 7.57 | 5,5-2,20 |
| 024 | 2,04 : 8,14 | 4.31 : 17.2 | 1,55-3,10 | 225 | 3,988 | 8.01 | 5,5-2,25 |
| | | | | 230 | 4,18 | 8.41 | 5,5-2,30 |
| | | | | 235 | 4,37 | 8.83 | 5,5-2,35 |
| | | | | 240 | 4,57 | 9.24 | 5,5-2,40 |
| | | | | 245 | 4,80 | 9.66 | 5,5-2,45 |
| | | | | 250 | 5,00 | 10.14 | 5,5-2,50 |
| | | | | 255 | 5,19 | 10.57 | 5,5-2,55 |
| | | | | 260 | 5,37 | 10.97 | 5,5-2,60 |
| | | | | 265 | 5,55 | 11.35 | 5,5-2,65 |
| | | | | 270 | 5,77 | 11.73 | 5,5-2,70 |
| | | | | 275 | 5,99 | 12.19 | 5,5-2,75 |
| | | | | 280 | 6,22 | 12.66 | 5,5-2,80 |
| | | | | 285 | 6,49 | 13.15 | 5,5-2,85 |
| | | | | 290 | 6,74 | 13.72 | 5,5-2,90 |
| | | | | 295 | 6,95 | 14.24 | 5,5-2,95 |
| | | | | 300 | 7,15 | 14.69 | 5,5-3,00 |
| | | | | 305 | 7,31 | 15.11 | 5,5-3,05 |
| | | | | 310 | 7,48 | 15.45 | 5,5-3,10 |

SMB 10 without starting reduction – ratio 1:1

| Order number | Flow rate ¹⁾ | Nozzle Ø mm |
|--------------|-------------------------|----------------|
| | l/min pts/min | |
| 050 | 0,08 0.17 | 5,5-0,50 |
| 055 | 0,12 0.25 | 5,5-0,55 |
| 060 | 0,15 0.32 | 5,5-0,60 |
| 065 | 0,20 0.42 | 5,5-0,65 |
| 070 | 0,25 0.55 | 5,5-0,70 |
| 075 | 0,29 0.61 | 5,5-0,75 |
| 080 | 0,35 0.74 | 5,5-0,80 |
| 085 | 0,41 0.87 | 5,5-0,85 |
| 090 | 0,47 0.99 | 5,5-0,90 |
| 095 | 0,56 1.18 | 5,5-0,95 |
| 100 | 0,65 1.37 | 5,5-1,00 |
| 105 | 0,73 1.54 | 5,5-1,05 |
| 110 | 0,79 1.67 | 5,5-1,10 |
| 115 | 0,88 1.86 | 5,5-1,15 |

¹⁾ at an operating viscosity of 300 mm²/s

Accessories

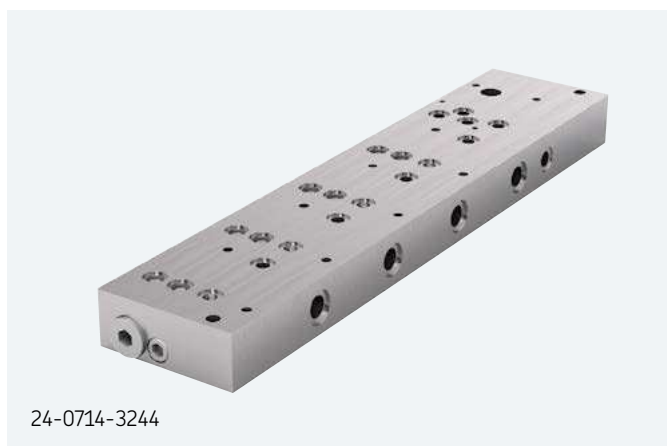
SMB 10



SMB 10 mounting plates with extension for hydraulic changeover valve mounting ¹⁾

| Order number | Designation | Flow limiter(s) |
|--------------|-----------------------|-----------------|
| 24-0714-3231 | SMB 10 mounting plate | 1 |
| 24-0714-3232 | SMB 10 mounting plate | 2 |
| 24-0714-3234 | SMB 10 mounting plate | 4 |
| 24-0714-3236 | SMB 10 mounting plate | 6 |

¹⁾ please order changeover valve separately



SMB 10 mounting plates with extension for hydraulic changeover valve and oil filter mounting ¹⁾

| Order number | Designation | Flow limiter(s) |
|--------------|-----------------------------------|-----------------|
| 24-0714-3241 | SMB 10 mounting plate | 1 |
| 24-0714-3242 | SMB 10 mounting plate | 2 |
| 24-0714-3244 | SMB 10 mounting plate | 4 |
| 24-0714-3246 | SMB 10 mounting plate | 6 |
| 24-0714-3164 | blind plate to close filter ports | |

¹⁾ please order changeover valve and oil filter separately



SMB 10 mounting plates with extension for electrical changeover valve and oil filter mounting ¹⁾

| Order number | Designation | Flow limiter(s) |
|--------------|-----------------------------------|-----------------|
| 24-0714-3261 | SMB 10 mounting plate | 1 |
| 24-0714-3262 | SMB 10 mounting plate | 2 |
| 24-0714-3263 | SMB 10 mounting plate | 3 |
| 24-0714-3264 | SMB 10 mounting plate | 4 |
| 24-0714-3265 | SMB 10 mounting plate | 5 |
| 24-0714-3266 | SMB 10 mounting plate | 6 |
| 24-0714-3164 | blind plate to close filter ports | |

¹⁾ please order changeover valve and oil filter separately

SMB 10



SMB 10 oil filter

| Order number | Designation |
|--------------|---------------------------------------|
| 24-0651-3041 | oil filter with shut-off valve |
| 24-2104-2009 | valve insert with hand wheel |
| 24-0651-2200 | filter insert, filter fineness 100 µm |
| 24-0404-2293 | seal kit filter |



SMB 10 change-over valve

| Order number | Designation |
|--------------|---------------------------------------|
| 24-1883-2093 | hydraulic change-over valve |
| 24-1254-2486 | electrical change-over valve 24 V DC |
| 24-1254-2487 | electrical change-over valve 230 V AC |
| 24-0404-2281 | seal kit hydraulic change-over valve |

SMB 10 group monitoring

| Order number | Designation |
|--------------|---|
| 84-8011-0380 | IPM 12 pulse meter for SMB 9, 10, 13 and 14 |
| 84-8011-0390 | IPM 12 pulse meter with connection socket for PGA 3 |

SMB 10 spare parts

| Order number | Designation |
|--------------|--|
| 24-1883-3020 | SMB 10 without nozzle, without electrical monitoring |
| 24-0404-2341 | Seal kit for SMB 10 |
| 24-0758-2113 | Sight glass (with flange, seals and shims) |

SMB 10 blind element to blank off unused positions

| Order number | Designation |
|--------------|----------------------|
| 24-0711-2406 | blind element SMB 10 |

Flow limiter

SMB 13



Description

The SMB 13 flow limiter is designed to divide the main line flow into parallel, individual, volumetric flow quantities and to “limit” these according to requirements. The flow is generated independently of system pressure and virtually independently of viscosity, guaranteeing a constant flow. The SMB 13 provides a flow rate from 6 to 30 l/min (12.6–63.4 pts/min) and a pressure range up to 50 bar (725 psi). The flow limiter has a built-in, gear-wheel-type flow indicator for electronic and visual monitoring of oil flow. Every rotation creates a signal offering information about the flow rate. The SMB 13 can be used in combination with the IPM 12.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Visual and electronic monitoring with real flow indication
- Easy start-up with fixed flow rate via pre-selected nozzle sizes
- Adaptation of flow rate possible (nozzle exchange)
- Optional ATEX version for Ex II 2G c TX Gb, Ex II 2D c TX Db

Applications

- Mining
- Presses
- Cement
- Heavy industry



Technical data

| | |
|-------------------------|---|
| Function | flow limiter 2-way with volumetric flow control |
| Outlets | 1 |
| Lubricant | environmentally friendly, mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Flow rate ¹⁾ | 6,0–30 l/min; 12.7–63.4 pts/min |
| Operating temperature | 0 to +70 °C; +32 to 158 °F |
| Operating pressure | 6–50 bar 87–725 psi |
| Differential pressure | >6 bar >87 psi |
| Material | AlCuPb F38, neutrally anodized |
| Electrical sensor | Hall sensor |
| Voltage | 24 V DC ± 10% |
| Current switch | max. 20 mA |
| Connection | plug, DIN 43 650 |
| Protection class | IP 65 |
| Dimension | 115 × 120 × 128,5 mm 4.53 × 4.72 × 5.06 in |
| Mounting position | any |

¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system.



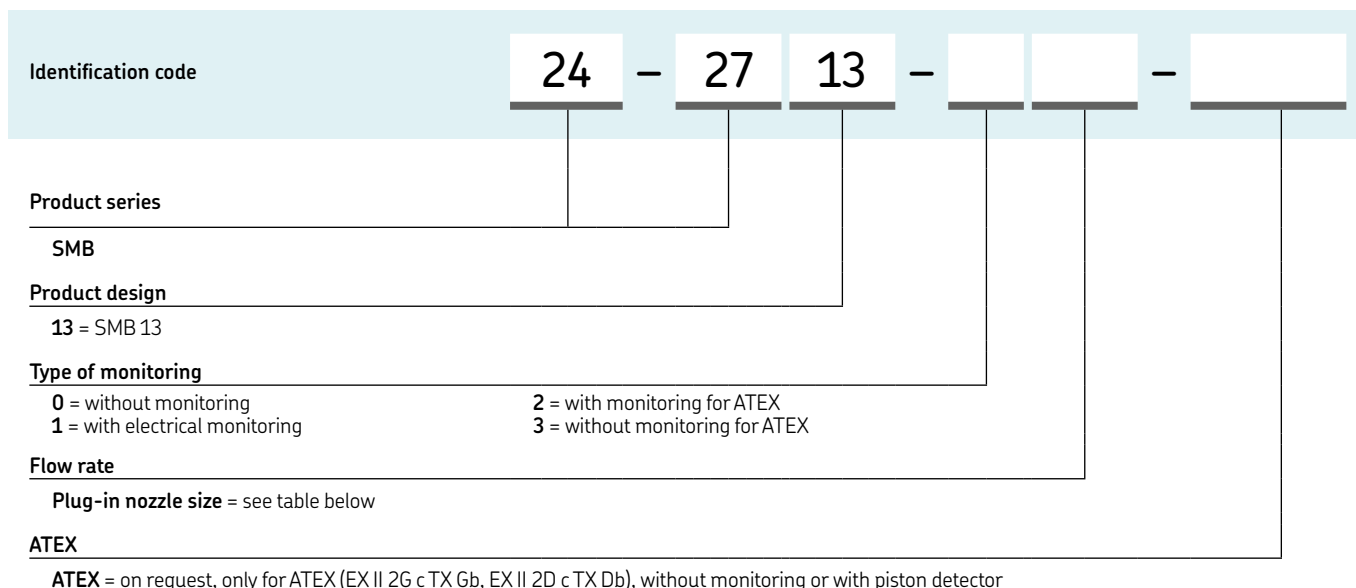
NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3004-EN; 951-180-072 EN

Flow limiter

SMB 13



SMB 13 plug-in nozzle

| Order number | Flow rate ¹⁾ | | Nozzle Ø mm |
|--------------|-------------------------|---------|----------------|
| | l/min | pts/min | |
| 250 | 6,00 | 12.6 | 2,50 |
| 260 | 6,50 | 13.7 | 2,60 |
| 270 | 6,75 | 14.2 | 2,70 |
| 280 | 7,00 | 14.8 | 2,80 |
| 290 | 7,50 | 15.6 | 2,90 |
| 300 | 8,00 | 16.9 | 3,00 |
| 310 | 8,75 | 18.5 | 3,10 |
| 320 | 9,25 | 19.5 | 3,20 |
| 330 | 9,75 | 20.6 | 3,30 |
| 340 | 10,50 | 22.1 | 3,40 |
| 350 | 11,00 | 23.2 | 3,50 |
| 360 | 11,50 | 24.3 | 3,60 |
| 370 | 12,00 | 25.4 | 3,70 |
| 380 | 12,75 | 26.9 | 3,80 |
| 390 | 13,50 | 28.5 | 3,90 |
| 400 | 14,00 | 29.6 | 4,00 |
| 410 | 14,75 | 31.1 | 4,10 |
| 420 | 15,50 | 32.8 | 4,20 |
| 430 | 16,00 | 33.8 | 4,30 |
| 440 | 16,75 | 35.4 | 4,40 |
| 450 | 17,50 | 36.9 | 4,50 |
| 460 | 18,00 | 38.0 | 4,60 |
| 470 | 18,75 | 39.6 | 4,70 |
| 480 | 19,50 | 41.2 | 4,80 |
| 490 | 20,25 | 42.8 | 4,90 |
| 500 | 21,00 | 44.4 | 5,00 |
| 510 | 21,75 | 45.9 | 5,10 |
| 520 | 22,50 | 47.6 | 5,20 |
| 530 | 23,25 | 49.1 | 5,30 |
| 540 | 24,00 | 50.7 | 5,40 |
| 550 | 25,00 | 52.8 | 5,50 |
| 560 | 26,00 | 54.9 | 5,60 |
| 570 | 27,00 | 57.0 | 5,70 |
| 580 | 28,00 | 59.1 | 5,80 |
| 600 | 30,00 | 63.4 | 6,00 |

¹⁾ at an operating viscosity of 300 mm²/s

SMB 13 group monitoring

| Order number | Designation |
|---------------------|---|
| 84-8011-0380 | IPM 12 pulse meter |
| 84-8011-0390 | IPM 12 pulse meter with connection socket for PGA 3 |

SMB 13 flow limiter

| Order number | Designation |
|---------------------|---|
| 24-1883-3016 | SMB 13 without nozzle, with electrical monitoring |

SMB 13 accessories

| Order number | Designation |
|---------------------|---|
| 44-0758-2049 | sight glass D45x12 |
| 24-0404-2310 | gasket set: gasket D32/45x05 O-ring 44x3 O-ring 90x3 |
| 24-1882-2029 | socket |

Flow limiter

SMB 14



Description

The SMB 14 flow limiter is designed to divide the main line flow into parallel, individual, volumetric flow quantities and to “limit” these according to requirements. The flow is generated independently of system pressure and virtually independently of viscosity, guaranteeing a constant flow. The SMB 14 provides a flow rate from 25 to 100 l/min (52.8–211.3 pts/min) and a pressure range up to 50 bar (725 psi). It has a built-in, gear-wheel-type flow indicator for electronic and visual monitoring of oil flow. Every rotation creates a signal offering information about the flow rate. SMB 14 flow limiter can be used in combination with the SKF IPM 12.

Features and benefits

- Stable system regardless of pressure, temperature or viscosity changes
- Visual and electronic monitoring with real flow indication
- Easy start-up with fixed flow rate via pre-selected nozzle sizes
- Adaptation of flow rate possible (nozzle exchange)
- Optional ATEX version for Ex II 2G c TX Gb, Ex II 2D c TX Db

Applications

- Metal industry
- Automation
- Heavy industry



Technical data

| | |
|-------------------------|---|
| Function | 2-way flow limiter valve with volumetric flow check |
| Outlets | 1 |
| Lubricant | environmentally friendly, mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Flow rate ¹⁾ | 25–132 l/min 52.8 - 278.9 pts/min |
| Operating temperature | 0 to +70 °C +32 to 158 °F |
| Operating pressure | 6–50 bar 87–725 psi |
| Differential pressure | >6 bar >87 psi |
| Material | AlCuPb F38, neutrally anodized |
| Electrical connection | hall sensor |
| Voltage | 24 VDC ±10% |
| Current switch | max. 20 mA |
| Connection | plug, DIN 43 650 |
| Protection class | IP 65 |
| Dimensions | 150 × 180 × 190 mm 5.91 × 7.09 × 7.48 in |
| Mounting position | any |

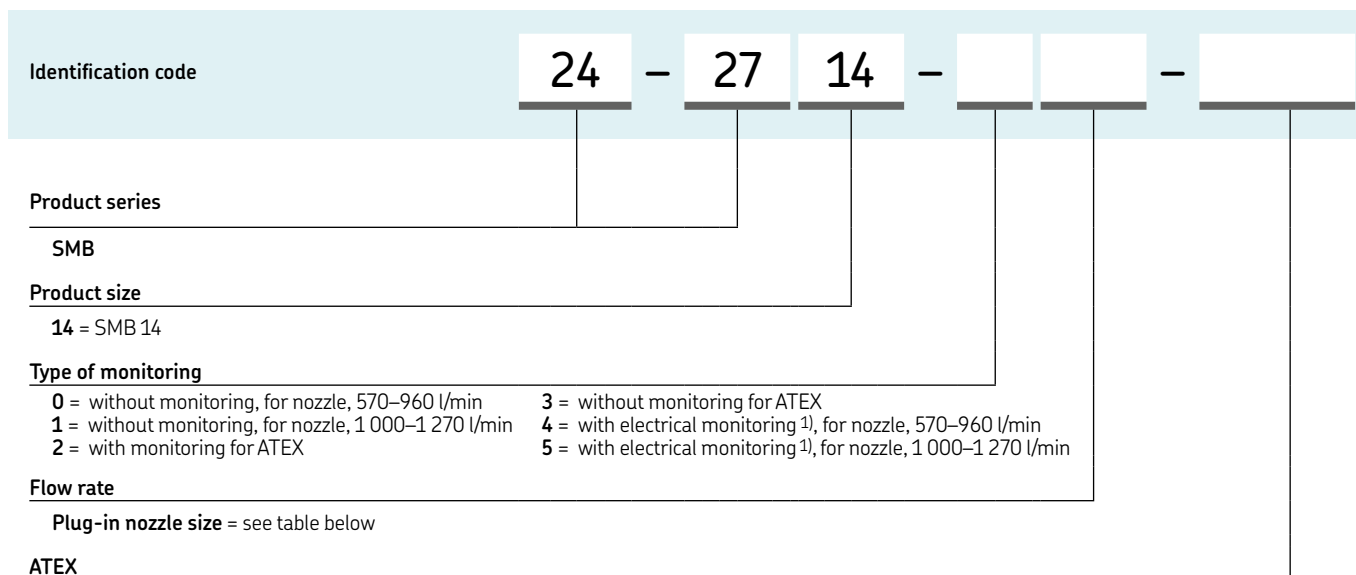
¹⁾ For technical reasons oil output of the system's feeding pump must be > 10–15% of all flow limiters flow rates mounted in the system. Higher metering quantities available on request

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:
1-3005-EN; 951-180-072 EN

Flow limiter

SMB 14



¹⁾ with electrical monitoring, (PNP technology, 24 V DC) continuous pulse sequence, proportional to volumetric flow

SMB 14 plug-in nozzle

| Order number | Flow rate ¹⁾ | | Nozzle Ø mm |
|--------------|-------------------------|---------|----------------|
| | l/min | pts/min | |
| 44-0455-2357 | 25 | 52.8 | 5,70 |
| 44-0455-2360 | 30 | 63.4 | 6,30 |
| 44-0455-2363 | 35 | 73.9 | 6,80 |
| 44-0455-2365 | 40 | 84.5 | 7,30 |
| 44-0455-2367 | 45 | 95.1 | 7,80 |
| 44-0455-2369 | 50 | 105.7 | 8,20 |
| 44-0455-2371 | 55 | 116.2 | 8,70 |
| 44-0455-2373 | 60 | 126.8 | 9,10 |
| 44-0455-2374 | 65 | 137.4 | 9,60 |
| 44-0455-2375 | 70 | 147.9 | 10,00 |
| 44-0455-2376 | 75 | 158.5 | 10,40 |
| 44-0455-2377 | 80 | 169.0 | 10,80 |
| 44-0455-2378 | 90 | 190.2 | 11,70 |
| 44-0455-2379 | 100 | 211.3 | 12,70 |
| 44-0455-2385 | 105 | 221.9 | 13,10 |
| 44-0455-2380 | 110 | 232.4 | 13,50 |
| 44-0455-2381 | 116 | 245.1 | 14,00 |
| 44-0455-2386 | 120 | 253.6 | 14,40 |
| 44-0455-2382 | 132 | 278.9 | 15,30 |

¹⁾ at an operating viscosity of 300 mm²/s

SMB 14 group monitoring

| Order number | Designation |
|--------------|---|
| 84-8011-0380 | IPM 12 pulse meter |
| 84-8011-0390 | IPM 12 pulse meter with connection socket for PGA 3 |

SMB 14 flow limiter

| Order number | Designation |
|--------------|---|
| 24-1883-3017 | SMB 14 without nozzle, with electrical monitoring |

SMB 14 accessories

| Order number | Designation |
|--------------|---|
| 44-0758-2049 | sight glass, D45x12 |
| 24-0404-2311 | gasket set: gasket D32/45x05 O-ring 44x3 O-ring 90x3 |
| 24-1882-2029 | socket |

Progressive metering device

PSG1



Description

The PSG1 is a progressive metering device consisting of a baseplate and different metering sections that can be individually combined for specific outlet ratios and cross portings. The ports are part of the baseplate, so that connectors and tubes remain in place when segments need to be changed.

Features and benefits

- Easy servicing as outlets are located on baseplate
- Flexible due to exchangeable metering segments
- Visual or electrical monitoring possible
- Dummy segments with no output available
- Adjustable by consolidating outlets internally or externally

Applications

- Automobile presses
- Paper machines
- Tunnel boring machines

Technical data

| | |
|----------------------------------|--|
| Function | segmented progressive metering device |
| Outlets | 6 to 20 |
| Lubricant | grease: up to NLGI 2 mineral and synthetic oils; min. viscosity 12 mm ² /s per cycle and outlet: |
| Metering quantity | min. 0,05 cm ³ ; 0.003 in ³ |
| max. | 0,25 cm ³ ; 0.015 in ³ |
| Flow rate | max. 0,8 l/min; 0.17 pts/min |
| Operating temperature | -15 to +110 °C; 5 to 230 °F |
| Operating pressure ¹⁾ | 200 bar; 2 900 psi |
| Material | baseplate: aluminum alloy |
| sections: | steel galvanized |
| Inlet connection | G 1/8 |
| Outlet connection | G 1/8 |
| Protection class | IP 67 |
| Dimensions | min. 90 × 55 × 41 mm max. 244 × 55 × 41 mm min. 3.54 × 2.17 × 1.61 in max. 9.61 × 2.17 × 1.61 in |
| Mounting position: | |
| on machines without vibration | any |
| on machines with vibration | piston position should be 90° to machine's movement direction |

¹⁾ Operating pressure may be lower depending on design with monitoring or attachments

PSG1 accessories

| Order number | Designation |
|--------------|--|
| 466-419-001 | Closure plug for baseplate outlet incl. washer |
| 24-2151-3760 | Crossporting bridge, 2 outlets ¹⁾ |
| 24-2151-3762 | Crossporting bridge, 2 outlets, with outlet port ¹⁾ |
| 24-2151-3764 | Crossporting bridge, 2 outlets, with outlet port and check valve ¹⁾ |

¹⁾ bridges are approved for a maximum operating pressure of 100 bar; crossporting bridge also available for 3 outlets, see brochure



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

14389EN; 951-230-013



3D

skf-lubrication.partcommunity.com/3d-cad-models

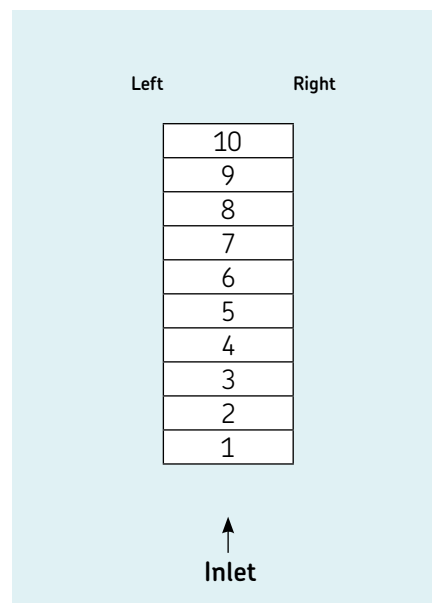
Progressive metering device

PSG1

| | | | | | | |
|--|------|--|---|---|---|--|
| Identification code | PSG1 | | X | X | X | |
| Product series | | | | | | |
| Monitoring | | | | | | |
| <ul style="list-style-type: none"> X = none 3 = 3-pin piston detector, M12x1 plug Y = cycle indicator, visual plunger rod ^{1) 2)} S = cycle indicator with bracket and proximity switch ^{1) 2)} G = cycle indicator with bracket for proximity switch (without proximity switch) ^{1) 2)} | | | | | | |
| Position of monitoring device ²⁾ | | | | | | |
| <ul style="list-style-type: none"> X = none A = left, section 1 C = left, section 2 E = left, section 3 G = left, section 4 J = left, section 5 L = left, section 6 N = left, section 7 Q = left, section 8 S = left, section 9 U = left, section 10 B = right, section 1 D = right, section 2 F = right, section 3 H = right, section 4 K = right, section 5 M = right, section 6 P = right, section 7 R = right, section 8 T = right, section 9 V = right, section 10 | | | | | | |
| Connector baseplate inlet ³⁾ | | | | | | |
| <ul style="list-style-type: none"> X = none A = tube Ø6 mm | | | <ul style="list-style-type: none"> B = tube Ø8 mm C = tube Ø10 mm | | | |
| Sections | | | | | | |

... = to be configured in the section configurator below

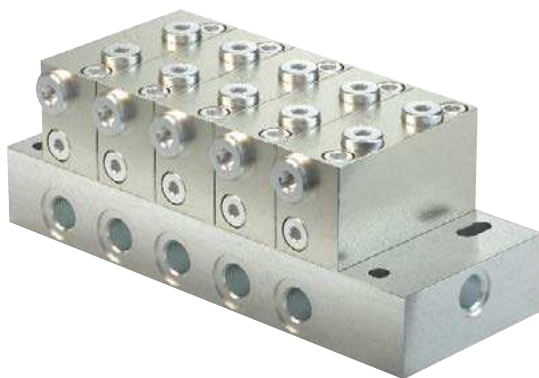
| | | | |
|---|---|---|--|
| Identification code | - | - | |
| Section (minimum 3 sections) ⁴⁾ | | | |
| <ul style="list-style-type: none"> X = dummy section A = 0,05 cm³/cycle ⁵⁾ E = 0,25 cm³/cycle B = 0,10 cm³/cycle D = 0,20 cm³/cycle | | | |
| Outlet connector left | | | |
| <ul style="list-style-type: none"> S = outlet closed by screw plug ⁶⁾ X = outlet without fitting | | | |
| Outlet connector right | | | |
| <ul style="list-style-type: none"> S = outlet closed by screw plug ⁶⁾ X = outlet without fitting | | | |



¹⁾ Only on 200 and 250 mm³ section sizes
²⁾ Installation on first or last section is not recommended
³⁾ Solderless pipe union with cutting sleeve per DIN 2353
⁴⁾ The volume per section is equal on both sides
⁵⁾ If possible, do not place in first position when designing metering device
⁶⁾ Metering device only operates with one side (left or right) outlet closed per section

Progressive metering device

PSG2



Description

The PSG2 is a progressive metering device consisting of a baseplate and different metering sections that can be individually combined for specific outlet ratios and cross portings. The ports are part of the baseplate, so that connectors and tubes remain in place when segments need to be changed.

Features and benefits

- Easy servicing due to outlet location
- Flexible with exchangeable metering segments
- Visual or electrical monitoring available
- Increased corrosion-resistant material
- Adjustable output by consolidating outlets internally or externally

Applications

- Automobile presses
- Tunnel boring machines
- Paper machines

Technical data

| | |
|----------------------------------|---|
| Function | segmented progressive metering device |
| Outlets | 6 to 20 |
| Lubricant | grease: up to NLGI 2 mineral and synthetic oils; min. viscosity of 12 mm ² /s |
| Metering quantity | per cycle and outlet: |
| min. | 0,06 cm ³ ; 0.0037 in ³ |
| max. | 0,84 cm ³ ; 0.051 in ³ |
| Flow rate | max. 2,5 l/min; 5.3 pts/min |
| Operating temperature | -15 to +110 °C; +5 to +230 °F |
| Operating pressure ¹⁾ | 200 bar; 2 900 psi |
| Material | |
| baseplate: | aluminium alloy or anodized |
| sections: | steel or nickel plated |
| Inlet connection | G 1/4 |
| Outlet connection | G 1/4 |
| Protection class | IP67 |
| Dimensions | min. 131 × 86 × 71 mm max. 327 × 86 × 71 mm min. 5.16 × 3.39 × 2.80 in max. 12.87 × 3.39 × 2.80 in |
| Mounting position: | |
| on machines without vibration | any |
| on machines with vibration | piston position should be 90° to machine movement direction |
| Options | flow limiter |

¹⁾ Operating pressure may be lower depending on design with monitoring or attachments

PSG2 accessories

| Order number | Designation |
|--------------|--|
| 466-419-001 | Closure plug for baseplate outlet incl. washer |
| 24-2151-3760 | Crossporting bridge, 2 outlets ¹⁾ |
| 24-2151-3762 | Crossporting bridge, 2 outlets, with outlet port ¹⁾ |
| 24-2151-3764 | Crossporting bridge, 2 outlets, with outlet port and check valve ¹⁾ |

¹⁾ Bridges are approved for a maximum operating pressure of 100 bar; crossporting bridge also available for 3 outlets, see brochure



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

14389 EN; 951-230-01



3D

skf-lubrication.partcommunity.com/3d-cad-models

Progressive metering device

PSG2

| | | | | | | | |
|--|-----------------|--|--|--|--|---|-----------------|
| Identification code | PSG2 | | | | | X | |
| Product series | | | | | | | |
| Monitoring | | | | | | | |
| X = none 3 = 3-pin piston detector, M12x1 plug Y = cycle indicator, visual plunger rod ¹⁾ S = cycle indicator with bracket and proximity switch ¹⁾ G = cycle indicator with bracket for proximity switch (without proximity switch) ¹⁾ | | | | | | | |
| Position of monitoring device ²⁾ | | | | | | | |
| X = none A = left, section 1 B = right, section 1 C = left, section 2 D = right, section 2 E = left, section 3 F = right, section 3 G = left, section 4 H = right, section 4 J = left, section 5 K = right, section 5 L = left, section 6 M = right, section 6 N = left, section 7 P = right, section 7 Q = left, section 8 R = right, section 8 S = left, section 9 T = right, section 9 U = left, section 10 V = right, section 10 | | | | | | | |
| Attachments | | | | | | | |
| F = SMB 8 flow limiter with nominal volume up to 1.56 l/min G = SMB 8 flow limiter with nominal volume from 1.67 l/min K = gear-type flow indicator | | | | | | | |
| Plug-in nozzle for flow limiter | | | | | | | |
| see PUB 14389 EN; p. 15 | | | | | | | |
| Connector baseplate inlet³⁾ | | | | | | | |
| X = none A = tube Ø6 mm B = tube Ø8 mm | C = tube Ø10 mm | | | | | | D = tube Ø12 mm |
| Sections | | | | | | | |

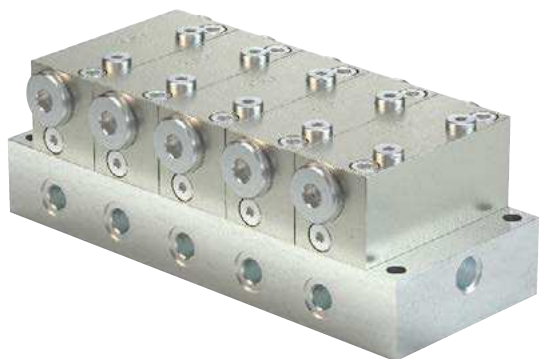
... = to be configured in the section configurator below

| | |
|---|--|
| Section configurator ⁴⁾ | |
| Section (minimum 3 sections) ⁴⁾ | |
| x = dummy section F = 0,06 cm ³ /cycle ⁵⁾ K = 0,48 cm ³ /cycle G = 0,12 cm ³ /cycle L = 0,60 cm ³ /cycle H = 0,24 cm ³ /cycle M = 0,72 cm ³ /cycle J = 0,36 cm ³ /cycle N = 0,84 cm ³ /cycle | |
| Outlet connector left | |
| S = outlet closed by screw plug ⁶⁾ X = outlet without connector | |
| Outlet connector right | |
| S = outlet closed by screw plug ⁶⁾ X = outlet without connector | |
| ¹⁾ Only on section sizes L (0,60 cm ³) ²⁾ Installation on first or last section is not recommended ³⁾ Solderless pipe union with cutting sleeve per DIN 2353 ⁴⁾ The volume per section is equal on both sides ⁵⁾ If possible, do not place in first position when designing metering device ⁶⁾ Metering device only operates with one side (left or right) outlet closed per section | |

| | | | | | | | | | | | |
|------|---|----|---|---|---|---|---|---|---|---|---|
| Left | Right | | | | | | | | | | |
| | <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>10</td></tr> <tr><td>9</td></tr> <tr><td>8</td></tr> <tr><td>7</td></tr> <tr><td>6</td></tr> <tr><td>5</td></tr> <tr><td>4</td></tr> <tr><td>3</td></tr> <tr><td>2</td></tr> <tr><td>1</td></tr> </table> | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
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| 2 | | | | | | | | | | | |
| 1 | | | | | | | | | | | |
| | ↑ Inlet | | | | | | | | | | |

Progressive metering device

PSG3



Description

The PSG3 is a progressive metering device consisting of a baseplate and different metering sections that can be individually combined for specific outlet ratios and cross portings. The ports are part of the baseplate, so that connectors and tubes remain in place when segments need to be changed.

Features and benefits

- Easy servicing as outlets are located on baseplate
- Flexible with exchangeable metering segments
- Visual or electrical monitoring available
- Increased corrosion-resistant material available
- Dummy segments without output available
- Adjustable output by consolidating outlets internally or externally
- Main metering device in oil circulation systems

Applications

- Automobile presses
- Paper machines
- Tunnel boring machines

Technical data

| | |
|----------------------------------|---|
| Function | segmented progressive metering device |
| Outlets | 6 to 20 |
| Lubricant | grease up to NLGI 2 mineral and synthetic oils; min. viscosity 12 mm ² /s |
| Metering quantity | per cycle and outlet: |
| min. | 0,80 cm 0,049 in |
| max. | 3,20 cm 0,195 in |
| Flow rate | max. 6 l/min; 12.7 pts/min |
| Operating temperature | -15 to +110 °C; +5 to +230 °F |
| Operating pressure ¹⁾ | 200 bar 2 900 psi |
| Material | |
| baseplate: | aluminium alloy or anodized |
| sections: | steel galvanized or nickel plated |
| Inlet connection | G 3/8 |
| Outlet connection | G 1/4 |
| Protection class | IP 67 |
| Dimensions | min. 165 × 108 × 88 mm max. 466 × 108 × 88 mm min. 6.50 × 4.25 × 3.46 in max. 18.35 × 4.25 × 3.46 in |
| Mounting position: | |
| on machines without vibration | any |
| on machines with vibration | piston position must be in 90° angle to machine's movement direction |
| Options | flow limiter |

¹⁾ Operating pressure may be lower depending on design with monitoring or attachments

PSG3 accessories

| Order number | Designation |
|-----------------|--|
| DIN908-R1-4-5.8 | Closure plug for baseplate outlet |
| 508-108 | Washer for closure plug |
| 24-2151-3734 | Crossporting bridge, 2 outlets ¹⁾ |
| 24-2151-3736 | Crossporting bridge, 2 outlets with outlet ports ¹⁾ |

¹⁾ Crossporting bridges are approved for a maximum operating pressure of 100 bar; crossporting bridge also available for 3 outlets, see brochure

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

14389 EN; 951-230-013



3D

skf-lubrication.partcommunity.com/3d-cad-models

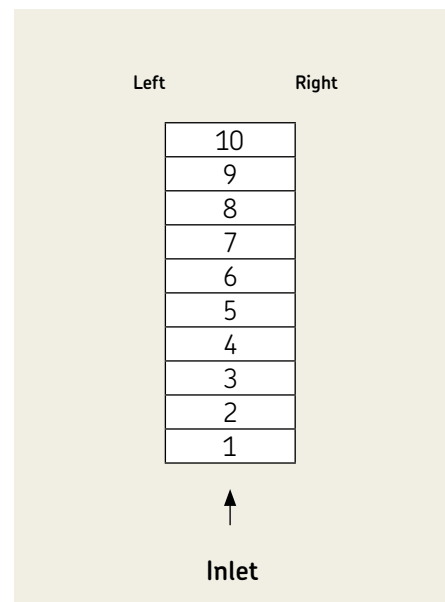
Progressive metering device

PSG3

| | | | | | | | |
|--|------|--|--|--|--|---|--|
| Identification code | PSG3 | | | | | X | |
| Product series | | | | | | | |
| Monitoring | | | | | | | |
| <ul style="list-style-type: none"> X = none 3 = 3-pin piston detector, M12x1 plug Y = cycle indicator, visual plunger rod ¹⁾ S = cycle indicator with bracket and proximity switch ¹⁾ G = cycle indicator with bracket for proximity switch (without proximity switch) ¹⁾ | | | | | | | |
| Position of monitoring device ²⁾ | | | | | | | |
| <ul style="list-style-type: none"> X = none A = left, section 1 C = left, section 2 E = left, section 3 G = left, section 4 J = left, section 5 L = left, section 6 N = left, section 7 Q = left, section 8 S = left, section 9 U = left, section 10 B = right, section 1 D = right, section 2 F = right, section 3 H = right, section 4 K = right, section 5 M = right, section 6 P = right, section 7 R = right, section 8 T = right, section 9 V = right, section 10 | | | | | | | |
| Attachments | | | | | | | |
| <ul style="list-style-type: none"> F = SP/SMB 8 flow limiter with nominal volume up to 1.56 l/min G = SP/SMB 8 flow limiter with nominal volume from 1.67 l/min K = gear-type flow indicator | | | | | | | |
| Plug-in nozzle for flow limiter | | | | | | | |
| see PUB 14389 EN; p. 22 | | | | | | | |
| Connector baseplate inlet ²⁾ | | | | | | | |
| <ul style="list-style-type: none"> X = none B = tube Ø8 mm C = tube Ø10 mm D = tube Ø12 mm F = tube Ø16 mm E = tube Ø15 mm | | | | | | | |
| Sections | | | | | | | |

... = to be configured in the section configurator below

| | |
|--|--|
| Section configurator | <div style="border: 1px solid black; width: 100px; height: 20px; margin: 0 auto;"></div> |
| Section (minimum 3 sections) ³⁾ | |
| <ul style="list-style-type: none"> X = dummy section P = 0,80 cm³/cycle ⁴⁾ Q = 1,20 cm³/cycle R = 1,60 cm³/cycle S = 2,40 cm³/cycle T = 3,20 cm³/cycle | |
| Outlet fitting left | |
| <ul style="list-style-type: none"> S = outlet closed by screw plug ⁵⁾ X = outlet without fitting | |
| Outlet fitting right | |
| <ul style="list-style-type: none"> S = outlet closed by screw plug ⁵⁾ X = outlet without fitting | |



¹⁾ Installation on first or last section is not recommended
²⁾ Solderless pipe union with cutting sleeve per DIN 2353
³⁾ The volume per section is equal on both sides
⁴⁾ If possible, do not place in first position when designing metering device
⁵⁾ Metering device only operates with one side (left or right) outlet closed per section

Progressive metering device

VP



Description

The VP type metering device is a sectional metering device. Its metering sections cover a metering volume per outlet and cycle of 0,1 cm³ (T-section = 2 outlets) to 1,2 cm³ (S-section = 1 outlet). All sections (inlet, intermediate, end) are tightened via tie rods. The delivery ducts are sealed by porting plates in between the segments. A minimum of three intermediate sections is necessary.

Features and benefits

- Volumetric flow of up to 1,0 l/min; 2.1 pts/min
- Universal use in continuous or intermittent operation
- Metering sections with variable metering amount
- Internal and external consolidation of outlets
- Visual or electrical monitoring optional
- Ideal as main metering device
- All outlets with built-in, non-return valves

Applications

- Preferred master metering device
- Metal forming machines
- Vehicles, trucks
- Construction and mining
- Packaging machines
- General industry
- Farm machinery

Technical data

| | |
|--------------------------------|---|
| Function | sectional metering device |
| Outlets | 6 to 20 |
| Lubricant | grease up to NLGI 2; environmentally friendly mineral and synthetic oils; viscosity min. 12 mm ² /s |
| Metering quantity | per cycle and outlet: 0,1–1,2 cm ³ ; 0.006–0.073 in ³ 1 l/min; 2.1 pts/min |
| Flow rate | |
| Operating temperature | –25 to +90 °C; –13 to 194 °F |
| Operating pressure | oil: 200 bar; 2 900 psi grease: 200 bar; 2 900 psi |
| Material: | |
| inlet, separator and end plate | steel, galvanized/NBR |
| sections/piston plate | steel, galvanized |
| Inlet connection: | |
| VPM/VPG | M14 × 1,5/G 1/4 |
| Outlet connection: | |
| VPM/VPG | M10 × 1/G 1/8 |
| Protection class | IP 67 |
| Dimensions | min. 98 × 82,5 × 41 mm max. 238 × 82,5 × 41 mm min. 3.86 × 3.25 × 1.61 in max. 9.37 × 3.25 × 1.61 in |
| Mounting position: | |
| on machines without vibration | any |
| on machines with vibration | piston position must be in 90° angle to machine's movement direction |

NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:
15400EN, 951-230-008 EN



3D
skf-lubrication.partcommunity.com/3d-cad-models

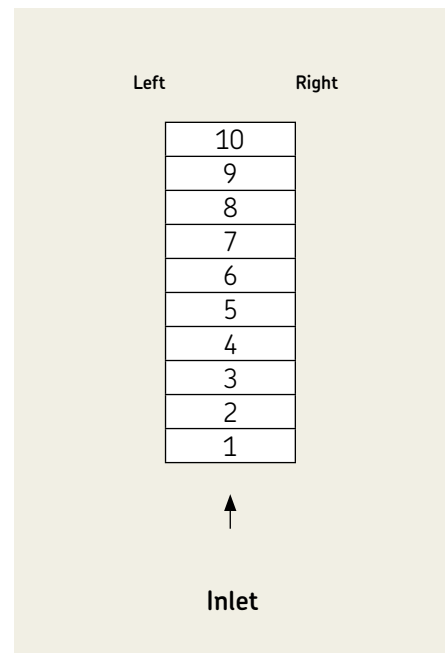
Progressive metering device

VP

| | | | | | | | | | |
|--|----------------------|--|--|---|---|--|--|---|-----------------------|
| Identification code | VP | | | A | | | | X | |
| Product series | | | | | | | | | |
| Connections | | | | | | | | | |
| M = M14×1,5 inlet thread; M10×1 outlet thread | | | | | | | | | |
| G = G 1/4 inlet thread; G 1/8 outlet thread | | | | | | | | | |
| Monitoring | | | | | | | | | |
| X = none | | | | | | | | | |
| 2 = 2-pin piston detector, M12×1 plug | | | | | | | | | |
| 3 = 3-pin piston detector, M12×1 plug (wire breaking detection) | | | | | | | | | |
| Y = cycle indicator, visual (plunger rod) ¹⁾ | | | | | | | | | |
| Plug-on | | | | | | | | | |
| A = flow limiter SMB 8 with nominal volume up to 1,09 l/min; 2.3 pts/min | | | | | | | | | |
| Plug-in nozzle for flow limiter | | | | | | | | | |
| see PUB 1-3016 EN, p. 12 | | | | | | | | | |
| Position of monitoring device ²⁾ | | | | | | | | | |
| X = none | | | | | | | | | |
| A = left, section 1 | D = right, section 2 | | | | | | | | Q = left, section 8 |
| C = left, section 2 | F = right, section 3 | | | | | | | | S = left, section 9 |
| E = left, section 3 | H = right, section 4 | | | | | | | | U = left, section 10 |
| G = left, section 4 | K = right, section 5 | | | | | | | | R = right, section 8 |
| J = left, section 5 | M = right, section 6 | | | | | | | | T = right, section 9 |
| L = left, section 6 | P = right, section 7 | | | | | | | | V = right, section 10 |
| N = left, section 7 | | | | | | | | | |
| Inlet connector ^{2) 3)} | | | | | | | | | |
| X = none | | | | | | | | | |
| A = VPM straight connector, tube Ø6 mm (L) | | | | | B = VPG straight connector, tube Ø6 mm (S) | | | | |
| D = VPM straight connector, tube Ø8 mm (S) | | | | | C = VPG straight connector, tube Ø8 mm (L) | | | | |
| E = VPM straight connector, tube Ø10 mm (L) | | | | | E = VPG straight connector, tube Ø10 mm (L) | | | | |
| F = VPM straight connector, tube Ø12 mm (L) | | | | | F = VPG straight connector, tube Ø12 mm (L) | | | | |
| Sections | | | | | | | | | |

... = to be configured in the section configurator below

| | | |
|---|---------------------------------|---|
| Section configurator ⁴⁾ | - | - |
| Section (minimum 3 sections) | | |
| Single | Twin | |
| D = 0,20 cm ³ /cycle | C = 0,10 cm ³ /cycle | |
| F = 0,40 cm ³ /cycle | E = 0,20 cm ³ /cycle | |
| H = 0,60 cm ³ /cycle | G = 0,30 cm ³ /cycle | |
| K = 0,80 cm ³ /cycle | J = 0,40 cm ³ /cycle | |
| M = 1,00 cm ³ /cycle | L = 0,50 cm ³ /cycle | |
| Q = 1,20 cm ³ /cycle | N = 0,60 cm ³ /cycle | |
| Outlet connector left | | |
| S = outlet closed by screw plug ⁵⁾ | | |
| X = outlet without fitting | | |
| Outlet connector right | | |
| S = outlet closed by screw plug ⁵⁾ | | |
| X = outlet without fitting | | |



¹⁾ The installation of the cycle indicator is only possible from metering device section 2T and 2S, respectively!
²⁾ Solderless pipe unions with cutting sleeve acc. to DIN 2353
³⁾ LL-series = extra light version, L-series = light version, S-series = heavy-duty version
⁴⁾ Repeat this entry according to number of selected sections (1 to 10)
⁵⁾ Metering device only operates with one side (left or right) outlet closed per section



Overview of oil circulation control units and software

| Control units | | | | | | |
|---------------------|------------------------------|----------------------------|------------|-----------------------|-----------------------------------|------|
| Product | Function type | Operating temperature max. | | Electrical connection | | Page |
| | | °C | °F | V DC | V AC | |
| ST-2240-CIRC | Control unit | -20 to +70 | -4 to +158 | - | 93–132 / 5.4 A 186–264 / 2.2 A | 90 |
| PGA 3 | Programming and display unit | -20 to +70 | -4 to +158 | 24/170 mA | - | 91 |

| Control and monitoring software | | | | |
|---------------------------------|---------------|----------------------------------|-------------------------------|------|
| Product | Function type | Metering device to be used with | Connection interface | Page |
| SKF Flowline Software | Software | SKF Flowline Monitor flow meters | USB or SKF Flowline HUB (LAN) | 92 |
| SKF Variolub Software | Software | IPM 12 pulse meter | USB | 93 |

Control unit

ST-2240 CIRC



Description

The SKF Control Centre ST-2240-CIRC is a stand-alone controller for oil circulation lubrication systems. It comes with a touch screen and remote smart phone option. It is a flexible and cost-effective solution for controlling and monitoring oil circulation lubrication systems. It comes with an easy-to-use touch screen interface, machine interlocking and various communication protocol.

Features and benefits

- Automatic and manual pump change
- Control of output pressure, output oil temperature and oil reservoir heating and filter pressures
- Automatic cold start-up mode
- By-pass valve control

Applications

- Pulp and Paper, metals industry
- Mining, mineral processing and cement
- Power plants

Technical data

| | |
|--------------------------|---|
| Function | control unit |
| Operating temperature 1) | -20 to +70 °C; -4 to +158 °F |
| Power supply | 93–132 VAC / 5.4 A 186–264 VAC / 2.2 A 47–63 Hz |
| Instrument power supply | Internal power supply 24 V DC / 10A |
| Display | 5.7 TFT touch screen, 64k color |
| Ports | Ethernet for remote control via web browser or mobile app for Android and iPhone/iPad USB for log and trend memory Modbus TCP for DCS (data control system) interface |
| Control unit | SKF ST-105 |
| Communication | 2 Modbus ports for VFD and display communication RS232/CAN interface for Flowline monitor communication |
| Input | 4 analog/digital 4...20 A 6 digital 10 mA |
| Output | 8 digital 24V / 2A 2 relay outputs for alarm and interlocking |
| Protection class | IP 65 |
| Dimensions | 380 × 380 × 210 mm 14.96 × 14.96 × 8.27 in |
| Mounting position | vertical |

ST-2240

| Order number | Designation |
|--------------|------------------------------|
| 12380707 | ST-2240-CIRC |
| on request | ST-2240-SUMP |
| on request | power stack for ST-2240-CIRC |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

14257 EN

Programming and display unit

PGA 3



Description

The PGA 3 programming and display unit is an input device for the IPM 12 pulse meter. It is used to parameterize the IPM 12 and display current flow rates of the IPM 12 connected to it. It can be used to transfer data to a customer data control system or a condition monitoring system via an OPC interface (Ethernet). The PGA 3 mobile version is used for maintenance purposes. Its function and design is identical.

Features and benefits

- Portable version available
- Easy handling
- Easy-to-read display
- Interface to condition monitoring system
- Interface to customer data control system (DCS)

Applications

- Pulp and paper industry
- Metals industry
- Automobile body presses
- Machine tools

Technical data

| | |
|-------------------------------------|--|
| Function | programming and display unit |
| Operating temperature ¹⁾ | -20 to +70 °C; -4 to +158 °F |
| Operating voltage | 24 V DC |
| Power consumption | 170 mA |
| Interfaces | ethernet LAN interface RS 232/422/485, serial interface |
| Indicating range | 1–9999 pulse/min or 0,01–99 l/min; 0,00–26.15 gal/min |
| Display | approx. 62 × 44 mm; 2.44 × 1.73 in |
| Display precision | ± 2% |
| Protection class | IP 65 |
| Dimensions | with housing: 191 × 161 × 57 mm; 75.3 × 6.34 × 2.24 in |
| Mounting position | any |

PGA 3

| Order number | Designation |
|---------------------|---|
| 84-8011-0402 | PGA 3 mobile including connection cable |
| 84-8011-0401 | PGA 3 mobile |
| 84-8011-0400 | PGA 3 stationary |
| 24-6882-5010 | Connection cable for PGA 3 mobile |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3022-EN; 951-180-003 EN

Software

SKF Flowline Software



Description

The SKF Flowline Software is designed as a stand alone monitoring software for SKF Flowline Monitor flow meters. It collects and processes information on current states of all connected flow meters and records trends. A detailed visualization enables the operator to track down each alarm signal from the factory view to the individual panel and flow meter. The software provides detailed information on each lubrication point.

Features and benefits

- Full overview of all connected flow meters
- Traceability down to the lubrication point
- Compatibility with Canbus, Modbus, Profibus, Profinet

Applications

- Pulp and paper industry
- Metals industry
- Mining, mineral processing and cement

SKF Flowline Software

| Order number | Designation |
|--------------|---|
| 13399500 | Flowline Software Version 2 with Flowline Hub |
| 13399510 | Flowline Software Version 2 with Flowline Hub and Bus Gateway |
| 13399520 | Flowline Software Version 2 with USB interface |
| 13399540 | Flowline Software Version 2 with Ethernet interface |
| 13399560 | Flowline Software Version 2 with RS232 interface |

SKF Variolub Software



Description

The SKF Variolub Software offers an inexpensive solution for the set-up of the IPM 12 pulse meter. It can be downloaded to a laptop computer for maintenance purposes in the field and directly communicates with the IPM 12 connected to it. Set points can be defined for each individual lube point whereas the alarm limits are set as a common parameter for each IPM 12. Inputs currently not in use can be switched off.

Features and benefits

- Human Machine Interface for parameter setting
- Connector cable to connect a laptop computer (Sub-D9) to the IPM 12 pulse meter (M12)
- Adaptor Sub-D9 – USB optional

Applications

- Pulp and paper industry
- Metals industry
- Automobile body presses

SKF Variolub Software

| Order number | Designation |
|---------------------|--------------------------------|
| 84-8013-0001 | Software IPM 12V1.01 |
| 24-6882-5003 | Connection cable laptop RS 232 |
| 44-2392-2694 | USB RS 232 adapter |



Overview of oil circulation monitoring devices

Level switches

| Product | Function type | Operating temperature max. | | Electrical connection | | Page |
|--------------------|---------------|----------------------------|------------|-----------------------|------|------|
| | | °C | °F | V DC | V AC | |
| WS 32/33/35 | level switch | -10 to +80 | +14 to 175 | 230 | 230 | 96 |
| WS-63-2 | level switch | -10 to +80 | +14 to 175 | 200 | 240 | 98 |
| WS 68 | level switch | -10 to +80 | +14 to 175 | 48 | 48 | 98 |

Monitoring and indication devices

| Product | Function type | Operating temperature max. | | Electrical connection | | Page |
|----------------|-------------------------------------|----------------------------|------------|-----------------------|-------------|------|
| | | °C | °F | V DC | V AC | |
| 171-210 | flow monitor | +5 to 80 | +41 to 176 | - | 250 / 0,5 A | 100 |
| IPM 12 | pulse meter | 0 to +70 | +32 to 158 | 24 ±15%; 0,15 A | - | 102 |
| SFZ | gear wheel indicator hall sensor | 0 to +70 | +32 to 158 | 24 ±10%; 20 mA | - | 104 |

Level switch

WS 32/33/35



Description

Fill level switches monitor the fill level in non-pressurized fluid reservoirs. To meet different requirements, fill level switches either have one or two switching points. If fill level switches have one switching point (WS32), the minimum fill level in the reservoir is monitored. Fill level switches with two switching points either monitor the minimum and maximum fill levels in the reservoir so the filling stops automatically when the maximum level is reached (WS33), or they monitor the minimum fill level and have an early warning function (WS35). The latter version gives a signal before a critical oil level in the reservoir is reached so oil can be topped off before the machine stops working. Other fill level switches are available on request, e.g. with three switching points.

Features and benefits

- Easy mounting
- Different plug sizes
- Various switching points

Applications

- Machine tools
- Printing
- Automation

Technical data

| | |
|--------------------------|--|
| Function | level switch |
| Lubricant | mineral and synthetic oils; viscosity max. 1 500 mm ² /s |
| Operating temperature | -10 to +80 °C; +14 to 175 °F |
| Material | Aluminium, CuZn, NBR, PP |
| Switching points : | |
| WS 32 | 1 |
| WS 33, WS35 | 2 |
| Switching element | reed contact |
| Switching voltage | 230 V AC, 230 V DC |
| Switching capacity max. | 60 VA / 40 W |
| Switching current max. | 1 A |
| Switching point settings | 100–1 600 mm; 3.94–63 in |
| Protection class | IP 65 |
| Dimensions | |
| WS32 | min. 100–1 600 × 52 × 52 mm min. 3.94–63 × 2 × 2 in |
| WS33 | max. 120–600 × 52 × 52 mm max. 4.72–23.6 × 2 × 2 in |
| WS 35 | max. 120–1 600 × 52 × 52 mm max. 4.72–63 × 2 × 2 in |
| Mounting position | vertical |



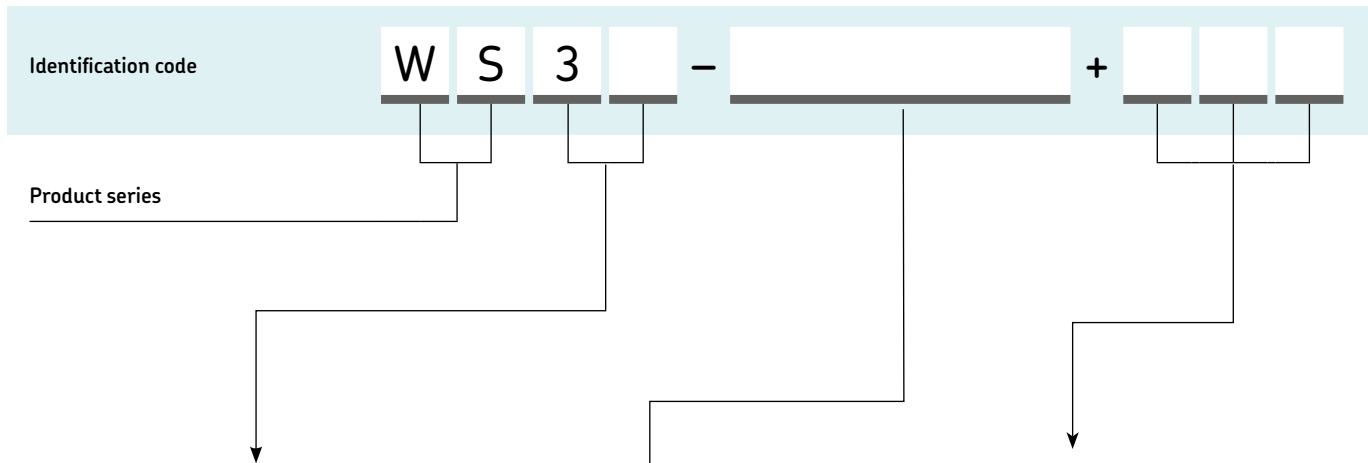
NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1702-EN

Level switch

WS 32/33/35



Switching points ¹⁾

| Code | Designation |
|------|--------------------------------------|
| 32 | Minimum fill level |
| 33 | Minimum and maximum fill levels |
| 35 | Early warning and minimum fill level |

¹⁾ gasket included

Plug connector and visual monitoring

| Code | Designation |
|---------|---|
| S10 | Circular connector with cable socket and LED |
| 2 | Square connector with cable socket, without LED |
| S30 | Circular connector M12x1 with LED |
| 2-V57-A | Circular connector x1 without LED |

Lengths keys for fill level switch

| Lenght mm | Designation | Lengths keys | | | | | |
|--------------|-------------|--------------|------|------|------|------|------|
| | | WS32 | WS33 | WS33 | WS33 | WS33 | WS35 |
| | | - | 50 | 100 | 150 | 65 | - |
| 100 | C49 | - | - | - | - | - | - |
| 110 | C25 | - | - | - | - | - | - |
| 120 | C17 | V69 | V69 | - | - | - | C17 |
| 130 | B27 | Y72 | Y72 | - | - | - | B27 |
| 140 | B97 | X16 | X16 | - | - | - | B97 |
| 150 | C08 | X41 | X41 | Z06 | - | - | C08 |
| 160 | E08 | X24 | X24 | - | - | - | E08 |
| 170 | D84 | X07 | X07 | - | - | - | D84 |
| 180 | B53 | X22 | X22 | - | - | - | B53 |
| 190 | E77 | Y91 | Y91 | - | - | - | E77 |
| 200 | B31 | V85 | V85 | Y87 | - | - | B31 |
| 210 | D42 | ZE7 | ZE7 | - | - | - | D42 |
| 220 | C52 | V86 | V86 | - | - | - | C52 |
| 230 | C81 | V27 | V27 | - | - | - | C81 |
| 240 | C79 | Z49 | Z49 | - | - | - | C79 |
| 250 | B44 | X46 | X46 | V23 | ZG4 | - | B44 |
| 260 | F01 | Y69 | Y69 | - | - | - | F01 |
| 270 | D54 | ZL8 | ZL8 | - | - | - | D54 |
| 280 | C04 | X98 | X98 | - | - | - | C04 |
| 290 | D65 | X84 | X84 | - | - | - | D65 |
| 300 | B37 | X76 | X76 | V75 | - | - | B37 |
| 325 | E28 | - | - | - | - | - | E28 |
| 350 | B46 | X86 | X86 | V21 | - | - | B46 |
| 375 | D13 | - | - | - | - | - | D13 |
| 400 | B95 | V74 | V74 | V43 | - | - | B95 |
| 425 | D56 | - | - | - | - | - | D56 |
| 450 | L69 | Y85 | Y85 | - | - | - | L69 |
| 475 | E30 | - | - | - | - | - | E30 |
| 500 | B28 | V49 | V49 | V17 | Y77 | - | B28 |
| 550 | B48 | - | - | - | - | - | B48 |
| 600 | B51 | - | - | X93 | - | - | B51 |
| 650 | C65 | - | - | - | - | - | C65 |
| 700 | F94 | - | - | - | - | - | F94 |
| 750 | E54 | - | - | - | - | - | E54 |
| 800 | F29 | - | - | - | - | - | F29 |
| 850 | F53 | - | - | - | - | - | F53 |
| 900 | L24 | - | - | - | - | - | L24 |
| 1 000 | B70 | - | - | - | - | - | B70 |
| 1 100 | B84 | - | - | - | - | - | B84 |
| 1 200 | F49 | - | - | - | - | - | F49 |
| 1 300 | F77 | - | - | - | - | - | F77 |
| 1 400 | L06 | - | - | - | - | - | L06 |
| 1 500 | F83 | - | - | - | - | - | F83 |
| 1 600 | L34 | - | - | - | - | - | L34 |

Level switch

WS63-2



Description

Fill level switches monitor the fill level in non-pressurized fluid reservoirs. To suit different requirements, the fill level switches either have one or two switching points. WS63-2 series has only one switching point and electric contact opens with dropping oil level. The switch can be turned by 180° to make the electric contacts close with rising oil level.

Features and benefits

- Compact design
- Dropping and rising oil level monitoring

Applications

- Machine tools
- Printing
- Automation

Technical data

| | |
|-------------------------|--|
| Order number | WS63-2 |
| Function | level switch |
| Lubricant | mineral and synthetic oils; viscosity max. 1 500 mm ² /s |
| Operating temperature | -10 to +80 °C; +14 to 175 °F |
| Material | PP, Aluminium, NBR |
| Switching voltage | 240 V AC, 200 V DC |
| Switching capacity max. | 100 VA / 50 W |
| Switching current max. | 0,5 A |
| Switching points | 1 |
| Protection class | IP 65 |
| Dimensions | 55 × 55 × 131 mm 2.17 × 2.17 × 5.16 in |
| Mounting position | horizontal |


NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1702-EN

Level switch

WS68



Description

Fill level switches monitor the fill level in non-pressurized fluid reservoirs. To suit different requirements, the fill level switches either have one or two switching points. WS 68 series has only one switching point, and electric contact opens with dropping oil level.

Features and benefits

- Compact design
- Dropping and rising oil level monitoring

Applications

- Machine tools
- Printing
- Automation

Technical data

| | |
|-------------------------|--|
| Order number | WS68 |
| Function | level switch |
| Lubricant | mineral and synthetic oils; viscosity max. 1 500 mm ² /s |
| Operating temperature | -10 to +80 °C; +14 to 175 °F |
| Material | NBR, Aluminium, PA |
| Switching voltage | 48 V AC/DC |
| Switching capacity max. | 10 VA / 10 W |
| Switching current max. | 0,25 A |
| Switching points | 1 |
| Protection class | IP 65 |
| Dimensions | 53 × 53 × 62 mm 2.09 × 2.09 × 2.44 in |
| Mounting position | horizontal |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1702-EN

Flow monitor

171-210



Description

Flow monitors are minimum flow detector switches. They represent an inexpensive solution for the monitoring of smaller oil circulation lubrication systems or critical lubrication points in systems that generally are not equipped with individual flow monitoring.

Features and benefits

- Effective monitoring of minimum oil flow
- Wide flow range
- Available in five ranges but with identical outer dimensions
- High operating temperature

Applications

- Automotive industry
- Metal forming
- Machine tools
- Heavy industry

Technical data

| | |
|----------------------------------|---|
| Function | Flow switch |
| Lubricant | mineral oils; viscosity 20–1 000 mm ² /s ¹⁾ |
| Flow rate | 0,05–14 l/min; 0.013–3.70 gal/min |
| Operating temperature | +5 to 80 °C; +41 to 176 °F |
| Operating pressure ¹⁾ | 4–25 bar; 58–363 psi |
| Electrical connection | change-over 250 V AC / 0,5 A |
| Inlet connection | depending on model: M10×1, M18×1,5 M18×1,5 |
| Outlet connection | |
| Material: | |
| Housing | die-cast zinc, polyamide |
| Seals | NBR (FKM on request) |
| Protection class | IP 65 |
| Dimensions | min. 90 × 47 × 34 mm max. 101 × 47 × 34 mm min. 3.54 × 1.85 × 1.33 in max. 3.98 × 1.85 × 1.33 in |
| Mounting position | any |

¹⁾ If the flow monitors are equipped with metering restrictors, at least 6 bars are required in the feed line

 NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-1704-EN, 951-170-232



3D

skf-lubrication.partcommunity.com/3d-cad-models

Flow monitor

171-210

Flow monitor 171-210-05...

| Order number | Flow rate | | Connection | |
|--------------------|-----------|-----------|------------|---------|
| | l/min | gal/min | inlet | outlet |
| 171-210-051 | 0,05–0,1 | 0.01–0.03 | M10×1 | M18×1,5 |
| 171-210-052 | 0,1–0,2 | 0.03–0.05 | M10×1 | M18×1,5 |
| 171-210-053 | 0,2–0,5 | 0.05–0.13 | M10×1 | M18×1,5 |
| 171-210-054 | 0,5–0,8 | 0.13–0.21 | M10×1 | M18×1,5 |
| 171-210-055 | 0,8–1,8 | 0.21–0.48 | M10×1 | M18×1,5 |

Flow monitor 171-210-06...

| Order number | Flow rate | | Connection | |
|--------------------|-----------|-----------|------------|---------|
| | l/min | gal/min | inlet | outlet |
| 171-210-061 | 1,6–2,5 | 0.42–0.67 | M18×1,5 | M18×1,5 |
| 171-210-062 | 2,3–4,0 | 0.61–1.06 | M18×1,5 | M18×1,5 |
| 171-210-063 | 3,6–6,0 | 0.95–1.59 | M18×1,5 | M18×1,5 |
| 171-210-064 | 5,5–10,0 | 1.45–2.64 | M18×1,5 | M18×1,5 |
| 171-210-065 | 8,0–14,0 | 2.11–3.70 | M18×1,5 | M18×1,5 |

Connection fittings for 171-210-05... ¹⁾

| Inlet connection | Tube Ø | Union nut | Cutting ring | Adapter | Washer |
|------------------|--------|----------------|----------------|-----------------|----------------|
| mm | | | | | |
| M10×1 | 6 | 406-302 | 406-301 | GD60.02 | 504-019 |
| M10×1 | 8 | 408-302 | 408-301 | GD80.02 | - |
| M10×1 | 10 | 410-302 | 410-301 | GD100.02 | - |

Connection fittings for 171-210-06... ¹⁾

| Inlet connection | Tube Ø | Functional nut |
|------------------|--------|--------------------|
| mm | | |
| M18×1,5 | 12 | 460-212-001 |

Connection fittings ¹⁾

| Outlet connection | Tube Ø | Adapter |
|-------------------|--------|--------------------|
| mm | | |
| M18×1,5 | 6 | 473-806-391 |
| M18×1,5 | 8 | 473-808-392 |
| M18×1,5 | 10 | 473-810-391 |

¹⁾ Port tapped for solderless cutting-sleeve screw union to DIN 2353, connection piece without restrictor, straight screw-in connector

Pulse meter

IPM 12



Description

The IPM 12 pulse meter is used to monitor the functionality of oil circulation metering devices like restrictor valve metering devices, flow limiters or progressive metering devices. It allows for the monitoring of as many as 12 lubrication points per pulse meter, each point being assigned to one input of the IPM 12. Thanks to its modular design, the IPM 12 easily can be adapted to machines and systems at any time. Based on specified values entered via a programming unit or programming software, each lubrication point is monitored individually with LEDs indicating in the event of malfunctions or alarms. Also, relay contacts signal alarms to the process control level.

Features and benefits

- Easy wiring and installation
- Modular design for simple system extension
- RS 232 interface
- Easy parameter set-up

Applications

- Pulp and paper industry
- Metals industry
- Automobile body presses

Technical data

| | |
|-----------------------|---|
| Function | pulse meter |
| Operating temperature | 0 to +70 °C; +32 to 158 °F |
| Connection type | screw terminal 1,5 mm ² |
| Electrical data | |
| Operating voltage | 24 V DC ±15% |
| Power consumption | 0,15 A |
| Interface | RS 232 |
| Transmission rate | 9 600 baud |
| Signal amplitude | ± 9 V |
| Signal inputs | 12 ¹⁾ pulse generator inputs, min. pulse width 20 ms |
| Signal outputs | 2 change-over switches (isolated) |
| Switching voltage | max. 250 V AC |
| Switching current | max. 2 A |
| Switching capacity | 250 VA |
| Protection class | IP 64 |
| Dimensions | 200 × 120 × 93 mm 7.87 × 4.72 × 3.66 in |
| Mounting position | any |
| Options | PNP initiators, three-wire technology as per Namur, two-wire technology 24 V DC contactor, max. 15 mA |

¹⁾ The start-up mode and the external reset signals require free inputs. In case these signals are used, the number of pulse inputs is reduced accordingly.



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-3022-EN; 951-180-003 EN

Pulse meter

IPM 12

IPM 12

for the use with Variolub, SMB 9, 10, 13, 14

| Order number | Designation |
|---------------------|--|
| 84-8011-0380 | IPM 12 pulse meter without connection socket for PGA 3 mobile |
| 84-8011-0390 | IPM 12 pulse meter with connection socket for PGA 3 mobile |

IPM 12

for the use with SMB 3, 6, 8

| Order number | Designation |
|---------------------|-----------------------|
| 84-8011-0369 | group monitoring unit |

IPM 12 accessories

| Order number | Designation |
|---------------------|-----------------------------|
| 24-6882-5002 | connection socket for PGA 3 |
| 24-6882-5010 | connection cable for PGA 3 |

Gear wheel indicator

SFZ



Description

The SFZ product series offers robust flow monitoring even under harsh environmental conditions. Its gear-wheel measuring principle is based on the flow limiter technology.

Features and benefits

- Three designs with metering ranges from 0 to 180 l/min (0 to 380 pts/min)
- Robust aluminium body
- Sight glass for visual monitoring
- Gear-wheel-type measuring principle

Applications

- Pulp and paper industry
- Metals industry
- Mining
- Mineral processing
- Cement
- Automobile body presses

Technical data

| | |
|-------------------------------------|---|
| Function | gear wheel indicator |
| Lubricant | mineral and synthetic oils; viscosity 20–600 mm ² /s |
| Operating temperature ¹⁾ | 0 to +70 °C; +32 to 158 °F |
| Operating pressure | 6–50 bar 87–725 psi |
| Flow rate | |
| SFZ 9/6/1; SFZ 9E/6/1: | 0,09–8,2 l/min; 0,19–17,3 pts/min |
| SFZ 9E30/1: | 6–30 l/min; 12,7–63,4 pts/min |
| SFZ 9E100/1: | 25–132 l/min; 52,8–279 pts/min |
| SFZ 9E180/3: | max. 180 l/min; max. 380 pts/min |
| Electrical connection | hall sensor |
| Voltage | 24 VDC ±10%; 20mA |
| Material | Al, Cu, Mg, Pb |
| Protection class | IP 65 |
| Dimensions | min. 80 × 80 × 75 mm max. 190 × 180 × 150 mm min. 3.1 × 3.1 × 3.0 in max. 190 × 180 × 150 in |
| Mounting position | any |

Gear wheel indicator

SFZ

| SFZ | | | | | | |
|--------------|-------------|------------|------------|-----------|-----------|--|
| Order number | Designation | Monitoring | Connection | Flow rate | | |
| | | | | l/min | pts/min | |
| 24-2581-2150 | SFZ 9/6/1 | visual | G 3/8 | 0,09–8,2 | 0.19–17.3 | |
| 24-2581-2151 | SFZ 9E/6/1 | electrical | G 3/8 | 0,09–8,2 | 0.19–17.3 | |
| 24-2581-2155 | SFZ 9E30/1 | electrical | G 3/4 | 6–30 | 12.7–63.4 | |
| 24-2581-2156 | SFZ 9E100/1 | electrical | G 1 1/4 | 25–132 | 52.8–279 | |
| 24-2581-2550 | SFZ 9E180/3 | electrical | G 1 1/4 | max. 180 | max. 380 | |



Overview of oil circulation system accessories

| Filters | | | | | | | |
|--------------------|-----------------|----------------------------|------------|---------------|-------------------------|------|------|
| Product | Function type | Operating temperature max. | | Filter rating | Operating pressure max. | | Page |
| | | °C | °F | | bar | psi | |
| 169-460-... | oil filter | -30 to +100 | -22 to 212 | 3-50 | 100 | 1450 | 108 |
| 169-400-... | filter elements | -30 to +100 | -22 to 212 | 3-50 | 30 | 435 | 108 |
| 176-200-... | dirt indicators | -30 to +100 | -22 to 212 | 3-50 | - | - | 108 |

Filter

169-460-...



Description

SKF pressure filter series 169-460 are standard oil filters according to DIN 24550. They are modular in design with a filter housing (filter head/ filter body), a filter element and a screw plug. Optionally a dirt indicator can be selected instead of the screw plug. The pressure filters are used as line filters in the pipes of the CircOil lubrication system for separating solids from the fluids. Two kinds of filter elements are available. Fiberglass fleece – disposable elements based on inorganic fibers (absolute filtration) or wire fabric (nominal filtration). The dirt indicator monitors the filter element and signals when it needs to be replaced.

Features and benefits

- Prevents system or component failures and extends system life due to significant reduction of solids
- Economical, reliable and maintenance-friendly operation
- Compact and modular design mountable directly into pipes
- Wide range of volumetric flow up levels and grades of filtration
- Optimized service handling by replacing of filter elements only
- Dirt monitoring of filter elements as an option

Applications

- General mechanical and plant engineering
- Shipbuilding and offshore industry
- Pulp and paper industry
- Heavy industry

Technical data

| | |
|-------------------------------|---|
| Function | oil filter |
| Lubricant | mineral and synthetic oils; viscosity 20–1 000 mm ² /s |
| Operating temperature | -30 to +100 °C; -22 to 212 °F |
| Operating pressure | max. 100 bar max. 1450 psi |
| Pressure difference: | |
| Fiberglass fleece | Δp 30 bar; 435 psi |
| Dirt indicators | Δp 5 bar; 72.5 psi |
| Collapse pressure resistance: | |
| Fiberglass fleece | 20 bar; 290 psi |
| Wire fabric | 30 bar; 435 psi |
| Volumetric flow up | 40 l, 63 l, 100 l; 10.6, 16.6, 26.4 gal |
| Filter ratings | 3 to 50 μm |
| Material: | |
| Housing | Aluminum |
| Sealing material | FKM |
| Filter | Fiberglass fleece-inorganic-absolute filtration, wire fabric-stainless steel-nominal filtration |
| Connecting thread (ISO 228) | G 1/2 |
| Dimensions | min. 92 × 82 × 186 mm max. 92 × 82 × 426 mm min. 3.62 × 3.3 × 7.32 in max. 3.62 × 3.3 × 16.77 in |
| Mounting position | vertical |



NOTE

Further technical information, technical drawings, accessories, spare parts or product function descriptions available on SKF.com/lubrication:

1-0116-EN; 1-0103-EN; 995-901-056 EN

Filter

169-460-...

| Filter | | | | | | | | | |
|--------------------|-----------------|------|------------------------|---------------|----------------|-----|-------------------|-------------------------|--------------------|
| Filter complete | Volumetric flow | | Filter element | Filter rating | Dirt retention | | Filter material | Dirt indicator, display | Housing |
| | l | gal | | | µm | g | | | |
| 169-460-261 | 40 | 10.6 | 169-400-260-V57 | 3 | 5,2 | - | Fiberglass fleece | 176-200-012 | 853-880-011 |
| 169-460-269 | 40 | 10.6 | 169-400-260-V57 | 3 | 5,2 | - | Fiberglass fleece | 833-030-014 | 853-880-011 |
| 169-460-273 | 40 | 10.6 | 169-400-260-V57 | 3 | 5,2 | - | Fiberglass fleece | 176-200-013 | 853-880-011 |
| 169-460-279 | 40 | 10.6 | 169-400-260-V57 | 3 | 5,2 | - | Fiberglass fleece | 176-200-014 | 853-880-011 |
| 169-460-280 | 40 | 10.6 | 169-400-260-V57 | 3 | 5,2 | - | Fiberglass fleece | 176-200-011 | 853-880-011 |
| 169-460-262 | 40 | 10.6 | 169-400-250 | 10 | 6,3 | - | Fiberglass fleece | 176-200-012 | 853-880-011 |
| 169-460-264 | 63 | 16.6 | 169-400-252 | 10 | 11,3 | - | Fiberglass fleece | 176-200-012 | 853-880-012 |
| 169-460-266 | 100 | 26.4 | 169-400-254 | 10 | 18,6 | - | Fiberglass fleece | 176-200-012 | 853-880-013 |
| 169-460-270 | 40 | 10.6 | 169-400-250 | 10 | 6,3 | - | Fiberglass fleece | 176-200-014 | 853-880-011 |
| 169-460-274 | 40 | 10.6 | 169-400-250 | 10 | 6,3 | - | Fiberglass fleece | 176-200-013 | 853-880-011 |
| 169-460-287 | 40 | 10.6 | 169-400-252 | 10 | 11,1 | - | Fiberglass fleece | 176-200-014 | 853-880-012 |
| 169-460-286 | 63 | 16.6 | 169-400-286 | 20 | - | - | Fiberglass fleece | 176-200-013 | 853-880-012 |
| 169-460-263 | 40 | 10.6 | 169-400-255 | 25 | 7 | - | Fiberglass fleece | 176-200-012 | 853-880-011 |
| 169-460-265 | 63 | 16.6 | 169-400-253 | 25 | 12,8 | - | Fiberglass fleece | 176-200-012 | 853-880-012 |
| 169-460-267 | 100 | 26.4 | 169-400-256 | 25 | 20,6 | - | Fiberglass fleece | 176-200-012 | 853-880-012 |
| 169-460-271 | 40 | 10.6 | 169-400-255 | 25 | 7 | - | Fiberglass fleece | 833-030-014 | 853-880-011 |
| 169-460-276 | 40 | 10.6 | 169-400-255 | 25 | 7 | - | Fiberglass fleece | 176-200-010 | 853-880-011 |
| 169-460-278 | 40 | 10.6 | 169-400-255 | 25 | 7 | - | Fiberglass fleece | 176-200-013 | 853-880-011 |
| 169-460-288 | 63 | 16.6 | 169-400-253 | 25 | 12,8 | - | Fiberglass fleece | 176-200-010 | 853-880-012 |
| 169-460-284 | 40 | 10.6 | 169-400-185-V57 | 25 | - | 440 | Wire fabric | 176-200-014 | 853-880-011 |
| 169-460-259 | 40 | 10.6 | 169-400-251 | 50 | - | 440 | Wire fabric | 833-030-014 | 853-880-011 |
| 169-460-272 | 40 | 10.6 | 169-400-251 | 50 | - | 440 | Wire fabric | 176-200-013 | 853-880-011 |
| 169-460-282 | 40 | 10.6 | 169-400-251 | 50 | - | 440 | Wire fabric | 176-200-009 | 853-880-011 |

| Dirt indicators | | | | |
|--------------------|--------------------|-------------------------------|--|------------------|
| Order number | Indication | Switching type | Electrical connections | Switching points |
| 176-200-009 | Electrical/Optical | 1× NO-contact / 1× NC-contact | M12x1 / 4-pin | 75% / 100% |
| 176-200-010 | Electrical/Optical | 1× NO-contact / 1× NC-contact | M12x1 / 4-pin / LED, Cold start suppression 30°C | 75% / 100% |
| 176-200-011 | Electrical/Optical | 2× NC-contact | - | 75% / 100% |
| 176-200-012 | Electrical/Optical | 1× NO-contact / 1× NC-contact | - | 75% / 100% |
| 176-200-013 | Optical | - | - | - |
| 176-200-014 | Electrical | Change-over contact | DIN EN 175301-803-A | - |

| Filter elements | |
|------------------------|---------------|
| Order number | Designation |
| 169-400-260-V57 | 3 µm; NG 40 |
| 169-400-257 | 3 µm; NG 63 |
| 169-400-250 | 10 µm; NG 40 |
| 169-400-252 | 10 µm; NG 63 |
| 169-400-254 | 10 µm; NG 100 |
| 169-400-286 | 20 µm; NG 63 |
| 169-400-185-V57 | 25 µm; NG 40 |
| 169-400-253 | 25 µm; NG 63 |
| 169-400-255 | 25 µm; NG 40 |
| 169-400-256 | 25 µm; NG 100 |
| 169-400-251 | 50 µm; NG 40 |

| Filter accessories | |
|--------------------|--|
| Order number | Designation |
| 833-030-014 | Closure plug |
| 853-880-011 | Filter housing, without reverse flow rate NG 40 |
| 853-880-012 | Filter housing, without reverse flow rate NG 63 |
| 853-880-013 | Filter housing, without reverse flow rate NG 100 |
| 881-280-050 | Mounting bracket for 3-liter plastic and metal reservoir |
| 881-280-044 | Retaining plate for 6-liter plastic reservoir |
| 881-290-270 | Filter plate for 6-liter metal reservoir |
| 881-290-271 | Filter plate for 15-liter metal reservoir |
| 881-290-272 | Filter plate for 30-liter metal reservoir |
| 881-290-273 | Filter plate for 50-liter metal reservoir |

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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.



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PUB LS/P1 18000 EN · July 2020

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