

SKF lubrication products for North America

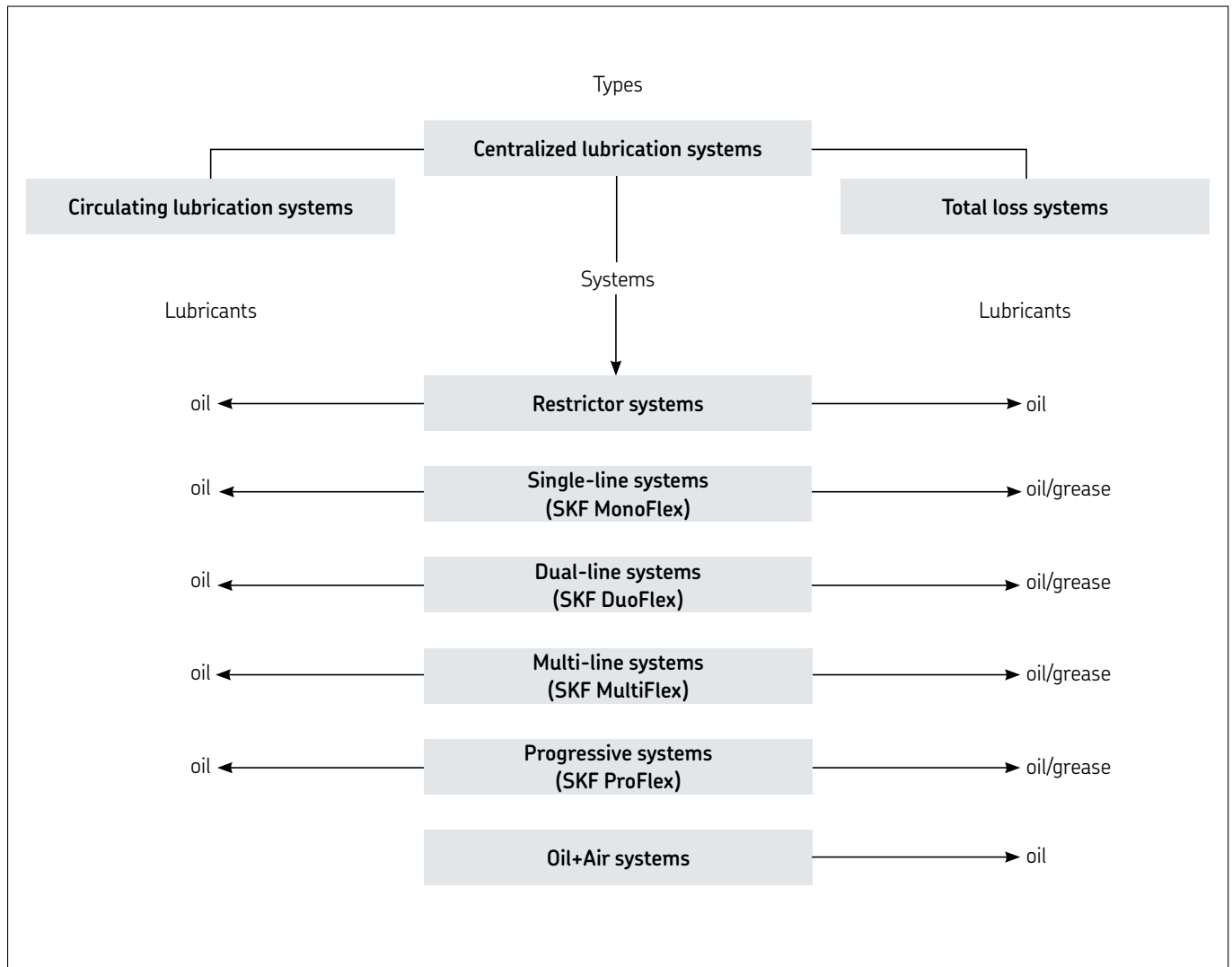
Product catalog



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Overview of centralized lubrication systems based on DIN 24271



System description

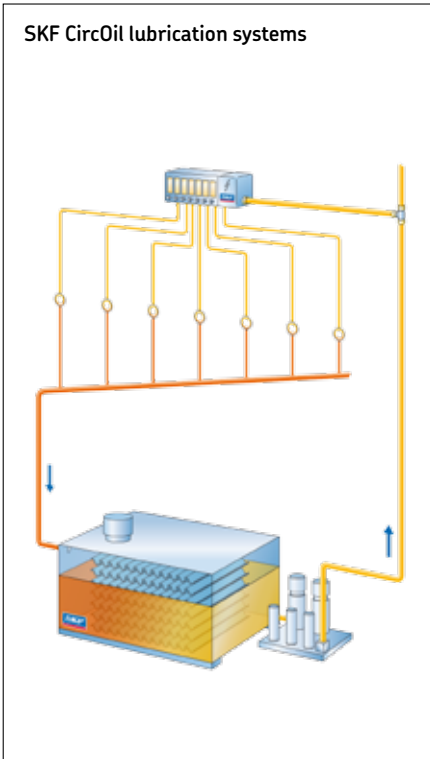
A centralized lubrication system performs the task of supplying individual lube points or groups of points with varying amounts of exactly metered lubricant from one central location to meet their different needs.

Oil and grease up to NLGI grade 2 are used as the lubricant. Care taken during the installation, start-up and maintenance of the central lubrication system will help to enhance the operating readiness and life of your machines. The central lubrication system must be given the same attention as all the other sophisticated equipment on a machine.

Our experience in the field of central lubrication technology will enable us to support our distributors and customers in the design, installation and service of lubrication systems to meet your requirements. Centralized lubrication systems are classified in accordance with their function and type of lubricant distribution.

Centralized lubrication systems included in this catalog

SKF CircOil lubrication systems



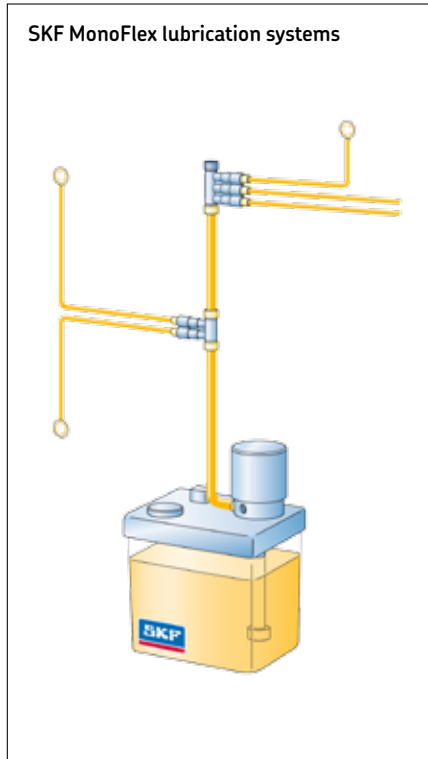
SKF CircOil lubrication systems

SKF CircOil systems are designed primarily for circulating oil lubrication to not only lubricate but also to cool highly stressed bearings in various industrial applications. They also efficiently remove dirt, water and air particles.

An oil supply system delivers the lubricant to the flow meters. The actual flow rates can be monitored visually or electronically.

SKF CircOil systems are available in this catalog for flow rates from 0.12 to 6.0 l/min (0.03 to 1.60 gal/min). SKF also offers a wide range of custom units up to 3,000 l/min (792 gal/min). Information about these units can be found in the referenced brochures. SKF CircOil systems are easy to service and feature a modular design.

SKF MonoFlex lubrication systems

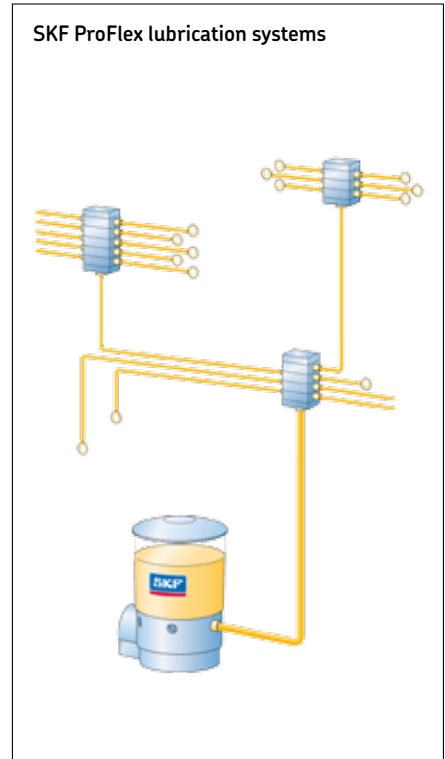


SKF MonoFlex lubrication systems

SKF MonoFlex systems include the following system components: pumps, metering devices, control and monitoring devices and accessories.

Regardless of the application, the principle remains the same; a central pump station automatically delivers lubricant through a single supply line to the lubricant metering devices. Each metering device serves only one lubrication point and may be adjusted to deliver the precise amount of lubricant required. Systems can service one machine, different zones on one machine or even several separate machines.

SKF ProFlex lubrication systems



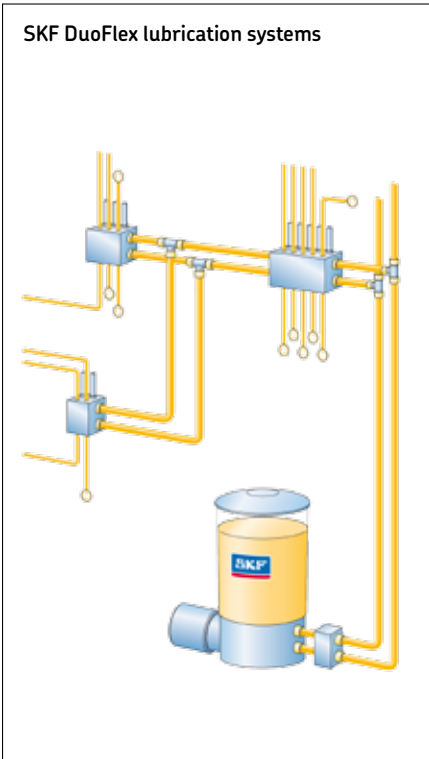
SKF ProFlex lubrication systems

Each SKF ProFlex system typically dispenses small measured amounts of lubricant at frequent intervals while machines are operating. The grease flow created by the pump is proportioned by progressive metering devices and distributed to each bearing.

The grease supply in SKF ProFlex systems can be monitored with a piston detector installed at one of the progressive metering devices or the safety valve installed at the pump unit (single point monitoring).

Centralized lubrication systems included in this catalog

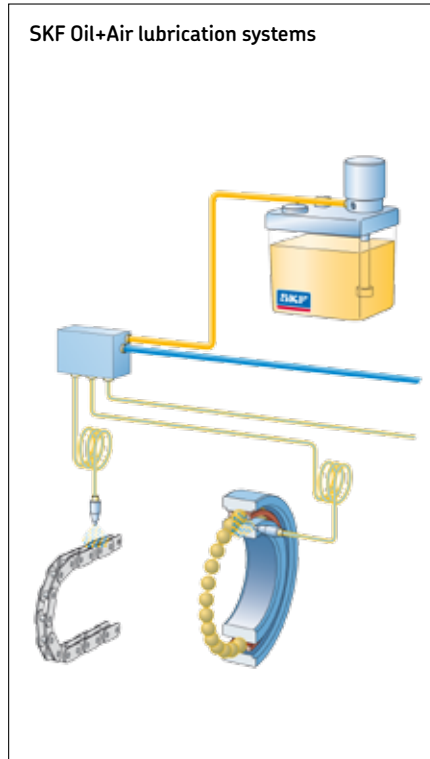
SKF DuoFlex lubrication systems



SKF DuoFlex lubrication systems

SKF DuoFlex lubrication systems are designed for large machines with many lubrication points, long lines and harsh operating conditions. Typical applications include heavy industry, metal working plants, pulp and paper, mining, mineral processing and cement factories, deck cranes, power plants, sugar mills and more. These systems utilize two main lines that are supplied alternately with lubricant.

SKF Oil+Air lubrication systems



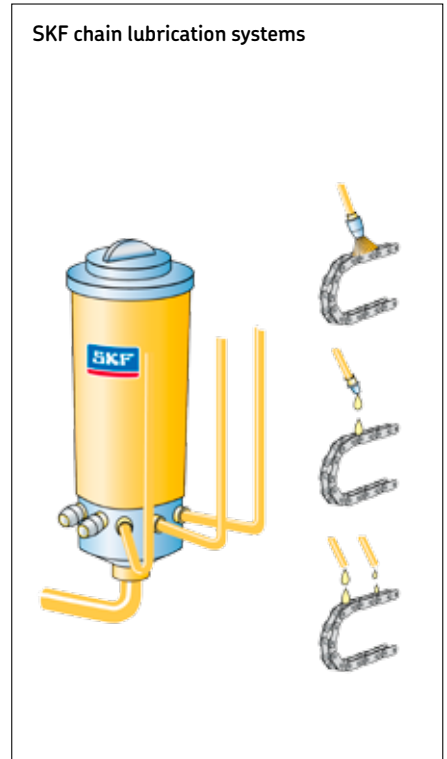
Oil+Air lubrication systems

SKF Oil+Air lubrication systems are designed for high-speed bearings, spindles, rack pinions, chains and special applications in the steel industry.

A pump, progressive feeder or single-line metering device injects a small, metered amount of oil into a mixing valve. Utilizing compressed air, the oil moves slowly to the lubrication point and provides the bearing or chain with a small, continuous stream of oil and air.

SKF Oil+Air lubrication systems are designed to your specifications and are available with oil-streak sensor technology for monitoring.

SKF chain lubrication systems

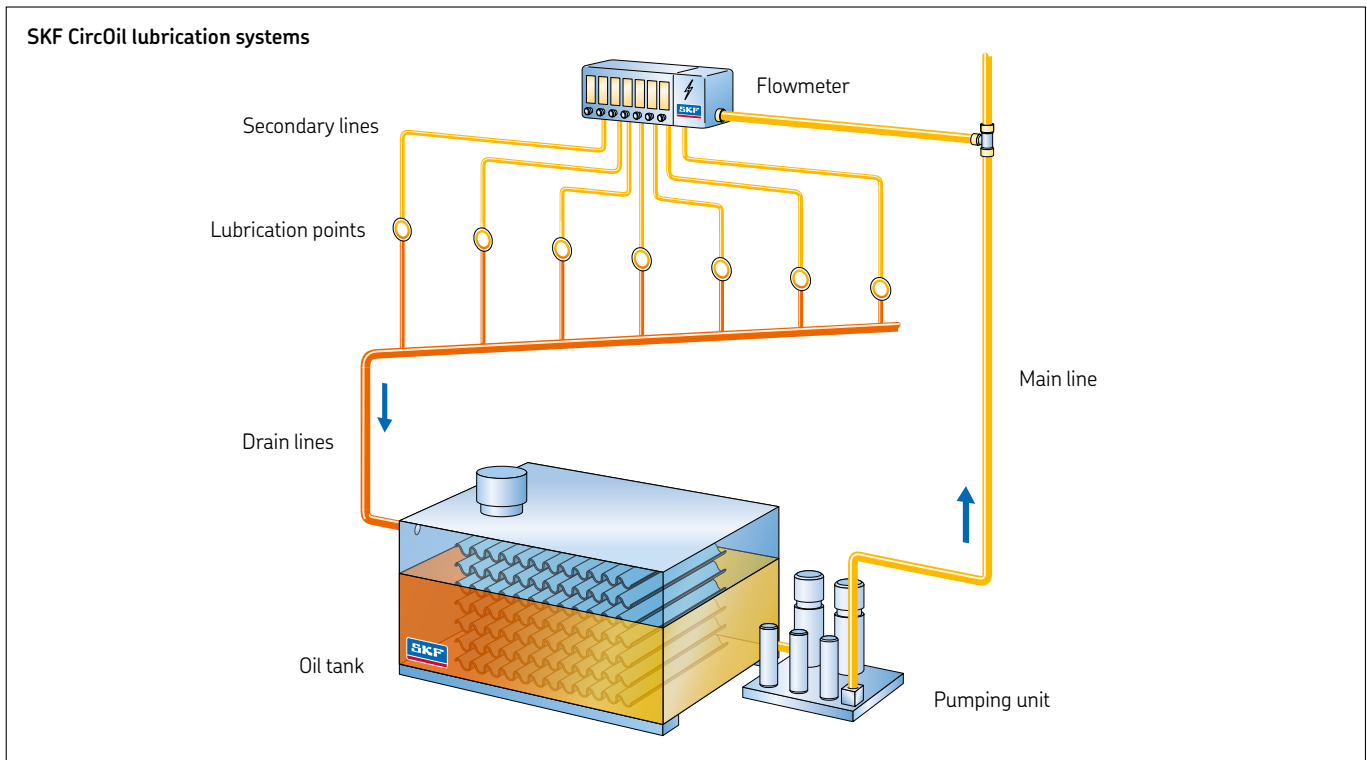


Chain lubrication systems

Despite new types of material and advanced technology, many chains still require lubrication. Optimum lubrication reduces friction and subsequent wear on chains. The largest relative movement of all chains occurs between the link plate and the chain stud, and it is here where considerable forces are present. Insufficient lubrication of this area will result in premature wear and chain failure. The consequence is expensive production downtime. Precise and efficient lubrication is a prerequisite for trouble-free operation and long life of the chain.

SKF's chain lubrication systems provide an exact metered quantity of lubricant and apply it reliably to the chain where it is required. The SKF chain lubrication systems in this catalog do not require compressed air.

SKF CircOil oil-circulating lubrication systems



System description

SKF CircOil systems enable circulating oil to lubricate and cool stressed bearings in nearly every size of machine for industrial applications. They also efficiently remove dirt, water and air particles.

An oil supply system delivers the lubricant to the flow meters. The actual flow rates can be monitored visually or electronically. Monitoring systems with a flow-rate read-out function and individual warning levels are available for a more predictive maintenance approach, but are not included in this catalog.

SKF CircOil systems include a wide range of custom made and turnkey solutions. All are simple to service and feature a modular design that can be easily expanded.

SKF Safeflow series

Product description

SKF Safeflow oil flowmeters are used for controlling and measuring the flow rate of lubricants in oil circulation lubrication systems. The SKF Safeflow oil flowmeters are available with up to 10 outlets per flowmeter to reduce piping and simplify installation. The base is made of durable aluminum and the flow tube is made of glass, therefore high temperatures up to 158 °F (70 °C) and the use of mineral and synthetic oils will be no problem.

Benefits and features:

- Durable aluminum housing
- Excellent visual flow indication due to a straight glass flow tube with an internal calibration cone extending along its vertical axis and a cylindrical float
- Easy to calibrate to different oil viscosities and oil temperatures
- Improved flow adjusting valve design by utilizing a cylindrical spindle with an elliptical shape bevelled on the metering end

Please refer to brochure PUB LS/P2 6409/1-EN for further information.



Technical data

Function principle flowmeter
 Operating temperature max. 70 °C, 158 °F
 Power supply 24 V DC (22–36 V DC) or
 24 V AC (18–27 V AC RMS)
 Power consumption 150 mA max.
 Alarm output Dry contact relay output
 Max. load 50 V AC/DC, 1 A
 Delays 0 s, 10 s, 50 s or 10 0s (selectable)

Safeflow flowmeters without alarms

Order no.	Description	Outlets
13126820	SF05A-01-UX flowmeter	1
13126830	SF05A-02-UX flowmeter	2
13126840	SF05A-04-UX flowmeter	4
13126850	SF05A-06-UX flowmeter	6
13126860	SF05A-08-UX flowmeter	8
13126870	SF05A-10-UX flowmeter	10
13121080	SF10A-01-UX flowmeter	1
13121160	SF10A-02-UX flowmeter	2
13121320	SF10A-04-UX flowmeter	4
13121480	SF10A-06-UX flowmeter	6
13121640	SF10A-08-UX flowmeter	8
13121800	SF10A-10-UX flowmeter	10
13121880	SF15A-01-UX flowmeter	1
13121960	SF15A-02-UX flowmeter	2
13122120	SF15A-04-UX flowmeter	4
13122280	SF15A-06-UX flowmeter	6
13122440	SF15A-08-UX flowmeter	8
13122600	SF15A-10-UX flowmeter	10
13127160	SF20A-01-UX flowmeter	1
13127180	SF20A-02-UX flowmeter	2
13127220	SF20A-04-UX flowmeter	4
13127260	SF20A-06-UX flowmeter	6
13127540	SF30A-01-UX flowmeter	1

Safeflow flowmeters with common alarms

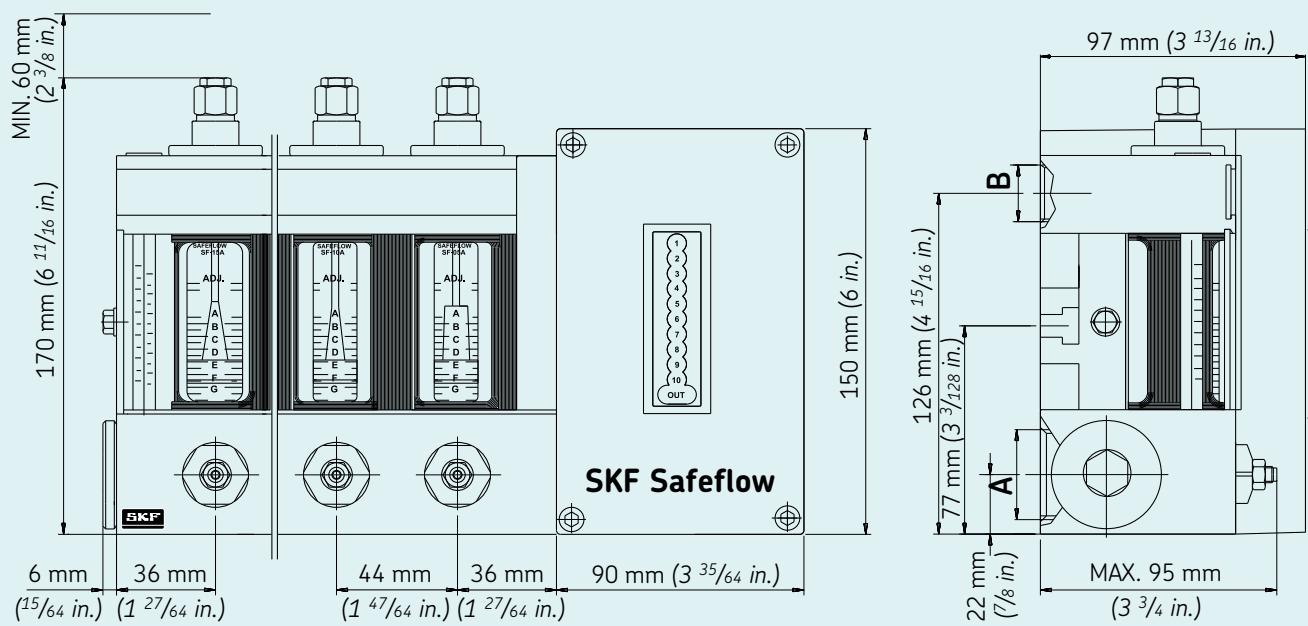
Order no.	Description	Outlets
13128956	SF05A-02-UA-BSC	2
13128958	SF05A-04-UA-BSC	4
13128960	SF05A-06-UA-BSC	6
13128962	SF05A-08-UA-BSC	8
13128964	SF05A-10-UA-BSC	10
13129014	SF10A-01-UA-BSC	1
13129016	SF10A-02-UA-BSC	2
13129018	SF10A-04-UA-BSC	4
13129020	SF10A-06-UA-BSC	6
13129022	SF10A-08-UA-BSC	8
13129024	SF10A-10-UA-BSC	10
13129070	SF15A-01-UA-BSC	1
13129072	SF15A-02-UA-BSC	2
13129074	SF15A-04-UA-BSC	4
13129076	SF15A-06-UA-BSC	6
13129078	SF15A-08-UA-BSC	8
13129080	SF15A-10-UA-BSC	10

Common alarm box for SF20 and SF30

Order no.	Description
13128390	BSC-12030A

SKF Safeflow series

Technical data
SKF Safeflow sizes 05, 10 and 15



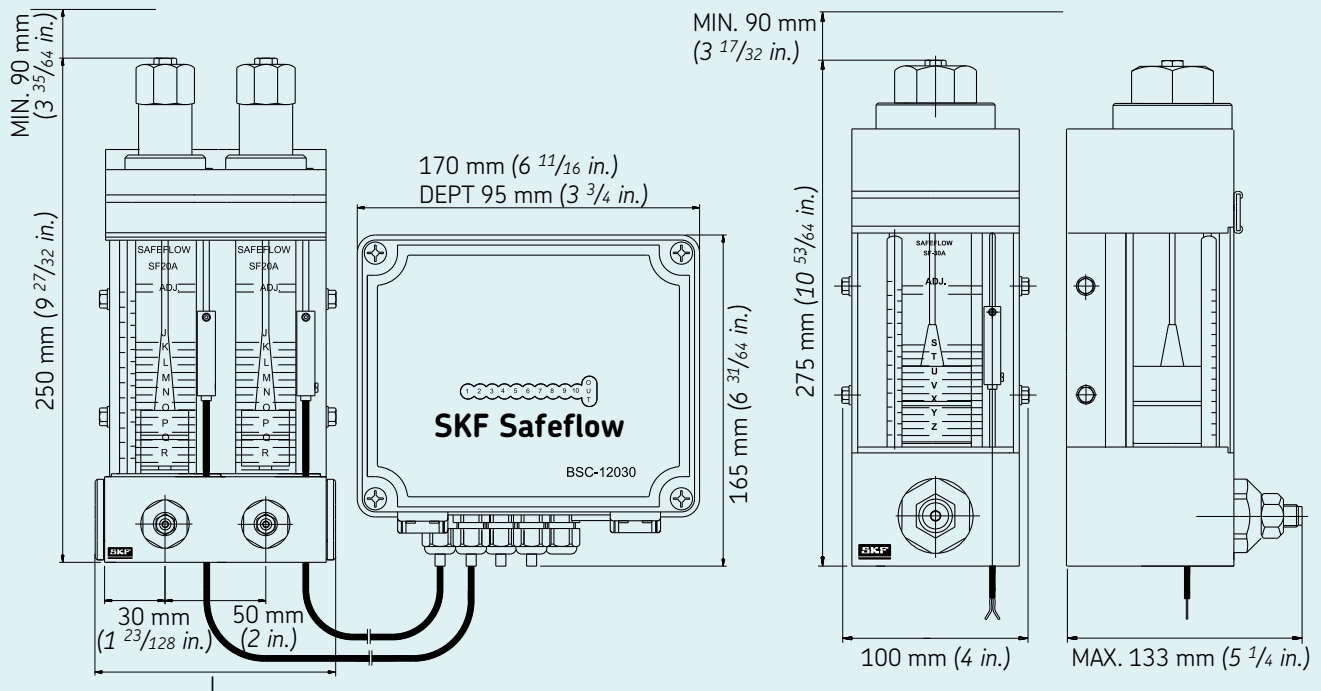
	SF05A	SF10A	SF15A
Flow rate			
100 cSt (460 SSU)	0.1–0.7 l/min 0.2–1.5 pints/min	0.1–3.0 l/min 0.2–6.3 pints/min	0.3–7.2 l/min 0.6–15.2 pints/min
220 cSt (1 000 SSU)	0.04–0.35 l/min 0.08–0.74 pints/min	0.1–1.7 l/min 0.2–3.6 pints/min	0.2–4.4 l/min 0.4–9.3 pints/min
Number of flowmeters (tubes, pcs)	1, 2, 4, 6, 8, 10	1, 2, 4, 6, 8, 10	1, 2, 4, 6, 8, 10
Connections			
A & B	GS1 ¹⁾	1/2 in. NPT	1/2 in. NPT
A ¹⁾	GS 2–10	1 in. NPT	1 in. NPT
B ¹⁾	GS 2–10	1/2 in. NPT	1/2 in. NPT

¹⁾ GS = Group size
A = inlet
B = outlet
Both SF05 and SF10A together and SF10A and SF15A together can be combined in the same bank

SKF Safeflow series

Technical data

SKF Safeflowsizes 20 and 30



SF20A

SF30A

Flow rate 100 cSt (460 SSU)	1.3–17.0 l/min 2.7–36.0 pints/min	5.0–56.0 l/min 10.6–118.3 pints/min
220 cSt (1 000 SSU)	0.6–10.6 l/min 1.3–22.4 pints/min	2.5–44.0 l/min 5.3–93.0 pints/min
Number of flowmeters (tubes, pcs)	1, 2, 4, 6	1
Length (L)	Connections R (NPT)	
Group size 1	74 mm (3 45/64 in.)	
Group size 2	124 mm (5 43/64 in.)	
Group size 4	224 mm (9 5/8 in.)	
Group size 6	324 mm (13 35/64 in.)	
Connections		
A & B GS1 ¹⁾	3/4 in. NPT	1 1/4 in. NPT
A ¹⁾ GS 2–6	1 in. NPT	
B ¹⁾ GS 2–6	3/4 in. NPT	

¹⁾ GS = Group size
A = inlet
B = outlet

SKF Flowline monitor

Product description

SKF Flowline monitor ensures that the oil supply to the lubrication points is not disturbed or deviated excessively from the set limit values. Alarm limits and nominal flow can be set for each flowmeter individually.

Regardless of oil temperature and viscosity changes, the SKF Flowline monitor provides accurate monitoring results. The flow rate is calculated by measuring the turbine rotation time, compensating the result by considering the viscosity grade entered by the user, and the oil temperature measured by the on-board temperature sensor.

Benefits and features:

- Easy to use; practical and visual LED indicator system and clear digital display
- Wide adjustment range
- Electronic temperature measurement
- Temperature compensated measuring results
- Multimonitoring possibility
- Modern design

Please refer to brochure PUB 6410/1-EN for further information.



Technical data

	FL15-XX	FL50
Flow rate range ¹⁾	0.05–15.0 l/min 0.10–30.0 pints/min	10.0–50.0 l/min 20.0–100.0 pints/min
Number of flowmeters . . .	2, 4, 6, 8, 10	1
Connections		
– input	1 in. NPT	1 in. NPT
– output	1/2 in. NPT	1 in. NPT
Power supply	24 V DC/AC	24 V DC/AC
Power consumption	max. 5 W	max. 5 W
Alarm relay	120 V/1 A max, extra relay board available with 11 relays, 50 V DC/0.5 A	120 V/1 A max, extra relay board available with 11 relays, 50 V DC/0.5 A
Serial bus	CAN	CAN
Operating temperature . .	max. 70 °C (158 °F)	max. 70 °C (158 °F)

¹⁾ 220 cSt (1 000 SUS) max dP = 1.0 bar (14.5 psi)

Flowline monitors

Order no.	Designation	Number of meters	Thread	Bus interface card	Common alarm
13120222	FL15-02-U	2	NPT		•
13120224	FL15-04-U	4	NPT		•
13120226	FL15-06-U	6	NPT		•
13120228	FL15-08-U	8	NPT		•
13120230	FL15-10-U	10	NPT		•
13120320	FL50-U	1	NPT		•
13120232	FL15-02-U-CAN	2	NPT	CAN	•
13120234	FL15-04-U-CAN	4	NPT	CAN	•
13120236	FL15-06-U-CAN	6	NPT	CAN	•
13120238	FL15-08-U-CAN	8	NPT	CAN	•
13120240	FL15-10-U-CAN	10	NPT	CAN	•
13120330	FL50-U-CAN	1	NPT	CAN	•

Please consult with SKF engineering for communication options for more than 50 lubrication points.

SKF Flowline monitor



Dimensions

Flowmeter type	L		W		H	
	mm	in	mm	in	mm	in
FL15-02	226	8.9	106	4.2	150	5.9
FL15-04	324	12.76	106	4.2	150	5.9
FL15-06	422	16.61	106	4.2	150	5.9
FL15-08	520	20.47	106	4.2	150	5.9
FL15-10	618	24.33	106	4.2	150	5.9
FL50-01	226	8.89	106	4.2	150	5.9

SKF CircOil systems for flow rate of 0.12–0.60 l/min (0.03–0.16 gal/min)

Standard SKF CircOil pumping units

Product description

These units utilize the MF gear pump modular pumping solution and are designed to supply the lubricant in SKF ProFlex and CircOil system solutions.

The standard solutions shown in the table below includes a gear pump unit with motor, a 6-, 15-, or 30-liter carbon steel lubricant reservoir and float switch to monitor the minimum permissible level of lubricant.

In addition to the standard models shown below, it is possible for units to be custom engineered for the exact requirements of the application.

Please refer to brochure PUB 1-1204-2-EN for further information.



Standard SKF CircOil pumping units

Order no.	Volumetric output at 60 Hz		Max. operating pressure		Reservoir capacity		Voltage 60 Hz ¹⁾		Filter dirty indication type		Pressure gauge
	l/min	gal/min	bar	psi	liter	gal	Three phase	Single phase	Visual	Electrical	
							460V	115 V	10 μ	10 μ	
MF1-BW7-V11+562A	0.12	0.03	20	290	6	1.6	•		•		•
MF1-BW16-V22+562A	0.12	0.03	20	290	15	4.0	•		•		•
MF1-BW30-V8+562A	0.12	0.03	20	290	30	8.0	•		•		•
MF5-BW16-V20+562A	0.6	0.16	20	290	15	4.0	•		•		•
MF5-BW30-V2+562A	0.6	0.16	20	290	30	8.0	•		•		•
MF2-S127-BW7-V1+562A	0.24	0.06	70	1,015	6	1.6	•		•		•
MF2-S127-BW16-V1+562A	0.24	0.06	70	1,015	15	4.0	•		•		•
MF2-S127-BW30-V3+562A	0.24	0.06	70	1,015	30	8.0	•		•		•
MF1-K-BW7-V2+757	0.12	0.03	20	290	6	1.6		•	•		•
MF1-K-BW16-V1+757	0.12	0.03	20	290	15	4.0		•	•		•
MF1-K-BW30-V4+757	0.12	0.03	20	290	30	8.0		•	•		•
MF5-K-BW16-V2+757	0.60	0.16	20	290	15	4.0		•	•		•
MF5-K-BW30-V1+757	0.60	0.16	20	290	30	8.0		•	•		•
MF2-K-S127-BW7-V1+757	0.24	0.06	70	1,015	6	1.6		•	•		•
MF2-K-S127-BW16-V1+757	0.24	0.06	70	1,015	15	4.0		•	•		•
MF2-K-S127-BW30-V1+757	0.24	0.06	70	1,015	30	8.0		•	•		•
MF1-BW7-V12+562A	0.12	0.03	20	290	6	1.6	•			•	•
MF1-BW16-V23+562A	0.12	0.03	20	290	15	4.0	•			•	•
MF1-BW30-V9+562A	0.12	0.03	20	290	30	8.0	•			•	•
MF5-BW16-V21+562A	0.60	0.16	20	290	15	4.0	•			•	•
MF5-BW30-V3+562A	0.60	0.16	20	290	30	8.0	•			•	•
MF2-S127-BW7-V2+562A	0.24	0.06	70	1,015	6	1.6	•			•	•
MF2-S127-BW16-V2+562A	0.24	0.06	70	1,015	15	4.0	•			•	•
MF2-S127-BW30-V4+562A	0.24	0.06	70	1,015	30	8.0	•			•	•
MF1-K-BW7-V3+757	0.12	0.03	20	290	6	1.6		•		•	•
MF1-K-BW16-V2+757	0.12	0.03	20	290	15	4.0		•		•	•
MF1-K-BW30-V5+757	0.12	0.03	20	290	30	8.0		•		•	•
MF5-K-BW16-V3+757	0.60	0.16	20	290	15	4.0		•		•	•
MF5-K-BW30-V2+757	0.60	0.16	20	290	30	8.0		•		•	•
MF2-K-S127-BW7-V2+757	0.24	0.06	70	1,015	6	1.6		•		•	•
MF2-K-S127-BW16-V2+757	0.24	0.06	70	1,015	15	4.0		•		•	•
MF2-K-S127-BW30-V2+757	0.24	0.06	70	1,015	30	8.0		•		•	•

¹⁾ Other voltages available upon request

All listed models have low level and adjustable pressure regulating valve

Units with 70 bar (1,015 psi) operating pressure are designed for SKF ProFlex metering devices

Canadian voltage code +816: 575 V, 60 Hz, CSA approved

SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

Pump unit:

- Available flows:
 - Gear pump
 - 002 = 0.2 l/min (0.06 gal/min)
 - 005 = 0.5 l/min (0.13 gal/min)
 - 010 = 1.0 l/min (0.26 gal/min)
 - 030 = 3.0 l/min (0.79 gal/min)
 - Gerotor pump
 - 060 = 6.0 l/min (1.58 gal/min)
- Continuous duty
- Power: 208–230/460 V AC 60 Hz motor
- Oil viscosity: 20–1000 cSt
- Ambient temperature range: 0 to 40 °C (32 to 104 °F)

Filter:

- Filtration rate: 10 micron, $\beta_{10}(c) \geq 1,000$
- Electrical clogging SPDT indicator signals degraded condition if differential pressure reaches 5 bar (72.5 psi)
- Sized for an adequate dirt retention level
- Filter housing includes a built-in 7 bar (101.5 psi) bypass valve
- Screw-in filter bowls
- Duplex housing includes manual change-over valve
- Aluminum housing and filter bowls

Level switch:

- WS35 series level switch with two switching points for monitoring both early warning and low reservoir oil levels
- DPST contacts provide a warning low-level signal before a critical oil level is reached so that the oil can be topped off before the oil pumps must be stopped to avoid equipment damage

Immersion heater:

- Reservoir immersion heater provided to help warm the oil to the optimal bearing operating temperature, avoiding thermal shock or leaks through the shaft seal due to reduced oil viscosity at low temperature
- Immersion heater includes built-in 16 to 121 °C (60 to 250 °F) adjustable thermostat to ensure oil is maintained above the minimum pump viscosity operating range and close to the desired bearing operating temperature. Thermostat is factory set to 43 °C (110 °F)

Ancillary equipment:

Oil temperature control is enhanced by convective and radiant heat transfer through the oversized reservoir design standing on legs. Selected reservoir size allows for increased settling of lubrication oil. This additional time allows solid particulate, entrained air and small amounts of free water typically resulting from ambient moisture condensation in the bearing, to separate from the oil. This increases lubrication effectiveness at the lubrication film boundary condition in the bearing.

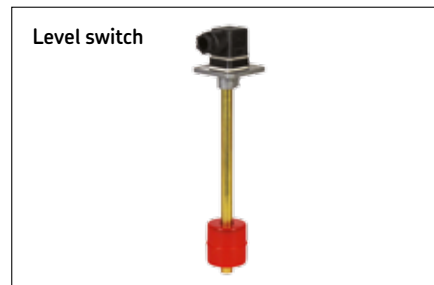
Pump unit



Fluid temperature range

ISO VG	Minimum		Maximum	
	°C	°F	°C	°F
150	13	56	80	176
220	18	65	80	176
320	24	75	80	176

Level switch



Single-housing filter



Duplex-housing filter

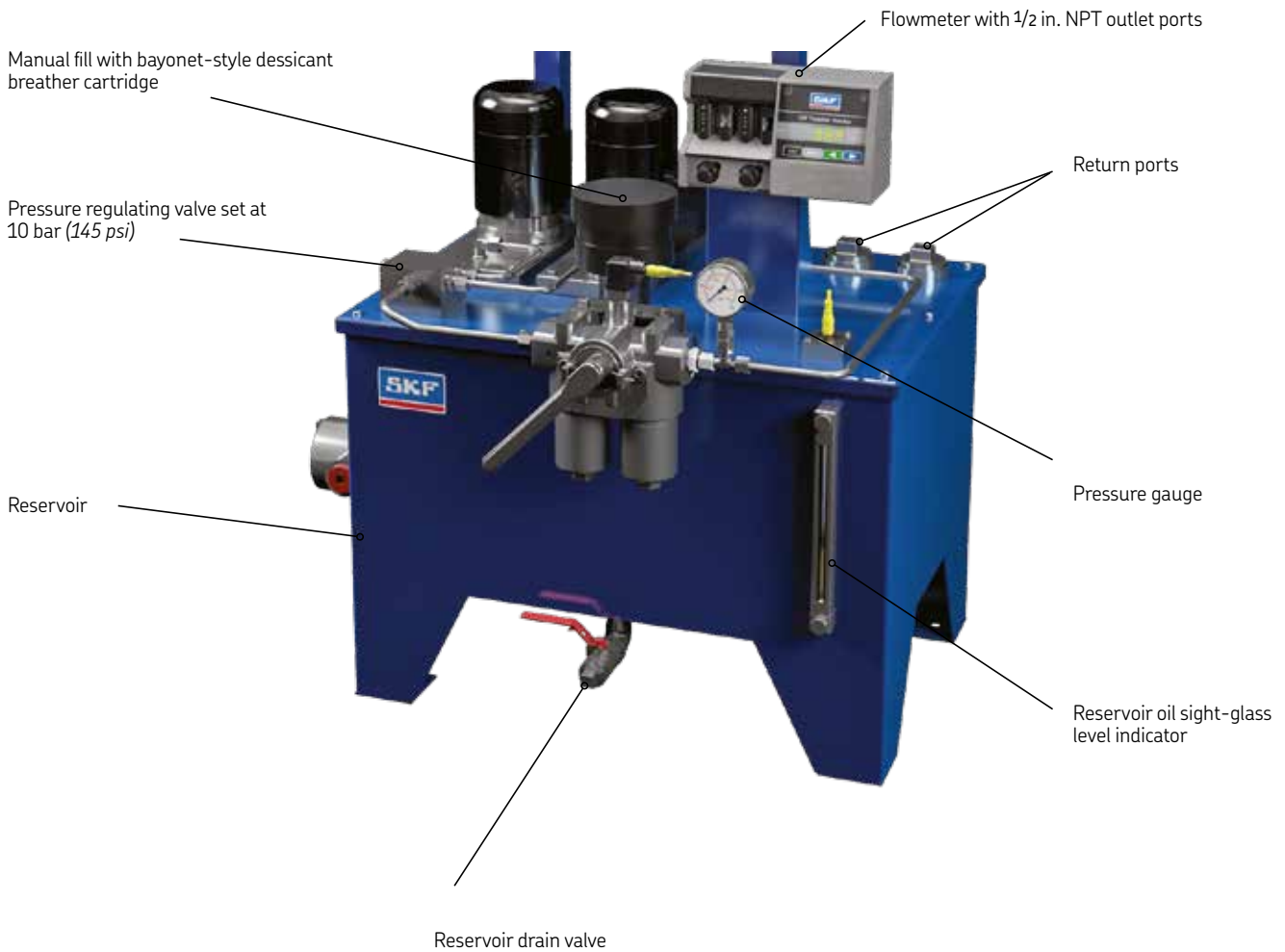
Immersion heater



SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

OC1 oil -circulation unit main components



SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

SKF Flowline¹⁾ monitor features:

- Modern design
- Easily adjustable in a wide range
 - 0.05–15 l/min (0.1–30.0 pints/min)
- Adjustable values are visible on display
- Electronic temperature measurement
- Temperature-compensated flow rate measurements
- Typically no field calibration required
- Common digital display and visual LED color indicators for local monitoring
- Oil temperature measurement
- Several remote monitoring possibilities like CAN-bus and mA-connections

SKF Safeflow²⁾ oil flowmeter features:

- Compatible with most petroleum and synthetic oils
- Compact, one-piece aluminum body
- No interconnecting fittings
- Does not leak
- Easy visual monitoring
- Simple, one-time calibration; easy to recalibrate
- Integrated thermometer allows oil temperature monitoring and system troubleshooting
- Oil flow out-of-range alarm

Custom designs:

Consult our experienced SKF Application Engineering team for applications with special requirements:

- Larger pump flows and reservoir sizes
- Controls with additional features like HMI panels, connection with remote DCS, tower lights, NEMA 4X enclosures for outside applications
- Stainless steel reservoir and fittings
- Oil-Air or Oil-Water coolers for additional heat rejection in applications with bearings subject to high thermal loads
- Configurations with Class I, Div 2 electrical components
- Additional monitoring equipment:
 - Oil temperature and pressure transducers or switches, in-line metal particles, moisture sensors
- Reservoirs with special geometry and with additional features like water separation units, inspection covers, etc.

SKF Flowline monitor



SKF Safeflow oil flowmeter



Custom designs

¹⁾ Please refer to brochure PUB 6410/1-EN for further information on SKF Flowline.

²⁾ Please refer to brochure PUB 6409/1-EN for further information on SKF Safeflow.

Pre-engineered SKF CircOil systems solutions

Selecting the optimal design for your application

Selection is based on the following guidelines:

- Bearing housing: standard
- Roller elements of bearing: spherical, roller or ball
- Installation: indoor
- Bearing temperatures without external cooling: < 82 °C (180 °F)
- Operating viscosity: < 220 cSt

Step 1: Determine oil flow requirements

Optimal oil flows and reservoir sizes have been determined for applications with two or four bearings. Identify SKF bearing housings part numbers or measure shaft size. Refer to (→ **tables 1 and 2**) and (→ **tables 3 and 4, page 15**).

Table 1

Select the recommended oil flow to two (2) bearing housings operating at normal ambient temperature condition [< 60 °C (140 °F)]

Typical data needed:		Standard SKF SAF bearing housing	Drain connection thread in NPT pillow block ¹⁾		Pump flow			Reservoir size		
Shaft size										
in			in		l/min	gal/min		l	gal	
1 1/8 ... 2		SAF 507 ... SAF 511	1/8		002	0.2	0.06	030	30	7.9
2 1/16 ... 2 1/4		SAF 513	1/8		005	0.5	0.13	050	50	13.2
2 3/8 ... 2 1/2		SAF 515	1/4		005	0.5	0.13	050	50	13.2
2 9/16 ... 2 3/4		SAF 516	3/8		005	0.5	0.13	050	50	13.2
2 13/16 ... 3	or	SAF 517	3/8	Configuration that fits this application:	005	0.5	0.13	050	50	13.2
3 1/16 ... 4		SAF 518 ... SAF 522	3/8		010	1.0	0.26	100	100	26.4
4 1/16 ... 4 1/4		SAF 524	1/2		010	1.0	0.26	100	100	26.4
4 5/16 ... 4 1/2		SAF 526	1/2		030	3.0	0.79	100	100	26.4
4 13/16 ... 5 1/2		SAF 528 ... 532	3/4		030	3.0	0.79	100	100	26.4

Bearing housings drain ports sized for oil flows that will allow adequate lubrication and cooling at normal ambient temperature.
¹⁾ Consult SKF LBU application engineering for sizing and routing drain pipes.

Table 2

Select the recommended oil flow to four (4) bearing housings operating at normal ambient temperature condition [< 60 °C (140 °F)]

Typical data needed:		Standard SKF SAF bearing housing	Drain connection thread in NPT pillow block ¹⁾		Pump flow			Reservoir size		
Shaft size										
in			in		l/min	gal/min		l	gal	
1 1/8 ... 2		SAF 507 ... SAF 511	1/8		005	0,5	0.13	050	50	13.2
2 1/16 ... 2 1/4		SAF 513	1/8		010	1,0	0.26	100	100	26.4
2 3/8 ... 2 1/2		SAF 515	1/4		010	1,0	0.26	100	100	26.4
2 9/16 ... 2 3/4		SAF 516	3/8		010	1,0	0.26	100	100	26.4
2 13/16 ... 3	or	SAF 517	3/8	Configuration that fits this application:	010	1,0	0.26	100	100	26.4
3 1/16 ... 4		SAF 518 ... SAF 522	3/8		030	3,0	0.79	100	100	26.4
4 1/16 ... 4 1/4		SAF 524	1/2		030	3,0	0.79	100	100	26.4
4 5/16 ... 4 1/2		SAF 526	1/2		060	6,0	1.58	200	200	52.8
4 13/16 ... 5 1/2		SAF 528 ... 532	3/4		060	6,0	1.58	200	200	52.8

Bearing housings drain ports sized for oil flows that will allow adequate lubrication and cooling at normal ambient temperature.
¹⁾ Consult SKF LBU application engineering for sizing and routing drain pipes.

SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

Table 3

Select the recommended oil flow to two (2) bearing housings operating at high ambient temperature condition [$< 80\text{ °C}$ (180 °F)]²⁾

Typical data needed:		Standard SKF SAF bearing housing	Drain connection thread in NPT pillow block ¹⁾		Pump flow		Reservoir size			
Shaft size					l/min	gal/min	l	gal		
in			in							
1 1/8 ... 2	or	SAF 507 ... SAF 511	3/8	Configuration that fits this application:	005	0,5	0.13	050	50	13.2
2 1/16 ... 2 1/2		SAF 513, SAF 515	3/8		010	1,0	0.26	100	100	26.4
2 9/16 ... 3		SAF 516, SAF 517	3/4		010	1,0	0.26	100	100	26.4
3 1/16 ... 4 1/2		SAF 518 ... SAF 526	3/4		030	3,0	0.79	100	100	26.4
4 13/16 ... 5 1/2		SAF 528 ... 532	1		060	6,0	1.58	200	200	52.8

Bearing housings drain ports sized for larger oil flows required to dissipate larger thermal loads, i.e. hot gas fans²⁾

¹⁾ Consult SKF LBU application engineering for sizing and routing drain pipes.

²⁾ Consult SKF LBU application engineering for applications with bearing housings subject to ambient temperatures above 82 °C (180 °F)

Table 4

Select the recommended oil flow to four (4) bearing housings operating at high ambient temperature condition [$< 80\text{ °C}$ (180 °F)]²⁾

Typical data needed:		Standard SKF SAF bearing housing	Drain connection thread in NPT pillow block ¹⁾		Pump flow		Reservoir size			
Shaft size					l/min	gal/min	l	gal		
in			in							
1 1/8 ... 2	or	SAF 507 ... SAF 511	3/8	Configuration that fits this application:	010	1,0	0.26	100	100	26.4
2 1/16 ... 2 1/2		SAF 513, SAF 515	3/8		030	3,0	0.79	100	100	26.4
2 9/16 ... 3		SAF 516, SAF 517	3/4		030	3,0	0.79	100	100	26.4
3 1/16 ... 4 1/2		SAF 518 ... SAF 526	3/4		060	6,0	1.58	200	200	52.8
4 13/16 ... 5 1/2		SAF 528 ... 532	1		Consult SKF LBU application engineering					

Bearing housings drain ports sized for larger oil flows required to dissipate larger thermal loads, i.e. hot gas fans²⁾

¹⁾ Consult SKF LBU application engineering for sizing and routing drain pipes.

²⁾ Consult SKF LBU application engineering for applications with bearing housings subject to ambient temperatures above 82 °C (180 °F)

SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

Step 2: Do you need an operational critical configuration?

Operational critical configuration

Evaluate how critical your equipment availability is for the entire process. If unplanned corrective maintenance results in process interruption and significant losses, then we recommend you consider an operational critical configuration, including a back-up pump, duplex filter configuration and our SKF Flowline monitor with digital display. The back-up pump provides additional flexibility and the duplex filter allows for filter element replacement 'on the fly'. The Flowline monitor enables easy flow adjustment and verification with the added possibility of transmitting individual flow out of range conditions and oil flow to a remote location.

Operational critical configuration



Basic configuration

If you have built-in redundancies in the process or the process is such that some flexibility in equipment up-time is possible, then a configuration with a single pump, simplex filter and our SKF Safeflow flowmeter may be the most effective solution.

Basic configuration



Pre-engineered SKF CircOil systems solutions

Step 3: Do you need on-board controls?

On-board controls:

The integrated control package allows the user with the least amount of additional equipment and time to implement a proper electrical control package.

The complete turnkey system controls typically include:

- PLC-preprogrammed and wired
- 24 V DC power supply
- Main fused disconnect switch
- Pump motor starters with overloads
- Circuit breakers for:
 - Power supply
 - Pumps
 - Immersion heater
- Nema 12 enclosure
- All components pre-wired for customer supplied power input: 460 V, 60 Hz, 15 A
- Control input required: machine on command
- System-critical and degraded-condition fault outputs
- Panel lights including power on, flow fault, dirty filter and low level
- Panel-installed fault reset button

The system program requires one input from the customer to indicate that the equipment to be lubricated is on, and provides two fault outputs to the customer, indicating whether the fault is critical or non-critical.

A dirty-filter or low-flow alarm on standard configurations would be considered a degraded condition. A low-level alarm would be considered critical. Flowmeter faults on operational critical units are considered a critical fault as well.

The controller PLC is programmed to indicate a critical fault if the minimum level as indicated by the level switch has been reached and will stop the pumps to avoid equipment damage. The low-level warning indication should provide time to look into the issue and establish corrective measures.

OC1 pumping unit with operational critical configuration

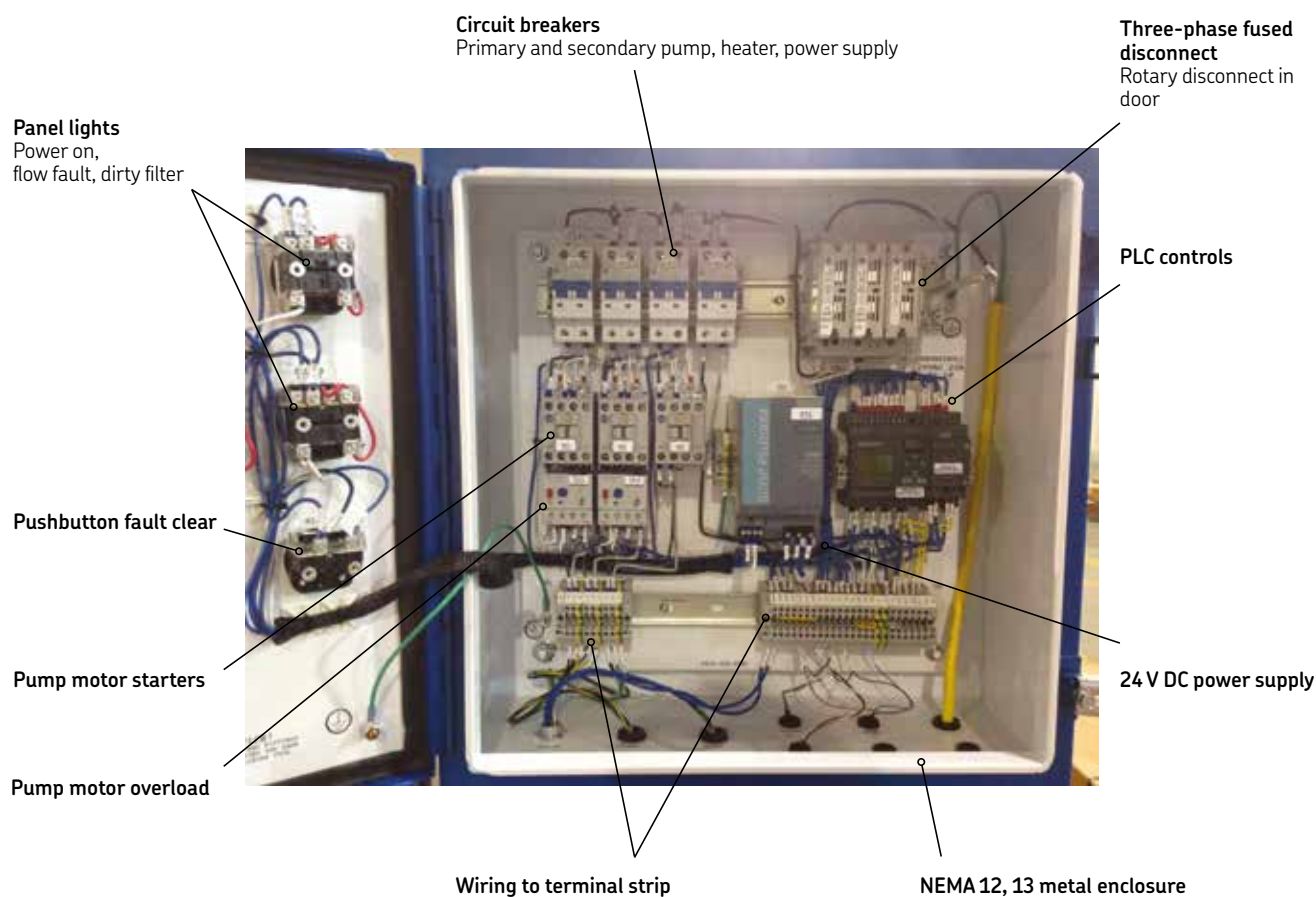


SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

On-board controls panel

The controls provided allow the user to connect 460/480 V directly to the panel with inputs for machine/fan on and fault out, providing a turnkey control installation.



Pre-engineered SKF CircOil systems solutions

Oil circulation units													
Order no.	Flow rate		Reservoir capacity		No. lubrication points			Flowmeter type		Filter/pump config.		Control unit	Heater
	l/ min	gal/ min	l	gal	No Flowmeter	Two	Four	SF	FL	Single	Duplex		
OC1-002-030-SXH-X00+645	0.24	0.06	30	8	•					•			•
OC1-002-030-SXH-S02+645	0.24	0.06	30	8		•		•		•			•
OC1-002-030-SXH-S04+645*	0.24	0.06	30	8			•	•		•			•
OC1-002-030-SXH-F02+645	0.24	0.06	30	8		•			•	•			•
OC1-002-030-SXH-F04+645*	0.24	0.06	30	8			•		•	•			•
OC1-002-030-DXH-X00+645	0.24	0.06	30	8	•						•		•
OC1-002-030-DXH-S02+645	0.24	0.06	30	8		•		•			•		•
OC1-002-030-DXH-S04+645*	0.24	0.06	30	8			•	•			•		•
OC1-002-030-DXH-F02+645	0.24	0.06	30	8		•			•		•		•
OC1-002-030-DXH-F04+645*	0.24	0.06	30	8			•		•		•		•
OC1-002-030-SCH-X00+780	0.24	0.06	30	8	•					•		•	•
OC1-002-030-SCH-S02+780	0.24	0.06	30	8		•		•		•		•	•
OC1-002-030-SCH-S04+780*	0.24	0.06	30	8			•	•		•		•	•
OC1-002-030-SCH-F02+780	0.24	0.06	30	8		•			•		•		•
OC1-002-030-SCH-F04+780*	0.24	0.06	30	8			•		•		•		•
OC1-002-030-DCH-X00+780	0.24	0.06	30	8	•						•	•	•
OC1-002-030-DCH-S02+780	0.24	0.06	30	8		•		•			•	•	•
OC1-002-030-DCH-S04+780*	0.24	0.06	30	8			•	•			•	•	•
OC1-002-030-DCH-F02+780	0.24	0.06	30	8		•			•		•	•	•
OC1-002-030-DCH-F04+780*	0.24	0.06	30	8			•		•		•	•	•
OC1-005-050-SXH-X00+645	0.5	0.13	50	13.2	•					•			•
OC1-005-050-SXH-S02+645	0.5	0.13	50	13.2		•		•		•			•
OC1-005-050-SXH-S04+645	0.5	0.13	50	13.2			•	•		•			•
OC1-005-050-SXH-F02+645	0.5	0.13	50	13.2		•			•	•			•
OC1-005-050-SXH-F04+645	0.5	0.13	50	13.2			•		•	•			•
OC1-005-050-DXH-X00+645	0.5	0.13	50	13.2	•						•		•
OC1-005-050-DXH-S02+645	0.5	0.13	50	13.2		•		•			•		•
OC1-005-050-DXH-S04+645	0.5	0.13	50	13.2			•	•			•		•
OC1-005-050-DXH-F02+645	0.5	0.13	50	13.2		•			•		•		•
OC1-005-050-DXH-F04+645	0.5	0.13	50	13.2			•		•		•		•
OC1-005-050-SCH-X00+780	0.5	0.13	50	13.2	•					•		•	•
OC1-005-050-SCH-S02+780	0.5	0.13	50	13.2		•		•		•		•	•
OC1-005-050-SCH-S04+780	0.5	0.13	50	13.2			•	•		•		•	•
OC1-005-050-SCH-F02+780	0.5	0.13	50	13.2		•			•		•		•
OC1-005-050-SCH-F04+780	0.5	0.13	50	13.2			•		•		•		•
OC1-005-050-DCH-X00+780	0.5	0.13	50	13.2	•						•	•	•
OC1-005-050-DCH-S02+780	0.5	0.13	50	13.2		•		•			•	•	•
OC1-005-050-DCH-S04+780	0.5	0.13	50	13.2			•	•			•	•	•
OC1-005-050-DCH-F02+780	0.5	0.13	50	13.2		•			•		•	•	•
OC1-005-050-DCH-F04+780	0.5	0.13	50	13.2			•		•		•	•	•
Voltage codes – must be supplied to determine the proper operating voltages +645: 208-230/460 V, 60 Hz, units without control panels, pump motor and heater +780: 460 V, 60 Hz, units with control panels, includes 24 V DC power supply for flow meter, level switch and electrical filter clogging indicator +757: 115 V, 60 Hz, for both units with and without controls +816: 575 V with and without control panel, pump motor and heater, CSA approved, control panel to be cUL508 Other voltages upon request													
* Four point flow meter constraints Four point options with four point flow meters may not be suitable depending on the number of points (3 or 4) and specific operating viscosity. Please verify volumetric requirements and establish that low end of scale for SafeFlow and FlowLine are suitable for the application.													

Pre-engineered SKF CircOil systems solutions

Oil circulation units													
Order no.	Flow rate		Reservoir capacity		No. lubrication points			Flowmeter type		Filter/pump config.		Control unit	Heater
	l/ min	gal/ min	l	gal	No Flowmeter	Two	Four	SF	FL	Single	Duplex		
OC1-010-100-SXH-X00+645	1	0.26	100	26.4	•					•			•
OC1-010-100-SXH-S02+645	1	0.26	100	26.4		•		•		•			•
OC1-010-100-SXH-S04+645	1	0.26	100	26.4			•	•		•			•
OC1-010-100-SXH-F02+645	1	0.26	100	26.4		•			•	•			•
OC1-010-100-SXH-F04+645	1	0.26	100	26.4			•		•	•			•
OC1-010-100-DXH-X00+645	1	0.26	100	26.4	•						•		•
OC1-010-100-DXH-S02+645	1	0.26	100	26.4		•		•			•		•
OC1-010-100-DXH-S04+645	1	0.26	100	26.4			•	•			•		•
OC1-010-100-DXH-F02+645	1	0.26	100	26.4		•			•		•		•
OC1-010-100-DXH-F04+645	1	0.26	100	26.4			•		•		•		•
OC1-010-100-SCH-X00+780	1	0.26	100	26.4	•					•		•	•
OC1-010-100-SCH-S02+780	1	0.26	100	26.4		•		•		•		•	•
OC1-010-100-SCH-S04+780	1	0.26	100	26.4			•	•		•		•	•
OC1-010-100-SCH-F02+780	1	0.26	100	26.4		•			•			•	•
OC1-010-100-SCH-F04+780	1	0.26	100	26.4			•		•			•	•
OC1-010-100-DCH-X00+780	1	0.26	100	26.4	•						•	•	•
OC1-010-100-DCH-S02+780	1	0.26	100	26.4		•		•			•	•	•
OC1-010-100-DCH-S04+780	1	0.26	100	26.4			•	•			•	•	•
OC1-010-100-DCH-F02+780	1	0.26	100	26.4		•			•		•	•	•
OC1-010-100-DCH-F04+780	1	0.26	100	26.4			•		•		•	•	•
OC1-030-100-SXH-X00+645	3	0.79	100	26.4	•					•			•
OC1-030-100-SXH-S02+645	3	0.79	100	26.4		•		•		•			•
OC1-030-100-SXH-S04+645	3	0.79	100	26.4			•	•		•			•
OC1-030-100-SXH-F02+645	3	0.79	100	26.4		•			•	•			•
OC1-030-100-SXH-F04+645	3	0.79	100	26.4			•		•	•			•
OC1-030-100-DXH-X00+645	3	0.79	100	26.4	•						•		•
OC1-030-100-DXH-S02+645	3	0.79	100	26.4		•		•			•		•
OC1-030-100-DXH-S04+645	3	0.79	100	26.4			•	•			•		•
OC1-030-100-DXH-F02+645	3	0.79	100	26.4		•			•		•		•
OC1-030-100-DXH-F04+645	3	0.79	100	26.4			•		•		•		•
OC1-030-100-SCH-X00+780	3	0.79	100	26.4	•					•		•	•
OC1-030-100-SCH-S02+780	3	0.79	100	26.4		•		•		•		•	•
OC1-030-100-SCH-S04+780	3	0.79	100	26.4			•	•		•		•	•
OC1-030-100-SCH-F02+780	3	0.79	100	26.4		•			•			•	•
OC1-030-100-SCH-F04+780	3	0.79	100	26.4			•		•			•	•
OC1-030-100-DCH-X00+780	3	0.79	100	26.4	•						•	•	•
OC1-030-100-DCH-S02+780	3	0.79	100	26.4		•		•			•	•	•
OC1-030-100-DCH-S04+780	3	0.79	100	26.4			•	•			•	•	•
OC1-030-100-DCH-F02+780	3	0.79	100	26.4		•			•		•	•	•
OC1-030-100-DCH-F04+780	3	0.79	100	26.4			•		•		•	•	•

Voltage codes – must be supplied to determine the proper operating voltages
+645: 208-230/460V, 60 Hz, units without control panels, pump motor and heater
+780: 460 V, 60 Hz, units with control panels, includes 24 V DC power supply for flow meter, level switch and electrical filter clogging indicator
+757: 115 V, 60 Hz, for both units with and without controls
+816: 575 V with and without control panel, pump motor and heater, CSA approved, control panel to be cUL508
Other voltages upon request

* **Four point flow meter constraints**
Four point options with four point flow meters may not be suitable depending on the number of points (3 or 4) and specific operating viscosity.
Please verify volumetric requirements and establish that low end of scale for SafeFlow and FlowLine are suitable for the application.

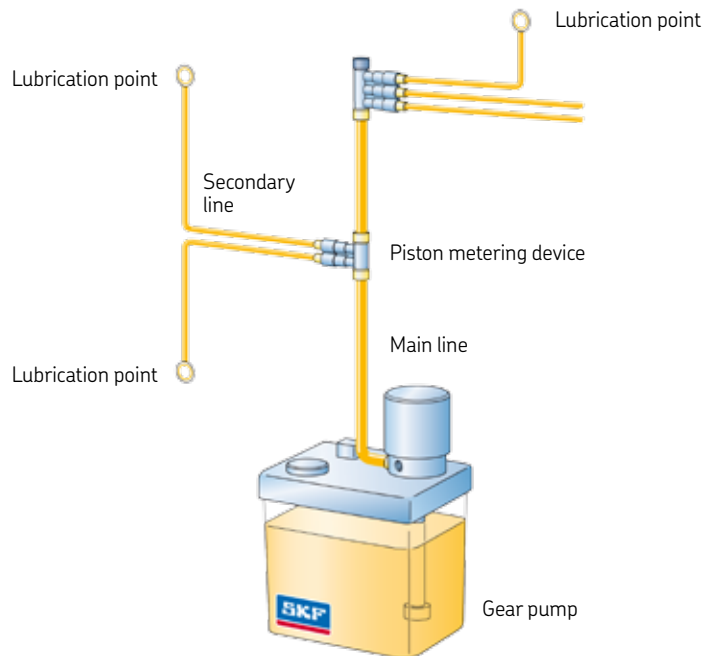
SKF CircOil systems for flow rate of 0.24–6.00 l/min (0.06–1.60 gal/min)

Pre-engineered SKF CircOil systems solutions

Oil circulation units													
Order no.	Flow rate		Reservoir capacity		No. lubrication points			Flowmeter type		Filter/pump config.		Control unit	Heater
	l/ min	gal/ min	l	gal	No Flowmeter	Two	Four	SF	FL	Single	Duplex		
OC1-060-200-SXH-X00+645	6	1.58	200	52.8	•					•			•
OC1-060-200-SXH-S02+645	6	1.58	200	52.8		•		•		•			•
OC1-060-200-SXH-S04+645	6	1.58	200	52.8			•	•		•			•
OC1-060-200-SXH-F02+645	6	1.58	200	52.8		•			•	•			•
OC1-060-200-SXH-F04+645	6	1.58	200	52.8			•		•	•			•
OC1-060-200-DXH-X00+645	6	1.58	200	52.8	•						•		•
OC1-060-200-DXH-S02+645	6	1.58	200	52.8		•		•		•			•
OC1-060-200-DXH-S04+645	6	1.58	200	52.8			•	•			•		•
OC1-060-200-DXH-F02+645	6	1.58	200	52.8		•			•		•		•
OC1-060-200-DXH-F04+645	6	1.58	200	52.8			•		•		•		•
OC1-060-200-SCH-X00+780	6	1.58	200	52.8	•						•	•	•
OC1-060-200-SCH-S02+780	6	1.58	200	52.8		•		•		•		•	•
OC1-060-200-SCH-S04+780	6	1.58	200	52.8			•	•		•		•	•
OC1-060-200-SCH-F02+780	6	1.58	200	52.8		•			•	•		•	•
OC1-060-200-SCH-F04+780	6	1.58	200	52.8			•		•	•		•	•
OC1-060-200-DCH-X00+780	6	1.58	200	52.8	•						•	•	•
OC1-060-200-DCH-S02+780	6	1.58	200	52.8		•		•			•	•	•
OC1-060-200-DCH-S04+780	6	1.58	200	52.8			•		•		•	•	•
OC1-060-200-DCH-F02+780	6	1.58	200	52.8		•			•		•	•	•
OC1-060-200-DCH-F04+780	6	1.58	200	52.8			•		•		•	•	•
Voltage codes – must be supplied to determine the proper operating voltages +645: 208-230/460 V, 60 Hz, units without control panels, pump motor and heater +780: 460 V, 60 Hz, units with control panels, includes 24 V DC power supply for flow meter, level switch and electrical filter clogging indicator +757: 115 V, 60 Hz, for both units with and without controls +816: 575 V with and without control panel, pump motor and heater, CSA approved, control panel to be cUL508 Other voltages upon request													
* Four point flow meter constraints Four point options with four point flow meters may not be suitable depending on the number of points (3 or 4) and specific operating viscosity. Please verify volumetric requirements and establish that low end of scale for SafeFlow and FlowLine are suitable for the application.													

SKF MonoFlex lubrication systems

SKF MonoFlex lubrication systems
Designed for oil and semi-fluid grease.



System description

In MonoFlex lubrication systems, fresh lubricant (oil, grease or fluid grease) is fed at certain intervals (depending on the time or load) to the friction points during the lubrication cycle (contact time, pump runtime).

The quantity of lubricant is dimensioned so that friction points are supplied with enough lubricant during the interval times to build up an adequate film of lubricant.

In the course of time, the lubricant is partially used up as a result of aging, evaporation, bleeding and leaks (total loss lubrication). Heat cannot be dissipated with this lube method.

Additional expressions for total loss lubrication systems are customary in the literature and in catalogs, e.g.

- Terminating lubrication
- Once-through lubrication (in DIN ISO 5170)
- Fresh-oil lubrication

The centralized lubrication units are manually, mechanically, electrically, hydraulically or pneumatically actuated piston pumps or intermittently operated gear pumps.

The lubricant is metered out by piston metering devices installed in the tubing system. Exchangeable metering nipples on the metering devices make it possible to supply every lube point with the required amount of lubricant per stroke.

The metered quantities represented in this catalog range from 0.03 to 1.5 cm³ (0.0018 to 0.0915 in³) per lubrication pulse and lube point. The amount of lubricant to be fed to the lube points can also be influenced by the number of lubrication pulses.

An oil return line from the lube point to the oil reservoir is not required on total loss lubrication systems.

The basic layout of a MonoFlex lubrication system is always the same:

- pump, piston metering device
- main line (connection: pump – metering device)
- secondary line (connection: metering device – lube point)

Automatically operated systems also come with control and monitoring units, pressure switches, float switches, indicator lights.

SKF MonoFlex lubrication systems

Gear pump unit



Piston pump unit



Metering device



Components

Gear pumps

Because of their electric drive, gear pumps are especially well-suited for automatic systems with monitoring and safety equipment. They can also be operated using push-button remote control systems.

Piston pumps

Piston pumps have a limited delivery volume per stroke. As a result, there are limits on the metered quantities and size of a system. Piston pumps are used in the following forms: manually, mechanically, electrically, hydraulically or pneumatically actuated pumps.

Metering devices

Metering devices (piston metering devices, metering units, dosing valve) meter out and distribute the oil delivered by the pump (e.g. oil or grease of NLGI grades 000 or 00). The quantities of lubricant for the individual lube points are determined by exchangeable metering nipples. The metered quantity is shown on the individual nipples. Four groups of metering devices that differ in terms of metering ranges and sizes can be selected so they comply with the amounts required and space available. A mixture of different groups can be used in one system.

Gear pump unit for oil

MKU

Product description

Units from the MKU product series include a pressure regulating valve, pressure relief valve, pressure gauge, pressure switch, level switch and manual push button.

Units without an internal control unit are controlled externally via the machine control system. Units with reservoir capacity of 2, 3 or 6 liters (*0.5, 0.8 or 1.6 gal*) can be supplied with an optional integrated control unit.

Please refer to brochure PUB LS/P2 12133-EN (1-1203-EN) for further information.



Technical data

Function principleelectric
 Metering quantity0.1, 0.2 l/min
 0.02, 0.05 gal/min
 Lubricantmineral oil or synthetic oil,
 20 to 1,500 mm²/s
 Operating temperature . . . +10 to +40 °C, +50 to +104 °F
 Operating pressuremax. 30 bar, 435 psi
 Reservoir capacity2.0, 3.0 and 6.0 l
 0.5, 0.8 and 1.6 gal
 Material (reservoir)plastic
 Outlet connection.G¹/₄ (British pipe thread)
 Protection classIP 54

MKU pump units

Order no.	Delivery rate		Reservoir capacity		Monitoring			Electrical connection
	liter/min	gal/min	liter	gal	Pressure switch	Level switch	Push button	
MKU without control unit								
MKU11-KW2-0005+429	0.1	0.02	2	0.5	•	•	manual	115 V AC
MKU1-11BC11000+924	0.1	0.02	2	0.5	•	•	manual	24 V DC
MKU2-12BC11000+429	0.2	0.05	3	0.8	•	•	manual	115 V AC
MKU2-12BC11000+924	0.2	0.05	3	0.8	•	•	manual	24 V DC
MKU2-14BC11000+429	0.2	0.05	6	1.6	•	•	manual	115 V AC
MKU2-14BC11000+924	0.2	0.05	6	1.6	•	•	manual	24 V DC
MKU with integrated control unit								
MKU11-KW2-C123+429 *	0.1	0.02	2	0.5	•	•	manual	115 V AC
MKU2-12CC11000+429	0.2	0.05	3	0.8	•	•	manual	115 V AC
MKU2-12CC11000+924	0.2	0.05	3	0.8	•	•	manual	24 V DC
MKU2-14CC11000+429	0.2	0.05	6	1.6	•	•	manual	115 V AC
MKU2-14CC11000+924	0.2	0.05	6	1.6	•	•	manual	24 V DC

* Includes timer, no monitoring

MFE

Please refer to brochure 1-1202-EN for further information.



Technical data

Function principle	electric
Outlets	1
Metering quantity	0.5 l/min, 0.13 gal/min
Lubricant	oil
Operating temperature	-10 to +60 °C, +14 to +140 °F
Back pressure	max. 17.5, 28 bar 254, 406 psi
Reservoir capacity	3, 6 and 15 l 0.8, 1.6 and 4 gal
Material (reservoir)	plastic, metal
Outlet connection	M14 x 1.5

Float switch for monitoring minimum oil level

Type of contact 1 changeover; 2 change-over contacts
(reed contacts)
Switching voltage max. 230 V AC, 230 V DC
Switching current max. 0.8 A; 1.0 A
Switching capacity max. 60 VA, 40 W¹⁾
Protection class IP65

MFE pump units

Order no.	Delivery rate		Reservoir capacity		Level switch	Multi-range motor, 3 phase
	liter/min	gal/min	liter	gal		
MFE with plastic reservoir MFE5-KW3+299	0,5	0.13	3	0.8	•	220-265/380-460V, 60 Hz 180-220/315-380V, 50Hz
MFE5-KW6+299	0,5	0.13	3	0.8	•	220-265/380-460V, 60 Hz 180-220/315-380V, 50Hz
MFE with metal reservoir MFE5-BW3+299	0,5	0.13	3	0.8	•	220-265/380-460V, 60 Hz 180-220/315-380V, 50Hz
MFE5-BW7+299	0,5	0.13	6	1.6	•	220-265/380-460V, 60 Hz 180-220/315-380V, 50Hz
MFE5-BW16+299	0,5	0.13	15	4	•	220-265/380-460V, 60 Hz 180-220/315-380V, 50Hz
Other available voltage codes (please inquire for current delivery times):						
XXXX-XXXX+298						249-305/432-528 V, 60 HZ 207-254/360-440 V, 50 HZ
XXXX-XXXX+399						290-346/500-600 V, 60 Hz 230-290/398-500 V, 50 Hz

MKF

Product description

MKF gear pump units are used in MonoFlex systems to supply fluid greases of NLGI grades 000 and 00 and include a pressure regulating valve, pressure relief valve, oil pressure switch, level switch and a manual push button. These units are controlled externally via the machine control system or an integrated control unit. Main functions are integrated into the lid, and a plastic cap protects the electrical components from contaminants.

Please refer to brochure PUB LS/P2 12133-EN (or 1-1203-EN) for further information.



Technical data

Function principleelectric
Metering quantity0.1, 0.2 l/min, 0.02, 0.05 gal/min
Lubricantfluid grease NLGI Grade 000 or 00,
compatible with plastics, NBR elastomers,
copper and copper alloys
Operating temperature . . .+10 to +40 °C, +50 to +104 °F
Operating pressuremax. 30 bar, 435 psi
Reservoir capacity2.0 and 3.0 l, 0.5 and 0.8 gal
Material (reservoir)plastic, metal
Outlet connection.G 1/4 (British pipe thread)
Protection classIP 54

MKF pump units

Order no.	Delivery rate		Reservoir capacity		Monitoring			Electrical connection
					Pressure switch	Level switch	Push button	
	liter/min	gal/min	liter	gal				
MKF without control unit								
MKF1-11BC11000+429	0.1	0.02	2	0.5	•	•	•	115 V AC
MKF1-11BC11000+924	0.1	0.02	2	0.5	•	•	•	24 V DC
MKF2-12BC11000+429	0.2	0.05	3	0.8	•	•	•	115 V AC
MKF2-12BC11000+924	0.2	0.05	3	0.8	•	•	•	24 V DC
MKF with integrated control unit								
MKF2-12CC11000+429	0.2	0.05	3	0.8	•	•	•	115 V AC
MKF2-12CC11000+924	0.2	0.05	3	0.8	•	•	•	24 V DC

PPS30

Product description

Setting new standards in design, this compact unit combines proven lubrication technology with integrated functional elements. The easy-to-clean PPS30 features an integrated relief valve and electronic sensors, as well as a central opening for easy filling from all sides. In addition to low investment costs, it offers very low operating costs due to minimal compressed air consumption. The lightweight unit is made almost entirely of functional, high-performance plastics.

Please refer to brochure PUB LS/P2 11218-EN (1-1110-EN) or PUB LS/P2 14075-EN (1-0942-EN) for further information.



Technical data

Pump

Dimensions (WxHxD)	187 x 246 x 129 mm 7.36 x 9.68 x 5.08 in
Installation space (WxHxD)	min. 230 x 300 x 250 mm min. 9.05 x 11.81 x 9.84 in
Weight (empty)	1.95 kg, 4 lb 5 oz
Mounting position	vertical
Drive	pneumatic
Reservoir capacity	1.5 l, 3.2 US pt lqd
Reservoir material	plastic (SAN)
Actuation pressure	4.5–6 bar, 65.3–87 psi
Operating pressure	up to 27 bar, 391 psi ¹⁾
Lubrication cycle number	max. 6 cycles/h
Delivery volume	30 cm ³ /stroke, 1.83 in ³ /stroke
Operating temperature	+10 to +50 °C, +50 to +122 °F
Protection class per DIN EN 60529	IP54
Lubricant	mineral and synthetic oil operating viscosity 20–1,500 mm ² /s fluid grease, NLGI-grade 000, 00
Number of outlets	max. 3, M10x1

Fill level switch to monitor minimum lubricant level²⁾

Lubricant	oil or fluid grease
Function	capacitive, NC-contact
Switched voltage range	10–36 V DC
Power consumption	max. 150 mA

Pressure switch to monitor pressure build-up and overall function

Function	NO-contact
Rated pressure	16 bar, 232 psi
Electrical connection	4-pin M12x1 circular plug in compliance with DIN EN 60947-5-2

- 1) Dependent upon inlet air pressure
2) Can be used as pre-warning signal

Accessories

Order no.	Description
995-901-063	24 V DC air valve kit for PPS30
995-901-062	Pressure reducing valve kit

PPS30 pump units

Order no.	Delivery rate/stroke		Reservoir capacity		Monitoring		
	cm ³	in ³	liter	gal	Pressure switch	Level switch	Pneumatic connection
PPS30-21W1AA1XXX	30	1.83	1.5	0.4	•	•	M10x1
PPS30-21XXXX1XXX	30	1.83	1.5	0.4			M10x1

Prelubrication metering device

Product description

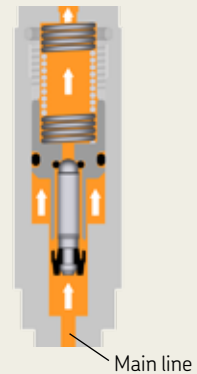
On SKF MonoFlex prelubrication metering devices, the quantity of lubricant is fed to the lubrication point while pressure is being built up in the main line, i.e. during the lubrication unit's run time.

After the lubrication unit is switched on, the lubricant is drawn out of the lubricant reservoir by the lubricant pump and fed through the main line to the prelubrication metering device. The pressure built up in the centralized lubrication system causes the metering piston to move toward the outlet (1), delivering the lubricant that is upstream of the metering piston from the metering chamber to the lubrication point. After the lubrication unit is turned off, pressure in the centralized lubrication system is relieved, which relieves pressure in the main line. In this process, spring tension causes the metering piston to return to its normal position (2). At the same time, the lubricant is moved from the metering chamber into the spring chamber. The prelubrication metering device is ready for the next lubrication cycle (3).

Area of application

Prelubrication metering devices are used in applications where the lubricant needs to be delivered to the lubrication point immediately. Especially in the case of long lubrication point lines and high bearing back pressures, increasing the pressure in the main line can provide reliable lubrication of the bearing. Fields where prelubrication metering devices are widely used is in the machine tool, textile and packaging industry.

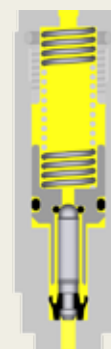
Phase 1



Phase 2



Phase 3



Relubrication metering device

Product description

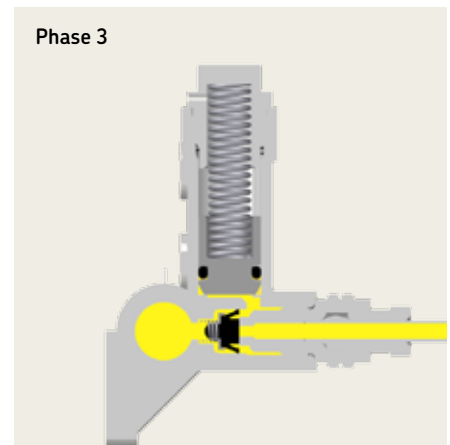
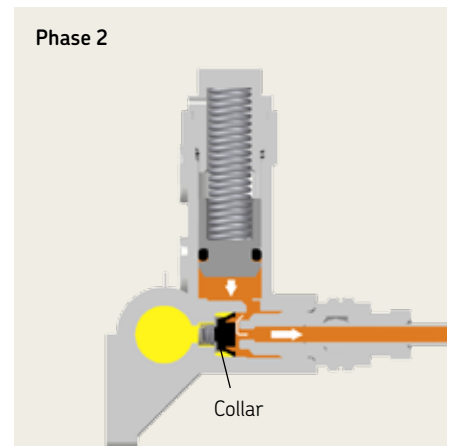
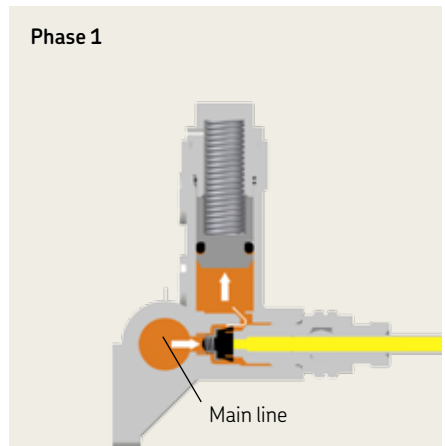
On SKF MonoFlex relubrication metering devices, the quantity of lubricant is fed to the lubrication point only during or after pressure relief in the main line, i.e. after the lubrication unit is switched off.

The pressures with which lubricant can be delivered to the lubrication point are determined by the spring tension in the piston area, and they are lower than the maximum delivery pressure of the prelubrication metering devices. The relubrication metering device thus has the function of a spring accumulator.

After the lubrication unit is switched on, the lubricant is drawn out of the lubricant reservoir by the lubricant pump and fed through the main line to the relubrication metering device. The pressure built up in the centralized lubrication system causes the collar (shuttle valve) to close the outlet to the lubrication point, which feeds the lubricant into the storage chamber. The lubricant below the spring-loaded metering piston is stored (1). After the lubrication unit is turned off, pressure in the centralized lubrication system is relieved, which relieves pressure in the main line. The lubricant under preload below the spring-loaded metering piston now pushes the collar back toward the main line (2). This closes the main line and opens the outlet to the lubrication point. The lubricant can now be metered from the storage chamber and delivered to the lubrication point (relubrication effect). After the lubricant has been completely delivered to the lubrication point, the relubrication metering device is ready for the next lubrication cycle (3).

Area of application

Relubrication metering devices are used in applications where sudden pressure at the lubrication point is undesirable, for example, when lubricating slideways on grinding machines. Such pressure at the lubrication point can lead to undesirable rough grinding results. The delivery time of the relubrication metering device depends on the back pressures in the lubrication point lines. If, for example, the lubrication points are under heavy load during the lubrication cycle, the lubricant will be stored in the relubrication metering device and only fed upon movement or when pressure at the lubrication point is relieved. For commercial vehicle lubrication, this mode of operation is a significant advantage over manual lubrication which may be difficult on pressure-loaded bearings.



341 series

Product description

SKF MonoFlex metering devices of product series 341 are single-port prelubrication metering devices for SKF MonoFlex centralized lubrication systems for oil and fluid grease lubrication. These single-line metering devices are designed for installation in manifolds. The combination of these single-line metering devices with 1- to 6-port manifolds provides flexible options for designing the lubrication system on the machine/system requiring lubrication. Manifolds for product series 341 are available in aluminum in this catalog.

The available metered quantities in this catalog range from 0.03 to 0.16 cm³ (0.0018 to 0.0097 in³). The metering nipples have a mark indicating the metered quantity. To better distinguish between different designs, metering nipples for oil are made of brass and metering nipples for fluid grease are made of nickel-plated brass. Metering nipples made of stainless steel are untreated. The lubrication point line can be connected to the metering nipple using SKF quick connectors or solderless pipe connections (DIN 3862) depending on the selected metered quantity. Lubrication point lines can be connected that are made of plastic or metal tubing, or hose lines with associated hose fittings. The diameter of the lubrication point line that will be connected can be either 2.5 mm or 4 mm.

Please refer to brochure PUB LS/P2 11213-EN (1-5001-EN) for further information.



341 series metering devices

Order no.	Metering quantity per stroke		ø Secondary line connection	
	cm ³	in ³	mm	in
For oil, without quick connect fittings for the secondary line				
341-400-40000-00	0.10	0.0061	4	0.16
For oil, with quick connect fittings for the secondary line				
341-4VS-40000-00	0.10	0.0061	4	0.16
For fluid grease, without quick connect fittings for the secondary line				
341-500-40000-00	0.10	0.0061	4	0.16
For fluid grease, with quick connect fittings for the secondary line:				
341-5VS-40000-00	0.10	0.0061	4	0.16

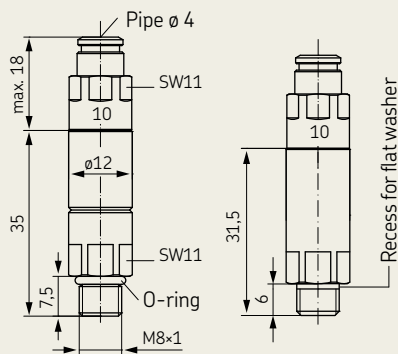
Please refer to (→ pages 92-93) in the accessory section for suitable manifolds.
A copper washer DIN7603 A8x11.5 has to be installed between the manifold and the metering unit.
Metering nipples for 0.01 and 0.02 cm³/stroke (0.00061 and 0.0012 in³/stroke) are not exchangeable.
Distributor can change metering to meet customer specification. Prelubrication metering devices in this catalog are available with the most common metering nipple installed.

Metering nipples with O-ring, exchangeable

Order no.	Metering quantity per stroke		Metering device group
	cm ³	in ³	
For oil, without quick connect fittings for the secondary line			
995-994-103	0.03	0.0018	341 and 340
995-994-106	0.06	0.0037	341 and 340
995-994-110	0.10	0.0061	341 and 340
995-994-116	0.16	0.0097	341 and 340
For oil, with quick connect fittings for the secondary line			
995-994-103-VS	0.03	0.0018	341 and 340
995-994-106-VS	0.06	0.0037	341 and 340
995-994-110-VS	0.10	0.0061	341 and 340
995-994-116-VS	0.16	0.0097	341 and 340
For fluid grease, without quick connect fittings for the secondary line			
341-853-K	0.03	0.0018	340
341-856-K	0.06	0.0037	340
341-860-K	0.10	0.0061	340
For fluid grease, with quick connect fittings for the secondary line:			
341-853-VS	0.03	0.0018	341 and 340
341-856-VS	0.06	0.0037	341 and 340
341-860-VS	0.10	0.0061	341 and 340

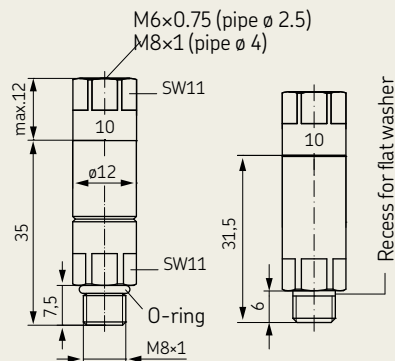
341 series

Dimensions: Product series 341 + SKF quick connector (VS)



Dimensions shown are in mm
Please order washer (DIN7603-A8x11.5-CU) and metering device manifold separately.

Dimensions: Product series 341 + solderless pipe connection (00)



Dimensions shown are in mm
Please order washer (DIN7603-A8x11.5-CU) and metering device manifold separately.

Technical data – 341 series

Lubricant	Metered quantity		Metering nipple	Operating pressure				Relief pressure		Operating temperature	
	cm ³	in ³		bar	psi	bar	psi	bar	psi	°C	°F
Mineral and synthetic oil 20 – 2,000 mm ² /s; compatible with steel, FKM (FPM)/NBR, brass	0.01 – 0.02	0.0006 – 0.0012	00	12	174	45	653	max 3	max 44	0 to 80	32 to 176
			VS	12	174	80	1 160	max 3	max 44	0 to 80	32 to 176
	0.03 – 0.16	0.0018 – 0.0098	00	6	87	45	653	≤ 1	≤ 15	0 to 80	32 to 176
			VS	6	87	80	1 160	≤ 1	≤ 15	0 to 80	32 to 176
Fluid grease of NLGI Grade 000, 00; compatible with steel, FKM (FPM)/NBR, brass	0.03 – 0.10	0.0018 – 0.0061	00	12	174	45	653	max 3	max 44	0 to 80	32 to 176
			VS	12	174	80	1 160	max 3	max 44	0 to 80	32 to 176

Tightening torque for assembly

Metering device	Seal	Tightening torque	
		Nm	ft lb
341-xxx-x0000-00	O-ring	2.5	1.8
341-xxx-x0000-00	Flat washer	6	4.4

Metering nipples for 0.01 and 0.02 cm³/stroke
(0.00061 and 0.0012 in³/stroke) are not exchangeable.

Mark on metering nipple

Metered quantity		Mark
cm ³	in ³	
0.01	0.0006	1
0.02	0.0012	2
0.03	0.0018	3
0.06	0.0037	6
0.10	0.0061	10
0.16	0.0098	16

340 series

Product description

SKF MonoFlex metering devices of product series 340 are 2-, 3-, and 5-port prelubrication metering devices for SKF MonoFlex centralized lubrication systems for oil and fluid grease lubrication. These single-line metering devices are designed for installation directly on the machine/system requiring lubrication.

Please refer to brochure PUB LS/P2 11213-EN (1-5001-EN) for further information.



Technical data

Function principle	metering device
Outlets	2, 3 or 5
Metering quantity	oil: 0.03 to 0.16 cm ³ <i>0.0018 to 0.0097 in.³</i> fluid grease: 0.03 to 0.10 cm ³ <i>0.0018 to 0.0061 in.³</i>
Lubricant	oil or fluid grease, NLGI Grade 000, 00
Operating temperature	-20 to 176 °C, -4 to 320 °F
Material	zinc die-cast, NBR, brass
Outlet connection	solderless pipe (00) or SKF quick connector (VS)
Lubricant point	solderless pipe connection or SKF quick connector

340 series metering devices

Order no.	Metering quantity per stroke		Outlets	Secondary line connection	
	cm ³	in ³		mm	in
For oil, without quick connect fittings for the secondary line					
342-400-44000-ZZ	0.10	0.0061	2	4	0.16
343-400-44400-ZZ	0.10	0.0061	3	4	0.16
345-400-44444-ZZ	0.10	0.0061	5	4	0.16
For oil, with quick connect fittings for the secondary line					
342-4VS-44000-ZZ	0.10	0.0061	2	4	0.16
343-4VS-44400-ZZ	0.10	0.0061	3	4	0.16
345-4VS-44444-ZZ	0.10	0.0061	5	4	0.16
For fluid grease, without quick connect fittings for the secondary line					
342-500-44000-ZZ	0.10	0.0061	2	4	0.16
343-500-44400-ZZ	0.10	0.0061	3	4	0.16
345-500-44444-ZZ	0.10	0.0061	5	4	0.16
For fluid grease, with quick connect fittings for the secondary line:					
342-5VS-44000-ZZ	0.10	0.0061	2	4	0.16
343-5VS-44400-ZZ	0.10	0.0061	3	4	0.16
345-5VS-44444-ZZ	0.10	0.0061	5	4	0.16

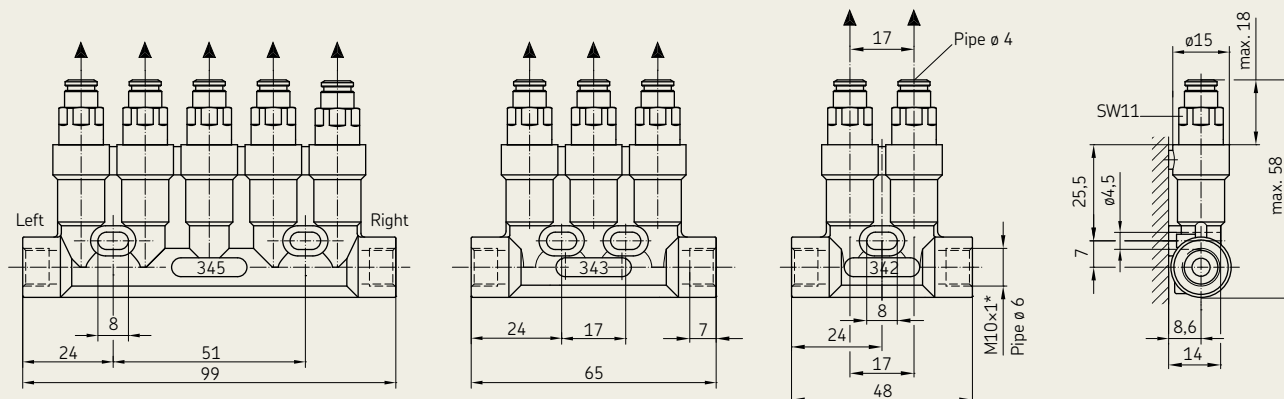
Distributor can change metering to meet customer specification. Prelubrication metering devices in this catalog are available with the most common metering nipple installed.

Metering nipples with O-ring, exchangeable

Order no.	Metering quantity per stroke		Metering device group
	cm ³	in ³	
For oil, without quick connect fittings for the secondary line			
995-994-103	0.03	<i>0.0018</i>	320 and 340
995-994-106	0.06	<i>0.0037</i>	320 and 340
995-994-110	0.10	<i>0.0061</i>	320 and 340
995-994-116	0.16	<i>0.0097</i>	320 and 340
For oil, with quick connect fittings for the secondary line			
995-994-103-VS	0.03	<i>0.0018</i>	320 and 340
995-994-106-VS	0.06	<i>0.0037</i>	320 and 340
995-994-110-VS	0.10	<i>0.0061</i>	320 and 340
995-994-116-VS	0.16	<i>0.0097</i>	320 and 340
For fluid grease, without quick connect fittings for the secondary line			
341-853-K	0.03	<i>0.0018</i>	340
341-856-K	0.06	<i>0.0037</i>	340
341-860-K	0.10	<i>0.0061</i>	340
For fluid grease, with quick connect fittings for the secondary line:			
341-853-VS	0.03	<i>0.0018</i>	320 and 340
341-856-VS	0.06	<i>0.0037</i>	320 and 340
341-860-VS	0.10	<i>0.0061</i>	320 and 340

340 series

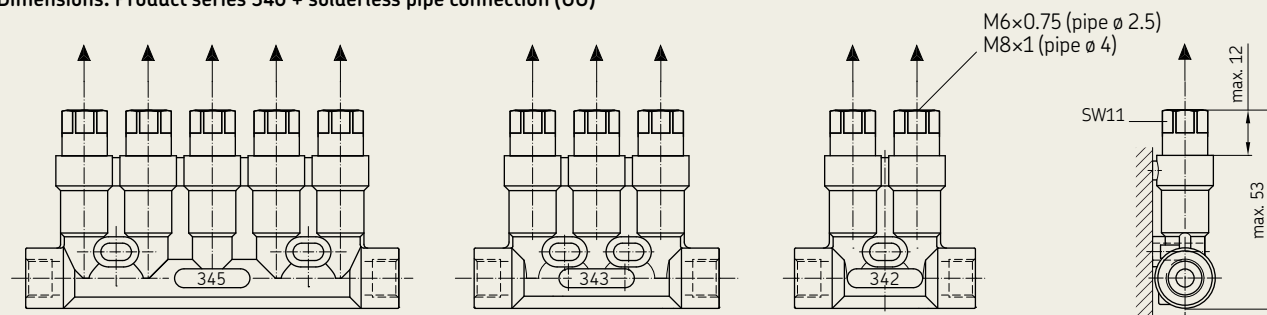
Dimensions: Product series 340 + SKF quick connector (VS)



Dimensions shown are in mm

* Counterbore for solderless pipe connection per DIN 3862

Dimensions: Product series 340 + solderless pipe connection (00)



Dimensions shown are in mm

For missing dimensions refer to → product series 340 + SKF quick connector (VS)

Technical data – 340 series

Operating temperature 0 to 80 °C (32 to 176 °F)

Lubricant	Metered quantity		Metering nipple	Operating pressure				Relief pressure	
	cm ³	in ³		min	max	min	max	bar	psi
Mineral and synthetic oil 20 – 2,000 mm ² /s; compatible with zinc die-cast, FKM (FPM)/NBR, brass, steel	0.01 –	0.0006 –	00	12	174	45	653	max 3	max 44
	0.02	0.0012	VS	12	174	80	1,160	max 3	max 44
	0.03 –	0.0018 –	00	6	87	45	653	≤ 1	≤ 15
	0.16	0.0098	VS	6	87	80	1,160	≤ 1	≤ 15
Fluid grease of NLGI Grade 000, 00; compatible with zinc die-cast, NBR, brass, steel	0.03 –	0.0018 –	00	12	174	45	653	max 3	max 44
	0.10	0.0061	VS	12	174	80	1,160	max 3	max 44

Mark on metering nipple

Metered quantity		Mark
cm ³	in ³	
0.01	0.0006	1
0.02	0.0012	2
0.03	0.0018	3
0.06	0.0037	6
0.10	0.0061	10
0.16	0.0098	16

350 series

Product description

SKF MonoFlex metering devices of product series 350 are 2-, 3-, and 5-port prelubrication metering devices for SKF MonoFlex centralized lubrication systems for oil and fluid grease lubrication. These metering devices are designed for installation directly on the machine/system requiring lubrication.

Please refer to brochure PUB LS/P2 11213-EN (1-5001-EN) for further information.



Technical data

Function principle	metering device
Outlets	2, 3 or 5
Metering quantity	oil: 0.05 to 0.60 cm ³ , <i>0.003 to 0.037 in.³</i> fluid grease: 0.10 to 0.60 cm ³ <i>0.0061 to 0.0366 in.³</i>
Lubricant	oil and fluid grease, NLGI Grade 000, 00
Operating temperature	-20 to 80 °C, <i>32 to 176 °F</i>
Material	zinc die-cast, NBR, brass
Main line connection	M 12 × 1 male thread or G 1/2
Outlet connection	solderless pipe (00) or SKF quick connector (VS)
Lubricant point	solderless pipe connection or SKF quick connector

350 series metering devices

Order no.	Metering quantity per stroke		Outlets	ø Secondary line connection	
	cm ³	in ³		mm	in
For oil, without quick connect fittings for the secondary line					
352-000-44000-ZZ	0.10	0.0061	2	4	0.16
353-000-44400-ZZ	0.10	0.0061	3	4	0.16
355-000-44444-ZZ	0.10	0.0061	5	4	0.16
For oil, with quick connect fittings for the secondary line					
352-OVS-44000-ZZ	0.10	0.0061	2	4	0.16
353-OVS-44400-ZZ	0.10	0.0061	3	4	0.16
355-OVS-44444-ZZ	0.10	0.0061	5	4	0.16
For fluid grease, without quick connect fittings for the secondary line					
352-100-44000-ZZ	0.10	0.0061	2	4	0.16
353-100-44400-ZZ	0.10	0.0061	3	4	0.16
355-100-44444-ZZ	0.10	0.0061	5	4	0.16
For fluid grease, with quick connect fittings for the secondary line:					
352-1VS-44000-ZZ	0.10	0.0061	2	4	0.16
353-1VS-44400-ZZ	0.10	0.0061	3	4	0.16
355-1VS-44444-ZZ	0.10	0.0061	5	4	0.16

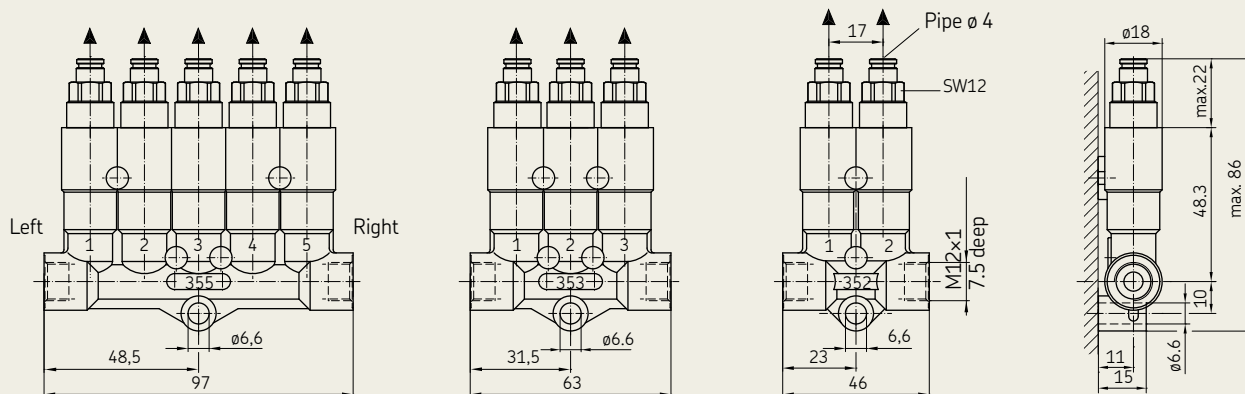
Distributor can change metering to meet customer specification. Prelubrication metering devices in this catalog are available with the most common metering nipple installed.

Metering nipples with O-ring, exchangeable

Order no.	Metering quantity per stroke		Metering device group
	cm ³	in ³	
For oil, without quick connect fittings for the secondary line			
352-010-K	0.1	<i>0.006</i>	350
352-020-K	0.2	<i>0.012</i>	350
352-040-K	0.4	<i>0.024</i>	350
352-060-K	0.6	<i>0.036</i>	350
For oil, with quick connect fittings for the secondary line			
352-005-VS	0.05	<i>0.003</i>	350
352-010-VS	0.10	<i>0.006</i>	350
352-020-VS	0.20	<i>0.012</i>	350
352-040-VS	0.40	<i>0.024</i>	350
352-060-VS	0.60	<i>0.036</i>	350
For fluid grease, without quick connect fittings for the secondary line			
995-993-610	0.1	<i>0.006</i>	350
995-993-620	0.2	<i>0.012</i>	350
995-993-630	0.3	<i>0.018</i>	350
995-993-660	0.6	<i>0.036</i>	350
For fluid grease, with quick connect fittings for the secondary line:			
995-993-610-VS	0.10	<i>0.006</i>	350
995-993-620-VS	0.20	<i>0.012</i>	350
995-993-630-VS	0.30	<i>0.018</i>	350

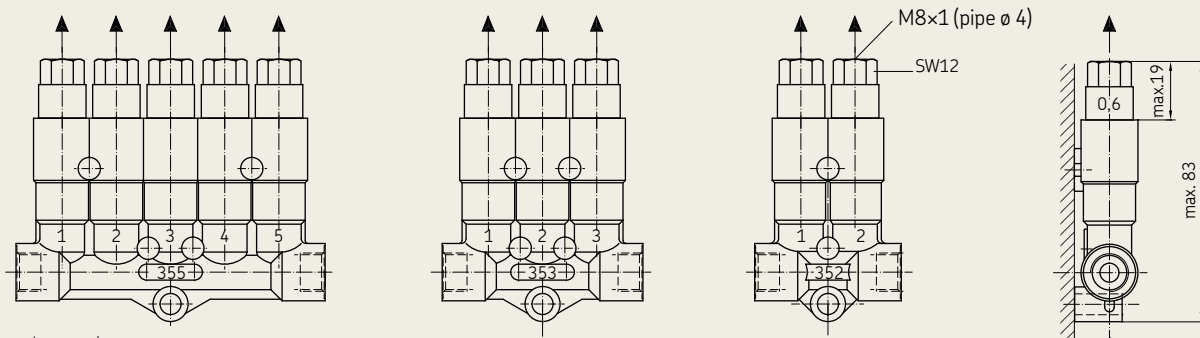
350 series

Product series 350 + SKF quick connectors (VS)



Dimensions shown are in mm

Product series 350 + solderless pipe connection (00)



Dimensions shown are in mm
For missing dimensions → product series 350 + SKF quick connector (VS)

Technical data – 350 series

Operating temperature 0 to 80 °C (32 to 176 °F)

Lubricant	Metered quantity		Metering nipple	Operating pressure				Relief pressure	
	cm ³	in ³		min	max	min	max	bar	psi
Mineral and synthetic oil 20 – 2,000 mm ² /s; compatible with zinc die-cast, FKM (FPM)/NBR, brass, steel	0.05 –	0.0031 –	00	6	87	45	653	≤ 1	≤ 14.5
	0.60	0.0366	VS	6	87	80	1,160	≤ 1	≤ 14.5
Fluid grease of NLGI Grade 000, 00; compatible with zinc die-cast, NBR, brass, steel	0.10 –	0.0061 –	00	12	174	45	653	max 3	max 44
	0.60	0.0366	VS	12	174	80	1,160	max 3	max 44

Mark on metering nipple

Metered quantity		Mark
cm ³	in ³	
0.05	0.0031	0.05
0.10	0.0061	0.1
0.20	0.0122	0.2
0.30	0.0183	0.3
0.40	0.0244	0.4
0.60	0.0366	0.6

390 series

Product description

SKF MonoFlex metering devices of product series 390 are 2- and 3-port prelubrication metering devices for SKF MonoFlex centralized lubrication systems for oil and fluid grease lubrication. These single-line metering devices are designed for installation directly on the machine/system requiring lubrication.

Please refer to brochure PUB LS/P2 11213-EN (1-5001-EN) for further information.



Technical data

Function principle	metering device
Outlets	2 or 3
Metering quantity	oil: 0.2 to 1.5 cm ³ /min., 0.01 to 0.09 in. ³ /min. fluid grease: 0.1 to 0.3 cm ³ /min., 0.006 to 0.018 in. ³ /min.
Lubricant	oil and fluid grease, NLGI Grade 000, 00
Operating temperature	-20 to 80 °C, 32 to 176 °F
Material	zinc die-cast, NBR, brass

390 series metering devices

Order no.	Metering quantity per stroke		Out- lets	Secondary line connection	
	cm ³	in ³		mm	in
For oil, without quick connect fittings for the secondary line					
391-000-40000-00	0.10	0.0061	1	4	0.16
392-000-44000-ZZ	0.10	0.0061	2	4	0.16
393-000-44400-ZZ	0.10	0.0061	3	4	0.16
For fluid grease, without quick connect fittings for the secondary line					
391-100-40000-00	0.10	0.0061	1	4	0.16
392-100-44000-ZZ	0.10	0.0061	2	4	0.16
393-100-44400-ZZ	0.10	0.0061	3	4	0.16

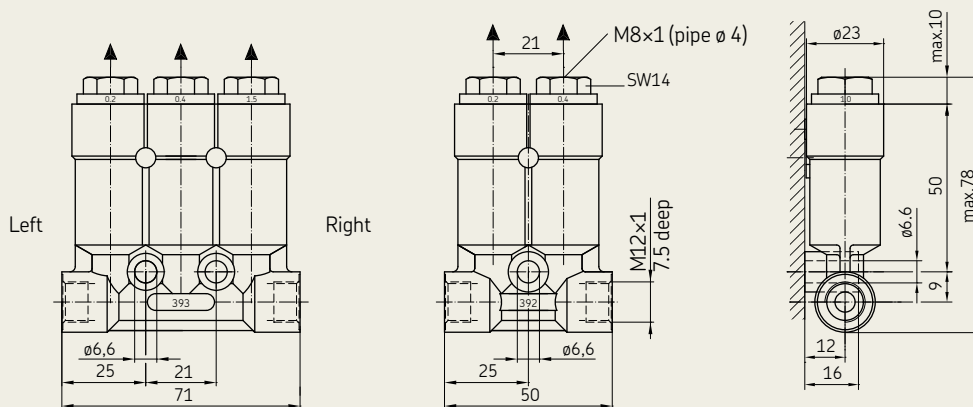
Distributor can change metering to meet customer specification. Prelubrication metering devices in this catalog are available with the most common metering nipple installed.

Metering nipples

Order no.	Metering quantity per stroke		O-ring	Metering device group
	cm ³	in ³		
For oil, without quick connect fittings for the secondary line				
391-020-K	0.2	0.012	•	390
391-040-K	0.4	0.024	•	390
391-060-K	0.6	0.036	•	390
391-100-K	1.0	0.061	•	390
391-150-K	1.5	0.092	•	390
For fluid grease, without quick connect fittings for the secondary line				
391-010-K-S1	0.1	0.006	•	390
391-020-K-S1	0.2	0.012	•	390
391-030-K-S1	0.3	0.018	•	390

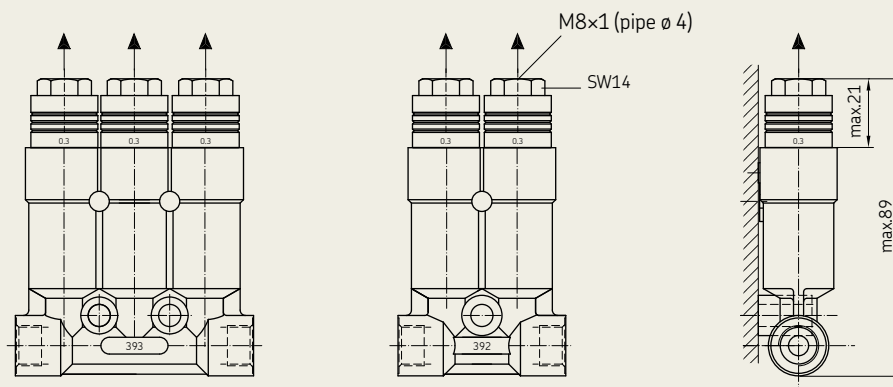
390 series

Product series 390 for oil + solderless pipe connection (00)



Dimensions shown are in mm

Product series 390 for fluid grease + solderless pipe connection (00)



Dimensions shown are in mm
For missing dimensions, → product series 390 for oil.

Technical data – 390 series

Operating temperature 0 to 80 °C (32 to 176 °F)

Lubricant	Metered quantity		Metering nipple	Operating pressure				Relief pressure	
	cm ³	in ³		bar	psi	bar	psi	bar	psi
Mineral and synthetic oil 20 – 2,000 mm ² /s; compatible with zinc die-cast, FKM (FPM)/ NBR, brass, steel	0.20 – 1.50	0.0122 – 0.0915	00	8	116	45	653	≤ 1	≤ 14.5
Fluid grease of NLGI Grade 000, 00, 0; com- patible with zinc die- cast, NBR, brass, steel	0.10 – 0.30	0.0061 – 0.0183	00	26	377	45	653	max 7	max 102

Mark on metering nipple

Metered quantity		Mark
cm ³	in ³	
0.10	0.0061	0.1
0.20	0.0122	0.2
0.30	0.0183	0.3
0.40	0.0244	0.4
0.60	0.0366	0.6
1.00	0.0610	1.0
1.50	0.0915	1.5

Mobile on-road (MOR)

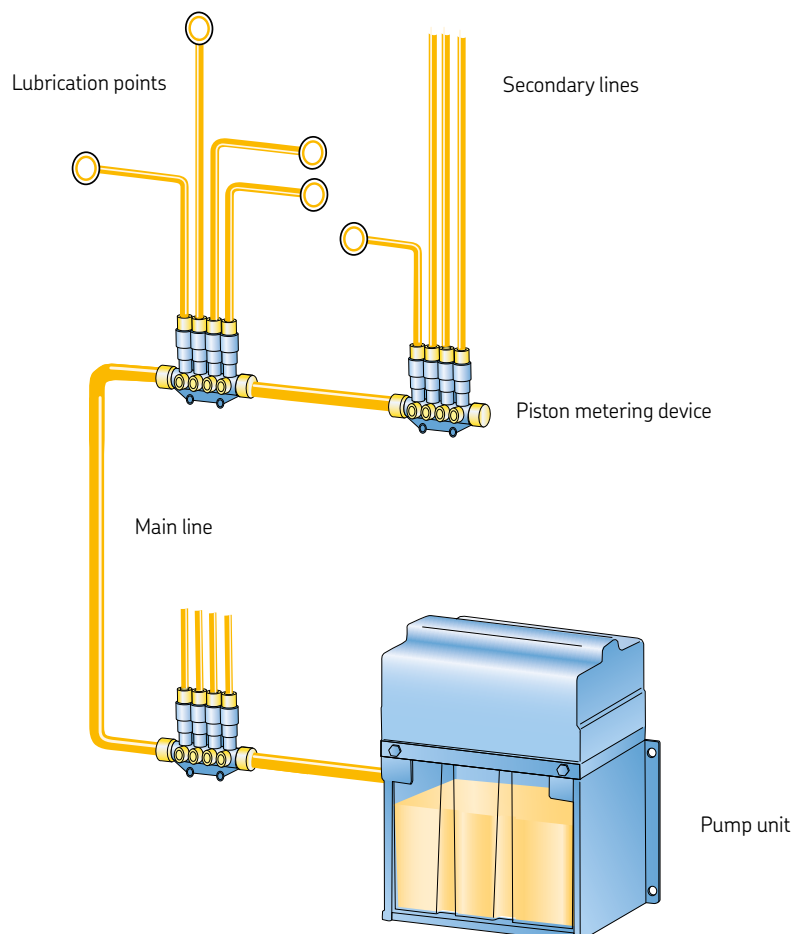
System description

In SKF MonoFlex lubrication systems, a pump feeds the lubricant via the main line to the lubricant metering devices, where it is metered and fed to the lubrication points. Each outlet serves one lubrication point. The individual lubricant requirements for each lubrication point can be adjusted using interchangeable metering nipples. The parallel setup of the single-line metering valves enables a reliable system design with simple installation.

Advantages:

- Standard grease NLGI class 00, 000
- Relubrication metering devices feed the lubricant after the pump has been turned off
- Modular design provides scalable system planning
- System continues to work if a lubrication point is blocked
- Functions reliably in low temperatures
- Easily adjustable delivery volumes

SKF MonoFlex lubrication systems for mobile on-road



KFU

Product description

The gear pump supplies lubricant to relubrication metering devices via the main line network when the pump is in operation. When the metering chambers of the device are full, excess lubricant flows back into the reservoir via the safety valve. At the end of the pump running time, the pressure relief valve opens so that pressure in the main line drops to a residual pressure of 0.2 to 1.0 bar (2.9 to 14.5 *psi*), allowing the spring-loaded pistons of the metering devices to deliver lubricant from the metering chambers to the lubrication points.

Please refer to brochure 1-9420-EN for further information.



Technical data

Function principle	electric
Outlets	1
Metering quantity ¹⁾	140 cm ³ /min., 8.5 in ³ /min.
Lubricant	NLGI 000, 00
Operating temperature	-25 to +75 °C, -13 to +167 °F
Operating pressure	max 38 bar, 551 <i>psi</i>
Reservoir capacity	KFU2-40: 2.7 l, 0.7 gal KFU6-20: 6 l, 1.6 gal
Material (reservoir)	transparent plastic
Main connection	Mainly plastic tubing 10x1.5 diam., but also steel tubing 10x0.7 diam. hose SLH10-...
Secondary connection	Mainly plastic tubing 4x0.85 diam.; in case of large movement between lubrication point and chassis: hose 734 ...
Voltage	12 or 24 V DC
Protection rating	IP59K

¹⁾ At back pressure 38 bar (551 *psi*) and temperature 25 °C (77 °F)

KFUx pump units

Order no.	Metering quantity		Reservoir capacity		Reservoir material	Electrical connection
	cm ³ /min	in ³ /min	liter	gal		
KFU2-40+912	140	8.5	2.7	0.7	transparent plastic	12 V DC
KFU2-40+924	140	8.5	2.7	0.7	transparent plastic	24 V DC
KFU6-20+912	140	8.5	6.0	1.6	transparent plastic	12 V DC
KFU6-20+924	140	8.5	6.0	1.6	transparent plastic	24 V DC

VN

The metering devices meter and distribute the lubricant from the pump to the individual lubrication points. They do so independent of each other.

The cycle number, i.e. the number of pump strokes per time unit of the lubrication system, also permits further coordination of the lubricant quantity with the friction point and entire system.

Please refer to brochure 1-9420-EN and PUB LS/P2 11213-EN (1-5001-EN) for further information.

0.05 to 1.0 cm³ (0.003 to 0.06 in³) metering shown with universal quick connectors



0.05 to 1.0 cm³ (0.003 to 0.06 in³) metering shown with universal quick connectors



0.05 to 1.0 cm³ (0.003 to 0.06 in³) metering shown with universal quick connectors



Function principle	metering device
Outlets	2, 4 or 6
Metering quantity	0.05 to 1.0 cm ³ 0.003 to 0.06 in. ³
Lubricant	NLGI 00, 000

Order no.	Metering quantity per stroke		Outlets
	cm ³	in ³	
VN2-000-330000-ZZ	0.20	0.0122	2
VN4-000-333300-ZZ	0.20	0.0122	4
VN6-000-333333-ZZ	0.20	0.0122	6

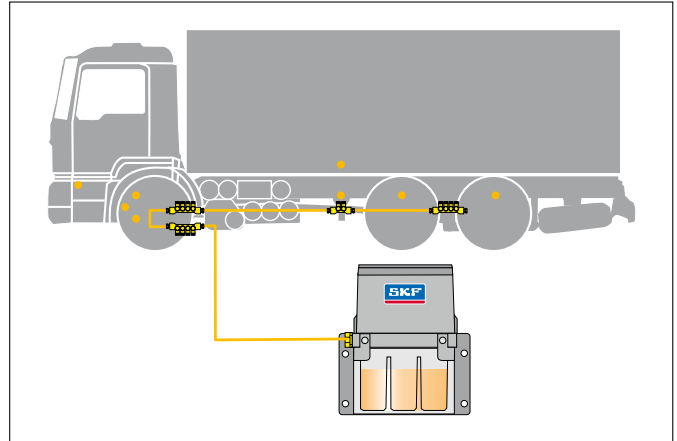
Order no.	Metering quantity per stroke		O-ring
	cm ³	in ³	
VKU005-K	0.05	0.003	•
VKU010-K	0.10	0.006	•
VKU020-K	0.20	0.012	•
VKU030-K	0.30	0.018	•
VKU040-K	0.40	0.024	•
VKU060-K	0.60	0.036	•
VKU100-K	1.00	0.061	•

Kits

Each kit includes:

- Electrical kit:
KFU pump unit; pump mounting bracket and hardware;
IG-502-E controller; pressure switch; cable harness; fault indicator
“red pilot light” for mounting in the dash board; 10 amp slow blow
fuse
- Mechanical kit (application specific):
VN piston metering devices; mounting brackets and hardware;
tubing; tubing protection/split loot; fittings; main line banjos, screw
plugs, adaptors, bulk head fittings (as required); main line tee junc-
tion blocks (mountable).

Please refer to brochure 1-9420-EN for further information.



Truck tractors	Metering quantity		Trailers and semi-trailers	Metering quantity		Buses	Metering quantity	
	cm ³	in ³		cm ³	in ³		cm ³	in ³
Steering knuckle	0.4	0.024	Tow bar	0.4	0.024	Stop lever	0.1	0.006
Spring pin	0.4	0.024	Turntable	0.4	0.024	Dual lever	0.1	0.006
Spring suspension	0.4	0.024	Spring pin	0.4	0.024	Reversing lever	0.1	0.006
Brake shaft	0.2	0.012	Brake shaft	0.2	0.012	Idler arm	0.1	0.006
Bake shaft, wheel side	0.1	0.006	Brake shaft, wheel side	0.1	0.006	Linkage setting device	0.2	0.012
Linkage setting device	0.2	0.012	Linkage setting device	0.2	0.012	Brake shaft	0.2	0.012
Stabilizer	0.2	0.012	Hand brake	0.1	0.006	Brake shaft, wheel side	0.1	0.006
Driver's cab support	0.1	0.006	Spare wheel	0.1	0.006	Steering knuckle	0.4	0.024
Longitudinal control arm	0.2	0.012	Brake shoe pin	0.1	0.006	Turntable	0.4	0.024
Transverse control arm	0.2	0.012	Steering assembly	0.4	0.024	Drag link	0.4	0.024
Coupling	0.1	0.006	Support arms	0.1	0.006	Knuckle pin bearing	0.4	0.024
Gas control	0.1	0.006	Wearing plate	0.4	0.024	Axle support	0.4	0.024
Center bearing	0.4	0.024				Gas control	0.1	0.006
Fifth wheel support plate	0.4	0.024						

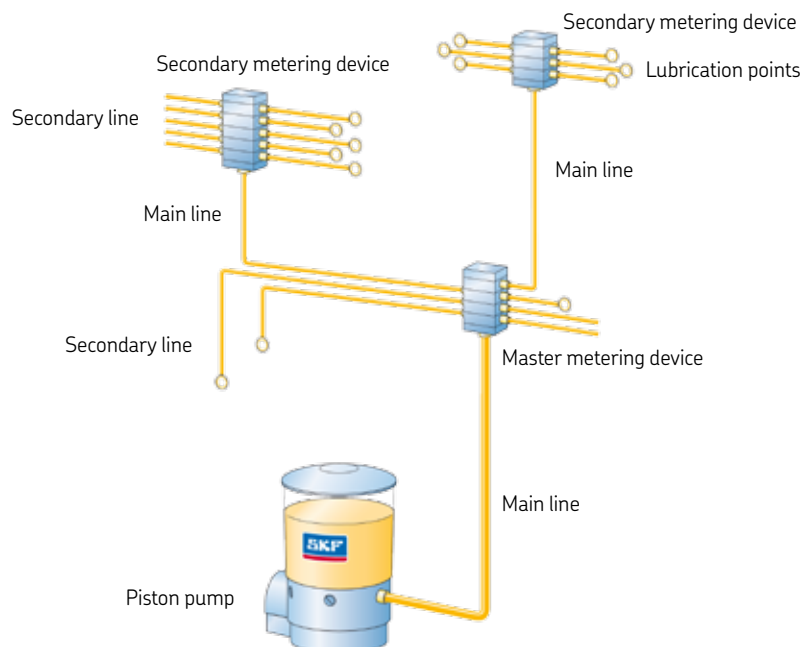
MOR kits

Order no.	Description	Metering quantity	
		cm ³	in ³
9900-103-208-VS	Std. KFU2-40 pump, electrical kit	–	–
9900-003-1128-VS	Dump box, 4 points	0.6/0.6 – 0.1/0.1	0.4/0.4 – 0.006/0.006
9900-003-1130-VS	Front passenger side, 10 points	0.4/0.4/0.4/0.1/0.1/0.2/0.2/0.2/0.4/0.4	0.02/0.02/0.02/0.006/0.006/0.01/0.01/0.01/0.02/0.02
9900-003-1132-VS	Front driver side, 10 points	0.4/0.4/0.4/0.1/0.1/0.2/0.2/0.2/0.4/0.4	0.02/0.02/0.02/0.006/0.006/0.01/0.01/0.01/0.02/0.02
9900-003-1133-VS	Front passenger side, 8 points	0.4/0.4/0.4/0.2/0.1/0.1/0.4/0.4	0.02/0.02/0.02/0.01/0.006/0.006/0.02/0.02
9900-003-1134-VS	Rear drive axles, 8 points	0.2/0.2/0.2/0.2 – 0.2/0.2/0.2/0.2	0.01/0.01/0.01/0.01 – 0.01/0.01/0.01/0.01
9900-003-1135-VS	5th wheel, 6 points	0.2/1.0/1.0/1.0/1.0/0.2	0.01/0.06/0.06/0.06/0.06/0.01
9900-003-1138-VS	Front driver side, 5 points	0.4/0.4/0.2/0.2/0.2	0.02/0.02/0.01/0.01/0.01
9900-003-1139-VS	Front passenger side, 3 points	0.4/0.4/0.2	0.02/0.02/0.01
9900-003-1140-VS	Lift/steer, 10 points	0.2/0.2/0.2/0.4/0.4/0.2/0.2/0.2/0.4/0.4	0.01/0.01/0.01/0.02/0.02/0.01/0.01/0.01/0.02/0.02
9900-003-1142-VS	Front passenger side, 5 points	0.4/0.4/0.1/0.1/0.2	0.02/0.02/0.006/0.006/0.01
9900-003-1143-VS	Front driver side, 7 points	0.4/0.4/0.1/0.1/0.2/0.2/0.2	0.02/0.02/0.006/0.006/0.01/0.01/0.01
9900-003-1144-VS	Front passenger side, 12 points	0.4/0.4/0.05/0.05/0.1/0.1/0.2/0.2/0.2/0.4/0.4/0.4	0.02/0.02/0.003/0.003/0.006/0.006/0.01/0.01/0.01/0.02/0.02/0.02
9900-003-1159-VS	Front passenger side, 10 points	0.4/0.4/0.4/0.2/0.2/0.1/0.4/0.4/0.05/0.05	0.02/0.02/0.02/0.01/0.01/0.06/0.02/0.02/0.003/0.003

SKF ProFlex lubrication systems

SKF ProFlex lubrication systems

Progressive lubrication systems designed for oil, semi-fluid grease and hard grease up to NLGI grade 2. The system shown below is for hard grease.



System description

SKF ProFlex systems are designed for small and medium-sized machines. They are used, for example, in the printing industry, construction machines, industrial presses and wind turbines.

A feed pump supplies lubricant to the metering device that serves each outlet progressively, with a defined amount of lubricant. Each metering device outlet can also serve a secondary metering device that divides the amount into smaller portions for progressive delivery to their outlets. To control the system's function, only one metering piston has to be controlled on a frequency basis.

SKF ProFlex lubrication systems are designed for up to 150 lubrication points for grease or oil. SKF ProFlex systems include a wide range of progressive metering devices based on a block, segmented or modular design with up to 20 outlets, flow rates of 0.01 to 6,000 cm³/min (0.0006 to 366 in.³/min) and system pressures as high as 300 bar (4,351 psi).

Advantages:

- Delivers frequent and measured amounts of grease to each lubrication point
- Easy system monitoring and simple blockage control
- Integrated system control and monitoring

SKF ProFlex lubrication systems

Piston pump unit



VPBM



VPKM



VPM



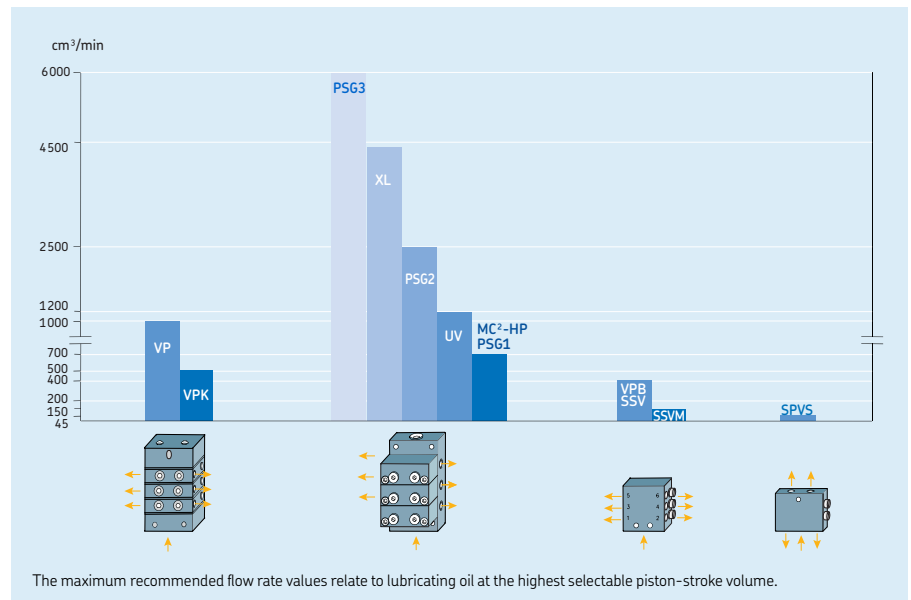
Components

Automatic-operated piston pump units

Pump units of the KFGS series are reservoir pump units with an integrated control unit based on the KFG. The KFGS pump unit is controlled by the IG502-2-I integrated control and monitoring unit, which can operate based on time or pulses and with or without a monitoring function.

Metering devices

SKF ProFlex feeders have a versatile field of application. They are suited for intermittent operation in total loss lubrication systems; also for continuous operation in circulating lubrication systems.



Piston pump unit for grease up to NLGI grade 2

KFG

Product description

The KFG pump unit is an electrically driven piston pump. The pump is comprised of four main components: housing with pump elements, reservoir with fill level monitoring, internal control units and attachments. The housing integrates the motor, the drive shaft with an eccentric and up to three pump elements for delivering the lubricant. Positively driven pump elements should be used in order to maintain the delivery rate in areas with extremely low temperatures or in applications where dirt is unavoidable.

Benefits

- Reliable: due to sturdy materials, very durable components and designs for extreme conditions (with positively driven pump elements, please refer to brochure 1-3030-EN)
- Versatile: can be used as a single line and as a progressive pump
- Safe: through fill level monitoring, lubrication system monitoring, pressure relief and control unit

Please refer to brochure PUB LS/P2 12649-EN (1-3030-EN) and PUB LS/P1 16964-EN for further information.



Technical data

Function principle electric
 Outlets 1–3
 Metering quantity 0.8 to 15 cm³/min
 0.05 to 0.9 in³/min
 Lubricant fluid grease, grease
 Operating temperature –25 to +70 °C, –13 to +158 °F
 Flow pressure 0.45 to 0.7 bar, 6.5 to 10.2 psi
 Reservoir capacity 2 to 10 kg, 4.4 to 22.0 lb
 Material (reservoir) polyamide PA 6I, PMMA
 Material (pump housing) aluminum-silicon cast alloy
 Operating voltage 24 V DC, 110 V AC (90–264 V AC)
 Protection class according
 to DIN 40050 T9IP56

Pumping elements

Order no.	Metering quantity		Order no.	Metering quantity	
	cm ³ /min	in ³ /min		cm ³ /min	in ³ /min
KFG1.U0	5	0.31	KFG1.U3	1.3	0.08
KFG1.U1	2.5	0.15	KFG1.U4	0.8	0.05
KFG1.U2	1.8	0.11			

Accessories

Order no.	Description
161-210-012	PRV ¹⁾ 300 bar (4,351 psi), ø 6 mm
161-210-014	PRV ¹⁾ 300 bar (4,351 psi), ø 8 mm, with grease zerk
161-210-020	PRV ¹⁾ 300 bar (4,351 psi), with quick connect for ø 6 mm, with grease zerk
161-210-021	PRV ¹⁾ 300 bar (4,351 psi), with quick connect for ø 6 mm
179-990-700	4 pin branch molded splitter
179-990-600	5 m (16.4 ft) 4 pin cable with connector, type C straight
179-990-601	5 m (16.4 ft) 4 pin cable with 90° connector, type D
179-990-603	10 m (32.8 ft) 4 pin cable with connector, type C
179-990-719	KFG cable harness for industrial applications
997-000-904	KFG cable harness for heavy industry applications
179-990-371	Cable connector, straight, 4-pole, M12×1
179-990-372	Cable connector, angled, 4-pole, M12×1

¹⁾ Pressure regulating valve

KFG pump units

Order no.	Reservoir capacity		Level switch	Electrical connection
	kg	lb		
KFG without control unit; mobile applications				
KFGX1FX1XXXXX99+924	2	4.4	●	24 V DC
KFGX3FX1XXXXX99+924	6	13.2		24 V DC
KFGX1FX1XXXXX99+924	2	4.4		24 V DC
KFGX3FX1XXXXX99+924	6	13.2		24 V DC
KFG without control unit; industrial applications				
KFGX1MX1XXXXX99+486	2	4.4		90-264 V AC
KFGX3MX1XXXXX99+486	6	13.2		90-264 V AC
KFG with controls; mobile applications				
KFGS1FX1XXXXXEB+924	2	4.4	●	24 V DC
KFGS3FX1XXXXXEB+924	6	13.2	●	24 V DC
KFGS5FX1XXXXXEB+924	10	22	●	24 V DC
KFG with controls; industrial applications				
KFGS3MX1XXXXXEB+486	6	13.2	●	90-264 V AC

Piston pump unit for grease up to NLGI grade 2

KFGL

Product description

Pump units of the KFGL series are reservoir pump units with an LC502 integrated control unit with a control display. The control unit is pre-programmed with standard settings and easy to operate.

The control unit can be used to set the pump run time either:

- based on pump speed
- based on time (hours and minutes) or machine cycles (load-dependent)

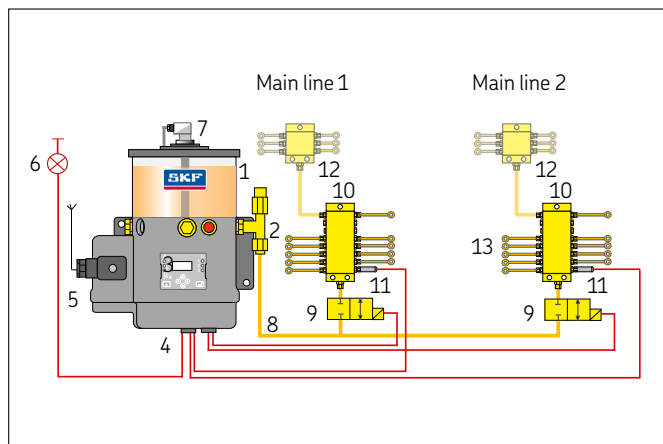
Zoned lubrication is available to meet different lubricant requirements; the lubrication lines can be controlled and monitored individually. The LC502 also offers a wide range of options for monitoring functions and processes, with up to three lubrication zones able to be monitored independently.

The LC502 is fitted with integrated temperature overload protection and continuous system monitoring with fault detection and fault analysis. The pause time for the LC502 can be set in minutes or seconds.

A piston detector is used to monitor the feeding operation on progressive systems; a pressure switch is used for single-line systems.

The KFGL pump is available in the same reservoir capacities and voltage designs as the KFG/KFGS series.

Please refer to brochure PUB LS/P2 12649-EN (1-3030-EN) and PUB LS/P1 16964-EN for further information.



SKF ProFlex system with cycle switch and two main lines

- 1 KFGL unit
- 2 Pump element with pressure regulating valve
- 3 LC502 display
- 4 Connection of inputs, outputs and monitoring
- 5 Power supply
- 6 Fault indicator light
- 7 Fill level control
- 8 Main line
- 9 Zone valve
- 10 Master metering device
- 11 Cycle switch
- 12 Secondary metering device
- 13 Secondary lines

LC502 control unit



Pressure relief valve with integrated pressure restriction valve for SKF MonoFlex systems



KFGL pump units

Order no.	Reservoir capacity	Level switch	Electrical connection	Control unit	Application	MonoFlex	ProFlex	Pressure relief valve with integrated pressure restriction valve
	kg lb							
KFGL1MX1XXXXEB+486	2 4.4	•	90–264 VAC	LC 502	Industrial		•	
KFGL3MX1XXXXEB+486	6 13.2	•	90–264 VAC	LC 502	Industrial		•	
KFGL1MX1XXXXWEB+486	2 4.4	•	90–264 VAC	LC 502	Industrial	•		•
KFGL3MX1XXXXWEB+486	6 13.2	•	90–264 VAC	LC 502	Industrial	•		•
KFGL1FX1XXXXEB+924	2 4.4	•	24 V DC	LC 502	Construction		•	
KFGL3FX1XXXXEB+924	6 13.2	•	24 V DC	LC 502	Construction		•	

Piston pump unit for fluid grease, grease

KFGS assemblies

Product description

KFGS assemblies include the KFG piston pump with integrated IG502-2-I controller, reservoir sizes of 2, 6 and 10 kg (4.4, 13.2 and 22 lb), electric connection of 24 V DC or 110 V AC with a 300 bar (4,351 psi) safety valve. The units are available mounted in a polycarbonate, carbon steel or fiberglass enclosure and can be combined with any of the SKF ProFlex metering devices.

Please refer to brochure PUB LS/P2 12649-EN (1-3030-EN) and PUB LS/P1 16964-EN for further information.



KFGS assemblies

Order no.	Reservoir capacity		Electrical connection		Outlets	Safety valve pressure		Enclosure material		
	kg	lb	24 V DC	90-264 V AC 50/60 Hz		bar	psi	Polycarbonate	Carbon steel	Fiberglass
KFGS1-5W1-1-6-S-VS-V1+924	2	4.4	•		1	300	4,351			
KFGS3-5W1-1-6-S-VS-V1+924	6	13.2	•		1	300	4,351			
KFGS5-5W1-1-6-S-VS-V1+924	10	22	•		1	300	4,351			
KFGS10-5W1-1-6-S-VS-V1+486	2	4.4		•	1	300	4,351			
KFGS30-5W1-1-6-S-VS-V1+486	6	13.2		•	1	300	4,351			
KFGS50-5W1-1-6-S-VS-V1+486	10	22		•	1	300	4,351			
KFGS10-5W1-11-6-S-VS-V1+486	2	4.4		•	2	300	4,351			
KFGS30-5W1-11-6-S-VS-V1+486	6	13.2		•	2	300	4,351			
KFGS50-5W1-11-6-S-VS-V1+486	10	22		•	2	300	4,351			
KFGS10-5W1-1-6-S-VS-PC-V1+486	2	4.4		•	1	300	4,351	•		
KFGS30-5W1-1-6-S-VS-PC-V1+486	6	13.2		•	1	300	4,351	•		
KFGS50-5W1-1-6-S-VS-FG-V1+486	10	22		•	1	300	4,351			•
KFGS10-5W1-11-6-S-VS-PC-V1+486	2	4.4		•	2	300	4,351	•		
KFGS30-5W1-11-6-S-VS-PC-V1+486	6	13.2		•	2	300	4,351	•		
KFGS50-5W1-11-6-S-VS-FG-V1+486	10	22		•	2	300	4,351			•
KFGS10-5W1-1-6-S-VS-CS-V1+486	2	4.4		•	1	300	4,351		•	
KFGS30-5W1-1-6-S-VS-CS-V1+486	6	13.2		•	1	300	4,351		•	
KFGS10-5W1-11-6-S-VS-CS-V1+486	2	4.4		•	2	300	4,351		•	
KFGS30-5W1-11-6-S-VS-CS-V1+486	2	4.4		•	2	300	4,351		•	

VPB

Product description

Block metering devices of the VPBM series are used in small circulating-oil lubrication systems as well as in grease and oil total loss lubrication systems. The VPB progressive metering device does not include check valves in the outlets, they have to be ordered separately. Fields of application are, for example, metal-forming machines, construction equipment, production systems in the automotive industry as well as packaging and printing machines.

Benefits

- Robust and cost-efficient
- Usable for a wide range of applications with regards to mode of operation (continuous/intermittent) and lubricants
- Central function monitoring of all feeder ports with cycle indicator or piston detector
- Accurate lubricant distribution, even with back pressure at the lubrication points, due to fitted pistons
- Maximum number of lubrication points (per system) approximately 100; for ringline systems with in-line metering pumps several hundred

Please refer to brochure 1-3017-EN and PUB LS/P1 16964-EN for further information.



Technical data

Function principle	block metering device
Outlets	6 to 20
Metering quantity	per stroke and outlet: 0.20 cm ³ /min; 0.012 in. ³ /min
Lubricant	mineral oils, greases based on mineral oil, environmentally friendly and synthetic oils and greases
Operating temperature	–25 to +110 °C, –13 to +230 °F
Operating pressure	oil: max 200 bar, 2,900 psi; grease: max 300 bar, 4,350 psi
Connection inlet and outlet	VPBM: M 10×1
Number of cycles	max. 200/min.
Material	steel, tinned/nitrile

VPB block metering devices

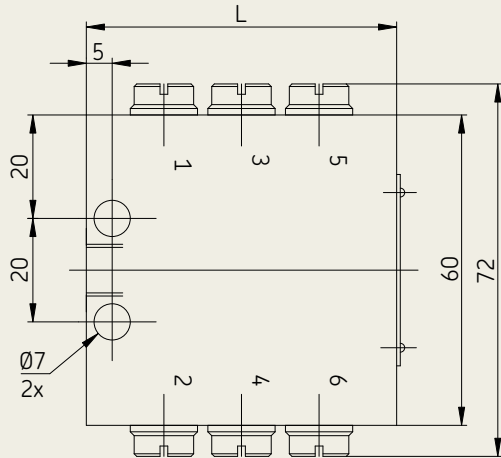
Order no.	Metering quantity per stroke per outlet		Outlets	Dimension L	
	cm ³	in ³		mm	in
VPBM-3	0.2	0.012	6	60	2.4
VPBM-4	0.2	0.012	8	75	3.0
VPBM-5	0.2	0.012	10	90	3.5
VPBM-6	0.2	0.012	12	105	4.1
VPBM-7	0.2	0.012	14	120	4.7
VPBM-8	0.2	0.012	16	135	5.3
VPBM-9	0.2	0.012	18	150	5.9
VPBM-10	0.2	0.012	20	165	6.5

Accessories

Order no.	Description
VPBM-ZY 917-006-101 466-431-001	Cycle indicator Set screw to combine outlets Plug for unused outlet
VPBM-C2 VPBM-C3 VPBM-C4	Crossporting 2-bridge, one output and check valve Crossporting 3-bridge, one output and check valve Crossporting 4-bridge, one output and check valve
VPBM-C2-VS VPBM-C3-VS VPBM-C4-VS	Crossporting 2-bridge, one output, quick connect and check valve Crossporting 3-bridge, one output, quick connect and check valve Crossporting 4-bridge, one output, quick connect and check valve
VPBM-C-S2 177-300-096 177-300-097	Crossporting 2-bridge, without outlet port and without check valve Piston detector, 4 pin connector with 2 wires Piston detector, 4 pin connector with 3 wires Refer to electric plug and socket connectors (→ page 110), for connecting cables
VPKM-RV VPKM-RV-VS VPKM-RV-S3	Check valve, M10×1 Check valve, 6 mm, 0.24 in, quick connect Check valve, M10×1, stainless steel

VPB

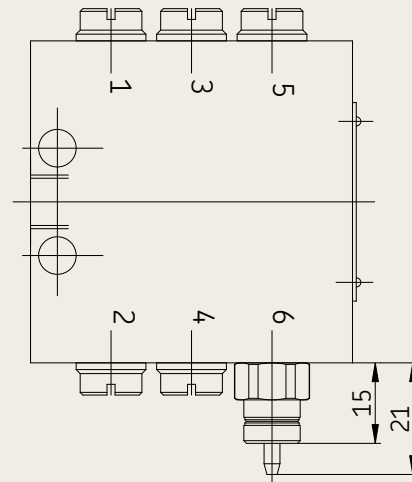
Dimensions: Block metering device VPB, basic design



Dimensions shown are in mm

The task of the ProFlex feeder is to consecutively distribute specified portions of the pressure-fed lubricant (grease or oil) to the connected lubricant points. The discharge of the lubricant continues as long as it is pressure-fed to the ProFlex feeder. The specified portions are generated through the piston movement. Two lubricant outlets on the two end positions of the piston travel are allocated to each piston. If lubricant is pressure-fed, the pistons of a feeder move sequentially to their end position. The piston movement displaces a portion of the lubricant that is upstream of the piston to the downstream outlet. The movement of a piston can only start after the upstream piston has been moved to its end position. If all pistons are in their left or right end position, internal connecting bores in the feeder ensure a defined and continued running of the pistons. When all pistons have been moved once to the left as well as to the right end position, all connected lubrication points have been supplied once with the preset lubricant quantity. The portions for both outlets are determined by the diameter and the travel of the piston. The selection of the required portion is made during the design of the feeder.

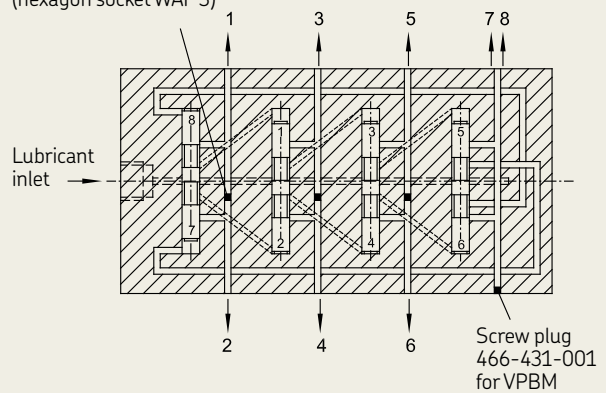
Dimensions: Block metering device VPB with cycle indicator (ZY)



Dimensions shown are in mm

Sectional view of a VPB feeder

917-006-101
(hexagon socket WAF 3)



Sectional metering device for oil, grease

VPK

Product description

Progressive sectional metering devices of the VPKM series are used in small circulating-oil lubrication systems as well as in grease and oil total loss lubrication systems. Fields of application are, for example, metal-forming machines, construction equipment, production systems in the automotive industry as well as packaging and printing machines.

Benefits

- For universal use in continuous or intermittent operations
- Versatile – features metering sections with variable dosing amounts and internal and external consolidation of outlets
- Expandable by attaching directional solenoid valves
- Can be monitored using piston detectors or visual cycle indicators
- Simple to service – separator plates feature vulcanized seals that cannot be detached
- Powerful – max. 20 outlets for volumetric flow of up to 500 cm³/min (30.5 in³/min)

Please refer to brochures PUB LS/P2 16443-EN (1-3015-EN), 951-230-008-EN and PUB LS/P1 16964-EN for further information, installation and assembly instructions.



Technical data

Function principle	sectional metering device
Outlets	6 to 20
Metering quantity	per stroke and outlet: 1 outlet: 0.6 cm ³ ; 0.037 in ³ 2 outlets: 0.05 cm ³ ; 0.003 in ³
Lubricant	grease up to NLGI 2; oil with minimum viscosity of 12 mm ² /s
Operating temperature	–25 to +90 °C, –13 to +194 °F
Operating pressure	oil: max 200 bar, 2 900 psi; grease: max 300 bar, 4 350 psi
Connection inlet and outlet	VPKM: M10x1
Number of cycles	max. 200/min.
Worked penetration	≥ 265 x 0.1 mm (up to NLGI Grade 2)
Material	Inlet plate, separator plate and end plate: steel, tinned/NBR; Sections – piston plates: steel, tinned

Tie rods

Order no.	Description	Length	
		mm	in
DMAC947-11C83	Tie rod, VPKM 3	80	3.14
DMAC947-11Z9	Tie rod, VPKM 4	96.5	3.79
DMAC947-11B20	Tie rod, VPKM 5	113.5	4.46
DMAC947-11F35	Tie rod, VPKM 6	130	5.11
DMAC947-11C37	Tie rod, VPKM 7	144	5.66
VPKM.58	Tie rod, VPKM 8	158	6.21
DMAC947-11FA9	Tie rod, VPKM 9	175	6.84
VPKM.60	Tie rod, VPKM 10	190	7.47
DIN934-M6-8	Self locking nuts for tie rods	–	–
650-060	Lock washer	–	–

Accessories

Order no.	Description
177-300-092	Piston sensor for VPKM feeder, 2 pin
177-300-095	Piston detector for VPKM feeder, 3 pin
VPKM-RV	Check valve, M10x1
VPKM-RV-VS	Check valve, 6 mm, 0.24 in, quick connect
VPKM-RV-S3	Check valve, M10x1, stainless steel

VPK sectional metering devices

Order no.	Description	Metering qty per stroke per side		Outlets
		cm ³	in ³	
VPKM-K-05T-PS	Feeder section 05T	0.05	0.003	2
VPKM-K-05S-PS	Feeder section 05S	0.10	0.006	1
VPKM-K-1T-PS	Feeder section 1T	0.10	0.006	2
VPKM-K-1S-PS	Feeder section 1S	0.20	0.012	1
VPKM-K-2T-PS	Feeder section 2T	0.20	0.012	2
VPKM-K-2S-PS	Feeder section 2S	0.40	0.024	1
VPKM-K-3T-PS	Feeder section 3T	0.30	0.018	2
VPKM-K-3S-PS	Feeder section 3S	0.60	0.036	1
VPKM-A	End section	–	–	–
VPKM-E	Inlet section	–	–	–
VPKM.07	Inlet plate	–	–	–
VPKM.08	Separator plate	–	–	–
VPKM.09	End plate	–	–	–

VPK

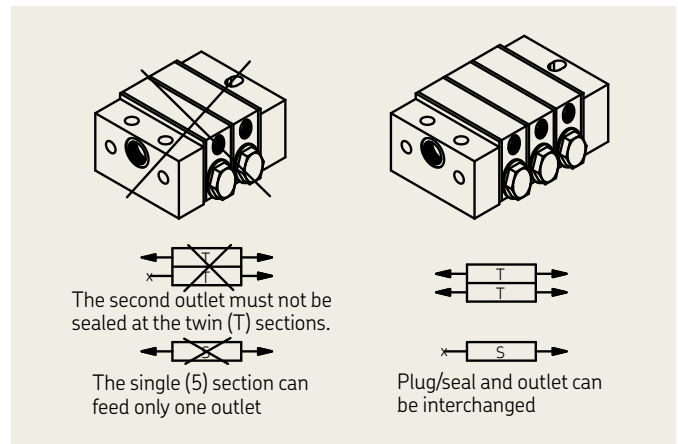
Consolidation of outlets

Two neighboring outlets are joined from the end section towards the inlet section. The plug (order no. 917-006-101) of the outlet nearest to the end section must be unscrewed and the outlet bore must be sealed with a screw plug. The fluid of the two outlets will then flow out of the outlet near the inlet section.

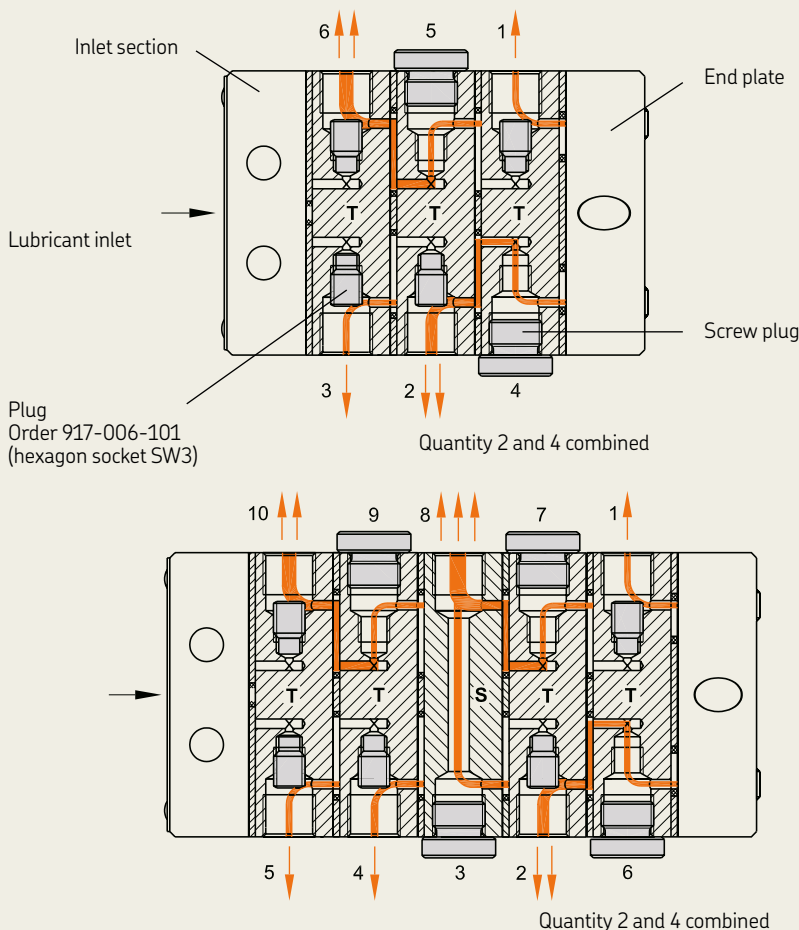
NOTE: To avoid damages the feeder section behind the inlet section must not be closed!

IMPORTANT: To avoid damages it is absolutely essential that the plug (order no. 917-006-101) has been removed before screwing in the screw plug, otherwise the feeder may block.

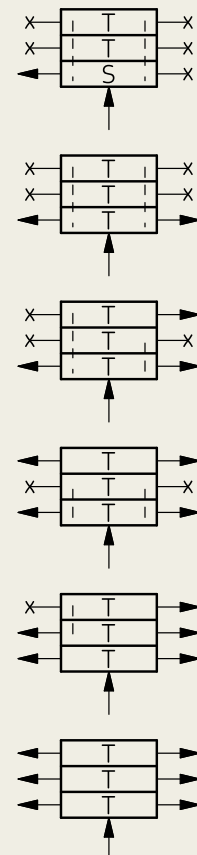
This consolidation of outlets can be combined, as long as there is no single section in-between. The single section completes the group formation; a new group formation can only be carried out behind the single section. If it turns out that the fluids of two neighboring outlets have to be separated again (e.g. due to an additional lubrication point), this will be a simple matter. The only thing to do is to screw in a plug (order no. 917-006-101) and to connect the previously closed outlet to the new lubrication point.



Example for the consolidation of several neighboring outlets



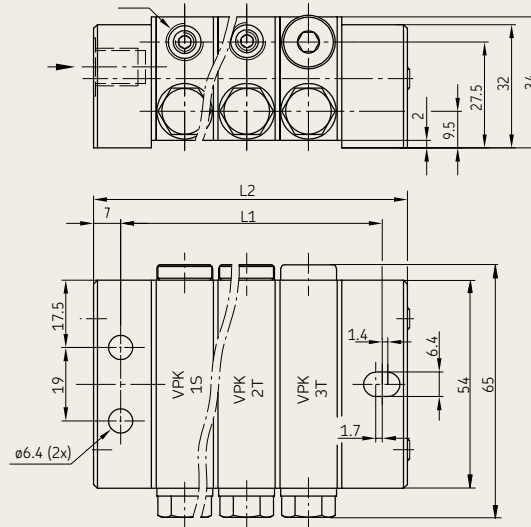
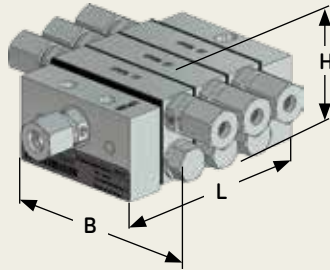
Example of the variations for 1 to 6 lubrication points on a 3-section feeder



Sectional metering device for oil, grease

VPK

VPK metering device in basic design



Dimensions shown are in mm

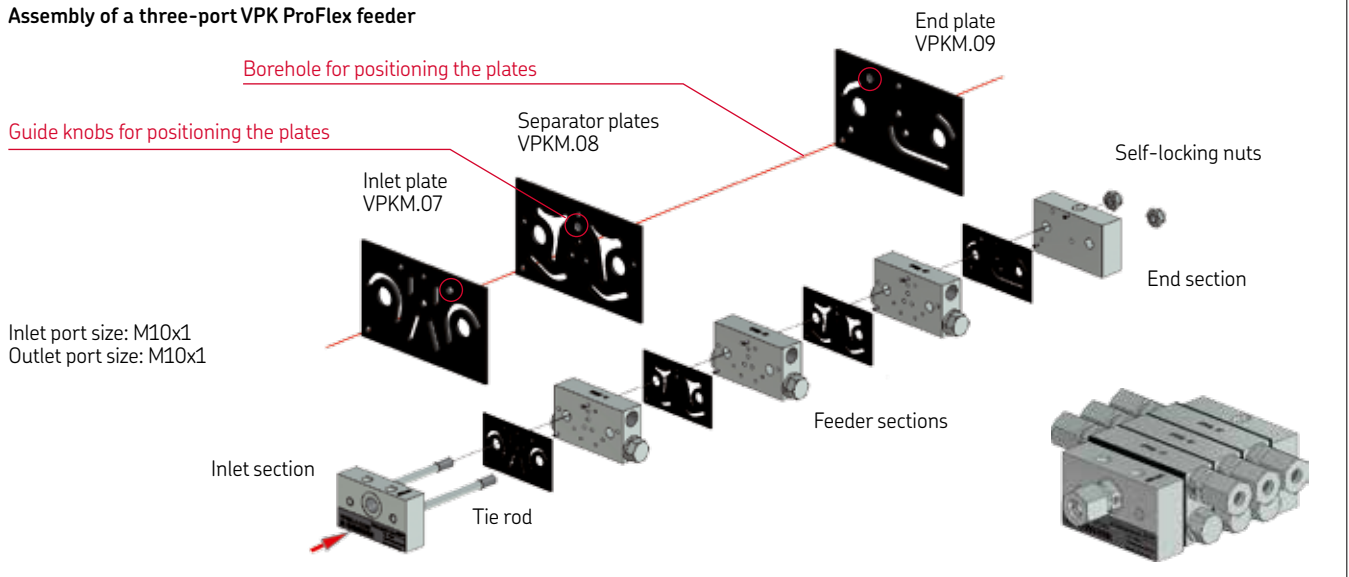
Minimum mounting dimensions:

Width: 80 mm, 3.14 in
Height: 40 mm, 1.57 in
Length: L2 + 10 mm, L2 + 0.39 in

Dimensions

Type	Feeder sections	Possible outlets	L1		L2	
			mm	in	mm	in
VPKM-3	3	6	68.4	2.7	81.9	3.2
VPKM-4	4	8	84.6	3.3	98.1	3.8
VPKM-5	5	10	100.8	3.9	114.3	4.5
VPKM-6	6	12	117.0	4.6	130.5	5.1
VPKM-7	7	14	133.2	5.2	146.7	5.8
VPKM-8	8	16	149.4	5.9	162.9	6.4
VPKM-9	9	18	165.6	6.5	179.1	7.0
VPKM-10	10	20	181.8	7.1	195.3	7.7

Assembly of a three-port VPK ProFlex feeder



Sectional metering device for oil, grease

VP

Product description

VP metering devices cover a metering volume per outlet and cycle of 0.1 cm³, 0.0061 in³, (T- section) to 1.2 cm³, 0.07 in³ (S-section). The inlet of the feeder is located at an inlet section and the outlets are at the downstream feeder sections. The delivery ducts are sealed by elastic seals. An end section is located downstream of the last feeder section. All sections are interconnected with tie-rods. They seal the feeder assembly.

Benefits

- For universal use in continuous or intermittent operations
- Versatile – features metering sections with variable dosing amounts and internal and external consolidation of outlets
- Expandable by attaching flow limiters and directional solenoid valves
- Can be monitored using piston detectors or visual cycle indicators
- High function reliability due to standard equipped check valves
- Simple to service – separator plates feature vulcanized seals that cannot be detached
- Easy to install alternative outlets on top and side

Please refer to brochures PUB LS/P2 15400-EN (1-3016-EN), 951-230-008-EN and PUB LS/P1 16964-EN for further information, installation and assembly instructions.



Technical data

Function principle sectional metering device, hydraulic
 Outlets 6 to 20
 Operating temperature -25 to +90 °C, -13 to +194 °F
 Metering quantity max. up to 1,000 cm³/min; 61 in.³/min
 Material Steel, galvanized, NBR

Hydraulic system
 Operating pressure oil: max 200 bar, 2,900 psi;
 grease: max 300 bar, 4,350 psi
 Connection inlet VPM: M14x1.5
 Connection outlet VPM: M10x1
 Lubricant mineral oils, greases based on mineral oil,
 environmentally friendly and synthetic oils
 and greases
 Operating viscosity > 12 mm²/s, 0.019 in.²/sec
 Worked penetration ≥ 265 x 0.1 mm (up to NLGI Grade 2)

Tie rods

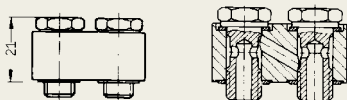
Order no.	Description	Order no.	Description
VP.93	Tie rod VPM-3	VP.97	Tie rod VPM-7
VP.94	Tie rod VPM-4	VP.98	Tie rod VPM-8
VP.95	Tie rod VPM-5	VP.99	Tie rod VPM-9
VP.96	Tie rod VPM-6	VP.100	Tie rod VPM-10

DIN934-M8-8 Self locking nuts for tie rods
650-080 Lock washer

Accessories

Order no.	Description
177-300-091	Piston sensor for VPM feeder, 2 pin
177-300-094	Piston detector for VPM feeder, 3 pin
VP-C	Crossporting for 2 sections

VP-C



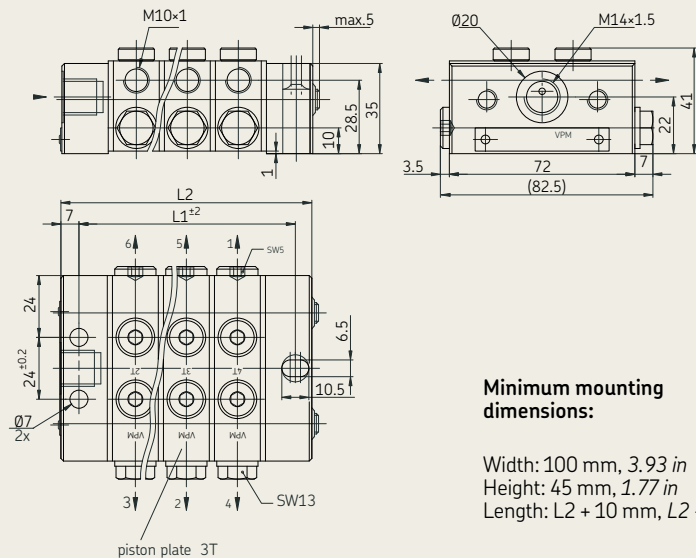
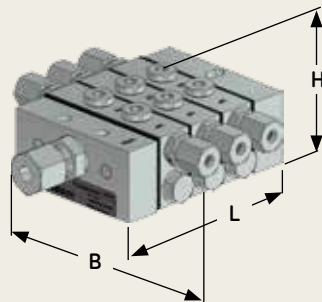
VP sectional metering devices

Order no.	Description	Metering qty per stroke per side		Outlets
		cm ³	in ³	
VPM-K-1T-PS	Feeder section 1T	0.10	0.006	2
VPM-K-1S-PS	Feeder section 1S	0.20	0.012	1
VPM-K-2T-PS	Feeder section 2T	0.20	0.012	2
VPM-K-2S-PS	Feeder section 2S	0.40	0.024	1
VPM-K-3T-PS	Feeder section 3T	0.30	0.018	2
VPM-K-3S-PS	Feeder section 3S	0.60	0.036	1
VPM-K-4T-PS	Feeder section 4T	0.40	0.024	2
VPM-K-4S-PS	Feeder section 4S	0.80	0.048	1
VPM-K-5T-PS	Feeder section 5T	0.50	0.030	2
VPM-K-5S-PS	Feeder section 5S	1.00	0.061	1
VPM-K-6T-PS	Feeder section 6T	0.60	0.036	2
VPM-K-6S-PS	Feeder section 6S	1.20	0.073	1
VPM-A	End section	–	–	–
VPM-E	Inlet section	–	–	–
VP2.07	Inlet plate	–	–	–
VP2.08	Separator plate	–	–	–
VP2.09	End plate	–	–	–

Sectional metering device for oil, grease

VP

VP sectional metering device, basic design



Minimum mounting dimensions:

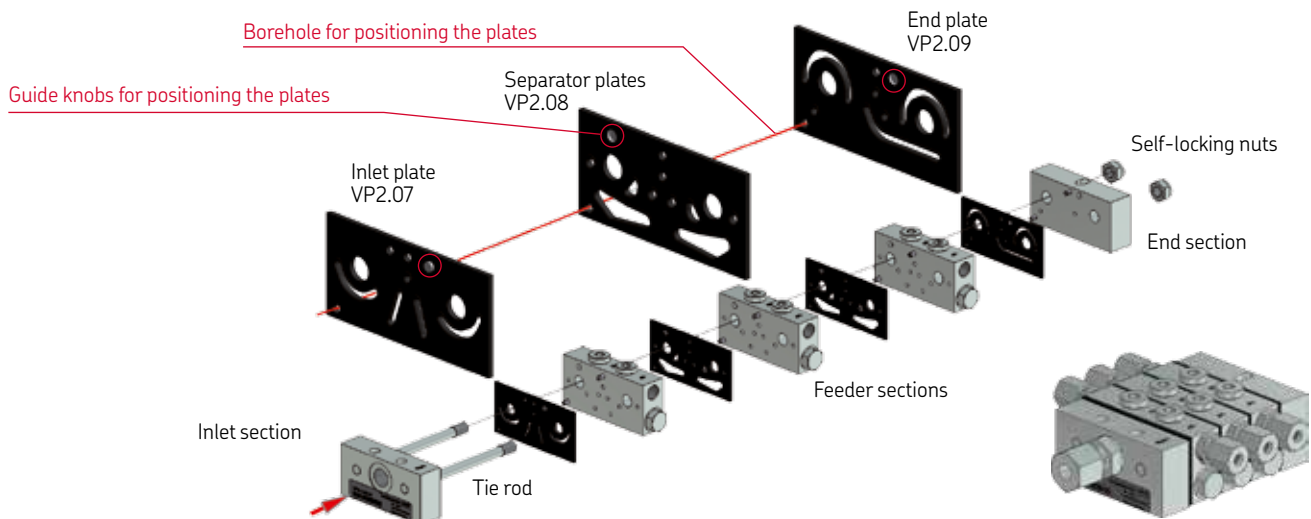
Width: 100 mm, 3.93 in
Height: 45 mm, 1.77 in
Length: L2 + 10 mm, L2 + 0.39 in

Dimensions shown are in mm

Dimensions

Type	Feeder sections	Possible outlets	L1		L2	
			mm	in	mm	in
VPM-3	3	6	84	3.3	98	3.9
VPM-4	4	8	104	4.1	118	4.6
VPM-5	5	10	124	4.9	138	5.4
VPM-6	6	12	144	5.7	158	6.2
VPM-7	7	14	164	6.5	178	7.0
VPM-8	8	16	184	7.2	198	7.8
VPM-9	9	18	204	8.0	218	8.6
VPM-10	10	20	224	8.8	238	9.4

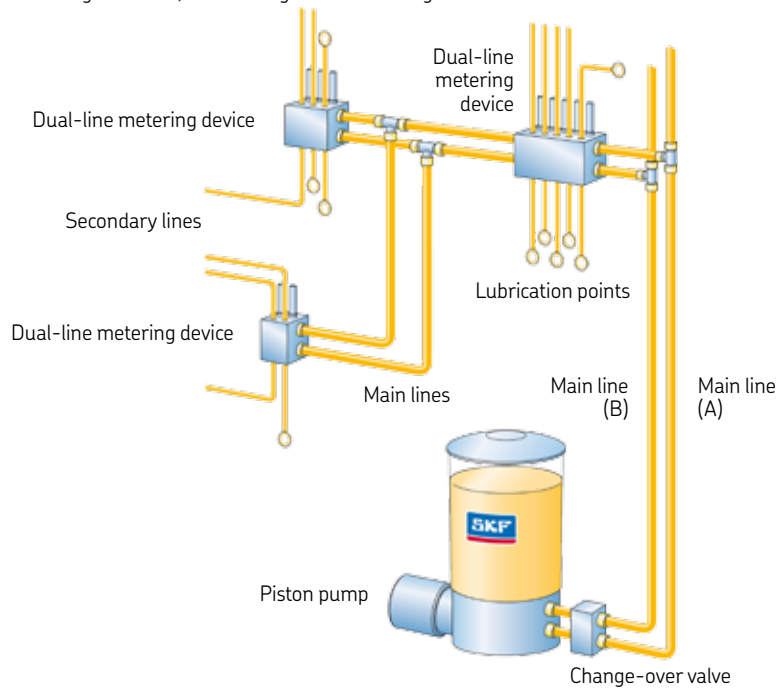
Assembly of a three-port VP ProFlex feeder



SKF DuoFlex lubrication systems

SKF DuoFlex lubrication systems

Dual-line lubrication systems designed for oil, semi-fluid grease and hard grease.



System description

SKF DuoFlex systems are typically used on large systems with long main lines (up to 100 meters, 328 feet) and with up to 1,000 lubrication points. These systems utilize two main lines that are supplied alternately with lubricant from a high-pressure pump via a change-over valve. Branch lines, along the main lines, are connected with dual-line metering devices to supply lubricant to the bearings. Within large dual-line systems, end-of-line pressure switches or pressure transducers are used to control and monitor the system.

SKF DuoFlex systems are simple to design and can be extended or reduced easily by installing additional metering devices or by removing them. A redesign of the system is not required. SKF DuoFlex metering devices can be combined with downstream SKF ProFlex metering devices to increase the total number of lubrication points.

Even if one pair of outlets becomes blocked inside one metering device, SKF DuoFlex systems still provide lubrication for the rest of the system's lubrication points. The lubricant volume can be adjusted individually, and can be monitored visually via the indicator pin.

The function principles of the SKF DuoFlex systems consists of two half-cycles. In the first half-cycle, the lubricant is pumped into the main line (A) and the main line (B) is connected to the relief line. The lubricant is supplied to the metering devices. The pistons of the metering devices are moved into their adjusted end positions, thus dispensing an exact, metered quantity of grease. Once all metering devices have dispensed their lubricant to the usage point, the system is hydraulically closed, which causes the pressure in main line (A) to rise until the preset pressure at the end-of-line pressure switch or pressure transducer (mounted in the main lines before the last metering device) is reached. This pressure switch or transducer then signals an electric pulse to the control unit, which turns the pump off and signals the change-over valve to relieve main line (A), and the pause time starts. At this stage, half of the lubrication points in the system have been lubricated.

In the second half-cycle, main line (B) is pressurized and the cycle continues as before.

SKF Maxilube

Product description

The SKF Maxilube unit consists of the Maxilube pumping center and the barrel pump unit. The SKF Maxilube pumping center includes all necessary hydraulic components to run the system, as well as an integrated digital control unit. The hydraulic components are the solenoid and control valve groups, as well as the pressure gauges for the lubrication lines. The SKF Maxilube pumping center is controlled and monitored by an integrated digital control unit, the ST-105. In addition, the unit is equipped with a compressed air regulator. The barrel pump for the SKF Maxilube is available for 50 and 180 kg (120 and 400 lb) drums, other sizes available upon request.

Features and benefits

- Reliable, trouble-free operation
- Suitable for lubricants up to NLGI 2
- Available for barrel reservoir capacities of 50 and 180 kg (120 and 400 lb), other sizes available upon request.

Please refer to brochure PUB LS/P1 16132-EN for further info.



Technical data SKF pneumatic pumps

Capacity	up to 1,360 cm ³ /min, 83 in ³ /min
Stroke capacity	6.2 cm ³ /stroke, 0.38 in ³ /stroke
Air pressure	min. 3 bar, 43 psi max. 4.5 bar, 65 psi
Oil viscosity	9,600 cSt
Grease	NLGI 000–2.5
Grease pressure	260 bar at 4.5 bar air pressure 3,770 psi at 65 psi air pressure
Grease supply outlet . .	ISO-G1/4 male, moveable
Grease return inlet . . .	plugged tube fitting for 12 mm diameter
Air connection	ISO-G1/4 female
Pump tube	ø 50 mm
Material	anodized aluminum, tempered and stainless steel, brass and plastics
Seals	polyurethane

Technical data, SKF Maxilube pumping center

Operating temperature . .	0 to +50 °C, +32 to +122 °F
Control voltage	24 V DC, 5 A max
Power input, 150 W max .	230 ±15% VAC; 50/60 Hz 115 ±15% VAC; 50/60 Hz
Air pressure range	4 to 7 bar, 60 to 100 psi
Connections	
Inputs	compressed air (1 pcs), pipe 12.7 mm, 0.5 in
Outputs	lubricant (2 pcs), pipe 12.7 mm, 0.5 in

SKF Maxilube pump units

Order no.	Description	Maxilube control center	Controls	NPT threads	Zones
12371370	MAX-1-2-115-IF105-U-A	•	IF105	•	1
12371430	MAX-2-2-115-IF105-U-A	•	IF105	•	2

SKF pneumatic pumps Ratio 65:1

Order no.	Description	Drum size	
		kg	lb
12602980	Pump 1/4-1:65-SKF pneumatic pump	50	120
12602990	Pump 1/1-1:65-SKF pneumatic pump	180	400

Accessories

Order no.	Description
12802910	MAXILUBE-SET-STA-U, air pressure regulator
12381330	MAX-LIDSET-1/4, STA-SKF, lid set with hoses for 54.4 kg, 120 lb drum
12381340	MAX-LIDSET-1/1-STA-SKF, lid set with hoses for 181 kg, 400 lb drum
12382680	MAX-HIGH FLOW KIT, high compressed air flow kit ¹⁾
12385331	BPSG2-PTA-MOD-D-SS, pressure transmitter stainless steel
12385900	CLV-2-24-NC-U, normally closed dual channel valve with NPT threads controlled by 24 volt power

¹⁾ Recommended for systems with more than 25 lubrication points. Please consult with SKF engineering.

SKF Multilube

Product description

Designed for heavy machines and equipment, the modular SKF Multilube pumping unit integrates all relevant components and functions including the control unit, pump, reservoir, change-over valve and pressure monitor. Compatible with all oil and grease metering devices for SKF MonoFlex, ProFlex and DuoFlex lubrication systems, the SKF Multilube pumping unit has built-in heating to enable operation in extremely cold and demanding environments.

Features and benefits

- Durable, compact structure featuring modular design for simple installation and start up
- Two-ball pumping element for operational reliability
- Filling connection equipped with filter
- External pressure relief valve
- Optional internal or external control
- Suitable for oil and grease systems

Please refer to brochure PUB LS/P1 16132-EN for further information.



Technical data

Function principle electrically operated piston pump
Operating temperature -30 to +60 °C, -22 to +140 °F
Operating pressure max. 200 bar, 2,900 psi
Lubricant grease: up to NLGI 2
oil: operating viscosity > 46 mm²/s
Metering quantity approx. 16 cm³/min, 0.98 in³/min
Outlet connection G 1/4
Electrical connections 24 V DC; 115 V AC
Protection class IP 67 (IP 65 with user interface)

SKF Multilube pump units						
Order no.	Description	Reservoir capacity		Electrical connection	Controller	Pressure transducer
		liter	gal			
12389624	MLPI-10-2-115-IF103-PSE	10	2.6	115 V AC	IF103, integrated	Integrated
12389921	MLPI-10-2-24-IF103-PSE	10	2.6	24 V DC	IF103, integrated	Integrated
11771002	Pump element Multilube					

ECB-DC10

Product description

The ECB-DC10 pump station is an electric piston pump unit designed for SKF DuoFlex systems. The dual-circuit piston system of the unit is synchronously driven, which eliminates the need for check valves. The pump shaft is driven by a unidirectional coupling to allow for rotation in one direction, thus avoiding damages. A hydraulic reversing valve (VCIR-40) is mounted directly on the pump discharge. The pump station reservoir is equipped with a low and high level indicator. In addition, a relief valve in the pump body protects the system against overpressure conditions.

Features and benefits

- Versatile and durable
- Hydraulic reversing valve mounted on pump
- Integrated pressure relief valve
- Reliable, trouble-free operation
- Suitable for lubricants up to NLGI 2



Technical data

Function principle	electric
Operating pressure	max. 250 bar, 3,626 <i>psi</i>
Regulated relief pressure	210 bar; 3,046 <i>psi</i>
Reservoir capacity	DGL-10 (grease): 18 kg, 40 <i>lb</i>
Lubricant	mineral oils from 32 to 680 cSt or grease up to Grade NLGI 2
BCE-DJ-10 pump	
Motor 0,5 HP	440 V, 60 Hz, 1 710 rpm
Metered quantity	106 cm ³ /min, 6.5 <i>in</i> ³ /min
Materials	follower plate seals: nitrile reservoir: metal

ECB-DC10 pump unit

Order no.	Description	Metering quantity		Reservoir capacity		Reversing valve
		cm ³ /min	<i>in</i> ³ /min	kg	<i>lb</i>	
ECB-DC10-1-10-A-4	Pump unit, no controls, metal reservoir	106	6.5	18	40	•

ECB-DC25

Product description

The ECB-DC25 pump station is designed for SKF DuoFlex systems that require flow rates of up to 341 cm³/min (21 in³/min). The pump station consists of a dual-circuit piston pump unit, driven by an electric motor. The dual-circuit piston system of the unit is synchronously driven, which eliminates the need for check valves. The pump station reservoir is equipped with a low and high level indicator. In addition, a relief valve in the pump body protects the system against overpressure conditions.

Features and benefits

- Versatile and durable
- Hydraulic reversing valve mounted on pump
- Integrated pressure relief valve
- Reliable, trouble-free operation
- Suitable for lubricants up to NLGI 2



Technical data

Function principle electric
Operating pressure max. 250 bar, 3,626 psi
Regulated relief pressure. 210 bar; 3,046 psi
Reservoir capacity DGL-40 (grease): 60 kg, 132 lb
Lubricant mineral oils from 32 to 680 cSt or grease up to Grade NLGI 2

BCE-DJ25 pump
Motor 1 HP 440 V, 60 Hz, 1,310 rpm
Metered quantity 341 cm³/min, 21 in³/min
Materials follower plate seals: nitrile
reservoir: metal

ECB-DC25 pump unit						
Order no.	Description	Metering quantity		Reservoir capacity		Reversing valve
		cm ³ /min	in ³ /min	kg	lb	
ECB-DC25-2-40-A-4	Pump unit, no controls, metal reservoir	341	20.8	60	132	•

SGA and SG

Product description

Designed for use in SKF DuoFlex lubrication systems, SGA and SG metering devices feature a modular design with separate base plate that makes system modification simple. Made of zinc-coated carbon steel or stainless steel, these metering devices are installed on aluminum or stainless steel BPSG base plates. Available in six basic sizes, the SGA and SG metering devices meet industrial lubrication needs ranging from small mechanical joints to large roller bearings.

Features and benefits

- Versatile and durable
- Modular units provide easy system modification and maintenance without costly piping work
- Manufactured from anodized carbon steel or stainless steel AISI-316 L to resist corrosion
- Suitable for lubricants up to NLGI 2
- Adjustable lubricant amounts

Please refer to brochures **PUB LS/P1 16132-EN** and **PUB LS/P8 11277-EN** for anodized carbon steel dual-line dosers and further information.



Technical data

Function principle metering device
 Outlets 1 to 12
 Operating temperature -25 to +80 °C, -13 to +176 °F
 Lubricant oil and greases NLGI 000-2
 Operating pressure SGA 01: max. 250 bar, 3,625 psi
 SG/SGA 1-5: max. 300 bar, 4,350 psi
 Material 316L stainless steel
 Metering quantity depending on outlet,
 0.15-196 cm³, 0.009-12 in³
 Outlet connection. NPTF

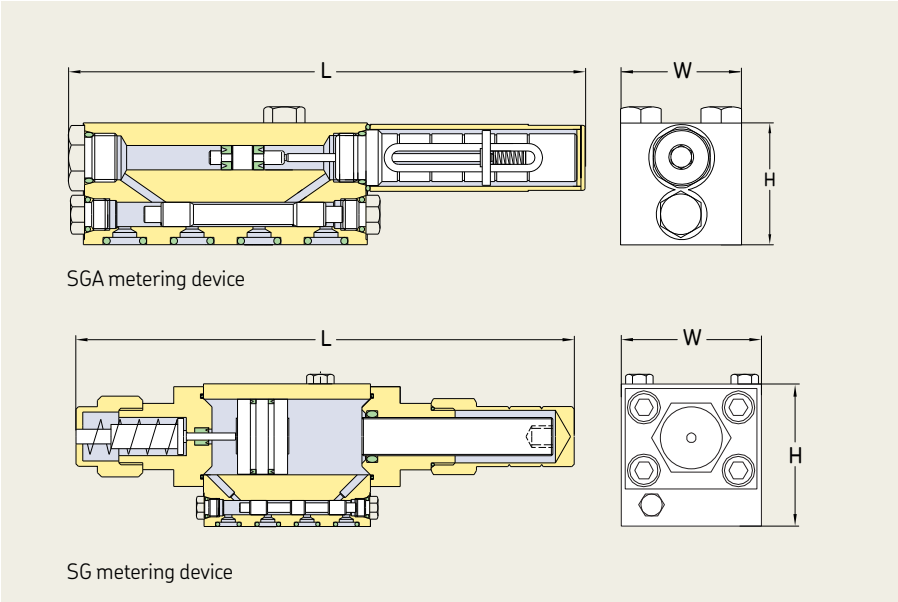
Accessories

Order no.	Designation	Description	316L stainless steel
12384300	BPSG-01-SS-U	Baseplate, 1-place	•
12384350	BPSG-02-SS-U	Baseplate, 2-place	•
12384400	BPSG-03-SS-U	Baseplate, 3-place	•
12384450	BPSG-04-SS-U	Baseplate, 4-place	•
12384500	BPSG-05-SS-U	Baseplate, 5-place	•
12384550	BPSG-06-SS-U	Baseplate, 6-place	•

SGA and SG metering devices

Order no.	Designation	Description	Metering quantity		Outlets	Material
			cm ³ /cycle	in ³ /cycle		
12386560	SGA-011-SS	Dosing module	0.30-1.6	0.02-0.10	1	•
12386610	SGA-012-SS	Dosing module	0.15-0.77	0.009-0.05	2	•
12386660	SGA-11-SS	Dosing module	0.60-2.80	0.04-0.18	1	•
12386710	SGA-12-SS	Dosing module	0.25-1.40	0.02-0.09	2	•
12386760	SGA-21-SS	Dosing module	1.5-9.7	0.09-0.6	1	•
12386810	SGA-22-SS	Dosing module	0.8-4.8	0.05-0.3	2	•
12387160	SG-31-SS	Dosing module (takes two places on baseplate)	9.4-62	0.6-3.8	1	•
12387210	SG-32-SS	Dosing module (takes two places on baseplate)	4.7-31	0.3-1.9	2	•
12387260	SG-41-S	Dosing module (takes two places on baseplate)	21-102	1.3-6.2	1	•
12387310	SG-42-SS	Dosing module (takes two places on baseplate)	10.7-51	0.6-3.0	2	•
12387360	SG-51-SS	Dosing module (takes two places on baseplate)	95-196	5.8-12	1	•
12387410	SG-52-SS	Dosing module (takes two places on baseplate)	47-97	2.9-6.0	2	•
12388400	SG-M-ZN	Filling module for installation	-	-	-	-

SGA and SG



Dimensions								
Metering device	L		W		H		Prefix	Code
	mm	in	mm	in	mm	in		
SGA-011-SS	128	5.03	30	1.18	30	1.18	VGAC	12386560
SGA-012-SS	128	5.03	30	1.18	30	1.18	VGAC	12386610
SGA-11-SS	128	5.03	30	1.18	30	1.18	VGAC	12386660
SGA-12-SS	128	5.03	30	1.18	30	1.18	VGAC	12386710
SGA-21-SS	161	6.33	30	1.18	40	1.57	VGAC	12386760
SGA-22-SS	161	6.33	30	1.18	40	1.57	VGAC	12386810
*SG-31-SS	222	8.72	60	2.36	60	2.36	VGAC	12387160
*SG-32-SS	222	8.72	60	2.36	60	2.36	VGAC	12387210
*SG-41-SS	263	10.34	62	2.44	60	2.36	VGAC	12397260
*SG-42-SS	263	10.34	62	2.44	60	2.36	VGAC	12397310
*SG-51-SS	307	12.07	62	2.44	60	2.36	VGAC	12387360
*SG-52-SS	307	12.07	62	2.44	60	2.36	VGAC	12387410

* Takes two places on baseplate

DDC

Product description

DDC dual-line metering devices feature full hydraulic operation and can deliver both grease and oil.

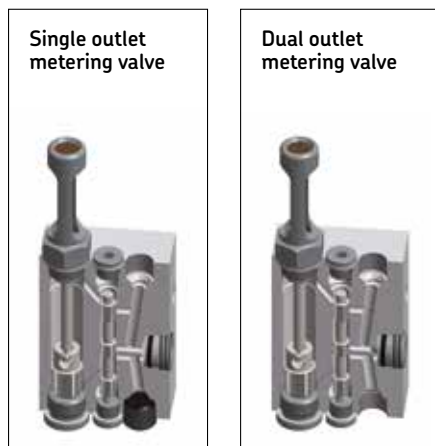
Each metering device can feed one or two lubrication points per piston and are available with 2, 4, 6 or 8 outlets. The discharge can be combined through a simple conversion kit (cross porting), changing the dual outlet of a device to a single one. The flow rate of the single outlet dual-line metering device will be twice as much compared to the dual outlet flow rate.

DDC metering devices do not have check valves and consist of only two moving parts. One of them provides a positive indication of grease delivery through an indicator pin, and also allows flow adjustment to the bearing.

DDC dual-line metering devices are available made of galvanized steel and electroless nickel plating for corrosive environments (upon request).

Features and benefits

- Versatile and durable
- Suitable for lubricants up to NLGI 2
- Adjustable lubricant amounts
- Visual indicator for each lubrication point
- Only two moving parts per metering device
- Fully hydraulic operation – no return springs



DDC metering devices cross porting kits

Order no.	Description
13KITCPDDC220	Cross porting kit for DDC-22x valves
13KITCPDDC250	Cross porting kit for DDC-23x, DDC-24x and DDC-25x valves

Single outlet plug



Dual outlet plug



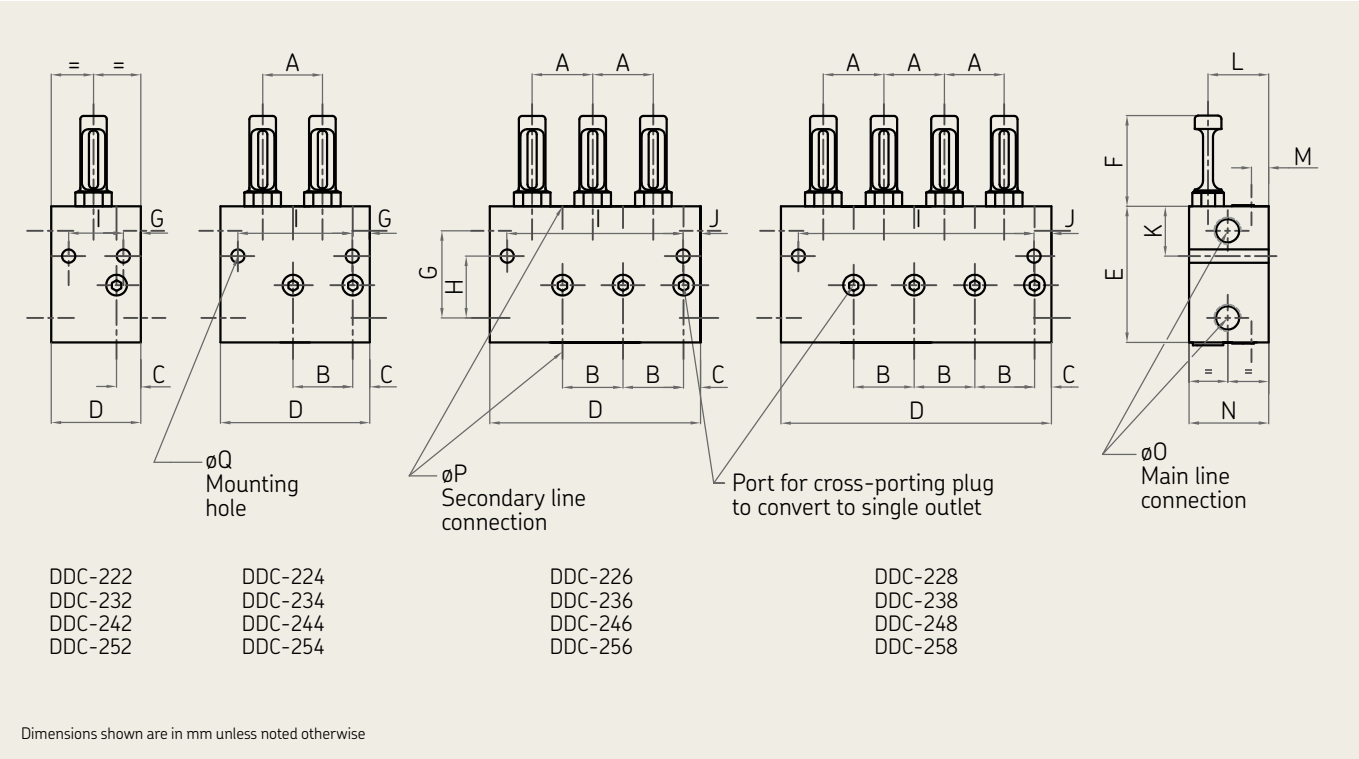
Technical data

Function principle	metering device
Outlets	2, 4, 6 or 8
Operating temperature	0 to 80 °C, 32 to 176 °F
Lubricant	oil and greases NLGI grade 2
Operating pressure	max. 250 bar, 3,625 psi min. 15 bar, 217.5 psi
Material	steel, galvanized
Metering quantity	depending on outlet, 0.09–5.00 cm ³ , 0.005–0.30 in ³

DDC metering devices

Order no.	Metering quantity		Outlets
	cm ³ /cycle	in ³ /cycle	
DDC-222	0.09–0.60	0.005–0.03	2
DDC-224	0.09–0.60	0.005–0.03	4
DDC-226	0.09–0.60	0.005–0.03	6
DDC-228	0.09–0.60	0.005–0.03	8
DDC-232	0.20–1.20	0.012–0.07	2
DDC-234	0.20–1.20	0.012–0.07	4
DDC-236	0.20–1.20	0.012–0.07	6
DDC-238	0.20–1.20	0.012–0.07	8
DDC-242	0.50–2.20	0.030–0.13	2
DDC-244	0.50–2.20	0.030–0.13	4
DDC-246	0.50–2.20	0.030–0.13	6
DDC-248	0.50–2.20	0.030–0.13	8
DDC-252	0.60–5.00	0.036–0.30	2
DDC-254	0.60–5.00	0.036–0.30	4
DDC-256	0.60–5.00	0.036–0.30	6
DDC-258	0.60–5.00	0.036–0.30	8

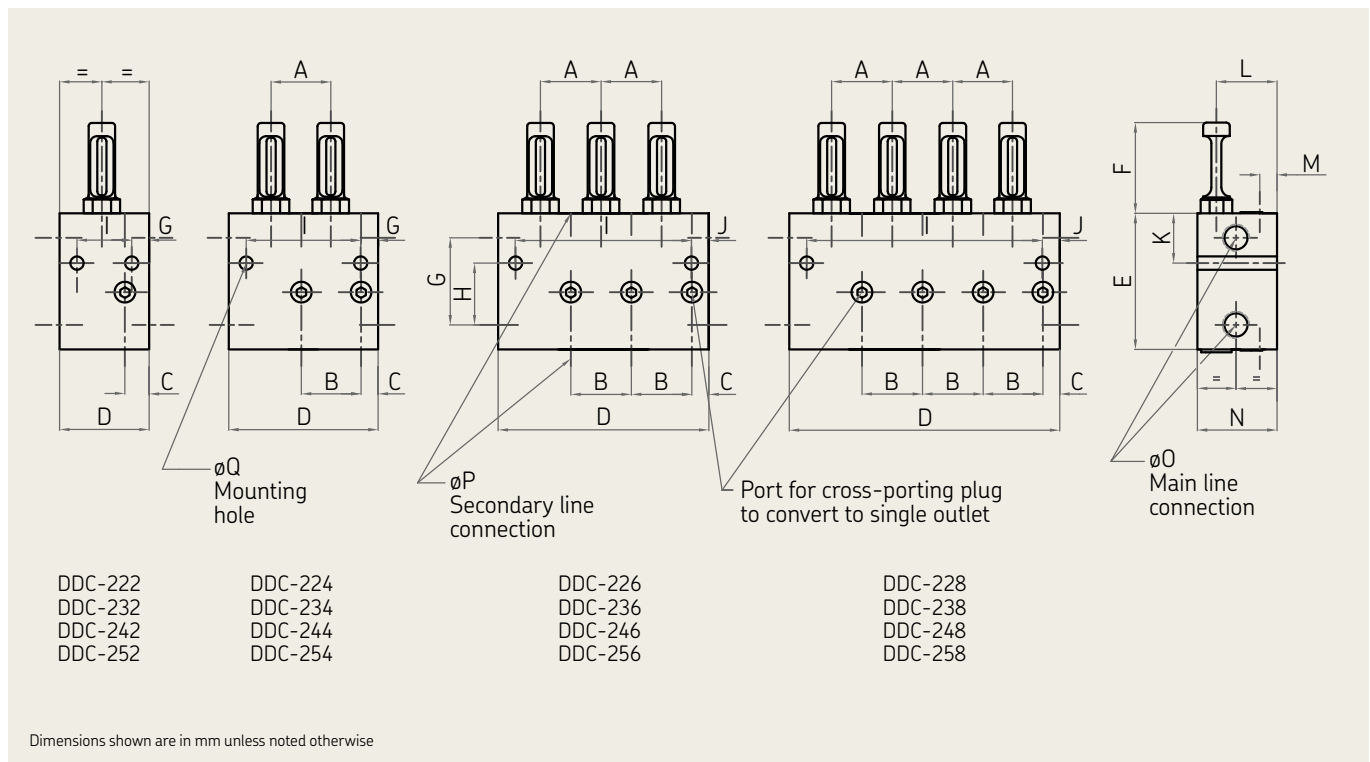
DDC



Dimensions								
	DDC-222		DDC-232		DDC-242		DDC-252	
	mm	in	mm	in	mm	in	mm	in
A	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
C	14.3	0.56	14.3	0.56	15.6	0.61	15.6	0.61
D	28.6	1.12	28.6	1.12	44.0	1.73	44.0	1.73
E	53.9	2.12	53.9	2.12	79.0	3.10	79.0	3.10
F	27.8	1.09	37.0	1.45	44.0	1.73	56.0	
G	38.1	1.49	38.1	1.49	57.0	2.24	57.0	2.24
H	26.9	1.06	26.9	1.06	41.0	1.61	41.0	1.61
I	15.9	0.62	15.9	0.62	30.0	1.17	30.0	1.17
J	6.35	0.25	6.35	0.25	7.00	0.27	7.00	0.27
K	19.05	0.75	19.05	0.75	27.0	1.06	27.0	1.06
L	30.2	1.18	30.2	1.18	42.0	1.65	42.0	1.65
M	7.50	0.29	7.50	0.29	11.5	0.45	11.5	0.45
N	38.10	1.49	38.10	1.49	53.5	2.10	53.5	2.10
O	1/8 in NPSF		1/8 in NPSF		3/8 in NPSF		3/8 in NPSF	
P	1/8 in NPSF		1/8 in NPSF		1/4 in NPSF		1/4 in NPSF	
Q	ø6	-	ø6	-	ø8	-	ø8	-

Dimensions								
	DDC-224		DDC-234		DDC-244		DDC-254	
	mm	in	mm	in	mm	in	mm	in
A	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
B	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
C	14.3	0.56	14.3	0.56	15.6	0.61	15.6	0.61
D	42.9	1.69	42.9	1.69	76	2.98	76	2.98
E	53.9	2.12	53.9	2.12	79	3.10	79	3.10
F	27.8	1.09	37	1.45	44	1.73	56	2.20
G	38.1	1.49	38.1	1.49	57	2.24	57	2.24
H	26.9	1.06	26.9	1.06	41	1.61	41	1.61
I	6.35	0.25	6.35	0.25	7	0.28	7	0.28
J	30.2	1.19	30.2	1.19	62	2.44	62	2.44
K	19.05	0.75	19.05	0.75	27	1.06	27	1.06
L	30.2	1.19	30.2	1.19	42	1.65	42	1.65
M	7.50	0.29	7.50	0.29	11.5	0.45	11.5	0.45
N	38.1	1.49	38.1	1.49	53.5	2.10	53.5	2.10
O	1/8 in NPSF		1/8 in NPSF		3/8 in NPSF		3/8 in NPSF	
P	1/8 in NPSF		1/8 in NPSF		1/4 in NPSF		1/4 in NPSF	
Q	ø6	-	ø6	-	ø8	-	ø8	-

DDC



Dimensions								
	DDC-226		DDC-236		DDC-246		DDC-256	
	mm	in	mm	in	mm	in	mm	in
A	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
B	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
C	14.3	0.56	14.3	0.56	15.6	0.61	15.6	0.61
D	57.2	2.25	57.2	2.25	108	4.24	108	4.24
E	53.9	2.12	53.9	2.12	79	3.10	79	3.10
F	27.8	1.09	37	1.45	44	1.73	56	2.20
G	38.1	1.49	38.1	1.49	57	2.24	57	2.24
H	26.9	1.06	26.9	1.06	41	1.61	41	1.61
I	6.35	0.25	6.35	0.25	7	0.28	7	0.28
J	44.5	1.75	44.5	1.75	94	3.69	94	3.69
K	19.05	0.75	19.05	0.75	27	1.06	27	1.06
L	30.2	1.19	30.2	1.19	42	1.65	42	1.65
M	7.5	0.29	7.5	0.29	11.5	0.45	11.5	0.45
N	38.1	1.49	38.1	1.49	53.5	2.10	53.5	2.10
O	1/8 in NPSF		1/8 in NPSF		3/8 in NPSF		3/8 in NPSF	
P	1/8 in NPSF		1/8 in NPSF		1/4 in NPSF		1/4 in NPSF	
Q	ø6	—	ø6	—	ø8	—	ø8	—

Dimensions								
	DDC-228		DDC-238		DDC-248		DDC-258	
	mm	in	mm	in	mm	in	mm	in
A	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
B	14.3	0.56	14.3	0.56	31.8	1.25	31.8	1.25
C	14.3	0.56	14.3	0.56	15.6	0.61	15.6	0.61
D	57.2	2.25	57.2	2.25	140	5.50	140	5.50
E	53.9	2.12	53.9	2.12	79	3.10	79	3.10
F	27.8	1.09	37	1.45	44	1.73	56	2.20
G	38.1	1.49	38.1	1.49	57	2.24	57	2.24
H	26.9	1.06	26.9	1.06	41	1.61	41	1.61
I	6.35	0.25	6.35	0.25	7	0.28	7	0.28
J	44.5	1.75	44.5	1.75	126	4.95	126	4.95
K	19.05	0.75	19.05	0.75	27	1.06	27	1.06
L	30.2	1.19	30.2	1.19	42	1.65	42	1.65
M	7.5	0.29	7.5	0.29	11.5	0.45	11.5	0.45
N	38.1	1.49	38.1	1.49	53.5	2.10	53.5	2.10
O	1/8 in NPSF		1/8 in NPSF		3/8 in NPSF		3/8 in NPSF	
P	1/8 in NPSF		1/8 in NPSF		1/4 in NPSF		1/4 in NPSF	
Q	ø6	—	ø6	—	ø8	—	ø8	—

DC

Product description

DC dual-line valves feature full hydraulic operation and can deliver both grease and oil.

Each metering device can feed one or two lubrication points per piston and are available with up to four outlets. DC valves do not have check valves and consist of only two moving parts. One of them provides a positive indication of grease delivery through an indicator pin, and also allows flow adjustment to the bearing.

DC dual-line valves are available made of galvanized steel and electroless nickel plating for corrosive environments (upon request).

Features and benefits

- Versatile and durable
- Suitable for lubricants up to NLGI 2
- Adjustable lubricant amounts
- Visual indicator for each lubrication point
- Only two moving parts per metering device
- Fully hydraulic operation – no return springs



Technical data

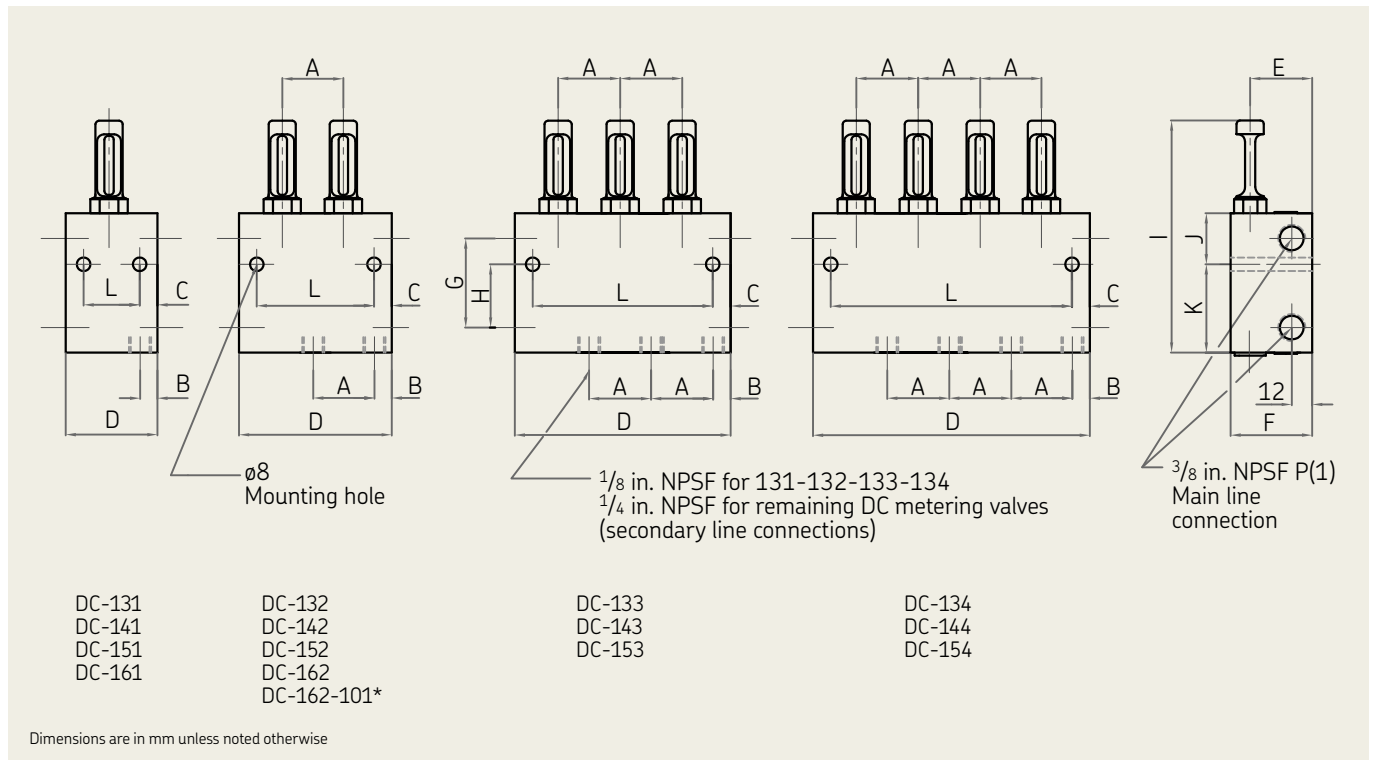
Function principle metering device
Outlets 1 to 4
Operating temperature . . 0 to 80 °C, 32 to 176 °F
Lubricant oil and greases NLGI grade 2
Operating pressure max. 250 bar, 3,625 psi
min. 15 bar, 217.5 psi
Material steel, galvanized
Metering quantity depending on outlet,
0.40–50 cm³, 0.024–3.05 in³

DC metering devices

Order no.	Metering quantity		Outlets
	cm ³	in ³	
DC-131	0.40–2.40	0.02–0.15	1
DC-132	0.40–2.40	0.02–0.15	2
DC-133	0.40–2.40	0.02–0.15	3
DC-134	0.40–2.40	0.02–0.15	4
DC-141	1.10–4.40	0.07–0.27	1
DC-142	1.10–4.40	0.07–0.27	2
DC-143	1.10–4.40	0.07–0.27	3
DC-144	1.10–4.40	0.07–0.27	4
DC-151	2.40–10.00	0.15–0.61	1
DC-152	2.40–10.00	0.15–0.61	2
DC-153	2.40–10.00	0.15–0.61	3
DC-154	2.40–10.00	0.15–0.61	4
DC-161	5.90–25.00	0.36–1.53	1
DC-162	5.90–25.00	0.36–1.53	2
DC-162-101*	10.80–50.00	0.67–3.05	1

* DC-162-101 has the same dimensions as the DC-162 valve. It has been cross ported from two to one outlet.

DC



Dimensions

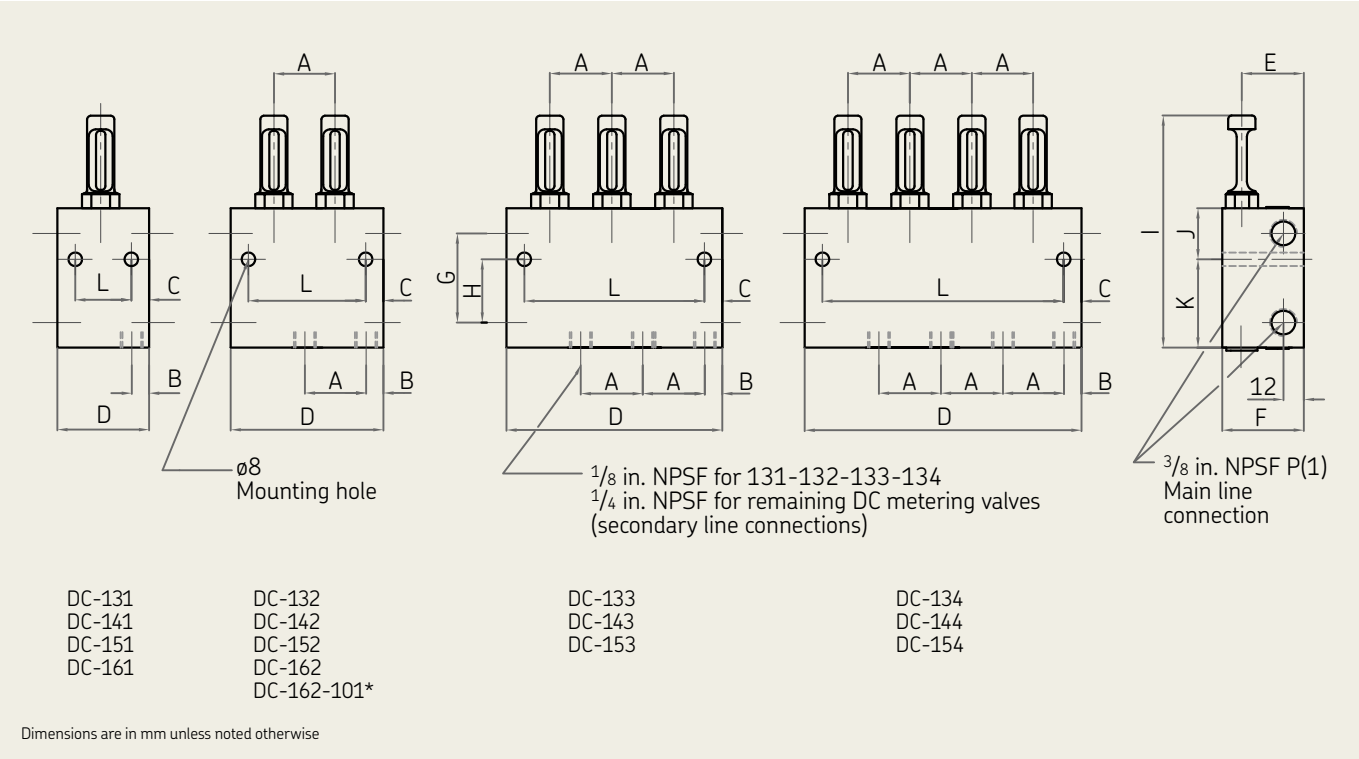
	DC-131		DC-141		DC-151		DC-161	
	mm	in	mm	in	mm	in	mm	in
B	8.2	0.32	8.2	0.32	10.2	0.40	10.5	0.41
C	10.5	0.41	10.7	0.42	10.5	0.41	10.5	0.41
D	45	1.77	48	1.89	54	2.12	62	2.44
E	28	1.10	30	1.18	33	1.29	37	1.45
F	38	1.49	40	1.57	44	1.73	57	2.24
G	41	1.61	55.5	2.18	55.5	2.18	56	2.20
H	27.7		38.2	1.50	37.2	1.46	41	1.61
I	100.5	3.95	120	4.72	138	5.42	152.5	5.99
J	24.5	0.90	27.5	1.08	30	1.18	32	1.26
K	39	1.53	48.5	1.91	52	2.04	58	2.28
L	24	0.94	27	1.06	33	1.29	41	1.61

Dimensions

	DC-132		DC-142		DC-152		DC-162	
	mm	in	mm	in	mm	in	mm	in
A	28.5	1.12	31.8	1.25	36.6	1.44	46	1.81
B	8.2	0.32	8.2	0.32	10.2	0.40	10.5	0.41
C	36.5	1.43	10.7	0.42	10.5	0.41	10.5	0.41
D	73	2.87	80	3.14	90	3.54	108	4.24
E	28	1.10	30	1.18	33	1.29	37	1.45
F	38	1.49	40	1.57	44	1.73	57	2.24
G	41	1.61	55.5	2.18	55.5	2.18	56	2.20
H	29.2	1.15	38.2	1.50	37.2	1.46	41	1.61
I	100.5	3.95	120	4.72	138	5.42	152.5	5.99
J	23	0.90	27.5	1.08	30	1.18	32	1.26
K	40.5	1.59	48.5	1.91	52	2.04	58	2.28
L	59	2.32	69	2.71	87	3.42		

One centered mounting hole

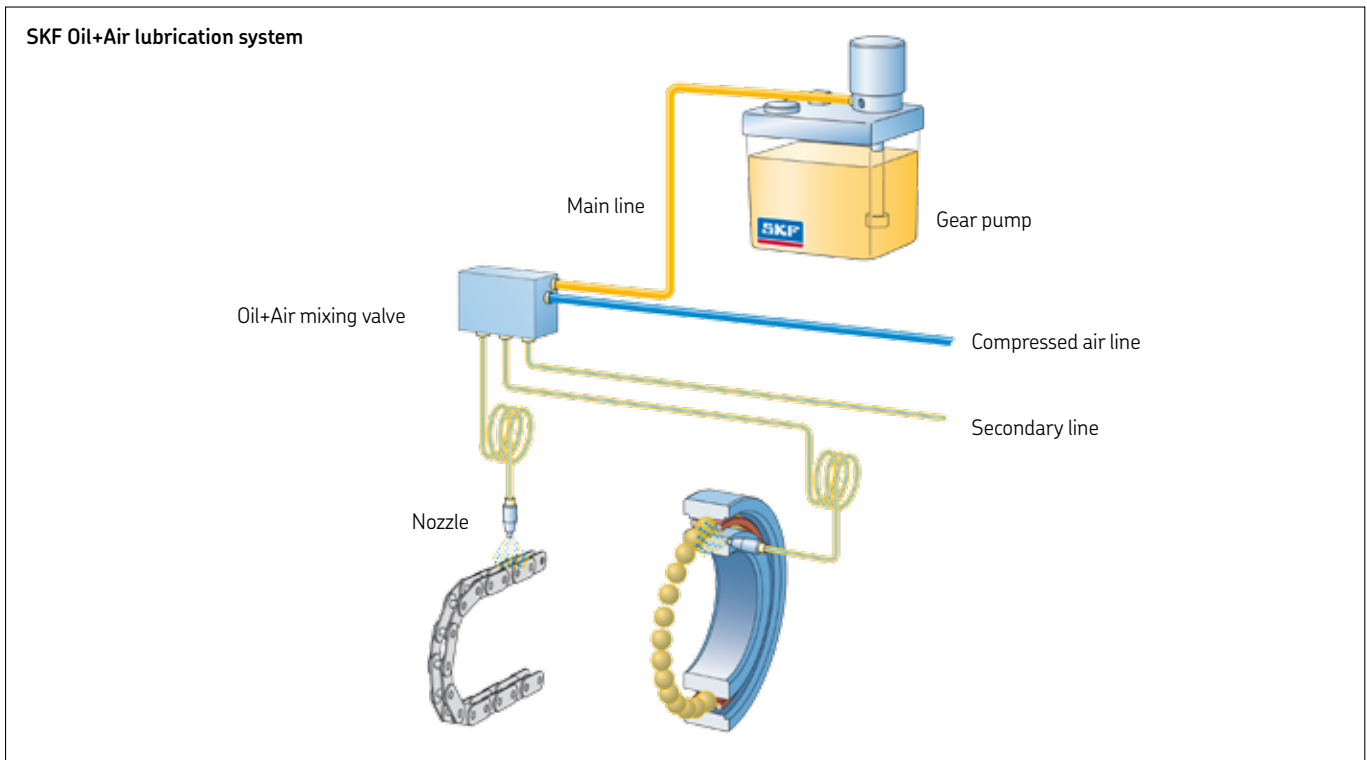
DC



Dimensions						
	DC-133		DC-143		DC-153	
	mm	in	mm	in	mm	in
A	28.5	1.12	31.8	1.25	36.6	1.44
B	8.2	0.32	8.2	0.32	10.2	0.40
C	36.5	1.43	10.7	0.42	10.5	0.41
D	102	4.01	111.5	4.38	127	4.99
E	28	1.10	30	1.18	33	1.29
F	38	1.49	40	1.57	44	1.73
G	41	1.61	55.5	2.18	55.5	2.18
H	29.2	1.15	38.2	1.50	37.2	1.46
I	100.5	3.95	120	4.72	138	5.42
J	23	0.90	27.5	1.08	30	1.18
K	40.5	1.59	48.5	1.91	52	2.04
L	29	1.14	90.5	3.55	106	4.16

Dimensions						
	DC-134		DC-144		DC-154	
	mm	in	mm	in	mm	in
A	28.5	1.12	31.8	1.25	36.6	1.44
B	8.2	0.32	8.2	0.32	10.2	0.40
C	36.5	1.43	10.7	0.42	10.5	0.41
D	130	5.11	143.4	5.64	163	6.41
E	28	1.10	30	1.18	33	1.29
F	38	1.49	40	1.57	44	1.73
G	41	1.61	55.5	2.18	55.5	2.18
H	29.2	1.15	38.2	1.50	37.2	1.46
I	100.5	3.95	120	4.72	138	5.42
J	23	0.90	27.5	1.08	30	1.18
K	40.5	1.59	48.5	1.91	52	2.04
L	57	2.24	122	4.79	142	5.58

SKF Oil+Air lubrication systems



System description

SKF Oil+Air lubrication systems are used in centralized lubrication engineering for a large number of applications. All of them are total loss systems. Main applications are:

- High speed bearing lubrication
- Chain lubrication
- Assembly lubrication
- Tool lubrication

In Oil+Air systems, a precisely metered amount of oil from the mixing block is dispersed by a continuous flow of compressed air. The oil is carried along the inner wall of the tubing in the direction of the compressed air flow. The oil flow is nearly constant and depends on the metered amount and the lubrication frequency. The minimum length of the secondary line is 1 meter (3.28 feet), the maximum length is 10 meter (32.8 feet).

Advantages

- Higher dependability due to continuous supply of defined quantities of lubricant; sealing air provided by the system protects the bearings against outside contamination
- Less lubricant
 - as much as needed, as little as possible – for greater safety and environmental protection
 - demand-based metering for each lubrication point, with approximately 90% lower lubricant consumption compared to oil lubrication
 - no oil mist, no repack period compared to grease lubrication

MV20x series

Product description

The MV20x-1... is a mixing valve with metering. It is built in block design and contains up to eight secondary line connections. The lubricant metering is selectable in a range of 0.01–0.16 cm³ (0.0006–0.0098 in³/stroke) for each lubrication point. Secondary line connections which are not needed can be plugged. This involves screwing an appropriate metering screw for zero metering into the mixing valves. The MV20x-1... design contains an air adjustment screw for setting the quantity of compressed air. The secondary line connections are available with SKF plug connectors or fittings for solderless tube unions for tube $\varnothing$ 4 mm. Another Oil+Air mixing valve must be provided if more than eight lubrication points will be supplied. In this case, the compressed air must be fed separately to each mixing valve.

Please indicate the metering rate when ordering. Indicate from left to right.

Please refer to brochure PUB LS/P2 13220-EN (1-5012-3-EN) for further information.

Order example:

MV202-100-34000000

two outlet mixing block with 0.03 cm³/stroke (0.0018 in³/stroke),
0.06 cm³/stroke (0.0036 in³/stroke)

MV203-100-13X00000

three outlet mixing block with 0.01 cm³/stroke (0.0006 in³/stroke),
0.03 cm³/stroke (0.0018 in³/stroke), metering point plugged



Technical data

Function principle	mixing valve with metering
Number of metering points	1 to 8
Metered quantity per metering point	0.01–0.16 cm ³ /stroke 0.0006–0.0098 in ³ /stroke
Actuating pressure, air	3 to 10 bar, 43.5 to 145 psi
Actuating pressure, oil	17 to 40 bar, 246.5 to 580 psi
Operating temperature	5 to 80 °C, 41 to 176 °F
Sealing material	NBR/KFM
Air consumption	1,000 to 1,500 Nl/h
Inlet connection	M10x1, counterbore for solderless tube union
Outlet connection	M8x1, counterbore for solderless tube union

MV20x mixing valves

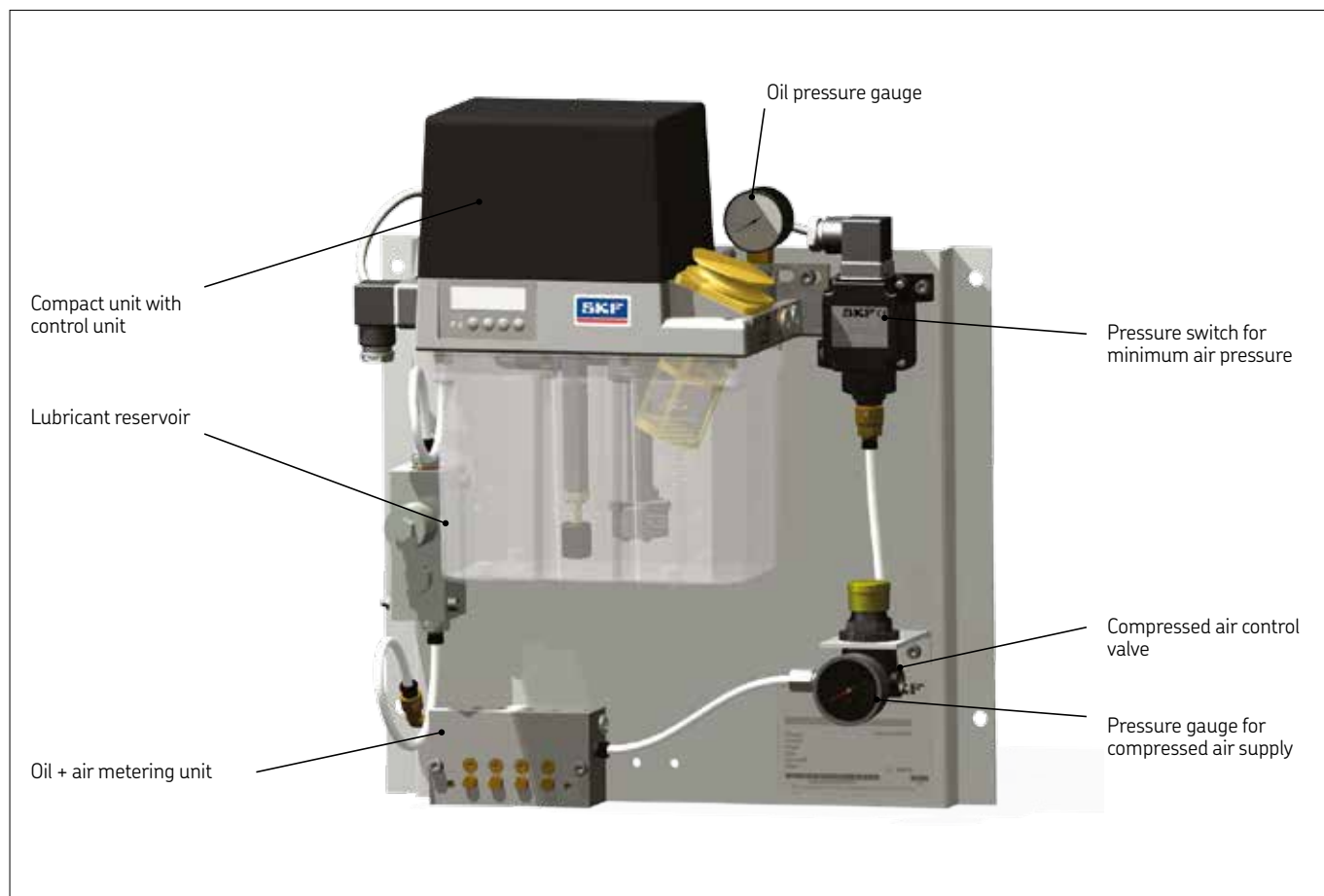
Order no.	Outlets
MV201-100-_____	1
MV202-100-_____	2
MV203-100-_____	3
MV204-100-_____	4
MV205-100-_____	5
MV206-100-_____	6
MV207-100-_____	7
MV208-100-_____	8

Metered quantities

Metering rate code	Metering quantity	
	cm ³ /stroke	in ³ /stroke
1	0.01	0.0006
3	0.03	0.0018
4	0.06	0.0036
5	0.10	0.0061
6	0.16	0.0098

X = Metering point plugged
0 = No metering point available

Standard OLA panels



Oil+Air systems

Order no.	Outlets	Monitoring			Electrical connection
		Control unit	Low air pressure	Prelubrication cycle	
OLA1-02-V1R	2	•			115 V AC
OLA1-03-V1R	3	•			115 V AC
OLA1-04-V1R	4	•			115 V AC
OLA1-05-V1R	5	•			115 V AC
OLA1-06-V1R	6	•			115 V AC
OLA1-07-V1R	7	•			115 V AC
OLA1-08-V1R	8	•			115 V AC
OLA5-02-V1R	2	•	•	•	115 V AC
OLA5-03-V1R	3	•	•	•	115 V AC
OLA5-04-V1R	4	•	•	•	115 V AC
OLA5-05-V1R	5	•	•	•	115 V AC
OLA5-06-V1R	6	•	•	•	115 V AC
OLA5-07-V1R	7	•	•	•	115 V AC
OLA5-08-V1R	8	•	•	•	115 V AC

Please specify metering at the time of order. Example: OLA1-02-V1R, 0.03 cm³/stroke, 0.03 cm³/stroke

Standard OLA panels

Technical data: gear pump unit ¹⁾

Delivery rate of unit ²⁾	0.2 l/min, 0.05 gal/min
Number of metering points	1 to 8 (>8 on request)
Operating pressure	max. 30 bar, 435 psi
Ambient temperature	10 to 40 °C, 50 to 104 °F
Pumped medium	mineral or synthetic oil, compatible with NBR elastomers
Operating viscosity	20 to 1,500 mm ² /s
Rated capacity of lubricant reservoir	3.0 l, 0.8 gal (others on request)
Lubricant reservoir material	polyamide (PA6)
Protection class	IP54
Pressure relief valve	included
Thermal circuit breaker	included
Duty type (per VDE 0530)	standard design: S3, ON-time 20% (1.25 to 25 minutes)
Mounting position	vertical

¹⁾ Technical data on MV20x oil+air mixing valve (→ page 68)

²⁾ Based on an oil viscosity of 140 mm²/s at a back pressure of 5 bar, 72.5 psi

Technical data: oil pressure switch (included in gear pump unit)

Function	NO-contact
Switching voltage range	10 to 25 V AC; 10 to 36 V DC
Switched current (resistive load)	≤ 1 A
Switched capacity (resistive load)	≤ 10 W
Nominal pressure	20 bar, 290 psi

Technical data: pressure switch for minimum air pressure

Switching pressure	3 bar, 43.5 psi (non-adjustable)
Switching voltage	max 250 V
Switched current	max 0.3 A

Technical data: motor (gear pump unit)

Rated frequency	60 Hz
Rated voltage	115/230 V AC
Rated current	1.36/0.68 A
Starting current	—
Power	75 W

Technical data: fill level switch (included in gear pump unit)

Function	NC contact (opens when fill level too low)
Switching voltage range	10 to 25 V AC; 10 to 36 V DC
Switched current (resistive load)	≤ 0.25 A
Switching capacity (resistive load)	≤ 3 W

Oil filter technical data

Filter mesh	25 μ
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Oil+Air accessories

Accessories

Order no.	Description
828-090-004	4 mm (0.16 in) helical coil tubing for mixing block, bearing connection
P-89.29	Spray nozzle for tube $\varnothing 4$ mm (0.16 in)
GS4011-S300	Oil-streak sensor for flow rate from 0.002 cm ³ /pulse (0.0001 in ³ /pulse), to be installed close to the mixing block outlet, for 4 mm (0.16 in) tubing

GS4011-S..., GS6011-S... electrical data

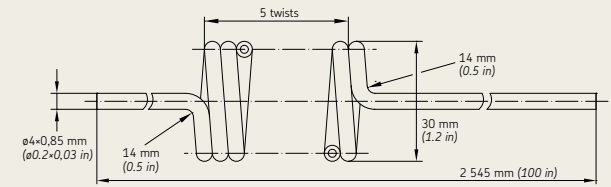
Rated voltage U_N 24 V DC¹⁾
 Operating range U_B 20 to 30.5 V DC
 Max. power consumption I_E ... 40 mA
 Type of enclosure IP54
 Outputs pnp type
closes when oil streaks detected, opens when there are none

Color coding with standard sensor cables:
 brown (BN) +24 V
 blue (BU) GND
 black (BK) make contact
 white (WH) break contact

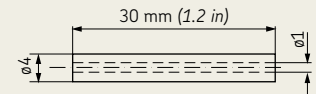
¹⁾ Protective measure to be taken for operation in conformity with "Functional extra-low voltage with safety separation" (PELV = protective extra-low voltage)

Accessories:
 Connection cable with straight cable socket, 4-pole type, length 5 m (16.4 ft), order **179-990-600**
 Socket, 90° angled, order **179-990-601**

Helical coil 828-090-004



Nozzle P-89.29

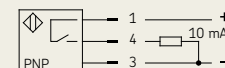
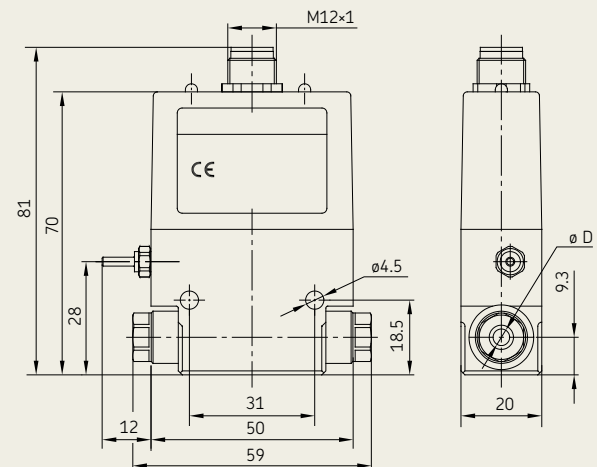


Oil-streak sensors



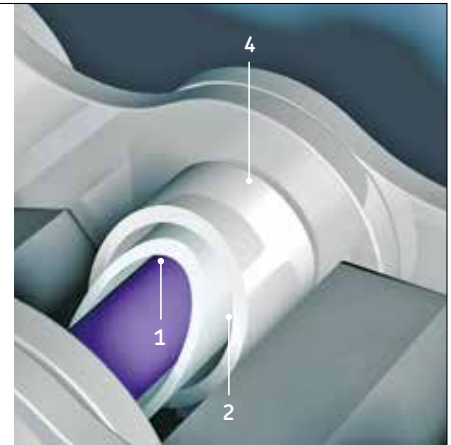
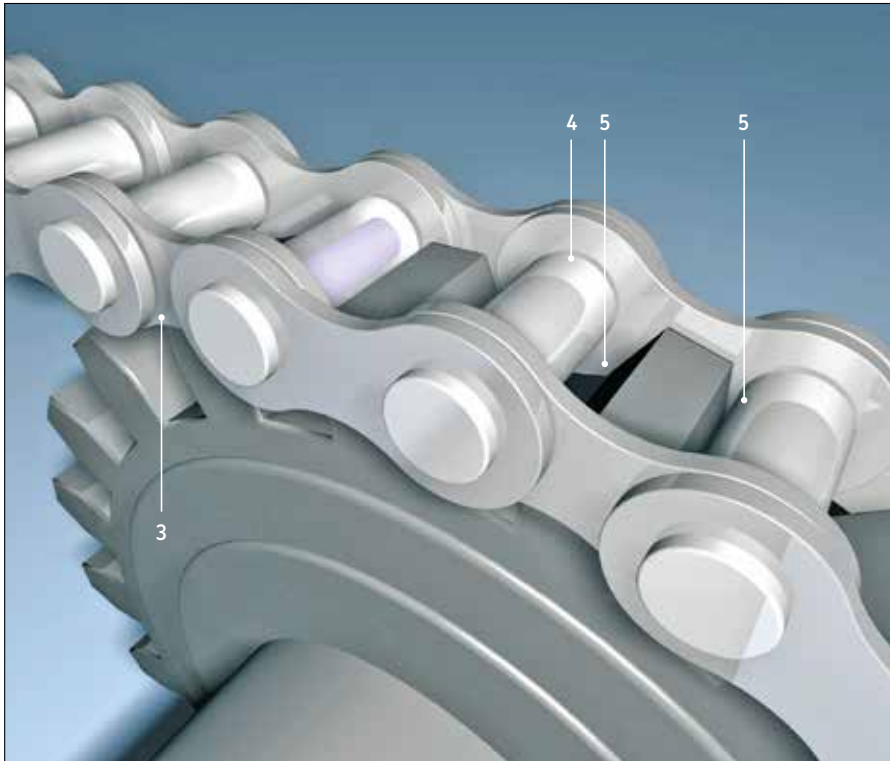
The oil-streak sensors monitor the continuity of the oil flow in the oil+air systems

Oil-streak sensor GS4011-S300



Dimensions shown are in mm

Chain lubrication systems



Friction points of a chain:

- 1 Friction between bushing/stud
- 2 Friction between bushing/roller
- 3 Friction between inner/outer plate
- 4 Friction between plate/bushing
- 5 Sprocket/roller/inner plate

Further friction points are found at the drive and chain attachments.

System description

Despite new types of material and advanced technology, many chains still require lubrication. Optimum lubrication reduces friction and subsequent wear on chains. The largest relative movement of all chains occurs between the link plate and the chain stud, and it is here where considerable forces are present. Insufficient lubrication of this area will result in premature wear and chain failure. The consequence is expensive production downtime. Precise and efficient lubrication is a prerequisite for trouble-free operation and a long life of the chain.

SKF automated chain lubrication systems provide an exact metered quantity of lubricant and apply it reliably to the chain where it is required.

Advantages of automated chain lubrication

- Increases life expectancy of the chain
- Minimizes downtime resulting from insufficient lubrication
- Reduces energy consumption
- Reduces lubricant consumption
- Absorbs shocks
- Cools fast-running chains
- Lessens noise

Suitable chain lubricants

All well-known chain manufacturers recommend the periodic relubrication of the chain with a suitable chain lubricant.

The most important chain lubricant requirements are:

- Good penetration characteristics
- High pressure resistance
- Reliable corrosion protection

PE pump

Product description

The electromagnetic pump PE consists of a housing, a rotatable (-90° , 0° , $+90^\circ$) mounting flange, an electric connector and an electromagnet that acts on the plunger. The plunger moves the pumping pistons with the help of a barrel centered in the pump's housing. A return spring pulls each piston back into its initial position. The PE pump can supply 2, 4 or 6 outlet ports. Each outlet port is equipped with a check valve.

Oil is fed directly from the lubricant reservoir into the intake chamber of the pump. The pump is vented by an opening.

Power is supplied to the pump via a swiveling connector – the signal light lights up when the power is on. DC or AC current supply. Alternating current can be rectified with a diode bridge.

The pump can be operated by hand at any time or when there is a power failure.



Please refer to brochures 1-4003-EN, 1-4106-EN and PUB LS/P2 10275/1-EN for further information.

Technical data

Delivery pressure	< 100 bars, 1,450 psi
Inlet pressure	0.01 < P < 0.5 bar, 7.25 psi
Flow rate	20, 40 or 60 mm ³ /stroke 0.0012, 0.0024 or 0.0037 in ³
Service temperature	-20 to +60 °C, -4 to +140 °F
Working frequency	≤ 2 strokes/s
Mechanical life	max 20 × 10 ⁶ cycles
Lubricant	mineral oil or synthetic oil, no additives
Effective viscosity	< 1,000 mm ² /s, 1.55 in ² /s
Seals	fluorocarbon (FPM)
Lubricant inlet	G 1/4 NF E 03-005 max. depth 8 mm, 0.31 in
Lubricant outlet	M 8×1 acc. to NFR 954-03
Bleeding opening	G 1/4, plug H12
Weight (PE-6)	ca. 3.26 kg, 7.18 lb

Electric

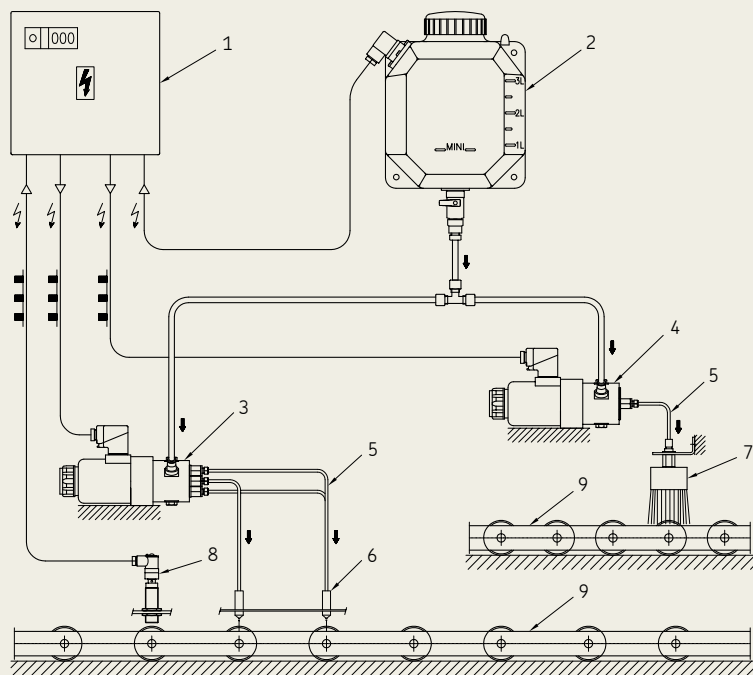
Direct current	24 V DC
or alternative current	115 V-50/60 Hz
Intensity max	4.5 A/24 V DC 1 A/115 V
Duty cycle	0.1 ≤ T ≤ 0.2 s
Duty ratio	40%
Electromagnet, power	105 W according to 93/68/EWG CE / 73/23/EWG low voltage
Type of enclosure (screw-in connector)	IP 65
Connector	according to DIN 43 650

PE pumps

Order no.	Metering quantity per stroke		Outlets	Electrical connection
	mm ³	in ³		
PE-2-40+924	40	0.0024	2	24 V DC
PE-4-40+924	40	0.0024	4	24 V DC
PE-6-40+924	40	0.0024	6	24 V DC
PE-2-40+429	40	0.0024	2	110 V AC
PE-4-40+429	40	0.0024	4	110 V AC
PE-6-40+429	40	0.0024	6	110 V AC

PE pump

Application example



- 1 Control unit
- 2 Lubricant reservoir
- 3 Electromagnetic pump
- 4 Electromagnetic pump
- 5 Lubrication line
- 6 Projection nozzles
- 7 Oiling brush
- 8 Proximity switch
- 9 Roller



Accessories

Order no.	Description
AC-A-406	Projection nozzle
UC-1075	Oil brush kit to connect to PE pump
992-000-289	Oil brush
UC-1060-16-10M	Proximity switch kit, bracket, fittings, 10 m (33 ft) cable, proximity switch
MOD-031-NC	Translucent plastic reservoir, 3.5 l (0.9 gal), 200 micron outlet filter, NO low level switch
MOD-032-NC	Translucent plastic reservoir, 6.0 l (1.6 gal), 200 micron outlet filter, NO low level switch

CLK system

Product description

The SKF ChainLube airless oil projection system CLK, is a food-safe, reliable, easy-to-use solution for accurate, automatic roller chain lubrication.

The system includes an electromagnetic pump unit that precisely delivers a metered volume of lubricant to the points of friction of each chain link while the chain is running. A control unit is preset to the preferred timing for lubricant application. Airless projection nozzles have no mechanical contact with the chains thus minimizing applicator wear and dirt accumulation. The main components are resistant to corrosion and suitable for a wide range of temperatures. All of these features make this solution suitable for the particular requirements of the food and beverage industry.

Please refer to brochure PUB LS/P2 13249/2-EN for further information.



Technical data

Central unit

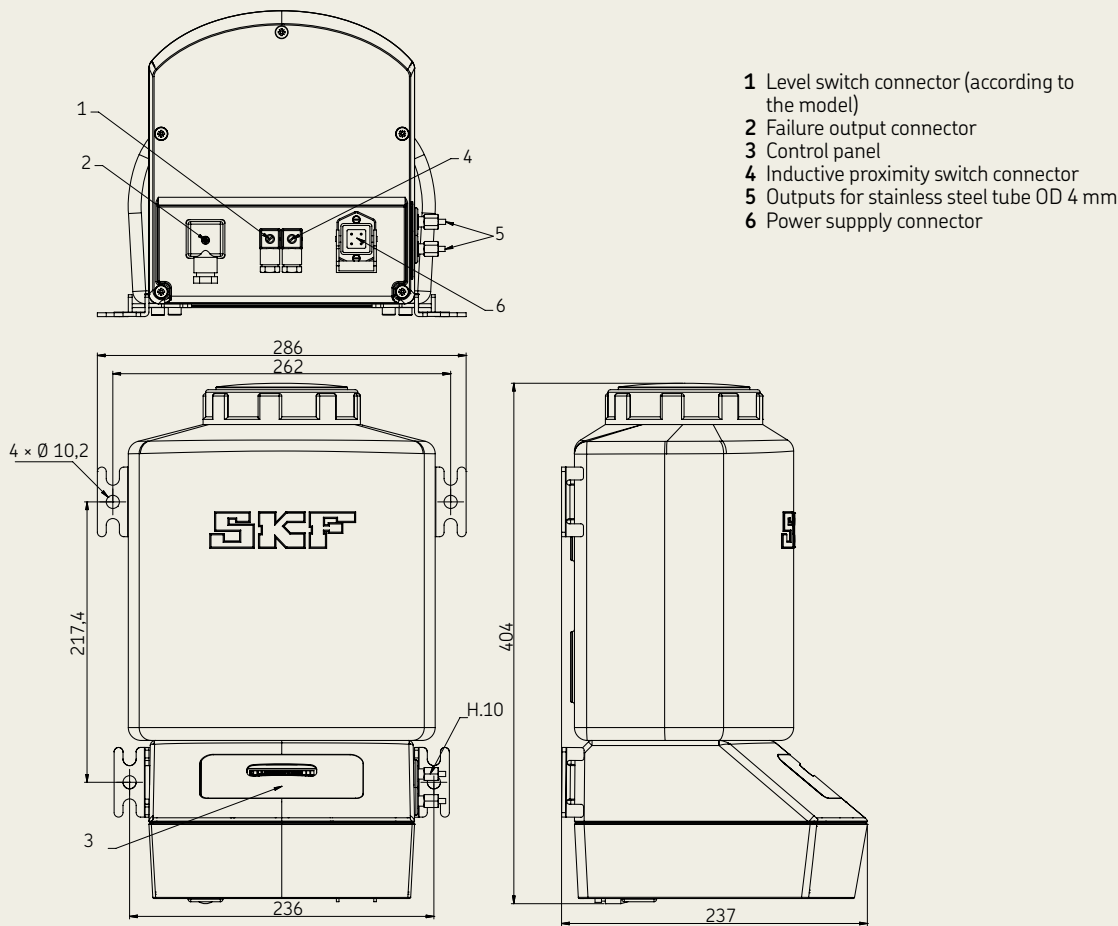
Flow rate	0.03 or 0.06 cm ³ /stroke and outlet 0.0018 or 0.0037 in ³ /stroke and outlet
Lubricant	mineral or synthetic oil without solid additives
Viscosity	< 100 m ² /s (cSt) at projection temperature
Delivery pressure	< 100 bars, 1,450 psi
Operating frequency	< 3 strokes/s
Cycle life	20 × 10 ⁶ cycles max.
Operating temperature	0 to +60 °C, +32 to +140 °F
Operating voltage	110 V AC, 60 Hz
Protection	IP65
Reservoir capacity	7.5 l, 2 gal (useful capacity)
Level monitoring	min. level switch
Material, reservoir	PEhd
Material, housing	ABS
Weight	ca. 12 kg, 26.4 lb (full reservoir)
Noise emission	≤ 70 dB (A)

CLK systems

Order no.	Central unit Metering quantity per stroke and outlet		Outlets	Nozzle Simple	Double	Proximity switch Ø	Sensing range		Tube Long	Short
	cm ³	in ³					mm	in		
CLK-460R-100+429	0.06	0.0037	4	—	4	12	7	0.28	1	1
CLK-260R-100+429	0.06	0.0037	2	—	2	12	7	0.28	1	—
CLK-460R-110+429	0.06	0.0037	4	—	4	18	8	0.31	1	1
CLK-430R-101+429	0.06	0.0037	4	4	—	12	7	0.28	1	1
CLK-430R-121+429	0.06	0.0037	4	4	—	8	4	0.16	1	1

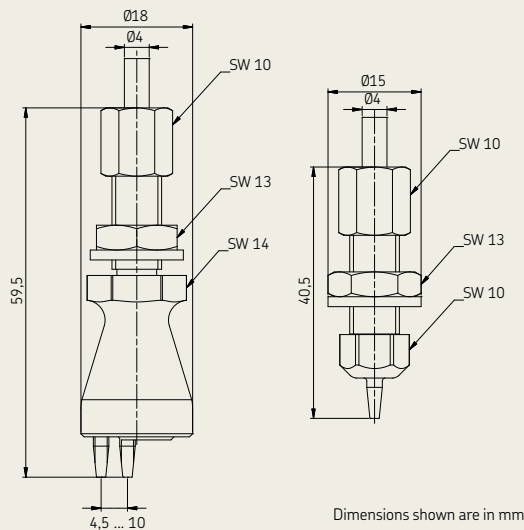
CLK system

Central unit



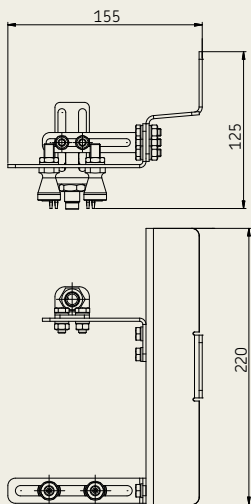
Dimensions shown are in mm

Stainless steel projection nozzles



Dimensions shown are in mm

Stainless steel support for nozzles and proximity switch



Dimensions shown are in mm

CLK kit

The oil lubrication system CLK is offered as a comprehensive kit. The kit gives the user all the components necessary to set up his centralized lubrication system, i.e the central unit, the nozzles, the proximity switch and all accessories and fittings.



Technical data

Kit

Nozzle set

Type	one or two head projection nozzle
Projection	vertically, top-down
Volume	0.03 cm ³ /stroke, 0.0018 in ³ /stroke
Projection distance	5 to 50 mm, 0.2 to 2.0 in
Lubricant	mineral or synthetic oil with a max. viscosity < 100 mm ² /s (cSt) at projection temperature
Operating temperature	–25 to +220 °C, –13 to +428 °F
Standby temperature	–40 to +220 °C, –40 to +428 °F
Lubricant inlet	for metallic tube Ø 4 mm max. length 5 m, 16.4 ft
Weight	ca. 50 g
Material	stainless steel 304, FPM seal for the check valve
Number of nozzles	2
Accessories	holder and fittings

Proximity switch set

Proximity switch type	3 wires DC PNP
Output function	NO, normally open
Operating voltage	10 to 36 V DC
Sensing range	5 mm, 0.2 in
Protection	IP68
Operating temperature (sensor)	–40 to +85 °C, –40 to +185 °F
Cable length	5 m, 16.4 ft
Accessories	holder and fittings

Long tube set

Diameter	4 mm, 0.16 in – thin wall
Length	5 m, 16.4 ft
Material	stainless steel 316L annealed under PTFE holding tube
Number of tubes	2

Short tube set

Diameter	4 mm, 0.16 in – thin wall
Length	2.5 m, 8.2 ft
Material	stainless steel 316L annealed under PTFE holding tube
Number of tubes	2

Control units for centralized lubrication systems



Product description

Control and monitoring devices for centralized lubrication systems in stationary and mobile industrial installations are supplied either as part of SKF compact lubrication units or individually for installation in a control cabinet. The task of the control units is to trigger lubrication at specific intervals. Additionally, the devices possess a range of functions necessary to control and monitor the lubrication system. The scope of these functions depends on the specific type of device.

Functions

- Trigger the lubrication routine
- Set the pause time between lubrication cycles
- Evaluate such system parameters as:
 - Main line or individual zones pressure
 - Lubricant dispensed quantity
 - Lubricant level in reservoir
 - Lubricant dispensing devices cycling
 - Other instrumentation monitoring key lubrication system operating variables.

If faults occur, one or more output signals, or indicators are available to help the machine's operator take the appropriate action in regard to the machine or system. This protects the machine or system against severe damage.

Please refer to the following brochures for additional controllers from SKF:

- SKF control centers ST-1340 and ST-1440: PUB LS/P8 13166-EN
- SKF control centers for MonoFlex, ProFlex and DuoFlex: PUB LS/P8 13165-EN
- DIN rail mounted controllers:
 - MonoFlex (single line parallel systems): 1-1700-4-EN
 - ProFlex (progressive systems): 1-1700-2-EN
 - Oil+Air lubrication: 1-1700-3-EN
 - Control and monitoring units for centralized systems: 1-1700-1-EN

SKF LMC 101

Product description

The versatile SKF LMC 101 controller operates as a timer or controller on SKF MonoFlex or ProFlex lubrication systems. Developed for use on off-road and mobile equipment, the LMC 101 also is suitable for many low voltage, industrial lubrication applications, such as those found in food and beverage, pulp and paper and steel markets.

When operating as a controller, the LMC 101 ends the lubrication cycle when a pressure switch, pressure transducer or piston detector is actuated. In the timer mode, the lubrication cycle ends when time has expired.

Designed to meet OEM vibration standards for major construction equipment, the LMC 101 controller can cycle a pneumatically, hydraulically or electrically driven pump in one- to 10-second intervals.

Features:

- Operates SKF MonoFlex or ProFlex lubrication systems
- Functions as a timer or controller
- Records history of system operation and fault codes
- Configured using PC software and USB connection
- Controls FlowMaster or high-current pump without external relay
- Uses pressure switch or pressure transducers (1 to 6 V or 4 to 20 mA) in controller mode
- LED indicators show power, pump function, low-level fault and system faults
- Manual lubrication cycle activation button
- Data logging includes date and time of alarms, power ups, configuration changes, lubrication cycles and totals lubrication count, manual lubrication count, pressure alarm, low levels and pump on-time information
- Four inputs:
 - Two pressure switches, pressure transducers or piston detectors
 - Remote manual lubrication switch
 - Low-level switch
- Four outputs:
 - Pump
 - Low-level alarm relay
 - System fault relay
 - Vent solenoid

Please refer to brochure PUB LS/P8 15556-EN.R1 for further information.



Technical data

Function principle	control unit
Power input	12 or 24 V DC, -20% + 30%
Enclosure rating	NEMA 12
Operating temperature	-40 to +66 °C, -40 to +150 °F
Inputs	4
Outputs	4
Approvals	none
Pump relay contact	20 amps at 30 V DC
Vent and alarm relay contacts	2 amps at 30 V DC
Enclosure size	186 x 120 x 59 mm, 7.3 x 4.7 x 2.3 in.
Mounting dimensions	172 x 89 mm, 6.75 x 3.5 in.

PC requirements

Operating system	Windows XP, Vista, 7 and 8
Processor minimum	1 GHz
Memory minimum	512 MB
Additional software	Microsoft .Net 4.0
Hard drive space	50 MB
USB port	1 needed

LMC 101

Order no.	Description	Electrical connection
86535	LMC101 MOR and off-road controller	12 or 24 V DC

IG502-2-E

Product description

The IG502-2-E is an external control unit with a control display. It operates as a timer or controller on MonoFlex or ProFlex lubrication systems. Developed for use with on- and off-road mobile equipment, the IG502-2-E can be programmed to turn a pump on based on time elapsed or on machine contact event. The pump will be turned off based on the run time programmed. During run time, the IG502-2-E can monitor a single cycle switch in a ProFlex system, a single pressure switch in a MonoFlex system or can be turned off for no system monitoring.

Features and benefits

- Universal control and monitoring device
- Compact design
- Easy to operate
- Different operating modes, such as timer, counter and monitoring functions
- Red LED failure indicator also shows failure cause
- Integrated counters for permanent operation and failed hours; working-hour meter shows system life cycle
- PIN lockout feature to prevent unauthorized programming changes

Please refer to brochure 1-9420-EN for further information.



Technical data

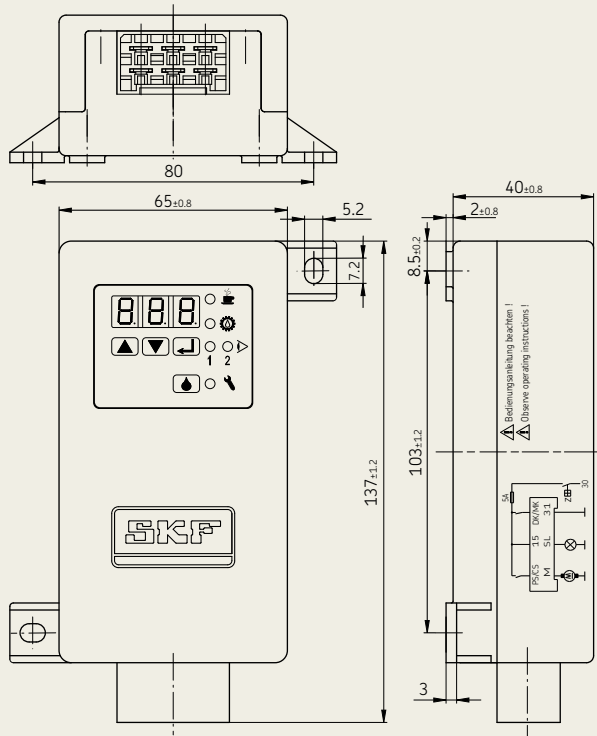
Function principle	controller
Control voltage	max 12 or 24 V DC
Contact load connector M	5 A at 12 or 24 V DC
SL-output	4 W
Operating temperature	-25 to +75 °C, -13 to +167 °F
Storage temperature	-40 to +75 °C, -40 to +167 °F
Fuse protection	max 5 A
Pause time	adjustable, 0.1 to 99.9 h
Pump running time	adjustable, 0.1 to 99.9 min
Pulse time	adjustable, 1 to 999
Operation hours storage	0 to 99999.9 h
Operation-failed hours storage	0 to 99999.9 h
Protection class	IP20 DIN 40050, plug IP 00
Dimensions	138 × 65 × 40 mm 5.43 × 2.56 × 1.57 in

IG502-2-E units

Order no.	Description	Electrical connection
IG502-2-E+912	External controller	12 V DC
IG502-2-E+924	External controller	24 V DC

IG502-2-E

Unit layout and installation dimensions



Dimensions shown are in mm



LED pause
Lights in intervals



LED contact
Lights when pump running



LED CS
Lights for monitoring with cycle switch function



LED PS
Lights for monitoring with pressure switch function

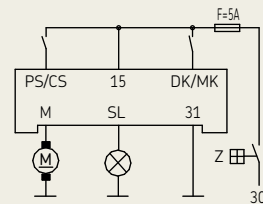


LED fault
Lights for fault monitoring (cycle or pressure switch)

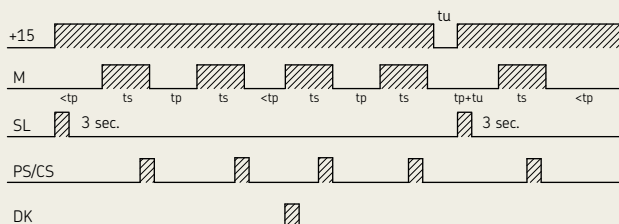


Pushbutton DK

Wiring diagram



Normal functional sequence



- tu = ignition interruption
- ts = contact time
- tp = interval time
- 30 = battery + / vehicle network
- 15 = operating voltage + / after ignition "ON"
- 31 = operating voltage -
- DK/MK = pushbutton / intermediate lubrication or pulsecounter input
- PS/CS = pressure switch / cycle switch
- M = pump motor
- SL = indicator light
- Z = ignition loc
- F = fuse 5 A

SKF LMC 301

Product description

Designed for use with pumps that have no internal controller, the LMC 301 is suitable for applications where sophisticated control and feedback are required. This versatile controller can handle multiple configurations and diverse temperature ranges.

The LMC 301 works with multiple system types, including SKF MonoFlex, ProFlex and DuoFlex systems. One system can operate three different pumps, and each of those pumps can control up to three zones for a total of nine zones. Also, each pump can function as a different system type.

The LMC 301 utilizes pressure switches and pressure transducers, and a grease monitor sensor can be placed before the lubrication point to verify that the system is working correctly. This is ideal for use on critical bearings where it is essential to know that they have been lubricated properly.

Because the unit manages up to nine separate zones, fewer controllers are needed, which saves you money. The unit is designed for systems that have lubrication points requiring different lubrication intervals or different types of grease.

The LMC 301 can be programmed via an external laptop computer or with the display screen and buttons.

Features:

- IP 65-rated container for water resistance
- Available in 24 V DC or 110 or 220 VAC
- Modular system with 10 inputs per unit minimizes hardware and installation costs
- Up to seven IO extensions can be added per controller
- USB connection mode
- Pump settings include time- or pressurebased lubrication, pump control and temperature monitoring
- Controller and PC software language:
English and German (other languages coming soon)
- Can download new firmware for free from SKF website and update units via PC software
- Many high-end functions
 - prelubrication and post spray capability
 - ability to control auto-fill pump
 - temperature monitoring
- Ability to switch between a normal and heavy lubrication cycle via a remote switch

Please refer to brochure PUB LS/P2 15967-EN for further information.



Technical data

Models	86500, 86502 (DC units) 86501, 86503 (AC units)
Mounting position	vertical
Dimensions	270 × 170 × 90 mm, 0.6 × 6.7 × 3.5 in.
Display	60 × 30 mm, 2.4 × 1.2 in.; 128 × 64 pixels
Operating temperature AC	–10 to +50 °C, 14 to 122 °F
Operating temperature DC	–40 to +70 °C, –40 to +158 °F
LCD display	–20 °C, –4 °F
Storage temperature	–40 to +70 °C, –40 to +158 °F
Inputs	10
Outputs	Six 8 A relay contacts and two 20 A
Residual ripple relative operating voltage	±5% acc. to DIN 417 55
Protection and monitoring	
Current limit sustained short-circuit-proof	
Overload-proof	yes
Open-circuit-proof	yes
Protection class	IP 65
Input AC	
Input voltage	100–240 V AC (47–63 Hz)
Fusing (slow)	4 A
Input DC	
Input voltage	24 V DC ±10%
Fusing (slow)	10 A
Safety per DIN EN 60204-1	
Safety class	Class I
EMC	
Interference suppression	VDE 0875 T 11, EN 55011 Class A
Emitted interference	acc. to EN 61000-6-3
Immunity	acc. to EN 61000-6-2

LMC 301

Order no.	Description	Electrical connection
86500	LMC 301	24 V DC
86501	LMC 301	90–264 V AC, 47–63 Hz

ST-102

Product description

The versatile SKF ST-102 controller operates as a timer or controller on MonoFlex, ProFlex or DuoFlex lubrication systems. This compact unit can be used to operate and monitor a single 12 V or 24 V lubrication system. The lubrication pump can be programmed to be started either based on time or event and stopped by time, cycle switch or pressure switch. All programming is done on the face plate that can be remotely mounted to be within reach and view of the machine operator. System status can be identified by the three LEDs lights located on the face plate. In addition to the face plate, a secondary signal for reservoir low level and system fault can be sent to another location.

Features:

- Operates MonoFlex, ProFlex or DuoFlex lubrication systems
- Functions as a timer or controller
- Provides system feedback to operator via LED lights
- Provides additional fault signals to secondary location (eg. telematics)
- Programmable without external tools
- Monitors reservoir for low level
- Monitors pressure switch or cycle switch
- Manual lubrication cycle activation button
- Compact design
- Remote mountable face plate

Please refer to brochure PUB LS/P8 13165-EN for further information.



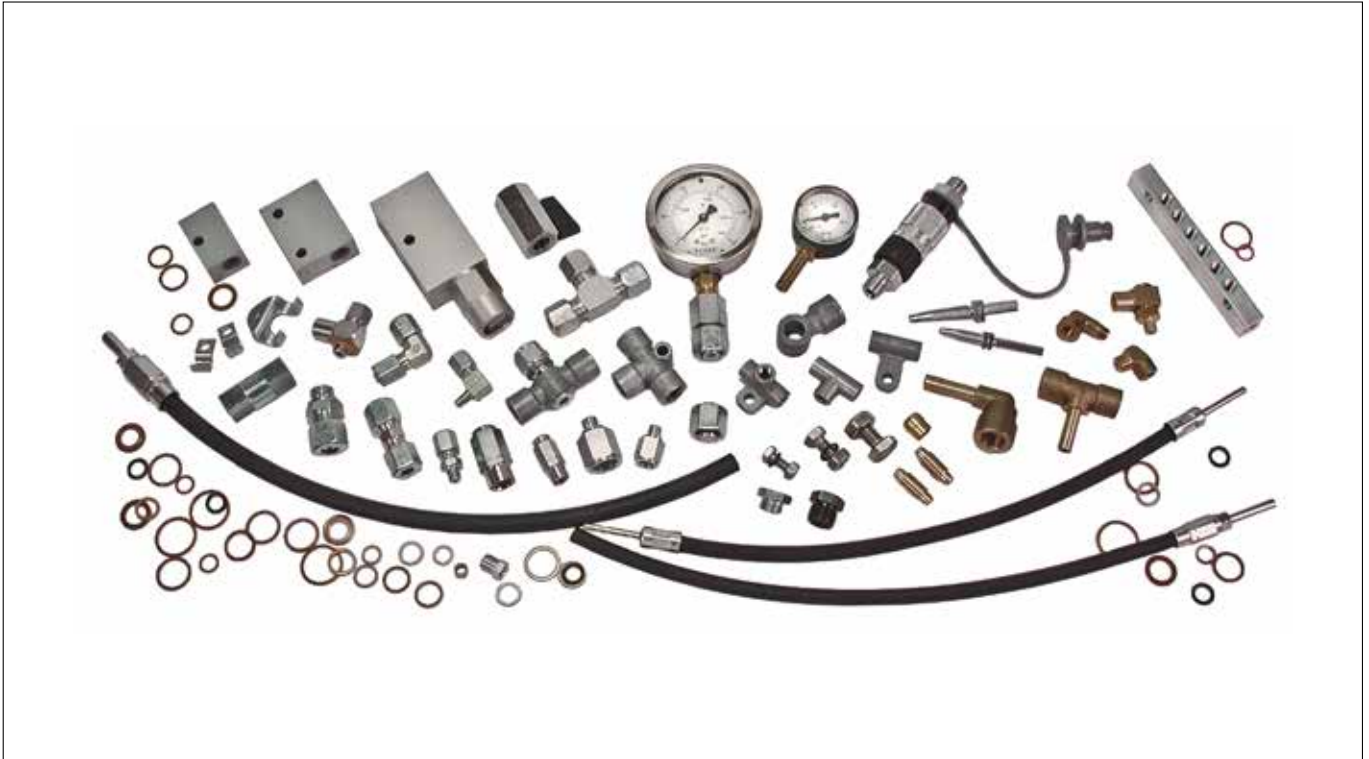
Technical data

Function principle	control and monitoring device
Operating temperature	–40 to +80 °C –40 to 176 °F
Power supply	12 and 24 V DC
Input	4 digital
Output	4 digital
Standard	CE
Interface	none
Protection class	IP40
Dimensions	26 × 60 × 160 mm 1.02 × 2.36 × 6.3 in

ST-102

Order no.	Description
11500613	External controller
11500147	Cable harness

Fittings and accessories



Description

An overview of metallic pipe unions for fluid engineering divided into the sections:

- Solderless pipe unions with tapered sleeve acc. to DIN 3862
- SKF Quick Connectors
- Solderless pipe unions with cutting sleeve acc. to DIN EN ISO 8434-1 and DIN 2353
- Other accessories

Please refer to brochure PUB LS/P2 15859-EN (1-0103-EN) for further information.

Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Connectors for steel and copper tubing

Ferrules – DIN 3862

Order no. for tube diam. d

mm

Brass

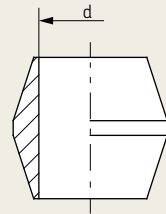
402-001 ¹⁾	2.5
404-001	4
406-001	6
408-001	8
410-001	10
412-001	12

Stainless steel

404-001-S3	4
406-001-S3	6
408-001-S3	8

¹⁾ Not shown in DIN standard

Ferrule



Male compression bushings – DIN 3871

Order no. for tube diam. d1

mm

d1

l1

mm

in

l2

mm

in

WAF

Steel, galvanized surface

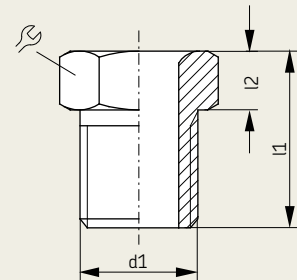
402-002 ¹⁾	2.5	M6×0.75	9	0.35	3	0.12	7
404-002	4	M8×1	12	0.47	4	0.16	8
406-002	6	M10×1	13	0.51	4	0.16	10
408-002	8	M14×1.5	16	0.63	4.5	0.18	14
410-002	10	M16×1.5	17	0.67	5.5	0.23	17
412-002	12	M18×1.5	18	0.71	6	0.24	19

Stainless steel

404-002-S3	4	M8×1	12	0.47	4	0.16	8
406-002-S3	6	M10×1	13	0.51	4	0.16	10
408-002-S3	8	M14×1.5	16	0.63	4.5	0.18	14

¹⁾ Not shown in DIN standard

Male compression bushing



Solderless pipe union (for steel and copper tubing)

Male compression
bushing

Ferrule



Installation (steel and copper tubing)

- 1 Push male compression bushing and ferrule onto tube end.
- 2 Insert tube end into tapped port up to the stop.
- 3 First tighten male compression bushing finger-tight by hand. Then turn another 1 1/2 turns.

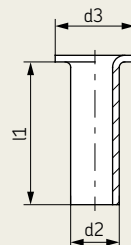
Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Connectors for steel, copper and nylon tubing

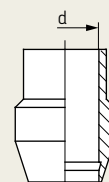
Reinforcing socket (if nylon tubing is used)

Order no.	for tube	d2		d3		l1	
	mm	mm	in	mm	in	mm	in
Brass							
402-603	2.5×0.5	1.4	0.55	2.3	0.09	8	0.31
404-603	4×0.85	2.2	0.86	3.8	0.15	10	0.39
406-603	6×1	3.9	0.15	5.8	0.23	12	0.47
406-613	6×1.25	3.4	0.13	5.8	0.23	12	0.47
408-603	8×1.25	5.4	0.21	7.8	0.31	15	0.59
410-603	10×1.5	6.9	0.27	9.8	0.39	18	0.71
412-603	12×1.5	8.9	0.35	11.8	0.46	20	0.79

Reinforcing socket



Ferrule



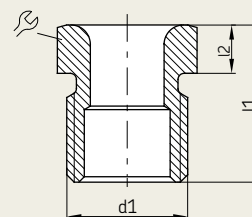
Ferrule – DIN 3862

Order no.	for tube diam. d
	mm
Brass	
402-611	2.5
404-611	4
406-611	6
408-611	8
410-611	10
412-611	12

Stainless steel

404-611-S3	4
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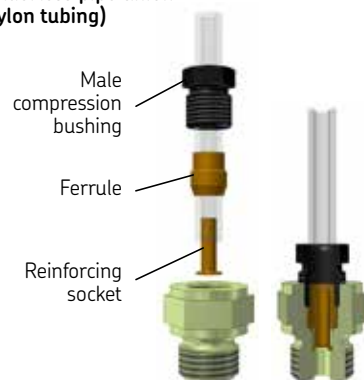
Male compression bushing



Male compression bushing – DIN 3871

Order no,	for tube diam.	d1	l1		l2		
	mm	mm	mm	in	mm	in	
Steel, galvanized surface							
402-612	2.5	M6×0.75	9	0.35	3	0.12	7
404-612	4	M8×1	12	0.47	4	0.16	8
406-612	6	M10×1	13	0.51	4	0.16	10
408-612	8	M14×1.5	16	0.63	4.5	0.18	14
410-612	10	M16×1.5	17	0.67	5.5	0.23	17
412-612	12	M18×1.5	18	0.71	6	0.24	19
Brass							
404-612-MS	4	M8×1	12	0.47	4	0.16	8
406-612-MS	6	M10×1	13	0.51	4	0.16	10
408-612-MS	8	M14×1.5	16	0.63	4.5	0.18	14
410-612-MS	10	M16×1.5	17	0.67	5.5	0.23	17
Stainless steel							
404-612-S3	4	M8×1	12	0.47	4	0.16	8

Solderless pipe union (nylon tubing)



Installation (nylon tubing)

- 1 Insert reinforcing socket into plastic tube.
- 2 Push male compression bushing and ferrule onto tube end.
- 3 Insert tube end into counterbored port up to the stop.
- 4 First tighten male compression bushing finger-tight by hand. Then turn another 1 1/2 turns.

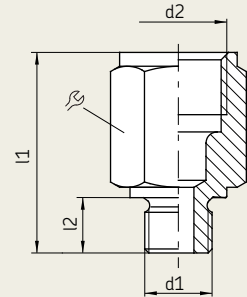
Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Adaptors

Adaptors with parallel thread to DIN 71428 (sealed by flat washer to DIN 7603)

Order no.	Tube diam. d1		d2	l1		l2		
	mm			mm	in	mm	in	
Steel, galvanized surface								
843-130-024	2.5	M3	M6×0.75	22	0.86	8.5	0.33	7
843-130-025	2.5	M4	M6×0.75	22	0.86	8.5	0.33	7
843-130-026	2.5	M5	M6×0.75	22	0.86	8.5	0.33	7
402-004	2.5	M6	M6×0.75	13	0.51	5.5	0.21	9
402-003	2.5	M6×0.75	M6×0.75	13	0.51	5.5	0.21	9
402-006	2.5	M8×1	M6×0.75	15	0.58	7.5	0.29	11
404-004	4	M8×1	M8×1	24	0.94	14	0.55	11
404-005	4	M8×1	M8×1	32	1.25	22	0.86	11
404-061	4	M5	M8×1	20	0.79	5.5	0.21	11
404-063	4	M8	M8×1	22	0.86	8	0.31	11
404-003	4	M8×1	M8×1	18	0.7	7.5	0.29	11
404-006	4	M10×1	M8×1	18	0.7	7.5	0.29	14
404-040	4	G 1/8 A	M8×1	18	0.7	8	0.31	14
404-162	4	M12×1	M8×1	18	0.7	9	0.35	17
404-164	4	M14×1.5	M8×1	18	0.7	9	0.35	17
406-158	6	M8×1	M10×1	23	0.9	7.5	0.29	14
406-004	6	M10×1	M10×1	18	0.7	7.5	0.29	14
406-162	6	M12×1	M10×1	19	0.75	9	0.35	17
406-054	6	G 1/4 A	M10×1	20	0.79	10	0.39	17
301-005	6	M14×1.5	M10×1	18	0.7	9	0.35	17
406-166	6	M16×1.5	M10×1	19	0.75	9	0.35	19
406-055	6	G 3/8 A	M10×1	21	0.82	10	0.39	22
408-004	8	M10×1	M14×1.5	28	1.10	7.5	0.29	17
408-154	8	G 1/8 A	M14×1.5	29	1.14	8	0.31	17
408-160	8	G 1/4 A	M14×1.5	30	1.18	16	0.63	17
408-162	8	M12×1	M14×1.5	29	1.14	9	0.35	17
301-020	8	G 1/4 A	M14×1.5	23	0.9	10	0.39	17
301-001	8	M14×1.5	M14×1.5	26	1.02	9	0.35	17
408-005	8	M16×1.5	M14×1.5	22	0.86	9	0.35	19
408-006	8	M18×1.5	M14×1.5	22	0.86	10	0.39	22
408-002	8	M22×1.5	M14×1.5	24	0.94	12	0.49	27
410-160	10	M10×1	M16×1.5	30	1.18	7.5	0.29	19
410-162	10	M12×1	M16×1.5	31	1.22	9	0.35	19
410-163	10	G 1/4 A	M16×1.5	30	1.18	10	0.39	19
410-164	10	M14×1.5	M16×1.5	29	1.14	9	0.35	19
410-169	10	G 1/4 A	M16×1.5	52	2.04	16	0.63	19
410-004	10	M16×1.5	M16×1.5	23	0.9	9	0.35	19
410-018	10	M18×1.5	M16×1.5	24	0.94	10	0.39	22
410-171	10	G 1/2 A	M16×1.5	24	0.94	12	0.49	27
410-022	10	M22×1.5	M16×1.5	24	0.94	12	0.49	27
412-162	12	M12×1	M18×1.5	35	1.37	9	0.35	22
412-163	12	G 1/4 A	M18×1.5	35	1.37	10	0.39	22
412-164	12	M14×1.5	M18×1.5	33	1.29	9	0.35	22
412-169	12	G 1/4 A	M18×1.5	41	1.61	16	0.63	22
412-004	12	M18×1.5	M18×1.5	24	0.94	10	0.39	22
412-014	12	M22×1.5	M18×1.5	26	1.02	12	0.49	27

Adaptor



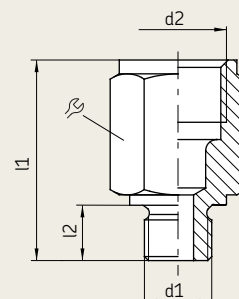
Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Adaptors

Adaptors with parallel thread to DIN 71428 (sealed by flat washer to DIN 7603)

Order no.	Tube diam.	d1	d2	l1		l2		
	mm			mm	in	mm	in	
Brass								
301-134 ¹⁾	–	M10×1	G 1/4 A	23	0.90	7.5	0.29	17
301-034 ¹⁾	–	M14 ×1.5	G 1/4 A	22	0.86	9	0.35	17
267-001.17	6	G 1/8 A	M10×1	24	0.94	8	0.31	14
406-163	6	M12×1	M10×1	19	0.74	9	0.35	17
D301-005-MS	6	M14 ×1.5	M10×1	20	0.79	9	0.35	17
406-167	6	M16 ×1.5	M10×1	19	0.74	9	0.35	19
267-001.19	6	M18 ×1.5	M10×1	21	0.83	10	0.39	22
D408-004-MS	8	M10×1	M14 ×1.5	29	1.13	7.5	0.29	17
D301-001-MS	8	M14 ×1.5	M14 ×1.5	28	1.10	9	0.35	17
D301-020-MS	8	G 1/4 A	M14 ×1.5	30	1.18	10	0.39	17
267-001.13	8	G 1/8 A	M14 ×1.5	24	0.94	12	0.47	27
Stainless steel								
404-162-S3	4	M12×1	M8×1	18	0.70	9	0.35	17
301-005-S3	6	M14×1.5	M10×1	18	0.70	9	0.35	17
406-004-S3	6	M10×1	M10×1	18	0.70	7.5	0.29	14
406-158-S3	6	M8×1	M10×1	23	0.90	7.5	0.29	14
301-020-S3	8	G 1/4 A	M14×1.5	23	0.90	10	0.39	17

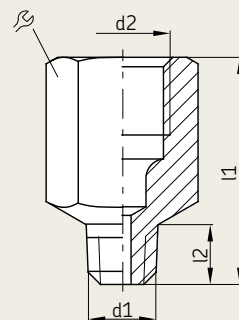
Adaptor with parallel thread



Adaptors with tapered thread

Order no.	Tube diam.	d1	d2	l1		l2		
	mm			mm	in	mm	in	
Steel, galvanized surface								
402-003K	2.5	M6×0.75 tap.	M6×0.75 tap.	11.5	0.45	4.5	0.17	8
402-006K	2.5	M8×1 tap.	M6×0.75 tap.	15	0.59	8	0.31	9
402-008K	2.5	M10×1 tap.	M6×0.75 tap.	16	0.63	7.5	0.29	12
404-662K	4	M6 tap.	M8×1	19	0.75	5	0.19	11
404-663K	4	M6 tap.	M8×1	20	0.79	6	0.24	11
404-673K	4	M6×0.75 tap.	M8×1	20	0.79	6	0.24	11
404-047K	4	M7 tap.	M8×1	20	0.79	6	0.24	11
404-003K	4	M8×1 tap.	M8×1	17	0.67	7.4	0.29	11
404-045	4	M8×1 tap.	M8×1	62.5	2.45	7.4	0.29	11
404-006K	4	M10×1 tap.	M8×1	16	0.63	7.4	0.29	11
401-004-512	4	M10×1 tap.	M8×1	25	0.98	7.4	0.29	11
404-040K	4	R 1/8 tap.	M8×1	16	0.63	6	0.24	11
404-040K-V1	4	1/8 NPTF	M8×1	20	0.79	6.7	0.26	11
404-054K	4	R 1/4 tap.	M8×1	14	0.55	9	0.35	14
404-072	4	1/4-28 UNF	M8×1	20	0.79	5.6	0.22	11
401-004-903	4	1/4 BSF	M8×1	20	0.79	5	0.19	11
401-004-904	4	1/16 BSF	M8×1	18	0.70	5	0.19	11
406-004K	6	M10×1 tap.	M10×1	23	0.90	7.4	0.29	14
301-105K	6	M12×1 tap.	M10×1	18	0.70	7.4	0.29	14
456-004K	6	R 1/8 tap.	M10×1	21	0.83	6	0.24	14
406-054K	6	R 1/4 tap.	M10×1	20	0.79	9	0.35	17

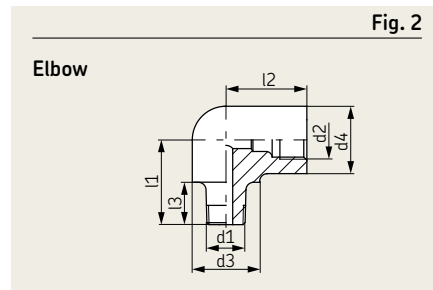
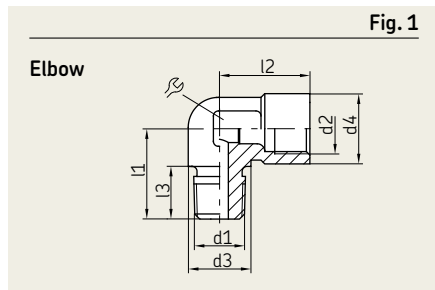
Adaptor with tapered thread



¹⁾ Tapered thread according to DIN 158, short, resp. according to DIN 2999

Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Elbows



Elbows with tapered thread (→ fig. 1)

Order no.	Tube diam.	d1 ¹⁾	d2	d3		d4		l1		l2		l3		
	mm			mm	in	mm	in	mm	in	mm	in	mm	in	
Die-cast zinc														
504-510K	4	M10×1 tap.	M8×1	13	0.51	13	0.51	21	0.83	16	0.63	10	0.39	14
514-018K	4	R 1/8 tap.	M8×1	13	0.51	13	0.51	21	0.83	16	0.63	10	0.39	14
506-508K	6	M8×1 tap.	M10×1	12.5	0.49	14	0.55	18	0.70	18	0.70	10.5	0.41	14
506-510K	6	M10×1 tap.	M10×1	12.5	0.49	14	0.55	18	0.70	18	0.70	10.5	0.41	14
506-512K	6	M12×1 tap.	M10×1	12.5	0.49	14	0.55	18	0.70	18	0.70	10.5	0.41	14
508-512K	8	M12×1 tap.	M14×1.5	14	0.55	19.5	0.76	19.5	0.76	24	0.94	10	0.39	14

¹⁾ Tapered thread according to DIN 158, short, resp. according to DIN 2999

Elbows with tapered thread (→ fig. 2)

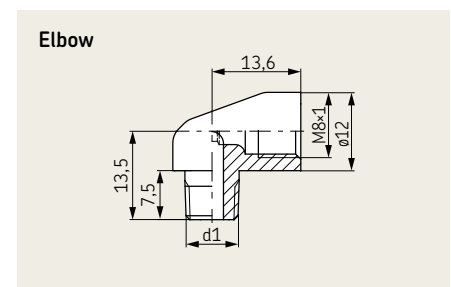
Order no.	Tube diam.	d1 ¹⁾	d2	d3		d4		l1		l2		l3	
	mm			mm	in	mm	in	mm	in	mm	in	mm	in
Steel													
502-206K	2.5	M6 tap.	M6×0.75	–	–	8	0.31	10	0.39	9.5	0.37	6	0.23
401-006-651	6	R 1/4 tap.	M10×1	14	0.55	14	0.55	17	0.66	17.5	0.68	8.5	0.33
Brass													
506-202K	6	M10×1 tap.	M10×1	17	0.66	17	0.66	22	0.86	21	0.82	11	0.43

¹⁾ Tapered thread according to DIN 158, short, resp. according to DIN 2999

Elbows with tapered thread

Order no.	Tube diam.	d1 ¹⁾
	mm	
Brass		
504-200K	4	M6 tap.
504-201K	4	M8×1 tap.
504-202K	4	M10×1 tap.
504-203K	4	M6×0.75 tap.
514-018K-S1	4	R 1/8 tap.
514-018K-V1	4	1/8 NPT
504-200K-V1	4	1/8 NPT

¹⁾ Tapered thread according to DIN 158, short, resp. according to DIN 2999



Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Screw and vent plugs

Fig. 3

Screw plugs

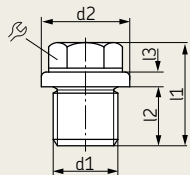


Fig. 4

Screw plugs

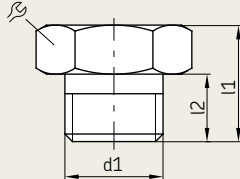
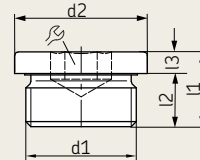


Fig. 5

Screw plugs



Screw plugs (sealed by flat washer to DIN 7603)

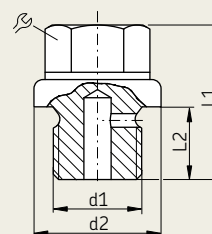
Order no.	d1	d2		l1		l2		l3		<i>ℓ</i>	Fig.
		mm	in	mm	in	mm	in	mm	in		
Steel, galvanized surface											
DIN910-R1-8-5.8	G 1/8 A	14	0.55	17	0.67	8	0.31	3	0.12	11	3
DIN910-R1-4×8-5,8	G 1/4 A	18	0.70	17	0.67	8	0.31	3	0.12	14	3
DIN910-R3-8-5.8	G 3/8 A	22	0.86	21	0.83	12	0.47	3	0.12	17	3
DIN910-R1-2-5.8	G 1/2 A	26	1.02	26	1.02	14	0.55	4	0.16	19	3
DIN910-R3-4-5.8	G 3/4 A	32	1.25	30	1.18	16	0.63	4	0.16	24	3
DIN910-R1-5.8	G 1 A	39	1.53	32	1.25	16	0.63	5	0.19	27	3
402-011	M6×0.75	–	–	9	0.35	5	0.19	–	–	10	4
404-011	M8×1	–	–	9.5	0.37	5.5	0.22	–	–	11	4
406-011	M10×1	–	–	12	0.47	7	0.28	–	–	12	4
408-211	M12×1	–	–	12	0.47	7	0.28	–	–	17	4
408-011	M14×1.5	–	–	12	0.47	7	0.28	–	–	17	4
410-011	M16×1.5	–	–	14	0.55	8	0.31	–	–	19	4
412-011	M18×1.5	–	–	15	0.59	10	0.39	–	–	22	4
DIN 908-M10×1-5.8	M10×1	14	0.55	11	0.43	8	0.31	3	0.12	5 ¹⁾	5
DIN 908-M12×1.5-5.8	M12×1.5	17	0.67	15	0.59	12	0.47	3	0.12	6 ¹⁾	5
DIN 908-M14×1.5-5.8	M14×1.5	19	0.75	15	0.59	12	0.47	3	0.12	6 ¹⁾	5
DIN 908-G1-8A-5.8	G 1/8 A	14	0.55	11	0.43	8	0.31	3	0.12	5 ¹⁾	5
DIN 908-G1-4A-5.8	G 1/4 A	18	0.70	15	0.59	12	0.47	3	0.12	6 ¹⁾	5
DIN 908-G3-8A-5.8	G 3/8 A	22	0.86	15	0.59	12	0.47	3	0.12	8 ¹⁾	5

1) Hexagon socket

Vent plugs (sealed by flat washer to DIN 7603)

Order no.	d1	d2		l1		l2		
		mm	in	mm	in	mm	in	
Steel, galvanized surface								
833-330-016	M10x1	14	0.55	17	0.67	8	0.31	11
833-330-021	G 1/8 A	14	0.55	17	0.67	8	0.31	11
833-340-034	G 1/4	18	0.86	17	0.67	8	0.31	14

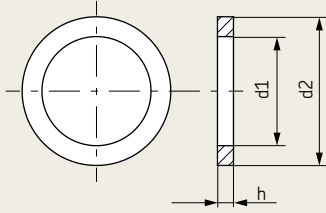
Vent plug



Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

Flat washers

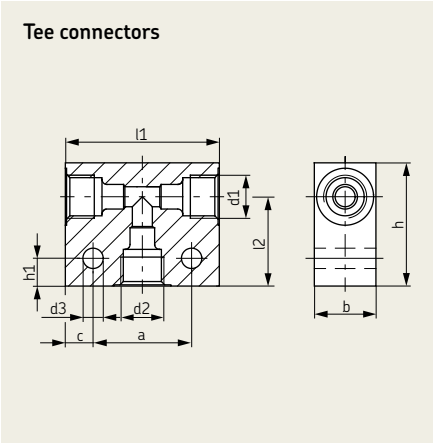
Flat washer



Flat washers

Order no.	d1		d2		h		Suitable for thread	
	mm	in	mm	in	mm	in	mm	in
Aluminum								
404-011-AL	10.2	0.40	13.9	0.55	1.1	0.04	M10	G 1/8
Copper								
DIN7603-A6×10-CU	6.2	0.24	9.9	0.39	1	0.03	M6	–
DIN7603-A8×11.5-CU	8.2	0.32	11.4	0.45	1	0.03	M8	–
504-019	10.2	0.40	13.9	0.55	1.1	0.04	M10	G 1/8
508-215-CU	12.2	0.48	15.9	0.63	1.4	0.05	M12	–
508-320-CU	12.2	0.48	15.9	0.63	2	0.07	M12	–
DIN7603-A12×18-CU	12.2	0.48	14.9	0.59	1	0.03	M12	–
508-108	13.3	0.52	17.9	0.70	1.5	0.06	–	G 1/4
DIN7603-A14×18-CU	14.2	0.56	17.9	0.70	1.5	0.06	M14	–
DIN7603-A16×20-CU	16.2	0.64	19.9	0.78	1.5	0.06	M16	–
DIN7603-A17×21-CU	17.2	0.68	20.9	0.82	1.5	0.06	–	G 3/8
DIN7603-A18×22-CU	18.2	0.72	21.9	0.86	1.5	0.06	M18	–
DIN7603-A20×24-CU	20.2	0.79	23.9	0.94	1.5	0.06	M20	–
DIN7603-A21×26-CU	21.2	0.83	25.9	1.02	1.5	0.06	–	G 1/2
DIN7603-A22×27-CU	22.2	0.87	26.9	1.06	1.5	0.06	M22	–
DIN7603-A27×32-CU	27.3	1.07	31.9	1.25	2	0.07	M27	–
DIN7603-A30×36-CU	30.3	1.19	35.9	1.41	2	0.07	M30	–
DIN7603-A33×39-CU	33.3	1.30	38.9	1.53	2	0.07	M33	–

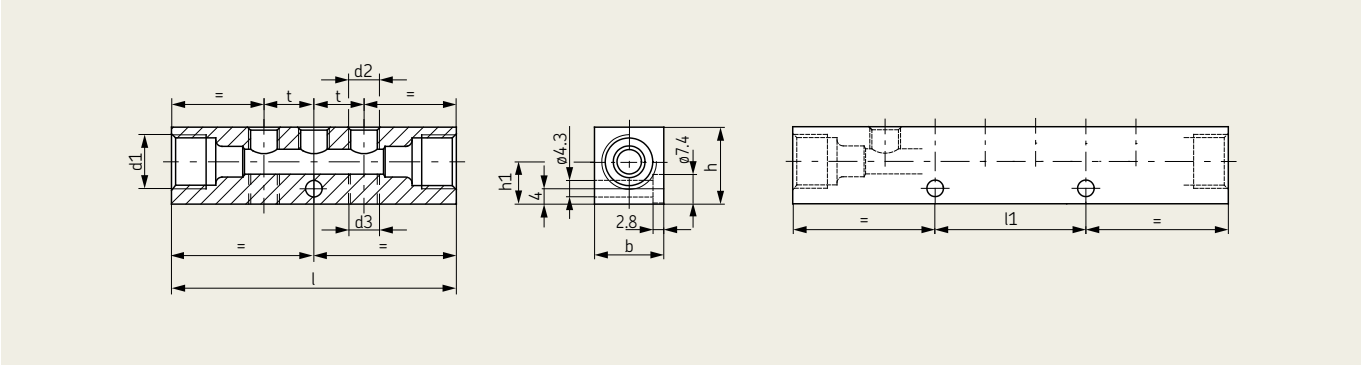
Tee connectors



Tee connectors to DIN 71433																			
Order no.	Tube diam.	d1	d2	d3	a		b		c		h		h1		l1		l2		
	mm	mm	mm	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
Aluminum																			
DAT506	6	M10×1	M10×1	6.6	0.26	22	0.86	20	0.79	9	0.35	30	1.18	9	0.35	40	1.57	20	0.79
DAT508	8	M14×1,5	M14×1,5	6.6	0.26	32	1.26	20	0.79	9	0.35	40	1.57	9	0.35	50	1.96	29	1.14
DAT510-S5	6	M16×1,5	M10×1	7	0.27	25	0.98	25	0.98	13.5	0.53	40	1.57	15	0.59	52	2.04	29	1.14
DAT512	12	M18×1,5	M18×1,5	6.6	0.26	42	1.65	25	0.98	9	0.35	40	1.57	9	0.35	60	2.36	29	1.14
Steel, galvanized surface																			
DAT510	10	M16×1,5	M16×1,5	7	0.27	25	0.98	20	0.79	13.5	0.53	40	1.57	15	0.59	52	2.04	29	1.14

Fig. 6

Metering device manifold



Solderless pipe union with tapered sleeve acc. to DIN 3862. For pressures up to 45 bar (650 psi)

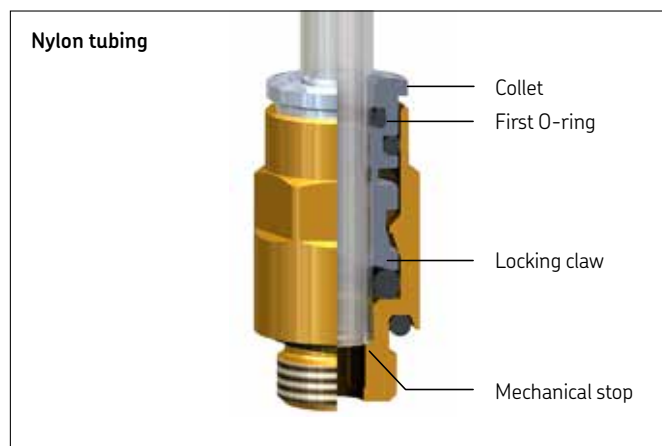
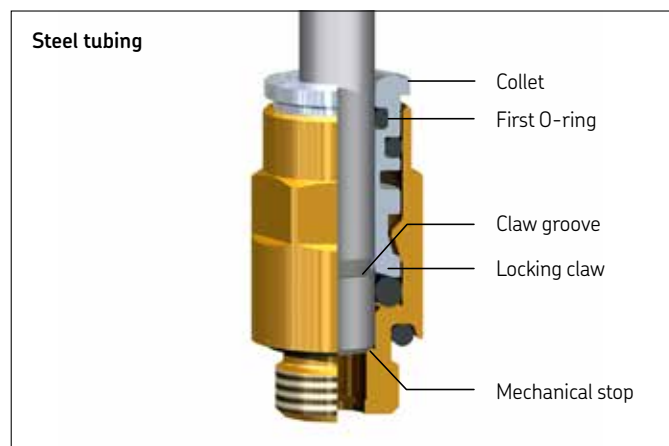
Metering device manifolds

Distributor manifold (→ fig. 6, page 92)

Old Order no.	New Order no.	Main tube port tube diam.	Number of port	d1	d2	d3	l	l1	h	h1	b	t
		mm					mm	mm	mm	mm		
Aluminum alloy												
322-541	VL-322-541	4	2	M8×1	2×M8×1	–	49	–	17	10.5	13	13
323-541	VL-323-541	4	3	M8×1	3×M8×1	–	62	–	17	10.5	13	13
324-581		4	4	M8×1	4×M8×1							
321-661	VL-01EAM3	6	1	M10×1	M10×1	–	41	–	20	11	18	–
322-661	VL-02EAM3	6	2	M10×1	2×M10×1	–	58	–	20	11	18	17
323-661	VL-03EAM3	6	3	M10×1	3×M10×1	–	75	–	20	11	18	17
324-761	VL-04EAM3	6	4	M10×1	4×M10×1	–	92	–	20	11	18	17
325-861	VL-05EAM3	6	5	M10×1	5×M10×1	–	109	51	20	11	18	17
326-661	VL-06EAM3	6	6	M10×1	6×M10×1	–	126	68	20	11	18	17
328-761	VL-08EAM3	6	8	M10×1	8×M10×1	–	160	52	20	11	18	17
329-761	VL-329-761	6	9	M10×1	9×M10×1	–	177	119	20	11	18	17
330-761	VL-10EAM3	6	10	M10×1	10×M10×1	–	194	136	20	11	18	17
331-761		6	11	M10×1	11×M10×1	–	211	153	20	11	18	17
332-761		6	12	M10×1	12×M10×1	–	228	170	20	11	18	17
					(above)	(below)						
325-561		6		M10×1								
322-861		6	2	M10×1	1×M10×1	1×M101	41		20	11	18	–
324-861		6	4	M10×1	2×M10×1	2×M101	58	–	20	11	18	18
326-663		6	6	M10×1	3×M10×1	3×M101	77	52	17	11	18	18
328-861		6	8	M10×1	4×M10×1	4×M101	92	34	20	11	18	18
330-861		6	10	M10×1	5×M10×1	5×M101	109	51	20	11	18	18
332-861		6	12	M10×1	6×M10×1	6×M101	126	68	20	11	18	18
334-861		6	14	M10×1	7×M10×1	7×M101	143	85	20	11	18	18
336-861		6	16	M10×1	8×M10×1	8×M101	160	102	20	11	18	18
338-861		6	18	M10×1	9×M10×1	9×M101	177	119	20	11	18	18
340-861		6	20	M10×1	10×M10×1	10×M101	194	136	20	11	18	18
322-561	VL-02DAM3	6	2	M10×1	2×M8×1	–	52	–	17	10.5	13	13
323-561	VL-03DAM3	6	3	M10×1	3×M8×1	–	65	–	17	10.5	13	13
324-561	VL-04DAM3	6	4	M10×1	4×M8×1	–	78	–	17	10.5	13	13
325-565	VL-05DAM3	6	5	M10×1	5×M8×1	–	91	–	17	10.5	13	13
326-562	VL-06DAM3	6	6	M10×1	6×M8×1	–	104	52	20	11	18	13
327-564	VL-07DAM3	6	7	M10×1	7×M8×1	–	117	39	20	11	18	13
328-561	VL-08DAM3	6	8	M10×1	8×M8×1	–	130	52	17	10.5	13	13
329-561	VL-10DAM3	6	10	M10×1	10×M8×1	–	156	78	17	10.5	13	13
321-581		8	1	M14×1,5	1×M8×1	–	48	–	20		18	–
322-581		8	2	M14×1,5	2×M8×1	–	61	–	20	11	18	13
323-581		8	3	M14×1,5	3×M8×1	–	74	–	20	11	18	13
323-661-S1		8	3	M14×1,5	3×M10×1	–	94	–	20	11	18	22
324-581		8	4	M14×1,5	4×M8×1	–	87	–	20	11	18	13
325-581		8	5	M14×1,5	5×M8×1	–	74	–	20	11	18	13
326-581		8	6	M14×1,5	6×M8×1	–	113	39	20	11	18	13
328-581		8	8	M14×1,5	8×M8×1	–	139	65	20	11	18	13
329-581		8	9	M14×1,5	9×M8×1	–	152	78	20	11	18	17
330-581		8	10	M14×1,5	10×M8×1	–	165	91	20	11	18	13
330-581-S1		8	10	M14×1,5	10×M8×1	–	201	85	20	11	18	17
331-581		8	11	M14×1,5	11×M8×1	–	178	104	20	11	18	13
332-581		8	12	M14×1,5	12×M8×1	–	191	117	20	11	18	13

SKF Quick Connectors. For pressures up to 300 bar (4,350 psi)

SKF Quick Connectors



Technical data

Lubricant oil, fluid grease, grease

Operating pressure max. 300 bar, 4,351 psi

Temperature range -40 to +80 °C, -40 to 176 °F

Seal material NBR or FKM (FPM)

Adaptors

Fig. 7

Adaptor

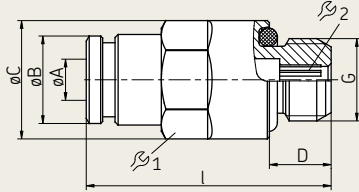
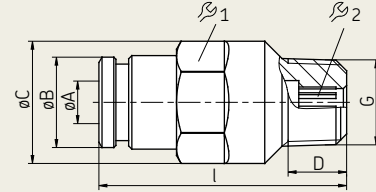


Fig. 8

Adaptor



Adaptors with parallel thread (→ fig. 7)

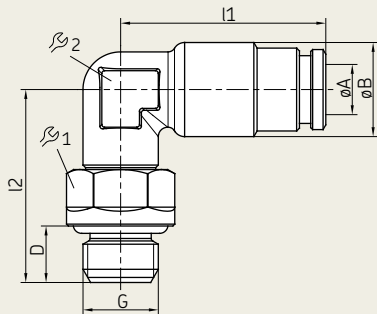
Order no.	Tube diam. A	G	D		$\varnothing B$		$\varnothing C$		l		$\varnothing 1$	$\varnothing 2$	Seal
			mm	in	mm	in	mm	in	mm	in			
404-003-VS	4	M8×1	6	0.24	8.8	0.35	11.5	0.45	23.8	0.94	10	2.5	NBR
404-006-VS	4	M10×1	6	0.24	8.8	0.35	13.5	0.53	23.8	0.94	12	2.5	NBR
404-006-S8-VS	4	M10×1	6	0.24	8.8	0.35	13.5	0.53	23.8	0.94	12	2.5	FPM
404-040-VS	4	G 1/8	6	0.24	8.8	0.35	13.5	0.53	23.8	0.94	12	2.5	NBR
406-158-VS	6	M8×1	6	0.24	11.7	0.46	13.2	0.52	30.5	1.19	12	3	NBR
406-004-VS	6	M10×1	6	0.24	11.7	0.46	13.5	0.53	27	1.06	12	4	NBR
406-004-S8-VS	6	M10×1	6	0.24	11.7	0.46	13.5	0.53	27	1.06	12	4	FPM
456-004-VS	6	G 1/8	6	0.24	11.7	0.46	13.5	0.53	27	1.06	12	4	NBR
406-054-VS	6	G 1/4	7	0.28	11.7	0.46	16.4	0.64	28	1.10	12	4	NBR
406-162-VS	6	M12×1	7	0.28	11.7	0.46	15.4	0.60	28	1.10	14	4	NBR
406-162-S8-VS	6	M12×1	7	0.28	11.7	0.46	15.4	0.60	28	1.10	14	4	FPM
408-004-VS	8	M10×1	6	0.24	13.9	0.55	15.2	0.59	32.3	1.27	14	5	NBR
408-004-S8-VS	8	M10×1	6	0.24	13.9	0.55	15.2	0.59	32.3	1.27	14	5	FPM
408-162-VS	8	M12×1	7	0.28	13.9	0.55	15.2	0.59	32.8	1.29	14	6	NBR
408-162-S8-VS	8	M12×1	7	0.28	13.9	0.55	15.2	0.59	32.8	1.29	14	6	FPM

Adaptors with tapered thread (→ fig. 8)

Order no.	Tube diam. A	G	D		$\varnothing B$		$\varnothing C$		l		$\varnothing 1$	$\varnothing 2$	
			mm	in	mm	in	mm	in	mm	in			
451-004-462-VS	4	M6 tap.	5.5	0.22	8.8	0.35	11.5	0.45	25.8	1.01	10	2.5	
451-004-498-VS	4	M8×1 tap.	5.5	0.22	8.8	0.35	13.5	0.53	23.3	0.92	10	2.5	
451-004-518-VS	4	M10×1 tap.	5.5	0.22	8.8	0.35	13.5	0.53	22.8	0.89	10	2.5	
404-673K-V1-VS	4	1/4-28 SAE LT	8.8	0.35	11.5	0.45	13.5	0.53	10	0.39	2.5		
404-040K-V1-VS	4	1/8 NPTF	8	0.31	8.8	0.35			24.8	0.97	10	2.5	
451-006-468-VS	6	M6 tap.	5.5	0.22	11.7	0.46	13.2	0.52	30	1.18	12	2.5	
451-006-498-VS	6	M8×1 tap.	5.5	0.22	11.7	0.46	13.5	0.53	29.5	1.16	12	4	
451-006-518-VS	6	M10×1 tap.	5.5	0.22	11.7	0.46	13.5	0.53	27	1.06	12	4	
406-423W-VS	6	R 1/8	6.5	0.26	11.7	0.46	13.5	0.53	28.5	1.12	12	4	
406-423N-VS	6	1/8 NPTF	6.5	0.26	11.7	0.46	13.5	0.53	28.5	1.12	12	4	

Banjo fittings

Banjo fitting



Banjo fittings with with parallel thread

Order no.	Tube diam. A	G	D		ø B		l1		l2		1	2	Seal
	mm		mm	in	mm	in	mm	in	mm	in			
504-100-VS	4	M6×1	4.5	0.18	10	0.39	21.8	0.86	17.5	0.69	9	9	NBR
504-101-VS	4	M8×1	6	0.24	10	0.39	21.8	0.86	20.5	0.80	10	9	NBR
504-102-VS	4	M10×1	6	0.24	10	0.39	21.8	0.86	20.5	0.80	12	9	NBR
504-101-S8-VS	4	M8×1	6	0.24	10	0.39	21.8	0.86	20.5	0.80	10	9	FPM
504-102-VS	4	M10×1	6	0.24	10	0.39	21.8	0.86	20.5	0.80	12	9	NBR
504-102-S8-VS	4	M10×1	6	0.24	10	0.39	21.8	0.86	20.5	0.80	12	9	FPM
504-108-VS	4	G 1/8	6	0.24	10	0.39	21.8	0.86	20.5	0.80	12	9	NBR
504-108-S8-VS	4	G 1/8	6	0.24	10	0.39	21.8	0.86	20.5	0.80	12	9	FPM
506-139-VS	6	M8×1	6	0.24	12.5	0.49	26	1.02	21	0.83	10	10	NBR
506-139-S8-VS	6	M8×1	6	0.24	12.5	0.49	26	1.02	21	0.83	10	10	FPM
506-140-VS	6	M10×1	6	0.24	12.5	0.49	26	1.02	21	0.83	12	10	NBR
506-140-S8-VS	6	M10×1	6	0.24	12.5	0.49	26	1.02	21	0.83	12	10	FPM
506-108-VS	6	G 1/8	6	0.24	12.5	0.49	26	1.02	21	0.83	12	10	NBR
506-108-VS	6	G 1/8	6	0.24	12.5	0.49	26	1.02	21	0.83	12	10	FPM
506-142-VS	6	M12×1	7	0.28	12.5	0.49	26	1.02	23	0.90	14	10	NBR
506-142-S8-VS	6	M12×1	7	0.28	12.5	0.49	26	1.02	23	0.90	14	10	FPM
506-143-VS	6	G 1/4	7	0.28	12.5	0.49	26	1.02	23	0.90	15	10	NBR
508-142-VS	8	M12×1	7	0.28	14.5	0.57	28.8	1.13	23	0.90	14	12	NBR
508-142-S8-VS	8	M12×1	7	0.28	14.5	0.57	28.8	1.13	23	0.90	14	12	FPM

Banjo fittings

Fig. 9

Banjo fitting

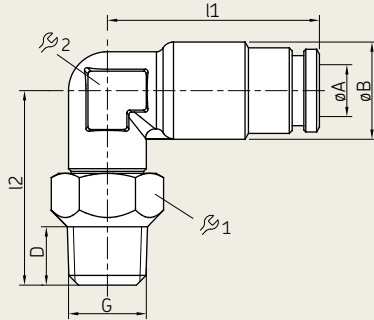
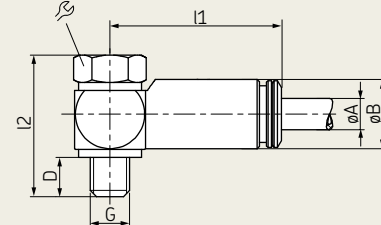


Fig. 10

Banjo fitting



Banjo fittings with tapered thread (→ fig. 9)

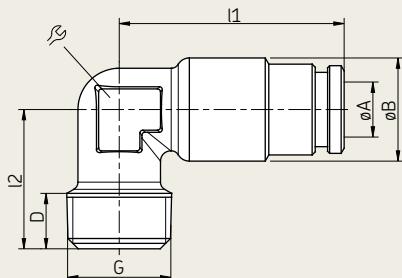
Order no.	Tube diam. A	G	D		ø B		l1		l2		1	2	Seal
	mm		mm	in	mm	in	mm	in	mm	in			
455-546-048-VS	4	M6 tap.	6	0.24	10	0.39	21.8	0.86	20	0.79	10	9	NBR
455-546-048-S8-VS	4	M6 tap.	6	0.24	10	0.39	21.8	0.86	20	0.79	10	9	FPM
455-529-048-VS	4	M8×1 tap.	6	0.24	10	0.39	21.8	0.86	20	0.79	10	9	NBR
455-529-048-S8-VS	4	M8×1 tap.	6	0.24	10	0.39	21.8	0.86	20	0.79	10	9	FPM
455-531-048-VS	4	M10×1 tap.	6	0.24	10	0.39	21.8	0.86	20	0.79	12	9	NBR
455-531-048-S8-VS	4	M10×1 tap.	6	0.24	10	0.39	21.8	0.86	20	0.79	12	9	FPM
455-569-048-VS	4	R 1/8	7.5	0.29	10	0.39	21.8	0.86	20.5	0.81	12	9	NBR
455-529-068-VS	6	M8×1 tap.	6	0.24	12.5	0.49	26	1.02	20	0.79	10	10	NBR
455-529-068-S8-VS	6	M8×1 tap.	6	0.24	12.5	0.49	26	1.02	20	0.79	10	10	FPM
455-531-068-VS	6	M10×1 tap.	6	0.24	12.5	0.49	26	1.02	20	0.79	12	10	NBR
455-531-068-S8-VS	6	M10×1 tap.	6	0.24	12.5	0.49	26	1.02	20.5	0.81	12	10	FPM
455-546-068-VS	6	M6×1 tap.	6	0.24	12.5	0.49	26	1.02	20.5	0.81	10	10	NBR
455-565-068-VS	6	R 1/4	11	0.43	12.5	0.49	26	1.02	20.5	0.81	14	10	NBR

Banjo fittings with banjo bolt and parallel thread (→ fig. 10)

Order no.	Tube diam. A	G	D		ø B		l1		l2		1	Seal
	mm		mm	in	mm	in	mm	in	mm	in		
504-161-VS	3	M6×1	5	0.19	8.8	0.35	22.3	0.88	19.5	0.77	9	NBR
504-401-S1-VS	4	M5	5	0.19	8.8	0.35	21.8	0.86	18	0.70	8	NBR
504-411-VS	4	M8	7	0.27	8.8	0.35	23.8	0.94	20	0.79	12	NBR
504-103-VS	4	M10×1	7	0.27	8.8	0.35	24.8	0.97	22.5	0.88	14	NBR
445-519-041-VS	4	G 1/8	7	0.27	8.8	0.35	24.8	0.97	22.5	0.88	14	NBR

Elbows

Elbow



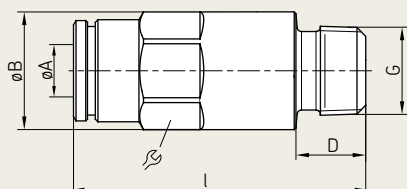
Elbows with tapered thread

Order no.	Tube diam. A	G	D		Ø B		l1		l2			Seal
			mm	in	mm	in	mm	in	mm	in		
453-004-471-VS	4	M6 tap.	6	0.24	10	0.39	21.8	0.86	14	0.55	9	NBR
453-004-471-S8-VS	4	M6 tap.	6	0.24	10	0.39	21.8	0.86	14	0.55	9	FPM
504-201-VS	4	M8×1 tap.	6	0.24	10	0.39	21.8	0.86	13.5	0.53	9	NBR
504-201-S8-VS	4	M8×1 tap.	6	0.24	10	0.39	21.8	0.86	13.5	0.53	9	FPM
504-202-VS	4	M10×1 tap.	6	0.24	10	0.39	21.8	0.86	13.5	0.53	9	NBR
504-202-S8-VS	4	M10×1 tap.	6	0.24	10	0.39	21.8	0.86	13.5	0.53	9	FPM
514-018-VS	4	R 1/8	7.5	0.29	10	0.39	21.8	0.86	15	0.59	9	NBR
514-018-S8-VS	4	R 1/8	7.5	0.29	10	0.39	21.8	0.86	15	0.59	9	FPM
504-200K-V1-VS	4	1/4-28 SAE LT	5.1	0.20	10	0.39	21.8	0.86	15.5	0.61	9	NBR
514-018K-V1-VS	4	1/8 NPTF	7	0.28	10	0.39	21.8	0.86	15	0.59	9	NBR
453-006-468-VS	6	M6 tap.	6	0.24	12.5	0.49	26	1.02	15	0.59	10	NBR
453-006-468-S8-VS	6	M6 tap.	6	0.24	12.5	0.49	26	1.02	15	0.59	10	FPM
506-508-VS	6	M8×1 tap.	6.5	0.26	12.5	0.49	26	1.02	14	0.55	10	NBR
506-508-S8-VS	6	M8×1 tap.	6.5	0.26	12.5	0.49	26	1.02	14	0.55	10	FPM
506-510-VS	6	M10×1 tap.	6	0.24	12.5	0.49	26	1.02	14	0.55	10	NBR
506-510-S8-VS	6	M10×1 tap.	6	0.24	12.5	0.49	26	1.02	14	0.55	10	FPM
506-511-VS	6	R 1/8	8.5	0.33	12.5	0.49	26	1.02	16.5	0.65	10	NBR
506-511-S8-VS	6	R 1/8	8.5	0.33	12.5	0.49	26	1.02	16.5	0.65	10	FPM
506-512-VS	6	M12×1 tap.	7	0.28	12.5	0.49	26	1.02	15	0.59	10	NBR
453-006-651-VS	6	R 1/4	11.5	0.45	12.5	0.49	26	1.02	19.5	0.77	10	NBR
506-511K-V1-VS	6	1/8 NPTF	8.5	0.33	12.5	0.49	26	1.02	16.5	0.65	10	NBR

SKF Quick Connectors. For pressures up to 300 bar (4,350 psi)

Check valves and locking pins

Check valve



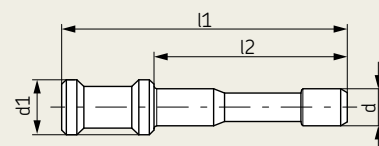
Check valve

Order no.	Tube diam. A	Opening pressure		Pressure, max.		G	D		$\varnothing B$		l_1			Seal
		bar	psi	bar	psi		mm	in	mm	in	mm	in		
VPKG-RV4-VS	4	3±1	43±1	300	4,351	R 1/8	7.9	0.310	10	0.39	32.3	1.27	9	NBR
VPKM-RV-VS	6	3±2	43±2	300	4,351	M10×1 tap.	8	0.314	13.5	0.53	33.5	1.32	12	NBR
VPKG-RV-VS	6	3±2	43±2	300	4,351	R 1/8	8	0.314	13.5	0.53	33.5	1.32	12	NBR

Locking pin

Order no.	Tube diam.	d_1		l_1		l_2	
		mm	in	mm	in	mm	in
450-204-002	4	6	0.24	31	1.22	21	0.83
450-206-002	6	8	0.31	37	1.45	25	0.98

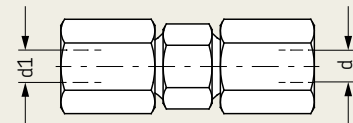
Locking pin



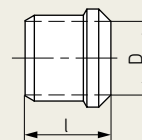
Solderless pipe union with cutting-sleeve

Straight connectors (tube to tube)				Reducing connectors			
Order no.	Tube ø d, d1	Series		Order no.	Tube ø d	Tube ø d1	Series
	mm				mm in	mm in	
Steel, galvanized surface (Cr-6-free)							
404-404	4	LL		504-410	6 0.24	4 0.16	L
406-406	6	L		504-412	8 0.31	4 0.16	L
408-408	8	L		506-410	8 0.31	6 0.24	L
410-410	10	L		506-412	10 0.39	6 0.24	L
412-412	12	L		508-410	10 0.39	8 0.31	L
415-415	15	L		506-413	12 0.47	6 0.24	L
418-418	18	L		508-412	12 0.47	8 0.31	L
				510-410	12 0.47	10 0.39	L
				508-413	15 0.59	8 0.31	L
				510-412	15 0.59	10 0.39	L
				512-410	15 0.59	12 0.47	L
				510-413	18 0.70	10 0.39	L
				512-412	18 0.70	12 0.47	L
				515-410	18 0.70	15 0.59	L
Stainless steel							
406-406-S3	6	L					
408-408-S3	8	L					
410-410-S3	10	L					
415-415-S3	15	L					

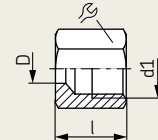
Straight connectors (tube to tube)



Cutting sleeves to DIN 3861/ISO 8434-1



Union nuts to DIN 3870/ISO 8434-1



Cutting sleeves to DIN 3861/ISO 8434-1

Material: steel, galvanized surface (Cr-6 free)

Order no.	D tube dia.	L	
	mm	mm in	
404-301 ¹⁾	4	6 0.24	
406-331 ¹⁾	6	7 0.28	
96-5708-0058 ¹⁾	8	7 0.28	
96-5710-0058 ¹⁾	10	7 0.28	
96-5712-0058 ¹⁾	12	7.5 0.29	
406-301 ²⁾	6	9.5 0.37	
408-301 ²⁾	8	9.5 0.37	
410-301 ²⁾	10	10 0.39	
412-301 ³⁾	12	10 0.39	
415-301 ³⁾	15	10 0.39	
418-301 ³⁾	18	10 0.39	

¹⁾ Pressure = 100 bar, 1,450 psi

²⁾ Pressure = 500 bar, 7,252 psi

³⁾ Pressure = 400 bar, 5,801 psi

Union nuts to DIN 3870/ISO 8434-1

Material: steel, galvanized surface (Cr-6 free)

Order no.	D tube dia.	d1	L	WAF		Pressure	
	mm		mm in	mm in		bar	psi
404-302	4	M8×1	11 0.43	10 0.39		100	1,450
406-332	6	M10×1	11.5 0.45	14 0.55		100	1,450
96-5608-0058	8	M12×1	12 0.47	14 0.55		100	1,450
96-5610-0058	10	M14×1	12.5 0.49	17 0.67		100	1,450
406-302	6	M12×1.5	14.5 0.57	14 0.55		100	1,450
408-302	8	M14×1.5	14.5 0.57	17 0.67		500	7,252
410-302	10	M16×1.5	15.5 0.61	19 0.75		500	7,252
412-302	12	M18×1.5	15.5 0.61	22 0.86		400	5,801
96-2815-0058	15	M22×1.5	17 0.67	27 1.06		400	5,801
96-2818-0058	18	M26×1.5	18 0.71	32 1.26		400	5,801

Solderless pipe union with cutting-sleeve

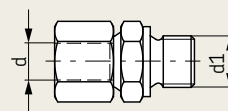
Straight connectors (tube to tube)

Order no.	Tube $\varnothing$ d	d1	Series
	mm	mm	
Steel, galvanized surface (Cr-6-free)			
Form C			
406-403	6	M10×1	LL
406-413	6	M14×1,5	L
410-403	10	M14×1,5	
410-463	10	M18×1,5	
412-423	12	M14×1,5	
412-403	12	M16×1,5	
412-433	12	M18×1,5	
415-403	15	M18×1,5	
415-413	15	M22×1,5	
418-403	18	M22×1,5	
96-0319-0058	18	M18×1,5	
96-0322-0058	22	M26×1,5	
96-0328-0058	28	M33×2	
96-0335-0058	35	M42×2	
96-0342-0058	42	M48×2	
Form A			
96-1206-0058	6	M12×1,5	S
408-413	8	M14×1,5	
410-413	10	M16×1,5	
412-453	12	M18×1,5	
96-1212-0058	12	M18×1,5	
96-1214-0058	14	M20×1,5	
96-1216-0058	16	M22×1,5	
96-1220-0058	20	M27×1,5	
96-6002-0058	4	M6×1 tap.	LL
404-413	4	M8×1 tap.	
404-403	4	M10×1 tap.	
404-403N	4	1/8 NPTF	
406-443	6	M6 tap.	
406-433	6	M8×1 tap.	
406-423	6	M10×1 tap.	
406-446 ¹⁾	6	M6 tap.	
406-423N	6	1/8 NPTF	
441-008-511	8	M10×1 tap.	
410-443	10	M10×1 tap.	L
Stainless steel			
406-443-S3	6	M6 tap.	LL
406-433-S3	6	M8×1 tap.	
406-403-S3	6	M10×1	
406-423-S3	6	M10×1 tap.	
410-443-S3	6	M10×1 tap.	
441-008-511-S3	8	M10×1 tap.	
410-403-S3	10	M14×1,5	L

¹⁾ Tapered thread, short

LL-series (extra-light version)
L-series (light version)
S-series (heavy-duty version)

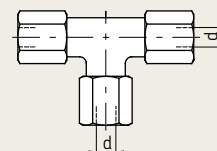
Straight screw-in connectors to DIN 2353 with metric thread



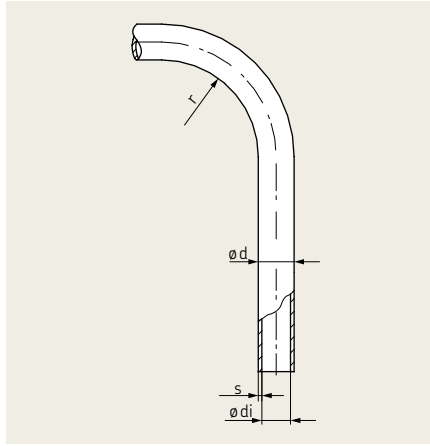
Tee connectors

Order no.	Tube diam. d
	mm
96-6904-0058	4
406-407	6
408-407	8
410-407	10
412-407	12
415-407	15
418-407	18
422-407	22

Tee connectors



Steel tubing



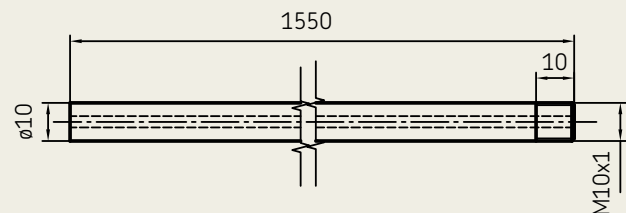
Steel tubing

Order no.	Nominal size da × s		s		di	Bending radius r ¹⁾		Operating pressure		Burst pressure	
	mm		mm	in	mm	mm	in	bar	psi	bar	psi
Steel, galvanized surface (Cr-6 free)											
982-120-040	4×1	±0.08	0.9	0.04	2 ±0.15	12	0.47	500	7,252	1,360	19,725
982-120-041	4×0.7	±0.05	0.67	0.03	2.6±0.10	12	0.47	368	5,337	952	13,808
982-120-060	6×1	±0.08	0.9	0.04	4 ±0.12	18	0.70	372	5,395	963	13,967
982-120-061	6×0.7	±0.05	0.67	0.03	4.6±0.10	18	0.70	271	3,931	674	9,775
982-120-080	8×1	±0.08	0.9	0.04	6 ±0.10	24	0.94	288	4,177	723	10,486
982-120-100	10×1	±0.08	0.9	0.04	8 ±0.08	30	1.18	248	3,597	612	8,876
982-120-120	12×1.5	±0.08	1.4	0.06	9 ±0.10	36	1.41	303	4,395	765	11,095
982-120-150	15×1.5	±0.08	1.4	0.06	12 ±0.08	45	1.77	248	3,597	612	8,876
982-120-180	18×1.5	±0.08	1.4	0.06	15 ±0.08	54	2.12	209	3,031	510	7,397
Stainless steel											
D1127R02.5×0.5+A46	2.5×0.5±0.03		0.5	0.02	1.5±0.05	7.5	0.29	386	5,598	1,664	24,134
DIN2462-R04×1+A46	4×1 ±0.1		0.9	0.04	2 ±0.2	12	0.47	466	6,759	2,080	30,168
DIN2462-R06×1+A46	6×1 ±0.1		0.9	0.04	4 ±0.2	18	0.70	347	5,033	1,473	21,364
DIN2462-R08×1+A46	8×1 ±0.1		0.9	0.04	6 ±0.2	24	0.94	269	3,901	1,105	16,027
DIN2462-R010×1+A46	10×1 ±0.1		0.9	0.04	8 ±0.2	30	1.18	231	3,350	936	13,575

Super rod

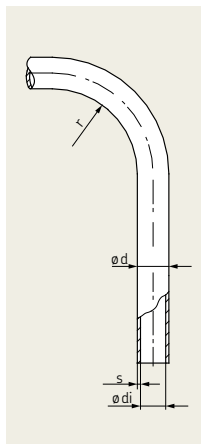
For locating lubricating lines in hazardous locations subject to damage

Order no.	Nominal size da × s		l	
	mm		m	ft
821-190-115	10×3		1.5	5



Dimensions shown are in mm

Nylon tubing



Technical data

WVN715	PA 12 H polyamide 12, semirigid, unplasticized as per DIN 73378, stabilized against heat and aging.	PA 12 HL (black tubing) polyamide 12, semirigid, unplasticized as per DIN 73378, stabilized against light, heat and aging.
WVN716	PA 12 PH polyamide 12, flexible, containing plasticizer as per DIN 73378, stabilized against heat and aging.	PA 12 PHL (black tubing) polyamide 12, flexible, containing plasticizer as per DIN 73378, stabilized against light, heat, and aging.
Temperature range	–60 to +80 °C –76 to +176 °F	–60 to +80 °C –76 to +176 °F

Important note: For screwed tubing joints only use unions with reinforcing sockets!

Nylon tubing WVN715, semirigid (without plasticizer)

Order no. ¹⁾	ø da		s	ø di		Smallest permissible bending radius r ²⁾				Operating pressure ²⁾ at 23 °C (73.4 °F)		Burst pressure	
	mm	mm		mm	in	mm	in	mm	in	bar	psi	bar	psi
WVN715-R02.5×0.5	2.5 ±0.1	0.5	0.02	1.5	0.06	25	0.98	9	0.35	66	957	198	2,872
WVN715-R04×0.85	4 ±0.1	0.85	0.03	2.3	0.09	38	1.49	14	0.55	72	1,044	216	3,133
WVN715-R06×1	6 ±0.1	1	0.04	4	0.16	63	2.48	21	0.83	53	769	159	2,306
WVN715-R06×1.25	6 ±0.1	1.25	0.49	3.5	0.14	63	2.48	21	0.83	70	1,015	210	3,046
WVN715-R08×1.25	8 ±0.1	1.25	0.49	5.5	0.22	76	2.99	28	1.10	49	711	147	2,132
WVN715-R010×1.5	10 ±0.15	1.5	0.06	7	0.28	89	3.50	35	1.38	47	682	141	2,045

¹⁾ If resistance to light-aging is desired, add the word "BLACK" in the order number (example = WVN715-R08x1.25x50M BLACK).

²⁾ The permissible operating pressure is lower at higher temperatures (→ the **Pressure utilization factor table**).

Nylon tubing WVN716, flexible (containing plasticizer)

Order no. ¹⁾	ø da ±0.1		s	ø di		Smallest permissible bending radius r ²⁾				Operating pressure ²⁾ at 23 °C (73.4 °F)		Burst pressure	
	mm	mm		mm	in	mm	in	mm	in	bar	psi	bar	psi
WVN716-R04×0.85	4	0.85	0.03	2.3	0.09	38	1.49	14	0.55	36	522	108	1,566
WVN716-R06×1.25	6	1.25	0.49	3.5	0.14	63	2.48	21	0.83	35	508	105	1,523
WVN716-R08×1.25	8	1.25	0.49	3.5	0.14	80	3.14	30	1.18	25	363	75	1,088

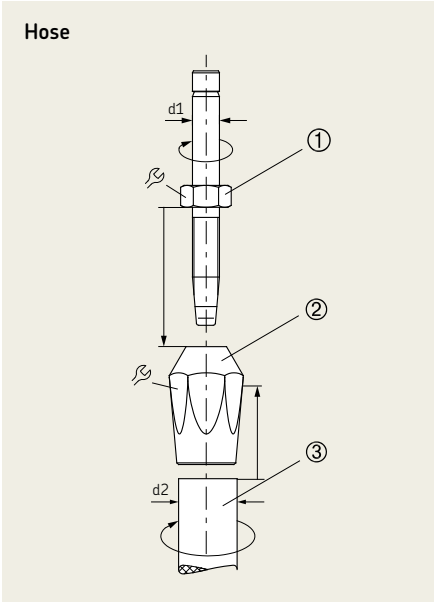
¹⁾ If resistance to light-aging is desired, add the word "BLACK" in the order number (example = WVN716-R08x1.25x50M BLACK).

²⁾ The permissible operating pressure is lower at higher temperatures (→ the **Pressure utilization factor table**).

Pressure utilization factor

Temperature up to Pressure efficiency (%)	30 °C, 86 °F 83	40 °C, 104 °F 72	50 °C, 122 °F 64	60 °C, 140 °F 57	70 °C, 158 °F 52	80 °C, 176 °F 47
--	--------------------	---------------------	---------------------	---------------------	---------------------	---------------------

Medium pressure hoses with reusable hose fittings



Hoses suitable for self-installation, operating pressure 45 bars (653 psi)

Tube diam. d1	① Male body Order no.		② Shell Order no.		③ Hose Order no. 1)	Hose diam. d2		Increase in volume at ~40 bars (~580 psi)	
						mm	in	cm ³ /m	in ³ /ft
4	406-704-001(-VS) 2)	8	406-804-001	14	WVN701-4	11	0.43	1	0.06
6	406-706-001(-VS) 2)	10	406-806-001	17	WVN701-6	13	0.51	1.4	0.09
8	406-708-001(-VS) 2)	13	406-808-001	19	WVN701-8	15	0.59	1.4	0.09

1) Please quote length when ordering. Max. length available 20 m (65.6 ft).
2) For version with claw groove on ends of tubing for quick connectors, Order No.: ... -VS

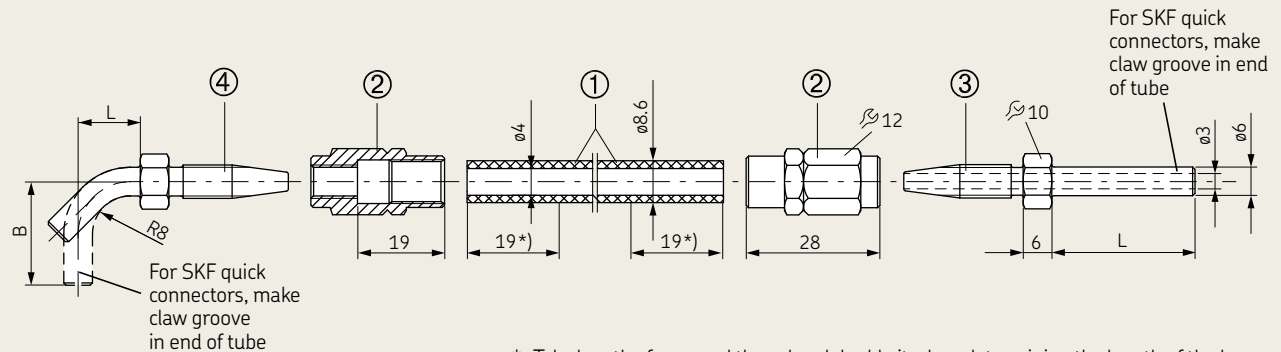
Material: Hose: Perbunan, resistant to mineral oils, with two layers of braided rayon
Male body: steel, galvanized
Shell: brass

Permissible operating pressure: -40 to +100 °C (-40 to +212 °F)

- Installation instructions**
- a) Apply thin film of oil to thread and inside of hose of parts ①②③ to be connected.
 - b) Clamp shell ② in vise and screw in hose ③ by turning it to the left up to the stop.
 - c) Important note: To avoid damages screw in male body ① with a wrench up to the stop. **Do not tighten!**

High pressure hoses for self-installation, $\varnothing 6$ diameter

High pressure hoses for main line for tube diam. $\varnothing 6$ (NW4) and secondary lines



Dimensions shown are in mm

* Take length of engaged thread and double it when determining the length of the hose.

High pressure hoses for self-installation

For main line for tube diam. $\varnothing 6$ (NW4) (connection: feeder – lubrication point)
and secondary lines (connection: feeder – lubrication point)

Designation	Order no.	L		B	
		mm	in	mm	in
① High pressure hose, max. length supplied 50 m (164 ft)	982-750-091				
High pressure hose, max. length supplied 50 m (164 ft) filled with NLGI grade 2 grease	982-750-091+AF2				
② Sleeve	853-540-010				
Sleeve in stainless steel	432-23676-1				
③ Tube stud, straight	853-370-002	20	0.79		
	853-380-002	30	1.18		
	853-390-002	69	2.71		
	853-370-002-VS¹⁾	26	1.02		
	853-380-002-VS¹⁾	33	1.29		
	853-390-002-VS¹⁾	69	2.71		
Tube stud, straight in stainless steel	855-308-002	30	1.18		
④ Tube stud, 10° angle	853-390-006-VS¹⁾	65	2.55	4	0.16
Tube stud, 30° angle	853-390-005-VS¹⁾	64	2.52	17	0.67
Tube stud, 45° angle	853-380-004	17	0.67	11	0.43
	853-380-004-VS¹⁾	59	2.32	24	0.94
Tube stud, 90° angle	853-380-003	13	0.51	22	0.86
	853-380-003-VS¹⁾	13	0.51	35	1.38
	853-390-003	24	0.94	50	1.97
	853-390-003-VS¹⁾	24	0.94	50	1.97
	853-390-004	24	0.94	36	1.41

¹⁾ Version with claw groove on ends of tubing for quick connectors, order No.: ...-VS (→ Page 94).

Technical data

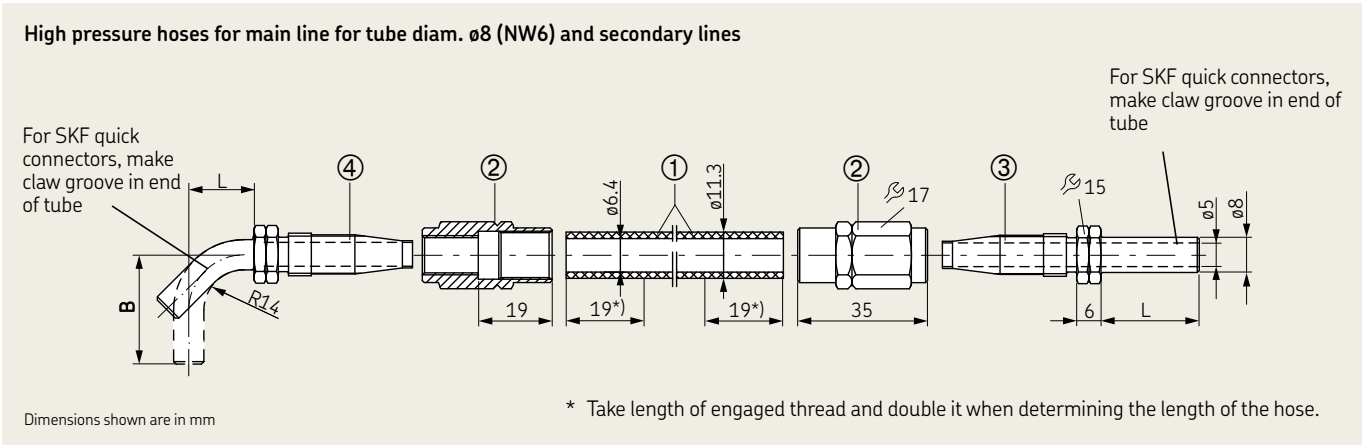
Hose
Burst pressure 840 bars
12,183 psi
Min. bending radius 35 mm, 1.38 in

Materials hose

Inner lining unplasticized polyester
Inner layer braided synthetic fibers
Outer cover weatherproof polyurethane
Sleeve, tube stud steel, galvanized or stainless steel

Permissible operating temperature -40 to +70 °C
-40 to +158 °F

High pressure hoses for self-installation, ø8 diameter



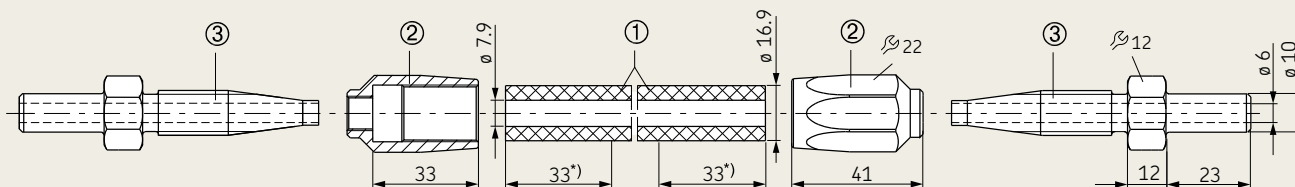
High pressure hoses for self-installation					
For main line for tube diam. ø8 (NW6) (connection: feeder – lubrication point) and secondary lines (connection: feeder – lubrication point)					
Designation	Order no.	L		B	
		mm	in	mm	in
① High pressure hose, max. length supplied 50 m (164 ft)	982-750-111				
High pressure hose, max. length supplied 50 m (164 ft) filled with NLGI grade 2 grease	982-750-111+AF2				
② Sleeve	406-808-005				
③ Tube stud, straight	406-708-005	20	0.79		
	406-708-007	47	1.85		
	406-708-005-VS ¹⁾	33	1.29		
④ Tube stud, 45° angle	406-708-009	37	1.45	26	1.02
	Tube stud, 90° angle	406-708-008	19	0.75	34 1.34

¹⁾ Version with claw groove on ends of tubing for quick connectors, order No.: ...-VS (→ Page 94).

Technical data	
Hose	
Burst pressure	840 bars 12,183 psi
Min. bending radius	45 mm, 1.77 in
Materials hose	
Inner lining	unplasticized polyamide
Inner layer	braided synthetic fibers
Outer cover	weatherproof polyurethane, black
Sleeve, tube stud	steel, galvanized
Permissible operating temperature	–40 to +70 °C –40 to +158 °F

High pressure hoses for self-installation, $\varnothing 10$ diameter

High pressure hoses for main line for tube diam. $\varnothing 10$ (NW8) and secondary lines



Dimensions shown are in mm

* Take length of engaged thread and double it when determining the length of the hose.

High pressure hoses for self-installation

For main line for tube diam. $\varnothing 10$ (NW8) (connection: feeder – lubrication point)

Designation	Order no.
① High pressure hose, max. length supplied 100 m (328 ft)	WVN711-10
High pressure hose, max. length supplied 50 m (164 ft) filled with NLGI grade 2 grease	WVN711-10+AF2
② Sleeve	406-810-002
③ Tube stud, straight	406-710-002

Technical data

Hose	
Burst pressure	315 bars 4,569 psi
Min. bending radius	55 mm 2.16 in

Materials hose

Inner lining	Perbunan
Inner layer	diagonally woven synthetic fibers
Outer cover	weatherproof neoprene
Sleeve, tube stud	steel, galvanized
Permissible operating temperature	-40 to +100 °C -40 to +212 °F

Pressure gauges

Pressure gauges, damped design with restrictor (→ fig. 11)

Order no.	Indication range	Restrictor	
Steel housing, black			
248-602.25	0–10 bar (0–145 psi)	4kt 12	–
169-102-506 ¹⁾	0–25 bar (0–363 psi)	12	0.4
248-602.20	0–40 bar (0–580 psi)	12	–
169-104 008 ¹⁾	0–40 bar (0–580 psi)	4kt 14	0.4
			for grease for oil

ABS housing
169-106-004

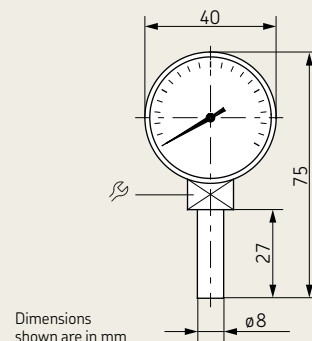
0–60 bars (0–870 psi) 4kt 14 –

Fixed by means of a double tapered sleeve and socket union (solderless tube connection) in counterbore acc. to DIN 3854/DIN 3862

¹⁾ Damped design

Fig. 11

Pressure gauge



Dimensions shown are in mm

Pressure gauges, damped design with restrictor (→ fig. 12)

Order no.	Indication range
-----------	------------------

ABS housing

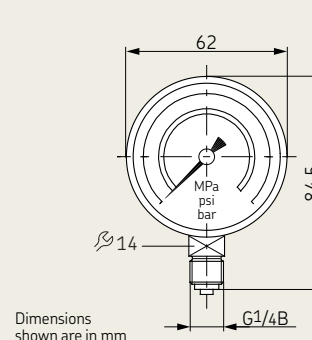
169-101-004	0–10 bar (0–145 psi)
169-102-020 ¹⁾	0–25 bar (0–363 psi), 0–2,5 Mpa
169-104-020 ¹⁾	0–40 bar (0–580 psi), 0–4 Mpa
169-106-020 ¹⁾	0–60 bar (0–870 psi), 0–6 Mpa
169-110-020 ¹⁾	0–100 bar (0–1,450 psi), 0–10 Mpa
169-116-000	0–160 bar (0–2,321 psi)
169-125-020 ¹⁾	0–250 bars (0–3,626 psi), 0–25 Mpa

Washer, order No. **248-610.02**, must be ordered separately for every pressure gauge

¹⁾ Associated connecting pieces (→ page 87)

Fig. 12

Pressure gauge



Dimensions shown are in mm

Pressure gauges, damped version with glycerine filling (→ fig. 13)

Order no.	Indication range	Mounting position
-----------	------------------	-------------------

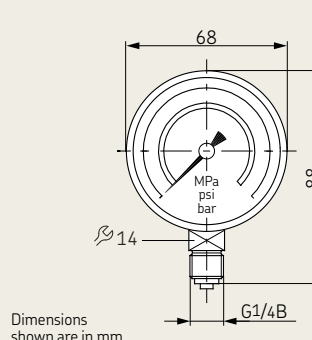
Stainless steel housing

169-102-015	0–25 bar (0–363 psi), 0–2,5 Mpa	vertically
169-104-015	0–40 bar (0–580 psi), 0–4 Mpa	
169-106-015	0–60 bar (0–870 psi), 0–6 Mpa	
169-110-015	0–100 bar (0–1,450 psi), 0–10 Mpa	
169-125-015	0–250 bar (0–3,626 psi), 0–25 Mpa	
169-140-001	0–400 bars (0–5,802 psi)	

Washer, order No. **248-610.02**, must be ordered separately for every pressure gauge

Fig. 13

Pressure gauge



Dimensions shown are in mm

Pressure gauges

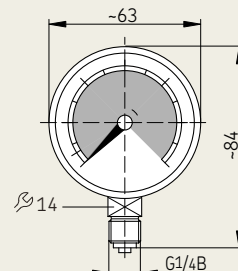
Pressure gauges, damped design with glycerine filling and visualization in red/green
(→ fig. 14)

Order no.	Indication range	Mounting position
Stainless steel housing		
169-101-607	0–16 bar (0–232 psi), 0–1.6 Mpa	vertically
169-104-011	0–40 bar (0–580 psi), 0–4 Mpa	
169-106-011	0–60 bar (0–870 psi), 0–6 Mpa	
169-110-010	0–100 bar (0–1 450 psi), 0–10 Mpa	

Washer, order No. **248-610.02**, must be ordered separately for every pressure gauge

Fig. 14

Pressure gauge



Dimensions shown are in mm

Check valves

Check valves (ball valves)

Order no.	Tube diam. d1	G	Opening pressure		Pressure max.		Series → fig.	
	mm		bar	psi	bar	psi		
VPG-RV	4	R 1/8 tap.	10	145	100	1,450	LL	15
VPG-RV6	6	R 1/8 tap.	10	145	315	4,569	L	15
VPG-RV8	8	R 1/8 tap.	10	145	315	4,569	L	15
VPM-RV4	4	M10×1 tap.	10	145	100	1,450	LL	15
VPM-RV	6	M10×1 tap.	10	145	315	4,569	L	15
VPM-RV8	8	M10×1 tap.	10	145	315	4,569	L	15
VPM-RV10	10	M10×1 tap.	10	145	315	4,569	L	15
With cutting sleeve and union nut								
VPKG-RV	6	R 1/8 tap.	3	43.5	100	1,450	LL	16
VPKM-RV-S3 ¹⁾	6	M10×1 tap.	3	43.5	100	1,450	LL	16
VPKM-RV-S4	6	M10×1 tap.	2	29.0	100	1,450	LL	16

Check valves for quick connectors (→ page 98)

LL-series = extra light version

L-series = light version

¹⁾ Stainless steel.

Fig. 15

Check valve

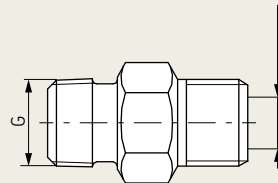
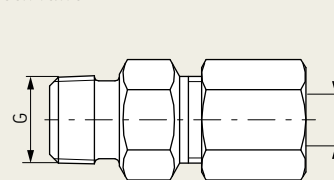


Fig. 16

Check valve

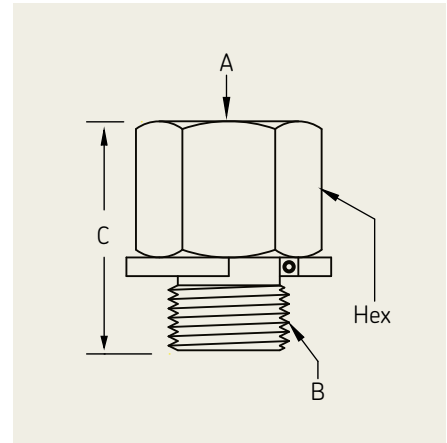


Conversion adaptors, metric to inch

Metric male to NPT female conversion adaptors

Order no.	A	B	C		Hex
	in	mm	mm	in	in
9543-511-001	1/8	10×1	1.18	0.046	9/16
9543-521-001	1/4	10×1	1.18	0.046	3/4
9543-621-001	1/4	12×1.5	1.38	0.054	3/4
9543-721-001	1/4	14×1.5	1.38	0.054	3/4
9543-731-001	3/8	M14×1.5			
9543-831-001	3/8	16×1.5	1.47	0.057	7/8
9543-931-001	3/8	18×1.5	1.51	0.059	15/16
9543-841-001	1/2	16×1.5	1.67	0.065	1 1/8
9543-941-001	1/2	18×1.5	1.69	0.066	1 1/8
9543-041-001	1/2	22×1.5	1.77	0.069	1 1/8
9543-061-001	3/4	27×2	1.85	0.072	1 3/8
9543-081-001	1	33×2	2.22	0.087	1 5/8

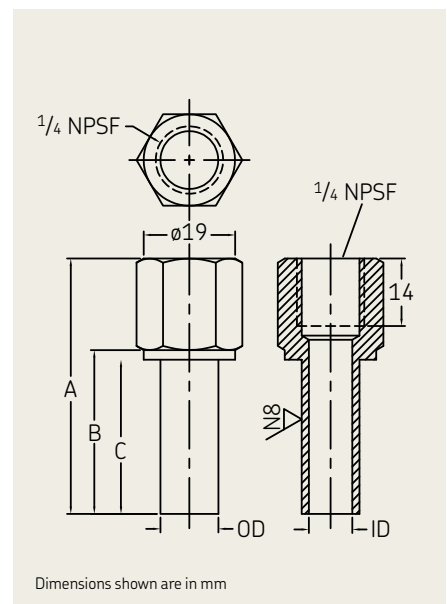
A = pipe thread NPTF
B = metric thread



BSPP male to NPT female conversion adaptors

Order no.	A	B	C	Hex
	NPT	BSPP	in	in
9544-111-001	1/8	1/8	1.06	9/16
9544-211-001	1/8	1/4	1.20	3/4
9544-221-001	1/4	1/4	1.42	3/4
9544-331-001	3/8	3/8	1.46	7/8
9544-441-001	1/2	1/2	1.77	1 1/8
9544-661-001	3/4	3/4	1.85	1 3/8
9544-881-001	1	1	2.20	1 5/8

A = pipe thread NPTF
B = BSPP thread



Dimensions shown are in mm

Metric standpipe to 1/4 NPT adaptor

Order no.	Diam.	OD	ID	A		B		C		Hex
	in	mm	mm	mm	in	mm	in	mm	in	in
9523-321-101	1/4 NPT	6	3.2	43	1.68	23	0.90	22	0.86	0.75
9523-421-101	1/4 NPT	8	5.2	48	1.88	28	1.10	27	1.06	0.75
9523-521-101	1/4 NPT	10	7.2	50	1.96	30	1.17	29	1.13	0.75
9523-621-101	1/4 NPT	12	9.2	53	2.08	33	1.29	32	1.25	0.75

Electric plug and socket connectors

For pressure switches, level switches, flow sensors, directional control valves and filters

Electric plugs or sockets are required for the actuation of various models of hydraulic equipment used in the field of central lubrication technology and for the evaluation of switching signals.

Please refer to brochure 1-1730-EN for further information.

DIN EN 175301-803/ISO 4400



DIN EN 175201-804



M12x1



Overview of sockets

Order no.	Standard design/type	Pressure switch	Flow sensor	Filter monitor	Lubricant level switch	Application Metering device	Oil-streak sensor	Flow monitor	Directional control valve	Cycle switch
179-990-034	DIN EN 175301-803 A/ISO 4400	•	•	•	•					
179-990-110								•		
179-990-111								•		
179-990-147		•	•	•	•					
179-990-657									•	
179-990-416	DIN EN 175301-803 A/ISO 4400 (with integrally extruded line)								•	
179-990-452		•	•	•	•					
179-990-200	DIN EN 175201-804	•	•	•	•			•		
179-990-371 straight	4-pole, M12x1	•	•	•	•	•	•	•		•
179-990-372 angled		•	•	•	•	•	•	•		•
179-990-600 straight	4-pole, M12x1 (with integrally extruded line)	•	•	•	•	•	•	•		•
179-990-601 angled		•	•	•	•	•	•	•		•
179-990-381 straight	3-pole, M12x1 (with integrally extruded line)	•	•	•	•	•	•	•		•
179-990-382 angled		•	•	•	•	•	•	•		•

Accessories for socket 179-990-200

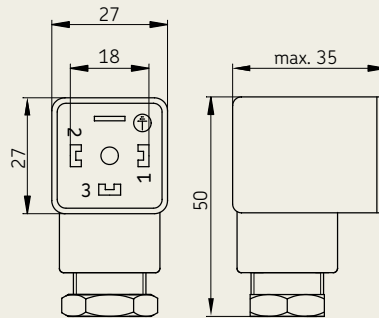
LED insert (2 LED version), order No. 179-990-299+924 (24 V DC)

LED insert (3 LED version), order No. 179-990-203+924 (24 V DC)

Socket to DIN EN 175301-803 A/ISO 4400

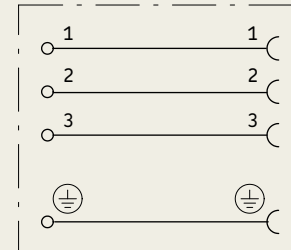
179-990-034

Supplied with flat packing and fixing screw



Dimensions shown are in mm

Circuit diagram 179-990-034 / -147



Technical data

Order no	179-990-034 / 179-990-110 / 179-990-111 / 179-990-147
Version	insert rotatable 4x90°
Poles	3 + PE
Operating display	—
Operating current	max 10 A
Housing	PA, black
Cable gland	PG 11 / PG 9 ¹⁾
Conductor cross section	max 1.5 mm ² , 0.0023 in ²
Type of terminal	screws
IP enclosure DIN40050	IP 65 (installed)
Temperature range	−40 to +80 °C, −40 to + 176 °F
Seal	attached, NBR

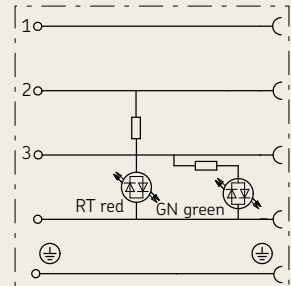
Order no	179-990-034 / 179-990-147
Max rated operating voltage	230 VAC/DC
Approval	UL-SEV
Line diameter	6 to 9 mm / 4.5 to 7 mm

Order no	179-990-110
Max rated operating voltage	230 VAC/DC
Approval	—
Line diameter	6 to 8 mm

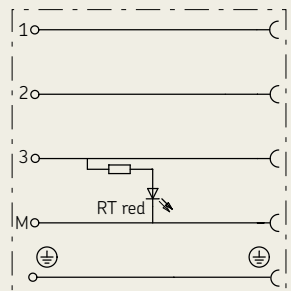
Order no	179-990-111
Max rated operating voltage	24 V DC
Approval	—
Line diameter	6 to 8 mm

¹⁾ PG = heavy gauge conduit thread

Circuit diagram 179-990-110



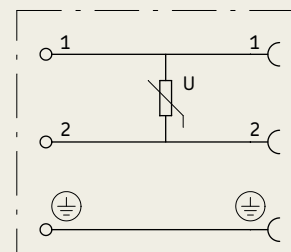
Circuit diagram 179-990-111



Technical data

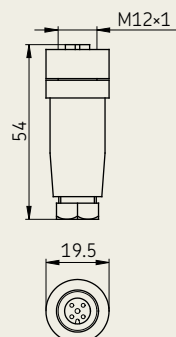
Order no	179-990-657
Version	insert rotatable 4x90°, varistor
Poles	2 + PE
Operating display	—
Max rated operating voltage	120 VAC/DC
Operating current	max 10 A
Housing	PA, black
Approval	—
Cable gland	PG 11 ¹⁾
Conductor cross section	max 1.5 mm ² , 0.0023 in ²
Line diameter	6 to 9 mm
Type of terminal	screws
IP enclosure DIN40050	IP 65 (installed)
Temperature range	−40 to +80 °C, −40 to + 176 °F
Seal	attached, silicone

Circuit diagram 179-990-657



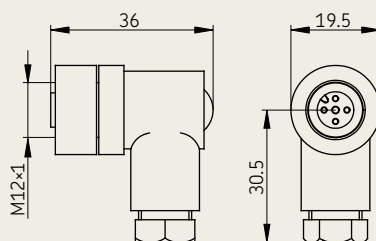
Socket M12x1

Type A straight



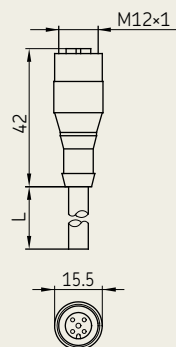
Dimensions shown are in mm

Type B angled



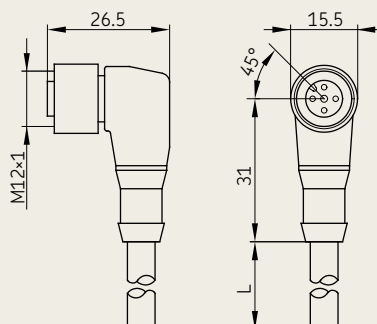
Dimensions shown are in mm

Type C straight



Dimensions shown are in mm

Type D angled



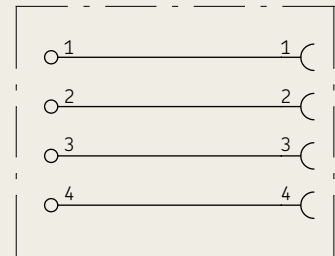
Dimensions shown are in mm

Socket M12x1

Technical data

Order no	179-990-371 / 179-990-372
Version	A / B
Poles	4
Max rated operating voltage	250 V AC/DC
Operating current	max 4 A
Housing	PBT-GF, black / PA, black
Approval	—
Conductor cross section	max 0.75 mm ² , 0.0012 in ²
Line diameter	4 to 6 mm
Type of terminal	screws
Power lead	—
Color coding	—
IP enclosure DIN40050	IP 67 (installed)
Temperature range	–40 to +85 °C, –40 to + 185 °F
Seal material (O-ring)	integrated

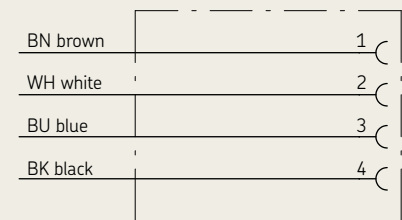
Circuit diagram 179-990-371 / -372



Technical data

Order no	179-990-600 / 179-990-601
Version	C / D
Poles	4
Max rated operating voltage	250 V AC / 300 V DC
Operating current	max 4 A
Housing	—
Approval	UL-CSA
Conductor cross section	—
Line diameter	5 mm
Type of terminal	—
Power lead	5 m • 4x0.34 mm ² , PUR
Color coding	cf circuit diagram
IP enclosure DIN40050	IP 68 (installed)
Temperature range	–25 to +90 °C, –13 to + 194 °F
Seal material (O-ring)	integrated, FKM (FPM)

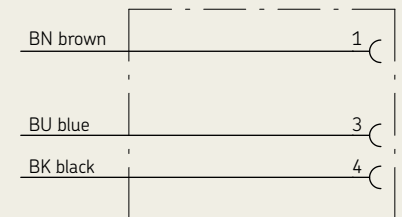
Circuit diagram 179-990-600 / -601



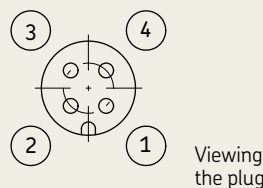
Technical data

Order no	179-990-381 / 179-990-382
Version	C / D
Poles	3
Max rated operating voltage	10 to 30 V AC
Operating current	max 4 A
Housing	—
Approval	UL-CSA
Conductor cross section	—
Line diameter	5 mm
Type of terminal	—
Power lead	5 m • 3x0.34 mm ² , PUR/PVC
Color coding	cf circuit diagram
IP enclosure DIN40050	IP 68 (installed)
Temperature range	–25 to +90 °C, –13 to + 194 °F
Seal material (O-ring)	integrated, FKM (FPM)

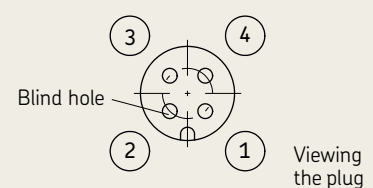
Circuit diagram 179-990-381 / -382



Contact assignments 179-990-371 / -372 / -600 / -601



Contact assignments 179-990-381 / -382



Pressure switches – series DSA, DSC

For oil and fluid grease. For use in SKF centralized lubrication systems, hydraulic and compressed-air systems

SKF pressure switches monitor the pressure of a centralized lubrication system to assess and help to ensure its proper function. Important monitoring parameters in an intermittently operated centralized lubrication system with SKF MonoFlex distributors are pressure buildup, pressure head, and pressure reduction.

In SKF CircOil systems, the pressure of the pipe system and thereby the function of the centralized lubrication system are monitored.

Depending on the design, these SKF pressure switches can be used for oil and fluid greases of NLGI Grades 000, 00, and 0.

SKF pressure switches are available as NC contacts, NO-contacts, or changeover contacts and monitor:

- Function of a lubrication pump unit (pressure buildup and reduction)
- Function of a directional control valve (zoned centralized lubrication systems)
- Function of a filter (degree of contamination)
- Piping (leakproof closure, etc.)

Please refer to brochure 1-1701-EN for further information.

DSA



DSC3

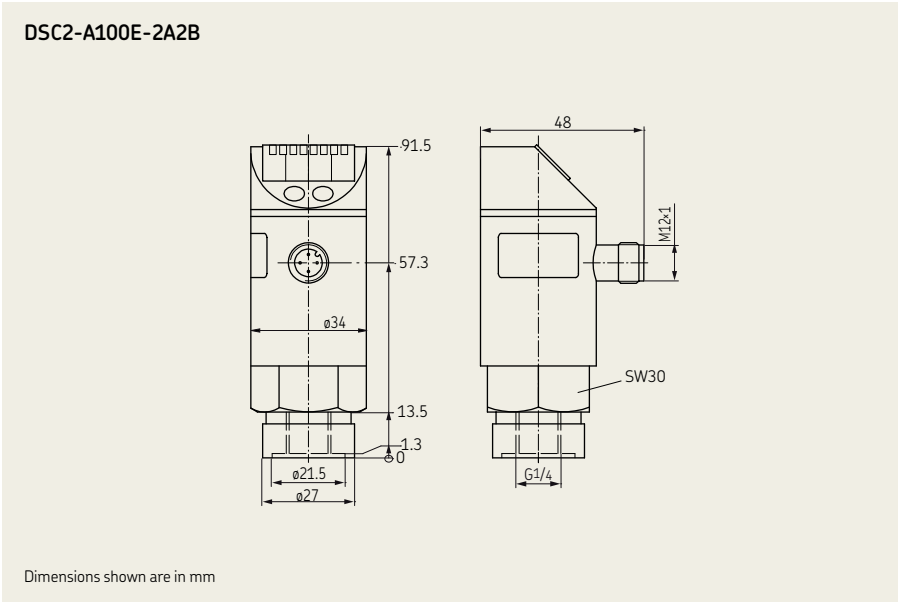


DSC

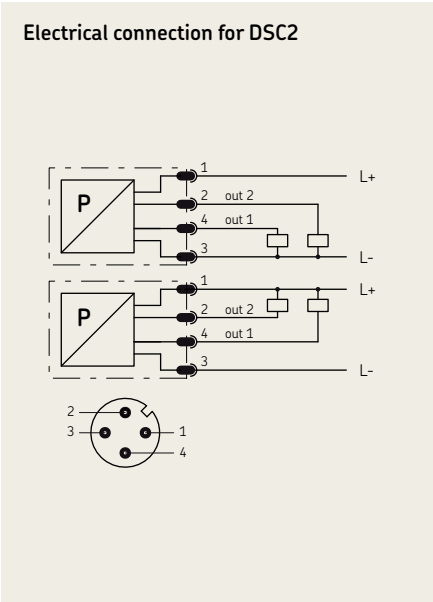


Pressure switches – DSC

Technical data		
Order no	DSC2-A100E-2A2B	DSC3-A100K-3A2B
Rated pressure range	1–100 bar, 14–1,450 psi, in 0.5 increments	1–100 bar, 14–1,450 psi, in 0.5 increments
Permissible overpressure	200 bar, 2,900 psi	300 bar, 4,351 psi
Burst pressure	> 650 bar, 9,427 psi	> 500 bar, 7,252 psi
Ambient temperture	–20 to +80 °C, –4 to +176 °F	–25 to +80 °C, –13 to 176 °F
Vibration resistance, max.	20 g (10–2,000 Hz)	10 g (5–500 Hz)
Service life	100×10 ⁶ pressure changes	100×10 ⁶ pressure changes
Protection class	IP 67	IP 67
Material	Stainless steel	Plastic
Mounting position	Any	Any
Electrical characteristics		
Operating voltage	18–36 V DC	9–35 V DC
Power consumption, max.	50 mA	35 mA
Current-carrying capacity	0.25 A	1.2 A
Number of signal outputs	2	2
Type of signal outputs	PNP/NPN	PNP transistor stages
Electrical connection M12×1	4-pin	4-pin
Pressure port	G1/4	G1/8



DSC3 switch available in 400 bar (5,800 psi) range
DSC2 switch available in AC version for both 400 bar (5,800 psi) range and 100 bar (1,450 psi) range
Please inquire with SKF LBU Application Engineering for specific information

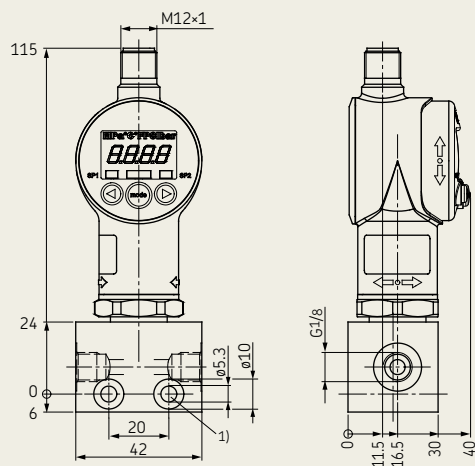


DSC2 connector pin assignment		
Pin	Function	Wire color ¹⁾
1	(+)	brown (BN)
2	output 2	white (WH)
3	(-)	blue (BU)
4	output 1	black (BK)

¹⁾ When using a customized cable with cable socket, see brochure 1-1730-EN

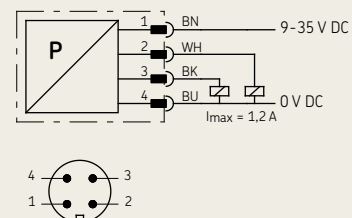
Pressure switches – DSC

DSC3-A100K-3A2B



1) Counterbore per DIN 974-1 (2 M5 fastening bolts and lock washers are supplied detached)
Dimensions shown are in mm

Electrical connection for DSC3



DSC3 connector pin assignment

Pin	Function	Wire color ¹⁾
1	(+)	brown (BN)
2	output 2	white (WH)
3	(-)	blue (BU)
4	output 1	black (BK)

¹⁾ When using a customized cable with cable socket, see brochure 1-1730-EN

Order number conversion chart

Order number conversion chart			
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MKU2-12BC11000+429	MKU2-KW3-20003+429	SKF MonoFlex	24
MKU2-14BC11000+429	MKU2-KW6-20003+429	SKF MonoFlex	24
MKU2-12CC11000+429	MKU2-KW3-22003+429	SKF MonoFlex	24
MKU2-14CC11000+429	MKU2-KW6-22003+429	SKF MonoFlex	24
MFE5-KW3-2+299	MFE5-KW3+299	SKF MonoFlex	25
MFE5-BW3-2+299	MFE5-BW3+299	SKF MonoFlex	25
MKF1-11BC11000+429	MKF1-KW2-20003+429	SKF MonoFlex	26
MKF2-12BC11000+429	MKF2-KW3-20003+429	SKF MonoFlex	26
MKF2-12CC11000+429	MKF2-KW3-22003+429	SKF MonoFlex	26
341-400-40000-00	320-416-3	SKF MonoFlex	30
341-4VS-40000-00	320-416-3-VS	SKF MonoFlex	30
341-500-40000-00	321-410-2	SKF MonoFlex	30
341-5VS-40000-00	321-410-2-VS	SKF MonoFlex	30
342-400-44000-ZZ	342-455-000	SKF MonoFlex	32
343-400-44400-ZZ	343-455-500	SKF MonoFlex	32
345-400-44444-ZZ	345-455-555	SKF MonoFlex	32
342-4VS-44000-ZZ	342-155-000	SKF MonoFlex	32
343-4VS-44400-ZZ	343-155-500	SKF MonoFlex	32
345-4VS-44444-ZZ	345-155-555	SKF MonoFlex	32
342-500-44000-ZZ	342-544-000	SKF MonoFlex	32
343-500-44400-ZZ	343-544-400	SKF MonoFlex	32
345-500-44444-ZZ	345-544-444	SKF MonoFlex	32
342-5VS-44000-ZZ	342-944-000	SKF MonoFlex	32
343-5VS-44400-ZZ	343-944-400	SKF MonoFlex	32
345-5VS-44444-ZZ	345-944-444	SKF MonoFlex	32
352-000-44000-ZZ	352-077-000	SKF MonoFlex	34
353-000-44400-ZZ	353-077-700	SKF MonoFlex	34
355-000-44444-ZZ	355-077-777	SKF MonoFlex	34
352-0VS-44000-ZZ	352-077-000-VS	SKF MonoFlex	34
353-0VS-44400-ZZ	353-077-700-VS	SKF MonoFlex	34
355-0VS-44444-ZZ	355-077-777-VS	SKF MonoFlex	34
352-100-44000-ZZ	352-166-000	SKF MonoFlex	34
353-100-44400-ZZ	353-166-600	SKF MonoFlex	34
355-100-44444-ZZ	355-166-666	SKF MonoFlex	34
352-1VS-44000-ZZ	352-166-000-VS	SKF MonoFlex	34
353-1VS-44400-ZZ	353-166-600-VS	SKF MonoFlex	34
355-1VS-44444-ZZ	355-166-666-VS	SKF MonoFlex	34
391-000-40000-00	391-090-000	SKF MonoFlex	36
392-000-44000-ZZ	392-099-000	SKF MonoFlex	36
393-000-44400-ZZ	393-099-900	SKF MonoFlex	36
391-100-40000-00	391-160-000	SKF MonoFlex	36
392-100-44000-ZZ	392-166-000	SKF MonoFlex	36
393-100-44400-ZZ	393-166-600	SKF MonoFlex	36
VN2-000-330000-ZZ	VKS02-1.0, 1.0	SKF MonoFlex	40
VN4-000-333300-ZZ	VKS04-1.0, 1.0, 1.0, 1.0	SKF MonoFlex	40
VN6-000-333333-ZZ	VKS06-1.0, 1.0, 1.0, 1.0, 1.0, 1.0	SKF MonoFlex	40

Order number conversion chart

Order number conversion chart			
New order no.	Old order no.	Catalog section	Page
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KFGX3FX1XXXXX99+924	KFG3-5W1+924	SKF ProFlex	44
KFGX1MXXXXXX99+486	KFG10-5+486	SKF ProFlex	44
KFGX3MXXXXXX99+486	KFG30-5+486	SKF ProFlex	44
KFGX1MXXXXXX99+486	KFG10-5+486	SKF ProFlex	44
KFGX3MXXXXXX99+486	KFG30-5+486	SKF ProFlex	44
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KFGS3FX1XXXXXEB+924	KFGS3-5W1+924	SKF ProFlex	44
KFGS5FX1XXXXXEB+924	KFGS5-5W1+924	SKF ProFlex	44
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DMAC947-11B20	VPKM.55	SKF ProFlex	49
DMAC947-11F35	VPKM.56	SKF ProFlex	49
DMAC947-11C37	VPKM.57	SKF ProFlex	49
DMAC947-11FA9	VPKM.59	SKF ProFlex	49
MV201-100-_____	MV201-20	Oil+Air	68
MV202-100-_____	MV202-20	Oil+Air	68
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MV204-100-_____	MV204-20	Oil+Air	68
MV205-100-_____	MV205-20	Oil+Air	68
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MV207-100-_____	MV207-20	Oil+Air	68
MV208-100-_____	MV208-20	Oil+Air	68
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VL-04DAM3	324-561	Fittings and accessories	93
VL-05DAM3	325-565	Fittings and accessories	93
VL-06DAM3	326-562	Fittings and accessories	93
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December 2016