Single-line lubrication systems

Product catalogue

LINCOLN

Lubrication systems catalogues

Single-line lubrication systems	**PUB LS/P1 17046 EN**
Dual-line lubrication systems	PUB LS/P1 16132 EN
Progressive lubrication systems	PUB LS/P1 16964 EN
Multi-line lubrication systems	PUB LS/P1 17478 EN

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This catalogue contains the global range of SKF lubrication systems products. Please contact your local country sales or customer service organization for availability in your area.

Navigation

Oil and fluid grease

Grease

System accessories

Content

PUB LS/P1 17046 EN

PUB LS/P1 17046 EN

SKF – the knowledge engineering company

From one simple but inspired solution to a misalignment problem in a textile mill in Sweden, and fifteen employees in 1907, SKF has grown to become a global industrial knowledge leader.

Over the years we have built on our expertise in bearings, extending it to seals, mechatronics, services and lubrication systems. Our knowledge network includes 46 000 employees, 15 000 distributor partners, offices in more than 130 countries, and a growing number of SKF Solution Factory sites around the world.

Research and development

We have hands-on experience in over forty industries, based on our employees' knowledge of real life conditions. In addition our world-leading experts and university partners who pioneer advanced theoretical research and development in areas including tribology, condition monitoring, asset management and bearing life theory. Our ongoing commitment to research and development helps us keep our customers at the forefront of their industries.

Meeting the toughest challenges

Our network of knowledge and experience along with our understanding of how our core technologies can be combined helps us create innovative solutions that meet the toughest of challenges. We work closely with our customers throughout the asset life cycle, helping them to profitably and responsibly grow their businesses.

Working for a sustainable future

Since 2005, SKF has worked to reduce the negative environmental impact from our own operations and those of our suppliers. Our continuing technology development introduced the SKF BeyondZero portfolio of products and services which improve efficiency and reduce energy losses, as well as enable new technologies harnessing wind, solar and ocean power. This combined approach helps reduce the environmental impact both in our own operations and in our customers'.

SKF Solution Factory makes SKF knowledge and manufacturing expertise available locally, to provide unique solutions and services to our customers.

Working with SKF IT and logistics systems and application experts, SKF Authorized Distributors deliver a valuable mix of product and application knowledge to customers worldwide.

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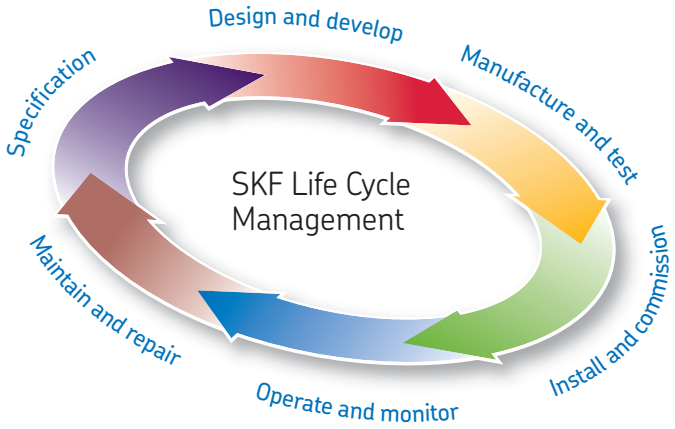
Our knowledge – your success

SKF Life Cycle Management is how we combine our technology platforms and advanced services, and apply them at each stage of the asset life cycle, to help our customers to be more successful, sustainable and profitable.



Working closely with you

Our objective is to help our customers improve productivity, minimize maintenance, achieve higher energy and resource efficiency, and optimize designs for long service life and reliability.

Innovative solutions

Whether the application is linear or rotary or a combination of the two, SKF engineers can work with you at each stage of the asset life cycle to improve machine performance by looking at the entire application. This approach doesn't just focus on individual components like bearings or seals. It looks at the whole application to see how each component interacts with the next.

Design optimization and verification

SKF can work with you to optimize current or new designs with proprietary 3-D modeling software that can also be used as a virtual test rig to confirm the integrity of the design.

Bearings
SKF is the world leader in the design, development and manufacture of high performance rolling bearings, plain bearings, bearing units and housings.

Machinery maintenance
Condition monitoring technologies and maintenance services from SKF can help minimize unplanned downtime, improve operational efficiency and reduce maintenance costs.

Sealing solutions
SKF offers standard seals and custom engineered sealing solutions to increase uptime, improve machine reliability, reduce friction and power losses, and extend lubricant life.

Mechatronics
SKF fly-by-wire systems for aircraft and drive-by-wire systems for off-road, agricultural and forklift applications replace heavy, grease or oil consuming mechanical and hydraulic systems.

Lubrication solutions
From specialized lubricants to state-of-the-art lubrication systems and lubrication management services, lubrication solutions from SKF can help to reduce lubrication related downtime and lubricant consumption.

Actuation and motion control
With a wide assortment of products – from actuators and ball screws to profile rail guides – SKF can work with you to solve your most pressing linear system challenges.

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Two leading brands

Oil and fluid grease

Grease

One global leader

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

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

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

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Classification of lubricants

Oil and fluid grease

The viscosity is an expression of a fluid's internal friction. Oils are classified in ISO VG viscosity classes from 2 to 3 200. NLGI 000, 00 and 0 greases are called fluid greases.

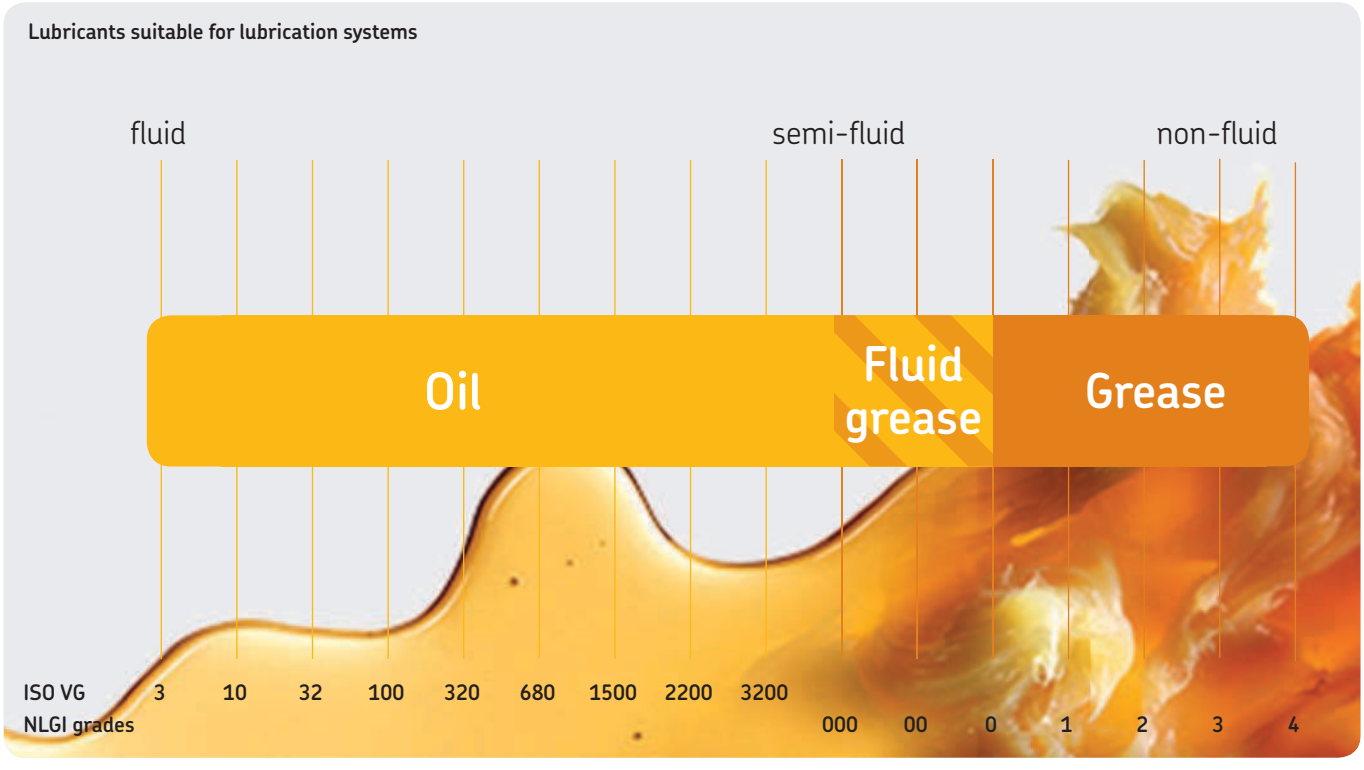
Different types of oils are available, including mineral oils, organic oils and synthetic oils. A compatibility check is recommended prior to using any oil with SKF lubrication systems.

Grease

Greases are consistent lubricants (NLGI 1–6). They are soft to hard, triple-component mixtures of a base oil as the lubricating fluid, a thickening agent and additives.

In most instances, greases of NLGI 1 up to 3 are suitable for use in a lubrication system. A compatibility check should be made prior to using any grease with SKF lubrication systems.

Lubricants suitable for lubrication systems



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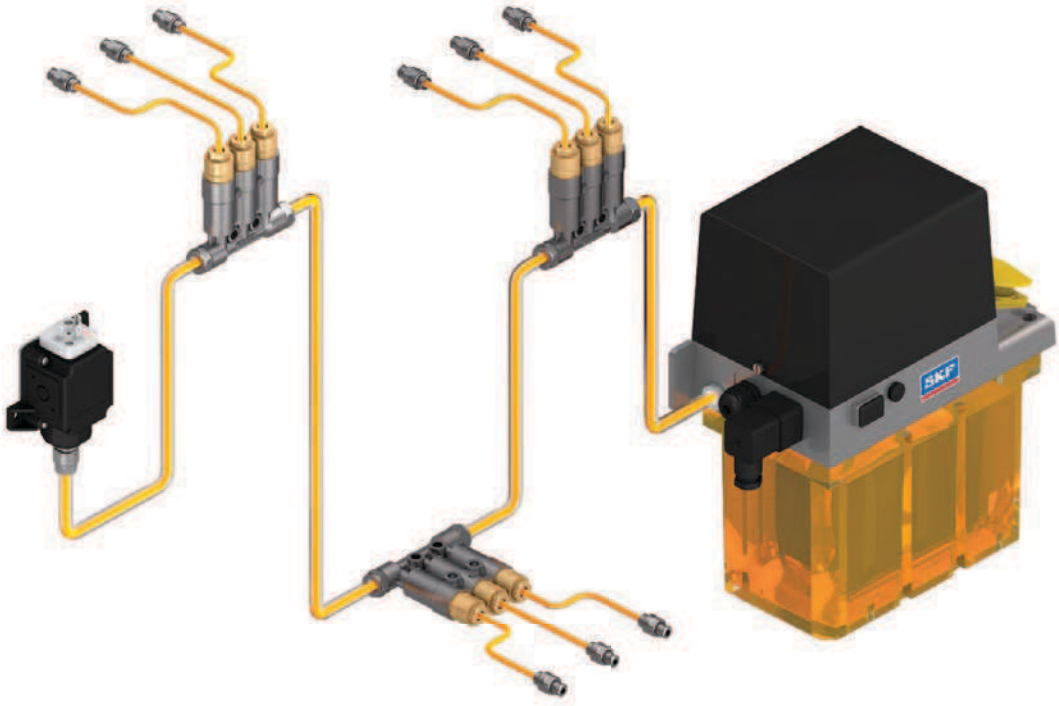
Single-line lubrication systems for oil and fluid grease



System description

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

The SKF portfolio includes both SKF MonoFlex and Lincoln Centro-Matic system components including pumps, metering units, control and monitoring devices and accessories.

For planning a lubrication system, conditions the system will be used in need to be determined first.

The number of lubrication points, back pressures at the lubrication points, operating temperature range, lubricant, the feed pump's drive energy, control and monitoring etc. need to be defined correctly.

Attention to information on bearing or lubrication point information need to be paid too. The sum of all the quantities metered out by the system's metering devices needs to be completed by safety margin and expansion and compressibility loss. SKF application engineers, as well as SKF sales partners and distributors, are experts in laying out lubrication systems according to all these specifications. A lubrication system laid out by SKF and partners ensures the supply of the correct amount of lubricant at the best time to lubricate. This reduces wear and avoids pollution caused by over-lubrication.

Advantages:

- Easy to understand, install and maintain
- Available in both preset and adjustable models
- Suitable for almost all lubricants
- Easy system expansion
- System continues to operate if one point becomes blocked
- Integrated system control and monitoring
- Able to pump long distances and within a wide temperature range

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System and applications

Applications

In total loss lubrication systems, fresh lubricant is fed to friction points during a lubrication cycle. The lubrication cycle is set up so that friction points are supplied with enough lubricant to build up an adequate film of lubricant, reducing wear and tear on bearings and friction points. Monoflex and Centromatic systems are designed to allow for easy expansion and simple assembly.

Applications for single-line systems include small-to-medium machine tools, mobile on-road (fleet vehicles, on-road transport), and assembly/automation food packaging, part assembly lines and injection molding:

- Small-to-medium line length
- Small-to-medium quantities of lubricant per lubrication point
- Ease of expansion
- Linear layout of lubrication points
- Flexibility of lubricant distribution
- Easy monitoring of lubrication distribution

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Pumps and pump units

1812

POE/PFE

82885/83667

85438/40/41

P/PW/PF/
PFW-289

POEP/PFEP

PPS30

82676/82570

85430/31/32/33

PEF/PEU

283167

1826

ECP

P653S (oil)

KFB/KFB-M

KFU

MKx

MFE

PUB LS/P1 17046 EN

Overview of oil and fluid grease pumps and pump units

Manually operated pumps and pump units

Product	Lubricant oil	Lubricant grease NLGI 000/00	Metering quantity		Operating pressure		Reservoir		Metering device	Page
			cm³/stroke	*in³/stroke*	bar	*psi*	l	*gal*		
1812	•	•	2,6	*0.16*	69	*1 000*	2,1	*0.55*	2, 3, 4	14
POE	•	–	15	*0.9*	30	*435*	0,5; 1; 1,7	*0.13; 0.26; 0.45*	1, 2	15
PFE	–	•	15	*0.9*	30	*435*	0,5; 1; 1,7	*0.13; 0.26; 0.45*	1, 2	16

[1] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range

Air-operated pumps and pump units

Product	Lubricant oil	Lubricant grease NLGI 000/00	Metering quantity		Operating pressure max.		Reservoir		Metering device category [1]	Page
			cm³/stroke	*in³/stroke*	bar	*psi*	l	*gal*		
82885, 83667	•	•	7,4	*0.45*	69	*1 000*	0,6; 2	*0.16; 0.53*	2, 3, 4	17
85438/40/41 [2]	•	•	7,4	*0.45*	69	*1 000*	0,6; 2	*0.16; 0.53*	2, 3, 4	18
P/PW/PF/PFW-289	•	•	10	*0.61*	40	*580*	1,5	*0.39*	1, 2, 3	19
POEP	•	–	15	*0.9*	60	*870*	0,5; 1; 1,7	*0.13; 0.26; 0.45*	1, 2, 3, 4	20
PFEP	–	•	15	*0.9*	60	*870*	0,5; 1; 1,7	*0.13; 0.26; 0.45*	1, 2, 3, 4	21
PPS30	•	•	30	*1.83*	27	*392*	1,5	*0.39*	1, 2	22
82676	•	•	39,3	*2.39*	69	*1 000*	–	–	4	24
82570	•	•	39,3	*2.39*	69	*1 000*	2	*0.53*	4	25
85430/31/32/33 [2]	•	•	39,3	*2.39*	69	*1 000*	0,0; 2	*0.0; 0.53*	4	26
PEF/PEU	•	•	48	*2.93*	50	*725*	3	*0.79*	1, 2, 3	27
			cm³/min	*in³/min*	bar	*psi*	l	*gal*		
283167	•	•	197	*12.02*	69	*1 000*	7,1	*1.88*	3, 4	28
1826 [2]	•	•	7 571	*462*	69	*1 000*	200	*52.83*	2, 3, 4	29

[1] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range
[2] Controller optionally

Electrically operated pumps and pump units

Product	Lubricant oil	Lubricant grease NLGI 000/00	Metering quantity		Operating pressure max.		Reservoir		Metering device category [1]	Page
			cm³/min	*in³/min*	bar	*psi*	l	*gal*		
ECP	•	•	12	*0.73*	38	*550*	0,38	*0.086*	1, 2, 3	30
P653S (oil) [2] [3]	•	•	24,6	*1.5*	240	*3500*	4; 8	*1.05; 2.11*	2, 3, 4	32
KFB [2]	•	•	50	*3*	38	*550*	1	*0.26*	1, 2, 3	34
KFB-M [2]	•	•	50	*3*	38	*550*	1	*0.26*	1, 2, 3	36
KFU	•	•	140	*8.5*	38	*550*	2,7; 6	*0.71; 1.56*	1, 2, 3	38
MKU [2]	•	–	100; 200; 500	*6; 12; 31*	30	*435*	2; 3; 6	*0.53; 0.79; 1.56*	1	40
MKF [2]	•	•	100; 200; 500	*6; 12; 31*	30	*435*	2; 3; 6	*0.53; 0.79; 1.56*	1, 2	42
MFE	•	•	250; 500	*15; 31*	28	*405*	3; 6; 15	*0.79; 1.56; 3.96*	1, 2	44

[1] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range
[2] Controller optionally
[3] With pressure transducer

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Pump unit

1812

Product description

The 1812 pump features a translucent reservoir with filler cap and strainer. Its pump base has an integrated check/vent valve and an indicator pin to show when system pressure is achieved.

Features and benefits

- Provides precise lubrication where air or electricity are not available
- Built-in vent valve activates when handle is pushed all the way up
- Pressure stem indicates 58 bar; 850 psi
- Suitable for use with metering devices of category 2, 3, 4

Applications

- Textile
- Stationary
- Material handling including presses
- Agriculture and farming

Technical data

Order number	**1812**
Function principle	manually operated piston pump
Outlets	1
Metering quantity	2,6 cm^3/stroke , *0.16 in^3/stroke*
Lubricant	oil, synthetic oil on request
Operating temperature	–23 to +65 °C *–10 to +150 °F*
Operating pressure	max. 70 bar, *1 000 psi*
Reservoir	2,13 l; 2 130 cm^3 *0.5 gal, 130 in^3*
Material (reservoir)	acrylic
Connection outlet	1/4 NPTF (F)
Dimensions	425×181×197 mm *16.75×7.125×7.75 in*
Mounting position	vertical

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POE

Product description

These manually actuated plunger pumps were developed for intermittently operated, single-line centralized lubrication systems with metering devices. They include a set of valves required for pressure relief and pressure limitation. Versions are available with or without fill-level switches to monitor critical levels of lubricant, and reservoirs are offered in three different sizes.

Features and benefits

- Suitable for amount of lube points per stroke:
  - 1-20: metering device 340
  - 1-18: metering device 350
  - 1-6: metering device 390
- Simple handling
- Low-cost, efficient method of distributing lubricant
- Optional low-level control for resevoir
- Suitable for use with metering devices of category 1

Applications

- Machine tool
- Industrial assembly and automation

Technical data

Function principle	manually operated piston pump
Outlets	1
Metering quantity	15 cm^3/stroke, *0.9 in^3/stroke*
Lubricant	mineral, synthetic, and environmentally compatible oils, operating viscosity 20 to 1 500 mm^2/s
Operating temperature	0 to +60 °C; *+32 to +140 °F*
Operating pressure	max. 30 bar, *435 psi*
Reservoir	0,5; 1,0 or 1,7 l, *0.1, 0.3 or 0.4 gal*
Material (reservoir)	plastic (PP), transparent
Connection outlet	G 1/4, on left or right
Dimensions	depending on model min. 133×248×124 mm max. 190×448×124 mm *min. 5.2×9.8×4.8 in* *max. 7.5×17.6×4.8 in*
Mounting position	vertical

Fill-level switch for monitoring the minimum oil level

Type of contact	contact opens at minimum fill level
Switching voltage	max. 42 V DC
Switching capacity	max. 50 W
Plug	4-pin M12x1 circular plug
Mounting position	1, 2 or 3 possible (2 on delivery)

POE pump units

Order number	Reservoir		Fill-level switch
	l	*gal*	
POE-15-0.5	0,5	*0.13*	–
POE-15-1.0	1,0	*0.26*	–
POE-15-1.0W	1,0	*0.26*	•
POE-15-1.7	1,7	*0.45*	–
POE-15-1.7W	1,7	*0.45*	•

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1110-EN, 951-170-011 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

PFE

Product description

These manually actuated plunger pumps were developed for intermittently operated, single-line centralized lubrication systems with metering devices. They include a set of valves required for pressure relief and pressure limitation. Versions are available with or without fill-level switches to monitor critical levels of lubricant, and reservoirs are offered in three different sizes.

Features and benefits

- Simple handling
- Low-cost, efficient method of distributing lubricant
- Optional low-level control for reservoir
- Suitable for use with metering devices of category 1 and 2

Applications

- Machine tool
- Printing machines
- Industrial assembly and automation

Technical data

Function principle	manually operated piston pump
Outlets	1
Metering quantity	15 cm^3/stroke, *0.9 in^3/stroke*
Lubricant	fluid grease, NLGI 000, 00
Operating temperature	0 to +60 °C; *+32 to +140 °F*
Operating pressure	max. 30 bar, *435 psi*
Reservoir	0,5; 1,0 or 1,7 l, *0.1, 0.3 or 0.4 gal*
Material (reservoir)	plastic (PP), transparent
Connection outlet	G $^1/_4$, on left or right
Dimensions	depending on model min. 133×248×124 mm max. 190×448×124 mm *min. 5.2×9.8×4.8 in* *max. 7.5×17.6×4.8 in*
Mounting position	vertical

Fill-level switch for monitoring the minimum grease level

Type of contact	NPN, PNP/NO-contact - NC contact
Switching voltage	10 to 36 V DC
Current at switching output	max. 150 mA
Protection class	IP 67
Connection	2 m PVC cable or 4-pin M8x1 circular plug
Mounting position	1, 2 or 3 possible (2 on delivery)

PFE pump units

Order numbers	Reservoir		Fill-level switch
	l	*gal*	
PFE-15-0.5	0,5	*0.13*	–
PFE-15-1.0	1,0	*0.26*	–
PFE-15-1.0W2	1,0	*0.26*	•
PFE-15-1.7	1,7	*0.45*	–
PFE-15-1.7W2	1,7	*0.45*	•

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1110-EN, 951-170-011 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

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82885, 83667

Product description

Model 82885, an air-operated, single-stroke oil pump, discharges lubricant on an air-powered forward stroke and releases pressure on the lubricant line on a spring-powered return stroke through an integrated check/relief valve (3 way). Its translucent reservoir is refilled through a filler cap with strainer. The pump unit is suitable for systems with a large number of lubrication points and clocked greasing strokes. Model 83667 offers the same features but includes a larger reservoir.

Features and benefits

- Reliable operation
- Reservoir with filler cap and internal strainer
- Suitable for use with metering devices of category 2, 3 and 4

Applications

- Textiles
- Steel mills
- Packaging
- Plastic processing
- Material handling
- Food and beverage

Technical data

Function principle	pneumatically operated piston pump
Outlets	1
Metering quantity	7,4 cm³/stroke, *0.45 in³/stroke*
Lubricant	oil, synthetic oils on request
Operating temperature	–23 to +65 °C *–10 to +150 °F*
Operating pressure	max. 70 bar, *1 000 psi*
Reservoir	0,6 and 2,0 l; *0.16 and 0.5 gal*
Material (reservoir)	acrylic
Connection outlet	¼ NPTF (F)
Air inlet connection	¼ NPTF (F)
Transmission ratio	20:1
Air valve	required, 3-way
Dimensions	min. 263×133×152 mm *10.375×5.25×6 in* max. 470×140×152 mm *18.5×5.5×6 in*
Mounting position	vertical

82885, 83667 pump units

Order number	Reservoir	
	l	*gal*
82885	0,6	*0.16*
83667	2	*0.5*

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **442832**

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Pump unit

85438/40/41

Product description

Pump models 85438/40/41 are air-operated, positive displacement pumps that deliver a maximum volume by means of a single stroke of the pump. Solenoid air valve and adjustable solid-state time controls are integrated into the pump body. These pumps are designed to deliver fluid lubricants to single-line injectors and are filled via a spring-loaded filler cap and internal strainer. Acrylic reservoirs are available in two sizes. Supply voltages are offered in 120 VAC and 240 VAC.

Features and benefits

- Reservoir with filler cap and internal strainer
- Integrated, adjustable, solid-state time controls with LED indicators for “Power On,” “Pump On” and “Alarm,” along with a membrane-type “Manual Lube” switch
- Integrated solenoid air valve
- Suitable for use with metering devices of category 2, 3 and 4

Applications

- Textiles
- Steel mills
- Plastic processing
- Material handling
- Food and beverage

Technical data

Function principle . . . . . pneumatically operated piston pump (single stroke)
Outlets. 1
Metering quantity . . . . . 7,4 cm³/stroke; *0.45 in³/stroke*
Lubricant. . . . . oil, synthetic oils on request
Operating temperature . . . –23 to +65 °C
–10 to +150 °F
Operating pressure . . . . . max. 70 bar, *1 000 psi*
Reservoir
85438 . . . . . 0,6 l; *0.16 gal*
85440, 85441 . . . . . 2,0 l; *0.5 gal*
Material (reservoir) . . . . . acrylic
Connection outlet . . . . . ¼ NPTF (F)
Voltage . . . . . 120 VAC, 240 VAC
Transmission ratio 20:1
Dimensions:
85438. . . . . 133 × 184 × 305 mm
5.25 × 7.24 × 12.02 in
85440, 85441 . . . . . 133 × 184 × 527 mm
5.25 × 7.24 × 20.75 in
Mounting position . . . . . vertical

Timer and controller

On time . . . . . 10 or 30 sec
Off time . . . . . 30 sec to 30 min. or 30 min. to 30 h
Alarm contacts . . . . . 8 A at 250 VAC
Operating temperature . . . –23 to 65 °C; *–10 to +150 °F*

85438/40/41 pump units

Order number	Voltage	Reservoir	
	VAC	l	*gal*
85438	120	0,6	*0.16*
85440	120	2	*0.5*
85441	240	2	*0.5*

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **442832**

PUB LS/P1 17046 EN

P/PW/PF/PFW-289

Product description

These pneumatically actuated piston pumps were designed for intermittently operated, single-line centralized lubrication systems with metering devices. The valve set required for pressure relief and limitation is included.

Features and benefits

- Electrical monitoring via external controller or SPS
- Simple handling
- Optional low-level control for reservoir
- Suitable for use with metering devices of category 1, 2 and 3

Applications

- Machine tool
- Printing machines
- Industrial assembly and automation

Technical data

Function principle	pneumatically operated piston pump (single stroke)
Outlets	1
Metering quantity	10 cm^3/stroke, *0.61 in^3/stroke*
Lubricant	mineral, synthetic, and environmentally compatible oils, operating viscosity 20 to 1 500 mm^2/s or fluid grease, NLGI 000, 00
Operating temperature	+10 to 40 °C; *+50 to 104 °F*
Operating pressure	max. 40 bar, *580 psi*
Reservoir	1,5 l, *0.4 gal*
Material (reservoir)	polycarbonate
Connection outlet	6 mm, *0.24 in*, OD tube
Dimensions	depending on model min. 170×248×128 mm max. 170×270×128 mm *min. 6.7×9.8×5.04 in* *max. 6.7×10.6×5.04 in*
Mounting position	vertical

Fill-level switch for monitoring the minimum fluid grease level

Type of contact	1 change-over
Switching voltage	230 VAC; 230 V DC
Switching current	max. 230 VAC/DC: 1,0 A
Breaking capacity	max. 230 VAC: 60 VA; max. 230 V DC:40 W
Type of enclosure	IP 65
Cable gland	PG11

P, PW, PF, PFW pump units

Order number.	Lubricant Oil	Fluid grease	Fill-level switch
P-289	•	–	–
PW-289	•	–	•
PF-289	–	•	–
PFW-289	–	•	•

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1110-EN, 951-170-012**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

POEP

Product description

These pneumatically actuated plunger pumps were developed for intermittently operated, single-line centralized lubrication systems with metering devices. They include a set of valves required for pressure relief and pressure limitation. Versions are available with or without fill-level switches to monitor critical levels of lubricant.

Features and benefits

- Electrical monitoring via external controller or SPS
- Simple handling
- Low-cost, efficient method of distributing lubricant
- Optional low-level control for reservoir
- Suitable for use with metering devices of category 1, 2, 3 and 4

Applications

- Machine tool
- Printing machines
- Industrial assembly and automation

Technical data

Function principle	pneumatically operated piston pump
Outlet	1
Metering quantity	15 cm^3/stroke, *0.9 in^3/stroke*
Lubricant	mineral, synthetic oils, operating viscosity 20 to 1 500 mm^2/s
Operating temperature	0 to +60 °C; *+32 to +140 °F*
Operating pressure	max. 60 bar, *870 psi*
Reservoir	0,5; 1,0 or 1,7 l, *0.13, 0.26 or 0.45 gal*
Material (reservoir)	plastic (PP), transparent
Connection outlet	G 1/4, on left or right
Air inlet	G 1/4 (on pump bottom)
Transmission ratio	10:1
Dimensions	depending on model min. 133 × 248 × 124 mm max. 190 × 448 × 124 mm *min. 5.2 × 9.8 × 4.8 in* *max. 7.5 × 17.6 × 4.8 in*
Mounting position	vertical

Fill-level switch for monitoring the minimum oil level

Type of contact	contact opens at minimum fill level
Switching voltage	max. 42 V DC
Switching capacity	max. 50 W
Plug	4-pin M12 × 1 circular plug
Mounting position	1, 2 or 3 possible (2 on delivery)

Note:
For a hydraulic system pressure of >45 bar, *653 psi*, use cutting-sleeve screw unions conforming to DIN 2353 or plug connectors as connection fittings.

POEP pump units

Order number	Reservoir		Fill-level switch
	l	*gal*	
POEP-15-0.5	0,5	*0.13*	–
POEP-15-1.0	1,0	*0.26*	–
POEP-15-1.0W	1,0	*0.26*	•
POEP-15-1.7	1,7	*0.45*	–
POEP-15-1.7W	1,7	*0.45*	•

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1110-EN, 951-170-011 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

PFEP

Product description

These pneumatically actuated plunger pumps were developed for intermittently operated, single-line centralized lubrication systems with metering devices. They include a set of valves required for pressure relief and pressure limitation. Versions are available with or without fill-level switches to monitor critical levels of lubricant.

Features and benefits

- Simple handling
- Optional low-level control for reservoir
- Suitable for use with metering devices of category 1, 2, 3 and 4

Applications

- Machine tool
- Industrial assembly and automation

Technical data

Function principle . . . . . .pneumatically operated piston pump
Outlets. 1
Metering quantity . . . . . .15 cm^3/stroke, *0.9 in^3/stroke*
Lubricant. . . . . .fluid grease, NLGI 000, 00
Operating temperature . . . . . .0 to +60 °C; *+32 to +140 °F*
Operating pressure . . . . . .max. 60 bar, *870 psi*
Reservoir. . . . . .0,5; 1,0 or 1,7 l, *0.13, 0.26 or 0.45 gal*
Material (reservoir) . . . . . .plastic (PP), transparent
Connection outlet . . . . . .G $^1/_4$, on left or right
Air inlet . . . . . .G $^1/_4$ (on pump bottom)
Transmission ratio 10:1
Dimensions . . . . . .depending on model
min. 133 × 248 × 124 mm
max. 190 × 448 × 124 mm
min. 5.2 × 9.8 × 4.8 in
max. 7.5 × 17.6 × 4.8 in
Mounting position . . . . . .vertical

Fill-level switch for monitoring the minimum filling level
Type of contact . . . . . .NPN, PNP/NO-contact - NC contact
Switching voltage . . . . . .10 to 36 VDC
Current at switching output . . .max. 150 mA
Protection class . . . . . .IP 67
Connection . . . . . .2 m PVC cable or 4-pin M8x1 circ. plug
Mounting position . . . . . .1, 2 or 3 possible (2 on delivery)

Note:
For a hydraulic system pressure of >45 bar, *653 psi*, use cutting-sleeve screw unions conforming to DIN 2353 or plug connectors as connection fittings.

PFEP pump unitss

Order number	Reservoir		Fill-level switch
	l	*gal*	
PFEP-15-0.5	0,5	*0.13*	–
PFEP-15-1.0	1,0	*0.26*	–
PFEP-15-1.0W2	1,0	*0.26*	•
PFEP-15-1.7	1,7	*0.45*	–
PFEP-15-1.7W2	1,7	*0.45*	•

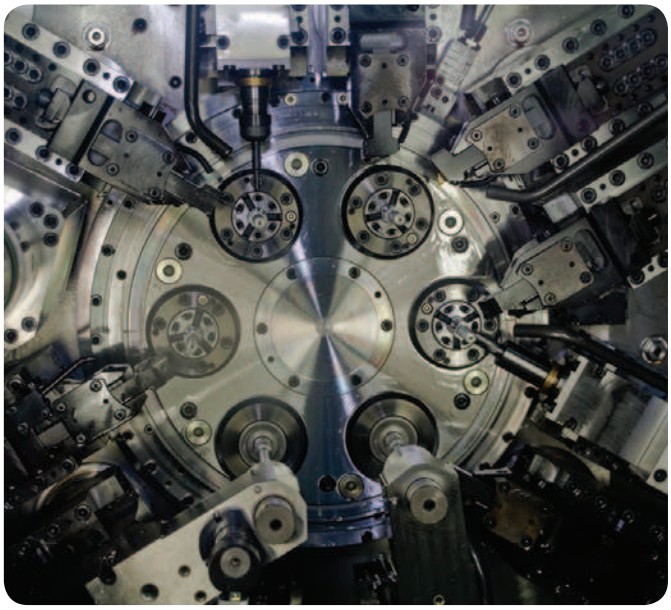
NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1110-EN, 951-170-011 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Pump unit

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.

Features and benefits

- Compact, modern design with user friendly operation
- Quick and simple installation with flexible connection system
- Easy visual fill-level monitoring plus electric fill-level control
- Suitable for use with metering devices of category 1 and 2

Applications

- Machine tool
- Automation
- Packaging
- Woodworking
- Printing
- Textiles

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-0942-EN, 951-170-220 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

Technical data

Function principle	pneumatically operated piston pump (single stroke)
Outlets	max. 3
Metering quantity	30 cm^3/stroke, *1.83 in^3/stroke*
Lubricant	mineral and synthetic oils, operating viscosity 20 to 1 500 mm^2/s or fluid grease NLGI 000, 00
Operating temperature	+10 to +50 °C; *+50 to +122 °F*
Operating pressure	max. 27 bar, *392 psi*
Actuation pressure	4,5 to 6 bar; *65 to 87 psi*
Reservoir	1,5 l, *0.39 gal*
Material (reservoir)	plastic (SAN)
Connection outlet	M10×1 thread or plug connector for pipes ø6 and ø8 mm or banjo fitting for pipe ø6 mm
Air inlet	M10×1 thread or plug connector for pipes ø6 and ø8 mm or banjo fitting for pipe ø6 mm
Air valve	required 3- way, see accessories
Pressure reducing valve	required, see accessories
Dimensions	187 × 246 × 129 mm; *7.3 × 9.6 × 5.1 in*
Installation space	min. 230 × 300 × 250 mm *min. 9 × 11.8 × 9.8 in*
Mounting position	vertical

Fill-level switch for monitoring the minimum lubricant level

Function	capacitive, NC-contact
Switching voltage	10 to 36 V DC
Power consumption	max. 150 mA

Pressure switch for monitoring pressure build-up and function

Function	NO-contact
Rated pressure	16 bar, *232 psi*
Electrical connection	4-pin M12×1 circular plug

PUB LS/P1 17046 EN

PPS30

Order number configurator

P	P	S	3	0	–	2									

Piston pump, pneumatically actuated

Lubricant
S = Oil and fluid grease

Delivery rate
30 = 30 cm³/stroke, *1.83 in³/stroke*

Generation

Lubricant reservoir
1 = 1.5 l; *0.39 gal* [1]
2 = 1.5 l; *0.39 gal* with oil filler screen [2]

Fill level switch, min.
W1 = With [1]
XX = Without

Pressure switch
A = 16 bar, *232 psi* [1]
X = Without

Electrical connection [3]
A = M12×1 plug, 4-pin [1]

Pneumatic connection [4]
1 = Pipe thread M10×1
2 = Plug connector for pipe ø 6 [5]
3 = Banjo fitting for pipe ø 6 [1] [5]
4 = Plug connector for pipe ø 8 [5]

Connection main line
1 = Pipe thread M10×1
2 = Plug connector for pipe ø 6 [1] [5]
3 = Banjo fitting for pipe ø 6 [5]
4 = Plug connector for pipe ø 8 [5]
X = Closed [5]

Left
Rear
Right

[1] Standard design
[2] The oil filler screen option can be used only on PPS30 pumps produced after September 29, 2017.
[3] Electrical connection required if fill-level switch and/or pressure switch is selected
[4] Must select pneumatic connection
[5] For fitting order numbers → accessories

Accessories

161-120-067+924

995-901-063

169-400-405

506-140-VS / 408-004-VS

466-421-001

995-901-061

Order numbers for accessories

Order number	Designation
161-120-067+924	3/2-way air inlet valve, 24 V DC
161-120-067+910	3/2-way air inlet valve, 110 V AC
995-901-063	Pressure-reducing valve
169-400-405	Oil filler screen
Optional fittings for pneumatic and main line connections	
406-004-VS	Plug connector for pipe ø 6; order code 2
506-140-VS	Banjo fitting for pipe ø 6; order code 3
408-004-VS	Plug connector for pipe ø 8; order code 4
466-421-001	Closed; order code X
995-901-061	Adapter plate for mounting; 214×48×10 mm, *8.4×1.9×0.4 in*

PUB LS/P1 17046 EN

Pump unit

82676

Product description

Pump model 82676 is a high-volume pump designed for remote or bulk-fill oil applications. It discharges lubricant on the air-powered forward stroke and releases pressure on the lubricant line through included check/relief valve through a $^1/_2$ NPTF (F) oil inlet. (head pressure max. 5,5 bar; *80 psi*)

Features and benefits

- Designed for remote or bulk-fill oil applications
- Remote system components available upon request
- Suitable for use with metering devices of category 4

Applications

- Steel mills
- Packaging
- Plastic processing
- Material handling
- Food and beverage

Technical data

Order number	**82676**
Function principle	pneumatically operated piston pump (single stroke)
Outlets	1
Metering quantity	39,3 cm³/stroke, *2.4 in³/stroke*
Lubricant	oil, synthetic oils on request
Operating temperature	–23 to +65 °C *–10 to +150 °F*
Operating pressure	max. 70 bar, *1 000 psi*
Reservoir	extern
Connection outlet	¼ NPTF (F)
Transmission ratio	20:1
Air valve	required, 4-way
Dimensions	470 × 146 × 533 mm *18.5 × 5.75 × 21 in*
Mounting position	vertical

PUB LS/P1 17046 EN

Pump unit

82570

Product description

Pump model 82570 is a high-volume pump that discharges lubricant on the air-powered forward stroke and releases pressure on the lubricant line through included check/relief valve on the air-powered return stroke. Its acrylic reservoir is refilled through the filler cap with strainer.

Features and benefits

- Reservoir with filler cap and internal strainer
- Remote system components available upon request
- Suitable for use with metering devices of category 2, 3 and 4

Applications

- Textiles
- Steel mills
- Packaging
- Plastic processing
- Material handling
- Food and beverage

Technical data

Order number	**82570**
Function principle	pneumatically operated piston pump (single stroke)
Outlets	1
Metering quantity	39,3 cm^3/stroke, *2.4 in^3/stroke*
Lubricant	oil, synthetic oils on request
Operating temperature	–23 to +65 °C *–10 to +150 °F*
Operating pressure	max. 70 bar, *1 000 psi*
Reservoir	2,0 l, *0.5 gal*
Material (reservoir)	acrylic
Connection outlet	¼ NPTF (F)
Transmission ratio	20:1
Air valve	required, 4-way
Dimensions	451×146×464 mm *17.75×5.75×18.25 in*
Mounting position	vertical

PUB LS/P1 17046 EN

Pump unit

85430/31/32/33

Product description

These air-operated, positive displacement pumps deliver maximum volume via a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. All pumps are designed to deliver fluid lubricants to single-line metering devices and are filled via a spring-loaded filler cap and internal filter. Acrylic reservoirs are available in several sizes. Pump models 85432 and 85433 do not include a reservoir and are designed for remote or bulk-fill oil applications.

Features and benefits

- Reservoir with filler cap and internal strainer
- Integrated, adjustable solid-state time controls with LED indicators
- Integrated solenoid air valves
- Suitable for use with metering devices of category 2, 3 and 4 (85432, 85433 are only suitable for use with category 4)

Applications

- Closing machines
- Packaging machines
- Material handling
- Plastic processing
- Tire presses

Technical data

Function principle	pneumatically operated piston pump (single stroke)
Outlets	1
Metering quantity	39,3 cm^3/stroke, *2.4 in^3/ stroke*
Lubricant	oil, synthetic oils oils on request
Operating temperature	–23 to +65 °C; *–10 to +150 °F*
Operating pressure	max. 70 bar, *1 000 psi*
Reservoir	85430, 85431 only: 2 l, *0.5 gal*
Material (reservoir)	acrylic
Connection outlet	1/4 NPTF (F)
Voltage	120 VAC; 240 VAC
Transmission ratio	20:1
Dimensions	627×166×460 mm *24.7×5.52×18.11 in*
Mounting position	vertical

Timer and controller

On time	10 or 30 sec
Off time	30 sec to 30 min. or 30 min. to 30 h
Alarm contacts	8 A at 250 VAC
Operating temperature	–23 to 65 °C; *–10 to +150 °F*

85430/31/32/33 pump units

Order number	Voltage	Reservoir	
	VAC	l	*gal*
85430	120	2	*0.5*
85431	240	2	*0.5*
85432	120	–	–
85433	240	–	–

PUB LS/P1 17046 EN

PEF/PEU

Product description

These pneumatically actuated piston pumps were designed for intermittently operated, single-line centralized lubrication systems with metering devices. The valve set required for pressure relief and limitation is included.

Features and benefits

- Driven by on-board compressed air system
- Optional integrated control
- Electrical monitoring via external controller or SPS
- Simple handling
- Suitable for use with metering devices of category 1, 2 and 3

Applications

- Vehicles and trailer
- Machine tools
- Printing machines
- Industrial assembly and automation

PEF/PEU pump units

Order number	Lubricant Oil	Fluid grease	Fill-level switch
PEF-90	•	•	•
PEF-99W	–	•	•
PEF-99W-S1	–	•	•
PEF-99W-S2	–	•	•
PEF-99W-S3	–	•	–
PEU-99	•	•	–
PEU-99-S2	•	•	–
PEU-99-S3	•	–	–

Technical data

Function principle	pneumatically operated piston pump
Outlets	1
Metering quantity	48 or 50 cm^3/stroke, *2.93 or 3.05 in^3/stroke*
Lubricant	mineral, synthetic, and environmentally compatible oils, operating viscosity 20 to 1 500 mm^2/s or fluid grease, NLGI 000, 00
Operating temperature	–25 to +80 °C; –13 *to +176 °F*
Operating pressure	max. 50 bar, *725 psi*
Reservoir	3,0 l, *0.8 gal*
Material (reservoir)	polycarbonate
Connection outlet	M16×1,5
Dimensions	
PEF-90	248×194×341 mm *9.8×7.6×13.4 in*
PEF-99 W	270×126×355 mm *10.6×4.9×13.9 in*
PEU-99	270×126×355 mm *10.6×4.9×13.9 in*
Mounting position	vertical

Fill-level switch for monitoring the minimum grease level

Type of contact	NO-contact
Switching voltage	max. 10 to 35 VDC
Output current	400 mA
Capacity	15 mA
Type of enclosure	IP 54

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1110-EN, 951-170-012 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Pump unit

283167

Product description

Pump model 283167 includes air motor, vent valve, translucent reservoir with filler cap, strainer and 1 200 psi *(82 bar)* safety unloader. Pump is an oscillating positive displacement pump with pneumatic drive. The change-over valve of the pump drive controls reciprocating of the pump strokes (discharges oil to outlet on forward stroke and sucks oil on back stroke). The reciprocating pump operates under air pressure and as such discharges material until the required system oil pressure is built up. The shut off and monitoring of the pump must be initiated by a pressure switch, 3/2 way air valve, components to limit and adjust the air operating pressure. These parts are to be furnished on site of the user.

Features and benefits

- Reservoir with filler cap and internal strainer
- Vent valve assembly enclosed
- Remote system components available upon request
- Suitable for use with metering devices of category 3 and 4

Applications

- Steel mills
- Glass manufacturing plants
- Packaging
- Plastic processing
- Material handling
- Food and beverage
- Metal cutting, metal forming
- Systems with many lubrication points

Technical data

Order number	**283167**
Function principle	pneumatic, reciprocating piston pump
Outlets	1
Metering quantity	197 cm^3/min, *12 in^3/min*
Pump cycles/minute	max. 100 permitted
Lubricant	oil, synthetic oils on request
Operating temperature	-23 to +65 °C *-10 to +150 °F*
Operating pressure	max. 70 bar, *1 000 psi*
Reservoir	7,1 l, 7 100 cm^3, *1.8 gal, 433 in^3*
Material (reservoir)	acrylic
Air inlet connection	1/8 NPTF (F)
Connection outlet	3/4 NPTF (F)
Transmission ratio	40:1
Air valve	required, 3-way
Dimensions	591 × 229 × 413 mm *23.25 × 9 × 16.25 in*
Mounting position	vertical

Note:
When operating the pump with air pressure > 1,7 bar a pressure switch for oil is required to limit the oil pressure (max. 68 bar) of the central lubrication system.

PUB LS/P1 17046 EN

Pump unit

1826

Product description

Pump model 1826 is modular assembled and consists of air motor, attached pump tube, vent valve assembly, drum cover, controller, lubricant connecting hoses and safety unloader. Modular structured air motor is fully pneumatically monitored. Supplied compressed air to air motor moves oscillating piston in cylinder up and down. Simultaneously outlet air pours out of opposite cylinder chamber via exhausting baffle. A signal valve operates as a sensor and forwards pneumatic signal pressure to a relay valve as soon as piston has reached its fully stroke in one direction. Relay valve now switches pneumatically movement of piston opposite. Oscillation operation is working. Pumps consist in two devices, air motor and pump tube with integrated shovel piston. Oscillation piston initiates shovel piston to pump operation by sucking and pumping function. Pumps are supplied in moduls must be furnished on side of user but can also supplied completely on request.

Features and benefits

- Midsize volume PowerMaster air motor
- Carbon steel pump tube with shovel-foot design, selected fit plunger and bushing
- Vent valve assembly and safety unloader included
- Drum cover for standard U.S. 55 gal. (200 l) drums (removable head)
- Simplified, modular design
- Wear-resistant and robust construction, reliable
- Suitable for use with metering devices of category 2, 3 and 4

Applications

- Steel mills
- Plastic processing
- Food and beverage
- Glass industry
- Material handling

Technical data

Order number	**1826**
Function principle	pneumatically operated reciprocating piston pump
Outlets	1
Metering quantity	7 571 cm^3/min, *462 in^3/min*
Lubricant	oil
Pump tube 84991	
Volume/cycle (up and down)	100 cm^3; *6.10 in^3*
Max. pump cycles/minute	70 permitted
Operating temperature	-34 to +93 °C *-29 to +199 °F*
Operating pressure	max. 70 bar; *1 000 psi*
Air inlet	3/8 NPTF (F)
Connection outlet	3/4 NPTF (F)
Transmission ratio	24:1
Dimensions	
Total length	1 464 mm; *57.64 in*
Immersion length	864 mm; *34.01 in*
Mounting position	vertical

Controller

Voltage	110 VAC, 50 Hz; 120 VAC, 60 Hz

PUB LS/P1 17046 EN

ECP

Product description

The Electric Cartridge Pump ECP was developed to lubricate bearings and linear guides in small machines. It includes an integrated pressure-relief. This electrically driven piston pump uses 24 V DC and is controlled by an external programmable logic controller (PLC) for convenience. In addition, the pump is capable of manually activating a lubrication cycle and can be used with an optional, integrated level switch to monitor the oil level of the cartridge. Utilizing easy-to-exchange cartridges, it is compatible with oil viscosities from 20 to 1 500 mm²/s and fluid grease grades of NLGI 00 and 000.

Features and benefits

- Cost effective solution
- Simple to operate
- Increases reliability
- Minimizes risk of using wrong or contaminated lubricant
- Reduces unplanned downtime
- Extends maintenance intervals
- Minimizes environmental impact via eficient use of lubricants

Applications

- Automation
- Machine tools
- Material handling
- Plastic processing
- Food and beverage

Technical data

Function principle	electrically operated piston pump
Outlets	2
Metering quantity	fluid grease: 12 cm³/min; *0.73 in³/min* oil: 0,012 l/min; *0.0027 gal/min*
Lubricant	oil: 20 to 1 500 mm²/s fluid grease: NLGI 00, 000
Operating temperature	+10 to +50 °C; *+50 to 122 °F*
Operating pressure	max. 38 bar; *550 psi*
Reservoir	380 ml; *12.8 l. oz.*
Outlet connection	M10×1 thread or SKF Quick Connector 6–8 mm
Output voltage	24 V DC
Dimensions	without cartridge: 143×172×121 mm; 5.63×6.77×4.76 in with cartridge: 307,5×172×121 mm; 12.1×6.77×4.76 in
Mounting position	upright

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **16966 EN, 951-170-232**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

ECP

Order number configurator

E	C	P	1	–	1			A		

Pump type

ECP = Electric Cartridge Pump

Output volume

1 = 12 cm³/min; *0.73 in³/min*
0,012 l/min; 0.0027 gal/min

Version

1 = 1st version

Reservoir level monitoring

W = Warning level (pre-warning empty)
0 = No warning switch

Wall bracket

A = With standard bracket
0 = Without

Electrical connection

A = Square plug following DIN EN 175301-803-A

Front outlet port connection

1 = Connection thread M10×1
2 = Quick connector ø 6 mm
3 = Banjo fitting ø 6 mm
4 = Quick connector ø 8 mm
X = Closed

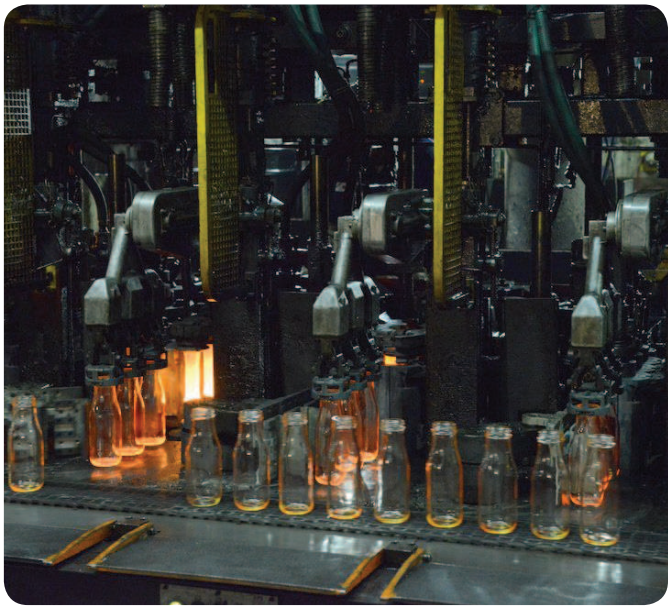
Outlet port bottom

1 = Connection thread M10×1
2 = Quick connector ø 6 mm
3 = Banjo fitting ø 6 mm
4 = Quick connector ø 8 mm
X = Closed

PUB LS/P1 17046 EN

Pump unit

P 653S (oil)



Product description

Suitable for multiple applications, the Lincoln P 653S electrically driven oil pump simplifies the design of your lubrication system and delivers significant flexibility. A member of the Centro-Matic family, the pump comes complete with a reservoir, pressure switch/ transducer, vent valve and controller in one compact unit.

Features and benefits

- Integration of major system components reduces labor and overall costs
- Simplifies lubrication system design
- Reduces installation time via “plug-and-go” capability
- Minimizes lubricant consumption by running only when the machine is operating

Applications

- Automation
- Machine tools
- Glass manufacturing plants
- Woodworking facilities
- Oil and Gas plants
- Steel plants

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **PUB LS/P2 16072 EN**

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	24,6 cm^3/min, *1.5 in^3/min*
Lubricant	oil, minimum 40 mm^2/s (cST)
Operating temperature	0 to +50 °C; *+32 to 122 °F*
Operating pressure	with pressure switch: 240 bar, *3 500 psi* with pressure transducer: factory preset to 82 bar, *1 200 psi*
Reservoir	4 l, *1 gal;* 8 l, *2 gal*
Material (reservoir)	thermoplastic
Connection outlet	G 1/4
Incoming voltage	120/230 VAC [1]
Current	max. 1,7 A
Frequency	47 to 63 Hz
Pause time	max. 59 h, 59 min min. 4 min;
Pause time increments	1 hr or 1 min
Pumping time	max. 12 min
Dimensions	depending on model min. 240×467×235 mm max. 240×508×235 mm *min. 9.5×18.4×9.25 in* *max. 9.5×20×9.25 in*
Mounting position	upright

Pump elements

Piston	ø 7 mm, *0.3 in*
Number connected	3
Protection	1P 6K9K

[1] 24 V DC version available on request.

PUB LS/P1 17046 EN

P 653S (oil)

P653S (oil)

Order number	120/230 VAC 50/60 Hz	Reservoir capacity		Internal pressure switch	Internal pressure transducer	Internal and end-of-line pressure switch	Internal and end-of-line pressure transducer
		l	*gal*				
80127	•	4	*1*	•	•	–	–
80128	•	8	*2*	•	•	–	–

PUB LS/P1 17046 EN

Pump unit

KFB

Product description

Used with SKF single-line systems, the KFB series gear pump units supply fluid grease NLGI 000 and 00 and include a pressure-relief valve and a pressure-limiting valve. The pumps are designed for supply voltages of 12 V DC and 24 V DC and are controlled either by an integrated electronic control unit or externally, via the machine control system. Depending on the design, the gear pump units are filled via a filler socket or attached filler coupling.

Features and benefits

- Compact pump unit
- Integrated pressure-relief valve and pressure-regulating valve
- Visual or optional electrical fill-level monitoring
- Optional integrated control
- Optional pre-assembled lubrication distributor of VN series

Applications

- Commercial vehicles
- Industrial applications

Technical data

Function principle	electrically operated gear pump
Outlets	1
Metering quantity[1)]	50 cm³/min, 3.05 in³/min
Lubricant	fluid grease of NLGI 000 or 00
Operating temperature	–25 to +75 °C; *–13 to +167 °F*
Operating pressure	max. 38 bar, *550 psi*
Reservoir	KFB(S)1-W: 1 l, 0.26 gal KFB(S)1: 1,4 l, 0.37 gal
Material (reservoir)	translucent plastic
Connection outlet	ø 10×1.5 (max. 16 m, *52.5 ft)*
Dimensions:	
KFB(S)1, KFB(S)1-W	216×150×235 mm; *8.5×5.9×9.3 in*
KFB(S)1-4-S1, KFB(S)1-W-4-S1, KFB(S)1-6-S1, KFB(S)1-W-6-S1	245×150×294 mm; *9.6×5.9×11.6 in*
Mounting position	vertical

DC motor

Voltage	12, 24 V DC
Current	3,8 A; 1,7 A
Rated output	46 W, 41 W
Protection class	IP 6K6K / IP 6K9K

[1)] At back pressure of 10 bar *(145 psi)* and a temperature of +25 °C *(+77 °F)*

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1206-EN, 951-170-009 EN**

PUB LS/P1 17046 EN

KFB

KFB pump units

Order number		Lubricant Fluid grease NLGI 000, 00	Control unit	Fill-level switch	Electrical connections Circular connector AMP, 4-pin	Circular connector AMP, 7-pin	Design
KFB1	2)	•	–	–	•	–	Basic version
KFB1-W	2)	•	–	•	–	•	Basic version
KFBS1	2)	•	•	–	–	•	Basic version
KFBS1-W	2)	•	•	•	–	•	Basic version
KFB1-4-S1	2)	•	–	–	•	–	VN metering device, 4-outlets
KFBS1-4-S1	2)	•	•	–	–	•	VN metering device, 4-outlets
KFB1-6-S1	2)	•	–	–	•	–	VN metering device, 6-outlets
KFBS1-6-S1	2)	•	•	–	–	•	VN metering device, 6-outlets
KFB1-W-4-S1	2)	•	–	•	–	•	VN metering device, 4-outlets
KFBS1-W-4-S1	2)	•	•	•	–	•	VN metering device, 4-outlets
KFB1-W-6-S1	2)	•	–	•	–	•	VN metering device, 6-outlets
KFBS1-W-6-S1	2)	•	•	•	–	•	VN metering device, 6-outlets

1) All units for vehicle applications have type approval pursuant to ECE-R 10.
2) When ordering, quote the code for voltage to be used
12 VDC: Order code +912
24 VDC: Order code +924

For units
KFB(S)1, KFB(S)1-W, KFB(S)1-4-S1, KFB(S)1-W-4-S1, KFB(S)1-6-S1, KFB(S)1-W-6-S1

Fill-level switch (for KFB(S)1-W) opens when fill level too low

Switching voltage . . . . . 10 to 36 VDC
Switching current . . . . . Resistive load 1): ≤0.5 A
Switching capacity . . . . . Resistive load 1): ≤12 W

Relubrication metering device VN (KFB(S)1(-W)4-S1, KFB(S)1(-W)-6-S1)

Lubrication point connection . . . . . Push-to-connect fitting for tube ø 4 mm
Metering quantity . . . . . 0.1; 0.2; 0.4 cm^3
Feeder body material . . . . . Die-cast zinc, black corrosion protection

Control unit IG502-2-I (KFBS1)

Interval, adjustable . . . . . 0.1 ... 99.9 h
Pump run time, adjustable . . . . . 0.1 ... 99.9 min
Max. pump run time . . . . . 3.0 min 2)
Elapsed-hours counter . . . . . 0 ... 99999.9 h
Fault-hours counter . . . . . 0 ... 99999.9 h

Additional input power for units
with control unit (without output load). . . . . 4 W

1) When switching inductive loads, take appropriate measures to protect contacts
2) The operating mode S3 (periodic duty) describes the ratio of pump run time to subsequent down time. If the relative ON-time is 2.5% and the duty cycle time is 10 to 120 min., then the limit values are as follows:
Min. duty cycle time: 10 min×0.025 = 0.25 min. pump run time with subsequent down time of 9.75 min.
Max. duty cycle time: 120 min×0.025 = 3 min. pump run time with subsequent down time of 117 min.

PUB LS/P1 17046 EN

Pump unit

KFB-M

Product description

Used with SKF MonoFlex single-line systems, the KFB series gear pump units supply fluid grease NLGI 000 and 00 and include a pressure-relief valve and a pressure-limiting valve. The pumps are designed for supply voltages of 24 V DC and are controlled either by an integrated electronic control unit or externally, via the machine control system. Depending on the design, the gear pump units are filled via a filler socket or attached filler coupling.

Features and benefits

- Compact pump unit
- Integrated pressure-relief valve and pressure-regulating valve
- Visual or optional electrical fill-level monitoring
- Optional integrated control

Applications

- Automation
- Automotive
- Machine tools

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1206-EN**

Technical data

Function principle	electrically operated gear pump
Outlets	1
Metering quantity[1]	50 cm³/min, *3.05 in³/min*
Lubricant	fluid grease of NLGI grade 000 or 00
Operating temperature	0 to +60 °C; *+32 to 140 °F*
Operating pressure	max. 38 bar, *550 psi*
Reservoir	KFB1-M: 1,4 l, *0.37 gal* KFB(S)1-M(-W): 1 l, *0.26 gal*
Material (reservoir)	translucent plastic
Connection outlet	ø 8×1,25; (max. 16 m, *52.5 ft*)
Dimensions KFB1-M, KFB1-M-W, KFBS1-M, KFBS1-M-W	216×150×235 mm *8.5×5.9×9.3 in*
Dimensions KFB1-M-W-S1	216×150×270 mm *8.5×5.9×10.6 in*
Mounting position	vertical

DC motor

Voltage	24 V DC[2]
Current	1,7 A
Rated output	41 W
Protection class	IP 65

Fill-level switch (KFB1-M-W) (change-over contact)

Switching voltage	24 V DC [2]
Switching current (resistive load)[3]	≤0.5 A
Switching capacity (resistive load)[3]	≤12 W

Control unit IG502-2-I (KFBS1)

Interval, adjustable	0.1 ... 99.9 h
Pump run time, adjustable	0.1 ... 99.9 min
Max. pump run time	2.4 min
Elapsed-hours counter	0 ... 99999.9 h
Fault-hours counter	0 ... 99999.9 h
Additional input power for units with control unit (without output load)	4 W

[1] At back pressure of 10 bar and a temperature of +25 °C; +77 °F
[2] Safety measures to be applied for correct operation: Protective extra-low voltage (PELV), standards: EN 60204-1/IEC 60204-1; HD 60364-4-41/DIN EN 0100-410/IEC 60364-4-41
[3] When switching inductive loads, take appropriate measures to protect contacts

PUB LS/P1 17046 EN

KFB-M

KFB-M pump units

Order number	Lubricant Oil viscosity 50–50 000 mm²/s	Fluid grease NLGI 000, 00	Control unit	Fill-level switch	Electrical connections Square connector 3-pin +PE	Circular connector M12×1, 4-pin
KFB1-M+924	–	•	–	–	•	–
KFBS1-M+924	–	•	•	–	•	•
KFB1-M-W+924	–	•	–	•	•	•
KFBS1-M-W+924	–	•	•	•	•	•
KFB1-M-W-S1+924	•	–	–	•	•	–

PUB LS/P1 17046 EN

Pump unit

KFU

Product description

The gear pump continuously supplies lubricant to relubrication metering devices via the main line network when the pump is in operation. When the metering chambers of the metering devices 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.

Features and benefits

- Includes gear pump with relief valve, safety valve, DC motor, transparent lubricant reservoir, filler socket and angle bracket
- Hood protects DC motor and filler socket from contaminants
- Minimizes wear and tear
- Reduces downtime
- Lowers maintenance costs via automatic lubrication

Applications

- Agriculture
- Construction machinery
- Trucks, trailers and buses

Technical data

Function principle	electrically operated gear pump
Outlets	1
Metering quantity [1]	140 cm^3/min, *8.5 in^3/min*
Lubricant	fluid grease, NLGI 000, 00
Operating temperature	–25 to +75 °C; *–13 to +167 °F*
Operating pressure	max. 38 bar, *550 psi*
Reservoir	2,7 or 6 l; *0.7 or 1.6 gal*
Material	Steel, plastic Sealings: FKM, NBR Reservoir: Translucent plastic
Main connection	Mainly plastic tubing ø 10×1.5 but also steel tubing ø 10×0.7 hose SLH10-...
Secondary connection	Mainly plastic tubing ø 4×0.85.; in case of large movement between lubrication point and chassis: hose 734 ...
Operating voltage	12 or 24 V DC
Protection class	IP 59k
Dimensions	min. 268×154×325 mm max. 343×184×364 mm *min. 10.5×6×12.7 in* *max. 13.5×7.2×14.3 in*
Mounting position	vertical

[1] At back pressure 38 bar *(550 psi)* and temperature +25 °C *(+77 °F)*

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-9420-EN, 951-170-006_EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

KFU

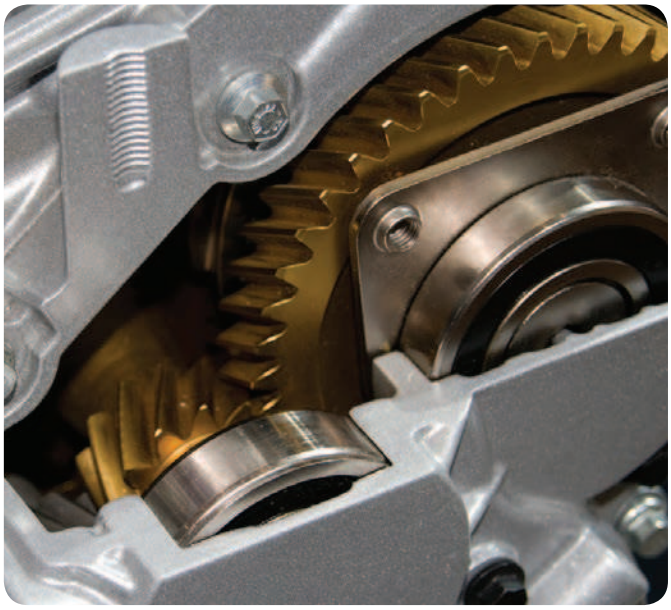
KFU pump units

Order number	Reservoir		Operating voltage	
	l	*gal*	VDC	Amp
KFU2-40+912	2,7	*12*	12	7.5
KFU2-40+924	2,7	*12*	24	7.5
KFU6-20+912 [1]	6	*1.6*	12	7.5
KFU6-20+924 [1]	6	*1.6*	24	7.5
KFUS2-64+912	2,7	*12*	12	16
KFUS2-64+924	2,7	*12*	24	8

[1] This unit should only be used for systems with a minimum lubricant consumption of 6 l *(1.6 gal)* per year.

PUB LS/P1 17046 EN

MKU



Product description

MKU gear pump units are used in single-line systems and include a pre-installed pressure-regulating valve and pressure-relief valve. These units can be supplied with an optional pressure gauge for visual monitoring of pressure changes in the main line. Electrical pressure monitoring is performed by an integrated pressure switch, and fill-level monitoring also is possible. The pump units are controlled externally via the machine control system or an integrated control unit. Also, MKU units can be supplied with a pushbutton to activate interim lubrication at any time. Main functions are integrated into the lid, and a plastic cap protects the electrical components from contaminants such as dirt and dust.

Features and benefits

- Integrated pressure limitation and pressure relief valve
- Optional: electrical pressure switch, pressure gauge, float switch
- External control via SPS or by means of internal control unit possible
- All important functions integrated into the lid
- Modular construction

Applications

- Material handling
- Automotive
- Machine tool
- Printing and finishing
- Industrial assembly and automation
- Textiles

Technical data

Function principle	electrically operated gear pump
Metering quantity	100; 200; 500 cm^3/min *6; 12; 31 in^3/min*
Lubricant	mineral oil or synthetic oil, 20 to 1 500 mm^2/s
Operating temperature	+10 to 40 °C; *+50 to 104 °F*
Operating pressure	max. 30 bar, *435 psi*
Reservoir	2,0; 3,0 and 6,0 l, *0.5, 0.8 and 1.6 gal*
Material (reservoir)	plastic, metal
Connection outlet	G ¼
Protection class	IP 54
Dimensions pump unit with	
2 l; *0.5 gal* plastic reservoir	204×130×298 mm *8×5.2×11.7 in*
3 l; *0.8 gal* plastic reservoir	286×132×298 mm *11.3×5.2×11.7 in*
3 l; *0.8 gal* metal reservoir	286×132×313 mm *11.3×5.2×12.3 in*
6 l; *1,5 gal* plastic reservoir	290×178×334 mm *11.4×7×13.2 in*
Mounting position	vertical

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1203-EN, 951-170-005 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Pump unit

MKU

Order code M K U _ – 1 _ _ _ _ _ 0 0 0 + _ _ _

Product series **MK**x

U = oil lubricant

Code number for delivery rate

Selected code number for lubricant reservoir

Selected code letter for control

Selected code letter for monitoring

Selected code number for pressure gauge

Selected code number for electrical connection

Delivery rate

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

Lubricant reservoir, control

Lubricant reservoir	**1** 2 l, plastic	**2** 3 l, plastic	**3** 3 l, metal	**4** 6 l, plastic
Control				
A = no control, with terminal strip	•	•	•	•
B = no control, with terminal strip and pushbutton	•	•	•	•
C = IG38-30-I[1]	–	•	•	•
D = IZ38-30-I[1]	–	•	•	•
E = IGZ36-20-S6-I[1][2]	–	•	•	•

[1] If control **C**, **D**, or **E** is selected, monitoring **C** must be selected.
[2] If control **E** is selected, electrical connection **1** must be selected.
For description of control units, **see page 16–17.**

Monitoring

	X	**A**	**B**	**C**	**D**	**E**
Fill-level switch						
Without fill-level switch	•	•	–	–	–	–
NC contact (detection of wire breakage)	–	–	•	•	–	–
NO contact (no detection of wire breakage)	–	–	–	–	•	•
Pressure switch 20 bar						
Without pressure switch	•	–	•	–	•	–
NO contact	–	•	–	•	–	•

Voltage key

	Voltage	Frequency	Control
924[3]	24 V DC	–	A, B, E
428	230 V AC	50/60 Hz	A, B, C, D, E
429	115 VAC		

[3] Only possible with delivery rates 0.1 und 0.2 l/min

Electrical connection

Control	A, B	A, B				C, D	E
Monitoring	X	A	B	C	D	E	C	C
Electrical connection								
0 = 2 cable fittings	–	•	•	•	•	•	•	–
1 = 1 cable fitting; 1 rectangular connector	–	•	•	•	•	•	•	•
2 = 1 circular connector M12×1; 1 rectangular connector[4]	–	•	•	•	•	•	–	–
3 = 1 sealing plug; 1 cable fitting	•	–	–	–	–	–	–	–
4 = 1 sealing plug; 1 rectangular connector	•	–	–	–	–	–	–	–

[4] Only for design without control.

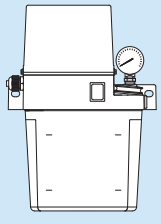
Pressure gauge

0 = without pressure gauge
1 = with pressure gauge

Order example

MKU1-11AC10000+924

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



PUB LS/P1 17046 EN

MKF

Product description

MKF gear pump units are used in single-line systems to supply fluid greases NLGI 000 and 00 and include a pressure-regulating valve and pressure-relief valve. Electrical pressure monitoring is performed by an integrated pressure switch, and fill-level monitoring also is possible. These units are controlled externally via the machine control system or an integrated control unit. Also, MKF units can be supplied with a pushbutton to activate interim lubrication at any time. Main functions are integrated into the lid, and a plastic cap protects the electrical components from contaminants such as dirt and dust.

Features and benefits

- Integrated pressure-limitation and pressure-relief valve
- Optional: electrical pressure switch, pressure gauge, float switch
- External control via SPS or by means of internal control unit possible
- All important functions integrated into the lid
- Modular construction

Applications

- Material handling
- Automotives
- Machine tool
- Printing and finishing
- Industrial assembly and automation
- Textiles

Technical data

Function principle	electrically operated gear pump
Metering quantity	100; 200; 500 cm^3/min *6; 12; 31 in^3/min*
Lubricant	fluid grease NLGI 000 or 00, compatible with plastics, NBR elastomers, copper and copper alloys
Operating temperature	+10 to 40 °C; *+50 to 104 °F*
Operating pressure	max. 30 bar, *435 psi*
Reservoir	2,0; 3,0 and 6,0 l, *0.5, 0.8 and 1.6 gal*
Material (reservoir)	plastic, metal
Connection outlet	G¼
Protection class	IP 54
Dimensions pump unit with	
2 l; *0.5 gal* plastic reservoir	204×130×298 mm *8×5.2×11.7 in*
3 l; *0.8 gal* plastic reservoir	286×132×298 mm *11.3×5.2×11.7 in*
3 l; *0.8 gal* metal reservoir	286×132×313 mm *11.3×5.2×12.3 in*
6 l; *1,5 gal* plastic reservoir	290×178×334 mm *11.4×7×13.2 in*
Mounting position	vertical

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1203-EN, 951-170-005 EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

MKF

Order code M K F _ – 1 _ _ _ _ _ 0 0 0 + _ _ _

Product series **MK**

F = fluid grease lubricant

Code number for delivery rate

Selected code number for lubricant reservoir

Selected code letter for control

Selected code letter for monitoring

Selected code number for pressure gauge

Selected code number for electrical connection

Delivery rate

1 = 0.1 l/min	•	•	–
2 = 0.2 l/min	–	•	•

Lubricant reservoir, control

Lubricant reservoir	**1** 2 l, plastic	**2** 3 l, plastic	**4** 6 l, plastic
Control			
A = no control, with terminal strip	•	•	•
B = no control, with terminal strip and pushbutton	•	•	•
C = IG38-30-I[1]	–	•	•
D = IZ38-30-I[1]	–	•	•
E = IGZ36-20-S6-I[1][2]	–	•	•

[1] If control **C**, **D**, or **E** is selected, monitoring **C** must be selected.
[2] If control **E** is selected, electrical connection **1** must be selected.
For description of control units, **see page 16–17.**

Monitoring

	X	**A**	**B**	**C**
Fill-level switch				
Without fill-level switch	•	•	–	–
NC contact (detection of wire breakage)	–	–	•	•
NO contact (no detection of wire breakage)	–	–	–	–
Pressure switch 20 bar				
Without pressure switch	•	–	•	–
NO contact	–	•	–	•

Voltage key

	Voltage	Frequency	Control
924	24 V DC	–	A, B, E
428	230 V AC	50/60 Hz	A, B, C, D, E
429	115 VAC		

Electrical connection

Control	A, B	A, B			C, D	E
Monitoring	X	A	B	C	C	C
Electrical connection						
0 = 2 cable fittings	–	•	•	•	•	–
1 = 1 cable fitting; 1 rectangular connector	–	•	•	•	•	•
2 = 1 circular connector M12×1; 1 rectangular connector[4]	–	•	•	•	–	–
3 = 1 sealing plug; 1 cable fitting	•	–	–	–	–	–
4 = 1 sealing plug; 1 rectangular connector	•	–	–	–	–	–

[4] Only for design without control.

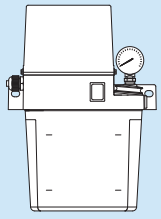
Pressure gauge

0 = without pressure gauge
1 = with pressure gauge

Order example

MKF1-11AC10000+924

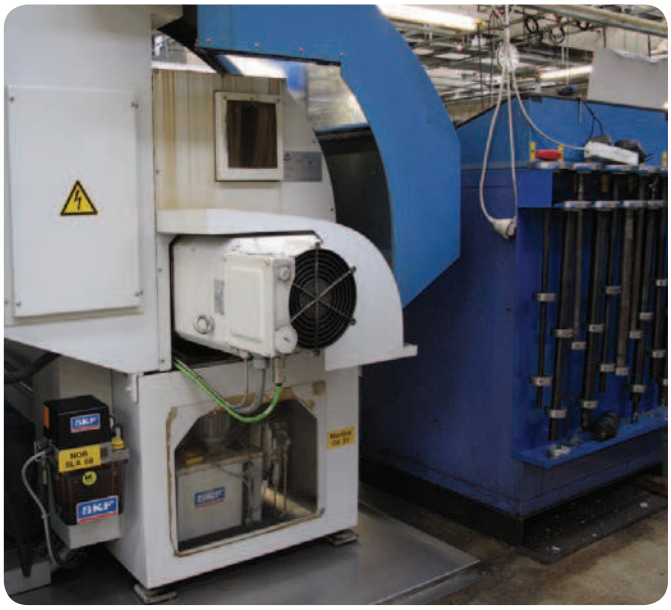
- Gear pump unit for fluid grease
- Delivery rate 0.1 l/min
- 1st generation
- 2 l plastic reservoir
- No control, with terminal strip
- NC fill level switch, NO pressure switch
- With pressure gauge
- 2 cable fittings
- Voltage 24 V DC



PUB LS/P1 17046 EN

Pump unit

MFE



Product description

The gear pump units comprising the MFE series are designed to supply lubricant used in intermittently operated, single-line centralized lubrication systems. The basic setup includes a gear pump unit with motor, a 3- or 6 l lubricant reservoir in metal or plastic, or a 15 l metal reservoir and float switch to monitor the minimum permissible level of lubricant. In addition to the basic models, units can be outfitted with add-ons.

Features and benefits

- Integrated float switch for fill-level monitoring
- Integrated pressure-relief valve and pressure-regulating valve
- Motors available for various voltage ranges and approvals
- Special designs offered for a wide range of applications
- Suitable for intermittent operation
- For remote installation out of reservoir or for built-in reservoir
- Reliable and versatile
- Suitable for use with metering devices of category 1 and 2

Applications

- Automotive manufacturing
- Metal, including presses
- Machine tools
- Printing and finishing
- Industrial assembly and automation

Technical data

Function principle	electrically operated gear pump
Outlets	1
Metering quantity	250 to 500 cm^3/min, *15 to 31 in^3/min*
Lubricant	oil 5 to 2 000 mm^2/s and fluid grease NLGI 00, 000
Operating temperature	–10 to +60 °C; *+14 to +140 °F*
Back pressure	max. 17,5; 28 bar, *max. 255, 405 psi*
Reservoir	3; 6; 15 l, *0.8, 1.6, 4 gal*
Material (reservoir)	plastic, metal
Connection outlet	M 14×1.5
Dimensions pump unit with	
3 l; *0.8 gal* plastic reservoir	303×130×245 mm; *11.9×5.1×9.6 in*
3 l; *0.8 gal* metal reservoir	332×178×312 mm; *13×7×12.3 in*
6 l; *1,5 gal* plastic reservoir	319×128×265 mm; *12.6×5×10.4 in*
6 l; *1,5 gal* metal reservoir	370×167×330 mm; *14.6×6.6×12.9 in*
15 l; *4 gal* metal reservoir	453×200×436 mm; *17.8×7.8×17.2 in*
Mounting position	vertical

Floating switch for low-level monitoring of oil

Type of contact	1 change-over; 2 change-over contacts (reed contacts)
Switching voltage	max. 230 VAC, 230 V DC
Switching current	max. 0,8 A; 1,0 A
Switching capacity	max. 60 VA, 40 W[1)]
Type of enclosure	IP 65

[1)] Take appropriate measures to protect contacts when switching inductive loads

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1202-EN, 951-170-002 EN**

PUB LS/P1 17046 EN

MFE

MFE pump units for oil

Order number	Reservoir		Reservoir material	Design[1)]
	l	*gal*		
MFE5-K3-2	3	*0.8*	Plastic	CE basic version without level monitoring
MFE5-KW3-2	3	*0.8*	Plastic	CE basic version with min. fill level switch
MFE5-KW3-2-S4	3	*0.8*	Plastic	CE basic version with min. fill level switch incl. pre-warning
MFE5-KW3-S37+1FV	3	*0.8*	Plastic	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE5-KW3-S35+1FW	3	*0.8*	Plastic	CCC version with fill level monitoring incl. min. fill level pre-warning
MFE5-KW3-S24+MPG	3	*0.8*	Plastic	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-K6	6	*1.6*	Plastic	CE basic version without level monitoring
MFE5-KW6	6	*1.6*	Plastic	CE basic version with min. fill level switch
MFE5-KW6-S1	6	*1.6*	Plastic	CE basic version with min. fill level switch incl. pre-warning
MFE5-KW6-S42+1FV	6	*1.6*	Plastic	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE5-KW6-S102+1FW	6	*1.6*	Plastic	CCC version with fill level monitoring incl. min. fill level pre-warning
MFE5-KW6-S33+MPG	6	*1.6*	Plastic	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-B3-2	3	*0.8*	Metal	CE basic version without level monitoring
MFE5-BW3-2	3	*0.8*	Metal	CE basic version with min. fill level switch
MFE5-BW3-2-S28	3	*0.8*	Metal	CE basic version with min. fill level switch incl. pre-warning
MFE5-BW3-S-S34+1FV	3	*0.8*	Metal	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE5-BW3-S41+MPG	3	*0.8*	Metal	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-B7	6	*1.6*	Metal	CE basic version without level monitoring
MFE5-BW7	6	*1.6*	Metal	CE basic version with min. fill level switch
MFE5-BW7-S22+1FV	6	*1.6*	Metal	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE5-BW7-S97+1FW	6	*1.6*	Metal	CCC version with fill level monitoring incl. min. fill level pre-warning
MFE5-BW7-S107+MPG	6	*1.6*	Metal	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-BW7-S222+MPG	6	*1.6*	Metal	CE version incl. gauge and vent filter, with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-BW16	15	*4*	Metal	CE basic version with min. fill level switch incl. pre-warning
MFE5-BW16-S145+1FV	15	*4*	Metal	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE5-BW16-S96+MPG	15	*4*	Metal	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-BW16-S222+MPG	15	*4*	Metal	CE version incl. gauge and vent filter, with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-BW30	30	*8*	Metal	CE basic version with min. fill level switch
MFE5-BW30-S30	30	*8*	Metal	CE basic version with min. fill level switch incl. pre-warning
MFE5-BW30-S35+MPG	30	*8*	Metal	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE5-BW30-S222+MPG	30	*8*	Metal	CE version incl. gauge and vent filter, with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning

[1)] Further designs are available on request.

MFE pump units for fuid grease

Order number	Reservoir		Reservoir material	Design[1)]
	l	*gal*		
MFE2-K3-2	3	*0.8*	Plastic	CE basic version without level monitoring
MFE2-K3F-2	3	*0.8*	Plastic	CE basic version with min. fill level switch
MFE2-KW3F-S13+1FV	3	*0.8*	Plastic	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE2-KW3F-S9+MPG	3	*0.8*	Plastic	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning
MFE2-K6F	6	*1.6*	Plastic	CE basic version without level monitoring
MFE2-K6F-S2	6	*1.6*	Plastic	CE basic version with min. fill level switch
MFE2-KW6F-S1	6	*1.6*	Plastic	CE basic version with min. fill level switch incl. pre-warning
MFE2-KW6F-S37+1FV	6	*1.6*	Plastic	UL/CSA version with fill level monitoring incl. min. fill level pre-warning
MFE2-KW6F-S41+1FW	6	*1.6*	Plastic	CCC version with fill level monitoring incl. min. fill level pre-warning
MFE2-KW6F-S20+MPG	6	*1.6*	Plastic	CE version with 6 pin Harting plug with fill level monitoring incl. min. fill level pre-warning

[1)] Further designs are available on request.

PUB LS/P1 17046 EN

Metering devices

341

340

LS22

LS21

361

351

350

370

391

390

321 Modul

321 G

321 T

321 W

321 G7

321 G4

AB

310

VN

Oi-Al-SR

SL-42

SL-43

SL-41

SL-44

PUB LS/P1 17046 EN

Overview of oil and fluid grease metering devices

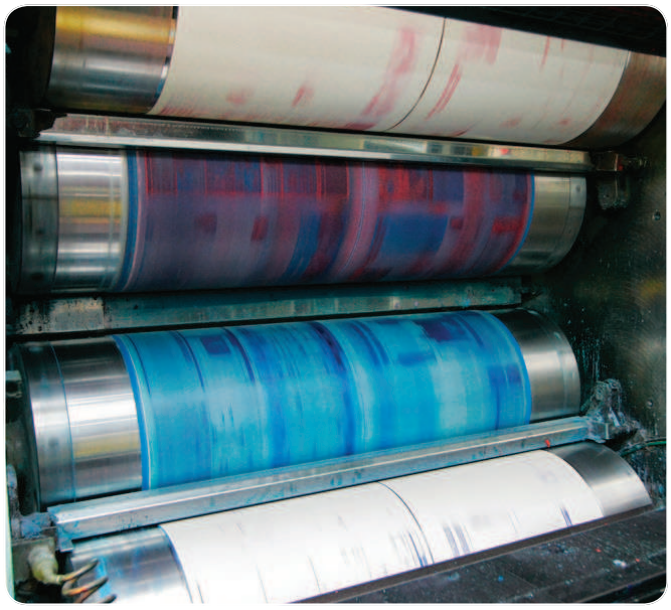
Product											
Metering device series	Category [1]	Lubricant oil	Lubricant fluid grease 000/00	Metering quantity per stroke		Operating pressure		Relief pressure max.		Function type	Function type	Page
				cm^3	*in^3*	bar	*psi*	bar	*psi*			
341 [2]	1	•	–	0,01-0,16	*0.0006-0.0097*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	48
340	1	•	–	0,01-0,16	*0.0006-0.0097*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	50
LS22 [2]	1	•	–	0,01-0,16	*0.0006-0.0097*	12-20	*174-290*	3	*43.5*	–	prelubrication	52
LS21 [2]	1	•	–	0,025-0,5	*0.0015-0.0305*	12-80	*174-1 160*	3	*43.5*	•	prelubrication	53
361	1	•	–	0,02-0,10	*0.0010-0.0060*	8-80	*116-1 160*	3	*43.5*	–	dynamic pulse type	54
351 [2]	1	•	–	0,05-0,60	*0.0030-0.0366*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	58
350	1	•	–	0,05-0,60	*0.0030-0.0366*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	60
370	1	•	–	0,05-1,50	*0.0030-0.0915*	20-80	*290-1 160*	1	*14.5*	–	relubrication	62
391	1	•	–	0,20-1,50	*0.0122-0.0915*	8-45	*116-653*	7	*101.5*	–	prelubrication	64
390	1	•	–	0,20-1,50	*0.0122-0.0915*	8-80	*116-1 160*	7	*101.5*	–	prelubrication	66
321 G, G4, T, W, Modul	2	•	•	0,01-0,10	*0.0006-0.0060*	12-45	*174-653*	3	*43.5*	–	special assembly arrangement	68
361	2	•	•	0,01-0,20	*0.0006-0.0122*	8-80	*116-1 160*	3	*43.5*	–	dynamic pulse type	54
321 G7	2	•	•	0,01-0,30	*0.0006-0.0183*	12-45	*174-653*	3	*43.5*	–	special assembly arrangement	68
AB [2]	2	•	•	0,01-0,60	*0.0006-0.0366*	18-50	*261-725*	3	*43.5*	–	prelubrication	70
341	2	•	•	0,03-0,10	*0.0018-0.0061*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	48
340	2	•	•	0,03-0,10	*0.0018-0.0061*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	50
310 [3]	2	•	•	0,03-0,16	*0.0018-0.0097*	12-30	*174-465*	3	*43.5*	–	prelubrication	56
VN	2	•	•	0,05-1,00	*0.0030-0.0610*	20-80	*290-1 160*	1	*14.5*	–	relubrication	72
351	2	•	•	0,10-0,60	*0.0061-0.0366*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	58
350	2	•	•	0,10-0,30	*0.0061-0.0183*	6-80	*87-1 160*	3	*43.5*	–	prelubrication	60
Oi-Al-SR	3	•	•	0,02-0,10	*0.0012-0.0061*	30-100	*435-1 450*	5	*72.5*	–	cartridge arrangement	74
391	3	•	•	0,10-0,30	*0.0061-0.0183*	8-45	*116-653*	7	*101.5*	–	prelubrication	64
390	3	•	•	0,10-0,30	*0.0061-0.0183*	8-80	*116-1 160*	7	*101.5*	–	prelubrication	66
SL-42	4	•	•	0,016-0,049	*0.001-0.0029*	52-69	*750-1 000*	10	*150*	•	prelubrication	76
SL-43	4	•	•	0,016-0,131	*0.001-0.0080*	52-69	*750-1 000*	10	*150*	•	prelubrication	78
SL-41	4	•	•	0,13-1,31	*0.0079-0.0799*	52-69	*750-1 000*	10	*150*	•	prelubrication	80
SL-44	4	•	•	0,13-1,31	*0.0079-0.0799*	52-69	*750-1 000*	10	*150*	•	prelubrication	82

[1] The category allows a simple assignment of the metering device to a pump of the same category. The category results from the relief pressure, the operating principle and the lubricant suitable for the metering device.
[2] Stainless steel or C5M available
[3] For technical reasons, 310 metering devices can not be operated with the ECP pump.

PUB LS/P1 17046 EN

Metering device

341



Product description

Developed for installation in manifolds, series 341 single-port, prelubrication metering devices are suitable for use with single-line, centralized lubrication systems for oil and fluid grease. The combination of these metering devices with one- to six-port manifolds provides flexible options for lubrication system design. Manifolds customized for product series 341 are available in aluminum and stainless steel.

Features and benefits

- Suitable with manifolds having one to six ports to match number of lubrication points
- Provides flexible options for systems with remote single lubrication points or multiple-port metering devices with up to six ports
- Select optional push-in or screw-in type metering nipples for feed line connections via order code
- Choose separately manifold models with different thread sizes for main line connection and materials
- Current metering nipples above 0,03 cm^3 are exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	1
Metering quantity	oil: 0,01 to 0,16 cm^3 *0.0006 to 0.0097 in^3* fluid grease: 0,03 to 0,10 cm^3 *0.0018 to 0.0061 in^3*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm^2/s, *0.031 to 3.100 in^2/s* fluid grease of NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 6 bar, *87 psi* max. 80 bar, *1 160 psi*
Relief pressure	max. 3 bar, *43.5 psi*
Materials	steel (galvanized, Cr6-free), stainless steel, nickel-plated brass, brass, copper, FKM (FPM)/ NBR
Connection main line	pipe ø 6 to 10 mm, solderless pipe connection for threads G $^1/_8$; G $^1/_4$; M 10×1 or M 14×1,5
Connection outlet	pipe ø 2,5 mm and ø 4 mm; metering nipple (VS) with SKF Quick Connector, metering nipple (00) for solderless pipe connection
Dimensions	min. 43,5×12 mm; *1.713×0.472 in* max. 53×12 mm; *2.086×0.472 in*
Mounting position	any

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

341

Order code 3 4 1 – _ _ _ – _ 0 0 0 0 – 0 0

Product series

Number of metering points **(1)**

Design and metering quantity

Design code	2	4		8		5		9	1		7		6
Lubricant	Oil	Oil		Oil		Fluid grease		Fluid grease	Oil		Fluid grease		Oil
ø Outlet [mm]	2,5	4		4		4		4	4		4		4
Distributor body	Steel	Steel		Steel		Steel		Steel	Steel		Steel		Steel (1.4305)
Metering nipple	Brass	Brass		Brass		Brass (n.p.)		Brass (n.p.)	Brass		Brass (n.p.)		Steel (1.4305)
Elastomer	NBR	NBR		FKM (FPM)		NBR		FKM (FPM)	NBR		NBR		FKM (FPM)
Threaded seal	FW[2)]	FW[2)]		FW[2)]		FW[2)]		Flat	O-ring [3)]		O-ring [3)]		O-ring [3)]
Connection outlet	**00**	**VS**	**00**	**VS**	**00**	**VS**	**00**	**00**	**VS**	**00**	**VS**	**00**	**00**
Metering quantity code 0,01 cm³ [1)]	**1**	**1**	**1**	**1**	**1**	–	–	–	**1**	**1**	–	–	**1**
Metering quantity code 0,02 cm³ [1)]	–	–	**6**	–	**6**	–	–	–	–	**6**	–	–	–
Metering quantity code 0,03 cm³	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Metering quantity code 0,06 cm³	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
Metering quantity code 0,10 cm³	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
Metering quantity code 0,16 cm³	**5**	**5**	**5**	**5**	**5**	–	–	–	**5**	**5**	–	–	**5**

[1)] Subsequent modification of the metering quantity is not technically possible.
[2)] FW=Flat washer must be ordered separately. Order number: **DIN7603-A8×11.5-CU** [3)] O-ring is part of the shipment

Accessory

Manifold

Manifold VL

Order code V L – _ _ _ _ _ _

Product series

Number of ports

01 = 1 screw-in point
02 = 2 screw-in points
03 = 3 screw-in points
04 = 4 screw-in points
05 = 5 screw-in points
06 = 6 screw-in points
(**other numbers of ports available on request**)

Design of metering device pipe thread

A = Normal profile, M8×1 with counterbore for O-ring
D = Small profile, M8×1 without counterbore

Material

A = Aluminum **E** = Stainless steel (1.4305) (**can only be selected for normal profile**)

Design of main line connection

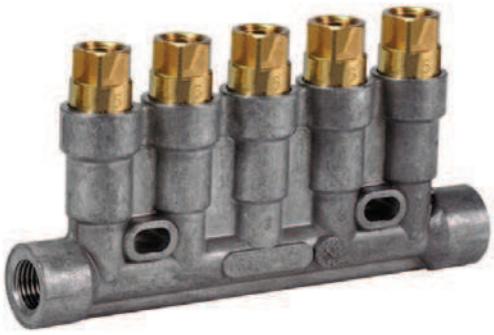
G1 = G $^1/_8$ per DIN 3852-2, Form X, small
G2 = G $^1/_4$ per DIN 3852-2, Form X, small
M3 = M10×1 with counterbore for solderless pipe connection per DIN 3862
M4 = M14×1,5 with counterbore for solderless pipe connection per DIN 3862 (**can only be selected for normal profile**)

Product description

For 341 metering devices, VL-manifold s are utilized for one to six screw-in points with thread M8x1 mm for O-ring or flat (copper) washer sealing. Normal-profile manifolds are available in aluminum and stainless steel, while narrow-profile manifolds are offered in aluminum only.

PUB LS/P1 17046 EN

340



Product description

Offered in two-, three- and five-port models, series 340 metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. These metering devices are designed for installation directly on the machine/system requiring lubrication. Series 340 metering devices can be ordered with fittings for the main line connection by selecting the appropriate order code.

Features and benefits

- Designed for installation directly on the machine/system requiring lubrication
- Select optional push-in or screw-in type metering nipples for feed line connections
- Choose optional push-in or screw-in type main line fittings
- Metering nipples above 0,03 cm^3 are exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	2, 3 or 5
Metering quantity	oil: 0,01 to 0,16 cm^3 *0.0006 to 0.0097 in^3* grease: 0,03 to 0,10 cm^3 *0.0018 to 0.0061 in^3*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm^2/s and fluid grease NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 6 bar, *87 psi;* max. 80 bar, *1160 psi*
Relief pressure	max. 3 bar, *43.5 psi*
Materials	zinc die-cast, brass (oil), nickel-plated brass (fluid grease), copper, steel, FKM (FPM)/NBR
Connection main line	different fittings for pipe ø 6 to 10 mm or closure plugs for thread M10×1
Connection outlet	pipe ø2,5 and ø 4 mm metering nipple (VS) with SKF quick connector, metering nipple (00) for solderless pipe connection
Dimensions	min. 48×53×15 mm *min. 1.889×2.086×0.590 in* max. 99×58×15 mm *max. 3.897×2.283×0.590 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

340

Order code 3 4 [ ] – [ ][ ][ ] – [ ][ ][ ][ ][ ] – [ ][ ]

Product series

Number of metering points (**2, 3, 5**)

Design and metering quantity

Design code	**2**		**4**		**8**		**5**	
Lubricant	Oil		Oil		Oil		Fluid grease	
Outlet [mm]	2,5		4		4		4	
Metering nipple	Brass		Brass		Brass		Brass, nickel-plated	
Elastomer	NBR		NBR		FKM (FPM)		NBR	
Outlet connection	**00**		**VS**	**00**	**VS**	**00**	**VS**	**00**
Metering quantity code: 0,01 cm³ [1]	**1**		**1**	**1**	**1**	**1**	–	–
0,02 cm³ [1]	–		–	**6**	–	**6**	–	–
0,03 cm³	**2**		**2**	**2**	**2**	**2**	**2**	**2**
0,06 cm³	**3**		**3**	**3**	**3**	**3**	**3**	**3**
0,10 cm³	**4**		**4**	**4**	**4**	**4**	**4**	**4**
0,16 cm³	**5**		**5**	**5**	**5**	**5**	–	–
closed [2]	**V**		**V**	**V**	**V**	**V**	**V**	**V**

[1] Subsequent modification of the metering quantity is not technically possible.
[2] V = Metering quatity of 0,03 cm³, closed

Fittings for main line connection

Designation	ømain line [mm]	Code
Straight adapter DIN 3862 with flat washer [1]	6	**B**
	8	**C**
	10	**D**
Banjo fitting DIN 3862 with flat washer, lockable [1] [2]	6	**F**
Screw plug with flat washer	–	**H**
Straight adapter with EO-2 functional nut	6	**M**
	8	**N**
	10	**P**
Straight adapter with SKF Quick Connector	6	**T**
	8	**U**
Banjo fitting with SKF Quick Connectors, not lockable	6	**V**
Vent plug with profile sealing ring	–	**Y**
Without fitting; for solderless pipe connection [1]	6	**Z**

[1] Solderless pipe connection according to DIN 3862 (operating pressure max. 45 bar)
[2] Banjo bolt only inserted in delivery condition, not tightened

Accessory

Exchangeable metering nipples

Solderless pipe connection

Order numbers for solderless pipe connection metering nipples

Outlet ø				Order numbers sorted by metering quantity			
mm	*in*	Elastomer	Lubricant	0,03 cm³ *0.00183 in³*	0,06 cm³ *0.00366 in³*	0,10 cm³ *0.0061 in³*	0,16 cm³ *0.0097 in³*
2,5	*0.1*	NBR	oil	**995-994-003**	**995-994-006**	**995-994-010**	**995-994-016**
4	*0.16*	NBR	oil	**995-994-103**	**995-994-106**	**995-994-110**	**995-994-116**
4	*0.16*	FKM	oil	**341-453-K-S8**	**341-456-K-S8**	**341-460-K-S8**	**341-466-K-S8**
4	*0.16*	NBR	fluid grease	**341-853-K**	**341-856-K**	**341-860-K**	–

SKF Quick Connector

Order numbers for SKF Quick Connector metering nipples

Outlet ø				Order numbers sorted by metering quantity			
mm	*in*	Elastomer	Lubricant	0,03 cm³ *0.00183 in³*	0,06 cm³ *0.00366 in³*	0,10 cm³ *0.0061 in³*	0,16 cm³ *0.0097 in³*
4	*0.16*	NBR	oil	**995-994-103-VS**	**995-994-106-VS**	**995-994-110-VS**	**995-994-116-VS**
4	*0.16*	FKM	oil	**341-453-S8-VS**	**341-456-S8-VS**	**341-460-S8-VS**	**341-466-S8-VS**
4	*0.16*	NBR	fluid grease	**341-853-VS**	**341-856-VS**	**341-860-VS**	–

PUB LS/P1 17046 EN

Metering device

LS22

Product description

Developed for installation in manifolds, LS22 are single-port metering devices for oil and special lubricants. When used in combination with one- to five-port manifolds, these prelubrication metering devices provide flexible options for lubrication system design. Connections with or without (M8x1) a quick-release connector are offered for feed lines and connections with a quick-release connector are available for main line tubes.

Features and benefits

- For use with manifolds having one to five ports to match number of lubrication points
- Compatible with ø 4 mm for feed lines and ø 8 for main lines
- Suitable for push-in or screw-in type fittings for dosers and push-in type fittings for manifolds
- Robust, reliable
- Suitable for up to 200 lubrication points

Applications

- Conveyor chain surfaces and guides
- Food and beverage
- Packaging

Technical data

Function principle	metering device
Outlets	1
Metering quantity	0,010 to 0,160 cm^3 *0.0006 to 0.0097 in^3*
Lubricant	mineral and synthetic oil, 5 to 2 500 mm^2/s; *0.007 to 3.875 in^2/s* or LDTS1 (dry film lubricant with synthetic oil and PTFE additions)
Operating temperature	0 to +50 °C; *+32 to 122 °F*
Operating pressure	min. 12 bar; *174 psi* max. 20 bar; *290 psi*
Relief pressure	max. 3 bar; *43.5 psi*
Materials	stainless steel 303, FKM (FPM), high phosphorus FDA chem. nickel-plated brass
Connection main line	push-in connectors for pipe ø 8 mm and thread G $^1/_4$
Connection outlet	with or without push-in connectors for pipe ø 4 mm and thread M10x1
Dimensions	min. 89×68,5×20 mm *min. 3.5×2.67×0.8 in* max. 179×84×20 mm *max. 7.0×3.3×0.8 in*
Mounting position	any

Order numbers

Order number.	Outlet(s)
LS2210	1
LS2220	2
LS2230	3
LS2240	4
LS2250	5

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **15848 EN**

PUB LS/P1 17046 EN

LS21

Product description

Developed for installation in manifolds, LS21 are single-port metering devices for oil and special lubricants. When used in combination with one- to five-port manifolds, these adjustable prelubrication metering devices provide flexible options for lubrication system design. Connections with or without (M8x1) a quick-release connector are offered for feed lines, and connections with a quick-release connector are available for main line tubes.

Features and benefits

- For use with manifolds having one to five ports to match number of lubrication points
- Compatible with ø 4 mm for feedlines and ø 8 for main lines
- Suitable for push-in type fittings for dosers and manifolds
- Robust, reliable
- Suitable for up to 200 lubrication points

Applications

- Conveyor chain surfaces and guides
- Food and beverage
- Packaging

Technical data

Function principle	adjustable metering device
Outlets	1
Metering quantity	adjustable 0,025 to 0,5 cm^3 *0.0015 to 0.0305 in^3*
Lubricant	mineral and synthetic oil, 5 to 2 500 mm^2/s; *0.007 to 3.875 in^2/s* or LDTS1 (dry film lubricant with synthetic oil and PTFE additions)
Operating temperature	0 to + 50 °C; *+32 to 122 °F*
Operating pressure	min. 12 bar; *174 psi* max. 20 bar; *290 psi*
Relief pressure	max. 3 bar; *43.5 psi*
Materials	stainless steel 303, FKM (FPM), high phosphorus FDA chem. nickel-plated brass
Connection main line	push-in connectors for pipe ø 8 mm and thread G $^1/_4$
Connection outlet	with or without push-in connectors for pipe ø 4 mm and thread M10×1
Working frequency	≤ 1 stroke/2 s
Dimensions	min. 89×92×20 mm *min. 3.5×3.622×0.8 in* max. 179×110×20 mm *max. 7.0×4.330×0.8 in*
Mounting position	any

Order numbers

Order number	Outlet(s)
LS2110	1
LS2120	2
LS2130	3
LS2140	4
LS2150	5

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **15848 EN**

PUB LS/P1 17046 EN

Metering device

361

Product description

Designed for installation in manifolds, series 361 single-port, dynamic metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. When used in combination with one- to six-port manifolds, these metering devices provide flexible options for lubrication system design. Customized manifolds for series 361 metering devices are available in aluminum.

Features and benefits

- For use with manifolds having one to six ports to match number of lubrication points
- Designed for installation directly on the machine/ system requiring lubrication
- Select screw-in type distributor with feed line connections via order code
- Choose separately optional manifold models with different thread sizes for main line connection

Applications

- Chain lubrication
- Transport and conveyor belts

Technical data

Function principle	metering device
Outlets	1
Metering quantity	oil and fluid grease: 0,01 to 0,20 cm^3; *0.0006 to 0.012 in^3* synthetic oil: 0,02 to 0,10 cm^3; *0.001 to 0.006 in^3*
Lubricant	mineral and synthetic oil: 10 to 1 000 mm^2/s, *0.015 to 1.55 in^2/s* fluid grease of NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 8 bar, *116 psi* max. 80 bar, *1 160 psi*
Relief pressure	max. 3 bar; *43.5 psi*
Materials	steel (galvanized, Cr6-free), (oil, grease), brass (oil), copper, flat washer (copper), NBR
Connection main line	pipe ø 6 to 12 mm, *0.236 to 0.472 in;* solderless pipe connection for threads G $^1/_8$; G $^1/_4$; M10×1 or M14×1,5 (DIN 3862)
Connection outlet	pipe ø 4 mm straight compression nut fitting
Dimensions	min. 42×14 mm max. 46,5×14 mm *min. 1.653×0.551 in max. 1.830×0.551 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

361

Order code 3 6 1 – _ 0 0 – _ 0 0 0 0 – 0 0

Product series

Number of metering points (**1**)

Design and metering quantity

Design code		**1**	**2**
Lubricant		oil, fluid grease	Oil
ø Outlet [mm]		4	4
Body		steel, galvanized	brass
Metering nipple material		steel, galvanized	brass
Elastomer		NBR	NBR
Connection outlet		**00**	**00**
Metering quantity code [cm³]	0,01	**1**	–
	0,02	**2**	**2**
	0,03	**3**	**3**
	0,05	**4**	**4**
	0,10	**5**	**5**
	0,20	**6**	–

* Flat washer must be ordered separately. Order number: **504-019**

Accessory

Manifold

Manifold VL

Order code V L – _ _ _ _ _ _

Product series

Number of ports

01 = 1 screw-in point
02 = 2 screw-in points
03 = 3 screw-in points
04 = 4 screw-in points
05 = 5 screw-in points
06 = 6 screw-in points
(**other numbers of ports available on request**)

Design of metering device pipe thread

B = Normal profile, M10×1 with counterbore for flat washer or O-ring
E = Narrow profile, M10×1 with counterbore for flat washer

Material

A = Aluminum **E** = Stainless steel (1.4305) (**can only be selected for normal profile**)

Design of main line connection

G1 = G $^1/_8$ per DIN 3852-2, Form X, small
G2 = G $^1/_4$ per DIN 3852-2, Form X, small
M3 = M10×1 with counterbore for solderless pipe connection per DIN 3862
M4 = M14×1,5 with counterbore for solderless pipe connection per DIN 3862 (**can only be selected for normal profile**)

Product description

For 361 metering devices, VL-manifolds are utilized for one to six screw-in points with thread M10×1 mm for flat washer sealing. Various main line connections can be selected via order code.

PUB LS/P1 17046 EN

Metering device

310

Product description

As the industry's irst non-metallic metering device, SKF's Series 310 has a unique appearance. However, its sleek, contemporary design provides proven SKF reliability for a minimum of 400 000 lubrication cycles. Developed for pre-lubrication applications using oil and luid grease, this metering device is simple to install utilizing plastic or metallic lines and can be mounted in either an upright or inverted position. It also features easily identiiable dosing elements to meet various lubrication requirements.

Features and benefits

- Suitable for use with plastic tubes or metal pipes
- Color-coded dosing elements to identify lubricant volumes
- Provides precise metering of lubricant
- Simple, lexible machine mounting in any position
- 2-, 3- or 5-port manifolds available
- Suitable for oil and luid grease

Applications

- Machine tools
- Textile and wood industry
- Printing machines
- Conveyors

Technical data [1)]

Function principle	metering device
Outlets	2, 3 or 5
Metering quantity	0,03 to 0,16 cm^3 *0.0018 to 0.0097 in^3*
Lubricant	mineral and synthetic oil, 20 to 1 500 mm^2/s fluid grease: NLGI 00 and 000
Operating temperature	+5 to +50 °C; *+41 to 122 °F*
Operating pressure	min. 12 bar, *174 psi* max. 30 bar, *435 psi*
Relief pressure	max. 3 bar; *43.5 psi*
Materials	high-performance PA66 resin
Connection main line	fittings for ø6 mm lines
Connection outlet	fittings for ø4 mm lines
Dimensions	min. 68×70×20,5 mm max. 119×70×20,5 mm *min. 2.67×2.75×8.07 in* *max. 4.68×2.75×8.07 in*
Mounting position	any

[1)] Metering devices of product series 310, can be operated with SKF's ECP pump.

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **17505 EN**

PUB LS/P1 17046 EN

Metering device

310

Order code 3 1 [ ] – 8 0 0 – [ ] [ ] [ ] [ ] [ ] – 0 0

Product series

Number of metering points
2 = 2 outlets
3 = 3 outlets
5 = 5 outlets

Elastomer
8 = Elastomer (FPM)

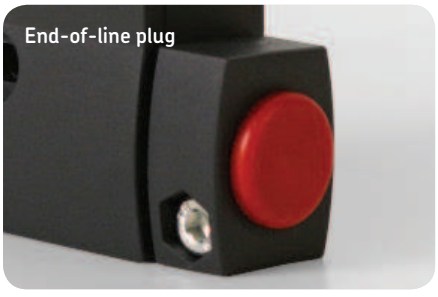
Metering quantity
0 = no outlet
2 = blue; 0,03 cm³; *0.0018 in³*
3 = white; 0,06 cm³; *0.0036 in³*
4 = grey; 0,10 cm³; *0.0061 in³*
5 = black; 0,16 cm³; *0.0097 in³*
Y = grey; closed; blind plug

Outlet 1
Outlet 2
Outlet 3 [1]
Outlet 4 [2]
Outlet 5 [2]

Connection main line
B = ø6 mm
Y = closed (with #898-210-001)

[1] not available for 2-outlet manifold 312 = 0
[2] not available for 2- and 3-outlet manifold 312 = 0; 313 = 0

Accessory



End-of-line plug

Order number	description
898-210-001	End-of-main-line plug

Product description

End-of-line plug suitable to plug main line outlet of 310 metering device to close the lubrication system. The red colour singalizes the end of the lubrication system.

PUB LS/P1 17046 EN

Metering device

351

Product description

Designed for installation in manifolds, series 351 single-port, prelubrication metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. When used in combination with one- to six-port manifolds, these metering devices provide flexible options for lubrication system design. Customized manifolds for series 351 metering devices are available in aluminum and stainless steel.

Features and benefits

- For use with manifolds having one to six ports to match number of lubrication points
- Provides flexible options for systems with remote single lubrication points or multiple-port metering devices with up to six ports
- Select optional push-in or screw-in type nipples for feed line connections
- Choose separately manifold models with different thread sizes for main line connection and materials
- Current metering nipples are exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	1
Metering quantity	oil: 0,05 to 0,60 cm^3 *0.0030 to 0.0366 in^3* fluid grease: 0,10 to 0,60 cm^3 *0.0061 to 0.0366 in^3*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm^2/s and fluid grease NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 6 bar, *87 psi;* max. 80 bar, *1 160 psi*
Relief pressure	max. 3 bar, *43.5 psi*
Materials	aluminum, stainless steel, brass (oil), nickel-plated brass (grease), flat washer (copper, stainless steel), FKM (FPM)/NBR
Connection main line	pipe ø 6 to 12 mm solderless pipe connection for threads G $^1/_8$; G $^1/_4$; M10×1 or M14×1,5 (DIN 3862)
Connection outlet	pipe ø 4 mm metering nipple (VS) with SKF Quick Connector – metering nipple (00) for solderless pipe connection
Dimensions	min. 43,5×12 mm; *1.713×0.472 in* max. 53×12 mm; *2.086×0.472 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

351

Order code 3 5 1 – _ _ _ – _ 0 0 0 0 – 0 0

Product series

Number of metering points (**1**)

Design and metering quantity

Design code	0		8		4	1		7		2		3		6
Lubricant	Oil		Oil		Oil	Fluid grease		Fluid grease		Oil		Fluid grease		Oil
ø Outlet [mm]	4		4		4	4		4		4		4		4
Body	Aluminum		Aluminum		Steel (1.4305)	Aluminum		Aluminum		Aluminum		Aluminum		Steel (1.4305)
Metering nipple	Brass		Brass		Steel (1.4305)	Brass (n.p.)		Brass (n.p.)		Brass		Brass (n.p.)		Steel (1.4305)
Elastomer	NBR		FKM (FPM)		FKM (FPM)	NBR		FKM (FPM)		NBR		NBR		FKM (FPM)
Threaded seal	FW [1]		FW [1]		Steel (1.4305) [2]	FW [1]		FW [1]		O-ring [3]		O-ring [3]		O-ring [3]
Connection outlet	**VS**	**00**	**VS**	**00**	**00**	**VS**	**00**	**VS**	**00**	**VS**	**00**	**VS**	**00**	**00**
Metering quantity code 0,05 cm³	3	3	3	3	–	–	–	–	–	–	–	–	–	–
0,10 cm³	4	4	4	4	4	4	4	4	4	4	4	4	4	4
0,20 cm³	5	5	5	5	5	5	5	5	5	5	5	5	5	5
0,30 cm³	–	–	–	–	–	6	6	6	6	–	–	6	6	–
0,40 cm³	6	6	6	6	6	–	–	–	–	6	6	–	–	6
0,60 cm³	7	7	7	7	7	–	7	–	–	7	7	–	–	7

[1] Flat washer must be ordered separately. Order number: **504-019**
[2] Stainless steel ring must be ordered separately. Order number: **99-1031-7603** [3] O-ring is part of the shipment

Accessory

Manifold

Manifold VL

Order code V L – _ _ _ _ _ _

Product series

Number of ports

01 = 1 screw-in point
02 = 2 screw-in points
03 = 3 screw-in points
04 = 4 screw-in points
05 = 5 screw-in points
06 = 6 screw-in points
(**other numbers of ports available on request**)

Design of metering device pipe thread

B = Normal profile, M10×1 with counterbore for flat washer or O-ring
E = Narrow profile, M10×1 with counterbore for flat washer

Material

A = Aluminum **E** = Stainless steel (1.4305) (**can only be selected for normal profile**)

Design of main line connection

G1 = G $^1/_8$ per DIN 3852-2, Form X, small
G2 = G $^1/_4$ per DIN 3852-2, Form X, small
M3 = M10×1 with counterbore for solderless pipe connection per DIN 3862
M4 = M14x1,5 with counterbore for solderless pipe connection per DIN 3862 (**can only be selected for normal profile**)

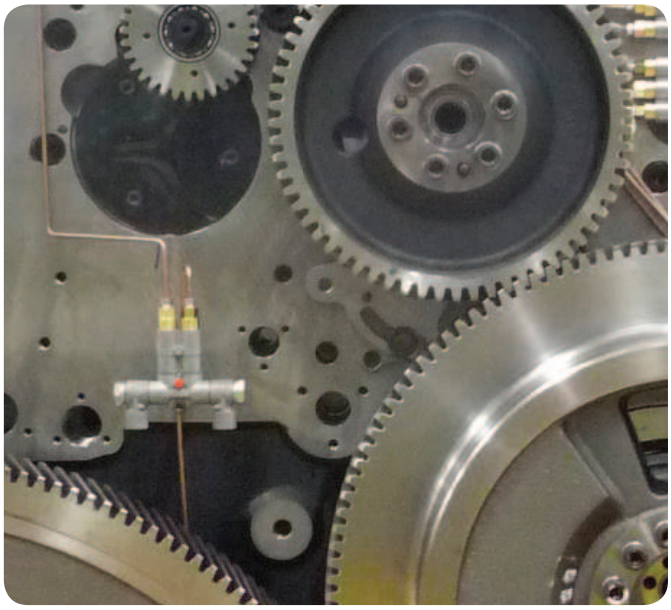
Product description

For 351 metering devices, VL-manifolds are utilized for one to six screw-in points with thread M10×1 mm for O-ring or flat (copper) washer sealing. Various main line connections can be selected via order code.

PUB LS/P1 17046 EN

Metering device

350



Product description

Designed for installation directly on the machine/system requiring lubrication, series 350 single-line, prelubrication metering devices are available in two-, three- and five-port models. These metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. Series 350 metering devices can be ordered with fittings for the main line connection by selecting the appropriate order code.

Features and benefits

- For use with distributor bodies having two, three and five ports to match number of lubrication points
- Designed for installation directly on the machine/system requiring lubrication
- Select push-in or screw-in type metering nipples for feed line connection with metering device bodies
- Choose push-in or screw-in type main line fittings with metering device bodies
- Current metering nipples above 0,03 cm^3 are exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry
- Agriculture

Technical data

Function principle	metering device
Outlets	2, 3 or 5
Metering quantity	oil: 0,05 to 0,60 cm^3 *0.003 to 0.037 in^3* grease: 0,10 to 0,30 cm^3 *0.0061 to 0.0183 in^3*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm^2/s and fluid grease NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 6 bar, *87 psi;* max. 80 bar, *1 160 psi*
Relief pressure	max. 3 bar, *43.5 psi*
Materials	zinc die-cast, brass (oil), nickel-plated brass (fluid grease), copper, steel, FKM (FPM)/NBR
Connection main line	different fittings for pipe ø 6 to 10 mm; *0.236 to 0.393 in* or closure plugs for thread M 12×1
Connection outlet	pipe ø 4 mm metering nipple (VS) with SKF Quick Connector - metering nipple (00) for solderless pipe connection
Dimensions	min. 46×83×18 mm *min. 1.811×3.267×0.708 in* max. 97×86×18 mm *max. 3.818×3.385×0.708 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

350

Order code 3 5 [ ] – [ ][ ][ ] – [ ][ ][ ][ ][ ] – [ ][ ]

Product series

Number of metering points (**2, 3, 5**)

Design and metering quantity

Design code		**0**		**8**		**1**		**7**
Lubricant		Oil		Oil		Fluid grease		Fluid grease
ø Outlet [mm]		4		4		4		4
Metering nipple		Brass		Brass		Brass (n.p.)		Brass (n.p.)
Elastomer		NBR		FKM (FPM)		NBR		FKM (FPM)
Outlet connection		**VS**	**00**	**VS**	**00**	**VS**	**00**	**VS**	**00**
Metering quantity code	0,05 cm³	**3**	**3**	**3**	**3**	**–**	**–**	**–**	**–**
	0,10 cm³	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
	0,20 cm³	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
	0,30 cm³	**–**	**–**	**–**	**–**	**6**	**6**	**6**	**6**
	0,40 cm³	**6**	**6**	**6**	**6**	**–**	**–**	**–**	**–**
	0,60 cm³	**7**	**7**	**7**	**7**	**–**	**7**	**–**	**–**
	closed *	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**

* V = Metering quatity of 0,20 cm³, closed

Fittings for main line connection

Designation	Main line [mm]	Code
Straight adapter DIN 3862 with flat washer [1]	6 8 10	**B** **C** **D**
Banjo fitting DIN 3862 with flat washer, lockable [1] [2]	6 8	**E** **F**
Screw plug with flat washer	–	**H**
Straight adapter with EO-2 functional nut	6 8 10 12	**M** **N** **P** **R**
Straight adapter with SKF Quick Connector	6 8	**S** **T**
Banjo fitting with SKF Quick Connectors	6 8	**W** **X**
Without fitting (M12x1 thread)	–	**Z**

[1] Solderless pipe connection according to DIN 3862 (operating pressure max. 45 bar)
[2] Banjo bolt only inserted in delivery condition, not tightened

Accessory

Exchangeable metering nipples

Order numbers for metering nipples for oil (replaceable)

Outlet ø mm	Outlet ø *in*	Material Elastomer	Metering nipple	Metering quantity 0,05 cm³ *0.003 in³*	0,10 cm³ *0.006 in³*	0,20 cm³ *0.012 in³*	0,40 cm³ *0.024 in³*	0,60 cm³ *0.036 in³*
4	*0.16*	NBR	00	**352-005-K**	**352-010-K**	**352-020-K**	**352-040-K**	**352-060-K**
4	*0.16*	NBR	VS	**352-005-VS**	**352-010-VS**	**352-020-VS**	**352-040-VS**	**352-060-VS**
4	*0.16*	FKM (FPM)	00	**352-005-K-S8**	**352-010-K-S8**	**352-020-K-S8**	**352-040-K-S8**	**352-060-K-S8**
4	*0.16*	FKM (FPM)	VS	**352-005-S8-VS**	**352-010-S8-VS**	**352-020-S8-VS**	**352-040-S8-VS**	**352-060-S8-VS**

Order numbers for metering nipples for fluid grease (replaceable)

Outlet ø mm	Outlet ø *in*	Material Elastomer	Metering nipple	Metering quantity 0,10 cm³ *0.006 in³*	0,20 cm³ *0.012 in³*	0,30 cm³ *0.018 in³*	0,60 cm³ *0.036 in³*
4	*0.16*	NBR	00	**995-993-610**	**995-993-620**	**995-993-630**	**995-993-660**
4	*0.16*	NBR	VS	**995-993-610-VS**	**995-993-620-VS**	**995-993-630-VS**	**–**
4	*0.16*	FKM (FPM)	00	**352-010-K-S82**	**352-020-K-S82**	**352-030-K-S82**	**–**
4	*0.16*	FKM (FPM)	VS	**352-010-S82-VS**	**352-020-S82-VS**	**352-030-S82-VS**	**–**

PUB LS/P1 17046 EN

370

Product description

Series 370 relubrication metering devices were developed for use with single-line, centralized lubrication systems for oil. Designed for installation directly on the machine/system requiring lubrication, these metering devices are available in two-, three- and five-port models. Series 370 metering devices can be ordered with fittings for the main line connection by selecting the appropriate order code.

Features and benefits

- For use with distributor bodies having two, three and five ports to match number of lubrication points
- Designed for installation directly on the machine/system requiring lubrication
- Choose optional metering nipples and push-in or screw-in type fittings for feed line connections
- Select SKF Quick Connector or screw-in type main line fittings
- Current metering nipples are easily exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	2, 3 or 5
Metering quantity	0,05 to 1,50 cm^3 *0.003 to 0.091 in^3*
Lubricant	mineral and synthetic oil 20 to 2 000 mm^2/s *0.031 to 3.100 in^2/s*
Operating temperature	–20 to +80 °C; *–4 to 176 °F*
Operating pressure	min. 20 bar, *290 psi* max. 80 bar, *1 160 psi*
Relief pressure	≤1 bar, *14.5 psi*
Materials	zinc die-cast, brass, copper, steel, NBR
Connection main line	different fittings for pipe ø 6 to 12 mm; *0.236 to 0.472 in* or closure plugs for thread M12×1
Connection outlet	pipe ø 4 mm; *0.16 in* - metering nipple (VS) with SKF Quick Connector - metering nipple (00) for solderless pipe connection (DIN 3862)
Dimensions	min. 37 × 75 × 50,5 mm *min. 1.456 × 2.952 × 1.988 in* max. 88 × 75 × 56,5 mm *max. 3.464 × 2.952 × 2.224 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

370

Order number configurator 3 7 [ ] – 2 [ ] [ ] – [ ] [ ] [ ] [ ] [ ] – [ ] [ ]

Product series

Number of metering points (2, 3, 5)

Lubrication line fitting

00 = Solderless pipe connection
VS = SKF Quick Connector

Metering point 1
Metering point 2
Metering point 3 (**0** = not present, on VN2)
Metering point 4 (**0** = not present, on VN2)
Metering point 5 (**0** = not present, on VN2)

Metering quantity

3 = 0,05 cm³, *0.0030 in³*
4 = 0,10 cm³, *0.0061 in³*
5 = 0,20 cm³, *0.0122 in³*
6 = 0,40 cm³, *0.0244 in³*
7 = 0,60 cm³, *0.0366 in³*
8 = 1,00 cm³, *0.0610 in³*
9 = 1,50 cm³, *0.0915 in³*

Fittings for main line connection

B = Solderless pipe connection ø 6 mm, *0.23 in.*
C = Solderless pipe connection ø 8 mm, *0.31 in.*
D = Solderless pipe connection ø 10 mm, *0.39 in.*
E = Banjo fitting DIN 3862 with flat washer, lockable ø 6 mm, *0.23 in.*
F = Banjo fitting DIN 3862 with flat washer, lockable ø 8 mm, *0.31 in.*
H = Screw plug with flat washer
M = Straight adapter with EO-2 functional nut ø 6 mm, *0.23 in.*
N = Straight adapter with EO-2 functional nut ø 8 mm, *0.31 in.*
P = Straight adapter with EO-2 functional nut ø 10 mm, *0.39 in.*
R = Straight adapter with EO-2 functional nut ø 12 mm, *0.47 in.*
S = Straight adapter with SKF Quick Connector ø 6 mm, *0.23 in.*
T = Straight adapter with SKF Quick Connector ø 8 mm, *0.31 in.*
W = Banjo fitting with SKF Quick Connector ø 6 mm, *0.23 in.*
X = Banjo fitting with SKF Quick Connector ø 8 mm, *0.31 in.*
Z = Without fitting, solderless pipe connection

Accessory

Exchangeable metering nipples

Solderless pipe connection

SKF Quick Connector

Order numbers for metering nipples* (replaceable)

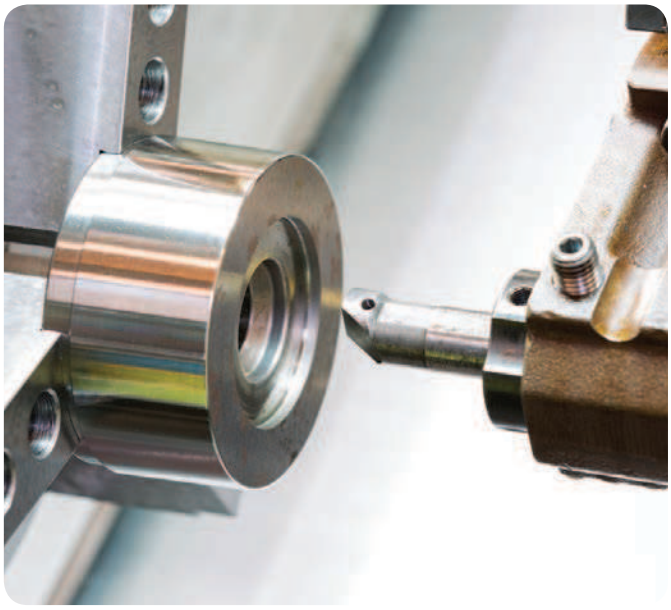
Outlet ø			Metering quantity						
mm	in	Material Elastomer	0,05 cm³ *0.003 in³*	0,10 cm³ *0.006 in³*	0,20 cm³ *0.012 in³*	0,40 cm³ *0.024 in³*	0,60 cm³ *0.036 in³*	1,00 cm³ *0.061 in³*	1,50 cm³ *0.092 in³*
4	*0.157*	NBR	**V72-005**	**V71-010**	**V71-020**	**V71-040**	**V71-060**	**V71-100**	**V71-150**

* Metering nipples are made of brass.

PUB LS/P1 17046 EN

Metering device

391



Product description

Series 391 single-port prelubrication metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. Designed for installation in manifolds, these metering devices provide flexible system design when combined with one- to six-port manifolds. Customized manifolds for series 391 are available in aluminum.

Features and benefits

- For use with manifolds having one to six ports to match number of lubrication points
- Provides flexible options for systems with remote single lubrication points or multiple-port metering devices with up to six ports
- Select screw-in type metering nipples with feed line connections via order code
- Choose separately manifold models with different thread sizes for main line connection
- Current metering nipples are exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	1
Metering quantity	oil: 0,2 to 1,5 cm^3; *0.01 to 0.09 in^3* fluid grease: 0,1 to 0,3 cm^3 *0.006 to 0.02 in^3*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm^2/s, fluid grease NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 8 bar, *116 psi* max. 45 bar, *653 psi*
Relief pressure	max. 7 bar; *101.5 psi*
Materials	aluminum, brass (oil), nickel-plated brass (fluid grease), copper, FKM (FPM)/NBR
Connection main line	pipe ø 6 to 12 mm *0.236 to 0.472 in* solderless pipe connection for threads G $^1/_8$; G $^1/_4$; M 10×1 or M 14×1,5 (DIN 3862)
Connection outlet	pipe ø 4 mm; 0.16 in - metering nipple (00) for solderless pipe connection
Dimensions	min. 67,5 × 22 mm *min. 2.657 × 0.866 in* max. 78,5 × 22 mm *max. 3.091 × 0.866 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

391

Order code 3 9 1 – _ 0 0 – _ 0 0 0 0 – 0 0

Product series

Number of metering points (**1**)

Design and metering quantity

Design code	**0**	**8**	**1**
Lubricant	Oil	Oil	Fluid grease
ø Outlet [mm]	4	4	4
Body	aluminum	aluminum	aluminum
Metering nipple	brass	brass	brass, nickel-plated
Elastomer	NBR	FKM (FPM)	NBR
Threaded seal	Flat washer*	Flat washer*	Flat washer*
Connection outlet	**00**	**00**	**00**
Metering quantity code 0,10 cm³	–	–	**4**
Metering quantity code 0,20 cm³	**5**	**5**	**5**
Metering quantity code 0,30 cm³	–	–	**6**
Metering quantity code 0,40 cm³	**6**	**6**	–
Metering quantity code 0,60 cm³	**7**	**7**	–
Metering quantity code 1,00 cm³	**8**	**8**	–
Metering quantity code 1,50 cm³	**9**	**9**	

* Flat washer must be ordered separately. Order number: **DIN7603-A14x18-CU**

Accessory

Manifold

Manifold VL

Product description

For 391 metering devices, VL-manifolds are utilized for one to six screw-in points with thread M14×1,5 mm for flat (copper) washer sealing. Various main line connections can be selected via order code.

Order code V L – _ _ C A _ _

Product series

Number of ports

01 = 1 screw-in point
02 = 2 screw-in points
03 = 3 screw-in points
04 = 4 screw-in points
05 = 5 screw-in points
06 = 6 screw-in points
(**other numbers of ports available on request**)

Design of metering device pipe thread

C = Normal profile, M14×1,5 with counterbore for flat washer

Material

A = Aluminum

Design of main line connection

G1 = G 1/8 per DIN 3852-2, Form X, schmal
G2 = G 1/4 per DIN 3852-2, Form X, schmal
M3 = M10×1 with counterbore for solderless pipe connection per DIN 3862
M4 = M14x1,5 with counterbore for solderless pipe connection per DIN 3862 (**can only be selected for normal profile**)

PUB LS/P1 17046 EN

Metering device

390

Product description

Series 390 prelubrication metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. Designed for installation directly on the machine/system requiring lubrication, these metering devices can be ordered with fittings for the main line connection by selecting the appropriate order code.

Features and benefits

- For use with distributor bodies having two or three ports to match number of lubrication points
- Designed for installation directly on the machine/system requiring lubrication
- Select screw-in type metering nipples for feed line connections
- Choose push-in or screw-in type main line fittings
- Current metering nipples are exchangeable to yield different output quantities

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	2 or 3
Metering quantity	oil: 0,2 to 1,5 cm^3 *0.01 to 0.915 in^3* fluid grease: 0,1 to 0,3 cm^3 *0.006 to 0.0183 in^3*
Lubricant	mineral and synthetic oil 20 to 2 000 mm^2/s *0.031 to 3.100 in^2/s* fluid grease of NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 8 bar, *116 psi* max. 45 bar, *653 psi*
Relief pressure	max. 7 bar, *101.5 psi*
Materials	zinc die-cast, brass (oil), nickel-plated brass (fluid grease), copper, steel, FKM (FPM)/NBR
Connection main line	different fittings for pipe ø 6 to 12 mm; *0.236 to 0.472 in* or closure plugs for thread M12×1
Connection outlet	pipe ø 4 mm; *0.16 in* - metering nipple (00) for solderless pipe connection (DIN 3862)
Dimensions	min. 50×89×23 mm *min. 1.968×3.503×0.905 in* max. 71×89×23 mm *max. 5.393×3.503×0.905 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

390

Order code 3 9 [ ] – [ ] 0 0 – [ ] [ ] [ ] 0 0 – [ ] [ ]

Product series

Number of metering points (**2, 3**)

Design and metering quantity

Design code	**0**	**8**	**1**
Lubricant	Oil	Oil	Fluid grease
ø Outlet [mm]	4	4	4
Body	aluminum	aluminum	aluminum
Metering nipple	brass	brass	brass (n.p.)
Elastomer	NBR	FKM (FPM)	NBR
Connection outlet	**00**	**00**	**00**
Metering quantity code 0,10 cm³	–	–	**4**
0,20 cm³	**5**	**5**	**5**
0,30 cm³	–	–	**6**
0,40 cm³	**6**	**6**	–
0,60 cm³	**7**	**7**	–
1,00 cm³	**8**	**8**	–
1,50 cm³	**9**	**9**	–
closed *	**V**	**V**	**V**

* V = Metering quatity of 0,20 cm³, closed

Fittings for main line connection

Designation	ømain line [mm]	Code
Straight adapter DIN 3862 with flat washer	6	**B**
	8	**C**
	10	**D**
Banjo fitting DIN 3862 with flat washer, lockable [1]	6	**E**
	8	**F**
Screw plug with flat washer	–	**H**
Straight adapter with EO-2 functional nut	6	**M**
	8	**N**
	10	**P**
	12	**R**
Straight adapter with SKF Quick Connector	6	**S**
	8	**T**
Banjo fitting with SKF Quick Connector, not lockable	6	**W**
	8	**X**
Without fitting (M12x1 thread)	–	**Z**

[1] Banjo bolt only inserted in delivery condition, not tightened

Accessory

Exchangeable metering nipples

Order numbers for metering nipples for oil (replaceable)

Outlet ø mm	*in*	Material Elastomer	metering nipple	Metering quantity 0,2 cm³ *0.012 in³*	0,4 cm³ *0.024 in³*	0,6 cm³ *0.036 in³*	1,0 cm³ *0.061 in³*	1,5 cm³ *0.092 in³*
4	*0.16*	NBR	brass	**391-020-K**	**391-040-K**	**391-060-K**	**391-100-K**	**391-150-K**
4	*0.16*	FKM (FPM)	brass	**391-020-K-S8**	**391-040-K-S8**	**391-060-K-S8**	**391-100-K-S8**	**391-150-K-S8**

Order numbers for metering nipples for fluid grease (replaceable)

Outlet ø mm	*in*	Material Elastomer	metering nipple	Metering quantity 0,1 cm³ *0.006 in³*	0,2 cm³ *0.012 in³*	0,3 cm³ *0.006 in³*
4	*0.16*	NBR	brass, nickel-plated	**391-010-K-S1**	**391-020-K-S1**	**391-030-K-S1**

PUB LS/P1 17046 EN

321 G, T, W, G4, Module, G7

G

G4

T

Module

W

G7

Product description

Series 321 single-port prelubrication metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. These metering devices are designed for installation directly in a lubrication point, which eliminates feeding lubricant via a lubrication point line, as well as the lubrication line at the lubrication point. This can be beneficial where space is limited. Choose from six types to meet application requirements.

Features and benefits

- Specially designed, single-port metering device for prelubrication
- For direct connection to the main line
- No separate lubrication line and fittings are necessary
- Screw-in type can be monitored by a pressure switch in the main line; suitable for feed line ø 4 mm (oil) and ø 6 mm (fluid grease)

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

Technical data

Function principle	metering device
Outlets	1
Metering quantity	Model G, G4, T, W, Modular: 0,01 to 0,10 cm³; *0.0006 to 0.006 in³* Model G7: 0,01 to 0,3 cm³ *0.0006 to 0.018 in³*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm²/s, 0.031 to 3.100 in²/s fluid grease of NLGI 000, 00,0
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 12 bar, *174 psi* max. 45 bar, *653 psi*
Relief pressure	max. 3 bar, *max. 43.5 psi*
Materials	steel (galvanized, Cr6-free) or brass, NBR , G7 FKM (FPM)
Connection main line	different fittings for pipe ø 6 to 10 mm; *0.236 to 0.393 in* or closure plugs for thread M 10×1
Connection outlet	pipe ø 4 and ø 6 mm; *0.157 to 0.236 in* - straight compression nut fitting - solderless pipe union (DIN 3862)
Dimensions: 321 G	length: 50 mm; *1.968 in* ø: 16,2 mm; *0.638 in* wrench size 14 mm
Dimensions: 321 W	length: 46 mm; *1.811 in* width: 26 mm; *1.023 in* ø: 11,5 mm; *0.453 in* wrench size 10 mm
Dimensions: 321 G4	length: 40,5 mm; *1.594 in* ø: 19,6 mm; *0.771 in* wrench size 17 mm
Dimensions: 321 T	length: 43 mm; *1.692 in* width: 61 mm; *2.401 in* ø: 16,2 mm; *0.638 in* wrench size 14 mm
Dimensions: 321 Module	ø: 30 mm; *1.181 in* height or thickness: 11 mm; *0.433 in*
Dimensions: 321 G7 small	length: 30 mm; *1.181 in* ø: 10,3 mm; *0.405 in*
Dimensions: 321 G7 large	length: 50 mm; *1.968 in* ø: 13,5 mm; *0.531 in*
Mounting position	any

PUB LS/P1 17046 EN

321 G, T, W, G4, Module, G7

Order numbers 321 G, T, W

Order number. 321 G	321 T	321 W	ø Outlet		Lubricant		Metering quantity		Pipe thread of lubrication point line
			mm	*in*	Oil	Fluid grease	cm^3	*in^3*	
321-401G1	**–**	**–**	4	*0.157*	•	–	0,01	*0.0006*	M8×1 taper
321-401G2	**321-401T2**	**321-401W2**	4	*0.157*	•	–	0,01	*0.0006*	M10×1 taper
			4	*0.157*		–	0,01	*0.0006*	R 1/8 taper
321-401G3	**–**	**–**			•				
321-403G1	**321-403T1**	**321-403W1**	4	*0.157*	•	–	0,03	*0.0018*	M8×1 taper
321-403G2	**321-403T2**	**321-403W2**	4	*0.157*	•	–	0,03	*0.0018*	M10×1 taper
321-403G3	**321-403T3**	**321-403W3**	4	*0.157*	•	–	0,03	*0.0018*	R 1/8 taper
321-406G1	**321-406T1**	**321-406W1**	4	*0.157*	•	–	0,06	*0.0036*	M8×1 taper
321-406G2	**321-406T2**	**321-406W2**	4	*0.157*	•	–	0,06	*0.0036*	M10×1 taper
321-406G3	**321-406T3**	**321-406W3**	4	*0.157*	•	–	0,06	*0.0036*	R 1/8 taper
321-410G1	**321-410T1**	**321-410W1**	4	*0.157*	•	–	0,10	*0.0061*	M8×1 taper
321-410G2	**321-410T2**	**321-410W2**	4	*0.157*	•	–	0,10	*0.0061*	M10×1 taper
321-410G3	**321-410T3**	**321-410W3**	4	*0.157*	•	–	0,10	*0.0061*	R 1/8 taper
321-601G1	**–**	**321-601W1**	6	*0.236*	•	•	0,01	*0.0006*	M8×1 taper
321-601G2	**321-601T2**	**321-601W2**	6	*0.236*	•	•	0,01	*0.0006*	M10×1 taper
–	**321-601T3**	**321-601W3**	6	*0.236*	•	•	0,01	*0.0006*	R 1/8 taper
321-603G1	**321-603T1**	**321-603W1**	6	*0.236*	•	•	0,03	*0.0018*	M8×1 taper
321-603G2	**321-603T2**	**321-603W2**	6	*0.236*	•	•	0,03	*0.0018*	M10×1 taper
321-603G3	**321-603T3**	**321-603W3**	6	*0.236*	•	•	0,03	*0.0018*	R 1/8 taper
321-606G1	**–**	**321-606W1**	6	*0.236*	•	•	0,06	*0.0036*	M8×1 taper
321-606G2	**321-606T2**	**321-606W2**	6	*0.236*	•	•	0,06	*0.0036*	M10×1 taper
321-606G3	**321-606T3**	**321-606W3**	6	*0.236*	•	•	0,06	*0.0036*	R 1/8 taper
321-610G1	**321-610T1**	**321-610W1**	6	*0.236*	•	•	0,10	*0.0061*	M8×1 taper
321-610G2	**321-610T2**	**321-610W2**	6	*0.236*	•	•	0,10	*0.0061*	M10×1 taper
321-610G3	**321-610T3**	**321-610W3**	6	*0.236*	•	•	0,10	*0.0061*	R 1/8 taper

* Designs G, T, W elastomer material NBR

Order numbers 321 G4, Module, G7

Order number. 321 G4	321 Module	321 G7 small	321 G7 large	ø Outlet		Lubricant		Metering quantity	
				mm	*in*	Oil	Fluid grease	cm^3	*in^3*
–	**321-101**	**321-401G7**	**–**	4	*0.157*	•	•	0,01	*0.0006*
321-403G4	**321-103**	**321-403G7**	**–**	4	*0.157*	•	•	0,03	*0.0018*
–	**–**	**321-403G7-S8**	**–**	4	*0.157*	•	•	0,03	*0.0018*
321-406G4	**321-106**	**321-406G7**	**–**	4	*0.157*	•	•	0,06	*0.0036*
–	**–**	**321-406G7-S8**	**–**	4	*0.157*	•	•	0,06	*0.0036*
321-410G4	**–**	**321-410G7**	**321-610G7**	4	*0.157*	•	•	0,10	*0.0061*
–	**–**	**321-410G7-S8**	**–**	4	*0.157*	•	•	0,10	*0.0061*
–	**–**	**–**	**321-616G7**	6	*0.236*	•	•	0,16	*0.0098*
–	**–**	**–**	**321-620G7**	6	*0.236*	•	•	0,20	*0.0122*
–	**–**	**–**	**321-630G7**	6	*0.236*	•	•	0,30	*0.0180*

PUB LS/P1 17046 EN

AB

Product description

Designed for installation in manifolds, series AB single-port, prelubrication metering devices were developed for use with single-line, centralized lubrication systems for oil and fluid grease. When combined with one- to six-port manifolds, these metering devices provide flexibility in lubrication system design. The metering device body is available in steel and stainless steel versions with copper or stainless steel sealing rings.

Features and benefits

- For use with manifolds having one to six ports to match number of lubrication points
- Provides flexible options for systems with remote single lubrication points or multiple-port metering devices with up to six ports
- Virtually maintenance-free
- Select screw-in type metering device for feed line connection via order code
- Choose separately manifold models with different thread sizes for main line connection and materials

Applications

- Machine tools
- Printing machines
- Packaging industry
- Textile industry

Technical data

Function principle	metering device
Outlets	1
Metering quantity	0,01 to 0,60 cm^3, *0.0006 to 0.04 in^3*
Lubricant	mineral and synthetic oil, 20 to 2 000 mm^2/s, *0.031 to 3.100 in^2/s* fluid grease of NLGI 000, 00
Operating temperature	0 to +80 °C; *+32 to 176 °F*
Operating pressure	min. 18 bar, *260 psi* max. 50 bar, *725 psi*
Relief pressure	max. 3 bar, *43.5 psi*
Materials	steel (galvanized, Cr6-free), stainless steel, copper, steel, flat washer (copper, stainless steel), FKM (FPM)
Connection main line	pipe ø 6 to 10 mm; *0.236 or 0.393 in*; solderless pipe connection for threads G 1/8; G 1/4; M10×1 or M14×1,5 (DIN 3862)
Connection outlet	Connection outlet: pipe ø 4 mm; *0.16 in*, straight compression nut fitting
Dimensions	min. 43×14 mm *min. 1.692×0.551 in* max. 82,5×14 mm *max. 1.228×0.551 in*
Mounting position	any

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

AB

Order number configurator

2	4	–	2	8	0	0	–		0		

Product series AB

Lubricant

5 = Oil/fluid grease, galvanized steel, copper ring
9 = Oil/fluid grease, stainless steel, stainless steel ring

Metering quantity

01 = 0,01 cm³, *0.0006 in³*
02 = 0,02 cm³, *0.0012 in³*
03 = 0,03 cm³, *0.0018 in³*
05 = 0,05 cm³, *0.0030 in³*
10 = 0,10 cm³, *0.0061 in³*
20 = 0,20 cm³, *0.0122 in³*
40 = 0,40 cm³, *0.0244 in³*
60 = 0,60 cm³, *0.0366 in³*

Accessory

Manifold

Manifold VL

Order code

V	L	–							

Product series

Ports

01 = 1 screw-in point
02 = 2 screw-in points
03 = 3 screw-in points
04 = 4 screw-in points
05 = 5 screw-in points
06 = 6 screw-in points
(**other ports available on request**)

Design of metering device pipe thread

B = Normal profile, M10×1 with counterbore for flat washer or O-ring
E1 = Narrow profile, M10×1 with counterbore for flat washer

Material

A = Aluminum
E = Stainless steel (1.4305) (**can only be selected for normal profile**)

Design of main line connection

G1 = G $^1/_8$ per DIN 3852-2, Form X, small
G2 = G $^1/_4$ per DIN 3852-2, Form X, small
M3 = M10×1 with counterbore for solderless pipe union per DIN 3862
M4 = M14×1.5 with counterbore for solderless pipe union per DIN 3862
(**can only be selected for normal profile**)

Product description

For series AB metering devices, VL-manifolds are utilized for one to six screw-in points with thread M10x1 mm for flat (copper) washer sealing. Normal-profile manifolds are available in aluminum or stainless steel, while narrow-profile manifolds are offered only in aluminum. Various main line connections can be selected via order code.

PUB LS/P1 17046 EN

Metering device

VN

Product description

Developed for use with single-line, centralized lubrication systems for fluid grease, series VN relubrication metering devices are offered with two, four or six ports. These metering devices were designed for installation directly on the vehicle or construction machine requiring lubrication. Series VN metering devices can be ordered with fittings for the main line connection via the appropriate order code.

Features and benefits

- Choose metering device with two, four or six points to match number of lubrication points
- Designed for installation directly on the vehicle/machine requiring lubrication
- Select metering nipples and push-in or screw-in type fittings for feed line or main line connections
- Easy metering adjustment by replacing metering nipples
- Black-coloured surface for optimized corrosion protection

Applications

- Commercial vehicles
- Construction machinery

Technical data

Function principle	metering device
Outlets	*2, 4 or 6*
Metering quantity	0,05 to 1,00 cm^3 *0.003 to 0.061 in^3*
Lubricant	fluid grease of NLGI 000, 00
Operating temperature	–25 to +80 °C; –13 *to +176 °F*
Operating pressure	min. 20 bar; *290 psi* max. 80 bar; *1160 psi*
Relief pressure	≤1 bar, *≤14.5 psi*
Materials	zinc die-cast, brass, steel, flat washer (copper), NBR
Connection main line	different fittings for pipe ø 6 to 10 mm; *0.236 to 0.393 in* or closure plugs for thread M8x1
Connection outlet	pipe ø 4 mm metering nipple (VS) with SKF Quick Connector – metering nipple (00) for solderless pipe connection
Dimensions	min. 62×83,5×52 mm max. 130,5×83,5×58 mm *min. 2.440×3.287×2.047 in* *max. 5.118×3.287×2.283 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

VN

Order number configurator V N [ ] – 0 [ ] [ ] – [ ] [ ] [ ] [ ] [ ] [ ] – [ ] [ ]

Product series

Number of metering points (2, 4, 6)

Lubrication line fitting
00 = Solderless pipe connection
VS = SKF Quick Connector

Metering point 1
Metering point 2
Metering point 3 (**0** = not present, on VN2)
Metering point 4 (**0** = not present, on VN2)
Metering point 5 (**0** = not present, on VN2/4)
Metering point 6 (**0** = not present, on VN2/4)

Metering quantity
1 = 0,05 cm³, *0.003 in³*
2 = 0,10 cm³, *0.006 in³*
3 = 0,20 cm³, *0.012 in³*
4 = 0,30 cm³, *0.018 in³*
5 = 0,40 cm³, *0.024 in³*
6 = 0,60 cm³, *0.036 in³*
7 = 1,00 cm³, *0.061 in³*

Fittings for main line connection
A = Solderless pipe connection ø 8 mm, *0.315 in*
E = Solderless pipe connection ø 6 mm, *0.236 in*
H = Screw plug with flat washer
S = SKF Quick Connector ø 10 mm, *0.01 in*
Z = Without fitting

Accessory

Exchangeable metering nipples

Solderless pipe connection

SKF Quick Connector

Order numbers for metering nipples [1] **(replaceable)**

Outlet ø			Metering quantity						
mm	*in*	Material Elastomer	0,05 cm³ *0.003 in³*	0,10 cm³ *0.006 in³*	0,20 cm³ *0.012 in³*	0,30 cm³ *0.018 in³*	0,40 cm³ *0.024 in³*	0,60 cm³ *0.036 in³*	1,00 cm³ *0.061 in³*
4	*0.16*	NBR	**VKU005-K**	**VKU010-K**	**VKU020-K**	**VKU030-K**	**VKU040-K**	**VKU060-K**	**VKU100-K**

[1] Metering nipples are made of brass.

PUB LS/P1 17046 EN

OI-AL-SR

Product description

Developed for use in single-line, centralized lubrication systems, series OI-AL-SR single-port, prelubrication metering devices (cartridges) feature an integrated control pin and are designed for installation in manifolds or in base plates with up to 40 lubrication points. Three cartridge models with different fixed metering quantities provide flexible lubrication system design. Reduced feeding of main lines and feed lines in machines/systems saves on materials and installation costs.

Features and benefits

- Screw-in type, single-port metering device with cartridges for prelubrication
- For use with manifolds having one to eight ports or with base plates with up to 40 ports to match number of lubrication points
- Suitable for many lubrication points in constricted rooms
- All main line and feed line connections are located internally in the manifolds or base plates
- Simplifies installation, control function and replacement by use of one unit

Applications

- Glass industry

Technical data

Function principle	metering device
Outlets	1
Metering quantity	0,02; 0,05; 0,10 cm^3 *0.001; 0.003; 0.006 in^3*
Lubricant	mineral and synthetic oil, 22 to 1 000 mm^2/s, *0.034 to 1.55 in^2/s* fluid grease of NLGI 000, 00
Operating temperature	+5 to 120 °C; *+41 to 248 °F*
Operating pressure	min. 30 bar; *435 psi* max. 100 bar; *1 450 psi*
Relief pressure	max. 5 bar; *72.5 psi*
Material cartridge	aluminum
Material manifold	AlCuMgPb F37 DIN 1796
Material base plate	AlMgSi1 F28-32 or AlCuMg1 F28 FKM (FPM)
Connection main line	SKF Quick Connector or solderless pipe connection for thread G $^1/_8$ (F)
Connection outlet	SKF Quick Connector or solderless pipe connection for thread G $^1/_8$ (F)
Dimensions	min. 120×35×105 mm *in. 4.72×1.38×4.13 in* max. 300×35×105 mm *max. 11.81×1.38×4.13 in*
Mounting position	any

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **951-231-001-EN**

PUB LS/P1 17046 EN

Metering device

OI-AL-SR

Complete metering devices

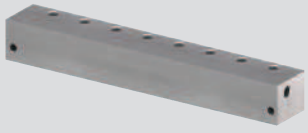
Order number	Number of outlets	Metering quantity															
		Outlet 1		Outlet 2		Outlet 3		Outlet 4		Outlet 5		Outlet 6		Outlet 7		Outlet 8	
		cm^3	*in^3*	cm^3	*in^3*	cm^3	*in^3*	cm^3	*in^3*	cm^3	*in^3*	cm^3	*in^3*	cm^3	*in^3*	cm^3	*in^3*
647-41151-2	2	0,02	*0.001*	0,02	*0.001*	–	–	–	–	–	–	–	–	–	–	–	–
647-41152-2	3	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	–	–	–	–	–	–	–	–	–	–
647-41152-4	3	0,10	*0.006*	0,05	*0.003*	0,05	*0.003*	–	–	–	–	–	–	–	–	–	–
647-41153-2	4	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	–	–	–	–	–	–	–	–	–	–
647-41154-4	5	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	–	–	–	–	–	–
647-41154-5	5	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	–	–	–	–	–	–	–	–
647-41154-7	5	0,02	*0.001*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	–	–	–	–	–	–
647-41154-6	5	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	–	–	–	–	–	–	–	–
647-41155-2	6	0,10	*0.006*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	–	–	–	–
647-41156-2	8	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	0,05	*0.003*	0,02	*0.001*	0,02	*0.001*	0,02	*0.001*	–	–

Accessories

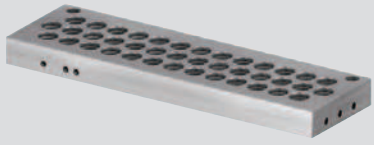
Cartridges, manifolds, base plates

Cartridge

Manifold



Base plates



Cartridges

Order number	Metering quantity
547-33924-1	0,02 cm^3/stroke
547-33925-1	0,05 cm^3/stroke
547-33926-1	0,10 cm^3/stroke

Manifolds

Order number	Number of ports
447-71901-1	2
447-71902-1	3
447-71903-1	4
447-71904-1	5
447-71905-1	6
447-71906-1	8

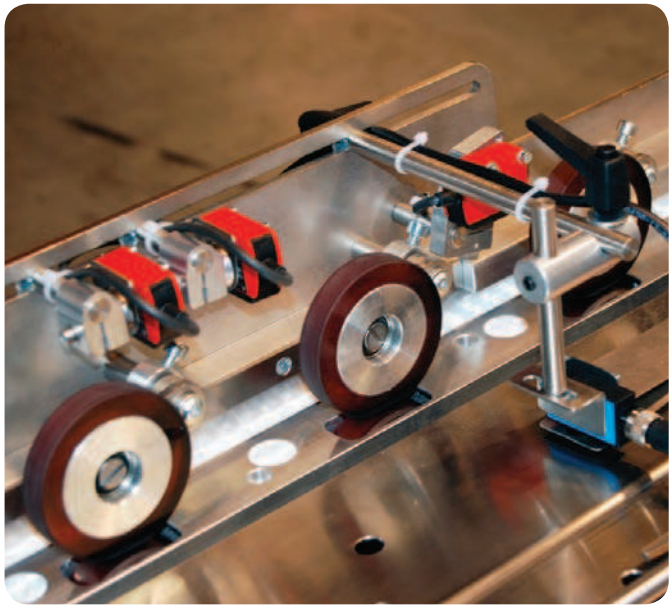
Base plate

Order number	Number of ports
447-71899-1	40

PUB LS/P1 17046 EN

Metering device

SL-42



Product description

Series SL-42 metering devices were developed for single-line, centralized lubrication systems dispensing oil or fluid grease. Lubricant output is externally adjustable, and the indicator stem permits a visual check of metering device operation. These carbon steel metering devices are available with nitrile or fluoroelastomer packings. Metering devices with fluoroelastomer packings (indicated by black adjustment caps) are used for applications requiring heat resistance or when a lubricant requires it for compatibility.

Features and benefits

- Screw-in type, single-port metering device for prelubrication affixed by adapter bolts
- Suitable for use with manifolds having one to 15 ports to match number of lubrication points
- Output is externally adjustable
- Indicator stem permits visual check of metering device operation
- May be combined in a circuit with SL-41, SL-43 and/or SL-44 metering devices
- Individual metering devices can be removed easily for inspection or replacement

Applications

- Paper converting
- Plastic processing
- Printing
- Packaging
- Metalworking
- Material handling equipment

Technical data

Function principle	metering device
Outlets	1
Metering quantity	adjustable from 0,016 to 0,049 cm^3, *0.001 to 0.003 in^3*
Lubricant	mineral and synthetic oil and fluid grease
Operating temperature	standard: -26 to +93 °C; *-15 to +200 °F* heat resistant: max. +176 °C; *+350 °F*
Operating pressure	min. 52 bar, *750 psi* max. 70 bar, *1 000 psi*
Relief pressure	< 10 bar, *150 psi*
Materials	carbon steel, stainless steel, brass, steel, Nitrile (NBR) or fluoroelastomer (FKM, FPM) packings (indicated by black adjustment caps) (heat resistance application)
Connection main line	$^1/_8$ NPTF (F)
Connection outlet	pipe $^1/_8$ O.D connections [1]
Dimensions	min. 41×62×43 mm *min. 1.6×2.4×1.7 in* max. 308×62×43 mm *max. 12.1×2.4×1.7 in*
Mounting position	any

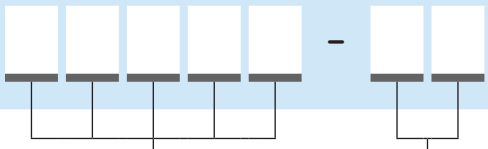
[1] different adapters are possible see accessories; Note: When using feed line tubing of 1/8 O.D. the feed line must not exceed a length of 7,5 m; 295 in based on oil +18 °C; +65 °F

PUB LS/P1 17046 EN

Metering device

SL-42

Order number configurator



Product series

83311 = standard with nitrile packings
84428 = heat resistant with fluoroelastomer packings
85352 = standard with nitrile packings for metric tube connection O.D. 4 and 6 mm, up to 6 outlets

Number of metering devices

1 = 1 metering device, mounted in a manifold
2 = 2 metering devices, mounted in a manifold
3 = 3 metering devices, mounted in a manifold
4 = 4 metering devices, mounted in a manifold
5 = 5 metering devices, mounted in a manifold
6 = 6 metering devices, mounted in a manifold
10 = 10 metering devices, mounted in a manifold
15 = 15 metering devices, mounted in a manifold

Accessories

Metering devices, manifolds and adapters

Metering devices

Manifolds

This picture shows a manifold example. Please note, that the real manifold differs in terms of size and design.

Adapters

Replacement for manifold injectors

Order number	Designation
83535	standard single metering device/no manifold, 1 outlet, $^1/_8$ NPTF (M) inlet
83313	metering device for standard manifold
84048	metering device for heat-resistant manifold
249649	metric replacement injector

Manifolds

Order number [1]	Number of ports
91863-1	1
91864-1	2
91865-1	3
91866-1	4
14361	5
91976-1	6
14312	10
14253	15

[1] Injectors except replacement injectors for manifold, include compression nut and ferrule for tubing 1/8 in O.D. as standard. Injectors with manifolds include two mounting clips and screws.

G $^1/_8$ to metric fitting adapters

Order number	Pipe ø mm	Material
249281	4	steel
249279	4	stainless steel
249282	6	steel
249280	6	stainless steel

PUB LS/P1 17046 EN

SL-43

Product description

Series SL-43 metering devices were developed for single-line, centralized lubrication systems dispensing oil or fluid grease. Lubricant output is externally adjustable, and the indicator stem permits a visual check of metering device operation. These carbon steel metering devices are available with nitrile or fluoroelastomer packings. Metering devices with fluoroelastomer packings (indicated by black adjustment caps) are used for applications requiring heat resistance or when a lubricant requires it for compatibility.

Features and benefits

- Screw-in type, single-port metering device for prelubrication affixed by adapter bolts
- Suitable for use with manifolds having one to four ports to match number of lubrication points
- Output is externally adjustable
- Indicator stem permits visual check of metering device operation
- May be combined in a circuit with SL-41, SL-42 and/or SL-44 metering devices
- Individual metering devices can be removed easily for inspection or replacement

Applications

- Glass processing
- Paper converting
- Plastic processing
- Printing and packaging
- Metalworking
- Material handling equipment

Technical data

Function principle	metering device
Outlets	1
Metering quantity	adjustable from 0,016 to 0,131 cm^3 *0.001 to 0.008 in^3*
Lubricant	mineral and synthetic oil
Operating temperature	standard: -26 to +93 °C; *-15 to +200 °F* heat resistant: max. +176 °C; *+350 °F*
Operating pressure	min. 52 bar, *750 psi* max. 70 bar; *1 000 psi*
Relief pressure	< 10 bar, *150 psi*
Materials	carbon steel, stainless steel, brass, steel, Nitrile (NBR) or fluoroelastomer (FKM, FPM) packings (indicated by black adjustment caps) (heat resistance application)
Connection main line	$^1/_4$ NPTF (F)
Connection outlet	pipe $^1/_8$ O.D connections [1)]
Dimensions	min. 44 × 79 × 52 mm max. 102 × 79 × 52 mm *min. 1.7 × 3.1 × 2.0 in* *max. 4.0 × 3.1 × 2.0 in*
Mounting position	any

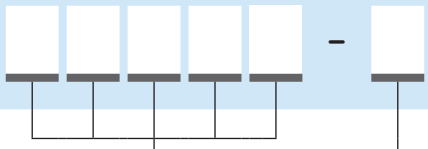
[1)] different adapters are possible see accessories; Note: When using feed line tubing of 1/8 O.D. the feed line must not exceed a length of 7,5 m; 295 in based on oil +18 °C; +65 °F

PUB LS/P1 17046 EN

Metering device

SL-43

Order number configurator



Product series

83661 = standard with nitrile packings
84429 = heat resistant with fluoroelastomer packings

Number of metering devices

1 = 1 metering device, mounted in a manifold
2 = 2 metering devices, mounted in a manifold
3 = 3 metering devices, mounted in a manifold
4 = 4 metering devices, mounted in a manifold

Accessories

Metering devices, manifolds and adapters

Metering devices

Manifolds

This picture shows a manifold example. Please note, that the real manifold differs in terms of size and design.

Adapters

Replacement for manifold injectors

Order number	Designation
83662	standard single metering device/no manifold, 1 outlet, $^1/_8$ NPTF (M) inlet
83660	metering device for standard manifold
84110	metering device for heat-resistant manifold

Manifolds

Order number [1]	Number of ports
91883-1	1
91884-1	2
91885-1	3
91886-1	4

[1] Injectors except replacement injectors for manifold, include compression nut and ferrule for tubing 1/8 in O.D. as standard. Injectors with manifolds include two mounting clips and screws.

G $^1/_8$ to metric fitting adapters

Order number	Pipe ø mm	Material
249281	4	steel
249279	4	stainless steel
249282	6	steel
249280	6	stainless steel

PUB LS/P1 17046 EN

SL-41

Product description

Series SL-41 metering devices are designed for use in high-temperature applications, depending on the lubricant. These metering devices are available installed only in manifolds with 3/8-inch NPT female inlets and feature a tamper-resistant adjustment screw that does not incorporate a visual indicator.

Features and benefits

- Screw-in type, single-port metering device affixed by adapter bolts
- Suitable for use with manifolds having one to five ports to match number of lubrication points
- Output is externally adjustable.
- Individual injectors can be removed easily for inspection or replacement
- Carbon steel with fluoroelastomer packings

Applications

- Glass processing
- Metalworking

Technical data

Function principle	metering device
Outlets	1 to 5
Metering quantity	adjustable from 0,13 to 1,31 cm^3 *0.008 to 0.0689 in^3*
Lubricant	mineral and synthetic oil
Operating temperature	standard: -26 to +93 °C; *-15 to 200 °F* heat resistant: max. +176 °C; *+350 °F*
Operating pressure	min. 52 bar, 750 psi max. 70 bar; 1 000 psi
Relief pressure	< 10 bar, *150 psi*
Materials	carbon steel, FKM (FPM)
Connection main line	$^3/_8$ NPTF (F)
Connection outlet	$^1/_8$ NPTF (F) [1)]
Dimensions	min. 63×163,5×52,4 mm *min. 2.5×6.4×2.1 in* max. 171×163,5×52,4 mm *max. 6.75×6.4×2.1 in*
Mounting position	any

[1)] When using feed line tubing of 1/8 O.D. the feed line must not exceed a length of 7,5 m; 295 in based on oil +18 °C; +64 °F 1/8 NPTF (F). When using feed line tubing of 1/8 O.D. the feed line must not exceed a length of 7,5 m; 295 in based on oil +18 °C; +64 °F

PUB LS/P1 17046 EN

Metering device

SL-41

Order number configurator

8	2	2	9	4	–	

Product series

82294 = heat resistant with fluoroelastomer packings

Number of metering devices

1 = 1 metering device, mounted in a manifold
2 = 2 metering devices, mounted in a manifold
3 = 3 metering devices, mounted in a manifold
4 = 4 metering devices, mounted in a manifold
5 = 5 metering devices, mounted in a manifold

Accessories

Metering devices and manifolds

Metering devices

Manifolds

This picture shows a manifold example. Please note, that the real manifold differs in terms of size and design.

Replacement for manifold injectors

Order number	Designation
82295	metering device for manifold NPTF (F)
82292	single metering device

Manifolds

Order number [1]	Number of ports
12658	1
11962	2
11963	3
11964	4
11965	5

[1] Each injector has two outlets. One is closed by a closure plug, but can be used to increase outlet quantity combined with another injector.

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Metering device

SL-44

Product description

Series SL-44 metering devices were developed for single-line, centralized lubrication systems dispensing fluid or semi-fluid lubricants. Lubricant output is externally adjustable, and the indicator stem permits a visual check of metering device operation. These carbon steel metering devices feature fluoroelastomer packings. Metering devices with fluoroelastomer packings (indicated by black adjustment caps) are used for applications requiring heat resistance or when a lubricant requires it for compatibility.

Features and benefits

- Screw-in type, single-port metering device for prelubrication affixed by adapter bolts
- Suitable for use with manifolds having one to five ports to match number of lubrication points
- Output is externally adjustable
- Indicator stem permits visual check of operation
- May be combined in a circuit with SL-41, SL-42 and/or SL-43 metering devices
- Individual metering devices can be removed easily for inspection or replacement

Applications

- Glass processing
- Paper converting
- Plastic processing
- Printing
- Packaging
- Metalworking
- Material handling equipment

Technical data

Function principle	metering device
Outlets	1
Metering quantity	adjustable from 0,13 to 1,31 cm^3 *0.008 to 0.080 in^3*
Lubricant	mineral and synthetic oil
Operating temperature	*-26 to +93 °C; -15 to +200 °F*
Operating pressure	min. 52 bar, *750 psi* max. 70 bar; *1 000 psi*
Relief pressure	< 10 bar, 150 psi
Materials	carbon steel, FKM (FPM)
Connection main line	$^3/_8$ NPTF (F)
Connection outlet [1]	$^1/_8$ NPTF (F)
Dimensions	min. 63×179,4×52,4 mm *min. 2.5×7.1×2.1 in* max. 171×179,4×52,4 mm *max. 6.75×7.1×2.1 in*
Mounting position	any

[1] When using feed line tubing of 1/8 O.D. the feed line must not exceed a length of 7,5 m; *295 in* based on oil 18 °C; *64.5 °F*

PUB LS/P1 17046 EN

Metering device

SL-44

Order number configurator

8	3	7	4	9	–	

Product series

83749 = heat resistant with fluoroelastomer packings

Number of metering devices

1 = 1 metering device, mounted in a manifold
2 = 2 metering devices, mounted in a manifold
3 = 3 metering devices, mounted in a manifold
4 = 4 metering devices, mounted in a manifold
5 = 5 metering devices, mounted in a manifold

Accessories

Metering devices and manifolds

Metering devices

Manifolds

This picture shows a manifold example. Please note, that the real manifold differs in terms of size and design.

Replacement for manifold injectors

Order number	Designation
83748	metering device for manifold NPTF (F)

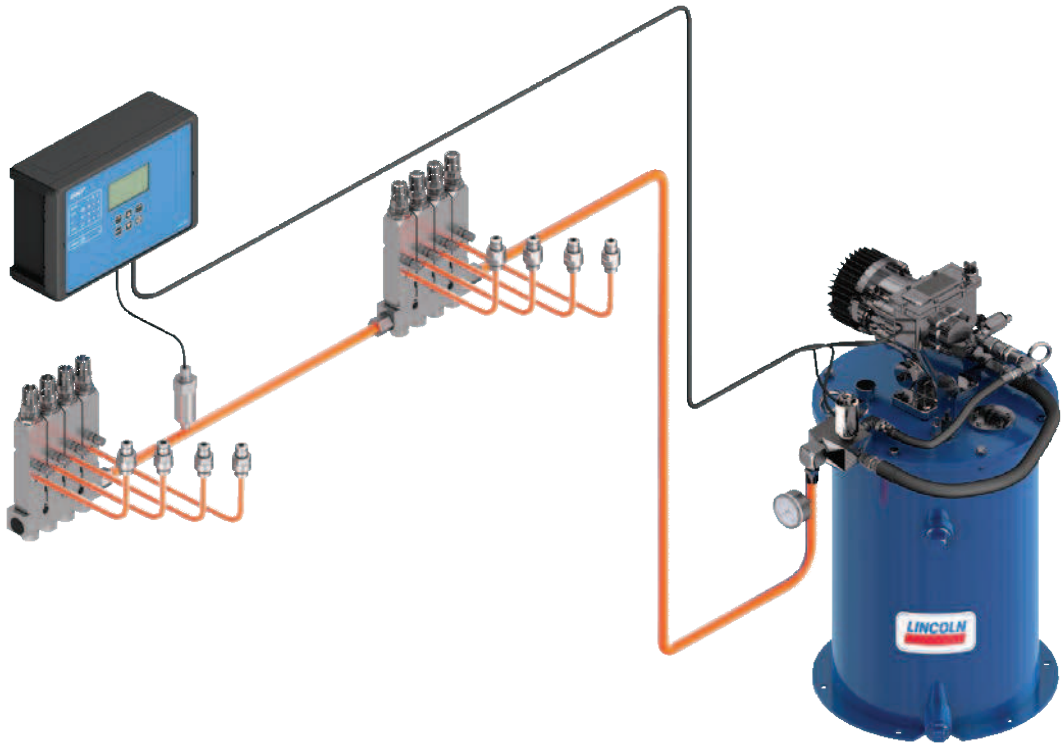
Manifold

Order number [1]	Number of ports
12658	1
11962	2
11963	3
11964	4
11965	5

[1] Each injector has two outlets. One is closed by a closure plug, but can be used to increase outlet quantity combined with another injector.

PUB LS/P1 17046 EN

Single-line lubrication systems for grease



System description

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

All single-line systems include a pump, injectors, controller and a pressure switch / transducer. These components are very easy to install and modify on any application as needed.

SKF offers two brands of single line parallel lubrication systems: the Lincoln Centro-Matic and the SKF MonoFlex. These systems are recognized world wide for their reliability to lubricate in adverse conditions in virtually any application.

For planning a lubrication system, conditions the system will be used in need to be determined first. The number of lubrication points, back pressures at the lubrication points, operating temperature range, lubricant, the feed pump's drive energy, control and monitoring etc. need to be defined correctly.

Attention to information on bearing or lubrication point specifications need to be paid too. The sum of all the quantities metered out by the system's metering devices needs to be completed by safety margin and compressibility loss. SKF application engineers, as well as SKF sales partners and distributors, are experts in laying out lubrication systems according to all these specifications. A lubrication system laid out by SKF and partners ensures the supply of the correct amount of lubricant at the best time to lubricate. This reduces wear and it avoids pollution caused by over-lubrication.

Advantages of a single-line lubrication system:

- Easy to understand, install and maintain
- Fully adjustable or customizable for any application
- Suitable for almost all lubricants
- Simple system expansion
- System continues to operate if one point becomes blocked
- Integrated system control and monitoring
- Able to pump long distances within a wide temperature range

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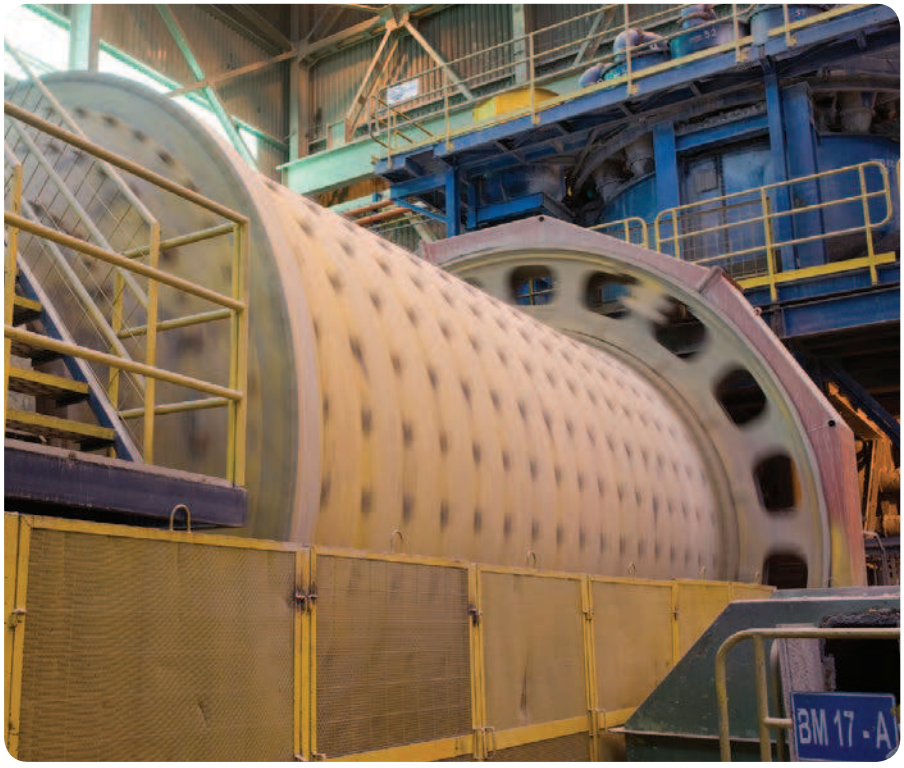
System and applications

Applications

Mining applications have been installed in the far north including the Oil Sands of Canada and Siberia and in the hot deserts of Africa and Australia. Major food, beverage, oil/gas, cement, steel, construction and rail customers also rely on SKF's single-line products. All single-line applications benefit from SKF's method of delivering precise amounts of lubricant at controlled intervals to the lubrication point.

- Mining
- On/Off-road
- Construction machinery
- Cement industry
- Food and beverage
- Machine tools
- Railroad
- Forestry
- Steel
- And more



PUB LS/P1 17046 EN

Pumps and pump units

83817

1810

40PGA

82886, 83668

85442

85444/45

85434/35/36

82653/55, 83800/34

83167, 83599

84050, 85460

282288

HG 1000/2000

84944, 84961

84960, 84962

FlowMaster, hydraulic

PUB LS/P1 17046 EN

Overview of grease pumps and pump units

Manually operated pumps and pump units

Product	Lubricant grease NLGI			Metering quantity max.		Reservoir		Metering device category [1]	Remarks	Page
	0	1	2	cm³/stroke	*in³/stroke*	kg	*lb*			
83817	•	•	•	1,6	*0.09*	0,5	*1*	5, 6, 7	multiple stroke possible	90
1810	•	•	•	2,6	*0.16*	2,3	*5*	5, 6, 7	multiple stroke possible	91

[1] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range

Air–operated pumps and pump units

Product	Lubricant grease NLGI			Metering quantity max.		Reservoir		Metering device category [1]	Remarks	Page
	0	1	2	cm³/stroke	*in³/stroke*	kg	*lb*			
40PGA	•	•	•	40	*2.44*	1,7; 2; 4; 10	*3.7; 4.4; 8.8; 22*	5, 6, 7	single stroke	92
82886, 83668	•	•	•	7,4	*0.45*	0,5; 2,0	*1; 4.4*	5, 6, 7	single stroke	94
85442 [2]	•	•	•	7,4	*0.45*	0,5	*1*	5, 6, 7	single stroke, 120 VAC	95
85444/45 [2]	•	•	•	7,4	*0.45*	1,8	*4*	5, 6, 7	single stroke, 120/240 VAC	96
85434/35/36 [2]	•	•	•	18,7; 35,2	*1.14; 2.15*	2,0	*4.5*	5, 6, 7	single stroke, 120/240 VAC	97
82653/55	•	•	•	22,9	*1.39*	2,0	*4.5*	5, 6, 7	single stroke, 120/240 VAC	98
83800/34	•	•	•	35,2	*2.15*	2,0	*4.5*	5, 6, 7	single stroke, 120/240 VAC	98
	0	1	2	cm³/min	*in³/min*	kg	*lb*			
83167	•	•	•	197	*12*	5,0	*11*	5, 6, 7	reciprocating	99
83599	•	•	•	197	*12*	5,0	*11*	5, 6, 7	reciprocating	100
84050, 85460	•	•	•	492	*30*	27	*60*	5, 6, 7	reciprocating	101
282288 [2]	•	•	•	492	*30*	55	*120*	5, 6, 7	reciprocating drum, 120 VAC	100

[1] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range
[2] Controller included or optional

Hydraulically operated pumps and pump units

Product	Lubricant grease NLGI			Metering quantity max.		Reservoir		Metering device category [1]	Remarks	Page
	0	1	2	cm³/stroke	*in³/stroke*	kg	*lb*			
HG 1000/2000	•	•	–	0–1 000 (0–2 000)	*0–61.02 (0–122)*	1,0; 2,0	*2.2; 4.4*	4, 5	single stroke	103
	0	1	2	cm³/min	*in³/min*	kg	*lb*			
84944, 84961	•	•	•	180	*11*	30		5, 6, 7	reciprocating	104
84960, 84962	•	•	•	180	*11*	–	–	5, 6, 7	reciprocating drum	105
FlowMaster	•	•	•	115–737	*7–45*	16; 27; 41; 54; 180	*35; 60; 90; 120; 400*	5, 6, 7	drum, solenoid, 24 V DC	106

[1] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range
[2] Controller included or optional

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Single-line lubrication systems

P603S

Minilube

KFG

Multilube

FK

FlowMaster, electric

P653S

PUB LS/P1 17046 EN

Overview of grease pumps and pump units

Electrically operated pumps and pump units

Product	Lubricant grease NLGI			Metering quantity max.		Reservoir capacity		Metering device category [1]	Remarks	Page
	0	1	2	cm^3/min	*in^3/min*	kg	*lb*			
P603S [2), 3)]	•	•	•	12	*0.7*	4; 8; 10; 15; 20	*8.8; 18; 22; 33; 44*	5, 6, 7	12/24 VDC	108
Minilube [2)]	•	•	–	13	*0.8*	2	*4.4*	5, 6, 7	12/24 VDC	110
KFG [2), 3)]	•	•	•	15	*0.9*	2; 4; 6; 8; 10; 12; 15; 20	*4.4; 8.8; 13; 18; 22; 26; 33; 44*	5, 6, 7	12/24 VDC, 90...264 VAC	112
Multilube [2)]	•	•	–	16	*0.976*	4; 10	*8.8; 22*	5, 6, 7	24 VDC, 115/230 VAC	114
P653S [2), 3)]	•	•	•	24,6	*1.5*	4; 8; 15; 20	*8.8; 18; 22; 44*	5, 6, 7	24 VDC, 120/230 VAC	116
FK [2)]	•	•	•	74	4.5	15; 30; 60	*22; 66; 132*	5, 6, 7	3 phase drive	118
FlowMaster, electric	•	•	•	103	*6.3*	16, 25, 28, 35, 40, 55, 180	*35, 55, 60, 78, 90, 120, 400*	5, 6, 7	12/24 VDC; 120 to 460 VAC	120

[1)] Select the recommended fittings, adjust the pump pressure within the recommended metering device pressure range
[2)] Controller included or optional
[3)] Stainless steel or C5M available

PUB LS/P1 17046 EN

Pump unit

83817

Product description

This manual pump unit has a metal reservoir and a spring-loaded follower. The indicator pin in the pump base shows when 172 bar *(2 500 psi)* system operating pressure has been achieved.

Features and benefits

- Number of strokes dependent on connected lubrication points and their dosage
- Metal reservoir with spring-loaded follower also suitable for replaceable 400 g grease cartridges
- Simple handling
- Low-cost, efficient method of lubricant distribution
- Pump base with built-in check vent valve and indicator pin for visual control of max. or vent pressure
- Vents when handle is pushed all the way back
- Two different filling couplers available
- For use with metering devices of category 5, 6, 7

Applications

- Construction machinery
- Agriculture

Technical data

Order number	**83817**
Function principle	manually operated piston pump
Outlets	1
Metering quantity	1,6 cm^3/stroke, *0.10 in^3/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–20 to +65 °C; *–4 to +149 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	0,5 kg, *1 lb*
Material	steel, brass, copper, polyurethane, nitrile
Filling method	0,4 kg, *14.5 oz*, grease cartridge/bulk fill
Connection outlet	⅛ NPTF (F)
Dimensions	387×127×141 mm *15.25×5×5.625 in*
Mounting position	vertical or horizontal

PUB LS/P1 17046 EN

1810

Product description

The Model 1810 pump unit features a translucent reservoir with spring-loaded follower. The indicator pin in the pump base shows when 172 bar *(2 500 psi)* system operating pressure has been achieved. It can be refilled via the included fitting using the Model 81834 filler pump or other manual pumps equipped with a Model 645006 coupler.

Features and benefits

- Number of strokes dependent on connected lubrication points and their dosage
- Reservoir with spring-loaded follower
- Simple handling
- Low-cost, efficient method of lubricant distribution
- Pump base with built-in check vent valve and indicator pin for visual control of max. or vent pressure
- Releases pressure on the lubricant line when handle is pushed all the way back
- Two different filling couplers available
- For use with metering devices of category 5, 6, 7

Applications

- Construction machinery
- Agriculture

Technical data

Order number	**1810**
Function principle	manually operated piston pump
Outlets	1
Metering quantity	2,6 cm^3/stroke, *0.16 in^3/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	-20 to +65 °C; *-4 to +149 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	2,3 kg, *5 lb*
Material	acrylic, steel, brass, copper, polyurethane, nitrile
Connection outlet	¼ NPTF (F)
Dimensions	413×181×197 mm *16.25×7.125×7.75 in*
Mounting position	vertical or horizontal

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40PGA

Product description

Pump Model 40PGA is a compact lubrication pump unit. The splash-proof pump operates pneumatically and can be controlled and monitored by the remote electric control unit ST-102 or ST-102P. The pump is available with a choice of different kind of reservoir sizes and materials, each featuring a spring-loaded intermediate piston. A low-level alarm is available in aluminum and steel version and pump is available with an integrated pressure switch.

Features and benefits

- Compact, air-operated lubrication pump unit for demanding conditions
- Part of a modular and modifiable system
- Splash-proof pump is offered with:
  - choice of four different reservoir sizes
  - spring-loaded, intermediate piston in reservoir
  - steel and aluminum reservoirs are equipped with low level alarm
  - optional an integrated pressure switch
- Mechanical relief valve
- Controlled and monitored by a remote timer continuously
- Safe and environmentally friendly
- For use with metering devices of category 5, 6 and 7

Applications

- Buses and trucks
- Vehicles

Technical data

Function principle	pneumatically operated piston pump
Outlet	1
Metering quantity	40 cm^3/stroke *2.4 in^3/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	-20 to +65 °C *-4 to +150 °F*
Operating pressure	max. 10 bar *145 psi*
Reservoir	1,7; 2; 4 and 10 kg *3.75; 4.4; 8.8 and 22 lb*
Material	stainless steel, plastic, steel and aluminum
Connection outlet	R 1/4 in
Operating voltage	24 V
Transmission ratio	16:1
Protection class	IP 65
Dimensions (dep. on version)	min. 270 × 320 × 180 mm *min. 10.63 × 12.59 × 7.0 in* max. 570 × 320 × 245 mm *max. 22.44 × 12.59 × 9.65 in*
Mounting position	vertical and horizontally

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **11678 EN, 11390007_40PGA_01_EN**

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40PGA

Order number configurator

40PGA – [ ] – [ ] – 24 – PS

Product series

40PGA = 40PGA Pump unit

Reservoir material

A = Aluminium
P = Plastic
S = Stainless steel

Reservoir volume

170 = 1,7 kg; *3.74 lb* (plastic reservoir)
2L = 2 kg; *4.4 lb* (stainless steel reservoir)
4L = 4 kg; *8.8 lb* (aluminum reservoir)
10L = 10 kg; *22 lb* (aluminum reservoir)

Operating voltage

24 = 24 V DC

Pressure monitoring

PS = integrated pressure switch

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Pump unit

82886, 83668

Product description

All models are air-operated, positive-displacement pumps delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body, and translucent, acrylic reservoirs with spring-loaded followers are available in several sizes. Pump discharges lubricant on air-powered forward stroke and releases pressure on the lubricant line on spring-powered return stroke through built-in check/relief valve. Includes filler fitting for refilling reservoir with Model 81834 or other manual pump equipped with Model 645006 coupler.

Features and benefits

- Remote system components such as 3/2-way valves, adjustments for air power, and monitoring of pump and system are available separately on request
- For use with metering devices of category 5, 6 and 7

Applications

- Cement industry
- Wood-working
- Food and beverage

Technical data

Order number **82886, 83668**
Function principle . . . . . pneumatically operated psiton pump (single-stroke)
Outlets. 1
Metering quantity . . . . . 7,4 cm^3/stroke, *0.45 in^3/stroke*
Lubricant. . . . . grease NLGI 0, 1, 2
Operating temperature . . . –18 to +65 °C; *0 to +150 °F*
Operating pressure . . . . . min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir. . . . . 0,5 or 2 kg; *1 or 4.4 lb*
Material. . . . . acrylic
Connection outlet . . . . . 1/4 NPTF (F)
Transmission ratio 20:1
Air inlet . . . . . 1/4 NPTF (F)
Mounting position . . . . . vertical

Timer

On time . . . . . min. 10 sec; max. 1 min. 24 sec
Cycle time . . . . . min. 20 sec; max. 24 h
Voltage . . . . . 120 VAC, 60 Hz; 110 VAC, 50 Hz
Operating temperature . . . –23 to +65 °C; *–10 to +150 °F*

Pumps

Order number	Reservoir capacity		Dimensions	
	kg	*lb*	mm	*in*
82886	0,5	*1*	263×133×152	*10.4×5.3×6.0*
83668	2	*4.4*	470×133×152	*18.5×5.3×6.0*

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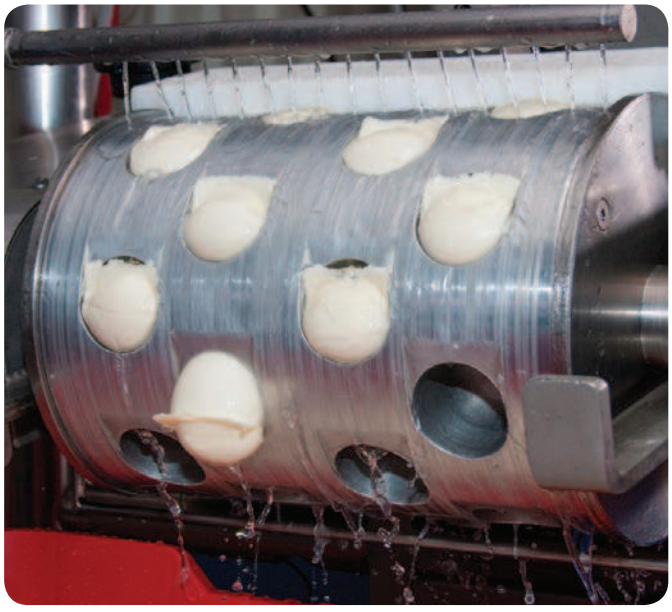
85442



Product description

Model 85442 is an air-operated, positive-displacement pump delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. This pump unit is designed to deliver grease to single-line metering devices and includes a special high-volume refill fitting. Acrylic reservoirs are available in several sizes. Integrated controls feature LED indicators for “Power On”, “Pump On” and “Alarm” along with a membrane-type, “Manual Lube” switch.

Features and benefits

- Reservoir 0,45 kg / *1 lb* with spring-loaded follower
- Integrated solenoid air valve
- High-volume refill fitting
- For use with metering devices of category 5, 6 and 7

Applications

- Cement industry
- Wood-working
- Food and beverage

Technical data

Order number	**85442**
Function principle	pneumatically operated piston pump (single-stroke)
Outlets	1
Metering quantity	7,4 cm³/stroke, *0.45 in³/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–23 to +65 °C; *–10 to +150 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	0,5 kg, *1.0 lb*
Material	acrylic
Connection outlet	¼ NPTF (F)
Voltage	120 VAC
Transmission ratio	20:1
Dimensions	133 × 184 × 305 mm *5.25 × 7.24 × 12.02 in*
Mounting position	vertical

Timer and controller

On time	10 or 30 sec
Off time	½ to 30 min. or 30 min. to 30 h
Alarm contacts	8 amps at 250 VAC
Operating temperature	–23 to +65 °C; *–10 to +150 °F*

PUB LS/P1 17046 EN

Pump unit

85444/45

Product description

All models are air-operated, positive-displacement pumps delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. These pump units are designed to deliver grease to single-line metering devices and include a special high-volume refill fitting. Acrylic reservoirs are available in several sizes. Integrated controls feature LED indicators for “Power On”, “Pump On” and “Alarm,” along with a membrane-type, “Manual Lube” switch.

Features and benefits

- Reservoir 1,8 kg/*4 lb* with spring-loaded follower
- Integrated, adjustable, solid-state time controls with LED indicators
- Integrated solenoid air valve
- High-volume refill fitting
- For use with metering devices of category 5, 6 and 7

Applications

- Food and beverage
- Glass industry

Technical data

Order number	**85444, 85445**
Function principle	pneumatically operated piston pump (single-stroke)
Outlets	1
Metering quantity	7,4 cm³/stroke, *0.45 in³/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–23 to +65 °C; *–10 to +150 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	1,8 kg, *4.0 lb*
Material	acrylic
Connection outlet	¼ NPTF (F)
Voltage	120 VAC; 240 VAC
Transmission ratio	20:1
Dimensions	133×184×527 mm *5.25×7.24×20.75 in*
Mounting position	vertical

Timer and controller

On time	10 or 30 sec
Off time	½ to 30 min. or 30 min. to 30 h
Alarm contacts	8 amps at 250 VAC
Operating temperature	–23 to +65 °C; *–10 to +150 °F*

Pumps

Order number	Voltage	Transmission ratio	Lubricant output	
	VAC		cm³/stroke	*in³/stroke*
85444	120	20:1	7,4	*0.45*
85445	240	20:1	7,4	*0.45*

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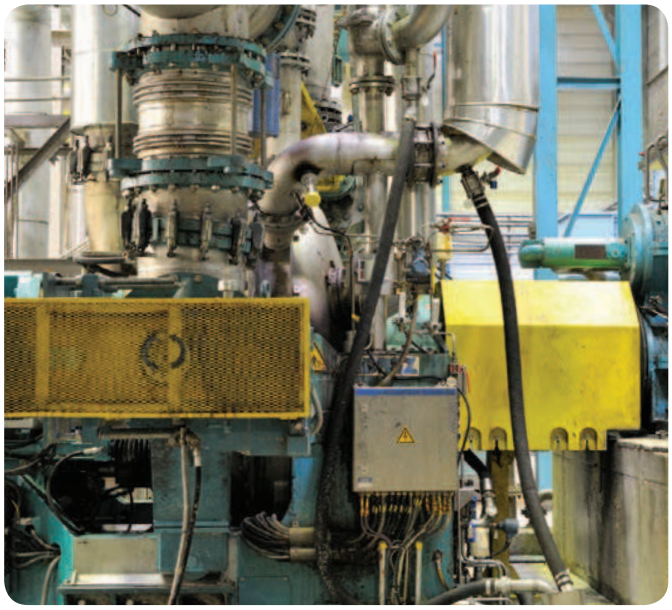
85434/35/36



Product description

All models are air-operated, positive-displacement pumps delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. These pumps are designed to deliver grease to single-line metering devices and include a special high-volume refill fitting. Acrylic reservoirs are available in several sizes. Integrated controls feature LED indicators for "Power On", "Pump On" and "Alarm," along with a membrane-type, "Manual Lube" switch.

Features and benefits

- Integrated, adjustable, solid-state time controls with LED indicators
- Integrated solenoid air valves
- High-volume refill fitting
- For use with metering devices of category 5, 6 and 7

Applications

- Food and beverage
- Glass industry
- Machine tools

Technical data

Function principle	pneumatically operated psiton pump (single-stroke)
Outlet	1
Metering quantity	depending on model: 18,7 or 35,2 cm^3/stroke *1.14 or 2.15 in^3/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–23 to +65 °C; *–10 to +150 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	2,0 kg, *4.5 lb*
Material	acrylic
Connection outlet	1/4 NPTF (F)
Voltage	120 VAC; 240 VAC
Transmission ratio	31:1; 25:1
Dimensions	627×166×460 mm *24.70×6.52×18.11 in*
Mounting position	vertical

Timer and controller

On time	10 or 30 sec
Off time	1/2 to 30 min. or 30 min. to 30 h
Alarm contacts	8 amps at 250 VAC
Operating temperature	–23 to +65 °C; *–10 to +150 °F*

Pumps

Order number	Voltage	Transmission ratio	Metering quantity	
	VAC		cm^3/stroke	*in^3/stroke*
85434	120	31:1	18,70	*1.14*
85435	240	31:1	18,70	*1.14*
85436	120	25:1	35,20	*2.15*

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82653/55, 83800/34

Product description

All models are air-operated, positive-displacement pumps delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. These pump units are designed to deliver grease to single-line metering devices and include a special high-volume refill fitting. Translucent, acrylic reservoirs with spring-loaded followers are available in several sizes. Pump uses air for forward and return stroke but dispenses lubricant on forward stroke only. Return stroke releases pressure on the lubricant line through included check/relief valve.

Features and benefits

- Remote system components such as 4/2-way valves, adjustments for air power, and monitoring of pump and system are available separately on request
- High-volume refill fitting
- For use with metering devices of category 5, 6 and 7

Applications

- Oil and gas industry
- Chain lubrication

Technical data

Order number	**82653, 83834, 82655, 83800**
Function principle	piston pump (single-stroke)
Outlets	1
Metering quantity	22,9 to 35,2 cm³/stroke *1.4 to 2.15 in³/stroke*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–18 to +65 °C; *0 to +150 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	2 kg, *4.5 lb*
Material	acrylic
Connection outlet	¼ NPTF (F)
Transmission ratio	31:1; 25:1
Air inlet	¼ NPTF (F)
Dimensions	470×146×533 mm *18.5×5.75×20.9 in*
Mounting position	vertical

Timer (for 82655 and 83800 only)

On time	min. 10 sec max. 1 minute, 24 sec
Cycle time	min. 20 sec max. 24 h
Operating voltage	120 VAC, 60 Hz; 110 VAC, 50 Hz
Operating temperature	–23 to +65 °C; *–10 to +150 °F*

Air consumption at 6,9 bar, *100 psi*, is 0,004 M³/min, *0.15 ft³/min*, per stroke

Pumps

Order number	Ratio	Lubricant output		Designation
		cm³/stroke	*in³/stroke*	
82653	31:1	22,9	*1.4*	bare pump
82655	31:1	22,9	*1.4*	pump with controls
83800	25:1	35,2	*2.15*	pump with controls
83834	25:1	35,2	*2.15*	bare pump

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Pump unit

83167

Product description

Model 83167 is an air-operated, positive-displacement pump delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. This pump unit is designed to deliver grease to single-line metering devices and includes a special high-volume refill fitting. Acrylic reservoirs are available in several sizes. Model 83167 includes a transparent reservoir, spring-loaded follower, vent valve assembly and filler fitting for refilling the reservoir.

Features and benefits

- 2 1/2 inch air motor
- Vent valve assembly
- Operation by air-powered reciprocating strokes and releases pressure on the lubricant line through included check/relief valve (3-way) on air-powered return stroke
- Remote system components such as 3/2-way valves, adjustments for air power, and monitoring of pump are available separately on request
- Two different filling couplers available
- For use with metering devices of category 5, 6 and 7

Applications

- Cement industry
- Food and beverage

Technical data

Order number	**83167**
Function principle	pneumatically operated, reciprocating piston pump
Outlets	1
Metering quantity	197 cm^3/min, *12 in^3/min*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–35 to +104 °C *–30 to +220 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Transmission ratio	40:1
Reservoir	5 kg, *11.0 lb*
Material	acrylic, nitrile, neoprene, steel, aluminum, zinc
Connection outlet	3/4 NPTF (F)
Air inlet	1/8 NPTF (F)
Dimensions	413 × 229 × 571,5 mm *16.25 × 9.0 × 22.5 in*
Mounting position	vertical

Pump requires 3-way air valve
Air consumption at 6,9 bar, *100 psi*, is 0,004 M^3/min, *0.15 ft^3/min*, per stroke

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Pump unit

83599

Product description

Model 83599 is an air-operated, positive-displacement pump delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. The pump is designed to deliver grease to single-line metering devices and includes a special high-volume refill fitting. Acrylic reservoirs are available in several sizes.

Model 83599 is similar to Model 83167 except that it includes a base-mounting kit and metal reservoir with indicator rod for visual check of grease level. The reservoir includes a spring-loaded follower.

Features and benefits

- 2 1/2 inch air motor
- Reservoir with spring-loaded follower and indicator rod for visual check of grease level
- Vent valve assembly
- Base mounting kit
- Operation by air-powered reciprocating strokes and releases pressure on the lubricant line through included check/relief valve (3-way) on air-powered return stroke
- Remote system components such as 3/2-way valves, adjustments for air power, and monitoring of pump are available separately on request
- Two different filling couplers available
- For use with metering devices of category 5, 6 and 7

Applications

- Machine tools
- Industrial machinery

Technical data

Order number	**83599**
Function principle	pneumatically operated, reciprocating piston pump
Outlets	1
Metering quantity	197 cm^3/min *12 in^3/min*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–34 to +121 °C *–30 to +250 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Transmission ratio	40:1
Reservoir	5 kg, *11 lb*
Material	acrylic, nitrile, neoprene, steel, aluminum, zinc
Connection outlet	3/4 NPTF (F)
Air inlet	1/4 NPTF (F)
Dimensions	462 × 229 × 697 mm *18.19 × 9.0 × 27.44 in*
Mounting position	vertical

Pump requires 3-way air valve
Air consumption at 6,9 bar, *100 psi*, is 0,004 M^3/min, *0.15 ft^3/min*, per stroke

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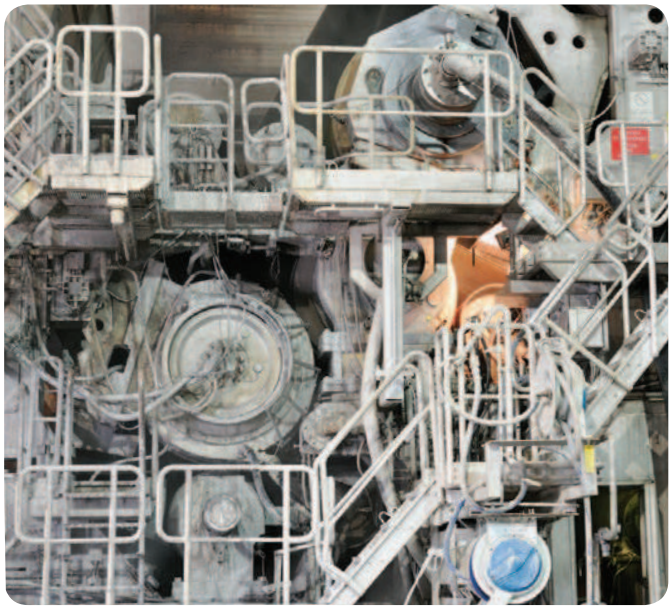
84050, 85460



Product description

Models 84050 and 85460 are air-operated, double-acting pumps for high-volume displacement. Both pumps are supplied with a 27 kg (*60 lb*) capacity metal reservoir with removable cover for easy filling. It includes an air-operated vent valve and air and lubricant connecting hoses. Model 85460 features a visual low-level and follower plate assembly.

Features and benefits

- Rugged, 14-gauge steel walls
- Large 1 inch NPT inlet for fast filling, 1 $^{1}/_{4}$ in overflow outlet
- 2 inch foam follower that virtually eliminates grease bypass
- Vent valve to bucket coupling
- Thick mounting ring that withstands severe vibration
- Bulk filling method
- Remote system components such as 3/2-way valves, adjustments for air power, and monitoring of pump are available separately on request
- For use with metering devices of category 5, 6 and 7

Applications

- Pulp and paper industry
- Construction machinery
- Food and beverage
- Mining

Technical data

Order number	**84050, 85460**
Function principle	pneumatically operated double-acting piston pump
Outlets	1
Metering quantity	492 cm³/min *30 in³/min*
Lubricant	grease xNLGI 0, 1, 2
Operating temperature	–23 to +60 °C; *–10 to +140 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Reservoir	27 kg, *60 lb*
Transmission ratio	50:1
Material (reservoir)	steel
Connection outlet	³/₄ NPTF (F)
Air inlet	³/₈ NPTF (F)
Dimensions	806×392×395 mm *31.75×15.44×15.56 in*
Mounting position	vertical

Pump requires 3-way air valve
Air consumption at 6,9 bar, *100 psi*, is 0,012 M³/min, *0.42 ft³/min*, per stroke
Optional 92597 follower available

PUB LS/P1 17046 EN

Pump unit

282288

Product description

All models are air-operated, positive-displacement pumps delivering a maximum volume by means of a single stroke of the pump. Solenoid air valves and adjustable, solid-state time controls are integrated into the pump body. Designed to deliver grease to single-line metering devices, these pump models include a special high-volume refill fitting. Integrated controls feature LED indicators for “Power On”, “Pump On” and “Alarm,” along with a membrane-type, “Manual Lube” switch. Model 1823 includes a 2 1/2 inch pneumatically driven pump, vent valve assembly, pump elevator, air and lubricant connecting hoses and control panel. Model 282288 has the same specifications as Model 1823 but does not include an elevator or controller.

Features and benefits

- Modular structure consists of 2 $^{1}/_{2}$ in air motor, pump and vent assembly, controller, pump elevator, air and lubricant connecting hoses, as well as an optional control panel
- For U. S. standard refinery drums (removable head)
- For clean and safe drum replacement
- Simplified, modular design
- For use with metering devices of category 5, 6 and 7.

Applications

- Agriculture
- Chemical industry
- Steel industry

Technical data

Order number	**282288**
Function principle	pneumatically operated reciprocating piston pump
Outlets	1
Metering quantity	492 cm³/min, *30 in³/min*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–15 to +121 °C; *+5 to 250 °F*
Operating pressure	min. 82 bar, *1 200 psi* max. 240 bar, *3 500 psi*
Transmission ratio	50:1
Reservoir	55 kg, *120 lb*
Drum size	standard 120 lb. refinery drum
Material	nitrile, steel, polyurethane
Connection outlet	¾ NPTF (F)
Air inlet	⅜ NPTF (F)
Voltage (controller)	120 V, 60 Hz; 110 V, 50 Hz
Dimensions	381 × 381 × 975 mm; *15 × 15 × 38.375 in*
Mounting position	vertical

Air consumption at 6,9 bar, *100 psi*, is 0,004 M³/min, *0.15 ft³/min*, per stroke
83371 follower plate is available as an optional accessory

PUB LS/P1 17046 EN

HG 1000, HG 2000

Product description

The hydraulic lubricator HG is an lubrication system developed for a cost-efficient automatic lubrication in machines and implements having a hydraulic circuit. With the help of the hydraulic lubricator, centralized automatic lubrication can be adapted to such units as dismountable hoists, small lift trucks and rear lifts of vehicles.

Features and benefits

- Simple piston pump utilizes self-relieving hydraulic lines
- Provides cost-efficient automatic lubrication
- Suitable for use in vehicles or machines having a safe hydraulic circuit that is not constantly in operation
- Pressure rise and fall operation in the pump is activated by powering-on and powering-off the adapted hydraulic circuit
- Pressure rise and fall operation in the lube line, as well as the amount of lube remaining, can be verified from the pressure gauge of the pump unit
- Optional low-level limit alarm can be indicated by a buzzer or indicator lamp 12 or 24 V DC
- Filling coupler with filter
- For use with metering devices of category 4 and 5

Applications

- Vehicles
- Machines
- Dismountable hoists
- Small lift trucks
- Rear lifts of trucks

Technical data

Order number	**HG 1000** **HG 2000**
Function principle	hydraulically operated piston pump
Outlets	1
Metering quantity	depending on the inlet pressure
Lubricant	grease NLGI 0, 1
Operating temperature	-25 to +80 °C *-13 to +176 °F*
Operating pressure	min. 50 bar; *725 psi* max. 150 bar; *2 176 psi*
Reservoir	1 and 2 kg; *2.2 and 4.4 lb*
Material (reservoir)	steel
Hydraulic inlet connection	R $^1/_4$ in ZN; main hose ø 8 mm, *0.341 in*
Grease outlet connection	R $^1/_4$ in ZN; main hose ø 8 mm, *0.341 in*
Transmission ratio	1:1
Operating voltage	12 or 24 V DC
Dimensions	HG 1000; 345×100×100 mm *13.58×3.94×3.94 in* HG 2000; 520×100×100 mm *20.47×3.94×3.94 in*
Mounting position	vertical or horizontal

PUB LS/P1 17046 EN

Pump unit

84944, 84961

Product description

Models 84944 and 84961 are pumping systems designed to operate centralized lubrication systems that utilize single-line, parallel grease metering components. The pump is double acting, dispensing lubricant on both the up and down strokes. These units are designed for off-road equipment that utilizes 24 VDC power sources. These units can be used in conjunction with: Models 244270 (not potted) or 249605 (potted) cycle timers; Model 84944 hydraulically operated pump with 60 lb metal reservoir and vent valve (basic pump); and Model 84961 basic pump (similar to Model 84944 but without reservoir or vent valve). These products include a pump and hydraulic control.

Features and benefits

- Robust
- Pump operates by an electrical signal
- Supplied with metal reservoir with removable cover for easy filling
- Includes a hydraulic operated solenoid vent valve 24 VDC
- Includes a hydraulic pressure reduction valve rated 4 to 55 bar (*60 to 800 psi*) output
- Bulk filling method
- For use with metering devices of category 5, 6 and 7

Applications

- Construction machinery
- Heavy machines
- Vehicles

Technical data

Order number	**84944** **84961**
Function principle	hydraulically operated, double-acting piston pump
Outlets	1
Metering quantity	180 cm^3/min, *11 in^3/min*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–40 to +57 °C; *–40 to +135 °F*
Fluid inlet temperature	max. +99 °C; *+210 °F*
Hydraulic inlet pressure	min. 20 bar, *300 psi* max. 205 bar, *3 000 psi*
Pressure ratio	16:1
Reservoir	27 kg, *60 lb*
Material	steel, brass, copper, polyurethane, nitrile
Connection outlet	¾ NPTF (M)
Hydraulic inlet/outlet	¼ NPTF (M)
Flow rate	at 30 cycles/min: 3,8 l/min, *1.0 gal/min*
Operating voltage	24 VDC
Dimensions	
84944	381×495,3×889 mm; *15×19.5×35 in*
84961	76×177,8×866,8 mm; *3×7×34.125 in*
Mounting position	vertical

Cycle timer

Voltage	24 VDC
Cycle rate per min	min. 6, max. 60

PUB LS/P1 17046 EN

84960, 84962

Product description

Models 84960 and 84962 are pumps designed to operate centralized lubrication systems that utilize single-line parallel grease metering components. The pumps are double acting, dispensing lubricant on both the up and down strokes. These units are designed for off-road equipment that utilizes 24 V DC power sources. These units can be used in conjunction with Models 244270 (not potted) or 249605 (potted) cycle timers. Included hydraulic solenoids require 24 V DC. Model 84960 is a hydraulic pump for use with U.S. standard 120 lb refinery drums. System components (pump, vent assembly, drum cover and follower plate) must be ordered separately. Model 84962 is a hydraulic pump for custom lubricant container installations. Pump length is sized for U.S. standard 400 lb refinery drum depth.

Features and benefits

- For use with U.S. standard 54 kg/*120 lb* refinery drum
- Robust
- Includes a hydraulic pressure reduction valve rated 4 to 55 bar (*60 to 800 psi*) output
- System components (pump, vent valve assembly, drum cover and follower plate) must be ordered separately
- For use with metering devices of category 5, 6 and 7

Applications

- Mining industry
- Cement industry

Technical data

Order number	**84960** **84962**
Function principle	hydraulically operated double-acting piston pump
Outlets	1
Metering quantity	180 cm³/min, *11 in³/min*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–40 to +57 °C; *–40 to +135 °F*
Fluid inlet temperature	max. +99 °C; *+210 °F*
Hydraulic inlet pressure	min. 20 bar, *300 psi* max. 205 bar, *3 000 psi*
Pressure ratio	16:1
Material	steel, brass, copper, polyurethane, nitrile
Connection outlet	¾ NPTF (F)
Hydraulic inlet/outlet	¼ NPTF (M)
Flow rate	at 30 cycles/min: 3,8 l/min, *1.0 gal/min*
Dimensions	
84960	76×177,8×1 083 mm; *3×7×42.625 in*
84962	76×177,8× 862 mm; *3×7×33.94 in*
Mounting position	vertical

Cycle timer

Voltage	24 V DC
Cycle rate per min	min. 6, max. 60

Pumps require a timed electrical signal to operate. Use 244270 (not potted) or 249605 (potted) cycle timer. Included hydraulic solenoids require 24 V DC. All pumps have a hydraulic pressure-reducing valve rated for 4 to 55 bar, *60 to 800 psi*, output. Maximum input is 207 bar, *3 000 psi*.

PUB LS/P1 17046 EN

FlowMaster, hydraulic

Product description

High-performance FlowMaster hydraulic pumps combine rotary-driven pump motors with reciprocating pump tubes and flexible control features that perform in desert heat and arctic cold. The integrated control manifold adjusts the amount of lubricant and operating pressure. The pump's output is adjustable from 115 to 737 cm³/min (*7 to 45 in³/min*).

Features and benefits

- Increases pump life and simplifies pump installation, operation and service
- Pump and reservoir combination models are automatically level-sensor and shut-off system ready
- Premium-choice pump for single-line parallel lubrication systems
- Flexible ranges of use pump only or pump and bucket with follower low- and high-level detection
- For desert heat and cold climates
- For use with metering devices of category 5, 6 and 7

Applications

- Construction machinery, mining and mineral processing
- Steel mills, paper mills, automotive
- Food and beverage, packaging

Technical data

Function principle	hydraulically operated piston pump
Outlets	1
Metering quantity	adjustable 115 to 737 cm³/min *7 to 45 in³/min*
Lubricant	grease NLGI 0, 1, 2
Hydraulic fluid temperature	max. +93 °C; *+200 °F*
Operating temperature	–29 to +65 °C; *–20 to +150 °F*
Operating inlet pressure	20 to 32 bar, *300 to 420 psi*
Supply inlet pressure	max. 200 bar, *3 000 psi*
Reservoir	16; 27; 41; 54; 180 kg *35; 60; 90; 120; 400 lb*
Material	fluoroelastomer, polyurethane, steel, aluminum zinc casting
Connection outlet	¼ NPTF
Hydraulic inlet flow	max. 28 l/min, *7 gal/min*
Solenoid valve coil	24 V DC
Hydraulic inlet port	SAE 4
Tank return port	SAE 6
Transmission ratio with manifold	9:1 at low inlet pressure (20 to 25 bar, *300 to 350 psi*) and flow (below 7 lpm, *2 gpm*); approaches 11:1 at higher inlet pressure and flow
Dimensions:	
Pump, dip tube length	min. 348 mm; 13.7 in *max. 864 mm; 34.02 in*
Basic pump	min. 610 × 231 × 291 mm *min. 24 × 9 × 11.5 in* max. 1 126 × 231 × 291 mm *max. 44.3 × 9 × 11.5 in*
Pumps with bucket, follower and vent valve	min. 633 × 496mm *min. 24.9 × 19.5 in* max. 1 155 × 496 mm *max. 45.44 × 19.5 in*
Mounting position	vertical

PUB LS/P1 17046 EN

FlowMaster, hydraulic

Order number

Order number	Designation	Reservoir		Solenoid manual override	Adjustable flow control	Adjustable pressure control
		kg	*lb*			
85722	pump and bucket with follower and low-level detection	27	*60*	–	•	•
85723	reservoir and pump	27	*60*	–	–	–
85724	reservoir and pump	27	*60*	–	–	–
85725	pump and bucket with follower and low-level detection	41	*90*	–	•	•
85726	pump and bucket	41	*90*	•	–	–
85727	pump and bucket with follower, low- and high-level detection	54	*120*	–	•	•
85731	pump only	16	*35*	–	•	•
85732	pump only	27	*60*	–	•	•
85733	pump only	54/41	*120/90*	–	•	•
85734	pump only	180	*400*	–	•	•
85735	pump only	27	*60*	–	–	–
85741	pump only	27	*60*	•	–	–
85742	pump only	54/41	*120/90*	•	–	–

Drum covers, follower assemblies and vent valve assemblies

Order number

Order number	Designation	Reservoir	
		gal	*lb*
84616	drum cover	18	*120*
85492	follower assembly	18	*120*
84990	vent valve assembly	18	*120*
271606	drum cover	55	*400*
270982	follower assembly	55	*400*
271605	vent valve assembly	55	*400*
84980	vent valve	18, 55	*120, 400*
237-11204-8	ultrasonic high/low sensor	18, 55	*120, 400*

PUB LS/P1 17046 EN

Pump unit

P 603S

Product description

The simple-to-install, all-in-one design of the P 603S pump includes the programmable controller, a pressure switch/transducer and a vent valve. It is quick and easy to change out a metering device as the main line or nearby metering devices do not have to be removed. The exchange can be performed between lubrication cycles so that there is no wasted lubricant or excessive costly downtime. An additional pressure switch at the end of larger systems can be used for added pressure control to ensure correct lubrication. For rotating operation in wind turbines, the reservoir is equipped with a follower plate and stirring paddle, which also facilitates the use of fast-separating lubricants. For stationary operations, a stirring and fixed paddle is sufficient.

Features and benefits

- Robust design with easy system layout
- Simple maintenance
- Easy system expandation
- SE1/SE2 suction elements for used lubricant
- QSL / SL metering devices suitable for high pressure
- Suitable for fast-separating lubricants
- For use with metering devices of category 5, 6, 7

Applications

- Wind turbines
- Construction machinery
- Mining and mineral processing
- Commercial vehicles

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	12 cm^3/min, *0.73 in^3*/min
Lubricant	grease up to NLGI 2
Operating temperature	–40 to +70 °C; *–40 to +158 °F*
Operating pressure	max. 300 bar; *4 350 psi*
Reservoir	4; 8; 10; 15 or 20 kg *9, 18, 22, 33 or 44 lb*
Pumping elements	3 (ø 7 mm, *0.27 in*)
Paddle	18 rpm
Operating voltage	12, 24 VDC, 115/230 VAC
Current draw	max. 2 A
Protection class	IP 6K9K
Connectors	12, 24 VDC: bayonet style AC: bayonet style plus square type
Switching power supply	12, 24 VDC: no AC: yes
Material	cast aluminum alloy, polycarbonate resin
Connection outlet	G1/4
Dimensions	min. 471 × 240 × 235 mm max. 949 × 240 × 235 mm *min. 18.54 × 9,44 × 9,25 in* *max. 37.08 × 9,44 × 9,25 in*
Mounting position	vertical (with follower plate; any)

PUB LS/P1 17046 EN

Pump unit

P 603S

Order number

Order number	Designation	Power	Reservoir capacity		Follower plate	Internal transducer
		V	kg	*lb*		
645-41064-3	P603S-4XLF -3Z7-AC-2A7.16-S13-SE	115 / 230 AC	4	*9*	•	•
645-41062-3	P603S-8XLF -3Z7-AC-2A7.16-S13-SE	115 / 230 AC	8	*18*	•	•
645-41110-2	P603S-8XLBO-3Z7-AC-3A7.16-S12-SE	115 / 230 AC	8	*18*	–	•
645-41062-4	P603S-8XLBO-3Z7-AC-3A7.16-S19-SE	115 / 230 AC	8	*18*	–	•
645-41119-2	P603S-10XLF -3Z7-AC-2A1.01-S13-SE	115 / 230 AC	10	*22*	•	•
645-41073-5	P603S-15XLF -3Z7-AC-2A7.16-S13-SE	115 / 230 AC	15	*33*	•	•
645-41064-8	P603S-4XLF1-3Z7-12-1A7.16-S01-SE	12 DC	4	*9*	• (bayonet)	•
645-41175-5	P603S-4XNBO -3Z7-12-1A7.16-S22-SE	12 DC	4	*9*	–	•
645-41064-7	P603S-4XNBO-3Z7-12-2A7.16-S01-SE	12 DC	4	*9*	–	•
645-41110-3	P603S-8XLF1-3Z7-12-1A7.16-S01-SE	12 DC	8	*18*	• (bayonet)	•
645-41064-4	P603S-4XLBO-3Z7-24-1A7.16-S17-SE	24 DC	4	*9*	–	•
645-41064-6	P603S-4XLF -3Z7-24-1A7.16-S13-SE	24 DC	4	*9*	•	•
645-41064-2	P603S-4XNBO-3Z7-24-1A7.16-S01-SE	24 DC	4	*9*	–	•
645-41062-9	P603S-8XLF -3Z7-24-1A7.16-S01-SE	24 DC	8	*18*	•	•
645-41062-8	P603S-8XLBO-3Z7-24-2A7.16-S19-SE	24 DC	8	*18*	–	•
645-41062-7	P603S-8XLF -3Z7-24-1A7.16-S03-SE	24 DC	8	*18*	•	•
645-41119-1	P603S-10XLF -3Z7-24-1A7.16-S13-SE	24 DC	10	*22*	•	•

Accessory

P653S and P603S reservoir kits

Reservoir kits

Order number	Reservoir size		Designation
	kg	*lb*	
276764	15	*33*	Converts 4 or 8 kg, *9 or 18 lb*, reservoirs without follower to 15 kg, *33 lb* reservoir
276765	20	*44*	Converts 4 or 8 kg, *9 or 18 lb*, reservoirs without follower to 20 kg, *44 lb* reservoir

PUB LS/P1 17046 EN

Minilube

Product description

SKF Minilube is a handy solution for vehicles with fewer lubrication points, such as mini-excavators, mini wheel loaders, buses and delivery trucks. Installing SKF Minilube is easy and quick, because everything is already integrated: control centre, pressure switch and alarm lights. Additional alarm lights can be installed, for example, in the vehicle's cabin. For each lubrication point, there is a specifically selected doser that is set according to the size of and the load on the lubrication point.

Features and benefits

- Compact handy lubrication system for fewer lubrication points
- Increases worker safety as system lubricates all points regardless of location
- Makes driving more environmentally friendly by maintaining optimal lubrication level
- Easy and quick installing and commissioning
- For use with metering devices of category 4 and 5

Applications

- Small excavators
- Wheel loaders
- Buses
- Delivery trucks
- Vehicles

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	
12 VDC	6,5 cm³/min, *0.4 in³/min*
24 VDC	13 cm³/min, *0.8 in³/min*
Lubricant	grease up to NLGI 1
Operating temperature	–30 to +70 °C; *–22 to +158 °F*
Operating pressure	max. 250 bar, *3 625 psi*
Reservoir	2 kg, *4 lb*
Material	acrylic, steel, aluminum, polyurethane, nitrile
Connection outlet	R 1/4 in
Operating voltage	12/24 VDC
Consumption	150 W, *0.2 HP*
Protection class	IP 65
Dimensions	327×273×184 mm *12.9×10.75×7.25 in*
Mounting position	vertical

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **12236 EN**

PUB LS/P1 17046 EN

Minilube

Order number configurator

MIN – 170 – ____ – ____

Product series

MIN = Minilube pump unit

Reservoir

170 = 2 kg, *4 lb*

Control system

ST-102 = external control with ST-102 control unit
Empty = with integrated control ST-104

Operating voltage

12 V = 12 V DC
24 V = 24 V DC

PUB LS/P1 17046 EN

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 an increased influence of dirt is unavoidable.

Features and benefits

- Reliable: due to durable materials, robust components and designs for extreme conditions (with positively driven pump elements)
- Plug-and-play pump design for reduced installation time
- Application-oriented: individual designs through user-friendly product customizer
- Versatile: can be used as a single-line (SKF MonoFlex) and as a progressive pump (SKF ProFlex)
- Safe: through fill-level monitoring, lubrication system monitoring, pressure relief and control unit
- Options: Top filling, several electronic options, Can bus
- For use with metering devices of category 5, 6 and 7

Applications

- Wind turbines
- Construction machinery
- Vehicle aftermarket
- Rotary applications
- Industry

Technical data

Function principle	electrically operated piston pump
Outlets	1-3
Metering quantity	5,0 to 15 cm^3/min *0.3 to 0.9 in^3/min*
Lubricant	NLGI 000 to 2 with EP additives, compatible with plastics, NBR elastomers, copper and copper alloys
Operating temperature:	
with spring-return pump element	–25 to +70 °C; *–13 to +158 °F*
with posit. driven pump element	–30 to +70 °C; *–22 to +158 °F*
Operating pressure	max. 300 bar; *4 351psi*
Flow pressure	0,45 to 0,7 bar, *6.5 to 10.2 psi*
Reservoir	2; 4; 6; 8; 10; 12; 15; 20 kg *4, 9, 13, 18, 22, 26, 33, 44 lb*
Material (reservoir)	polyamide PA 6I, PMMA
Material (pump housing)	aluminum-silicon cast alloy
Connection outlet	M14×1,5 mm
Operating voltage	12 VDC, 24 VDC, 230 VAC (90–264 VAC)
Dimensions	min 229×268×208mm min *9.01×10.55×8.2 in* max 1 170×268×216 mm max 46×10.55×8.5 in
Mounting position	vertical (with follower plate; any)

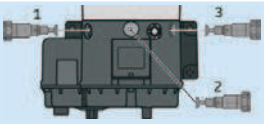
NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-3030 -EN, 951-170-211**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

KFG

Position of pump elements



Order number configurator

K	F	G												+			

Product series

1 2 3

Integrated control unit

X = No control unit **L** = LC502

Reservoir

1 = 2 kg, *4 lb* (not available for rotary application version)
2 = 4 kg, *9 lb* (only rotary application version)
3 = 6 kg, *13 lb*
4 = 8 kg, *18 lb* (only rotary application version)
5 = 10 kg, *22 lb*
6 = 12 kg, *26 lb* (only rotary application version)
7 = 15 kg, *33 lb*
8 = 20 kg, *44 lb* (not available for rotary application version)

Range of application

R = Rotary application **M** = Industry application **F** = Vehicle application

Filling

X = without lubricant (not available for rotary application version)
A = Grease NLGI-Grade 2 for vehicles (not for capacitive fill-level monitor)
F = Customized grease

Fill-level monitor

X = Without fill-level monitor
1 = Mechanical level monitor (not available for rotary application version)
2 = Mechanical level monitor with signal smoothing (not available for rotary version; only possible with KFGX)
3 = Capacitive level monitor (only available for industry version with 2 and 6 kg reservoir)
4 = Cylinder switch level monitor (only available for rotary application version)

Pump element or filler socket

Spring-return piston pump
X = No pump element
E = 5,0 cm^3/min; *0,30 in^3/min*
W = Socket for filling cylinder (not available for rotary application version)

Positively driven piston pump
Y = No pump element
L = 5,0 cm^3/min; *0,30 in^3/min*
V = Socket for filling cylinder (not available for rotary application version)

Fitting for main line connection and valves [1)]

S = Pressure relief and restriction valve (200 bar/*2 900 psi*) with SKF Quick Connector for ø 6 mm tubes
T = Pressure relief and restriction valve (200 bar/*2 900 psi*) with SKF Quick Connector for ø 8 mm tubes
U = Pressure relief and restriction valve (200 bar/*2 900 psi*) with solderless pipe union for ø 10 mm tubes
V = Pressure relief and restriction valve (200 bar/*2 900 psi*) with solderless pipe union for ø 8 mm tubes
W = Pressure relief and restriction valve (200 bar/*2 900 psi*) with female thread solderless pipe union for ø G $^1/_4$ tubes [2)]

Pump cycle/interval time

No control unit
99 = none

LC502
EB = 4 min. run time/1 h interval time. Factory setting, additional setting times on request

Voltage key

912 = 12 V DC (only available for vehicle application version) **924** = 24 V DC **486** = 90–264 VAC (not available for vehicle application version)

[1)] For technical reasons, the first pump element must always be installed at Outlet 1 in SKF MonoFlex systems
[2)] If the relief valve is configured together with several pump elements, then the lines leading from the pump elements will be joined together ahead of the relief valve

PUB LS/P1 17046 EN

Multilube, MLP

Product description

Multilube pump units help to ensure that the lubrication result is optimal, while reducing energy and lubricant consumption. All relevant components (control unit, pump, reservoir, directional valve and pressure monitoring) are integrated into its modular pumping unit. Built-in heating allows it to be operated even under demanding and cold circumstances.

Features and benefits

- Compact, all-in-one structure
- Modular and durable design
- Easy to install and start-up
- Can be used in single-line, dual-line and progressive lubrication systems
- For use in oil and grease lubrication systems
- Two reservoir sizes
- Pumping element equipped with pressure-relief valve
- Filling connection equipped with safety valve
- Visual and electric low-level monitoring in reservoir
- Pumping center is equipped with heating resistor
- Clear and versatile user interface
- Wide operating temperature range
- For use with metering devices of category 5, 6 and 7

Applications

- Stand-alone machines
- Construction machinery
- Mining applications

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	16 cm^3/min; *0.976 in^3/min*
Lubricant	grease up to NLGI 1
Operating temperature	–30 to +80 °C; *–22 to +176 °F*
Operating pressure	max. 200 bar, *2 900 psi*
Reservoir	4 or 10 kg, *9 or 22 lb*
Material	aluminum, polyurethane, nitrile
Connection outlet	G $^1/_4$
Operating voltage	12/24 V DC, 115 VAC, 230 VAC
Consumption	150 W, *0.2 HP*
Protection class	IP 67 (with user-interface IP 65)
Dimensions:	
with 4 kg reservoir	539 × 274 × 250 mm
with *9 lb* reservoir	*21.22 × 10.78 × 9.84 in*
with 10 kg reservoir	720 × 274 × 250 mm
with *22 lb* reservoir	*27.09 × 10.78 × 9.84 in*
Mounting position	vertical

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **6407/2 EN**

PUB LS/P1 17046 EN

Multilube, MLP

Order number configurator

MLP – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

Product series

Reservoir
4 = 4 l, *9 lb*
10 = 10 l, *22 lb*

Number of lines
1 = single-line system
2 = dual-line system

Voltage
24 = 24 V control voltage if external control is used
115 = power input 115 V
230 = power input 230 V

User interface
IF103 = user interface
24 = external control, control voltage 24 V DC
115 = external control, control voltage 115 V AC

Pressure control
PSE = Built-in pressure sensor
C2 = Single-line, dual-line lubrication pump used with single-line metering devices
C2P = Progressive, dual-line lubrication pump used with progressive metering devices
E = ATEX-certified version for Zone 20 and 22

PUB LS/P1 17046 EN

P653S

Product description

The fully integrated P653S pump unit is an example of the Lincoln brand's commitment to providing innovative, cost-effective solutions through industry-leading advances in technology. This next-generation, lower-cost pump package can be fitted with one of four reservoir sizes and easily adapts to many applications. It also interfaces with telematics technology in today's heavy equipment. A neutral switch allows mobile equipment to remain idling with pump power on, but the timer is deactivated, allowing manual lubrication functionality. All pumps include low-level and system fault alarms. Simply mount the pump, connect the power and supply lines, and the system is ready for operation.

Features and benefits

- Integration of major system components reduces operation and overall costs
- Plug-and-play pump design for reduced installation time
- Neutral switch ensures lubrication only when the machine is operating, eliminating wasted grease
- For use with metering devices of category 5, 6, 7

Applications

- Renewable energy, construction machinery
- Mining and mineral processing, commercial vehicles

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	24,6 cm^3/min, *1.5 in^3/min*
Lubricant	grease up to NLGI 2
Operating temperature	VDC: –40 to +70 °C; *–40 to +158 °F* VAC: 0 to +50 °C; *+32 to 122 °F*
Operating pressure	pressure switch, fixed: 240 bar, *3 500 psi* pressure transducer, adjustable: 96 to 317 bar, *1 400 to 4 600 psi* end of line pressure switch and transducer setting, not adjustable: 172 bar, *2 500 psi*
Reservoir	4; 8; 15 or 20 kg, *8.8; 18; 33 or 44 lb*
Material (reservoir)	thermoplastic
Connection outlet	G 1/4
Incoming voltage	DC: 19 to 31 VDC AC: 100 to 240 VAC
Current	DC: max. 10 A AC: max. 1,7 A
Frequency	AC: 47 to 63 Hz
Pause time	max. 59 h, 59 min; min. 4 min;
Pause time increments	1 hr or 1 min
Pumping time	max. 12 min
Dimensions	min. 240 × 235 × 467 mm max. 240 × 235 × 800 mm *min. 9.45 × 9.25 × 18.4 in* *max. 9.45 × 9.25 × 31 in*
Mounting position	vertical

Pump elements

Piston	ø 7 mm, *0.28 in*
Number connected	3
Protection	1P 6K9K

PUB LS/P1 17046 EN

P653S

P653S

Order number	Operating voltage		Reservoir		Follower plate	Internal pressure switch	Internal pressure transducer	Internal and end-of-line pressure switch	Internal and end-of-line pressure transducer
	24 V DC	120/230 VAC	kg	*lb*					
80086	•	–	4	*9*	–	•	–	–	–
80087	•	–	4	*9*	–	–	•	–	–
80105	•	–	4	*9*	–	–	–	•	–
80106	•	–	4	*9*	–	–	–	–	•
80076	•	–	4	*9*	•	•	–	–	–
80077	•	–	4	*9*	•	–	•	–	–
80109	•	–	4	*9*	•	–	–	•	–
80110	•	–	4	*9*	•	–	–	–	•
80090	•	–	8	*18*	–	•	–	–	–
80091	•	–	8	*18*	–	–	•	–	–
80107	•	–	8	*18*	–	–	–	•	–
80108	•	–	8	*18*	–	–	–	–	•
80080	•	–	8	*18*	•	•	–	–	–
80081	•	–	8	*18*	•	–	•	–	–
80111	•	–	8	*18*	•	–	–	•	–
80112	•	–	8	*18*	•	–	–	–	•
80121	•	–	15	*33*	•	–	•	–	–
80122	•	–	15	*33*	–	–	•	–	–
80120	•	–	20	*44*	–	–	•	–	–
80083	–	•	4	*9*	–	–	•	–	–
80084	–	•	4	*9*	–	–	–	•	–
80085	–	•	4	*9*	–	–	–	–	•
80072	–	•	4	*9*	•	•	–	–	–
80073	–	•	4	*9*	•	–	•	–	–
80074	–	•	4	*9*	•	–	–	•	–
80075	–	•	4	*9*	•	–	–	–	•
80088	–	•	8	*18*	–	•	–	–	–
80089	–	•	8	*18*	–	–	•	–	–
80078	–	•	8	*18*	•	•	–	–	–
80079	–	•	8	*18*	•	–	•	–	–
80134	–	•	15	*33*	–	–	•	–	–
80135	–	•	20	*44*	•	–	–	–	•

Note: All models are designed for grease and include stirring paddle and low-level detection. Pumps include remote signaling cable, relief valve,electrical connectors and external pressure switch or transducer (as indicated for each model).

PUB LS/P1 17046 EN

FK

Product description

The FK pump unit is a multi-function piston pump with a versatile, modular structure. The FK pump unit can be used as a single-line, dual-line or progressive pump unit with or without integrated reversing valves. The modular structure of the pump also allows it to be retrofitted from one of the above-mentioned lubrication systems to another system without much effort or expense. The pump, which was designed to handle demanding usage, is available with reservoir sizes of 15 kg (*33 lb*), 30 kg (*66 lb*) and 60 kg (*132 lb*).

Features and benefits

- Versatile, modular system; easy to retrofit to other systems
- High functional reliability due to positively driven pistons
- Fill-level monitoring (using ultrasonic sensor) with two adjustable switching points

Applications

- Automotive industry
- Rotary applications
- Assembly lines
- Printing presses

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-3033-EN, 951-170-200-EN**

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	12,3 to 74 cm³/min *0.75 to 4.5 in³/min*
Lubricant	mineral oils or environmentally compatible oils from ISO VG 46 to greases of NLGI Class 2 (consultation required for synthetic oils)
Operating temperature	-25 to +60 °C; *-13 to 140 °F*
Operating pressure	max. 400 bar, *5 800 psi*
Reservoir	15; 30 or 60 kg, *33, 66 or 132 lb*
Material	steel-sheet housing, steel, aluminum
Operating voltage	230/400 VAC
Pumping elements	1 to 6
Filling method	via filler socket G ½
Gear type	screw drive, type 1M
Gear ratio	40:1
Nominal speed	1 500 rpm
Frequency	50 Hz
Nominal output	0,37 kW
Rated current	1,09 A
Protection	IP 55-F
Connection outlet	G ½
Dimensions:	
15 kg (*33 lb*)	max. 470 × 598 × 335 mm *max. 18.5 × 23.54 × 13.18 in*
30 kg (*66 lb*)	max. 665 × 598 × 335 mm *max. 26.2 × 23.54 × 13.18 in*
60 kg (*132 lb*)	max. 1 035 × 598 × 335 mm *max. 40.74 × 23.54 × 13.18 in*
Mounting position	vertical

PUB LS/P1 17046 EN

Pump unit

FK

Order number configurator FK [ ] – [ ][ ] 1M 04 – [ ] – [ ][ ][ ] – [ ] AF 07

Product series

Version

1 = Unit for single-line centralized lubrication systems
2 = Unit for dual-line centralized lubrication systems with change-over valves
3 = Unit for dual-line centralized lubrication systems without change-over valves
4 = Unit for progressive systems

Lubricant reservoir

15 = 15 kg, *33 lb*
30 = 30 kg, *66 lb*
60 = 60 kg, *132 lb*

Monitoring

X = without lubricant level monitoring
U2 = ultrasonic sensor with 2 switching points

Drive type

1M = electrically operated

Gear ratio

04 = 40:1

Metering quantity

1 = 0.67 kg/h, *12.3 cm³/min*. **2** = 1.34 kg/h, *24.7 cm³/min*
3 = 2.00 kg/h, *37.0 cm³/min*. **4** = 2.64 kg/h, *49.3 cm³/min*
5 = 3.34 kg/h, *61.7 cm³/min*. **6** = 4.00 kg/h, *74.0 cm³/min*

Pressure-regulating valve, factory-set to

200 = 200 bar, *2 900 psi* (for progressive, single-line and dual-line centralized lubrication systems)
300 = 300 bar, *4 350 psi* (for progressive, single-line and dual-line centralized lubrication systems)

Pressure gauge

/ = without pressure gauge
MA = 1x pressure gauge
M2 = 2x pressure gauge

Filler socket/screw cap

0 = without filler socket **2** = without filler socket, with screw cap
1 = with filler socket **3** = with filler socket and screw cap

Version key

0001 = basic design
4001 = basic design with control cabinet and control unit (on request)

Motor data

AF = motor speed 1 500 rpm, rated voltage 230/400 VAC, 50 Hz

Motor protection class

07 = IP 55 F

PUB LS/P1 17046 EN

FlowMaster, electric

Product description

The high-performance FlowMaster product line is a new generation of pump technology. Compact and versatile, its unique rotary drive and modular gear set let you adjust the speed of the pump's motor to exactly fit your application. FlowMaster pumps can save the cost of air and plug in 12/24 VDC, 120/230-1ph and 230/460-3ph VAC models. The motion of pump created by the electric rotary motor is converted into reciprocating pump motion, providing an efficient lubricant flow. Because of its rotary drive, the motor can be placed directly on the pump. As a result, the pump is so compact it fits almost anywhere.

Features and benefits

- Advanced technology: brushless DC motor
- Temperature and overload protection: durable and long-lasting product that reduces machinery downtime for maintenance; less repair costs
- Totally sealed: withstands washdowns
- For use with metering devices of category 5, 6 and 7

Applications

- Mining and mineral processing, construction machinery
- Steel mills, paper mills, food and beverage

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **12938-EN**

Technical data

Function principle	electrically operated piston pump
Outlets	1
Metering quantity	max. 103 cm³/min max. *6.3 in³/min*
Lubricant	grease NLGI Grade 0, 1, 2
Operating temperature	*–40 to +65 °C; –40 to +150 °F*
Operating pressure:	
12 VDC	max. 251 bar; *3 500 psi*
24 VDC	max. 345 bar; *5 000 psi*
120 to 460 VAC	max. 345 bar; *5 000 psi*
Operating voltage	12/24 VDC; 120 to 460 VAC
Reservoir	40, 55, 180 kg; *90, 120, 400 lb*
Material	fluoroelastomer, polyurethane, steel, aluminum zinc casting
Connection outlet	$^1/_4$ NPTF
Gear ratio	17.8:1; 19:1; 34:1
Nominal power	5 to 50 and 9,5 to 100 rpm
Electric current	
12/24 VDC	1 to 7.5 A
120 VAC	1 to 4.6 A
230-460 VAC	0,5 to 2,4 A
Dimensions:	
16, 25, 28, 35, 40 kg	360×350×170 mm
35, 55, 60, 78, 90 lb	*14.17×13.78×6.7 in*
55 Kg	408×223×946 mm
120 lb	*16.07×8.78×37.24 in*
180 kg	408×223×1 111 mm
400 lb	*16.07×8.78×43.24 in*
Mounting position	vertical

PUB LS/P1 17046 EN

FlowMaster, electric

Order information

Order number	Designation	Power	Reservoir		Ratio	Metering quantity min.		max.		Operating pressure max.		Speed
			kg	*lb*		cm^3/min	*in^3/min*	cm^3/min	*in^3/min*	bar	*psi*	rpm
85479	pump, follower, bucket cover, hardware	24 VDC	28	*60*	19:1	11,5	*0.7*	103	*6.3*	170	*2 500*	9,5-100
85728	reservoir and pump	24 VDC	28	*60*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85729	reservoir and pump	24 VDC	90	*41*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85730	reservoir and pump	24 VDC	120	*55*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85736	pump	24 VDC	16	*35*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85737	pump	24 VDC	28	*60*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85738	pump	24 VDC	55/40	*120/90*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85739	pump	24 VDC	180	*400*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85740	pump	24 VDC	25	*55*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85743	pump	115 to 230 VAC	55/40	*120/90*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	95
85744	pump	115 to 230 VAC	180	*400*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	95
85745	pump	220 to 420 VAC, 50 Hz, 3 ph	55/40	*120/90*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85746	pump	220 to 420 VAC, 50 Hz, 3 ph	180	*400*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85747	pump	24 VDC	16	*35*	17.8:1	11,5	*0.7*	103	*6.3*	170	*5 000*	9,5-100
85748	pump	24 VDC	16	*35*	34:1	6,55	*0.4*	57,4	*3.5*	345	*5 000*	5-50
85749	pump	24 VDC	55/40	*120/90*	34:1	6,55	*0.4*	57,4	*3.5*	345	*5 000*	5-50
85750	pump	24 VDC	16	*35*	7:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85751	pump	24 VDC	16	*35*	7:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100
85752	pump	12 VDC	16	*35*	19:1	11,5	*0.7*	103	*6.3*	170	*2 500*	9,5-100
85753	pump	12 VDC	16	*35*	19:1	11,5	*0.7*	103	*6.3*	170	*2 500*	9,5-100
85754	pump	12 VDC	28	*60*	19:1	11,5	*0.7*	103	*6.3*	345	*5 000*	9,5-100

Accessory

Drum covers, follower assemblies and vent valve assemblies

Order number

Order number	Designation	Reservoir	
		gal	*lb*
85474	drum cover	*18*	*120*
85492	follower assembly		
85664	vent valve assembly (24 VDC)		
272180	strainer		
85475	drum cover	*55*	*400*
270982	follower assembly		
85665	vent valve assembly		
272180	strainer		
274899	24 VDC vent valve, IP 67 explosion-proof rating		
276325	24 VDC vent valve, IP 65 rating		
276903	24 VDC vent valve, IP 65 rating		
276919	hardware kit for 276903		
525-32083-1	24 VDC vent valve, IP 54 rating		

PUB LS/P1 17046 EN

SL-33

B-doser

LG-doser

Metering devices

SL-32HV

SL-1

QSL

VR

SL-11

SL-V

SL-V XL

PUB LS/P1 17046 EN

Overview of grease metering devices

Product finder

Metering device series	Category	Lubricant grease NLGI 0	1	2	Metering quantity per stroke		Operating pressure		Relief pressure max.		Adjustable metering quantity	Function type	Page
					cm^3	*in^3*	bar	*psi*	bar	*psi*			
SL-33 [1]	5	•	•	–	0,016-0,05	*0.0009-0.0030*	83-240	*1 200-3 500*	14	*200*	•	prelubrication	124
B [1]	5	•	•	–	0,02-0,50	*0.0012-0.0305*	max. 150	*max. 2 180*	5-15 [2]	*72-218* [2]	•	prelubrication	126
LG [1]	5	•	•	–	0,02-0,50	*0.0012-0.0305*	max. 150	*max. 2 180*	5-10 [2]	*72-145* [2]	•	prelubrication	128
SL-32 HV [1]	6	•	•	•	0,016-0,13	*0.0009-0.0079*	83-240	*1 200-3 500*	28	*400*	•	prelubrication	130
SL-1 [1]	6	•	•	•	0,13-1,31	*0.0079-0.0799*	127-240	*1 850-3 500*	41	*600*	•	prelubrication	131
QSL [1]	7	•	•	•	0,05-0,40	*0.0030-0.0244*	140-300	*2 030-4 350*	60	*870*	•	prelubrication	132
VR [1]	7	•	•	•	0,10-1,30	*0.0061-0.0793*	100-315	*1 450-4 570*	30 [2], 70 [2]	*435* [2], *1 000* [2]	•	prelubrication	134
SL-11	7	•	•	•	0,82-8,20	*0.0500-0.5002*	70-240	*1 000-3 500*	55	*800*	•	prelubrication	136
SL-V	7	•	•	•	0,25-1,31	*0.0152-0.0799*	128-413	*1 850-6 000*	70	*1 000*	•	prelubrication	137
SL-V XL	7	•	•	•	0,25-5,00	*0.0152-0.3050*	128-413	*1 850-6 000*	70	*1 000*	•	prelubrication	138

[1] Stainless steel or C5M available
[2] Depending on design

PUB LS/P1 17046 EN

SL-33

Product description

The series SL-33 metering devices are for single-line, high-pressure centralized lubrication systems dispensing petroleum-based lubricants with a viscosity up to NLGI 2. Output is externally adjustable. Its indicator stem permits visual check of metering device operation. May be combined in a circuit of metering devices SL-32, SL-V, SL-V XL, SL-1 and/or SL-11. Individual metering devices can be removed easily for inspection or replacement. Available in stainless steel SAE 304 for applications where environmental conditions are hazardous to carbon steel or in industries preferring stainless steel.

Features and benefits

- For use with manifolds from 1 to 7 ports to match number of lube points
- Output is externally adjustable
- Can be removed easily for inspection or replacement

Applications

- Food and beverage

Technical data

Function principle	metering device
Outlets	1 to 4
Metering quantity	0,016 to 0,049 cm^3 *0.001 to 0.003 in^3*
Lubricant	grease NLGI 0, 1
Operating temperature	max. +93 °C; *+200 °F*
Operating pressure	83 to 240 bar, *1 200 to 3 500 psi* typical: 100 bar, *1 500 psi*
Relief pressure	14 bar, *200 psi*
Materials	carbon steel, stainless steel 304
Connection main line	1/8 NPTF (F), 1/8 NPTF (M)
Connection outlet	1/8 in O.D. tube
Lubricant point	solderless pipe connection (DIN 3862) or plug connector
Dimensions	min. 41 × 62 × 43 mm max. 156 × 62 × 43 mm *min. 1.6 × 2.4 × 1.7 in* *max. 6.1 × 2.4 × 1.7 in*
Mounting position	any

Metering devices, except replacement metering devices for manifold, include compression nut and ferrule for tubing, 3,175 mm *(0.125 in)* O.D. as standard. Other outlet connectors for feed line optional; metering devices with manifolds include two mounting clips and screws; metering devices have nitrile packings. Check packing compatibility with synthetic lubricants; output with indicator cap hand-tightened is 0,016 cm^3 *(0.001 in^3)*. Maximum output is achieved with two turns at 0,016 cm^3/turn *(0.001 in^3/turn)*

PUB LS/P1 17046 EN

SL-33

SL-33

Order number [1)]	Designation	Material	Outlets	Manifold inlet
83309-1	metering device including manifold	carbon steel	1	1/8 NPTF (F)
83309-2	metering device including manifold	carbon steel	2	1/8 NPTF (F)
83309-3	metering device including manifold	carbon steel	3	1/8 NPTF (F)
83309-4	metering device including manifold	carbon steel	4	1/8 NPTF (F)
83309-5	metering device including manifold	carbon steel	5	1/8 NPTF (M)
83309-6	metering device including manifold	carbon steel	6	1/8 NPTF (F)
83900	single metering device, no manifold needed	carbon steel	1	1/8 NPTF (M)
83314	single metering device for replacement	carbon steel	–	–
83715-1	metering device including manifold	stainless steel 304	1	1/8 NPTF (F)
83715-2	metering device including manifold	stainless steel 304	2	1/8 NPTF (F)
83715-3	metering device including manifold	stainless steel 304	3	1/8 NPTF (F)
83715-4	metering device including manifold	stainless steel 304	4	1/8 NPTF (F)
83715-6	metering device including manifold	stainless steel 304	6	1/8 NPTF (F)
83715-7	metering device including manifold	stainless steel 304	7	1/8 NPTF (F)
83900-9	single metering device, no manifold needed	stainless steel 304	1	1/8 NPTF (M)
83314-9	single metering device for replacement	stainless steel 304	–	–

PUB LS/P1 17046 EN

B-doser

Product description

B-dosers are used in single-line, heavy vehicle and industrial lubrication applications. The doser group consists of a mounting rail with one or more dosers attached to it. Dosing modules and mounting rails are made of zinc-coated and yellow-passivated steel.
The dosage ranges of B-dosers are from 20 to 500 mm^3.

Features and benefits

- The output quantity of the used dosers is visible on amount of notches at the housing
- Suitable with optionally manifold sizes for 2-, 3- and 6-ports to match amout of lube points (1-6)
- Material of manifold : stainless steel AISI 303
- Suits for ø 4 and 6 mm of feedlines

Applications

- Heavy vehicles
- Heavy industrial application

Technical data

Function principle	metering device
Outlets	1 to 6
Metering quantity	0,02 to 0,50 cm^3, *0.0012 to 0.0305 in^3*
Lubricant	oil and grease NLGI 000 to 1
Operating temperature	–25 to +80 °C; *–13 to +176 °F*
Operating pressure	max. 150 bar, *2 180 psi*
Relief pressure	B1, B2=15 bar; *218 psi* B3, B4=10 bar; *145 psi* B5, B6=5 bar; *72 psi*
Materials	zinc-coated and yellow-passivated steel
Connection main line (manifold)	R $^1/_4$ for ø 8 mm or pipe ø $^1/_2$ in
Connection outlet	$^1/_8$ NPT(F) for ø 4 and 6 mm feedlines
Lubricant point	solderless pipe connection, DIN 3862
Dimensions	min. 15×90×15 mm max. 17×110×17 mm *min. 0.6×3.5×0.6 in* *max. 0.7×4.3×0.7 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **11276 EN**

PUB LS/P1 17046 EN

Metering device

B-doser

Order number configurator

B		–	G	1	/	8	–	Z	N	–		

Product series

Metering quantity

1 = 0,02 cm³, *0.0012 in³*
2 = 0,05 cm³, *0.0030 in³*
3 = 0,10 cm³, *0.0061 in³*
4 = 0,15 cm³, *0.0091 in³*
5 = 0,20 cm³, *0.0122 in³*
6 = adjustable 0,2 to 0,5 cm³; *0.012 to 0.03 in³*

Mounting rail fitting

G1/8 = G 1/8 fitting

Material

ZN = zinc-coated steel

Lubricant outlet

4 = pipe connector ø 4 mm
6 = pipe connector ø 6 mm
- = pipe connector mm
U = female thread NPT 1/8

Accessory

Manifold

Order number configurator

B	P	L	D	–		–	

Mounting rail, baseplate

Lubrication system type, LD

Mounting rail size

02 = 2-place mounting rail
04 = 4-place mounting rail
06 = 6-place mounting rail
0202 = 4-place mounting rail, 2 places on opposite sides
0303 = 6-place mounting rail, 3 places on opposite sides

Material mounting rail

ZN = Zinc-coated and yellow-passivated steel

Product description

For B-doser metering devices, manifolds utilized are for 1 to 6 screw-in points with thread G 1/8 for O-ring sealing . Mainline fitting for G 1/4 for ø 8 mm or pipe ø 1/2 in. Normal profile and opposite-side profile design manifolds are available in zinc-coated and yellow-passivated steel. Various designs of main line and feed line connection can be selected by order code.

PUB LS/P1 17046 EN

LG-doser

Product description

LG-dosers are used in single-line lubrication applications. The doser group consists of a mounting rail with one or more dosers attached to it. Dosing modules and mounting rails are made of stainless steel.

Features and benefits

- Two adjustable doser sizes are selectable by the used output quantity
- Manifold material: stainless steel AISI 303
- Compatible with screw-in type fittings for dosers and manifolds
- Suitable for feed line ø 4 and ø 6 mm
- Robust and reliable

Applications

- Food and beverage

Technical data

Function principle	metering device
Outlets	1 to 6
Metering quantity	0,02 to 0,50 cm^3; *0.0012 to 0.0305 in^3*
Lubricant	oil and grease NLGI 000 to 1
Operating temperature	–25 to +80 °C; *–13 to +176 °F*
Operating pressure	max. 150 bar, *2 180 psi*
Relief pressure	LG001=10 bar; *145 psi*
	LG002=5 bar; *72 psi*
Materials	stainless steel AISI 304
Connection main line	manifold: R $^1/_4$ in
Connection outlet	pipe connector ø 4 and 6 mm
	or pipe ø $^1/_4$ in
Connection lubricant point	solderless pipe connection (DIN 3862)
Material	stainless steel AISI 303
Dimensions	min. 15×112×15 mm
	max. 17×110×17 mm
	min. 0.6×4.4×0.6 in
	max. 0.7×4.3×0.7 in
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **11276 EN**

PUB LS/P1 17046 EN

Metering device

LG-doser

Order number configurator

L G – [ ] [ ] [ ] – [ ] – [ ] – [ ]

Product series

Doser size

001 = 0,02 to 0,20 cm³
0.0012 to 0.0122 in³
002 = 0,20 to 0,50 cm³
0.0122 to 0.0305 in³

Material

S = stainless steel AISI 304

Lubricant outlet

4 = pipe connector ø 4 mm
6 = pipe connector ø 6 mm
U = lubrication pipe ø $^1/_4$ in

Lubricant outlet

– = pipe connector mm
U = lubrication pipe ø $^1/_4$ in

Accessory

Manifold

Order number configurator

B P L D – [ ] – S

Mounting rail, baseplate

Lubrication system type, LD

Mounting rail size

02 = 2-place mounting rail
04 = 4-place mounting rail
06 = 6-place mounting rail
0303 = 6-place mounting rail, 3 places on opposite sides

Mounting rail material

S = stainless steel AISI 303

Product description

For LG-doser metering devices, manifolds utilized are for 1 to 6 screw-in points with thread G $^1/_8$ for O-ring sealing . Normal profile and opposite-side profile design manifolds are available in stainless steel AISI 303. Various designs of main line and feed line connections can be selected by order code.

PUB LS/P1 17046 EN

SL-32HV

Product description

The series SL-32HV (high venting) metering devices are for single-line, high-pressure centralized lubrication systems dispensing petroleum-based lubricants with a viscosity up to NLGI 2 (refer to Design Guide). Output is externally adjustable. The indicator stem permits visual check of metering device operation. Individual metering devices can be removed easily for inspection or replacement.

Features and benefits

- Shipped with manifolds from 1 to 10 ports to match number of lube points
- Output is externally adjustable
- Indicator stem permits visual check of operation
- Can be removed easily for inspection or replacement
- Available in stainless steel SAE 304

Applications

- Food and beverage
- Industrial automation
- Machine tools
- Oil and gas
- Steel industry
- Pulp and paper
- Marine and forestry
- Construction
- Wind energy
- Mobile on-road

Technical data

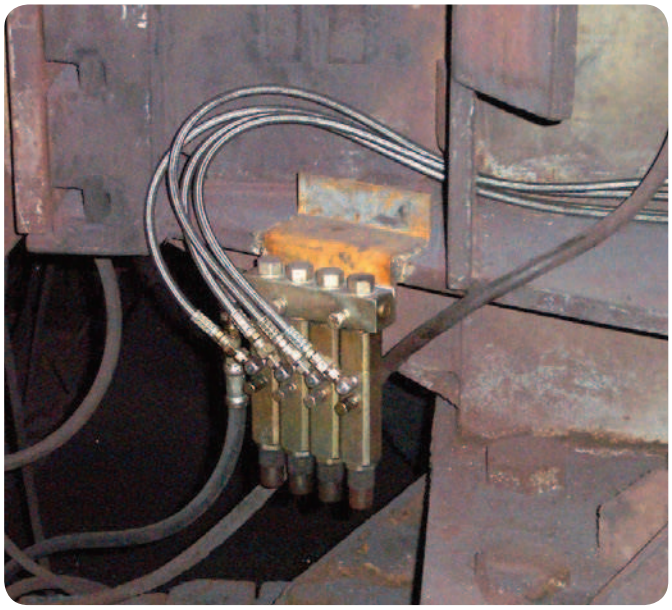
Function principle	metering device
Outlets	1 to 10
Metering quantity	0,016 to 0,131 cm^3
	0.001 to 0.008 in^3
Lubricant	grease NLGI 0, 1, 2
Operating temperature	max. +93 °C; *+200 °F*
Operating pressure	83 to 240 bar, *1 200 to 3 500 psi*
Relief pressure	28 bar, *400 psi*
Material	carbon steel, nitrile packings
Connection main line	¼ NPTF (F), ¼ NPTF (M)
Connection outlet	⅛ in O.D. tube
Lubricant point	solderless pipe connection (DIN 3862)
Dimensions	min. 44,5 × 93 × 52 mm
	max. 215 × 93 × 52 mm
	min. 1.8 × 3.6 × 2.1 in
	max. 8.5 × 3.6 × 2.1 in
Mounting position	any

SL-32HV

Order number	Designation	Outlet
83336HV-1	metering device	1
83336HV-2	metering device	2
83336HV-3	metering device	3
83336HV-4	metering device	4
83336HV-5	metering device	5
83336HV-6	metering device	6
83336HV-7	metering device	7
83336HV-8	metering device	8
83336HV-9	metering device	9
83336HV-10	metering device	10
83338HV	metering device, single, no manifold	1
83337HV	metering device, single replacement	–

PUB LS/P1 17046 EN

SL-1



Product description

The series SL-1 metering devices are for single-line, high-pressure centralized lubrication systems dispensing lubricants compatible with flouroelastomer packings and viscosity up to NLGI 2. Output is externally adjustable. An indicator stem permits visual check of metering device operation. Individual metering devices can be eremoved easily for inspection or replacement. Available in stainless steel SAE 316, for applications where environmental conditions are hazardous to carbon steel or in industries preferring stainless steel.

Features and benefits

- Shipped with manifolds from 1 to 6 ports to match number of lube points
- Output is externally adjustable
- Each indicator stem permits visual check of injector operation
- Individual metering devices can be removed easily for inspection or replacement
- Includes fitting for feed lines via alternate outlet port
- Available in stainless steel SAE 316

Applications

- Mining and mineral processing
- Construction machinery
- Steel/heavy industry

Technical data

Function principle	metering device
Outlets	1 to 6
Metering quantity	0,131 to 1,31 cm³; *0.008 to 0.080 in³*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	-26 to +176 °C; *-15 to +350 °F*
Operating pressure	127 to 240 bar, *1 850 to 3 500 psi*
Relief pressure	41 bar, *600 psi*
Materials	carbon steel, stainless steel 316
Connection main line	³/₈ NPTF (F)
Connection outlet	¹/₈ NPTF (F)
Lubricant point	solderless pipe connection
Dimensions	min. 63×179,4×52,4 mm max. 203×179,4×52,4 mm *min. 2.5×7.0×2.0 in* *max. 8.0×7.0×2.0 in*
Mounting position	any

SL-1

Order number	Designation	Outlets
81770-1	metering device	1
81770-2	metering device	2
81770-3	metering device	3
81770-4	metering device	4
81770-5	metering device	5
81770-6	metering device	6

PUB LS/P1 17046 EN

QSL

Product description

QSL metering devices are designed for 300 bar pressure. As a result, NLGI 2 greases can be pumped at temperatures below zero without problems. All metering devices operate independently of each other. This means that in the event of a blockage or fault of one metering device, all other metering devices will continue to supply lubricant. A control pin on top shows proper function of each metring device.

Features and benefits

- Suitable for use with manifolds from 1 to 6 ports to match number of lube points; must be ordered separately
- Corrosion-resistant, black-cromated or nickel-plated surface
- Each indicator stem permits visual check of operation
- Can be removed easily for inspection or replacement
- Controlled via main line

Applications

- Renewable energy
- Construction machinery
- Mining and mineral processing
- Compact and medium-sized machines and industrial applications
- Commercial vehicles

Technical data

Function principle	metering device
Outlets	1 to 6
Metering quantity	0,05 to 0,4 cm^3, *0.003 to 0.024 in^3*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–40 to +70 °C; *–40 to +158 °F*
Operating pressure	140 to 300 bar, *2 030 to 4 350 psi*
Relief pressure	≤ 60 bar, *≤ 870 psi*
Materials	steel, black cromated, polyurethane
Connection main line	G $^3/_8$ for steel pipe 16 × 2 mm; *0.63 × 0.08 in*
Connection outlet	G $^1/_8$ for tubes/hoses 4,1 × 2,3 mm; *0.16 × 0.09 in*
Lubricant point	solderless pipe connection, DIN 3862 or SKF quick connector
Dimensions	length: max. 160 mm, *6.3 in* ø 28 mm; *1.1 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **PUB LS/P2 12735 EN**

PUB LS/P1 17046 EN

QSL

OSL

Order number [1]	Designation Injectors	Metering quantity per stroke		Ring color
		cm³	*in³*	
554-32810-1	QSL 0,05	0,05	*0.00305*	blue
554-32811-1	QSL 0,1	0,10	*0.00610*	white
554-32812-1	QSL 0,2	0,20	*0.01220*	yellow
554-32813-1	QSL 0,3	0,30	*0.01830*	red
554-32814-1	QSL 0,4	0,40	*0.02440*	green

[1] In the case of backpressures in lubrication point lines of ≥ 100 bar or if several injectors are combined to one lubrication point, use check valves, order number 223-12289-7.

Accessory

Manifold, check valves and closure kit

Product description

For QLS metering devices, manifolds utilized are for 1 to 6 push-in points tightened by a hollow screw with thread G $^3/_8$ for O-ring sealing. Normal profile design manifolds are available in steel. The main line connection G $^3/_8$ is for steel pipe 16 × 2 mm *(0.63 × 0.08 in)*. The lubrication connection is for plastic tube 4,1 × 2,3 mm; *(0.16 × 0.09 in)*.

Manifolds [1]

Order number	Designation	Dimensions fixing hole		length, total	
		mm	*in*	mm	*in*
454-71505-1	divider bar, 2-fold	74	*2.91*	130	*5.11*
454-71506-1	divider bar, 3-fold	42	*1.65*	130	*5.11*
454-71507-1	divider bar, 4-fold	84	*3.30*	172	*6.77*
454-71508-1	divider bar, 5-fold	126	*4.96*	214	*8.42*
454-71509-1	divider bar, 6-fold	84 [1]	*3.30*	256	*10.07*

[1] Instead of the planned injectors a divider bar can also be equipped with a closure kit 5, order number: **554-34387-1**
[2] 3 bores

Check valves and closure kit

Order number	Designation
223-12289-7	check valves for connection at lubrication point outlets
554-34387-1	closure kit 5

PUB LS/P1 17046 EN

VR

Product description

Product series VR are 1- to 12-port prelubrication metering devices for single-line, centralized lubrication systems for fluid grease and grease up to NLGI 2. These metering devices are characterized by an innovative, compact and sturdy design with SKF Quick Connector systems.

Features and benefits

- Innovative, extremely compact design
- Optional metering devices for 1 to 12 ports to match number of lubrication points
- Metering nipples with indicator pin for visual monitoring of each lubrication point
- Optional push-in type or screw-in type fittings for feed line or main line connections are selectable
- Easy metering adjustment by replacing the metering nipples
- Black anodized surface for optimized corrosion protection
- Suitable for corrosivity category C3 and C5 per DIN EN ISO 12944 and certified by Germanischer Loyd
- High functional reliability when using stiff greases at low working temperatures

Applications

- Onshore and offshore wind energy systems
- Construction machinery
- Steel industry
- Heavy industry
- General mechanical engineering applications

Technical data

Function principle	metering device
Outlets	*1 to 12*
Metering quantity	non-adjustable: 0,1 to 1,3 cm^3/min *0.006 to 0.079 in^3/ min* *adjustable:* 0,1 to 1,1 cm^3/min *0.006 to 0.067 in^3/ min*
Lubricant	fluid greases and grease NLGI 0, 1, 2
Operating temperature	–25 to +80 °C; *–13 to +176 °F*
Operating pressure	100 to 315 bar; *1 450 to 4 570 psi*
Relief pressure	30 or 70 bar; *435 or 1 015 psi*
Materials	anodized aluminum, stainless steel, FKM (FPM)
Connection main line	G $^1/_4$ for pipes 4 or 6 mm, *0.16 or 0.24 in*
Connection outlet	G $^1/_8$ for pipes 4 or 6 mm, *0.16 or 0.24 in*
Lubricant point	solderless pipe connection (DIN 3862)
Dimensions	depending on model: min. 97 × 130 × 54 mm; max. 281 × 121 × 119 mm; *min. 3.82 × 5.12 × 2.13 in* *max. 11.06 × 4.76 × 4.68 in*
Mounting position	any

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-5001-EN, 951-230-007**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Metering device

VR

Order code

V	R													
					1	2	3	4	5	6	7	8	9	10	11	12		

Product series

Number of metering points

01 = 1 **07** = 7
02 = 2 **08** = 8
03 = 3 **09** = 9
04 = 4 **10** = 10
05 = 5 **11** = 11
06 = 6 **12** = 12

Code letter

Metering quantity letter
(**0** = not present, e.g. for VR06 assign 0 for metering points 7–12)

Code for fittings for main line connection

Design for fluid grease and grease

Design code letter	A	B	C	D	E	F	G	H	N	P
Max. relief pressure [bar]	30	70	30	70	30	70	30	70	30	70
Secondary line connection	G 1/8	G 1/8	VS	VS	VS	VS	G 1/8	G 1/8	SRV[1)]	SRV[1)]
Secondary line ø[mm]	–	–	4	4	6	6	–	–	6	6
Corrosivity category [2)]	C3	C3	C3	C3	C3	C3	C5-M	C5-M	C5-M	C5-M

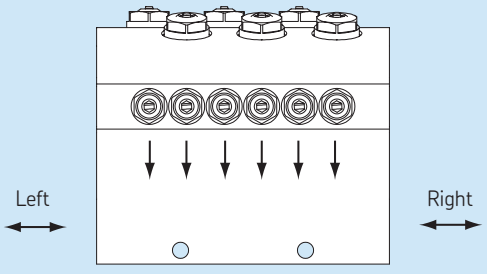
[1)] SRV = cutting-sleeve screw union, see **page 2**
[2)] Corrosivity categories per DIN EN ISO 12944 (certified by Germanischer Lloyd)

Metering

Metering quantity letter	A [1)]	B [1)]	D [1)]	F [1)]	H [1)]	J [1)]	M [1)]	R [2)]	X
Metering [cm³]	0,1	0,2	0,4	0,6	0,8	1	1,3	0,1–1,1	Closed

[1)] Fixed metering with indicator pin for visual function monitoring
[2)] Adjustable metering with indicator pin for visual function monitoring

Order example



VR06FFFFFFF000000Z
- Single-line distributor, 6-port
- Relief pressure max. 70 bar
- Lubrication point line connection using SKF plug connector for pipe ø 6 mm
- Metering quantity 1 – 6 = 0,6 cm³
- Without fitting for main line connection (G 1/4 thread)

Fittings for main line connection

Left fitting	Right fitting	ø Main line [mm]	Code
Cutting-sleeve screw union*	Cutting-sleeve screw union*	8 10	**A** **G**
Cutting-sleeve screw union*	Closed	8 10	**B** **H**
Closed	Cutting-sleeve screw union	8 10	**C** **J**
EO-2 screw union	EO-2 screw union	8 10	**D** **K**
EO-2 screw union	Closed	8 10	**E** **L**
Closed	EO-2 screw union	8 10	**F** **M**
G 1/4	G 1/4	–	**Z**

PUB LS/P1 17046 EN

SL-11

Product description

Series SL-11 metering devices are for single-line, high-pressure centralized lubrication systems dispensing lubricants compatible with flouroelastomer packings and viscosity up to NLGI 2. Output is externally adjustable. An indicator stem permits visual check of metering device operation. Available only as single unit with 1/2 inch NPTF (F) inlet.

Features and benefits

- Output is externally adjustable
- Indicator stem permits visual check of injector operation
- May be combined in a circuit of metering devices SL-32, SL-33, SL-V XL, SL-V and/or SL-1
- Can be removed easily for inspection or replacement
- Includes fitting for filling feed lines via alternate outlet port
- Available in stainless steel SAE 316

Applications

- Construction machinery
- Mining and mineral processing
- Steel industry
- Heavy industry

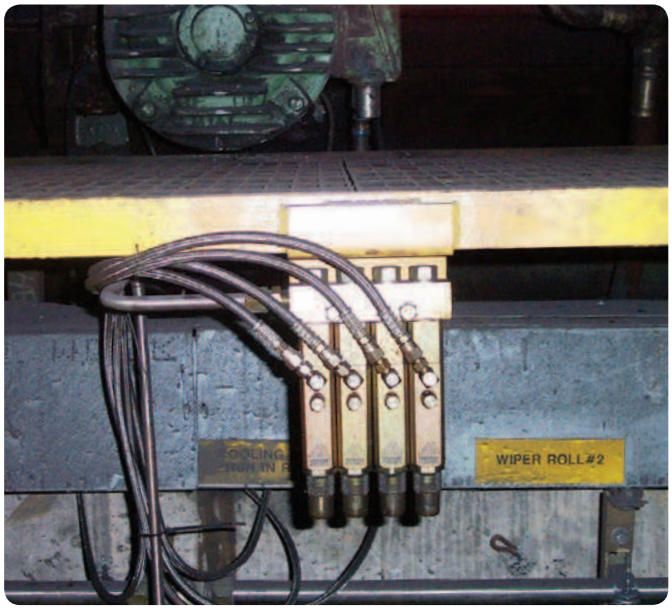
Technical data

Order number	**85497**
Function principle	metering device
Outlets	1
Metering quantity	0,82 to 8,2 cm^3; *0.050 to 0.500 in^3*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	-40 to +93 °C; *-40 to +200 °F*
Operating pressure	70 to 240 bar, *1 000 to 3 500 psi*
Relief pressure	55 bar, *800 psi*
Materials	carbon steel, FKM, PTFE
Connection main line	1/2 NPTF (F)
Connection outlet	1/4 NPTF (F)
Lubricant point	solderless pipe connection (DIN 3862) or plug connector
Dimensions	73 × 241 mm *2.87 × 9.48 in*
Mounting position	any

Metering devices have flouroelastomer packings. Check packing compatibility with synthetic lubricants; metering devices supplied with fitting for filling feed line via alternate outlet port Output with adjustment screw hand-tightened is 0,82 cm^3 *(0.05 in^3)*; maximum output is achieved with 11 1/2 turns at 0,66 cm^3/turn *(0.04 in^3/turn)*

PUB LS/P1 17046 EN

SL-V



Product description

Series SL-V metering devices are for single-line, high-pressure centralized lubrication systems dispensing lubricants compatible with polyurethane seals up to NLGI 2. Output is externally adjustable. An indicator stem permits visual check of metering device operation. Individual metering devices can be removed easily for inspection or replacement. Each SL-V metering device includes a clear, polycarbonate protective cap.

Features and benefits

- Shipped with manifolds from 1 to 6 ports
- Output is externally adjustable
- Clear, polycarbonate protected cap over indicator stem permits visual check of operation
- Can be removed easily for inspection or replacement
- Available in carbon steel or stainless steel SAE 304
- Output setting system by a set of color-coded sleeves

Applications

- Construction machinery
- Mining and mineral processing
- Steel industry

Technical data

Function principle	metering device
Outlets	1 to 6
Metering quantity	0,25 to 1,31 cm^3 *0.015 to 0.08 in^3*
Lubricant	greases NLGI 0, 1, 2
Operating temperature	max. +82 °C; +180 °F
Operating pressure	128 to 413 bar, *1 850 to 6 000 psi* typical: 172 bar, *2 500 psi*
Relief pressure	70 bar, *1 000 psi*
Materials	carbon steel
Connection main line	3/8 NPTF (F)
Connection outlet	1/8 NPTF (F)
Dimensions	min. 63 × 222 × 35 mm max. 203 × 222 × 35 mm *min. 2.5 × 8.7 × 1.4 in* *max. 6.1 × 8.7 × 1.4 in*
Mounting position	any

Metering device manifolds have 10,3 mm *(0.4 in)* dia. mounting holes for 9,5 mm *(0.375 in)* bolt; metering devices have polyurethane seals; check compatibility with synthetic lubricants; metering devices include fitting for filling feedlines via alternate outlet port; output with adjustment screw hand-tightened is 0,246 cm^3 *(0.015 in^3)*; maximum output is achieved with five turns at 0,229 cm^3/turn *(0.014 in^3/turn)*

SL-V

Order number	Outlets	Designation
85770-1	1	One metering device manifold
85770-2	2	Two metering device manifold
85770-3	3	Three metering device manifold
85770-4	4	Four metering device manifold
85770-5	5	Five metering device manifold
85770-6	6	Six metering device manifold
85771	–	Replacement for manifold metering device
85772	–	Single metering device, no manifold, 3/8 NPTF (M)

PUB LS/P1 17046 EN

SL-V XL

Product description

Series SL-V XL high-output metering devices are for single-line, high-pressure centralized lubrication systems dispensing lubricants compatible with polyurethane seals up to NLGI 2. Output is externally adjustable. An indicator stem permits visual check of metering device operation. Individual metering devices can be removed easily for inspection or replacement. Two SL-V XL metering devices are required to replace one SL-11 metering device. Each SL-V XL metering device includes a clear, polycarbonate protective cap.

Features and benefits

- Suitable for use with manifolds from 1 to 6 ports to match number of lubrication points
- Output is externally adjustable
- Includes a clear, polycarbonate protective cap over indicator stem that permits visual check of operation
- Can be removed easily for inspection or replacement
- Includes fitting for filling feed lines via alternate outlet port
- Available in carbon steel or stainless steel SAE 304

Applications

- Construction machinery
- Mining and mineral processing
- Heavy industry

Technical data

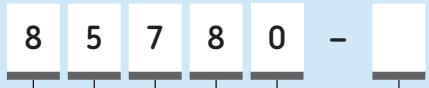
Function principle	metering device
Outlets	1 to 6
Metering quantity	0,25 to 5,00 cm^3, *0.015 to 0.305 in^3*
Lubricant	grease NLGI 0, 1, 2
Operating temperature	–40 to +82 °C; *–40 to +180 °F*
Operating pressure	128 to 413 bar; *1 850 to 6 000 psi*
Relief pressure	70 bar, *1 000 psi*
Materials	carbon steel
Connection main line	3/8 NPTF (F)
Connection outlet	1/8 NPTF (F)
Lubricant point	solderless pipe connection (DIN 3862) or plug connector
Dimensions	min. 63 × 284 × 35 mm max. 203 × 284 × 35 mm *min. 2.5 × 11.2 × 1.4 in* *max. 6.1 × 11.2 × 1.4 in*
Mounting position	any

Metering device manifolds have 10,3 mm *(0.4 in)* dia. mounting holes for 9,5 mm *(0.375 in)* bolt; metering devices have polyurethane seals. Check compatibility with synthetic lubricants; metering devices include fitting for filling feed lines via alternate outlet port; output with adjustment screw hand-tightened is 0,246 cm^3 *(0.015 in^3)*; maximum output is achieved with 20.5 turns at 0,229 cm^3/turn *(0.014 in^3/turn)*.

PUB LS/P1 17046 EN

SL-V XL

Order number configurator



Product series, carbon steel

85781 = replacement for manifold metering device
85782 = single metering device, no manifold; 9,5 mm NPTF (M), *0.375 NPTF (M)* inlet

Outlets

1 = 1
2 = 2
3 = 3
4 = 4
5 = 5
6 = 6

PUB LS/P1 17046 EN

EXZT/IGZ

IG502-2-E

LC502

ST-1440

ST-1240-GRAPH

ST-1100i

ST-102

84501

84015

85520

85535

Accessories

Controllers

LMC 101

EOT-1/2

LMC 301

LMC 2

85525

85208 / 85209

HCC

Flow sensor

PUB LS/P1 17046 EN

Overview of controllers

Controllers

Product	Operating temperature		Voltage		Adjustable	Level monitoring	Page
	°C	°F	VDC	VAC			
EXZT2A02	0 to 60	*+32 to 140*	12/24	120	•	–	142
EXZT2A05	0 to 60	*+32 to 140*	12/24	120	•	•	142
EXZT2A07	0 to 60	*+32 to 140*	12/24	120	•	•	142
IGZ36-20	0 to 60	*+32 to 140*	12/24	120	•	–	142
IGZ36-20-S6	0 to 60	*+32 to 140*	12/24	120	•	•	142
IGZ38-30	0 to 60	*+32 to 140*	12/24	120	–	•	142
IGZ38-30-S1	0 to 60	*+32 to 140*	12/24	120	–	•	142
IGZ51-20-S3	0 to 60	*+32 to 140*	12/24	120	–	–	142
IG502-2-E	-25 to +75	*-13 to +167*	12/24	–	•	•	144
LC502	0 to 60	*+32 to 140*	12/24	–	•	•	145
ST-1440	0 to 60	*+32 to 140*	–	93–264	•	•	146
ST-1340	0 to 60	*+32 to 140*	–	93–264	•	•	146
ST-1240-GRAPH	0 to 50	*+32 to 140*	–	93–264	•	•	147
ST-1240-GRAPH-4	0 to 50	*+32 to 140*	–	93–264	•	•	147
ST-1100i	-20 to +60	*-4 to +142*	–	93-264	•	•	148
ST-102	-40 to +80	*-40 to +176*	12/24	–	•	•	149
ST-102P	-40 to +80	*-40 to +176*	12/24	–	•	•	150
84501	-18 to +54	*0 to +130*	–	120/230	•	–	151
84015	-18 to +55	*0 to +131*	12/24	–	•	–	152
85520	-25 to +65	*-13 to +150*	–	120	•	•	153
85535	-40 to +65	*-40 to +150*	12/24	–	•	•	154
LMC 101	-40 to +65	*-40 to +150*	12/24	–	•	•	156
EOT-1	-25 to +70	*-13 to +158*	12/24	–	•	•	157
EOT-2	-25 to +70	*-13 to +158*	12/24	–	•	•	157
LMC 301	-40 to +70	*-40 to +158*	24	90–264	•	•	158
LMC 2	-10 to +70	*+14 to 158*	12/24	230	•	•	159

Controller kits

Product	Designation	Operating temperature		Voltage		Adjustable	Level monitoring	Page
		°C	°F	VDC	VAC			
85525	Kit: controller and pressure sensor	-25 to +65	*-13 to +150*	–	120	•	•	158
85208	Kit: controller, pressure sensor, solenoid valve	0 to +50	*+32 to +122*	–	110/120	•	•	159
85209	Kit: controller, pressure sensor, solenoid valve	0 to +50	*+32 to +122*	–	220	•	•	159

Connection and flow controllers

Product	Designation	Operating temperature		Voltage		Page
		°C	°F	VDC	VAC	
HCC	Hose tear-off control	-25 to +70	*-58 to +158*	12/24	–	160
Flow sensor	Flow sensor	+10 to +50	*50 to 122*	12/24	–	161

PUB LS/P1 17046 EN

EXZT/IGZ

Product description

Universal electronic control and monitoring devices are used in single- line and progressive lubrication systems for stationary industrial applications, installed in a switching cabinet or internally in a compact lubrication unit. Two different versions are required: +471 for 100 to 120 VAC and 200 to 240 VAC; and +472 for 24 VDC and 24 VAC. The universal devices can be used as time-dependent or pulse-dependent controllers. The main task is to initiate a
lubrication cycle after a set time. The devices also monitor the piston strokes and run the pump during the lubrication time in clogged operation. All devices have custom-built functions integrated and can be configured to meet the requirements of the application. Mentioned device models must be selected based on their special function configuration and additional features according to the user manual.

Features and benefits

- Easy installation via top hat rail mounting
- One unit for different operating modes such as timer, counter and monitoring functions; other features are adjustable
- Pulse generator/counter with adjustable interval time
- Time operation or machine clogged operation
- Pump run time limitation
- Monitoring of pressure build-up, contact (NO)
- Low-level control and EEPROM as an additional feature

Applications

- All single-line lubrication systems for stationary industrial applications

Technical data

Function principle	Universal electronic control and monitoring device
Operating temperature	0 to 60 °C *+32 to 140 °F*
Output voltage	24 VDC +10% /-15%
Connector for class	II
Protection class	IP 30, clamps IP 20
Dimensions	70×75×110 mm *2.7×3×4.3 in*

Version + 471

Input voltage	100 – 120 VAC; 200 – 240 VAC
Input current rated	70 mA / 35 mA
Power input	8 W
Frequency	50 – 60 Hz
Fuse	max. 6.3 A
Switching current	max. 5 A
Input voltage sensors	24 VDC

Version + 472

Input voltage	20 to 24 VDC; 20 to 24 VAC
Input current rated	75 mA at max. fan-out of 250 mA
Power input	5 W
Frequency	DC or 50 – 60 Hz
Fuse	max. 6.3 A
Switching current	max. 5 A
Input voltage sensors	24 VDC

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1700-4-EN**

PUB LS/P1 17046 EN

EXZT/IGZ

Models

Order number	Input voltage	Adjustable monitoring time	Adjustable pump delay time	Monitoring of pressure relief, contact	Lubricant level monitoring, contact	Interval time extension	Early lubricant level warning, contact	Pulse monitoring	Activatable failure memory EEPROM
EXZT2A02+471	120 VDC	•	•	NO [1]	NO [1]	•	–	–	–
EXZT2A02+472	24 VAC	•	•	NO [1]	NO [1]	•	–	–	–
EXZT2A05+471	120 VDC	•	•	–	NC [2]	•	–	•	–
EXZT2A05+472	24 VAC	•	•	–	NC [2]	•	–	•	–
EXZT2A07+471	120 VDC	•	•	–	NC [2]	•	•	–	–
EXZT2A07+472	24 VAC	•	•	–	NC [2]	•	•	–	–
IGZ36-20+471	120 VDC	•	•	NC [2]	NO [1]	–	–	–	–
IGZ36-20+472	24 VAC	•	•	NC [2]	NO [1]	–	–	–	–
IGZ36-20-S6+471	120 VDC	•	•	NC [2]	NC [2]	–	–	–	–
IGZ36-20-S6+472	24 VDC	•	•	NC [2]	NC [2]	–	–	–	–
IGZ38-30+471	120 VDC	–	–	–	NC [2]	–	–	–	–
IGZ38-30+472	24 VDC	–	–	–	NC [2]	–	–	–	–
IGZ38-30-S1+471	120 VDC	–	–	–	NO [1]	–	–	–	–
IGZ38-30-S1+472	24 VDC	–	–	–	NO [1]	–	–	–	–
IGZ51-20-S3+471	120 VDC	•	•	NC [2]	NO [1]	•	–	–	•
IGZ51-20-S3+472	24 VDC	•	•	NC [2]	NO [1]	•	–	–	•

[1] NO = contact normally open
[2] NC = contact normally closed

PUB LS/P1 17046 EN

IG502-2-E

Product description

The IG 502-2-E is a universal control and monitoring device for centralized lubrication in single-line and progressive lubrication systems. The compact device is equipped with a display panel for parameter settings and function monitoring. Different operating modes such as timer, counter and monitoring functions for pressure and cycle switches are programmable in their individual functions. The display panel is protected against moisture and dirt. A red LED shows faults as a collective message. Two integrated electronic counters are used for permanent operation control and failed hours, where pump could not operate properly. In both counters, saved times cannot be deleted. The working-hour meter summarizes times when supply voltage at the device is switched on. The device has its own database independent of supply voltage for saving configuration and parameters. To avoid environmental influences, it is advisible to install the device inside of a cabin.

Features and benefits

- Universal control and monitoring device
- Compact design
- Easy to handle operations
- Different operating modes such as timer, counter and monitoring functions
- Red LED for failure indication and cause
- Integrated counters for permanent operation, failed hours and working-hour meter show complete life cycle of system

Applications

- Commercial vehicles
- Construction machinery
- Agriculture

Technical data

Order number	**IG502-2-E**
Wire set	**997-000-185**
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
Protection class	IP 20 DIN 40050, plug IP 00
Temperature range	–25 to +75 °C; *-13 to +167 °F*
Storage temperature	–40 to +75 °C; *-40 to +167 °F*
Fuse protection	max. 5 A
Adjustable pause time	0,1 h to 99,9 h
Adjustable pump running time	0,1 min to 99,9 min
Adjustable pulse time	1 to 999
Operation hours storage	0 to 99999,9 h
Operation- failed hours storage	0 to 99999,9 h
Dimensions	138×65×40 mm *5.43×2.56×1.57 in*

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **951-180-002 EN**

PUB LS/P1 17046 EN

LC502

Product description

The compact LC502 is an all-purpose controller suitable for single-line, progressive and dual-line systems. Supplied as a separate unit or already integrated in the pump, this versatile controller includes a basic power switch, motor circuit breaker (230/400 VAC types) start button and fault indicator light. The unit's user-friendly display enables input of customer-specific settings in up to seven languages (optional). Integration of the LC502, configuration of technical ratings and characteristics depend on the customer's specific application.

Features and benefits

- Easy-to-operate, programmable controller
- System monitoring and error detection/failure remedy
- Integrated temperature-overload safety device
- Up to three lubrication circuits can be controlled or monitored separately

Applications integrated in the pump

- Construction machinery
- Special-purpose machinery
- Commercial vehicles
- Fork lifts

Applications stand alone

- Special-purpose machinery
- General industry
- Cement and steel plants
- Food and beverage

Technical data

Order number	**LC502**
Function principle	controller
Operating temperature	0 to +60 °C; *+32 to 140 °F*
Operating voltage	
24 VDC	0,16 ... 0,25 kW
230 VAC	0,15 ... 0.85 kW
400 VAC 3-phase	0,15 ... 0.85 kW
Operating voltage frequency	50 to 60 Hz
Electrical connectors	4
Electrical output connectors	4
Input voltage	12 or 24 VDC
Protection class	IP 54
Off time (cycle)	8 h
On time (pumping)	1 h
Fuses	
F1: 400 VAC and 203 VAC	5 × 20 mm / 4 A
F2: 400 VAC, 230 VAC 24 VDC	5 × 20 mm / 2 A
Cycle settings dependent on	time, machine pulse pump revolutions
Possible low-level controls: W1	Wipe /dynamic
Possible low-level controls: W2	Wipe /capacitive / static Analog
Lubrication circuits	max. 2
Rotation	10 (for industry and vehicle pumps) corresponds to 10 agitator rotations
Dimensions, for control cubicle	400 × 400 × 600 mm *15.75 × 15.75 × 23.62 in*
Mounting position	vertical, cable terminals pointing downwards

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **950-180-004-EN**

PUB LS/P1 17046 EN

ST–1340 and ST–1440

Product description

SKF ST-1340 and ST-1440 CPUs are microprocessor-based control centres for use in single-line lubrication systems, as well as dual-line and progressive lubrication systems. Featuring an alphanumeric keypad and display, the two units are identical with the exception of case size and maximum number of lubrication channels served. The ST–1340 controls up to four separate lubrication channels, while the ST–1440 controls up to 14 channels, each having independent lubrication parameters and/or lubricants. The lubrication system is expandable by installing new channel modules, and configuration is determined in the field by the user. Pressure switches and transmitters or piston detectors can be used in all channels.

Features and benefits

- Versatile and durable
- Modular units provide easy system modification
- Automatic pump change (Dualset)
- Grease-spraying control with air monitoring
- Compatible with SKF Doser monitor
- Works with SKF Online 1440 control software
- Program status and lubrication history data are protected by a back-up battery

Technical data

Function principle	control centre
Operating temperature	0 to +60 °C; *+32 to +140 °F*
Lubricant	oil and grease
Lubricant channels	ST–1340: up to 4 ST–1440: up to 14
Operating voltage	93 to 132 VAC, 186 to 264 VAC
Operating voltage frequency	47 to 63 Hz
Operating current	5,4 A/115 VAC, 2,2 A/ 230 VAC
Control voltage	24 VDC, ± 10%
Overload protection	automatic fuse, 6 A
Cable connection	screw terminals for 2,5 mm^2 wires
Protection class	IP 65
Interface	alphanumeric keypad and display, 4 × 20 characters, RS-422 Modbus port
Dimensions:	
ST-1340	600 × 380 × 210 mm *23.6 × 14.9 × 8.3 in*
ST-1440	600 × 600 × 210 mm *23.6 × 23.6 × 8.3 in*
Options	SMS control feature
Off time (cycle)	1 min to 999 h 59 min
On time (pumping)	0 s to 9 999 s
Mounting positions	vertical

ST–1340 and ST–1440

Order number	Designation
VGEV 12380695 **VGEV 12501254**	ST–1340 control centre 1 channel module
VGEV 12380700 **VGEV 12501254**	ST–1440 control centre 4 channel module

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
PUB LS/P8 13166 EN

PUB LS/P1 17046 EN

ST-1240-GRAPH/-4

Product description

The SKF ST-1240-GRAPH is a two-channel lubrication control centre that supports any combination of single-line, dual-line and progressive lubrication systems. The lubrication channels can be zones, separated by shut-off valves, or complete lubrication systems with separate pumping centres and varying lubricants. The ST-1240 control centre enables configuration in the field via an alphanumeric touchscreen display.

Features and benefits

- Automatic pump change (Dualset)
- Grease-spraying control with air monitoring
- IP 65 protection rating
- Compatible with SKF Doser monitor
- Works with SKF Online 1440 control software

Applications

- Large lubrication systems where dispensing of lubricant by zones or complete lubrication systems with separate pumping centres and varying lubricants are requested

Technical data

Function principle	control centre
Operating temperature	0 to +50 °C; *+32 to 122 °F*
Lubricant	oil and grease
Lubricant channels	2; 4
Operating voltage	93 to 132 VAC, 186 to 264 VAC
Operating voltage frequency	47 to 63 Hz
Operating current	5,4 A/115 VAC, 2,2 A/230 VAC
Control voltage	24 VDC, ± 10%
Overload protection	automatic fuse, 6 A
Cable connection	screw connections for 25 mm² wires
Protection class	IP 65
Interface	alphanumeric touchscreen display RS-422 Modbus port
Dimensions without cable glands	380 × 300 × 210 mm *14.9 × 11.8 × 8.3 in*
Mounting position	vertical

ST–1240-GRAPH

Order number	Designation
ST–1240 GRAPH	2-channel control centre
ST–1240 GRAPH-4	4-channel control centre

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
PUB LS/P8 12404 EN

PUB LS/P1 17046 EN

ST-1100i

Product description

SKF ST-1100i is an one-channel, microprocessor-based control centre for single-line, dual-line and progressive lubrication systems. All lubrication configurations can be set in the field by user interface. The centre controls lubrication according to the desired settings, and lubrication events can be monitored. Lubrication programming, alarm acknowledgements and lubrication event monitoring can be performed via both the control panel and the LED signals. The control panel is located inside the casing. The user interface is a three-button, six-digit display and can be used for setting the default values for the lubrication program and for turning on manual control.

Features and benefits

- Microprocessor-based control centre
- Simple monitoring via control panel and cover LED signals
- All lubrication configurations can be set in field by user interface
- Set values and program status at the power failure are stored in an EEPROM-memory; no battery

Applications

- Stand-alone machines and plants
- Construction machinery
- Mining applications

Technical data

Order number	**ST-1100i**
Function principle	control centre
Operating temperature	–20 to +60 °C; *–4 to +142 °F*
Lubricant	oil and grease
Lubricant channels	1
Operating voltage	93 to 132 VAC, 186 to 264 VAC
Operating voltage frequency	50/60 Hz
Control voltage	24 VDC, ± 10%
Protection class	IP 65
Interface	6-digit, 3-button user interface
Lubrication cycle	0 min 00 s to 9 999 min
Pressurization	0 min 00 s to 999 min
Dimensions	200 × 300 × 120 mm *8.66 × 11.8 × 4.7 in*
Mounting position	vertical

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **PUB LS/P8 13165 EN**

PUB LS/P1 17046 EN

ST-102

Product description

The ST-102 controller is designed for the control and monitoring of single-line, dual-line and progressive lubrication systems in vehicles with a 12 or 24 V DC power supply. It is a one-channel lubrication control centre for systems with pneumatic or electrical pumps. The ST-102 is suitable for environments with temperatures ranging from -40 to +80 °C (*-40 to +176 °F*) and features an IP 40 protection class. All lubrication configurations can be set in the field by the user.

Features and benefits

- Available for 12 or 24 V DC
- Suitable for operational environments with extreme temperatures
- One-button user interface
- Power failure memory

Applications

- Vehicles
- Construction machinery
- Agriculture

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; (10,5 to 32 V DC)
Pump output control	max. 5 A
Protection class	IP 30
Self-setting fuse	4 A on pcb
Time, cycle settings:	
Max. pressurization time	1 to 20 min
Interval time	5, 10...120 min
Pressurization time	1,2,3...10 min
Interface	1-button user interface, 3 LED's
Input	4 digital
Output	4 digital
Standard	CE
Dimensions	26 × 60 × 160 mm *1.02 × 2.36 × 6.3 in*
Mounting position	vertical

ST–102

Order number	Designation
11500607	V1 for progressive and single-line systems
11500610	V2 for progressive, dual- and single-line systems

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
6408 EN

PUB LS/P1 17046 EN

ST-102P

Product description

The ST-102P one-channel lubrication control centre is designed for the control and monitoring of lubrication systems in 12 V DC or 24 V DC vehicles. It supports single-line and dual-line lubrication systems. All lubrication configurations can be set in the field by the user. The ST-102P casing has an IP 65 rating.

Features and benefits

- Designed for control and monitoring in 12/24 V DC lubrication systems
- Reliable and durable, one-channel lubrication controller
- Supports single-line and dual-line lubrication systems
- All lubrication configurations can be set in the field by user
- IP 65 rating

Applications

- Control of lubrication systems with pneumatic pump SKF 40PGAS and electrical pump SKF Minilube
- Small excavators
- Wheel loaders
- Delivery trucks
- Buses, vehicles

Technical data

Order number	**ST-102P**
Function principle	controller
Operating temperature	–40 to +80 °C *–40 to +176 °F*
Operating voltage	12 or 24 V DC, (10,5 to 32 V DC)
Pump output control	max. 5 A
Protection class	IP 65
Self-setting fuse	4 A on printed circuit board
Time, cycle settings:	
Pressurization time	1 to 20 min
Interval time	5, 10...120 min
Interface	1-button user interface, 3 LEDs
Dimensions	67 × 80 × 170 mm *2.64 × 3.14 × 6.7 in*
Mounting position	vertical

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **13165 EN**

PUB LS/P1 17046 EN

84501

Product description

Model 84501 program timer is used to control the lubrication cycle frequency of air-operated, single-stroke pumps. The timer turns pump on/off at programmed intervals via a 3-way or 4-way air solenoid valve (not included) installed in the air line to the pump. It is capable of retaining memory for three hours during machine shut down or power failure. Timing is suspended during power interruptions. This feature eliminates over-lubrication due to pre-lube when machine is frequently started and stopped. Using two programmable jumper pins, four options are available with the memory and prelube feature.

Features and benefits

- Program timer controls lubication cycle frequency of air-operated, single-stroke pumps
- Timer turns pump on/off via solenoid air valves in programmed intervals
- Retains memory for three hours during machine shut down or power interruption
- Suspended timing during power interruptions eliminates over-lubrication due to pre-lube when machine is frequently started and stopped

Applications

- Cement industry
- Food and beverage
- Assembly lines
- Conveyors

Technical data

Order number	**84501**
Function principle	controller
Operating temperature	–18 to +54 °C; *0 to +130 °F*
Operating voltage	120/230 VAC
Operating voltage frequency	50/60 Hz
Switch capacity	120 VAC: 5 A 230 VAC: 1,5 A
Off-time cycle	min. 20 sec; max. 24 h
Off-time pumping	min. 10 sec; max. 1 min 24 sec
Prelube on time	40 sec
Protection class	NEMA 1
Standards	UL, CSA
Dimensions	173 × 210 × 125 mm *7 × 8 × 5 in*
Mounting position	vertical

PUB LS/P1 17046 EN

84015

Product description

Model 84015 is a 12/24 VDC-powered, solid-state controller for lubrication systems. It is microprocessor-based and can be used for automatic lubrication systems on mobile equipment or where AC power is not available. Its rugged construction with liquid- and dust-tight enclosure includes a manual push-button for remote initiation of a lubrication cycle. The controller always will start with an “off-time” period.

Features and benefits

- 12/24 VDC-powered, solid-state controller
- Microprocessor-based
- For automatic lubrication systems on mobile equipment
- Rugged construction with liquid- and dust-tight enclosure

Applications

- Construction machinery
- Delivery trucks
- Buses, vehicles

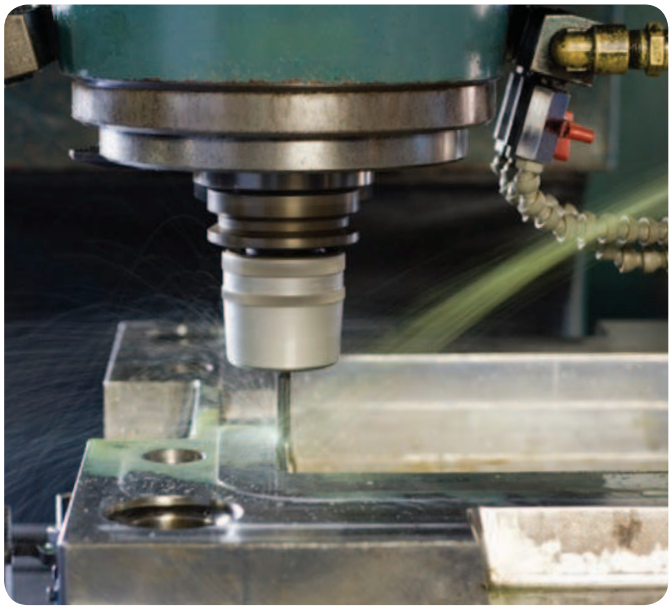
Technical data

Order number	**84015**
Function principle	controller
Operating temperature	–18 to +55 °C; *0 to +131 °F*
Operating voltage	24 VDC, (10-30 VDC)
Operating current	25 mA [1]
Switch capacity	5 A
Off-time cycle	min. 2,5 min; max. 80 min
Off-time pumping	fixed: 75 sec
Protection class	NEMA 12
Off-time (cycle) [2]	min. 90 sec max. 80 min
On-time (pumping)	fixed, 75 sec
Dimensions	79 × 133 × 76 mm *3.1 × 5.2 × 3 in*
Mounting position	vertical or horizontal

[1] Less load
[2] Available selections are 2.5, 5, 10, 20, 40 or 80 min

PUB LS/P1 17046 EN

85520



Product description

Model 85520 is a microprocessor-controlled, 120 VAC unit. It is fully programmable and can be used either as a timer or a controller. Controllers have a wider off-time range than timers and a memory switch to turn pre-lube option on or off. The controller is used to program the cycle frequency of a lubrication pump. Lubrication cycles are determined by the setting of internal switches, and the cycle times are selected to meet system requirements. During the "on" time, the air to the pump solenoid will be energized.

Features and benefits

- Microprocessor-controlled, 120 VAC unit
- Simple adjustment via dip switches and rotary switches
- Fully programmable
- Can be operated in timer or controller mode

Applications

- Paper converting
- Plastic processing
- Printing
- Packaging
- Metalworking
- Material handling equipment

Technical data

Order number	**85520**
Function principle	controller
Operating temperature	–25 to +65 °C; *–13 to 150 °F*
Operating voltage	120 VAC
Operating voltage frequency	50/60 Hz
Current consumption	20 mA (less external load)
Relay contact load	120 VAC: 2 amps inductive load
Relay contact alarm	120 VAC: 2 amps inductive load
Off-timecycle	min. 30 sec; max. 30 h
Off-time pumping	min. 30 sec; max. 5 min
Protection class	NEMA 12
Dimensions	125×191×89 mm *5×7.5×3.5 in*
Mounting position	vertical

PUB LS/P1 17046 EN

85535

Product description

Model 85535 is a microprocessor-controlled, 24 V DC unit. It is fully programmable and can be used either as a timer or a controller. Controllers have a wider off-time range than timers and a memory switch to turn pre-lube option on or off. The controller is used to program the cycle frequency of a lubrication pump. Lube cycles are determined by the setting of internal switches, and the cycle times are selected to meet system requirements. During the "on" time, the air to the pump solenoid will be energized.

Features and benefits

- Microprocessor-controlled, 24 V DC unit
- Simple adjustment via dip switches and rotary switches
- Fully programmable
- Can be operated in timer or controller mode

Applications

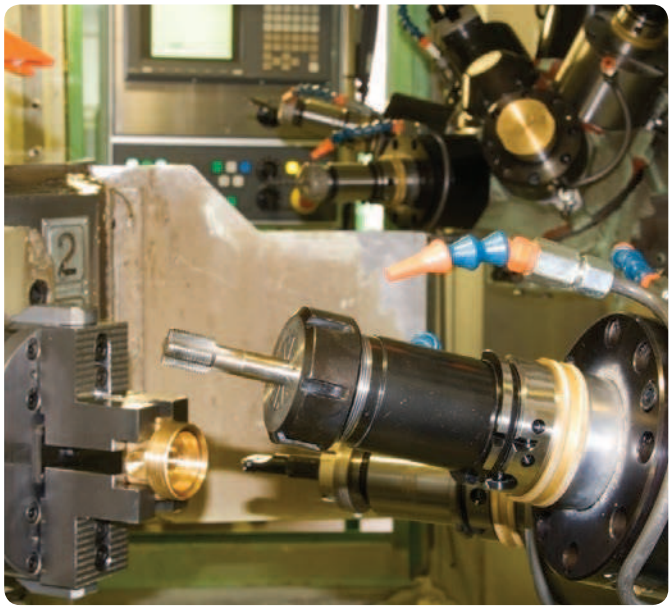
- Paper converting
- Plastic processing
- Printing
- Packaging
- Metalworking
- Material handling equipment

Technical data

Order number	**85535**
Function principle	controller
Operating temperature	-40 to +65 °C; *-40 to +150 °F*
Operating voltage	24 V DC; (21 to 30 V DC)
Operating voltage frequency	50/60 Hz
Current consumption	100 mA (less external load)
Relay contact load	30 V DC: 2 amps inductive load
External alarm load	30 V DC: 2 amps inductive load
Off-time cycle	min. 30 sec; max. 30 h
On-time pumping	min. 30 sec; max. 120 sec
Protection class	NEMA 12
Dimensions	125 × 191 × 89 mm *5 × 7.5 × 3.5 in*
Mounting position	vertical

PUB LS/P1 17046 EN

85525



Product description

Model 85525 is a microprocessor-controlled, 120 VAC unit that includes a pressure switch and mounting brackets. It is fully programmable and can be used either as a timer or a controller. Controllers have a wider off-time range than timers and a memory switch to turn pre-lube option on or off. The controller is used to program the cycle frequency of a lubrication pump. Lubrication cycles are determined by the setting of internal switches, and the cycle times are selected to meet system requirements. During the "on" time, the air to the pump solenoid will be energized. The enclosed pressure switch senses supply line pressure rise/fall to signal system operation to controller or system alarm.

Features and benefits

- Microprocessor-controlled, 120 VAC unit
- Includes pressure switch and brackets
- Simple setting via dip switches and rotary switches
- Fully programmable
- Can be operated in timer or controller mode

Applications

- Paper converting
- Plastic processing
- Printing
- Packaging
- Metalworking
- Material handling equipment

Technical data

Order number	**85525**
Function principle	control unit
Operating temperature	–25 to +65 °C; *–13 to +150 °F*
Operating voltage	120 VAC
Operating voltage frequency	50/60 Hz
Operating current	20 mA (less external load)
Relay contact load	2 amps inductive load at 120 VAC
Relay contact alarm	2 amps inductive load at 120 VAC
Off-time (cycle)	min. 30 s, max. 30 h
On-time (pumping)	min. 30 s, max. 5 min
Protection class	NEMA 12
Dimensions	125 × 191 × 89 mm; *5.0 × 7.5 × 3.5 in*
Mounting position	vertical
Pressure switch	**69630**
Protection class	housing and UL-listed switching elements: NEMA 3

PUB LS/P1 17046 EN

LMC 101

Product description

LMC 101 is a universal control and monitoring device for single-line and progressive lubrication systems. In single-line systems, pressure switches or pressure transducers can be installed at the pump and/or end of the supply line. While designed for off-the-road and mobile equipment use, the controller can be used for any low-voltage lubrication application. Timer or controller mode can be set for both systems. The device features various alarm condition settings, including cycle frequency or alarm triggers. Programming, data logging and reporting are possible, including system resets, downloads to controllers, lubrication activity, lubrication cycles and alarms. The controller must be programmed via USB connection to PC. In timer mode, the lubrication cycle ends when pre-assigned time has expired. In controller mode, the lubrication cycle ends when pressure switch, pressure transducer or piston detector actuates. System allows pressure to dissipate to end of supply line once pressure at pump is reached.

Features and benefits

- Various alarm condition settings including cycle frequency and alarm triggers
- Programming, data logging and reporting, including system resets, downloads to controllers, lubrication activity, lubrication cycles and alarms
- Display: LEDs, pump on and system fault (alarm)
- Controller must be programmed via USB connection to PC
- Manual lubrication push-button

Applications

- Off-highway vehicles
- Mobile equipment use

Technical data

Order number	**LMC 101**
Function principle	control unit
IVoltage input	12 VDC and 24 VDC -20%/ +30%
Current consumption	60 mA (less external load)
Vent relay contact	20 A at 30 VDC
Pump relay contact	2 A at 30 VDC
Alarm relay contact	2 A at 30 VDC
Enclosure rating	NEMA 12
Operating temperature	–40 to +65 °C; *–40 to +150 °F*
Net weight	0,9 kg, 2 lbs
Off-time adjustable	15 sec to 99 h
On-time adjustable	15 sec to 99 h
Lubrication systems	single-line and progressive systems
Enclosure size	209 × 127 × 89 mm *8.25 × 5 × 3.50 in*
Mounting dimensions	222 × 95 mm *8.75 × 3.75 in*

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **15625 EN**

PUB LS/P1 17046 EN

EOT-1/2 664-34135-6, 664-34135-7

Product description

EOT-1 / EOT-2 are time controllers for lubrication pumps in single-line or progressive lubrication systems. EOT-1 has a fixed running time of 4 seconds and flexible pause time adjustments and, therefore, is suitable for chain lubrication. EOT-2 features flexible time settings. Both controllers are required if pumps without timers are used in lubrication systems or there is no customer-related request for pumps with an integrated pump controller. It also is suitable for retrofit installation. Simply set time using the red (running time) and a blue (pause time) switches and use the push-button to activate an additional lubrication cycle for easy and safe pump operation.

Features and benefits

- Time controller for installation in driver's cabin
- Suitable for retrofit
- Simple handling of time setting and function control

Applications

- Agriculture
- Chain lubrication systems

Technical data

Function principle	control unit
Supply voltage	12/24 V DC
Max. current draw	≤ 7 A
Protection class	IP 65 , SELV/PELV
Operating temperature	–25 to +70 °C; *–13 to +158 °F*
Noise suppression	class A VDE 0875 T11
Interference resistance	DIN EN 61000-6-1
Transient emissions	DIN EN 61000-6-3
Outputs	transistor/ no
EEPROM	non-dissipative storage of data
EOT 1	
Pause time	min. 5 sec, max. 75 min
Running time	4 sec, unvaried
EOT 2	
Pause time	min. 4 min, max. 15 h
Running time	min. 8 sec, max. 30 min
Factory setting	
EOT 1	
Pause time	15 sec
Running time	4 sec
EOT 2	
Pause time	6 min
Running time	4 sec
Dimensions	122 × 118 × 56 mm *4.8 × 4.6 × 2.2 in*
Mounting position	any

EOT 1/2

Order number	Designation
664-34135-6	**EOT 1**
664-34135-7	**EOT 2**

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
951-181-005 EN

PUB LS/P1 17046 EN

LMC 301

Product description

The LMC 301 is a compact, modularly expandable control and monitoring device. The device is equipped with an LCD display and six functional keys for programming, parameter setting and signalization. The user is guided through the setting menu. Also, there is a simple-to-use PC software for parameter setting and diagnostics available.

Features and benefits

- Integrated, flexible lubrication programs
- Basic device with 10 digital inputs, of which two can be used analogously, and eight outputs
- Up to seven extension modules can be added, whereby each module has 10 E 8 A just like the basic device
- Three lubrication pumps can be controlled and monitored, each of which provides up to three lubrication circuits
- Single modules are connected by a bus interface

Applications

- Cement ans steel industry
- Mining; stationary and mobile excavators
- Food and beverage

Technical data

Function principle	electronic controller
Operating temperature VAC	–10 to +50 °C; *+14 to +122 °F*
Operating temperature VDC	–40 to +70 °C; *–40 to +158 °F*
Inputs	10 count, short-ciruit
Outputs	8 counts, relay outputs NO-contact 8 A, 2 of which up to 20 A
Supply voltage depending on model	90-264 VAC, 24 VDC ± 20%
Protection class	IP 64
Dimensions	270×170×90 mm 10.7×6.7×3.5 in
Mounting position	vertical

LMC 301

Order number	Designation
86500	LMC 301 230 AC (230 VAC)
86501	LMC 301 24 DC (24 VDC)

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
15967 EN

PUB LS/P1 17046 EN

LMC 2

Product description

The LMC 2 is a controller for the electronic management and monitoring of lubrication systems. It combines the advantages of a specially developed printed circuit board (PCB) and a PLC in an economical, compact unit.

Features and benefits

- Integrated, flexible lubrication programs
- 8 inputs / 5 outputs; suitable for complex lubrication systems
- Time- or cycle-dependent control of lubrication intervals
- Can be interfaced with common field bus systems

Applications

- Lincoln and SKF progressive systems, single-line, dual-line and multi-line systems
- Railway lubrication and spray lubrication systems
- Food and beverage
- Chain lubrication systems like Cobra and PMA

Technical data

Function principle	electronic controller
Operating temperature	–10 to +70 °C; *14 to 158 °F*
Inputs	max. 8 digital inputs
Outputs	4 relay outputs, 1 electronic
Supply voltage	depending on model: 230 VAC, 24 VDC
Protection class	IP 54
Dimensions	200×120×90 mm *7.9×4.7×3.5 in*
Mounting position	any

LMC2

Order number	Designation
236–10567–6	LMC 2 230 AC (230 VAC)
236–10567–5	LMC 2 24 DC (24 V DC)

For use with electrically driven, 3-phase pump, a motor starter must be ordered separately.

NOTE
For further technical information, technical drawings, accessories, spare parts or technical descriptions of functional types, see the following publication available on SKF.com/lubrication:
14004 EN

PUB LS/P1 17046 EN

HCC

Product description

The hose connection control (HCC) is intended to monitor electrically conductive, high-pressure lubrication hoses for line breakage. If there is a fault in the main line or feed lines, the unit alerts the machine operator immediately. Operation of the HCC is not affected by line lengths, ambient temperature, pressure differential or pressure losses. Utilizing non-conductive lubricants or hydraulic fluids, this monitoring system has an operating pressure of up to 300 bar *(4 350 psi)* and can be used in temperatures ranging from –40 to +70 °C *(–40 to +158 °F)*.

Features and benefits

- Immediately detects hose ruptures
- Expandable at any time
- Easy retrofit in existing lubrication systems
- Monitors difficult-to-access hoses to lubrication points
- Common LED signal of all connected hoses on the display

Applications

- Construction and mining machines; cranes
- Wood-handling machines
- Forklifts, reach stackers and machines with movable units or accessories
- Agriculture

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available online at SKF.com/lubrication: **13615 EN**

Technical data

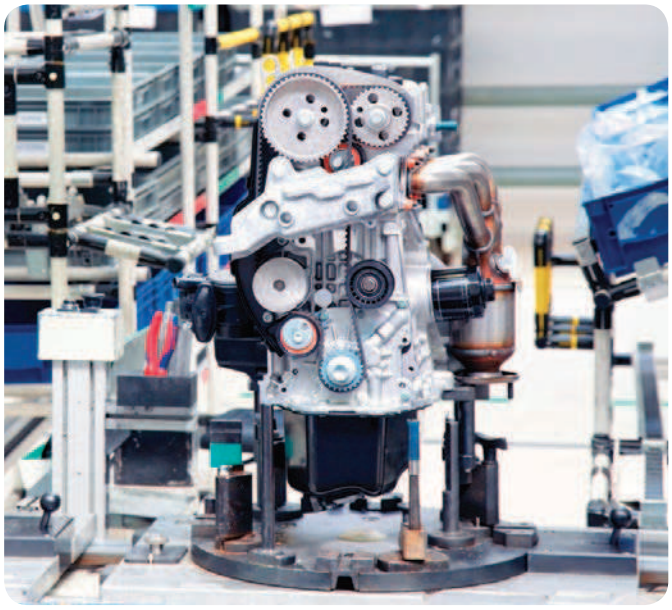
Function principle	control and monitoring device for hose connections
Operating temperature	Isolator: –50 to +70 °C; *–58 to +158 °F* Controller: –25 to +70 °C; *–13 to +158 °F* Controller storage: –40 to +70 °C; *–40 to +158 °F*
Power supply	12/24 V DC
Monitored hose per monitoring unit	max. 15 pieces at 12 V DC max. 24 pieces at 24 V DC
Positive ok signal	12/24 V PNP
Signal cable to one cut-off connector	20 m; *65 ft*
Signal cable at cut-off	approx. 150 mm; *5.90 in*
Protection class	IP 65
Dimensions	100 × 85 × 40 mm *3.93 × 3.34 × 1.57 in*

HCC Hose connection control

Order number	Designation
236-10986-1	HCC, evaluation unit
236-10153-3	HCC, with cable 20 m
532-34839-2	HCC, endlink HCC DN 8-10L-E
532-37731-1	basic kit consisting of above three parts
532-34839-6	HCC, endlink HCC DN 4-6L-E
532-34839-3	HCC, interlink HCC DN 8-10L-I
532-34839-5	HCC, Interlink HCC DN 4-6L-I

PUB LS/P1 17046 EN

Flow sensor



Product description

Flow sensors keep an eye on the flow of oil from a metering point to the lubrication point, metering out a small amount of oil for only a short period of time. They are suitable for intermittent, centralized lubrication systems e. g. with piston metering devices, metering elements, injection oilers, oil and air centralized lubrication systems.

Features and benefits

- Provide simple control
- Monitor flow of lubricant from the metering point to the lubrication point
- Meter out a small amount of oil for only a short period of time

Applications

- Machine tools
- Automotive manufacturing
- Industrial assembly and automation

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1704-EN**

Technical data

Ordner number	**GS304P**
Function principle	flow sensor
Measuring principle	calorimetrical
Lubricant [1]	oil (10 to 2 000 mm²/s)
Metering quantity	0,01 - 0,6 cm³/pulse *0.0006 - 0.03 in³/pulse*
Clock frequency [2]	max. 4 pulse/min
Operating temperature	+10 to 50 °C, *+50 to 122 °F*
Operating pressure	max. 40 bar; *580 psi*
Rated voltage	24 V DC
Residual ripple	10%
Working range UA	18 to 30 V DC
Max. power consumption IE	25 mA
Pulse output	3 s
Load current IA for GS300	max. 10 mA
for GS304	max. 500 mA per output
Output protection	short-circuit protection
Built-in plug	circular connector with M12×1 screw plug
Fluid connection	M 8x1 mm, port tapped for solderless Ø 4 mm tube connection
Dimensions	95 × 50 × 20 mm *3.74 × 1.96 × 0.78 in*
Mounting position	directly upstream of lubrication point
Vibration resistance	20 g (DIN / IEC 68-2-27, 10-2000 Hz)
Impact resistance	50 g (DIN / IEC 68-2-27, 11 ms)

[1] Sensor needs 30 sec. of warm-up time
[2] The use of oils containing corrosive and/or abrasive additives may impair sensor function and possibly damage the sensor

PUB LS/P1 17046 EN

DSA

DSD

69630

DSB1

234-10825-8

DSC2

DSC3

234-11145-3/4/5/9

Pressure sensors

234-10330-4

234-13161-5/9

234-11272-4

DSC1

247333

PUB LS/P1 17046 EN

Overview of pressure sensors

Mechanical pressure sensors with digital output signal

Product	Lubricant oil/fluid	grease	Pressure ranges bar	*psi*	Operating temparature °C	*°F*	Voltage VDC	VAC	Contact type	Page
DSA	•	–	1–30	*14.5–435*	+10 to +60	*+50 to +140*	–	250	change-over	164
DSD	•	–	0,5–45	*7.25–653*	-30 to +100	*-22 to +212*	36	–	change-over	166
69630	•	•	19–207	*275–3 000*	-25 to +65	*-13 to +149*	–	125/250/480	NO/NC	170
DSB	–	•	20–300	*290–4 350*	-25 to +80	*-13 to +176*	30	–	change-over	168
234-10825-8	•	•	100–400	*1 450–5 800*	-25 to +85	*-13 to +185*	30-250	125–250	change-over	171

Digital pressure sensors with digital output signal

Product	Lubricant oil/fluid	grease	Pressure ranges bar	*psi*	Operating temparature °C	*°F*	Voltage VDC	VAC	Contact type	Page
DSC2	•	–	0–40	*0–580*	-10 to +80	*+14 to+176*	18–30	–	change-over	172
DSC3	•	–	0–100	*0–1 450*	-25 to +80	*-13 to +176*	9–35	–	change-over	173
234-11145-3/4/5/9	•	•	0–400	*0–5 800*	-25 to +125	*-13 to +257*	18–36	–	NO/NC	174
234-10330-4	•	–	0–600	*0–8 700*	-20 to +85	*-4 to +185*	24	–	NO/NC	175
234-13161-5/9	•	•	0–600	*0–8 700*	-25 to +80	*-13 to +176*	20-32	–	NO/NC	176
234-11272-4	•	•	10–600	*145–8 700*	-25 to +100	*-13 to +212*	18-32	–	NO/NC	177

Digital pressure sensors with digital and analoge output signal

Product	Lubricant oil/fluid	grease	Pressure ranges bar	*psi*	Operating temparature °C	*°F*	Voltage VDC	VAC	Contact type	Page
DSC1	•	–	0–40	*0–580*	-10 to +80	*+14 to+176*	10–32	–	change-over	178

Digital pressure transducer with analoge output signal

Product	Lubricant oil/fluid	grease	Pressure ranges bar	*psi*	Operating temparature °C	*°F*	Voltage VDC	VAC	Contact type	Page
247333	•	–	0–276	*0–4 000*	-29 to +82	*-20 to +180*	10–30	–	transducer	179

PUB LS/P1 17046 EN

DSA

Product description

SKF pressure switches of the DSA series 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 single-line metering devices are pressure buildup, pressure head and pressure reduction.

Features and benefits

- Inexpensive mechanical diaphragm pressure switches
- Micro switch is designed as a change-over switch and can be used as both a normally closed contact (NC) and a normally open contact (NO)
- Switches are available for rising and falling pressures from 1 to 30 bar *(14.5 to 435 psi)* and have non-adjustable increments

Applications

- Machine tools
- Printing machines
- Wind
- Vehicle
- Steel and heavy industries

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1701-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

Technical data

Function principle	pressure switch
Lubricant	oil and fluid grease NLGI 000, 00, 0 oiled compressed air
Operating temperature	+10 to 60 °C; *+50 to 140 °F*
Operating pressure [1]	max. 45 bar; *max. 650 psi*
Switching pressure range	1 to 30 bar; *14.5 to 435 psi*
Switch type	micro switch
Contact type	change-over
Contact rating	max. 125 VA
Switch current	min. 2 mA , max. 300 mA
Switching rate	max. 30 per min
Switching voltage	max. 250 VAC / 30 V DC
Electrical connection [2]	DIN EN 175301-803, plug
Connection fitting	ø 6 mm; connector DIN 3862, for solderless pipe union, plug connector for pipe
Materials:	
Housing	PA6 6GF30
Contact	AuAg25Pt6
Membrane	FKM (FPM)
Protection class with cable box	IP 65
Safety class	II
Dimensions	min. 76×120×41 mm *min. 3.0×4.7×1.6 in* max. 83×129×41 mm *max. 3.3×5.1×1.6 in*
Mounting position	any

[1] A pressure-regulating valve must be installed in the system to prevent operating pressure from exceeding the permissible level
[2] M 12x1 circular plug, only for design with electrical connection center

PUB LS/P1 17046 EN

DSA

Order number configurator

D	S	A	1	–				W	–				A

Product series **DS**

Pressure switch type **A**

Switching direction

S = switch on increasing pressure
F = switch on decreasing pressure

Rated switching pressure

01 = 1 bar
02 = 2 bar
03 = 3 bar
05 = 5 bar
08 = 8 bar
12 = 12 bar
20 = 20 bar
25 = 25 bar
30 = 30 bar

Type of contact

W = change-over

Pressure port

1 = DIN 3862, ø 6 mm for solderless pipe union
2 = plug connector for pipe ø 6 mm

Position of electrical connection

M = middle
R = right
L = left

Electrical connection

1 = DIN EN 175301-803 A (DIN plug)
2 = M12×1 circular plug (only for design with electrical connection in center)

Switching voltage, max.

A = 250 VAC, 30 V DC

PUB LS/P1 17046 EN

DSD

Product description

DSD sensors are single, mechanical-diaphragm pressure switches. They are used for pressure monitoring and are dependent upon the mechanical design of resulting pressure and preloaded spring force of the pressure spring. Under pressure, a pressure plunger carries the contact washer and moves it to the opposing contact and closes the electrical circuit. If the pressure is reduced by the amount of hysteresis, the switch opens again. On an NC contact, contacts are made in the opposite way. In single-line systems, it can be integrated into metering devices at the end of the lubrication line.

Features and benefits

- Available for a pressure rating from 0 to 45 bar in fixed increments
- Electrical connection is established via screwed contacts, tab connectors, circular connectors or rectangular plug connectors
- Pressure monitoring, dependent upon the mechanical design of resulting pressure and preloaded spring force of the pressure spring
- Mechanical switch can be used as both a normally closed contact (NC) and a normally open contact (NO)

Applications

- Machine tools, printing machines, vehicles

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1701-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

Technical data

Function principle	pressure switch
Lubricant	oil and fluid grease NLGI 000, 00, 0
Operating temperature	–30 to +100 °C *–22 to +212 °F*
Operating pressure	static: max. 300 bar; *max. 4 350 psi* dynamic: max. 150 bar; *max. 2 175 psi*
Switch type	mechanical diaphragm pressure switch
Contact type	No, NC (change-over with rectangular plug connector only)
Switching pressure	0,5 to 45 bar; *7.25 to 653 psi*
Contact rating	max. 18 VA, 90 VA, 100 VA
Switching voltage/current	36 V DC/2.5 A/0,5 A 250 VAC/5 A
Electrical connection	M 3 or M 12×1 or DIN EN 175301-803-A
Pressure port	M 10×1 taper
Materials:	
Contact	silver plated
Housing	steel, galvanized, Cr6-free
Membrane	NBR
Protection class	IP 65
Dimensions	depending on model, ø×h 27,7×50 mm; *1.09×1.97 in* 31,2×85 mm; *1.23×3.35 in*
Mounting position	any

PUB LS/P1 17046 EN

DSD

Order number configurator

D S D ___ – A ___ ___ ___ ___ N – ___ ___ A 1 ___

Product series **DS**

Pressure switch type **D**

Manufacturer marking
1 = marking 1 (only with electrical connection 1)
3 = marking 3 (only with electrical connection 2–4)

Type **A**

Rated switching pressure
0005 = 0,5 bar, *7 psi*
0020 = 2 bar, *29 psi*
0030 = 3 bar, *44 psi*
0080 = 8 bar, *116 psi*
0120 = 12 bar, *174 psi*
0200 = 20 bar, *290 psi*
0280 = 28 bar, *405 psi*
0450 = 45 bar, *653 psi*

N = Membrane material NBR

Type of contact
NC = closed (only with electrical connection 1–3 available)
NO = open (only with electrical connection 1–3 available)
CO = change-over (only with electrical connection 4 available)

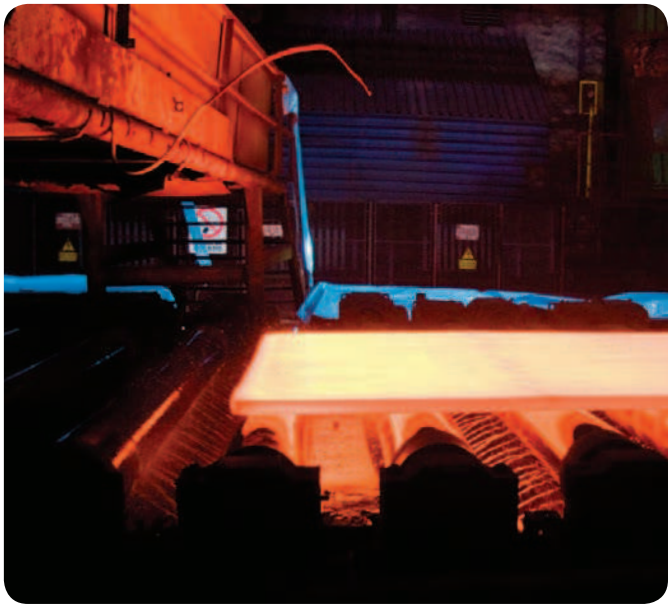
Contact material
A = silver contacts

Pipe thread
1 = M10×1 taper

Electrical connection
1 = screwed contacts M 3
2 = tab connector 6,3×0,8/screwed contacts M 3
3 = circular connector M 12×1
4 = rectangular plug connector DIN EN 175301-803-A (only as change-over (CO) available)

PUB LS/P1 17046 EN

DSB1



Product description

SKF pressure switches of product series DSB are mechanical piston pressure switches that are specially designed for use with NLGI 1-2 greases. The location of the actuating piston inside the pressure switch housing helps to ensure a continuous exchange of grease around the measuring point (pressurization point between grease and actuating piston). This reliably prevents the same grease from being pressurized repeatedly, which could cause grease bleeding (separation of the soap skeleton of the grease from the stored oil). Pressure switches of product series DSB are designed for corrosivity category C3 or C5M per ISO 12944.

Features and benefits

- Adaptable to VR lubricant metering devices due to same hole pattern, wall distance and connections
- Micro switch is designed as a change-over switch; can be used as both a normally closed contact (NC) and a normally open contact (NO)
- Available for rising and falling pressures from 20 to 300 bar in 10-bar increments
- No grease bleeding at measuring point
  Pressure switch permits continuous lubricant flow without dead space
- Suitable for use with unstable greases with a tendency to separate into soap and oil under high pressure

Applications

- Machine tools
- Printing machines
- Wind
- Vehicle
- Steel and heavy industries

Technical data

Function principle	pressure switch
Lubricant	grease NLGI 1, 2
Operating temperature	–25 to +80 °C; *–13 to +176 °F*
Operating pressure	*max. 300 bar; 4 350 psi*
Operating voltage	max. 30 VAC; max. 36 V DC
Operating current	max. 50 mA, min. 1 mA
Breaking capacity	max. 1,2 VA
Mechanical service life	10^5 switching cycles
Pressure port	G $^1/_4$ (F)
Electrical connection	connector socket 3+PE: DIN EN 175 301-803 A cable: ø 4.5 to 7 mm; *ø 0.177 to 0.275 in*
Switch type	micro switch
Contact type	change-over
Switching pressure range	20 to 300 bar; *290 to 4 350 psi;* increasing and decreasing
Materials:	
Housing	aluminum, anodized
Contact	silver alloy, hard gold plating
Protection class	IP 65; DIN EN 60529
Dimensions	depending on model min. 60×105×76 mm; max. 150×153×76 mm; *min. 2.36×4.13×2.99 in* *max. 5.90×6.02×2.99 in*
Mounting position	any
Certification	Germanischer Lloyd (GL)

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1701-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

DSB1

Order number configurator

D	S	B	1	–								–	1		–	0	1

Product series **DS**

Pressure switch type **B**

Pressure switch I

S = switch on increasing pressure
F = switch on decreasing pressure

Rated switching pressure I

02 = 20 bar; *290 psi*
03 = 30 bar; *435 psi*
04 = 40 bar; *580 psi*
... (in 10-bar increments up to)
30 = 300 bar; *4 350 psi*

Pressure switch II

0 = no pressure switch
S = switch on increasing pressure
F = switch on decreasing pressure

Rated switching pressure II

00 = no pressure switch
02 = 20 bar; *290 psi*
03 = 30 bar; *435 psi*
04 = 40 bar; *580 psi*
... (in 10-bar increments up to)
30 = 300 bar; *4 350 psi*

Measurement connector

A = measurement connector for pressure gauge M 16×2
G = with pressure gauge 250 bar; *3 625 psi*
H = with pressure gauge 400 bar; *5 800 psi*
X = no measurement connector

Electrical connection

1 = DIN EN 175301-803 A (DIN plug)

Design

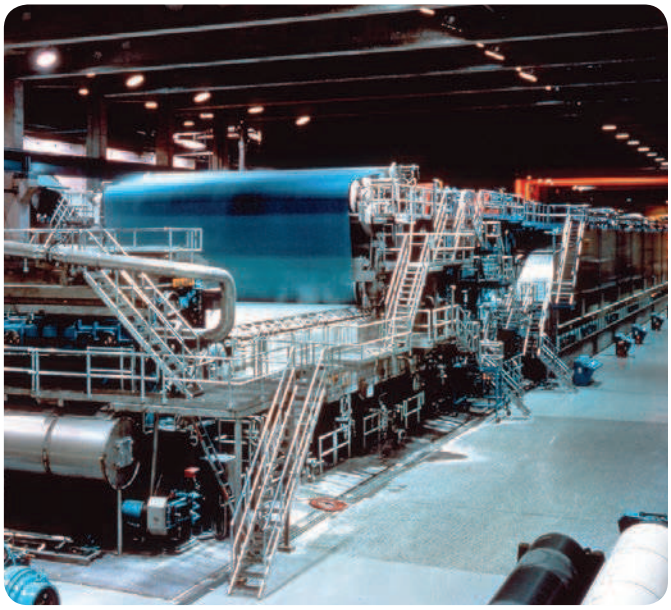
A = standard, based on corrosivity category C3 per ISO 12944, certified by Germanischer Lloyd
B = based on corrosivity category C5M per ISO 12944, certified by Germanischer Lloyd, suitable for offshore applications

Design key

01 = basic design (with thread G 1/4)

PUB LS/P1 17046 EN

69630



Product description

Pressure switch 69630 senses supply line pressure when pressure is rising or falling. One single contact signals system operation to controller or system alarm.

Features and benefits

- Simple pressure switch
- Adjustable pressure ranges for decreasing and increasing pressures to match system requirements
- Use as single pressure switch or in a system with controller and solenoid valve

Applications

- Paper converting
- Plastic processing
- Printing
- Packaging
- Metalworking
- Material handling equipment

Technical data

Order number	**69630**
Function principle	pressure switch
Operating temperature	–25 to +65 °C; *–13 to +150 °F*
Switching capacity	125, 250 or 480 VAC: 10 A 6 V DC: 15 A 24 V DC: 5 A 250 V DC: 0,3 A
Operating pressure:	
decreasing	max. 190 bar *max. 2 775 psi*
increasing	max. 207 bar *max. 3 000 psi*
Pressure port	$^{1}/_{4}$ NPTF (F)
Electrical connection	$^{27}/_{32}$ in hole for $^{1}/_{2}$ in; conduit connector
Protection class	housing and UL-listed switching elements: NEMA 3
Dimensions	57 × 146 mm; *2.25 × 5.75 in*
Mounting position	vertical

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **442832**

PUB LS/P1 17046 EN

Pressure sensor

234-10825-8

Product description

This pressure switch reliably monitors pressure in single-line lubrication systems at a pre-adjusted pressure value. When adjusted value is reached, pressure switch opens or closes an electric circuit via a defined piston stroke (depending on pressure power and pre-load spring). A micro switch can be used for DC or AC voltage. The switch's housing can be pivoted up to 360 (degree symbol). The pre-adjusted switching point pressure value is set at the factory.

Features and benefits

- Simple, mechanically operated pressure switch
- Designed as a change-over pressure switch
- Monitors a pre-adjusted pressure value
- Suitable for DC and AC voltage
- Pivotable housing up to 360°
- Maintenance free

Applications

- Machine tools
- Construction machinery
- Wind energy
- Vehicle
- Steel and heavy industries

Technical data

Order number	**234-10825-8**
Function principle	rotatable pressure switch
Lubricant	oil and fluid grease NLGI 000, 00
Operating temperature	–25 to +85 °C *–40 to +185 °F*
Operating pressure	max. 400 bar *max. 5 800 psi*
Switching pressure	100 to 400 bar *1 450 to 5 800 psi*
Adjustability	under pressure
Operating voltage	adjustable: 30 to 250 VDC; 125; 250 VAC
Load resistance	0,25-5 A
Load inductive	0,25-5 A
Switch type	micro switch with spring-loaded piston
Contact type	change-over
Contact electrical	plug connector DIN72585 ø 2,5 mm
Material:	
Housing	zinc-coated steel, UR
Contact electrical	electroplated silver gilt
Protection class	IP 67, IP 6K9K
Dimensions	30 × 74 mm; *1.18 × 2.91 in*
Mounting position	any, but preferably vertical

PUB LS/P1 17046 EN

DSC2

Product description

DSC2 sensors are electronic pressure switches with an integrated digital display for relative pressure measurement. They are used primarily for pressure monitoring. Depending on the design, they also can assume control functions. Pressure switch points, pressure indication and the switching logic can be configured and programmed easily. The four-digit, digital display that indicates switching with LEDs. DSC2 can operate in switching point, hysteresis and window function modes. The switching mode can be programmed separately for each output.

Features and benefits

- Available for rising and falling pressures from 0 to 100 bar in 0.5-bar increments
- Micro switch is designed as a change-over switch; can be used as both a normally closed contact (NC) and a normally open contact (NO)
- Four-digit, digital display indicates switching with LEDs
- Can operate in switching point, hysteresis and window function modes
- Diagnostic output based on the DESINA specification
- UL certification

Applications

- Machine tools
- Printing machines
- Wind
- Vehicle
- Steel and heavy industries

Technical data

Order number	**DSC2–A100E–2A2B**
Function principle	pressure switch
Lubricant	oil and fluid grease NLGI: 000–0
Operating temperature	–10 to +80 °C *+14 to 176 °F*
Operating pressure	max. 300 bar *max. 4 350 psi*
Switch type	micro switch
Contact type	change-over
Operating voltage	18 to 30 V DC
Power consumption	max. 35 mA
Output signal	2, PNP/NPN
Vibration resistance	20 g (10–2 000 Hz)
Service life	100 × 10^6 pressure changes
Material:	
Housing	aluminum, stainless steel
Control panel	polyester film
Electrical connection	M12 × 1, 4-pin
Pressure port	G $^1/_4$ (F)
Protection class	IP 67
Dimensions	34 × 90,7 × 49,4 mm; *1.33 × 3.57 × 37.4 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1701-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

DSC3

Product description

DSC3 sensors are electronic pressure switches with an integrated digital display for relative pressure measurement. They are used primarily for pressure monitoring. Depending on the design, they also can assume control functions. Pressure switch points, pressure indication and the switching logic can be configured and programmed easily. The display is a pivoted, four-digit, digital display. DSC3 can be integrated into lubrication line. It operates in switching point, hysteresis, and window function modes. The switching mode can be programmed separately for each output.

Features and benefits

- Available for rising and falling pressures from 0 to 100 bar in 0.5-bar increments
- Micro switch is designed as a change-over switch; can be used as both a normally closed contact (NC) and a normally open contact (NO)
- Easy to install into a lubrication line
- Pivoted, four-digit, digital display
- Can operate in switching point, hysteresis and window function modes
- Programmming lock to protect against unauthorized adjustment of drive
- Switching displayed using LEDs

Applications

- Machine tools
- Printing machines
- Wind
- Vehicle
- Steel and heavy industries

Technical data

Order number	**DSC3–A100K–3A2B**
Function principle	pressure switch
Lubricant	oil and fluid grease: 000–0
Operating temperature	–25 to +80 °C *–13 to +176 °F*
Operating pressure	max. 300 bar *4 350 psi*
Switch type	micro switch
Contact type	change-over
Operating voltage	9 to 35 V DC
Power consumption	max. 35 mA
Output signal	2, PNP transitor stages
Vibration resistance	20 g (5–500 Hz)
Service life	100×10^6 pressure changes
Material housing	plastic
Electrical connection	M12 × 1, 4-pin
Pressure port	via t connector, 2 × G $^1/_8$ (F)
Protection class	IP 67
Dimensions	42 × 115 × 40 mm *1.65 × 4.53 × 1.57 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1701-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

234-11145-3, -4, -5, -9

Product description

These maintenance-free electronic pressure sensors are suitable for pressure measurements for gases and fluids. They are user friendly and can be applied easily in standard or superior applications. The space-saving housing is pivotable up to 320° for optimal readability of the 4-digit, digital display. One or two switching outputs and an analog output signal for switching point and hysteresis. Both can be adjusted via push buttons. Different value units such as bar, mbar, psi or MPa can be selected.

Features and benefits

- Menu-guided adjustments via 2 push buttons
- Indication of status of outputs
- Pre-adjustable hysteresis
- Programmable parameters
- Password protected
- Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided
- Compact housing with 320 (degree symbol) pivot
- For standard and superior applications

Applications

- Marine
- Off-shore applications
- Wind
- Vehicle
- Steel and heavy industries

Technical data

Order number	**234-11145-...**
Function principle	digital pressure switch
Lubricant	oil and fluid grease NLGI 000–00, grease NLGI 1 ,2
Operating temperature	–25 to +125 °C; *–134 to +185 °F*
Operating pressure	max. 600 bar; *max. 8 700 psi* 234-11145-5: max. 400 bar; *max. 5 800 psi*
Operating voltage	18–36 V DC
Operating current	max. 500 mA
Current draw	≤ 50 mA
Output signal	1 or 2 × PNP; 1 analog, digital, NO or NC adjustable
Switching frequency	max. 200 Hz
Switching point adjusted	234-1145-5: 175 bar; *2 465 psi*
Material:	
Housing	PA6.6, stainless steel, FKM
Measuring cell	ceramics Al203
Apapter	stainless steel
Electrical connection	M 12 × 1; 4 pin plug
Pressure port	G $^1/_4$ or G 3/8; DIN3852
Protection class	IP 67; EC 60529
Dimensions	min. 34 × 94 × 49 mm *min. 1.34 × 3.7 × 1.9 in* max. 34 × 134,5 × 49 mm *max. 1.34 × 5.3 × 1.9 in*
Mounting position	any

Order number

Order number	Designation
234-11145-3	1 × PNP, 4-20 MA, with adapter G $^1/_4$ and connector
234-11145-4	1 × PNP, 4-20 MA, basic model
234-11145-5	2 × PNP, 0-20 MA, with adapter G $^1/_4$ and connector, front flushed
234-11145-9	1 × PNP, 4-20 MA, with adapter G $^3/_8$ and connector

PUB LS/P1 17046 EN

234-10330-4

Product description

This electronic pressure switch has a 4-digit, digital display, two switching outputs and an analog output signal for switching point and hysteresis. Both can be adjusted via push buttons. The water-proofed housing is pivotable up to 290° for optimal readability of digital display. The pressure switch is virtually maintenance free.

Features and benefits

- Menu-guided adjustments via 3 push buttons indicating status of outputs
- Peak value storage
- Adjustable hysteresis and absorption
- Programmable parameters
- Password protected
- Reverse polarity and overvoltage protected; short-circuit proof

Applications

- Machine tools
- Printing machines
- Wind
- Vehicles
- Steel and heavy industries

Technical data

Order number	**234-10330-4**
Function principle	digital pressure switch
Lubricant	oil, fluid grease NLGI 00, 000, 0, grease NLGI 1 ,2
Operating temperature	–20 to +85 °C ; *–4 to +185 °F*
Operating pressure	max. 1 000 bar; *max. 14 500 psi*
Analog output signal	0/4–20 mA, apparent ohmic resistance ≤ 500 Ω
Operating voltage	15–30 V DC, nominal 24 V DC
Signal output type	PNP-Transistor
Switching current	max. 0,7 A
Current consumption	< 100 mA
Switching cycle	≥ 20 Mio.
Electrical connection	M12 × 1; 5 pin
Pressure port	G $^{1}/_{4}$ (BSPP)
Materials:	
Housing	stainless steel 1.4404, NBR
Control panel	zinc die casting, surface treated
Protection class	IP 67
Dimensions	39,5 × 105,5 × 46,3 mm *1.55 × 4.15 × 1.82 in*
Mounting position	any

PUB LS/P1 17046 EN

234-13161-...

Product description

This compact, maintenance-free electronic pressure switch has a 3-digit, digital display, one switching output and an analog output signal for switching point and hysteresis. Both can be adjusted via push buttons. For optimum adaptation to a particular application, the instrument has many additional adjustment parameters, e.g. switching delay times, NO and NC function of the outputs.

Features and benefits

- Integrated pressure sensor with thin-film strain gauge on stainless steel membrane
- 3-digit, digital display
- Compact and robust design
- Independently adjustable switch-back hysteresis and switching point
- Reverse polarity protection of the supply voltage, excess voltage, override and short-circuit protection are provided
- Password protected
- Directly installable via G $^1/_4$ adapter into pressure line
- Many useful additional functions

Applications

- Marine
- Off-shore applications
- Wind
- Vehicle
- Steel and heavy industries

Technical data

Function principle	digital pressure switch
Lubricant	oil and fluid grease NLGI 0–000, grease NLGI 1 ,2
Operating temperature	–25 to +80 °C; *–13 to +175 °F*
Operating pressure	234-13161-5: max. 600 bar; *max. 8 700 psi* 234-13161-9: max. 250 bar; *max. 3 625 psi*
Operating voltage	20–32 VDC
Current consumption	approx. 100 mA (without switching outlet)
Electrical connection	plug DIN 43650 (3pin+ PE) or plug 4-pin binder 714, M18×1
Protection class	IP 65
Dimensions	35×119×48 mm *1.37×4.68×1.89 in*
Mounting position	any

Order number

Order number	Designation
234-13161-5	1×PNP, 4-20 MA, G $^1/_4$, with digital display
234-13161-9	1×PNP, 4-20 MA, G $^1/_4$, with digital display

PUB LS/P1 17046 EN

234-11272-4

Product description

The electronic pressure switch with internal stainless steel diaphragm, suits for pressure control in automatic single-line lubrication systems. It has a 4 digit 7 segment digital display, two solid state contacts or two solid state contacts plus one analog output for switching point and hysteresis. All contacts can be adjusted via push buttons. The pressure switch is virtually maintenance free.

Features and benefits

- Alphanumeric 4-digit 7 segment LED display
- Microprocessor controlled
- Self monitoring with error display
- Scalable analog output
- Programmable parameters via keypad
- Adjustable password protection
- Revers polarity and overvoltage protected, short-circuit proof max 60 VDC temporary
- Rugged stainless steel construction
- Vibration and shock-proof, longterm stability

Applications

- Machine tools
- Chemical technics
- Wind, vehicle, steel and heavy industries
- Automation

Technical data

Order number	**234-11272-4**
Function principal	electrically operated dual digital pressure switch
Lubricant	oil and fluid grease NLGI 00, 000, 0 grease NLGI 1, 2
Operating temperature	–25 to +100 °C ; *–13 to +212 °F*
Operating pressure	10 to 600 bar; *145 to 8702 psi*
Operating elements	3 easy-response push buttons
Protection class	IP 65 with plug
Pressure port	G $^1/_4$ M
Electrical connection	M12 × 1; for 4 pin or 5 pin plug
Current output	4-20 mA, apparent ohmic resistance 600 Ω at 24 V DC
Power supply	18-32 V DC reversed polarity protected (SELV, PELV)
Digital display	4-digit 7 segment LED display
Power consumption	approx. 50 mA at 24 V DC without load
Materials:	
Wetted parts	stainless steel 1.4301
Electronics housing	aluminum die-cast
Seals	FKM
Dimensions	75 × 130 × 55 mm *2.95 × 5.12 × 2.16 in*
Mounting position	vertical

PUB LS/P1 17046 EN

DSC1

Product description

DSC1 pressure switches are electronic pressure switches with integrated digital display for relative pressure measurement. They are used primarily for pressure monitoring. Depending on the design, they also can assume control functions. Pressure switch points, pressure indication, and the switching logic can be configured and programmed easily. A backlit, four-digit, digital display indicates switching with LEDs. DSC1 can operate in switching point, hysteresis and window function modes. The switching mode can be programmed separately for each output.

Features and benefits

- Available for rising and falling pressures from 0 to 40 bar in 0.2-bar increments
- Micro switch is designed as a change-over switch, can be used as both a normally closed contact (NC) and a normally open contact (NO)
- Backlit, four-digit digital display indicates switching with LEDs on a backlit
- Can operate in switching point, hysteresis and window function modes
- Encodable access protection
- Digital and analog output

Applications

- Machine tools
- Printing machines
- Wind
- Vehicle
- Steel and heavy industries

Technical data

Order number	**DSC1–A040A–1A2A**
Function principle	pressure switch
Lubricant	oil and fluid grease NLGI 000, 00, 0
Operating temperature	–10 to +80 °C *+14 to 176 °F*
Operating pressure	max. 100 bar max. *1 450 psi*
Switch type	micro switch
Contact type	change-over
Operating voltage	10 to 32 V DC
Power consumption	max. 50 mA
Output signal	2, PNP transistor stages
Vibration resistance	10 g (5-500 Hz)
Service life	100 × 10^6 pressure changes
Materials:	
Housing	aluminum, stainless steel
Control panel	polycarbonate
Electrical connection	M 12 × 1, 5-pin
Pressure port	G $^1/_8$ (F)
Protection class	IP 65
Dimensions	34 × 90,7 × 49,4 mm; *1.33 × 3.57 × 37.4 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1701-EN**

3D data and product configuration:
skf-lubrication.partcommunity.com/3d-cad-models/

PUB LS/P1 17046 EN

Pressure sensor

247333

Product description

The 24733 analog pressure transducer signals actual system pressure to a monitoring controller. It can be installed in end of single-line metering device manifolds or by the use of adapters. Comes with 1,8 m *(72 in)*, shielded, shielded 24-gauge connecting wire. Maximum length of wire between transducer and monitor is 9,1 m *(30 ft)*.

Features and benefits

- Analog pressure transducer signals actual system pressure from 0 bar to 276 bar *(0 to 4 000 psi)*
- Complete unit with 1,8 m *(72 in)*, shielded, 24-gauge connecting wire
- Installable on end of single-line metering device manifolds or by the use of adapters
- Sturdy, easy-to-handle product
- Cost-saving alternative to high-end sensors

Applications

- Metalworking
- Material handling equipment
- Off-road applications
- Mobile equipment use
- Food and beverage

Technical data

Order number	**247333**
Function principal	analog pressure transducer
Lubricant	oil and fluid grease: NLGI 000, 00, 0; grease: NLGI 1, 2
Switching pressure range	0 to 275 bar *0 to 4 000 psi*
Accuracy	±1%
Operating pressure	max. 515 bar max. 7 500 psi
Operating temperature	–29 to +82 °C *–20 to +180 °F*
Electrical input	10 to 30 V DC
Voltage output	1-6 V DC
Offset	1 V DC
Enclosure	NEMA 4X Rating
Pressure port	1/4 NPT (m)
Electrical connection	24 AWG 360° PVC shielded UL approved
Materials	stainless steel
Dimensions	16 × 76,2 mm; *0.625 × 3 in*
Mounting position	any

PUB LS/P1 17046 EN

35024 ...

350283

253-14076-X

525-320-XX-1

161-110-031

161-140-050

Solenoid valves

PUB LS/P1 17046 EN

Overview of solenoid valves

Solenoid valves

Product	Type	Operating pressure max.		Operating temperature		Voltage		Page
		bar	*psi*	°C	*°F*	VDC	VAC	
350241	3-way	10,3	*150*	-18 to +60	*0 to 140*	–	110–240	182
350242	3-way	10,3	*150*	-18 to +60	*0 to 140*	–	110–240	182
350244	4-way	10,3	*150*	-18 to +49	*0 to 120*	–	110–240	182
350245	4-way	10,3	*150*	-18 to +49	*0 to 120*	–	110–240	182
350282	3-way	10,3	*150*	-18 to +60	*0 to 140*	12	–	183
350283	3-way	10,3	*150*	-18 to +60	*0 to 140*	24	–	183
253-14076-6	3/2-way	0,5–16	*7.3–232*	-10 to +55	*14 to 131*	–	110	184
253-14076-7	3/2-way	0,5–16	*7.3–232*	-10 to +55	*14 to 131*	–	230	184
525-32085-1	3/2-way	0–400	*0–5 800*	-20 to +60	*-4 to +140*	24	–	185
525-32086-1	3/2-way	0–400	*0–5 800*	-20 to +60	*-4 to +140*	–	110	185
525-32087-1	3/2-way	0–400	*0–5 800*	-20 to +60	*-4 to +140*	–	230	185
161-110-031	2/2-way	max. 500	*max. 7 250*	-25 to +80	*-13 to +176*	24	–	186
161-140-050	4/2-way	max. 320	*max. 4 350*	-25 to +80	*-13 to +176*	24	220	187

PUB LS/P1 17046 EN

PUB LS/P2 XXXX EN

35024 ...

Product description

Electric solenoid-operated air valves 350241 to 350245 operate as 3-way or 4-way solenoid air valves. They are used to operate single-stroke or reciprocating-stroke, air-controlled pumps in single-line systems. Timer- and pressure-controlled air is supplied to the pumps, activating air-powered forward strokes and spring- (3-way) or air-powered (4-way) return strokes. In doing so, pumps discharge lubricant to the connected metering devices.

Features and benefits

- Timer- and pressure-controlled pump operation
- Use as 3-way or 4-way solenoid valves
- For operation of single-stroke or reciprocating-stroke pumps
- Flexible usage selectable on electrical VAC power requirements

Applications

- Mining and mineral processing
- Heavy machines

Technical data

Function principle
Model 350241, 350242 . . . . . 3-way, solenoid-operated air valve
Model 350244, 350245 . . . . . 4-way, solenoid-operated air valve

Operating temperature
350241, 350242 . . . . . –18 to +60 °C, *0 to +140 °F*
350244, 350245 . . . . . –18 to +49 °C, *0 to +120 °F*
Operating pressure . . . . . max. 10 bar; *150 psi*
Operating voltage . . . . . 110–240 VAC
Current . . . . . 8,4 A

Current inrush
Model 350241, 350244 . . . . . 0,11 A
Model 350242, 350245 . . . . . 0,055 A

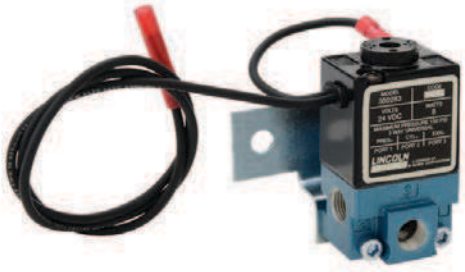
Current holding
Model 350241, 350244 . . . . . 0,7 A
Model 350242, 350245 . . . . . 0,35 A
Air inlet/outlet . . . . . $^1/_4$ NPT (F)
Conduit connection . . . . . $^1/_2$ NPS (F)
Mounting position . . . . . any

Order number

Order number	Operating voltage	Type
350241	110 VAC, 50 Hz, 120 VAC, 60 Hz, 8,4 VA	3-way
350242	220 VAC, 50 Hz, 240 VAC, 60 Hz, 8,4 VA	3-way
350244	110 VAC, 50 Hz, 120 VAC, 60 Hz, 8,4 VA	4-way
350245	220 VAC, 50 Hz, 240 VAC, 60 Hz, 8.4 VA	4-way

PUB LS/P1 17046 EN

350282, 350283



Product description

Electric solenoid-operated air valves 350282 and 350283 operate as DC 3-way solenoid air valves. They are used to operate single-stroke, air-controlled pumps in single-line systems.Timer- and pressure-controlled air is supplied to the pumps, activating air-powered forward strokes and spring- (3-way) return strokes. In doing so, pumps discharge lubricant to the connected metering devices.

Features and benefits

- Timer- and pressure-controlled pump operation
- Use as 3-way solenoid valves
- For operation of single-stroke pumps
- Flexible usage selectable on electrical 12 or 24 V DC power requirements

Applications

- Mining and mineral processing
- Heavy machines

Technical data

Order number	**350282, 350283**
Function principle	3-way solenoid air valve
Voltage supply:	
350282	12 V DC, 6 VA
350283	24 V DC, 6 VA
Operating temperature	–18 to +60 °C, *0 to +140 °F*
Operating pressure	max. 10 bar; *150 psi*
Air inlet/outlet	$^1/_8$ NPT (F)
Cv factor	0.18
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **442832**

PUB LS/P1 17046 EN

253-14076-X

Product description

Pumps in single-line systems can be supplied and actuated with compressed air via servo-controlled, 3/2-way piston valves (magnetic valve). For function and operation of the valve, a minimum differential pressure of 0,5 bar is requested. The valve is equipped with a control for initiation and check of function. Currentless, the valve is open to outlet A. It has a smooth-running servo piston. A 3/2-way pilot valve (tilting armature valve) provides safe and reliable operation.

Features and benefits

- Simple to install; no extra parts required
- Service friendly manual control of function
- Medium, separated pilot valve for higher operational safety
- Ground-optimized piston design for low switching pressure
- Power-saving pulse inductor

Applications

- Conveyors, transportation systems
- Chain lubrication
- Spray systems

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **W-115-EN-1212**

Technical data

Function principle	3/2-way solenoid air valve with servo piston
Initial state	outlet A open
Operating temperature	–10 to +55 °C *+14 to 131 °F*
Operating pressure	0,5–16 bar; *7.3–232 psi*
Supply voltage	
253-14076-6	110 VAC, 50 Hz
253-14076-7	230 VAC, 50-60 Hz
Power consumption	8 W
Protection class	IP 65
Air inlet	G 1/2
Air return connection	G 3/4
Nominal width	12 mm; *8.35 in*, socket
Materials	brass, NBR
Output connection	socket for cable ø 7 mm *ø 0.28 in*
Dimensions	179,5 × 76 × 33 mm *7.06 × 3 × 1.3 in*
Mounting position	any, especially impulse upward

Solenoid valves 253-1XXXX-X series

Order number	Type	Operating voltage	Connection thread BSPP (F)
253-14076-6	3/2-way valve	110-120 VAC	G 1/2
253-14076-7	3/2-way valve	230 VAC	G 1/2

PUB LS/P1 17046 EN

525-320 ...-1

Product description

3/2-way solenoid valves are suitable to supply lubricant in different lubrication circuits and also are used as release valves. Each lubrication circuit can be connected to one pump outlet by switching off or switching on separately. Thereby, the pressure inlet is connected either to one or to the other circuit. Solenoid valves are equipped with a dry magnetic rotor and a conical seat valve. In their initial state, the valves always are open to the return line and are activated by a return spring. The current switching positions remain as long as current is switched on. Solenoid valves are switchable and resistant to compression in both flow directions.

Features and benefits

- Suitable to divide lubricant in different lubrication circuits on different time sequences
- Equipped with a dry magnetic rotor and a conical seat valve
- Switchable and resistant to compression in both flow directions

Applications

- Construction machinery
- Wind turbines
- Mining

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **W-115-EN-1212**

Technical data

Function principle	3/2-way solenoid valve
Initial state	outlet B to R is open
Lubricant	oil, fluid grease and grease NLGI 0, 1, 2
Operating temperature	–20 to +60 °C, *–4 to +140 °F*
Operating pressure	0-400 bar; *0–5 800 psi*
Flow rate	max. 2 400 cm^3/min max. *146.5 in^3/min*
Supply voltage	24 VDC, 110 VAC, 50 Hz, 230 VAC, 50-60 Hz
Current draw	0,83 A; 0,2 A; 0,1 A
Rated power	20 W
Pressure connection	G $^3/_8$
Protection class	IP 54
Isolation class	F
Materials	steel, aluminum
Dimensions	147 × 50 × 45 mm *5.78 × 1.96 × 1.77 in*
Mounting position	any

Solenoid valves 525-320XX-1 series

Order number	Type	Operating voltage	Connection thread BSPP (F)
525-32085-1	3/2-way valve	24 VDC	G $^3/_8$
525-32086-1	3/2-way valve	110 VAC	G $^3/_8$
525-32087-1	3/2-way valve	230 VAC	G $^3/_8$

PUB LS/P1 17046 EN

161-110-031

Product description

The directional valves are used to control the flow of lubricants, e.g. to divide up a central lubrication system into a number of lubrication circuits (zoned actuation) or to switch between circulating and intermittently operated lubrication circuits. Valves for a maximum pressure of up to 45 bar can be used for single-line lubrication systems with metering devices. Valves for a pressure range of up to 300 or 500 bar also are suitable for progressive systems.

Features and benefits

- Directional valves for oil with a low or high effective viscosity and greases up to NLGI Grade 2
- 2-, 4- or 5-way valve switching functions selectable for zoned actuations
- For single-line systems with sectional supplying of lubricants dependent upon different times and quantities
- Manual action possible

Applications

- Paper industry
- Steel industry
- Heavy industry

Technical data

Order number	**161-110-031**
Function principle	2/2-way solenoid valve
Lubricant	oil and grease up to NLGI 2
Operating temperatures:	
Oil, 4–1 500 mm/s²	–40 to +80 °C; *–40 to +176 °F*
Grease, 700 mbar	–25 to +80 °C; *–13 to +176 °F*
Operating pressure	max. 500 bar, *max. 7 250 psi*
Hydraulic connector	$G^1/_4$
Materials	aluminum
Supply voltage	24 VDC
Rated current	0,67 A
Rated power	16 W, 5 W
Electrical connection	DIN EN175301-803
Protection class	IP 65 with plug
Dimensions	146,5×55×45 mm *5.77×2.17×1.77 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1703-EN**

PUB LS/P1 17046 EN

161-140-050

Product description

These directional valves are used to control the flow of lubricants, e.g. to divide up a central lubrication system into a number of lubrication circuits (zoned actuation) or to switch between circulating and intermittently operated lubrication circuits. Valves for a maximum pressure of up to 45 bar can be used for single-line lubrication systems with metering devices. Valves for a pressure range of up to 300 or 500 bar also are suitable for progressive systems.

Features and benefits

- Directional valves for oil with a low or high effective viscosity and greases up to NLGI Grade 2
- 2-, 4- or 5-way valve switching functions selectable for zoned actuations
- For single-line systems with sectional supplying of lubricants dependent upon different times and quantities
- Manual action possible

Applications

- Paper industry
- Steel industry
- Heavy industry

Technical data

Order number	**161-140-050**
Function principle	4/2-way valve
Lubricant	oil and grease up to NLGI 2
Valve, basic position	sliding, open P to A
Operating temperatures:	
oil, 4-1 500 mm/s²	–40 to +80 °C *–40 to +176 °F*
grease, 700 mbar	–25 to +80 °C *–13 to +176 °F*
Operating pressure	max. 320 bar *max. 4 350 psi*
Hydraulic connector	base plate G 1/4
Materials	aluminum
Supply voltage	DC and AC
Rated current	1,33 A at 24 VDC; 0,17 A at 220 VAC, 50 Hz
Rated power	16 W, 5 W
Electrical connection	DIN EN175301-803
Protection class	IP 65 with plug
Dimensions	148 × 58 × 45 mm *5.83 × 2.28 × 1.77 in*
Mounting position	any

NOTE
For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **1-1703-EN**

PUB LS/P1 17046 EN

Index of order numbers

Index of order numbers

Index of order numbers

Index of order numbers

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