



Multi-line lubrication systems

Product catalogue



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

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Accessories

Two leading brands

Oil

SKF®

Grease

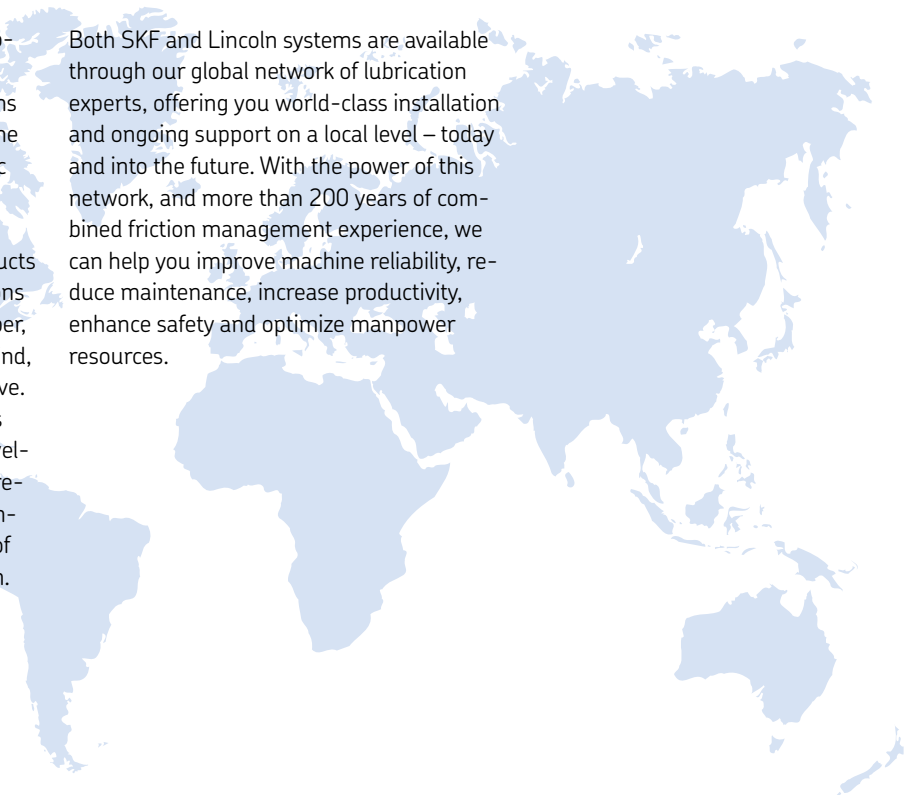
LINCOLN®

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.



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 grade 000, 00 and 0 greases are called fluid greases.

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



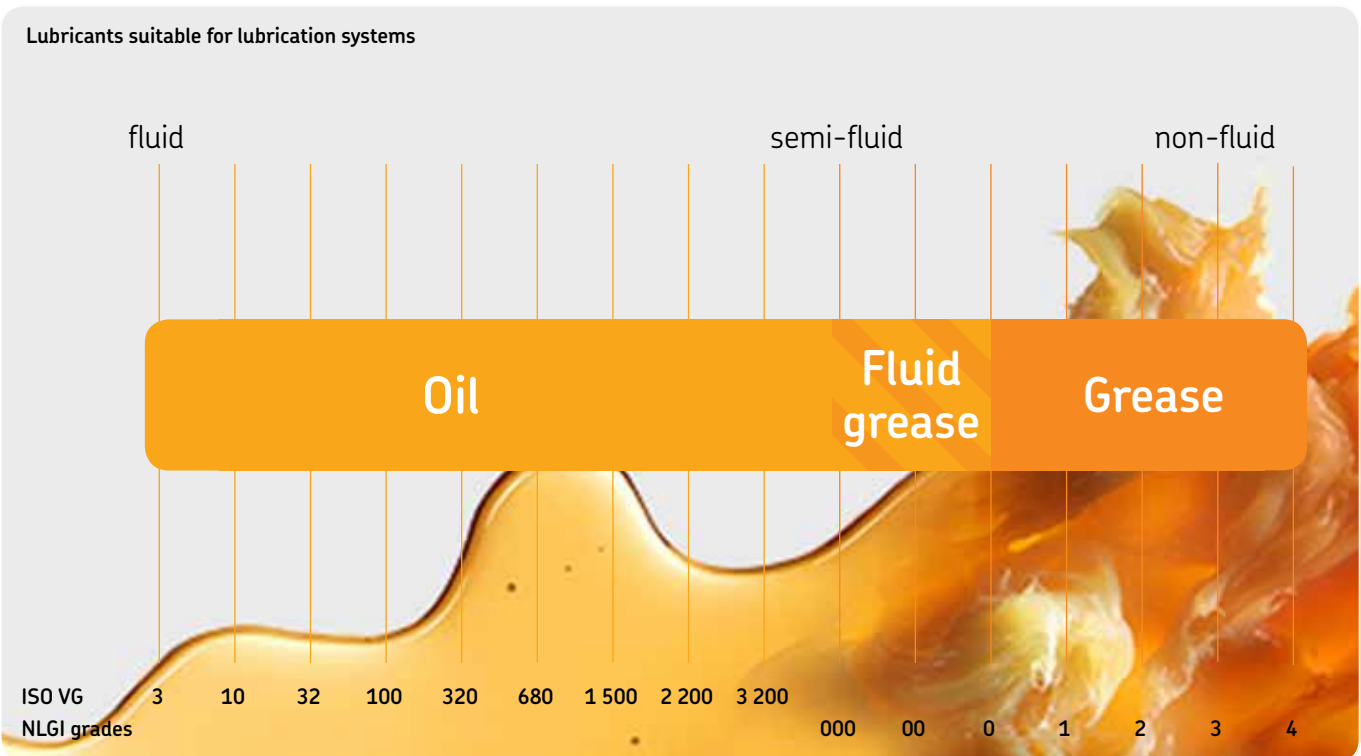
Grease

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

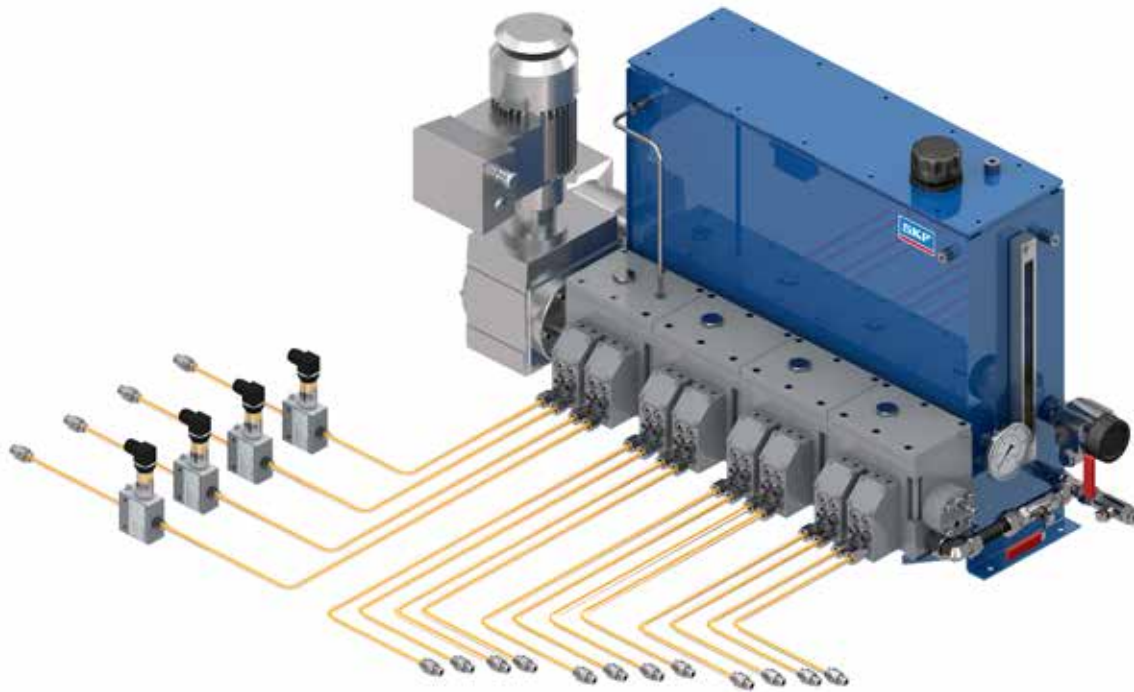
In most instances, greases of NLGI grade 1 up to 3 are suitable for use in a lubrication system. A compatibility check should be made prior to using any grease with SKF lubrication systems.

Oil

Grease



Multi-line lubrication systems for oil



System description

SKF multi-line lubrication systems consist of the following components: A pump unit, control and monitoring devices, tubing and fittings. Multi-line pump units supply lubricant to lubrication points without extra metering dividers. Thus, each lubrication point has its own pumping element. The system design is simple, accurate and most reliable.

Multi-line pumps can be actuated mechanically, electrically or hydraulically. The easily exchangeable pumping elements are usually operated by eccentric cam. Depending on drive speed, gearbox ratio and selected pump element size, a delivery range from almost 0 to 227 cm³/min (0 to 13,85 in³/min) can be covered.

By selecting pumping elements with different piston diameters and/or stroke settings, an individual lubrication volume per pump outlet is possible. The possible numbers of outlets range from 1 to 28.

SKF Multi-line oil pumps are designed for demanding applications in nearly all industries and for pressure requirements up to 4 000 bar (58 000 psi).

Advantages:

- Sturdy; durable pump series designed for 24/7 operation
- Simple; continuous lubrication without electrical cycle timers, in most cases
- Versatile; select individual pump element characteristics and oil reservoir size
- Precise; set the required stroke volume at the pumping element
- High delivery speed in milliseconds for timed and pin-pointed lubrication (PD series)
- Broad viscosity range due to special designs and small piston clearance
- ATEX explosion-proof versions available
- Extra, downstream-located flow control valves or progressive metering devices possible

Systems



Applications

SKF Multi-line oil pumps are sophisticated and have a long tradition going back to applications in steam-driven locomotives. Currently, they deliver the high reliability standard required in high-stressed machines in sensitive areas with a high vibrations, special formulated oils, high lubrication point back pressures or certain safety regulations such as:

- Vacuum pumps, compressors (all types) and hyper-compressor industry
- Combustion engines for valve and cylinder liner lubrication
- Important oil total loss or very small oil circulating applications
- Rubber-mixing machinery, supply of critical plasticizer oil
- Meet ATEX and API standards in the oil and gas industry



Pumps and pump units

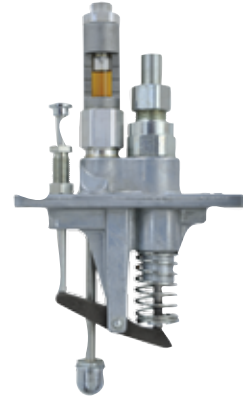
SP/G



RA...U



55i



PD...



PC



RAM



JM



SP/PFE



Overview of oil pumps and pump units

Mechanically operated pump units

Product	Outlets	Reservoir		Metering quantity per outlet		Operating pressure max.		ATEX ¹⁾	Page
		l	gal	cm ³ /min	in ³ /min	bar	psi		
SP/G	2 or 4	on request	on request	0,14–2,9	0.08–0.18	3	44	–	10
RA ... U	1 to 20	on request	on request	0,07–36	0.004–2.2	63	913	• ²⁾	14
55i	1 to 14	1; 1,9; 3,8	0.26; 0.5; 2.1	0,2–12,7	0.012–0.77	400	5 800	–	22
JM	1 to 28	2; 4; 6 ... 14; any	0.5; 1.06; 1.6 ... 3.7; any	0,17–5,0	0.01–0.31	600	8 700	• ³⁾	24
SP/PFE	1 to 5	on request	on request	1,0–75,0	0.06–4.6	4 000	58 000	• ³⁾	26

Hydraulically operated pump units

Product	Outlets	Reservoir		Metering quantity per outlet		Operating pressure max.		Page
		l	gal	cm ³ /min	in ³ /min	bar	psi	
PD ...	4 to 10	–	–	0–20	0–1.22	63	913	12
PC	1 to 28	–	–	1,74–227	0.1–14	50	725	20

Electrically operated pump units ⁴⁾

Product	Outlets	Reservoir		Metering quantity per outlet		Operating pressure max.		ATEX ¹⁾	Page
		l	gal	cm ³ /min	in ³ /min	bar	psi		
RA... M/RA B	1 to 20	0,3; 7; 15; any	0.8; 1.8; 4; any	0,07–36	0.004–2.2	60	870	• ²⁾	16
PC	1 to 28	–	–	1,74–227	0.1–14	50	725	–	20
JM	1 to 28	2; 4; 6 ... 14; any	0.5; 1.06; 1.6 ... 3.7; any	0,15–7,95	0.055–0.49	600	8 700	• ³⁾	24
SP/PFE	1 to 5	on request	on request	1,0–75,0	0.06–4.6	4 000	58 000	• ³⁾	26

¹⁾ on request

²⁾ for gas: II 2G c IIC T4 Gb; for dust: II 2D c IIIC T 135°C Db

³⁾ for gas: II 2G c IIC T4 Gb

⁴⁾ all data are based on 50 Hz operation for connection with a frequency of 60 Hz, the speed and the volumetric flow are increased by 20%, at ambient temperatures above +40 °C (+104 °F) there is a reducing of motor performance of approx. 1% per Kelvin

Pump unit

SP/G

oil



SP/G 02



SP/G 04

Product description

SP/G pumps are rotary operated multi-line piston pumps with an internal gear ratio of 30:1. The compact pump design with only two rotating/movable parts is slide operated and requires no rubber seals nor springs or additional non-return valves.

The SP/G is available as a self-priming pump or as a pump with priming pressure. Designs with two or four outlets are available. The two outlet version is available in two different stroke volumes. One vibration proof stroke regulating screw per outlet pair allows fine-tuned stroke settings

Features and benefits

- Maintenance free and vibration proof 24/7 design
- Designed for high ambient temperatures and all standard lube oils
- Machine operated, adjustable, no under or over lubrication
- Oil supply from the machine sump or from existing oil circulation system
- Wide speed range and adjustable output
- Available for two drive directions

Applications

- Reciprocating compressors
- Vacuum pumps in plastic bottle production
- Marine industry; inlet valve seat lubrication for powerful 4-stroke engines
- General machine driven applications



Technical data

Function principle	mechanically operated piston pump
Operating temperature	max. 100 °C, 212 °F
Operating pressure	3 bar; 43 psi, plus inlet pressure
Inlet pressure	0 or 2 to 6 bar, 0 or 30 to 85 psi
Outlets	2 or 4
Lubricant	mineral, synthetic, environmentally safe oil; up to 12 to 800 mm ² /s
Metering quantity max. ¹⁾	piston K 6: 0,042 cm ³ /stroke, 0.0026 in ³ /stroke piston K 7: 0,058 cm ³ /stroke, 0.0035 in ³ /stroke
Internal ratio	30:1
Drive speed	300–3 000 r/min
Drive direction	left/right
Connection in/outlet	for tube ø 4 and 6 mm OD
Dimensions	2 outlets: 56 × 88,5 × 45 mm 2.22 × 3.5 × 1.8 in 4 outlets: 69 × 85 × 45 mm 2.7 × 3.4 × 1.8 in
Mounting position	any
Options	customized pre-setted volumes

¹⁾ with priming pressure increased delivery volume see technical information

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
951-170-219-EN

Pump unit

SP/G

Order number configurator

SP/G / 30

Product series
SP/G

Outlets
02 = 2
04 = 4

Gear ratio
30 = 30:1

Oil inlet design
S = self priming suctional operation
P = pressure tight for overhead reservoirs or priming pump

Piston size
6 = piston K6, 6 mm OD
7 = piston K7, 7 mm OD

Accessories

SP/G tube connections

Order number	Designation
--------------	-------------

Inlet screw unions

406-001 double tapered ring for tube \varnothing 6 mm OD

406-002 socket union M10×1 – tube \varnothing 6 mm OD

Outlet screw unions

404-001 double tapered ring for tube \varnothing 4 mm OD

404-002 socket union M8×1 tube \varnothing 4 mm OD

SP/G coupling element with snap ring

Order number	Designation	Item
44-1202-2038	coupling element	1
44-0606-6302	snap ring for coupling element	2

Coupling element



Snap ring



PDYY, PDYC, PDYE and PDYS



PDYY



PDYC



PDYE



PDYS

Product description

The PDY ... pumps are designed for high-speed cylinder lubrication on two-stroke engines. An existing hydraulically system or SKF drive pump unit supplies the drive oil for the PDY ... pumps. The engine electronics trigger the pre-loaded pumps by activating the solenoid valve. Due to the integrated quick feedback sensor (resolution 0.1 ms), the exact stroke volume can be synchronized with the moving engine piston. The smart engine electronics can speed up or slow down the ignition timing to reach different piston stress areas with lubricating oil.

The PDYY and PDYC have a different baseplate configuration with safe pipe in the pipe main line connection for 6 or 8 outlets. The PDYE is designed for economical and quick direct rail assembly. PDYS has a double-stroke functionality to realize the higher speed requirements on small-bore engines with only four outlets per cylinder. These timed or pulsed systems are extremely robust and designed for 24/7 operation.

Features and benefits

- Timed metering quantities within a millisecond exact time frame
- Load dependent lubrication of defined cylinder/piston areas
- Modular, pre-adjusted design; simple to assemble and service
- Prevents over-lubrication, deposits, excess smoke and CO²
- Due to the exact timing, enables up to 40% oil savings
- Retrofit solutions available

Applications

- Marine, cylinder lubrication systems (CLU 4; CLU 4C; CLU 4eco; CLU 5)
- General industry
- Large two-stroke crosshead diesel engines
- Special pinpointed chains or compressors

Technical data

Function principle	electrically-hydraulically operated multi outlet pump
Operating temperature	+5 to 70 °C, +41 to 158 °F
Operating pressure	45 to 55 bar, 650 to 800 psi
Outlets.	PDYS: 4 PDYY, PDYC: 6 or 8 PDYE: 6, 8 or 10
Lubricant.	mineral based oil up to SAE50; 25 to 2 000 mm ² /s
Drive oil.	PDYS: supply unit with lubricating oil PDYY, PDYC, PDYE: mineral based system oil up to SAE30
Metering quantity outlet/stroke	40 to 310 mm ³ , 0.0024 to 0.019 in ³
Outlet connection	G 1/4, incl. connector for tube ø 6 or 8 mm OD
Injection time.	PDYS, PDYE: <5 ms; PDYY, PDYC: <8 ms
Electrical connections	24 V DC
Dimensions	max. 270 × 261 × 180 mm: max. 10.6 × 10.3 × 7.1 in
Protection class	IP 65
Mounting position	any, only PDYE: horizontal
Options	oil drive units with redundant pumps according to the marine standard

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
 PDYY; System CLU4: **951-130-314 EN**
 PDYC; System CLU4C: **951-160-012 EN**
 PDYE; System CLU4eco: **951-170-225 EN**
 PDYS; System CLU5: **951-170-210 EN**

Pump unit

PDYY, PDYC, PDYE and PDYS

Order number configurator	PDYC							-	
<p>Product series</p> <p>PDYY = electrically/hydraulically operated pump; (CLU4) PDYC = electrically/hydraulically operated pump; compact design (CLU4C) PDYE = electrically/hydraulically operated pump; flange design (CLU4eco) PDYS = electrically/hydraulically operated pump; small design (CLU5)</p> <p>Outlets</p> <p>04 = 4 outlets 06 = 6 outlets 08 = 8 outlets 10 = 10 outlets</p> <p>Engine bore size cm</p> <p>35 = 35 cm, 1.38 in 40 = 40 cm, 1.57 in 96 = 96 cm, 3.78 in XX = engine size independent</p> <p>Accumulator</p> <p>A = 0,7 l, 0.18 gal B = 0,32 l, 0.085 gal, for PDY/Y/C X = without</p> <p>Metering quantity per stroke</p> <p>PDYS: 40 = 40 mm³, 0.0024 in³ 60 = 60 mm³, 0.0037 in³</p> <p>PDYE: 60 = 60 mm³, 0.0037 in³ ... 230 = 230 mm³, 0.014 in³</p> <p>Outlet connection for tube ø OD</p> <p>A = 6 mm B = 8 mm</p> <p>Design key</p> <p>0201 = basic version without bracket 4XXX = special version</p> <p>Solenoid valve</p> <p>24DC = voltage 24 V DC</p>									

Accessories

PDYY, PDYC, PDYE and PDYS accessories

Order number	Pump	Designation
161-140-050+924	PDY/Y/C/E	solenoid valve
161-140-056+924	PDYS	solenoid valve
24-1884-2324	PDY/Y/C/E	pressure sensor
24-1884-2397	PDYS	pressure sensor
24-2578-2041	PDY/Y/C	accumulator: 0,32 l, 0.085 gal

Pump unit

RA ... U

oil



Product description

The RA multi-line pump is a unique radial piston pump with stackable pump elements. The modular pump design allows up to five pump elements, each with one, two, or four outlets. A later outlet reduction or outlet extension is thus possible.

The displacement of all outlets from a pump element is adjustable by a common setting device, setting range 33–100%. Several different mechanical or electric motor drives are available.

Features and benefits

- Modular pump to point solution for 1 to 20 lubrication points
- Depending on the drive speed respective selected drive ratio, RA pumps covers feed rates of some droplets until 36 cm³/min (2.2 in³/min)
- Drive direction left or right
- Allows mineral and synthetic based oil
- Vibration proof, marine and ATEX versions available

Applications

- Supplies different lubrication zones, lube points or chain pins
- General industry, total loss and small oil circulation applications
- As economic power unit for sealing oil systems
- All types of gas compressors and large pumps
- Marine, valve seat lubrication on large 4-stroke engines

Technical data

Function principle	radial piston pump with stackable pumping elements
Operating temperature	-15 to 80 °C, +5 to +176 °F
Operating pressure	10 to 63 bar, 145 to 915 psi depending on drive speed and oil viscosity
Outlets	1 to 20 (max. 5 elements with 1, 2 or 4 outlets)
Lubricant	mineral and synthetic based oil, 25 to 2 500 mm ² /s
Metering quantity per outlet	0.007–0.02 cm ³ /revolution 0.0004–0.0012 in ³ /revolution
Output per outlet	0.07–36 cm ³ /min 0.004–2.2 in ³ /min
Internal ratio	1:1, 5:1, 10:1, 15:1, 25:1, 75:1, 125:1
Dimensions	min. 113 × 54 × 54 mm max. 220 × 54 × 54 mm min. 4.45 × 2.13 × 2.13 in max. 8.68 × 2.13 × 2.13 in
Drive speed	10 to 1 800 r/min
Protection class	min. IP 55
Mounting position	any
Options	with manual hand crank for pre-lubrication, customized pre-set volume version with two inlet sections for two different oil types

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication: **11103 EN; 951-170-230 EN**

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

PUB LS/P2 17478 EN

Pump unit

RA ... U

Order number configurator

RA																				0001
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Product series
RA = radial piston pump

Drive; rotary
1UA = coaxial without gear reduction
3UA = coaxial with gear reduction
2UB = bevel gear

Ratio
00 = 1:1 (only for 1UA drive)
01 = 10.5:1 (only for 3UA drive)
05 = 5:1
15 = 15:1
25 = 25:1
75 = 75:1
13 = 125:1

Drive location
 / = coaxial
A = drive location A (only for 3UA drive)
B = drive location B (only for 3UA drive)

Pump elements, define max. 5 elements
1 = 1 element with 1 outlet
2 = 1 element with 2 outlets
4 = 1 element with 4 outlets

Prelubrication
D = prelubrication (only for 2UB drive)
 / = without prelubrication crank

Drive direction
R = right (2UB drive with prelubrication only)
L = left

Design key
0001 = standard including FPM seals



Accessories

RA pump elements	
Order number	Designation
24-1557-3520	pump element, with 1 outlet
24-1557-3521	pump element, with 2 outlets
24-1557-3522	pump element, with 4 outlets

Pump unit

RA ... M / RAB



Product description

The RA multi-line pump is a unique radial piston pump with stackable pump elements. This modular pump design enables use of up to five pump elements, each with one, two or four outlets. Thus, a subsequent outlet reduction or expansion can be accomplished easily. Displacement of all outlets from a pump element is adjustable by a common setting device and features a setting range of 33-100%. The RAB series have a pre-assembled oil reservoir.

Features and benefits

- Modular, pump-to-point solution for 1 to 20 lubrication points
- Depending on drive speed and step-down ratio, RA pumps cover feed rates of certain droplets to 36 cm³/min
- Left or right drive direction
- Compatible with mineral- and synthetic-based lubrication oils
- Vibration-proof, Marine and ATEX versions available

Applications

- Supplies different lubrication zones, lube points or chain pins
- General industry, total loss, sealing and small oil circulation applications
- All types of gas compressors and large pumps
- Marine industry, for small circulating systems in general



NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
11103 EN; 951-170-230 EN

3D data and product configuration:

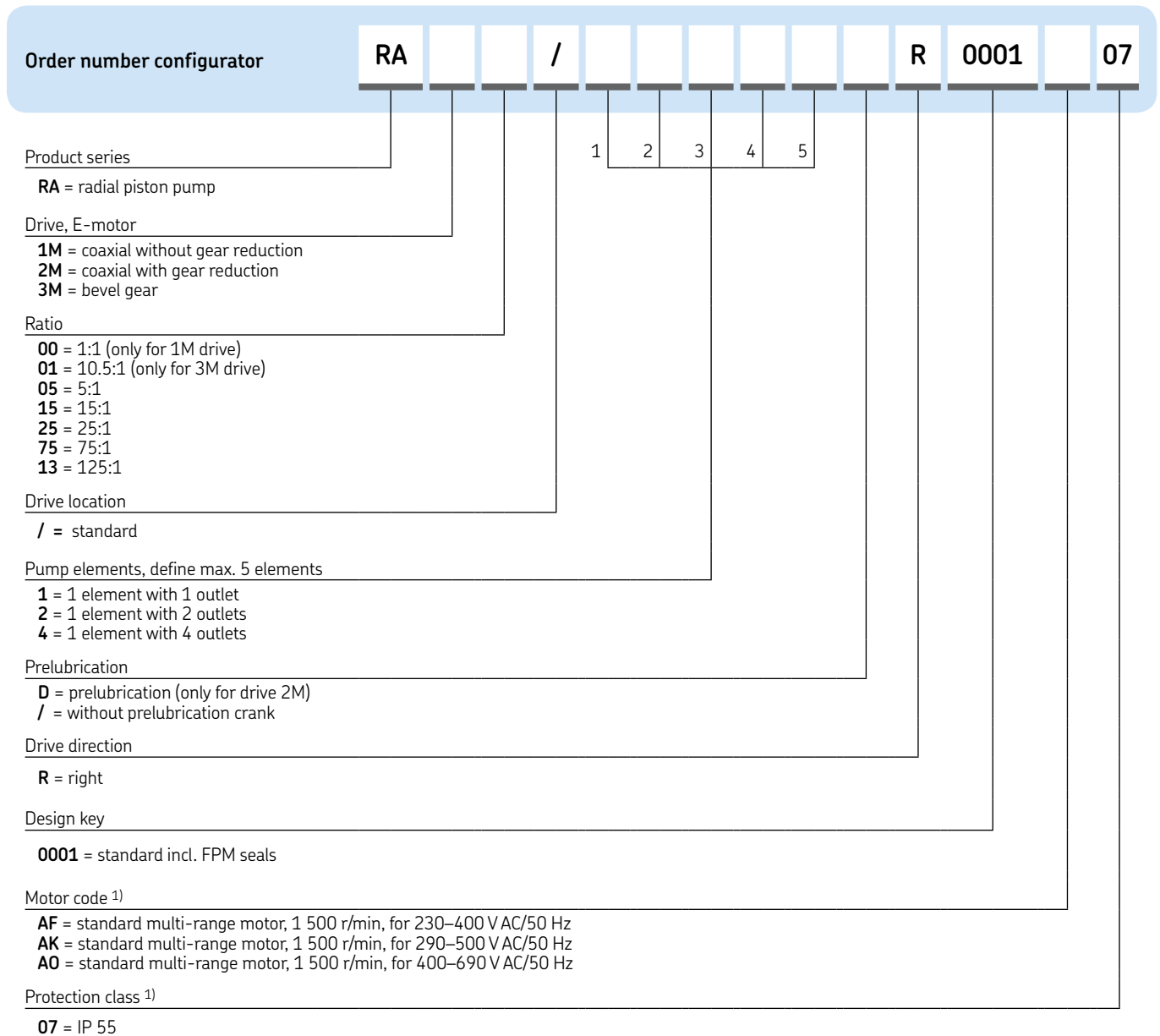
skf-lubrication.partcommunity.com/3d-cad-models/

Technical data

Function principle	radial piston pump with stackable pumping elements, mechanically or electrically operated
Operating temperature	-15 to 80 °C, +5 to 176 °F electrically operated: -15 to 60 °C; +5 to +140 °F
Operating pressure	10 to 63 bar, 145 to 913 psi depending on drive speed and oil viscosity
Outlets	1 to 20 (max. 5 elements with 1, 2 or 4 outlets)
Lubricant	mineral and synthetic oil, 25 to 2 500 mm ² /s
Reservoir	3, 7, 15 l and more, 0.8, 1.8, 4 gal and more
Metering quantity per outlet	0.007–0.02 cm ³ /revolution 0.0004–0.001 in ³ /revolution
Output per outlet	0.07–36 cm ³ /min 0.004–2.2 in ³ /min
Internal ratio	1:1, 5:1, 10,5:1,15:1, 25:1, 75:1, 125:1
Drive speed	10 to 1 800 r/min
E-motor drive	with 3-phase motor
Connection in/outlet	G ¹ / ₈
Dimensions	without reservoir: min. 113 × 54 × 54 mm max. 220 × 54 × 54 mm min. 4.45 × 2.13 × 2.13 in max. 8.68 × 2.13 × 2.13 in with reservoir: min. 400 × 333 × 140 mm max. 650 × 441 × 288 mm min. 15.7 × 13.1 × 5.5 in max. 25.6 × 17.4 × 11.3 in
Protection class	min. IP 55
Mounting position	any, RAB versions vertical
Options	with manual hand crank for pre-lubrication, customized pre-setted volume, reservoir options with further accessories

Pump unit

RA ... M

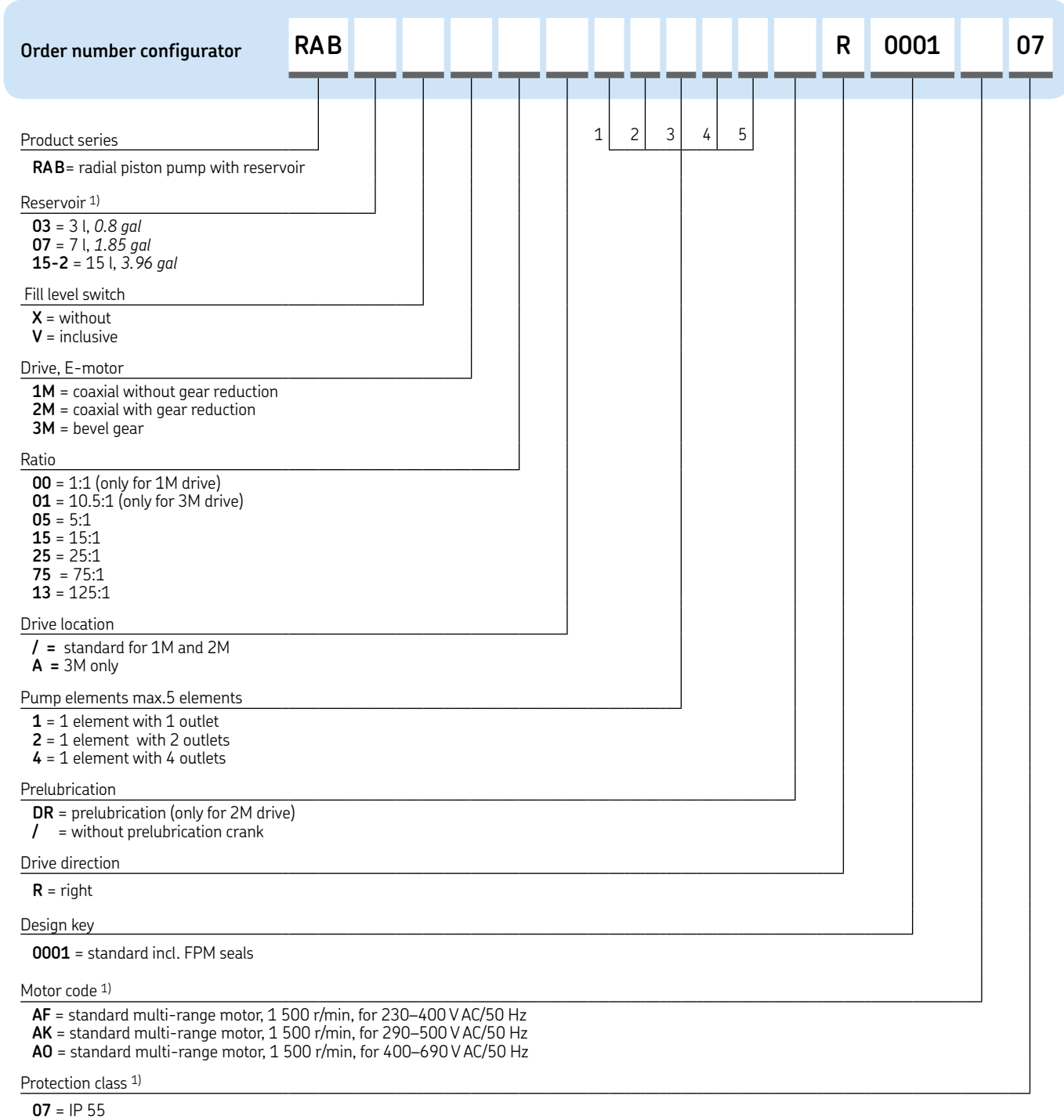


¹⁾ others models on request

Pump unit

RAB

01



¹⁾ others models on request

Pump unit

RA ... accessories

RA ...U drive assembly

Order number	Designation
1UA, 2UB, 3UA	mechanically drive
24-0701-3000	coaxial 1:1
24-0701-3070 24-0701-3080	coaxial 5:1 coaxial 5:1 with prelubrication
24-0701-3001 24-0701-3002	bevel gear, 10,5:1, position A bevel gear, 10,5:1, position B
24-0701-3071 24-0701-3081	coaxial 15:1 coaxial 15:1 with prelubrication
24-0701-3072 24-0701-3082	coaxial 25:1 coaxial 25:1 with prelubrication
24-0701-3073 24-0701-3083	coaxial 75:1 coaxial 75:1 with prelubrication
24-0701-3074 24-0701-3084	coaxial 125:1 coaxial 125:1 with prelubrication
24-1721-2000 24-1721-2001	spacer ring, only oil, for ratio 1:1 spacer ring, only grease

RA ... M drive assembly (please order motor separately)

Order number	Designation
1M, 2M, 3M	e-motor drive
24-0701-3004	coaxial 1:1
24-0701-3035 24-0701-3036	coaxial 5:1 coaxial 5:1 with prelubrication
24-0701-3003 24-0701-3003	bevel gear, 10,5:1, position A bevel gear, 10,5:1, position B
24-0701-3037 24-0701-3038	coaxial 15:1 coaxial 15:1 with prelubrication
24-0701-3039 24-0701-3040	coaxial 25:1 coaxial 25:1 with prelubrication
24-0701-3041 24-0701-3042	coaxial 75:1 coaxial 75:1 with prelubrication
24-0701-3043 24-0701-3044	coaxial 125:1 coaxial 125:1 with prelubrication
24-1721-2000 24-1721-2001	spacer ring, only oil, for ratio 1:1 spacer ring, only grease

RA tie rod ¹⁾ for ratio 1:1; 10,5:1; 15:1; 25:1; 75:1

Order number	Designation
44-0717-2060 44-0717-2061 44-0717-2062 44-0717-2063 44-0717-2064	for 1 pump element for 2 pump elements for 3 pump elements for 4 pump elements for 5 pump elements
DIN125-B6.4-ST DIN934-M6-8	washer, 6.4 DIN125 ¹⁾ nut ¹⁾

RA tie rod ¹⁾ for ratio 5:1; 125:1

Order number	Designation
44-0717-2069 44-0717-2070 44-0717-2071 44-0717-2072 44-0717-2073	for 1 pump element for 2 pump elements for 3 pump elements for 4 pump elements for 5 pump elements
DIN125-B6.4-ST DIN934-M6-8	washer, 6.4 DIN125 ¹⁾ nut ¹⁾

RA pump elements for oil and grease

Order number	Designation
24-1557-3520	for 1 outlet
24-1557-3521	for 2 outlets
24-1557-3522	for 4 outlets

RA accessories

Order number	Designation
24-0413-3490	cover
95-0006-0917	cap nut
24-0801-2070	hand crank

¹⁾ two required per pump

Pump unit

PC



Product description

Mainly designed for total-loss lubrication systems with significant oil volume requirements, the PC pump unit features from 1 to 28 outlets. Delivery volume can be sub-divided using a progressive-type distributor, enabling the pump to cover up to 224 lubrication points.

This all-in-one pump unit consists of a frequency-controlled e-motor with gear reduction, pump modules with pumping elements for six pre-defined settings, optical/electrical flow controls, additional sensors for low level and optional drive speed, safety valves and connections for heating oil. Its integrated shut-off valves, one per module, allow the use of different lubricating oil and/or pumping element replacement during operation. The terminal box with pre-wired sensors contains a push button for pre-lubrication.

Features and benefits

- Accurate, robust lubrication pump assembly; with optical/electrical non flow indicators
- Load-dependent, variable-speed operation as standard
- E-motor with electrically operated air fan enables wide speed range
- Ease of operation, maintenance and assembly
- Assembly brackets for hanging or standing position
- 24/7 operation in arctic and tropic conditions

Applications

- Marine industry
- Cylinder lubrication for 2-stroke crosshead diesel engines power rating 6 000-80 000 kW
- Special small-sized oil circulation systems

Technical data

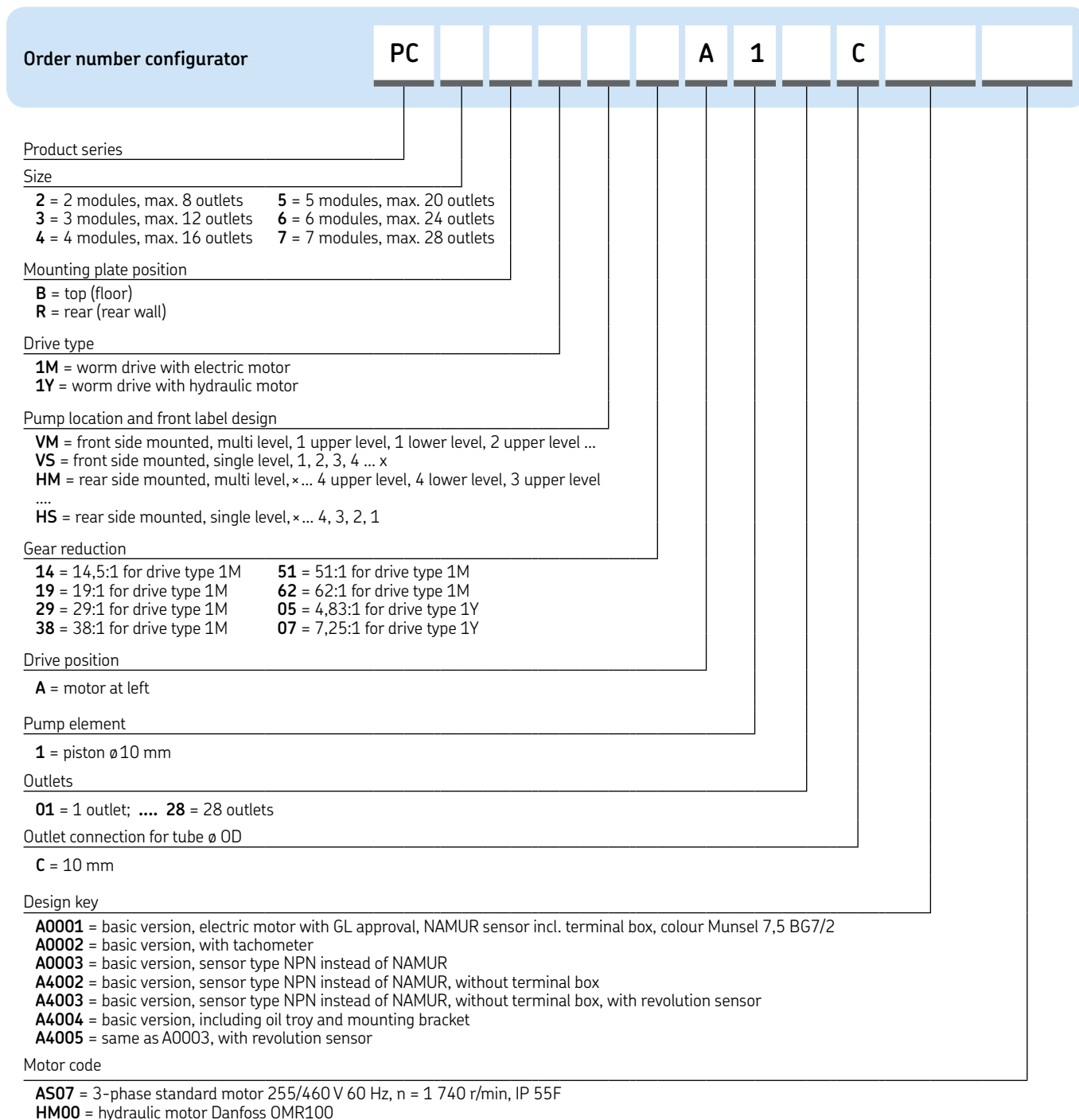
Function principle	modular electrically or hydraulically operated piston pump unit in marine standard, with non flow sensors and oil heating connections
Operating temperature	+5 to 45 °C, +41 to 113 °F
Operating pressure	max. 50 bar, 725 psi
Outlets.	1 to 28
Lubricant.	mineral oil up to SAE 5012 to 2 000 mm ² /s
Lubricant supply	by overhead reservoir, max. inlet pressure 2 bar, 30 psi
Metering quantity per outlet	1,74–227 cm ³ /min, 0.1–14 in ³ /min
Internal ratio	4.83; 14.5; 19; 29; 38; 51; 62 : 1
Output per outlet.	0.27–1,1 cm ³ , 0.016–0.67 in ³
Connection	inlet: G 1 ¹ / ₄ outlet: G 1 ¹ / ₄ for tube ø10 mm OD
Electrical connection sensor	24 V DC
Hydraulic drive option	100 cm ³ /revolution, 60–360 r/min for i = 4.81:1 and 7.25:1 only
Dimensions	min. 610 × 513 × 320 mm max. 610 × 1 580 × 320 mm min. 24 × 20.2 × 25.6 in max. 24 × 62.2 × 25.6 in
Protection class	IP 55F
Mounting position	horizontal
Options	version with mainshaft revolution; sensor; sensors NPN instead of NAMUR

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
951-170-208

Pump unit

PC

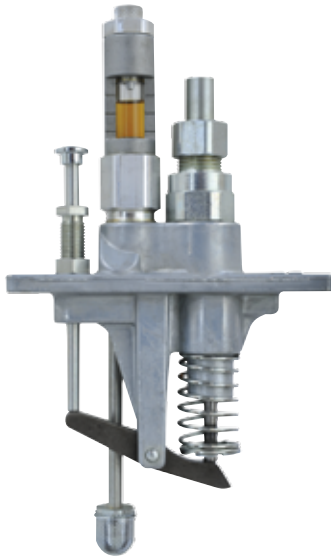


PC accessories

Order number	Designation
24-0404-2493	gasket set with seals spare pumping element
24-1557-3560	
24-1751-2760	filter assembly, 100 µm filter element only
24-0651-3519	

Pump

55i



oil

Product description

The positive-displacement, single-action 55i pumps are fully adjustable by means of manually modifying the angle of the rocker arm to the cam. The pump operation is a two-stage process. As the camshaft rotates, the cam mechanically forces the pump plunger forward, displacing a measured volume of oil. On the second or return stroke, a spring assists the plunger to return for prime.

All pump elements are designed with a push button for manual pre-lubrication.

Features and benefits

- Easy adjustment of flow rate
- Push button for pre-lubrication and system de-aeration
- Modular box lubricator mounting for ease of maintenance
- Pumps with suction tube for oil suction from the lubricator box or with direct feed by overhead reservoir
- With or without sight glass for visual flow indication
- For operating viscosity up to 1 700 mm²/s

Applications

- Gas engines
- Reciprocating compressors
- High-pressure oil, total-loss lubrication systems

Technical data

Function principle	camshaft piston operated pump
Operating temperature	-20 to + 70 °C, - 4 to + 158 °F
Operating pressure	K 3/8: max. 240 bar, 3 500 psi K 1/4: max. 400 bar, 6 000 psi
Lubricant	mineral or synthetic based oil, viscosity max. 1 700 mm ² /s
Outlets	1 to 7
Metering quantity per stroke	K 3/16 in: 0,20 cm ³ , 0.0120 in ³ K 1/4 in: 0,302cm ³ , 0.0184 in ³ K 3/8 in: 0,68 cm ³ , 0.0415 in ³
Reservoir	1,4 to 3,8 l, 0.37 to 1.0 gal depends on outlets quantity
Internal ratio	37.5:1; 60:1; 112.5:1; 137.5:1; 300:1
Drive speed	<20 r/min; depends on box lubricator
Electrical motor drives	for pumps with 112.5:1 and 300:1 ratio only
Connection outlet	1/8 NPTF
Dimensions	min. 127 × 88 × 35 mm, max. 127 × 132 × 35 mm, min. 5 × 3 15/32 × 1 3/8 in max. 5 × 3 3/16 × 1 3/8 in outer parts when installed in box lubricator
Mounting position	vertical
Options	pumping elements without sight glass lube sentries to control the oil level and camshaft rotation, oil level regulator,

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
FORM 442834 EN

Pump

55i

Order number configurator

55i

1 2 3 4 5 6 7

Product serie

55i = camshaft operated piston pump

Reservoir

3 = 1,4 l, 3 *pint*, max. 3 single pumps

4 = 1,9 l, 4 *pint*, max. 5 single pumps

8 = 3,8 l, 8 *pint*, max. 7 single pumps

Drive / gear ratio / available reservoir size / speed

Designation	Drive R = right L = left B = rear	Ratio	Reservoir		Speed r/min max.
			liter	<i>pint</i>	
A rotary drive, internal gear and ratchet	R or L	37,5:1	1,9 3,8	4, 8	700
B internal ratchet and external lever	R or L	75 teeth	1,9 3,8	4, 8	1100
C internal spur gear, pulley, machine drive	R or L	112,5:1	1,9 3,8	4, 8	1200
D external gear drive, specific OEM frame	R or L	60:1	1,9	4	1200
E rear drive, specific OEM frame, max. 1 single pump	B	80:1	1,4	3	1200

Single pumps

Designation	Piston ø	Inlet	Sight glass	Operating pressure max.		Metering quantity per stroke max.			Order number Spare part	
				bar	psi	drops	cm ³	in ³		
1 vacuum feed	6,4	1/4	suction tube	•	400	6 000	9	0,302	0.0184	880550
2 vacuum feed	9,5	3/8	suction tube	•	240	3 500	21	0,680	0.0415	880560
3 pressure inlet, manifold feed	4,8	3/16	1/8 NPTF	•	400	6 000	6	0,200	0.0120	880553
4 pressure inlet, manifold feed	6,4	1/4	1/8 NPTM	•	400	6 000	9	0,302	0.0184	880551
5 pressure inlet, manifold feed	9,5	3/8	1/8 NPTM	•	240	3 500	21	0,680	0.0415	880561
6 direct feed	6,4	1/4	1/8 NPTF	–	400	6 000	9	0,302	0.0184	880552
7 direct feed	9,5	3/8	1/8 NPTF	–	240	3 500	21	0,680	0.0415	880554

55i Accessories

Order number	Designation
880463	lubricator flow switch; monitors model 55i lubricant flow
880555	lube sentry; monitors camshaft rotation and reservoir level
880556	lube sentry; same as Model number: 880555, except suction is 1/2 inch, shorter, for pre-warning
880496	oil level regulator; automatically fills lubricator reservoir from header reservoir
350654	cover plate; gasket
250132	cover plate assembly
70224	cover plate screws
276517	armored sight glass kit

Pump unit

JM

oil



Product description

The JM oil lubrication pump is a robust high pressure multi-line pump designed for a maximum continuous operating pressure of 600 bar (8 700 psi). The modular design with its unique adjustable dual piston pumping elements (separate dosing and high pressure booster piston) in combination with an optical drip indicator realizes an outstanding reliability.

Depending on the application the pump can be machine or electric operated, the design is available in a pressure tight design thus suitable in connection with overhead lube oil reservoirs. The JM oil lubrication pump can deliver all mineral oils with an operating viscosity between 25 and 3 000 mm²/s.

Features and benefits

- Designed for 24/7 operation
- 3 piston sizes covers an output from 0,17 to 5,0 cm³/min (0.01 to 0.29 in³/min) per outlet
- Individual outlet settings between 25 and 100%
- Pressure tight design available
- Can be monitored according to the API 618 standards
- Most reliable replacement for all standard box lubricators

Applications

- Reciprocating gas compressors, mainly in an ATEX environment
- Pump to point lubrication of packings and cylinders
- Petro-chemical industry

Technical data

Function principle	cam operated piston pump in modular design, rotary or electrically operated
Operating temperature	0 to +60 °C, +32 to +140 °F
Operating pressure	max. 600 bar, 8 700 psi
Outlets	1 to 28
Lubricant	mineral or synthetic based oil, 25 to 3 000 mm ² /s
Metering quantity per stroke	0,017–0,2 cm ³ 0.001–0.012 in ³
Reservoir	per module 2 l, 0.5 gal
Internal ratio	1:1, 35.1:1, 62.8:1, 83.2:1, 100.9:1, 125.7:1
Drive speed main shaft n ₂	10 to 25 r/min
Metering quantity per outlet	0,17–5,0 cm ³ /min, 0.01–0.29 in ³ /min
Outlet connection	G 1/4, tube ø 6 or 8 mm OD
Drive	3-phase motor or mechanical
Dimensions	min. 315 × 200 × 260 mm max. 1 455 × 200 × 260 mm min. 12.4 × 7.87 × 10.24 in max. 57.3 × 7.87 × 10.24 in
Protection class	min. IP 55F, ATEX available
Mounting position	horizontal, level surface
Options	pressure tight design for overhead reservoirs, additional oil reservoir with heater and oil level sensor, camshaft rotation sensor, oil flow pulse transmitters in ATEX

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication: **951-170-019; 951-180-073; 14600; 1-3007**

Pump unit

JM

Order number configurator

JM - **3M** - **A** **AG07**

Product series

Oil reservoir ¹⁾ and number of outlets

02 = 2 l, 0.53 gal, max. 4 outlets
04 = 4 l, 1.1 gal, max. 8 outlets
06 = 6 l, 1.6 gal, max. 12 outlets
10 = 10 l, 2.6 gal, max. 20 outlets
12 = 12 l, 3.2 gal, max. 24 outlets
14 = 14 l, 3.7 gal, max. 28 outlets
14 .. 24 = twin version with drive M, max. 28 outlets

Oil reservoir

A = pressure tight, feed by overhead reservoir ¹⁾
B = ventilated

Drive type

3M = e-motor operated including gear reduction ²⁾

Gear ratio ¹⁾

39 = 35.1:1
57 = 62.8:1
78 = 83.2:1
98 = 100.9:1
13 = 125.7:1

Drive

A = left
B = right
M = middle (left max. 24 outlets, right max. 24 outlets)

Metering quantity, selection of pump element size

1 = 0,025–0,10 cm³, 0.0015–0.006 in³
2 = 0,05–0,20 cm³, 0.003–0.012 in³
3 = 0,017–0,07 cm³, 0.001–0.004 in³
0 = mixed design, please specify

Outlets

01 = 1 outlet

28 = total number of outlets

Connection outlet for tube ø OD

W = 8 mm solderless
X = 8 mm solderable
Y = 6 mm solderless
Z = 6 mm solderable
 - = G 1/4 female, stainless steel

Modification index

A = standard

Design key ¹⁾

0001 = basic design
4068 = ATEX II 2G c IIC T4 Gb

Motor code ¹⁾

AG07 = E-motor 1 000 r/min; 1 500 r/m on request available
 protection class: IP 55F



¹⁾ For supply via additional or overhead reservoir (max. installation height of 10 m; 5 m in conjunction with an additional reservoir in steel design)
²⁾ For direct machine operated versions, please consult technical support

Pump unit

SP/PFE



Product description

The SP/PFE multi-line pump is designed for very high system pressures. Its drive parts are located in the pump housing and are pre-filled with high-viscosity gear oil. The special, guided-roller tappet drives the pump element arrangement in a 100% axial direction and eliminates side forces. Each exchangeable pumping element contains a precise, volume-regulating device with scaling, a high-pressure, non-return valve and a high-pressure outlet adapter for up to 4 000 bar (58 000 psi).

Due to the pump's unique design, lubrication oil can be connected from an overhead reservoir directly to the pump elements without the use of additional oil level controllers.

Features and benefits

- Designed for continuous 24/7 operation
- High-efficiency pumping elements
- Modular pump design enables use of up to 5 pumping elements
- Pressure-tight design; suitable for overhead reservoir connection
- Large stroke adjustment range 0–0,14 cm³ (0 to 0.0085 in³)
- Available as ATEX package with E-motor drive arrangement
- Rack arrangement with additional pumps, filter and flow control equipment available

Applications

- Reciprocating hyper compressors for mainly ethylene processes
- As a hydraulically drive unit for high-torque tooling
- Petro-chemical industry

Technical data

Function principle	Rotary operated, cam operated piston pump; with pressure tight design for overhead reservoirs
Operating temperature	+15 to +40 °C, +59 to 104 °F
Operating pressure	max. 4 000 bar; 58 000 psi
Lubricant	mineral or synthetic based oil, < 230 mm ² /s
Outlet	1 to 5
Metering quantity per outlet	0–0,14 cm ³ /stroke 0–0.0085 in ³ /stroke
Internal ratio	1 : 1
Material	3-phase motor and flanged gearbox available
Drive speed main shaft	10 to 500 r/min
E-motor drive	10 to 500 r/min ¹⁾
Connection outlet	gland and sleeve for pipe 3/8 × 1/8
Connection inlet/leak oil outlet	M 14 × 1,5
Dimensions	287 × 350 × 130 cm 512 × 350 × 130 cm 11.3 × 13.8 × 5.1 in 20.15 × 13.8 × 5.1 in
Mounting position	vertical, pump body upright
Options	ATEX design, rack mounting, flow monitoring devices

¹⁾ please specify your requirements

Pump unit

SP/PFE

Order number configurator

SP / PFE - - C

Product series
SP/PFE

Housing
1 = housing for 1 up to 2 pump elements
2 = housing for 1 up to 5 pump elements

Pump elements
1 = 1 pump element
2 = 2 pump element
3 = 3 pump element
4 = 4 pump element
5 = 5 pump element

Modification index
C = actual version for p max. 4 000 bar, (58 000 psi), rotary operated, double sided drive shaft, ratio 1:1

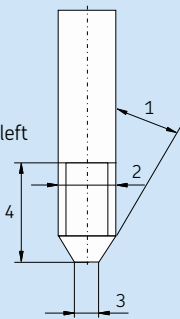
Accessories

SP/PFE pump outlets - high pressure pipe connection required

Pipe connection

Designation

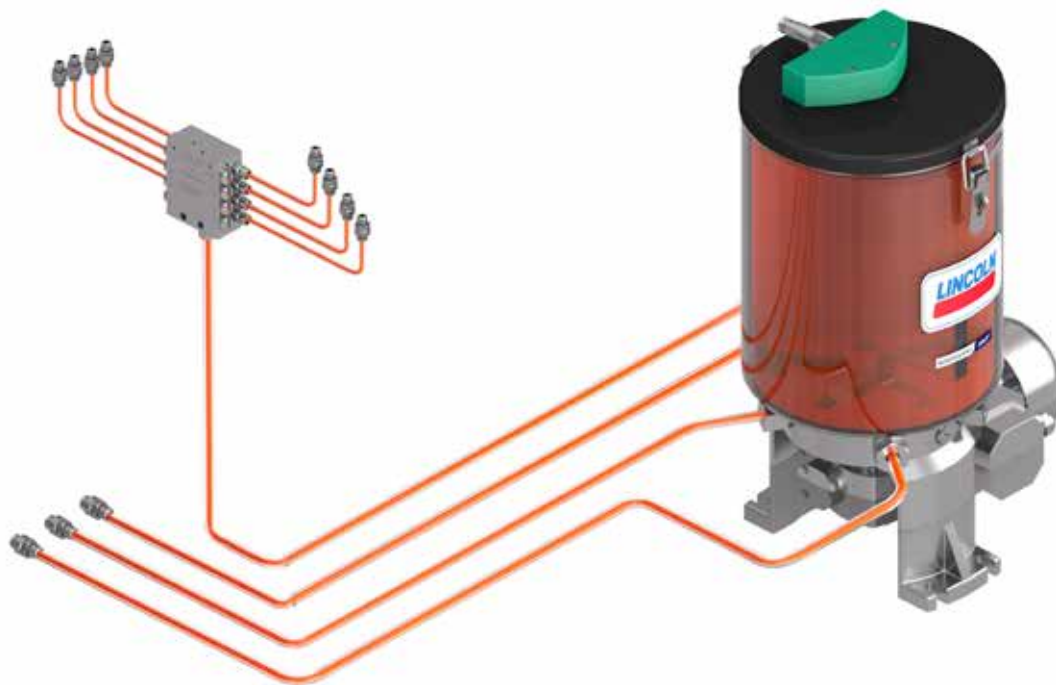
1. $29^\circ \pm 30'$
2. $\frac{3}{8}$ in 24 NF left
3. $\varnothing 5,5$ mm
4. 19 mm



SP/PFE accessories

Order number	Designation	Operating pressure max.	
		bar	psi
744-000-0107	high pressure pump head complete	4 000	58 000
24-2317-2017	high pressure piston and body only	4 000	58 000

Multi-line lubrication systems for grease



Grease

System description

SKF multi-line lubrication systems consist of the following components: A pump unit, control and monitoring devices, tubing and fittings. Multi-line pump units supply lubricant to lubrication points without extra metering dividers. Thus, each lubrication point has its own pumping element. The system design is simple, accurate and most reliable.

Multi-line pumps can be actuated mechanically, electrically or hydraulically. The easily exchangeable pumping elements are usually operated by eccentric cam. Depending on the drive speed, gearbox ratio and selected pump element size, a delivery range from almost 0 to 35 cm³/min (0 to 2.13 in³/min) can be covered.

The built-in stirrer mixes the grease (grease softening process), is synchronized with the pump element suction stroke, and assists the heavy lubricant to flow into the suction chamber. This unique concept supplies heavy lubricants usually up to NLGI 3.

An individual lubrication volume setting per pump outlet is possible by selecting pumping elements with different piston diameters and/or stroke settings. The possible numbers of outlets range from 1 to 30.

SKF Multi-line grease pumps are designed for demanding applications in nearly all industries.

Most pump versions are also available with special reservoirs for oil. The P 215 and P 230 pump series allows the use of plastizer oil for the rubber industry.

Advantages:

- Sturdy; durable pump series designed for 24/7 operation
- Simple; continuous lubrication without electrical cycle timers, in most cases
- Versatile; select individual pump element characteristics and reservoir size
- Precise; set the required stroke volume at the pumping element
- Due to the use of a built-in stirrer and broad viscosity range, heaters are not required
- ATEX explosion-proof versions available
- Extra, downstream-located flow control valves or progressive metering devices valves possible



Systems

Grease

Applications

SKF Multi-line grease pumps have a long tradition in the heavy steel industry. Their reliability standard is specified for high-stressed machinery in sensitive and/or dirty areas with pressure requirements up to 350 bar (5 800 psi) such as:

- Construction and mining machinery
- Tunnel-boring machines
- Forging, bending, forming and cutting presses
- Crushers, cranes and conveyors
- Pumps and compressors
- Rubber-mixing machinery
- Water and slurry pumps
- Meet ATEX standards for gas and dust



Multi-line grease pumps and pump units

PFHM



RA 45



Grease

Pumps and pump units

P 205



FF



P 212



P 215



FB



P 230



Overview of grease pumps and pump units

Hydraulically operated pump units

Product	Lubricant grease	Outlets	Reservoir		Metering quantity per outlet		Operating pressure max.		Page
			l	gal	cm ³ /min	in ³ /min	bar	psi	
	NLGI								
PFHM	3	1 to 6	6	1.6	0,16-5,0	0.009-0.305	250	3 625	32

Mechanically operated pump units

Product	Lubricant grease	Outlets	Reservoir		Metering quantity per outlet		Operating pressure max.		ATEX ³⁾	Page
			l/kg	gal/lb	cm ³ /min	in ³ /min	bar	psi		
RA20/45	3	1 to 12	2; 4,5 kg	4.4; 9.9 lb	0,07-6,0	0.004-0.37	60	870	• ⁴⁾	34
P 205	2	1 to 5	4, 5, 8, 10, 30 l	1.1; 1.3; 2.1; 2.6; 7.9 gal	0,08-420	0.005-0.26	350	5 075	• ⁵⁾	36
FF	3	1 to 12	4, 10 kg	8.8; 22 lb	0,04-6,90	0.002-0.37	350	5 075	• ⁴⁾	38
P 215	2 ²⁾	1 to 15	4, 8, 10, 30, 100 l	1.1; 2.1; 2.6; 7.9; 26.4 gal	0,55-3,15	0.033-0.19	350	5 075	• ⁵⁾	42
FB	3	1 to 24	6, 15, 30 kg	13, 33, 67 lb	0,04-7,70	0.002-0.47	350	5 075	• ⁴⁾	44
P 230	2	1 to 30	30, 100 l	7.9; 26.4 gal	0,55-3,15	0.03-0.19	350	5 075	•	48

Electrically operated pump units ¹⁾

Product	Lubricant grease	Outlets	Reservoir		Metering quantity per outlet		Operating pressure max.		ATEX ³⁾	Page
			l/kg	gal/lb	cm ³ /min	in ³ /min	bar	psi		
RA20/45	3	1 to 12	2; 4,5 kg	4.4; 9.9 lb	0,07-6,0	0.004-0.37	60	870	• ⁴⁾	34
P 205	2	1 to 5	4; 5; 8; 10; 30 l	1.1; 1.3; 2.1; 2.6; 7.9 gal	0,08-4,20	0.005-0.26	350	5 075	• ⁵⁾	36
FF	3	1 to 12	4, 10 kg	8.8; 22 lb	0,04-6,0	0.002-0.37	350	5 075	• ⁴⁾	38
P 212	2 ²⁾	1 to 12	30 l	8 gal	2,5-25,0	0.152-1.52	350	5 075	•	40
P 215	2 ²⁾	1 to 15	4, 8, 10, 30, 100 l	1.1; 2.1; 2.6; 7.9; 26.4 gal	0,55-3,15	0.033-0.19	350	5 075	• ⁵⁾	42
FB	3	1 to 24	6, 15, 30 kg	13, 33, 67 lb	0,04-7,70	0.002-0.47	350	5 075	• ⁴⁾	44
FB-XL	3	1 to 16	30 kg	66 lb	0,04-35,0	0.002-2.13	350	5 075	• ⁴⁾	46
P 230	2	1 to 30	30, 100 l	7.9; 26.4 gal	0,55-3,15	0.03-0.19	350	5 075	•	48

¹⁾ all data are based on 50 Hz operation for connection with a frequency of 60 Hz, the speed and volumetric flow are increased by 20% at ambient temperatures above +40 °C (+104 °F) there is a reducing of motor performance of approx. 1% per Kelvin

²⁾ NLGI 3 on request

³⁾ on request

⁴⁾ for gas: II 2G c IIC T4 Gb; for dust: II 2D c IIIC T125°C Db

⁵⁾ for gas: II 2G c IIC T4 Gb; for dust: II 2D c IIIC T120°C Db

Pump unit

PFHM



Grease



Product description

The PFHM is an hydraulically operated high pressure multi-line pump. The 1 to 6 pumping elements, are available in five sizes from 0,04 to 0,25 cm³/stroke (0.0024 to 0.0150 in³/stroke) or camshaft revolution. The ratio between the hydraulic motor and cam shaft is generally 1:1.

The PFHM sturdy steel housing and reservoir with air breather and overfill safety allows the use in dusty areas. In combination with downstream located progressive metering devices it can handle up to approximately 150 lube points. ATEX applications requires the selection of additional pressure relief valves. The reservoir with stirrer is suitable for both grease and oil and is designed with a locking device.

Features and benefits

- Sturdy design with standard, spring-return pumping elements
- Designed for 24/7 operation in harsh environments
- Different speed and stroke volumes allows economical lubricant settings
- Full hydraulically drive without electrics
- Modular design, available in corrosiveness class C3 as standard or C5-M according to DIN EN ISO 12944
- ATEX classifications

Applications

- Mining, including underground
- Hydraulic-operated machinery
- Screens and crushers in quarries
- Chemical industry
- Off shore

Technical data

Function principle	hydraulically operated radial piston pump in an ATEX design
Operating temperature	-20 to +40 °C; -14 to +104 °F
Operating pressure	max. 250 bar; 3 625 psi
Outlets	1 to 6
Lubricant	oil and grease: up to NLGI 2
Reservoir	6 kg, 12.6 lbs
Metering quantity per stroke	KFG1.U0: 0,250 cm ³ ; 0.0150 in ³ KFG1.U1: 0,125 cm ³ ; 0.0076 in ³ KFG1.U2: 0,090 cm ³ ; 0.0055 in ³ KFG1.U3: 0,065 cm ³ ; 0.0040 in ³ KFG1.U4: 0,040 cm ³ ; 0.0024 in ³
Metering quantity per outlet	0,16–7,5 cm ³ /min; 0.01–0.46 in ³ /min
Internal ratio	1:1
Drive speed	main shaft 4–30 r/min
Hydraulic drive oil requirements	51,5cm ³ per revolution, max. 175 bar, 2 540 psi
Outlet connection lubricant	M 14 × 1,5; tube ø 6, 8, 10 mm
In/outlet hydraulic connection	M 22 × 1,5
Dimensions	580 × 230 × 230 mm 22.8 × 9.1 × 9.1 in
Mounting position	vertical
Options	C5-M

Pump unit

PFHM

PFHM pumps (please order pumping elements separately)

Order number	Designation
PFHM-6-B6-C3-ATEX	standard pump including hydraulically drive, without pumping element version C3; 6 kg, 12.6 lbs reservoir; included ATEX approval: gas: II 2G c IIC TX Gb dust: II 2D c IIIC TX Db mining: I M2
PFHM-6-B6-C5-ATEX	same as above, with an improved corrosion standard C5-M included ATEX approval: gas: II 2G c IIB TX Gb dust: II 2D c IIIC TX Db mining: I M2

PFHM accessories

PFHM pump elements, spring return

Order number	Designation	Metering quantity per stroke	
		cm ³	in ³
KFG1.U0	pump element	0,250	0.0098
KFG1.U1	pump element	0,125	0.0049
KFG1.U2	pump element	0,090	0.0035
KFG1.U3	pump element	0.065	0.0026
KFG1.U4	pump element	0,040	0.0016

Pump element



Grease

Pump unit

RA20/45



Grease

Product description

The RA20/45 multi-line grease pump is a unique, radial-piston pump with stackable pump elements.

The modular pump design allows up to three pump elements, each with one, two or four outlets. Therefore, a later outlet reduction or extension easily can be achieved.

The displacement of all outlets from a pump element is adjustable by a common setting device with a range of 33 to 100%. The grease reservoir contains a stirrer and screw conveyor to pressurize the grease into the suction chamber. This feature, in combination with a wide range of different selectable gear ratios, allows a small and continuous lubricant flow without the use of extra on-/off timers.

Features and benefits

- Modular, pump-to-point solution for 1 to 12 lubrication points
- Suitable for standard NLGI 2 greases
- Grease reservoir for 2 or 4.5 kg (4.4 to 10 lb), optional level switch
- Selectable drive speeds to cover feed rates of droplets up to 10 cm³/min (0.6 in³/min)
- Simple system design with adjustable outputs
- Economical, multi-line grease pump

Applications

- Compact machinery
- Conveyor systems
- Water pumps



Technical data

Function principle	radial piston pump with stackable pumping elements, rotary or electrically operated
Operating temperature	-15 to +60 °C, +5 to 140 °F
Operating peak pressure	max. 63 bar, 913 psi
Outlets	1 to 12 (max. 3 elements with 1, 2 or 4 outlets)
Lubricant	grease: up to NLGI 2
Reservoir	2,0 or 4,5 kg, 4.4 or 10 lbs
Metering quantity per outlet	0,007–0,02 cm ³ /revolution 0.0004–0.0012 in ³ /revolution
Internal ratio	5:1, 10,5:1, 15:1, 25:1, 75:1, 125:1
Drive speed	10 to 245 r/min
E-motor drive	with 3-phase motor
Outlet connection	G 3/8
Dimensions	depending on the model min. 353×180×180 mm max. 660×325×180 mm min. 13.9×7.1×7.1 in max. 26×12.8×7.1 in
Protection class	IP 55
Mounting position	vertical
Options	with level switch

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
11103 EN; 951-170-230 EN

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

Pump unit

RA 20/45 grease

Order number configurator	RA														07
Product series	RA = radial piston pump														
Reservoir	20 = 2 kg, 4.41 lb 45 = 4,5 kg, 9.92 lb														
Fill level switch	X = none E = with 1 switching point F = with 2 switching points														
Drive	2M = electric motor with gear reduction 3M = electric motor with bevel gear 3UA = coaxial with gear reduction														
Step-down ratio	01 = 10.5:1 (3M, 3UA) 05 = 5:1 ; 15 = 15:1; 25 = 25:1; 75 = 75:1; 13 = 125:1 (2M)														
Drive position	A = only 2M, 3M A or B = only 3UA														
Pump elements, max. 3 elements	1 = 1 outlet 2 = 2 outlets 4 = 4 outlets														
Design	0001 = standard 4062 = ATEX II 2G c IICT4 Gb, II 2D c III CT 135°C														
Motor ²⁾	AF = standard multi-range motor, 1 500 r/min, for 230–400 V AC/50 Hz AK = standard multi-range motor, 1 500 r/min, for 290–500 V AC/50 Hz AO = standard multi-range motor, 1 500 r/min, for 400–690 V AC/50 Hz														
Protection class	07 = IP 55														

Grease

¹⁾ others models on request

RA accessories

RA pump elements and tie rods

Order number	Designation
Pump element	
24-1557-3520	pump element for 1 outlet
24-1557-3521	pump element for 2 outlets
24-1557-3522	pump element for 4 outlets
Tie rod ¹⁾	
44-0717-2070	tie rod for 1 pump element
44-0717-2071	tie rod for 2 pump elements
44-0717-2072	tie rod for 3 pump elements
DIN125-B6.4-ST	washer, 6.4 DIN125 ¹⁾
DIN934-M6-8	nut ¹⁾

¹⁾ two required per pump

RA reservoir for grease

Order number	Designation
24-0254-2312	reservoir 2 kg, without fill level switch
24-0254-2334	reservoir 2 kg, with fill level switch E
24-0254-2330	reservoir 2 kg, with fill level switch F
24-0254-2310	reservoir 4,5 kg, without fill level switch
24-0254-2335	reservoir 4,5 kg, with fill level switch E
24-0254-2331	reservoir 4,5 kg, with fill level switch F

RA drive assembly for grease: see page 21

Pump unit

P 205



Grease

Product description

The P 205 is a high pressure multi-line pump that can drive up to 5 elements. Different sizes of fix or adjustable elements are available. It is capable of handling direct supply of lubrication points or can be used as a centralized lubrication pump in large-sized progressive systems.

The design of the drive and eccentric shaft, the high efficiency worm gear, a minimal number of parts, and the multi-range motor provide the P 205 pump with several advantages. The P 205 pumps are available with a 3-phase flange mount and multi-range motor or with a free shaft end for use with other drive types. Various gear ratios and reservoir sizes with or without level control are available. The reservoir is suitable for both grease and oil.

Features and benefits

- Sturdy and durable pump series
- Continuous lubrication of machines and systems that operate in harsh environments
- Broad range of output possibilities
- Versatile pump regarding reservoir and drive types
- Modular design
- Easy maintenance

Applications

- Stationary machines with a high lubricant consumption
- Turbines in hydro-electric power plants
- Needling machines
- Screens and crushers in quarries
- Material handling equipment

Technical data

Function principle	electrically operated multi-piston pump
Operating temperature	-20 to +70 °C, -4 to +158 °F
Outlets	1 to 5
Lubricant	oil: viscosity from 40 mm ² /s grease: up to NLGI 2
Operating pressure	max 350 bar, 5 075 psi
Materials	steel plate or plastic, depending on reservoir
Metering quantity per stroke	0,04–0,23 cm ³ , 0.0024–0.014 in ³
Reservoir	plastic: 4 and 8 l, 1.06 and 2.11 gal steel: 5, 10 and 30 dm ³ , 1.32 and 2.64 gal
Line connection	G 3/4
Drive speed main shaft	grease: < 25 r/min, oil: < 25 r/min
Electrical connections	380–420 V AC/50 Hz, 440–480 V AC/60 Hz 500 V AC/50Hz
Dimensions	depending on the model min. 406 × 280 × 230 mm max. 507 × 365 × 300 mm min. 160 × 110 × 91 in max. 200 × 144 × 118 in
Protection class	IP 55
Mounting position	vertical
Options	several different level switches; ATEX versions

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication:
13651

Pump unit

P 205

Order number configurator

P 205 - - - - -

Product series

Drive
M = AC flange gear motor
F = free shaft end

Gear ratio
280 = 280:1
700 = 700:1
070 = 70:1

Reservoir
4 = plastic, 4 l, 1.05 gal
8 = plastic, 8 l, 2.11 gal
5 = steel plate, 5 l, 1.32 gal
10 = steel plate, 10 l, 2.64 gal
30 = steel plate, 30 l, 7.93 gal

Reservoir design
N = without level control
XY = for grease and oil
XL = for grease with low level control¹⁾
BU = with level control (ultrasonic sensor for two switching points, low- and high-level)

Pump elements; define max. 5 elements (f.i. 4 elements K6 = 4K6, ...)
K 5 = piston ø 5 mm, output per stroke: 0,11 cm³, 0.0067 in³
K 6 = piston ø 6 mm, output per stroke: 0,16 cm³, 0.0098 in³
K 7 = piston ø 6 mm, output per stroke: 0,23 cm³, 0.014 in³
KR = adjustable output, piston ø 7 mm, output per stroke: 0,04-0,18 cm³, 0.0024-0.011 in³

Supplements to motor designation
320 - 420, 440 - 480 = multi-range motor for nominal supply voltage, 380-420 V AC/50 Hz, 440-480 V AC/60 Hz
500 = single-range motor for nominal supply voltage, 500 V/50 Hz
000 = pump without motor, with coupling flange

Grease

Accessories

P205 pump elements, pressure relief valves and filling connectors

P 205 pump elements	
Order number	Designation
600-27464-2	pump element piston K 5
600-26876-2	pump element piston K 6
600-26877-2	pump element piston K 7
655-28716-1	pump element adjustable KR (7)
303-19285-1	closing screw ¹⁾

¹⁾ for outlet port instead of a pump element

Pressure relief valve and filling connectors	
Order number	Designation
624-29056-1	pressure relief valve, 350 bar, G 1/4 D 6 for tube ø 6 mm OD
624-29054-1	pressure relief valve, 350 bar, G 1/4 D 8 for tube ø 8 mm OD
304-17571-1	filling connector G 1/4 female ¹⁾
304-17574-1	filling connector G 1/2 female ¹⁾

¹⁾ filling connector fits for vacant outlet ports

PUB LS/P2 17478 EN

Pump unit

FF



Grease

Product description

The multiline pump unit of the FF series is suitable for small and medium-sized systems due to its flow rate and reservoir. The lubricant can be fed to the lube points directly or via a progressive feeder.

The FF is a very sturdy and vibration-resistant multiline pump, is designed for oils and for very stiff greases, harsh operating conditions and continuous operation.

Features and benefits

- As grease or oil lubrication pumps
- With 4 kg or 10 kg grease reservoir
- With or without fill level control
- High permissible operating pressure, up to 350 bar
- With 3-phase motors in 230/400 V, 290/500 V and 400/690 V designs
- With up to 12 individually adjustable pump elements/outlets with various delivery volumes and tube connections, up to 7 cm³/min lubricant per outlet
- Optional with pressure control valve integrated into the pump element
- All pump elements are adjustable between 33–100%

Applications

- Automotive industry
- Construction machinery
- Annealing machines
- Mining and quarries
- Paper and packing machinery
- Steel and heavy industry
- Conveying systems

Technical data

Function principle	radial piston pump with stirrer, electrically operated
Operating temperature	-15 to +70 °C, +5 to 158 °F
Operating pressure	125 to 350 bar, 1 800 to 5 075 psi
Lubricant	oil: mineral and synthetic based; viscosity from 50 mm ² /s grease: up to NLGI 2
Reservoir	4 and 10 kg, 8.8 and 22 lbs
Metering quantity per stroke	KR 6: 0,027–0,08 cm ³ , 0.0016–0.0048 in ³ KR 8: 0,05–0,15 cm ³ , 0.003–0.009 in ³ KR 10: 0,077–0,23 cm ³ , 0.005–0.014 in ³
Internal ratio	33:1, 80:1, 150:1, 300:1, 600:1
Outlet connection	1/4 NPTF, tube ø6, 8, 10 mm OD
E-motor drive	with 3-phase motor
Drive speed main shaft	< 32 r/min
Dimensions	min. 450 × 370 × 230 mm max. 656 × 370 × 230 mm min. 17.7 × 14.6 × 9 in max. 25.8 × 14.6 × 9 in
Protection class	IP 55
Mounting position	vertical
Options	several different reservoir designs for oil and grease, level switches, ATEX versions, pressure limiting valves

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication: **14129; 951-170-201; 951-180-076**

Pump unit

FF

Order number configurator

FF

A

0001

07

Product series

FF

Reservoir

- 04 = 4 kg, 8.81 lb
- 10 = 10 kg, 22 lb

Level indicator

X = reservoir without fill level control/fill level switch

for grease:

- G = optical fill level control (dip stick)
- E = fill level switch, 1 switching point (min.)
- F = fill level switch, 2 switching points (min., max.)
- H = fill level switch, 3 switching points (min., min. pre-warning, max.)
- A = fill level switch, 3 switching points (min., min. pre-warning, max.)

for oil:

- S = optical fill level control, sight glass
- W = read contact, 1 switching point (min.)

for grease and oil:

- U2 = ultrasonic sensor with 2 switching points (min., max.)

Pump type

- 1M = motor drive with double gear reduction
- 2M = motor drive with single gear reduction

Drive type

- 1M: 08 = 80:1, 15 = 150:1, 30 = 300:1, 60 = 600:1
- 2M: 06 = 33:1

Pump elements; define max. 12 elements

- 00-12 = pump elements, KR 6 piston \varnothing 6 mm, p max. = 350 bar; 5 075 psi
- 00-12 = pump elements, KR 8 piston \varnothing 8 mm, p max. = 200 bar, 2 900 psi
- 00-12 = pump elements, KR 10 piston \varnothing 10 mm; p max. = 125 bar; 1 800 psi

Connection tube \varnothing OD

- A = 6 mm
- B = 8 mm
- C = 10 mm
- D = $1/4$ NPT– internal thread

Modification index

A

Design key

- 0001 = basic design with adjustable pump elements

Motor code ^{1) 2)}

- AH = 750 r/min, for 230–400 V AC/50 Hz
- AM = 750 r/min, for 290–500 V AC/50 Hz
- AQ = 1 500 r/min, for 400–690 V AC/50 Hz
- AK = 1 500 r/min, for 290–500 V AC/50 Hz
- AF = 1 500 r/min, for 230–400 V AC/50 Hz
- AG = 1 000 r/min, for 230–400 V AC/50 Hz
- AL = 1 000 r/min, for 290–500 V AC/50 Hz
- AP = 1 000 r/min, for 400–690 V AC/50 Hz

Protection class ¹⁾

- 07 = IP 55, ATEX on request

¹⁾ others models on request

²⁾ 1M = 1 000 + 1 500 r/min; 2M = 750 + 1 000 r/min

Grease

Pump unit

P212



Grease

Product description

The P 212 is a high pressure multi-line pump that can drive up to 12 elements. It is capable of handling direct supply of lubrication points in multi-line systems or can be used as a centralized lubrication pump in large-sized progressive systems.

The heavy duty design of the drive and the eccentric shaft in combination with the high efficiency worm gear, different pump element sizes and powerful electric motor allows a huge output range.

The reservoir, with or without level control, is suitable for both grease and oil.

Features and benefits

- Continuous output per pump element up to $25 \text{ cm}^3/\text{min}$ ($1.5 \text{ in}^3/\text{min}$)
- High pressure solution, designed for difficult lubricants and compounds
- Due to the high element output, no element crossporting necessary
- Sturdy and durable pump series that operate in harsh environments
- Modular design
- Easy maintenance

Applications

- Machines with a high lubricant consumption
- Tunnelling machines
- Mining
- Rubber mixing machines as a pump for plasticizer liquid



Technical data

Function principle	radial piston pump with stirrer, electrically operated
Outlets	1 to 12
Operating temperature	-20 to $+70$ °C, -4 to $+158$ °F
Lubricant	mineral and synthetic oil and grease oil: viscosity from $40 \text{ mm}^2/\text{s}$ grease: up to NLGI 2
Operating pressure	max. 350 bar, 5 075 psi
Metering quantity per stroke	Piston KR 7: 0.11 – 0.39 cm^3 ; 0.0067 – 0.024 in^3 Piston KR 12: 0.33 – 1.12 cm^3 ; 0.02 – 0.07 in^3
Reservoir	30 l, 7.9 gal
Outlet connection	$G \frac{3}{8}$
Internal ratio	67:1
Output per outlet	2.5 – $25 \text{ cm}^3/\text{min}$, 0.15 – $1.5 \text{ in}^3/\text{min}$
Drive speed main shaft	$< 22 \text{ r/min}$
E-motor drive	with 3-phase motor
Dimensions	$880 \times 510 \times 350 \text{ mm}$ $34.65 \times 20.08 \times 13.78 \text{ in}$
Protection class	IP 55
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:
15301

Pump unit

P 212

Order number configurator **P 212 - MG 067 - 30 - - - 380-480**

Product series

Drive
MG = AC flange motor

Gear ratio i
067 = 67:1

Reservoir
30 = steel plate, 30 l, 7.92 gal

Reservoir design
XY = for grease and oil
N = without level control
BU = with level control (ultrasonic sensor for two switching points, low- and high-level)

Pump elements; define max. 12 elements (f.i. 4 elements KR 12 = 4KR 12, ...)

KR 7 = adjustable; piston \varnothing 7 mm; output per stroke: 0,11–0,39 cm³; 0.0067–0.024 in³
KR 12 = adjustable; piston \varnothing 12 mm; output per stroke: 0,33–1,12 cm³; 0.02–0.07 in³

Motor designation, supplements
380–480 = multi-range motor for 380–420 V AC/50 Hz, 440–480 V AC/60 Hz

Grease

Accessories

P 212 pump elements and pressure relief valves



P 212 accessories			
Order number	Designation	Connection	Operating pressure max
			bar psi
660-77835-1	pump element KR 7	G 3/8	
660-77619-1	pump element KR 12	G 3/8	
303-17431-1	closing screw ¹⁾	M 27 x 1,5	
624-25483-1	pressure relief valve ²⁾	tube stud \varnothing 10 mm	350 5 075
624-28362-1	pressure relief valve ²⁾	tube stud \varnothing 12 mm	350 5 075

¹⁾ for outlet port instead of a pump element
²⁾ to use via T-piece

PUB LS/P2 17478 EN

Pump unit

P 215



Grease

Product description

The P 215 is a high-pressure multi-line pump that can drive up to 15 pump elements. Different sizes of adjustable elements are available. It is capable of handling direct supply of lubrication points or can be used as a centralized lubrication pump in large-sized progressive systems.

P 215 pumps are available with a 3-phase multi-range motor, with a single-range motor, with a free shaft end for use with other motors, or with an oscillating drive. Various gear ratios and reservoir sizes made out of different materials, with or without level control, are available. The reservoir is suitable for both, grease and oil.

Features and benefits

- Sturdy and durable pump series
- Continual lubrication of machines and systems that operate in harsh environments
- Versatile pump regarding reservoir and drive types
- Broad range of output possibilities thanks to high number of outlets and different sizes of pump elements
- Modular design
- Easy maintenance

Applications

- Stationary machine with a high lubricant consumption
- Screens and crushers in quarries
- Material handling equipment
- Roller coaster

Technical data

Function principle	radial piston pump with stirrer; rotary, oscillating or electrically operated
Outlets.	1 to 15
Operating temperature	-20 to +70 °C, -4 to +158 °F
Operating pressure	350 bar, 5 075 psi
Lubricant.	mineral and synthetic oil and grease oil: viscosity from 20 mm ² /s grease: up to NLGI 2
Metering quantity per stroke	min. 0,11 cm ³ , 0.0067 in ³ max. 0,23 cm ³ , 0.014 in ³
Reservoir.	plastic: 4, 8 dm ³ , 1.06; 2.11 gal steel: 10, 30, 100 dm ³ , 2.64; 7.92; 26.42 gal
Internal ratio	7:1, 49:1, 100:1, 490:1
Output per outlet.	0,13 to 6,4 cm ³ /min, 0.008 to 0.39 in ³ /min
Outlet connection	G 1/4
E-motor drive	with 3-phase motor
Drive speed	< 28 r/min
Dimensions	min. 438 × 453 × 326 mm max. 1 225 × 600 × 550 mm min. 17.24 × 17.84 × 12.84 in max. 48.23 × 23.26 × 21.65 in
Protection class	IP 55
Mounting position	vertical
Options	hydraulic driven; 24 V DC motor

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **13651**

Pump unit

P 215

Order number configurator

P 215 - - -

Product series

Drive
 M = AC flange motor
 F = free shaft end
 P = oscillating drive

Gear ratio i
 490 = 490:1
 100 = 100:1
 049 = 49:1 (for oil only)
 007 = 7:1 (for P and F drive assemblies only)

Reservoir
 4 = plastic, 4 l, 1.05 gal 30 = steel plate, 30 l, 7.92 gal
 8 = plastic, 8 l, 2.11 gal 100 = steel plate, 100 l, 26.42 gal
 10 = steel plate, 10 l, 2.64 gal

Reservoir design
 YL = for oil with floating-switch low level
 XY = for grease and oil
 N = without level control
 BU = with level control (ultrasonic sensor for two switching points, low- and high-level)

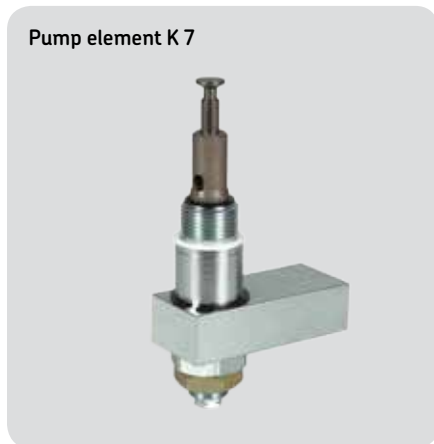
Pump elements, define max. 15 elements (f.i. 11 elements K 7 = 11K7, ...)
 1-15 = number of pump elements, adjustable
 K 5 = piston ø 5 mm, max. adjustable output per stroke: 0,11 cm³, 0.0067 in³
 K 6 = piston ø 6 mm, max. adjustable output per stroke: 0,16 cm³, 0.0098 in³
 K 7 = piston ø 7 mm, max. adjustable output per stroke: 0,23 cm³, 0.014 in³

Motor designation, supplements
 320-420, 440-480 = multi-range motor for nominal supply voltages, 380-420 V AC/50 Hz, 440-480 V AC/60 Hz
 500 = single-range motor for nominal supply voltages, 500 V/50 Hz
 000 = pump without motor, with coupling flange

Grease

Accessories

P 215 pump elements and pressure relief valves



P 215 accessories

Order number	Designation	Connection	Operating pressure max.	
			bar	psi
600-27464-2	pump element K 5	G 1/4		
600-25046-3	pump element K 6	G 1/4		
600-25047-3	pump element K 7	G 1/4		
303-19285-1	closing screw ¹⁾	M 27 x 1,5		
624-25478-1	pressure relief valve	tube stud ø 6 mm	200	2 900
624-25479-1	pressure relief valve	tube stud ø 6 mm	350	5 075
624-25480-1	pressure relief valve	tube stud ø 8 mm	200	2 900
624-25481-1	pressure relief valve	tube stud ø 8 mm	350	5 075
624-25482-1	pressure relief valve	tube stud ø 10 mm	200	2 900
624-25483-1	pressure relief valve	tube stud ø 10 mm	350	5 075
304-17571-1	filler fitting ²⁾	G 1/4 female, M 22 x 1,5		

¹⁾ for outlet port instead of a pump element
²⁾ filling connector fits for vacant outlet ports

PUB L5/P2 17478 EN

Pump unit

FB / FB-XL



Grease

Product description

The FB multiline pump unit is equipped standard with a motor protection enclosure of protection class IP 55 or better. The pump is available in a design for explosive atmospheres (ATEX) on request.

There are also different fill level switches for different applications and lubricants. We recommend the U2 ultrasonic design as the standard fill level switch.

When the FB pump is used as an oil lubrication pump, the reservoir can be equipped with an oil level monitor, fill level switch "W". The oil level monitor is designed and fitted in accordance with the customer's specific requirements as stated when ordering. Additionally, a specialized filling device and a visual fill level indicator can be installed.

Features and benefits

- Very sturdy and vibration-resistant multi-line pump, designed both for oil and very stiff greases, for harsh operating conditions, and for continuous operation if necessary
- Multiline lubrication pumps of the FB series are suitable for large systems due to their delivery rate and reservoir capacities.
- The lubricant can be fed to the lubrication points directly or via the SKF ProFlex progressive feeder system
- All pump elements are adjustable between 30–100%

Applications

- Automotive industry
- Construction materials machinery
- Annealing machines
- Tunnel-boring and mining
- Paper and packaging machinery
- Steel and heavy industry
- Conveying systems
- Wind energy systems

Technical data

Function principle	radial piston pump with stirrer
Operating temperature	–15 to +70 °C, +5 to 158 °F
Operating pressure	125 to 350 bar, 1 800 to 5 075 psi
Outlets	1–24
Lubricant	oil: viscosity from 40 mm ² /s grease: up to NLGI 3
Metering quantity per stroke	KR 6: 0,027–0,08 cm ³ , 0.0016–0.0048 in ³ KR 8: 0,05–0,15 cm ³ , 0.003–0.009 in ³ KR 10: 0,077–0,23 cm ³ , 0.005–0.014 in ³ for FB-XL lower level KR 7: 0,11 – 0,39 cm ³ , 0.0067–0.024 in ³ for FB-XL lower level KR 12: 0,33–1,12 cm ³ , 0.02–0.07 in ³
Reservoir	6, 15, 30 kg, 13.2, 33, 66 lbs
Outlet connection	1/4 NPTF, tube ø 6, 8, 10 mm OD
Internal ratio	45:1, 105:1, 288:1, 720:1
Output per outlet	0,04–7,7 cm ³ /min 0.0024–0.47 in ³ /min
Drive speed main shaft	< 32 r/min
E-motor drive	with 3-phase motor
Dimensions	min. 420 × 533 × 290 mm max. 660 × 533 × 290 mm min. 16.5 × 26 × 11.4 in max. 26 × 26 × 11.4 in
Protection class	IP 55
Mounting position	vertical
Options	ATEX versions, safety valves

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
**1-3026; 951-170-21; 951-170-201; 951-170-227;
951-180-076**

Pump unit

FB

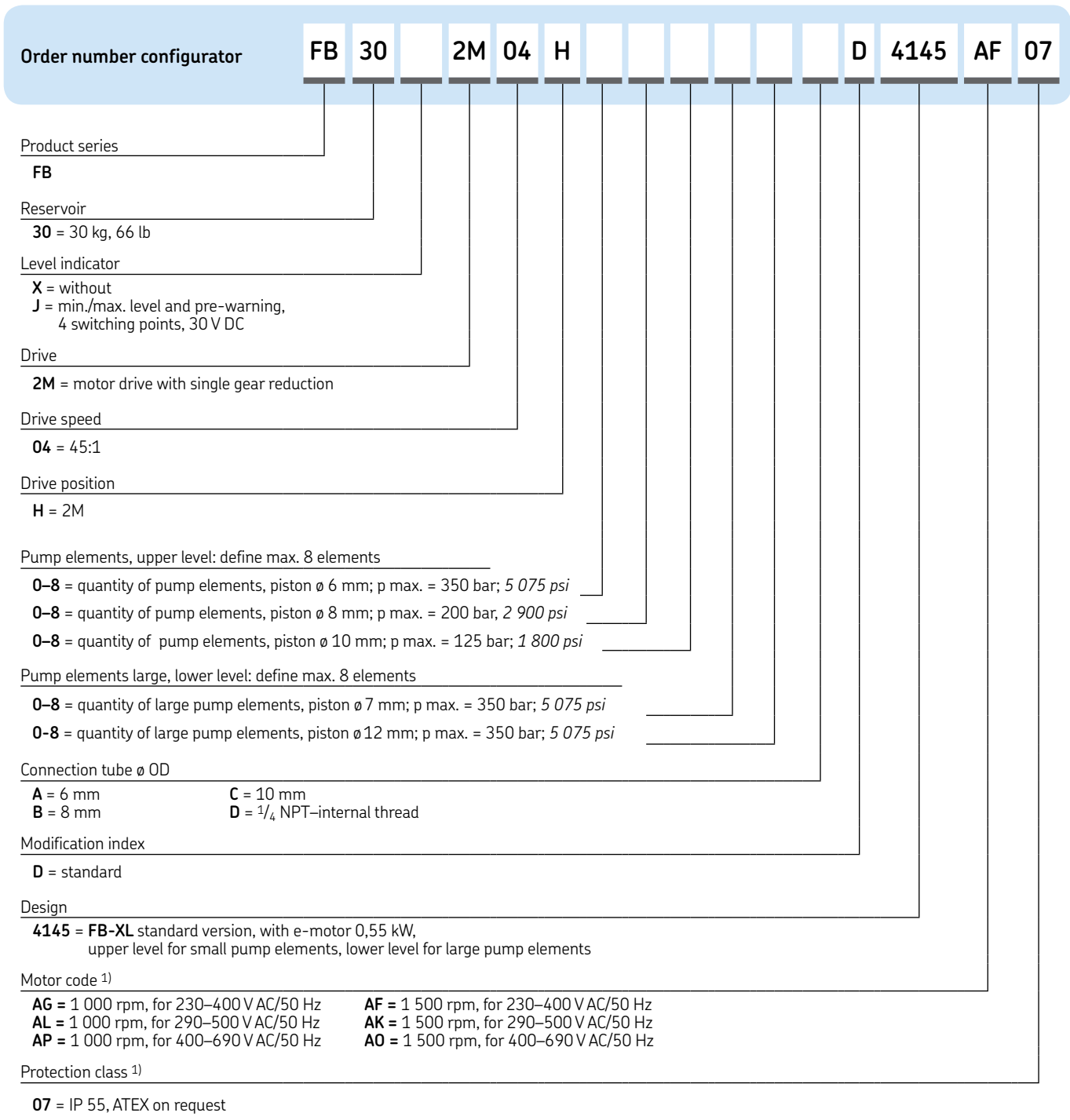
Order number configurator	FB											A	0001		07
Product series	FB											A	0001		07
Reservoir	06 = 6 kg, 13 lb 15 = 15 kg 33 lb 30 = 30 kg, 66 lb														
Level indicator	X = without for grease: G = visual indicator for grease (dip stick) E = min. level, 1 switching point, 230 V AC/DC F = min./max. level, 2 switching points, 42 V AC/DC H = min., pre-warning min, max. level, 3 switching points, 30 V DC A = min., pre-warning min, max. level, 3 switching points, 250 V AC/DC J = min./max. level and pre-warning, 4 switching points, 30 V DC for oil: S = visual indicator for oil (sight glass) W = float switch for oil, min. level, 1 switching point, 250 V AC/DC for grease and oil: U2 = ultrasonic sensor for oil/grease, min/max level, 2 switching points, 30 V AC/DC														
Drive type	1M = motor drive with double gear reduction 2M = motor drive with single gear reduction														
Ratio internal	1M drive : 06 = 105:1 07 = 288:1 08 = 720:1	2M drive: 04 = 45:1													
Drive position	1M drive: B = reservoir: 6, 15 and 30 kg; 13, 33, 66 lb E = reservoir: only 6 and 15 kg; 13, 33 lb	2M drive: H = reservoir: 6, 15 and 30 kg; 13, 33, 66 lb													
Pump elements: define max. 24 elements	00-24 = quantity of pump elements, piston \varnothing 6 mm; p max. = 350 bar; 5 075 psi 00-24 = quantity of pump elements, piston \varnothing 8 mm; p max. = 200 bar, 2 900 psi 00-24 = quantity of pump elements, piston \varnothing 10 mm; p max. = 125 bar; 1 800 psi														
Connection tube \varnothing OD	A = 6 mm C = 10 mm	B = 8 mm D = 1/4 NPT- internal thread													
Modification index	A = actual version														
Design key	0001 = standard														
Motor code ¹⁾	AG = 1 000 rpm, for 230-400 V AC/50 Hz AL = 1 000 rpm, for 290-500 V AC/50 Hz AP = 1 000 rpm, for 400-690 V AC/50 Hz	AF = 1 500 rpm, for 230-400 V AC/50 Hz AK = 1 500 rpm, for 290-500 V AC/50 Hz AO = 1 500 rpm, for 400-690 V AC/50 Hz													
Protection class ¹⁾	07 = IP 55, ATEX on request														

Grease

Pump unit

FB-XL

Grease



¹⁾ other models on request

Pump unit

FB/FB-XL/FF Accessories

Pump element with outlet stud



Pump elements for oil and grease FF, FB and FB-XL upper level

Order number	Designation	Piston
		ø mm
24-1557-3680	pump element	6
24-1557-3681	pump element	8
24-1557-3683	pump element	10

Outlet stud

Order number	Designation	Tube
		ø mm
24-2255-2003	outlet stud	6
24-2255-2004	outlet stud	8
24-2255-2005	outlet stud	10

Grease

Pressure limiting valve



Pressure limiting valves for grease pump elements FF, FB and FB-XL upper level ¹⁾

Order number	Designation	Pressure setting	
		bar	psi
24-2103-2273	pressure limiting valve	50	725
24-2103-2344	pressure limiting valve	100	1 450
24-2103-2345	pressure limiting valve	125	1 815
24-2103-2342	pressure limiting valve	150	2 175
24-2103-2272	pressure limiting valve	175	2 540
24-2103-2346	pressure limiting valve	200	2 900
24-2103-2271	pressure limiting valve	350	5 075

¹⁾ for direct assembly for each pump element (instead of the closure plug)

Pump element KR



Pump element for oil and grease, FB-XL lower level, P 212 ¹⁾

Order number	Designation	Piston
		ø mm
660-77835-1	pump element KR 7	7
660-77619-1	pump element KR 12	12

¹⁾ pressure limiting valve see pg. 41

Pump unit

P 230



Grease

Product description

The P 230 pump is a derivative of the P 215 multi-line pump. The P 230 pump is a high-pressure multi-line pump that can drive up to 30 adjustable pump elements. It is used within a multi-line system with direct supply of lubrication points or within large-sized progressive systems. As a result of the increased number of possible pump elements compared to the P 215, a more powerful 0,25 kW motor is used.

P 230 pumps are available with a 3-phase multi-range motor, with a single-range motor. Various gear ratios and reservoir sizes, with or without level control, are available. The reservoir is suitable for both, grease and oil.

Features and benefits

- Sturdy and durable pump series
- Continuous lubrication of machines and systems that operate in harsh environments
- Versatile pump regarding reservoir and drive types
- Broad range of output possibilities thanks to increased number of outlets and different sizes of adjustable pump elements
- Modular design
- Easy maintenance

Applications

- Stationary machines with a high lubricant consumption
- Rubber and plastic mixing machine
- Conveyors
- Cranes
- Eccentric presses
- Forging machines



Technical data

Function principle	radial piston pump with stirrer, rotary, oscillating or electrically operated
Outlets	1 to 30
Operating temperature	-20 to +70 °C, -4 to +158 °F
Lubricant	mineral and synthetic oil and grease oil: viscosity from 20 mm ² /s grease: up to NLGI 2
Operating pressure	max. 350 bar, 5 075 psi
Metering quantity per stroke	min. 0,11 cm ³ , 0.0067 in ³ max. 0,23 cm ³ , 0.014 in ³
Reservoir	30, 100 l, 7.9; 26.4 gal
Internal ratio	7:1, 49:1, 100:1, 490:1
Output per outlet	0,13–6,4 cm ³ /min, 0.008–0.39 in ³ /min
Outlet connection	G ¹ / ₄
E-motor drive	with 3-phase motor
Drive speed	< 28 r/min
Dimensions	min. 840 × 463 × 330 mm max. 1300 × 463 × 550 mm min. 33.07 × 18.23 × 12.99 in max. 51.18 × 18.23 × 21.65 in
Options	hydraulic driven; 24 V DC motor

Pump unit

P 230

Order number configurator

P 230 - - - - -

Product series

Drive
MG = AC flange gear motor
F = free shaft end

Gear ratio
490 = 490:1
100 = 100:1
049 = 49:1 (for oil only)

Reservoir
30 = steel plate, 30 l, 7.92 gal
100 = steel plate, 100 l, 26.42 gal

Reservoir design
YL = for oil with floating-switch low level
XY = for grease and oil
N = without level control
BU = with level control (ultrasonic sensor for two switching points, low- and high-level)

Pump elements, adjustable, define max. 30 elements (f.i. 25 elements K6 = 25K6, ...)

1-30 = number of pump elements
K 5 = piston \varnothing 5 mm, max. adjustable output per stroke: 0,11 cm³, 0.0067 in³
K 6 = piston \varnothing 6 mm, 0.236 in, max. adjustable output per stroke: 0,16 cm³, 0.0098 in³
K 7 = piston \varnothing 7 mm, 0.275 in, max. adjustable output per stroke: 0,23 cm³, 0.014 in³
KR = piston \varnothing 7 mm, 0,77-3.45 cm³, output per stroke: 0.047-0.210 in³

Supplements to motor designation
320-420, 440-480 = multi-range motor for nominal supply voltages, 380-420 V AC/50 Hz, 440-480 V AC/60 Hz
500 = single-range motor for nominal supply voltages, 500 V AC/50 Hz
000 = pump without motor, with coupling flange

Grease

Accessories

P 230 pump elements and pressure relief valves



P 230 accessories Order number	Designation	Connection	Pressure max	
			bar	psi
600-27464-2	pump element K 5	G 1/4	-	-
600-25047-3	pump element K 7	G 1/4	-	-
600-25046-3	pump element K 6	G 1/4	-	-
303-19285-1	closing screw ¹⁾	M 27 x 1,5	-	-
624-25478-1	pressure relief valve	tube stud \varnothing 6 mm	200	2 900
624-25479-1	pressure relief valve	tube stud \varnothing 6 mm	350	5 075
624-25480-1	pressure relief valve	tube stud \varnothing 8 mm	200	2 900
624-25481-1	pressure relief valve	tube stud \varnothing 8 mm	350	5 075
624-25482-1	pressure relief valve	tube stud \varnothing 10 mm	200	2 900
624-25483-1	pressure relief valve	tube stud \varnothing 10 mm	350	5 075
304-17571-1	filler adapter	G 1/4 female ²⁾	-	-
304-17574-1	filler adapter	G 1/4 female ²⁾	-	-

¹⁾ for outlet port instead of a pump element
²⁾ filling connector fits for vacant outlet ports

PUB LS/P2 17478 EN

Multi-line lubrication system

IGZ/EXT



EOT-2



Accessories

Control units

LMC 2



LMC 301



Overview of control units for oil and grease

Product finder

Product	Designation ¹⁾	Voltage		Timer	Level monitoring	Pulse evaluation	Without housing	Stand alone	Page
		V AC	V DC						
IGZ ...	only for one pump	115–230	24	•	•	–	•	–	52
EXZT ...	for one pump and one pulse generator	115–230	24	•	•	•	•	–	52
EOT-2	only for one pump	–	12, 24	•	–	–	–	•	54
LMC 2	for one pump and one pulse generator	230	24	•	•	•	–	•	55
LMC 301	for several pumps, max. six pulse generators (with extension 10 extra)	90–264	24	•	•	•	–	•	56

¹⁾ Instead of a pulse generator series SP/SFE all kind of progressive metering devices with piston detector might be selected.

Control and monitoring unit

IGZ/EXZT



Product description

IGZ 51 and EXZT universal electronic control and monitoring devices are used in multi-line and progressive lubrication systems and are available in two voltage versions. Developed for stationary industrial applications, these devices may be installed in a switching cabinet or internally in a compact lubrication unit. They can be used as time-dependent or pulse-dependent controllers to initiate a lubrication cycle. The EXZT devices controls the pump running time and monitors simultaneously the strokes of the pulse generator or sensor of the metering device. All devices have custom-built functions integrated and can be set to meet system requirements.

Features and benefits

- Combined universal control and monitoring device
- Easy installation by top hat rail mounting
- Adjustable operating modes
- Time operation or load dependent machine stroke operation
- Low-level control and EPROM included

Applications

- Stationary industrial applications
- Installation in switching cabinet of stationary general industry machines

Technical data

Function principle	universal electronic control and monitoring device
Operating temperature	0 to +60 °C +32 to 140 °F
Output voltage	24 V DC +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 V AC; 200 – 240 V AC
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 V DC

Version + 472

Input voltage	20 – 24 V DC; 20 – 24 V AC
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 V DC



NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
1-1700-1 EN, 1-1700-2 EN, 951-180-001 EN

Control and monitoring unit

IGZ/EXZT

Models

Order number	Input voltage	Monitoring time adjustable	Level monitoring	Interval time extension	Lubricant levels early warning, contact	Pulse monitoring
IG351-10-E + 471 ¹⁾	120, 230 V DC	•	NO ³⁾	•	–	–
IG351-10-E + 472 ¹⁾	24 V AC	•	NO ³⁾	•	–	–
EXZT2A03-E + 471 ²⁾	120, 230 V DC	•	NC ⁴⁾	•	•	•
EXZT2A03-E + 472 ²⁾	24 V AC	•	NC ⁴⁾	•	•	•

¹⁾ only for one pump

²⁾ for one pump and one pulse transmitter

³⁾ NO = contact normally open

⁴⁾ NC = contact normally closed

Control unit

EOT-2



Accessories

Product description

The EOT-2 controller is designed to control lubrication pumps during interval operation in multi-line systems. Rotary switches on the printed circuit board may be used to adjust lubrication time in seconds or minutes and pause time in minutes or hours.

The EOT-2 is suitable for retrofit installation and often is used when a lubrication pump has no integrated control unit. Additional lubrication cycles can be triggered via a pushbutton.

Features and benefits

- Easy-to-use controller for installation in and outdoor
- Suitable for retrofit
- Easy time setting and function control

Applications

- Lubrication pumps without integrated controller
- Agricultural machinery
- Chain lubrication systems
- Simple lubrication systems in machines
- In connection with motor relay assembly also preferred for 3-phase multi-line pump units

Technical data

Function principle	control and monitoring device
Operating temperature	-25 to +70 °C, -13 to +158 °F
Supply voltage	12 or 24 V DC
Current draw	max. ≤ 7 A
Outputs	transistor / N.O.
Pause time	min. 4 min max. 15 h
Running time	min. 8 sec max. 30 min
Standard	CE
Protection class	IP 65
Dimensions	122 × 118 × 56 mm 4.80 × 4.65 × 2.00 in
Mounting position	any

EOT-2 controller

Order number	Designation
664-34135-7	EOT-2 controller, for one pump only

EOT-2 controller including motor relay and housing IP 57

Order number	Designation
236-10850-7	with motor starter 0,4–0,6 A
236-10850-8	with motor starter 0,6–1,0 A
236-10850-9	with motor starter 1,0–1,6 A
236-10980-6	with motor starter 2,4–4,0 A

NOTE

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

PUB LS/P2 17478 EN

Control and monitoring unit

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. For progressive systems, it controls the pump unit and the metering devices.

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

- General lubrication systems with a pump and pulse generator
- Railway
- Food and beverage
- Chain lubrication systems like Lincoln Cobra and PMA
- Multi-line and further systems like dual-line, single-line and progressive systems

Technical data

Function principle	control and monitoring device
Operating temperature	-10 to +70 °C; +14 to 158 °F
Inputs	max. 8 digital inputs
Outputs	4 relay outputs, 1 electronic
Operating voltage	depending on model: 230 V AC, 24 V DC (± 10%)
Standard	CE
Protection class	IP 54
Dimensions	200 × 120 × 90 mm 7.9 × 4.7 × 3.5 in
Mounting position	any

Accessories

LMC 2

Order number	Designation
236-10567-6	LMC2 230 AC (230 V AC)
236-10567-5	LMC2 24 DC (24 V DC)

For use with electric operated 3-phase pump must order motor starter separately.

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available on SKF.com/lubrication: **14004 EN**

Control and monitoring unit

LMC 301



Accessories

Product description

The LMC 301 is a compact, modularly expandable control and monitoring device. The device is equipped with an LCD display and 6 functional keys for programming, parameter setting and signalization. The user is guided through the setting menu. Additionally, there is a simple-to-use PC software for parameter setting and diagnostics available.

Features and benefits

- Integrated, flexible lubrication programs
- Main device with 10 digital inputs, for 3 lubrication pumps and max. 6 pulse transmitters
- Up to seven slave/extension with additional inputs for max. 10 pulse transmitters
- Three lubrication pumps can be controlled and monitored
- Can connect the digital grease flow detectors 800030 or the universal pulse generators

Applications

- General and heavy industry
- Mining – stationary and mobile excavators
- Multi-, dual-, single-line and progressive systems

Technical data

Function principle	control and monitoring device
Operating temperature	VAC: -10 to +50 °C, +14 to 122 °F V DC: -40 to +70 °C, -40 to +158 °F
Inputs	10 count, short-circuit proof, 2 with analog
Outputs	8 count, relay outputs NO-contact 8 A, 2 of which up to 15 A
Operating voltage	depending on model 100–240 VAC, 24 V DC ±20%
Standard	CE; UL; CSA
Protection class	IP 65
Dimensions	270×170×90 mm; 10.7×6.7×3.5 in
Mounting position	vertical

LMC 301

Order number	Designation
086500	LMC301 24 V DC, master
086501	LMC301 100-240 VAC, master
086502	LMC301 24 V DC, I/O board, slave
086503	LMC301 100-240 AC, I/O board, slave



NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
15967 EN; 951-150-029 EN

Control and monitoring units

LMC 301 – Accessories

PG-M20 cable glands



LMC 301 housing

Order number	Designation
086504	door housing, complete
086505	cable USB

LMC 301 motor relay assembly

Order number	Designation
236-10850-7	with motor starter 0,4–0,6 A
236-10850-8	with motor starter 0,6–1,0 A
236-10850-9	with motor starter 1,0–1,6 A
236-10980-6	with motor starter 2,4–4,0 A

¹⁾ Including housing IP65

LMC 301 accessories ¹⁾

Order number	Designation
086506 086507	PG-M20 Cable gland kit, IP65 Multiple cable gasket set (3 x) Cable gasket set (3 x)
3515-10-6020 3515-10-6620	Cable glands PG-M20; complete, with cap nut, cable gasket set (2), screw plug cartridge (3) Cable gasket set (2); 2-wire, ø 0.24 in Cable gasket set (2); 4-wire, ø 0.2 in
3515-10-7620 3515-10-6220 3515-10-6320	Blind plug Gasket Counter nut
3515-07-6120 3515-10-2021 3515-07-2022 179-990-486 236-11066-1	Conduit glands, IP 65, with flexible metal tube (FMC) , UL approved Conduit glands AMG-M 20 x 1,5; UL 514B Counter nut M 20 x 1,5 Protection hose, liquid-proof protective; UL 360 (sold by the metre, when ordering specify the required length) Fuse, blade-type, FK1 3A (32 V) according to ISO 8820-3 Battery, 3 V lithium button cell, model CR3032
www.skf.com/LMC301	LMC 301 software, free download

¹⁾ The installation of the cable glands and cable sets to be provided and done by the customer. The customer is responsible for proper installation.

Multi-line lubrication systems

SP / SFE



EWT2A..



Monitoring devices

87630 Datalogger



Overview of monitoring devices for oil and grease

Product finder

Product	Function type	Designation	Voltage		Without housing	Stand alone	Page
			VAC	VDC			
SP/SFE 30/5	pulse generator	standard version	0-30	0-30	–	•	60
SP/SFE 30/6 GL	pulse generator	GL approved	0-30	0-30	–	•	60
SP/SFE 30/3003	pulse generator	ATEX II2G .. and II2D ..	0-30	0-30	–	•	60
87630	datalogger	for up to 2 pulse generators, ATEX Class 1, groups A, B, C & D available	–	10-30	–	•	61
EWT2A ..	pulse montitor	for up to 3 pulse generators	115, 230	24	•	–	62

Monitoring devices

SP/SFE 30



Product description

SP/SFE 30/5 pulse generators are designed to monitor oil and grease volumetric flow rates. The switching pulses are generated at a rate proportional to the volumetric flow, and the pulses from the pulse generator are evaluated by an additional control unit.

SP/SFE 30/6 GL pulse generators have been approved by Germanischer Lloyd for use on ships. SP/SFE 30/3003 pulse generators are suitable for applications in explosion-proof areas.

Features and benefits

- For oil and grease up to NLGI 2
- Operating pressure of up to 600 bar (8 700 psi)
- Germanischer Lloyd-approved device available

Applications

- For small lubricant flow measurements, in general
- Reciprocating compressors
- Oil and gas industry
- Marine

Technical data

Order number:	
SP/SFE/ 30/5	24-2583-2516
SP/SFE 30/6 GL	24-2583-2517
SP/SFE/ 30/3003 ATEX II2G ...	
and ATEX II2D	24-2583-2526
Function principle	pulse generator based on a progressive metering principle
Operating temperature	-15 to +70 °C; +5 to 158 °F
Operating pressure	4 to 600 bar; 58 to 8 700 psi
Lubricant	oil min. viscosity 12 mm ² /s grease up to NLGI 2
Volumetric flow range	0,1–50 cm ³ /min; 0.0061–3.0512 in ³ /min
Volume/pulse ¹⁾	0,34 cm ³ ; 0.021 in ³
Contact type	reed contact
Connection	SP/SFE 30/5: plug DIN 43650 SP/SFE 30/6 GL: cable 2 m, 6.56 ft
Switching voltage	0 to 30 V AC/V DC
Switching capacity	10 W with V AC/V DC
Standard	CE, GL (Germanischer Lloyd)
Protection class	IP 67
Dimensions	65 × 170 × 35 mm 2.56 × 6.69 × 1.37 in

¹⁾ One pulse comprises the opening or closing of the reed contact. Volume/cycle = 0,68 cm³ when a pulse monitoring unit is used (opening till reopening or closing to reclosing of reed contact).

SP/SFE30 accessories

Order number	Designation
406-411	straight connector G 1/4 for ø 6 mm tube
96-1108-0058	straight connector G 1/4 for ø 8 mm tube

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication: **1-3009 EN, 1-3018 EN; 951-230-012 EN**

87630 Datalogger



Product description

The Datalogger lubrication monitor is an innovative solution originally designed for the natural gas compression industry to protect compressors against untimely lubrication faults or “no flow” conditions. It also is suitable for use with progressive metering devices with piston detectors and pulse generators.

Utilizing reed or Hall Effect cycle switches, the Datalogger keeps track of lubricant consumption and communicates a lubrication fault or when system service is required. A battery-powered, standalone version is available.

Features and benefits

- Continuously monitors one or two pulse generators
- Downloads history to CSV report via USB flash drive
- Stores data for up to one year
- No special software or hand-held hardware device needed
- Designed for use with Reed or Hall Effect cycle switches

Applications

- Gas compressors, packing and cylinder lubrication
- Petro-chemical industry
- Progressive metering devices or pulse transmitters with reed switches

Technical data

Order number	87630
Function principle	datalogger lubrication monitor
Operating temperature	-40 to +85 °C; -40 to +184 °F
LCD:	-20 to +70 °C; -4 to +158 °F
USB download:	0 to +70 °C; +32 to 158 °F
Display	2 × 16 backlit character
Units of measure	liter, pint or gallon
Input cycle	5 to 300 seconds
Alarm time	adjustable, 5–300 seconds
Switch response time	max. 250 ms
USB download port	USB 2.0 compliant, accepts universal flash drive
Data log file format	comma-separated values file (CSV) for use in programs, including Microsoft Excel
Connection electrical	gland 1/2 NPTF
Protection class	IP 56
Dimensions	150 × 150 × 100 mm 5.90 × 5.90 × 3.93 in

887630 Datalogger accessories

Order number Designation

250001	wall mounting bracket
249125	Ex housing: Class I, Groups A, B, C & D, Div. 2 CE, II 3G Ex Na IIA
250001	battery, 3.6 V lithium
250010	USB port cap replacement

NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publication available online at SKF.com/lubrication: **FORM 403848**

Monitoring devices

EWT2A ...



Product description

The EWT2A series of universal pulse monitoring devices can be used in all standard SKF lubrication systems. The pulse, generated from a progressive metering valve sensor, pulse generator or rotary gear sensor, must be received within a pre-selected and defined value. Depending on the selected version, a minimum and a maximum value can be monitored simultaneously for two or three pulse inputs. The EWT2A pulse monitoring devices are available in two voltage versions and may be installed in a switching cabinet.

All devices have custom-built functions integrated and can be set to meet system requirements.

Features and benefits

- One universal pulse monitoring device
- Easy installation by top hat rail mounting
- Adjustable operating modes
- Monitoring time 6–90 seconds
- Settings possible from 0,01 to 2 500 pulse/minute

Applications

- Installation in switching cabinet of stationary general industry machines
- In connection with a pulse generator for oil and grease to reliably monitor lubricant flow
- To safeguard a 24/7 operation for expensive or important bearing equipment

Technical data

Function principle	universal electronic control and monitoring device
Operating temperature	0 to +60 °C +32 to 140 °F
Output voltage	24 V DC +10% /-15%
Dimensions	70 × 75 × 110 mm 2.7 × 3 × 4.3 in

Version + 471

Input voltage	100–120 V AC; 200–240 V AC
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
Output voltage sensors	24 V DC

Version + 472

Input voltage	20 to 24 V DC; 20 to 24 V AC
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
Output voltage sensors	24 V DC



NOTE

For further technical information, technical drawings, accessories, spare parts or product function descriptions, see the following publications available on SKF.com/lubrication:
1-1700-5 EN, 951-180-001 EN

Monitoring devices

EWT2A ...

EWT2A... pulse monitor

Order number	Designation	Voltage U1	
		V DC	V AC
EWT2A01-S1-E+471	for up to 3 pulse generators	–	115, 230
EWT2A01-S1-E+472	for up to 3 pulse generators	24	24
EWT2A04-S1-E+471	for up to 2 pulse generators, high and low limit	–	115, 230
EWT2A04-S1-E+472	for up to 2 pulse generators, high and low limit	24	24

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