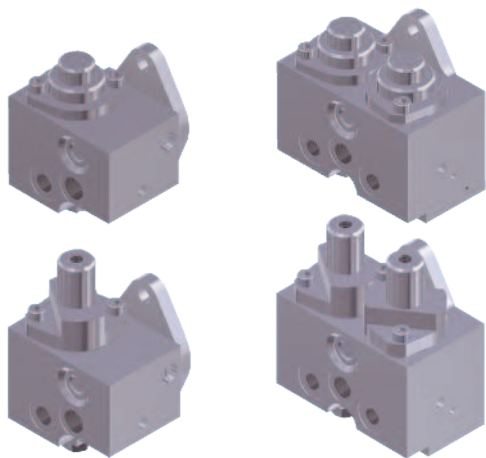


SP/G Oil Lubrication Pumps

self-priming or with priming pressure, with 2 or 4 outlets,
with external drive for total loss oil lubrication

Assembly instructions acc. to EC Dir. 2006/42/EC
for partly completed machinery, with associated operating instructions

EN



Version 02



EC Declaration of Incorporation acc. to Machinery Directive 2006/42/EC, Appendix II Part 1 B

The manufacturer, SKF Lubrication Systems Germany GmbH, Hockenheim Plant, 2. Industriestraße 4, DE - 68766 Hockenheim, hereby declares the conformity of the partly completed machinery

Designation: Manually operated single-piston grease lubrication pump
 Type: SP/G
 Item numbers: 740-*
 Year of manufacture: See rating plate

with the essential protection requirements of Machinery Directive 2006/42/EC at the time of placing on the market.

1.1.2 · 1.1.3 · 1.3.2 · 1.3.4 · 1.5.1 · 1.5.6 · 1.5.8 · 1.5.9 · 1.6.1 · 1.7.1 · 1.7.3 · 1.7.4

The technical documentation described in Annex VII, Part B of this Directive has been prepared. We undertake to transmit, in response to a reasoned request by the national authorities, the special documents for this partly completed machine. The Head of Technical Standardization is the authorized representative for the technical documentation. See the manufacturer information for the address.

Furthermore, the following Directives and (harmonized) standards were applied in the applicable areas:

Standard	Edition
DIN EN ISO 12100	2011
DIN EN 809	2012

The partially completed machinery must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of Machinery Directive 2006/42/EC and all other applicable Directives.

Hockenheim, 28/02/2017

Jürgen Kreutzkämper
 Manager R&D Germany
 SKF Lubrication Business Unit



Stefan Schürmann
 Manager R&D Hockenheim/Walldorf
 SKF Lubrication Business Unit



Masthead

These assembly instructions pursuant to Machinery Directive 2006/42/EC are an integral part of the product described here and must be kept for future use.

Warranty

The instructions do not contain any information on the warranty. This can be found in the General Conditions of Sales, which are available at:
www.skf.com/lubrication.

Copyright / Integration of instructions

© SKF Lubrication Systems Germany GmbH.
All rights reserved.

These instructions are protected by copyright.

The use of the contents for the purpose of integration into the documentation of the machine manufacturer in whose product it will be integrated is expressly allowed. This also includes making copies solely for internal training purposes.

Any other usage of any kind without written permission of the copyright holder is prohibited and constitutes a breach of copyright.

Manufacturer and service address

If you have questions, please contact:

SKF Lubrication Systems Germany GmbH Berlin Plant

Motzener Strasse 35/37
12277 Berlin
Germany
Tel. +49 (0)30 72002-0
Fax +49 (0)30 72002-111
www.skf.com/lubrication

Hockenheim Plant

2. Industriestrasse 4
68766 Hockenheim
Germany
Tel. +49 (0)62 05 27-0
Fax +49 (0)62 05 27-101
www.skf.com/lubrication

Table of contents

Assembly instructions acc. to EC Dir. 2006/42/EC

EC Declaration of Incorporation	2		
Explanation of symbols and signs	6		
1. Safety instructions	8	2. Lubricants	14
1.1 General safety instructions	8	2.1 General information	14
1.2 General behavior when handling the product	8	2.2 Selection of lubricants	14
1.3 Qualified technical personnel	9	2.3 Approved lubricants	15
1.4 System pressure or hydraulic pressure hazard	10	2.4 Lubricants and the environment	16
1.5 Operation	10	2.5 Lubricant hazards	16
1.6 Assembly/maintenance/malfunction/decommissioning/disposal	10	3. Overview	17
1.7 Intended use	11	3.1 Overview of the SP/G series and its components	17
1.8 Foreseeable misuse	12		
1.9 Disclaimer of liability	12		
1.10 Referenced documents	12		
1.11 Existing residual risks	13		
		4. Assembly	18
		4.1 General information	18
		4.2 Setup and attachment	18
		4.2.1 Minimum mounting dimensions	19
		4.3 Assembly drawings with minimum installation dimensions	20
		4.4 Preparing the mounting surface	24
		4.5 Attaching the SP/G oil lubrication pump	24
		4.6 Lubrication line arrangement	26
		4.7 Connecting the lubricant feed line and lubricant lines	27
		4.8 Venting the oil lubrication pump and lubricant lines	28
		4.9 Note on the rating plate	29




Operating instructions associated with assembly instructions 31

1. Safety instructions	32	6. Operation/decommissioning and disposal	39	7. Maintenance	50
1.1 General information	32	6.1 General information	39	7.1 General information	50
2. Lubricants	32	6.1.1 Influence of drive speed and lubricant viscosity	39	8. Malfunctions, causes, and remedies	51
3. Delivery, returns, and storage	32	6.2 Commissioning	39	9. Technical data	52
3.1 Lubrication units	33	6.3 Adjusting the delivery volume	40	9.1 SP/G with 2 outlets	52
3.2 General notes	33	6.4 Adjusting the delivery volume on self-priming pumps (SP/G ...S)	41	9.2 SP/G with 4 outlets	53
4. Assembly	33	<i>Adjustment chart, (SP/G....S)</i>		9.3 Usage range of the SP/G series as a function of priming pressure to back pressure	54
4.1 Information on assembly	33	6.4.1 SP/G 02/30 S6 - piston Ø 6	42	10. Accessories	55
5. Design and function	34	6.4.2 SP/G 02/30 S7 - piston Ø 7	43	11. Appendix	57
5.1 General information	34	6.4.3 SP/G 04/30 S7 - 2x piston Ø 7	44		
5.2 Functional description of the SP/G	35	6.5 Adjusting the delivery volume on pumps with priming pressure (SP/G... V)	45		
5.2.1 Self-priming design (S)	36	<i>Adjustment chart, (SP/G....V)</i>			
5.2.2 Priming pressure design (V)	37	6.5.1 Adjustment chart, SP/G 02/30 V6 - piston Ø 6	46		
5.2.3 SP/G feeding operation	38	6.5.2 Adjustment chart, SP/G 02/30 V7 - piston Ø 7	47		
		6.5.3 Adjustment chart, SP/G 04/30 V7 - 2x piston Ø 7	48		
		6.6 Temporary decommissioning	49		
		6.7 Decommissioning and disposal	49		














Explanation of symbols and signs

You will find these symbols, which warn of specific dangers to persons, material assets, or the environment, next to all safety instructions in these operating instructions.

Read the instructions completely and follow all operating instructions and the warning and safety instructions.

Warning level	Consequence	Probability
 DANGER	Death / serious injury	Immediate
 WARNING	Serious injury	Possible
 CAUTION	Minor injury	Possible
NOTE	Property damage	Possible

Information symbols within the text	
Symbol	Meaning
●	Prompts an action
○	Used for itemizing
☞	Refers to other facts, causes, or consequences
→	Provides additional information within procedures

Possible symbols	
Symbol	Meaning
	Note
	Electrical component hazard, electric shock hazard
	Slipping hazard
	Hazard from hot components Hazard from hot surface
	Risk of being drawn into machinery
	Crushing hazard
	Danger from suspended load
	Pressure injection hazard
	Explosion-proof component
	Electrostatic sensitive components
	Wear personal safety equipment (goggles)
	Secure (lock) the closing device against accidental starting of the machine
	Environmentally sound disposal

Instructions placed on a unit, machine, or equipment, such as:

○ Rotation arrows

○ Fluid connection labels
must be followed and kept in fully legible condition.

○ Warnings

Read the assembly and operating instructions thoroughly and follow the safety instructions.

Abbreviations and conversion factors

Abbreviations

re	regarding	oz.	ounce
approx.	approximately	psi	pounds per square inch
°C	degrees Celsius	hp	horsepower
s	seconds	lb.	pound
dB (A)	sound pressure level	sq.in.	square inch
i.e.	that is	kp	kilogram-force
etc.	et cetera	cu.in.	cubic inch
poss.	possibly	mph	miles per hour
<	less than	fpsec	feet per second
±	plus or minus	°F	degrees Fahrenheit
>	greater than	fl.oz.	fluid ounce
e.g.	for example	in.	inch
if	if necessary	gal.	gallon
necessary			
etc.	et cetera		
usually	usually		
Ø	diameter		
incl.	including		
K	Kelvin		
kg	kilogram		
rh	relative humidity		
kW	kilowatt		
l	liter		
Min.	minute		
max.	maximum		
min.	minimum		
mm	millimeter		
ml	milliliter		
N	Newton		
Nm	Newton meter		

Conversion factors

Length	1 mm = 0.03937 in.
Area	1 cm ² = 0.155 sq.in.
Volume	1 ml = 0.0352 fl.oz.
	1 l = 2.11416 pints (US)
Mass	1 kg = 2.205 lbs
	1 g = 0.03527 oz.
Density	1 kg/cm ³ = 8.3454 lb./gal. (US)
	1 kg/cm ³ = 0.03613 lb./cu.in.
Force	1 N = 0.10197 kp
Speed	1 m/s = 3.28084 fpsec
	1 m/s = 2.23694 mph
Acceleration	1 m/s ² = 3.28084 ft./s ²
Pressure	1 bar = 14.5 psi
Temperature	°C = (°F-32) x 5/9
Power	1 kW = 1.34109 hp

1. Safety instructions

1.1 General safety instructions

The operator must ensure that the assembly instructions/operating instructions are read and understood by all persons tasked with working on the product or who supervise or instruct such persons. The assembly instructions/operating instructions must be kept readily available together with the product.

Note that the assembly instructions/operating instructions form part of the product and must accompany the product if sold to a new owner.

The product described here was manufactured according to the state of the art. Risks may, however, arise from its usage and may result in harm to persons or damage to other material assets.

Any malfunctions which may affect safety must be remedied immediately. In addition to the assembly instructions/operating instructions, statutory regulations and other regulations for accident prevention and environmental protection must be observed and applied.

1.2 General behavior when handling the product

- o The product may only be used in awareness of the potential dangers, in proper technical condition, and according to the information in this manual.
- o Technical personnel must familiarize themselves with the functions and operation of the product. The specified assembly and operating steps and their sequences must be observed.
- o Any unclear points regarding proper condition or correct assembly/operation must be clarified. Operation is prohibited until issues have been clarified.
- o Unauthorized persons must be kept away from the product.
- o All safety instructions and in-house instructions relevant to the particular activity must be observed.
- o Responsibilities for different activities must be clearly defined and observed. Uncertainty seriously endangers safety.
- o Protective and safety mechanisms cannot be removed, modified, or disabled during operation and must be checked for proper function and completeness at regular intervals. If protective and safety mechanisms must be removed, they must be reinstalled immediately following conclusion of work and then checked for proper function.
- o Any malfunctions that occur must be resolved according to responsibility. The operator of the system/machine must be notified in case of malfunctions outside the scope of responsibility.
- o Wear personal protective equipment.
- o Observe the relevant safety data sheets when handling lubricants.

1.3 Qualified technical personnel

Only qualified technical personnel may install, operate, maintain, and repair the products described in the assembly instructions. Qualified technical personnel are persons who have been trained, assigned, and instructed by the operator of the final product into which the product described here is incorporated. Such persons are familiar with the relevant standards, rules, accident prevention regulations, and assembly conditions as a result of their training, experience, and instruction. They are qualified to carry out the required activities and in doing so recognize and avoid any potential hazards. The definition of qualified personnel and the prohibition against employing non-qualified personnel are laid down in DIN VDE 0105 and IEC 364.

Relevant country-specific definitions of qualified technical personnel apply for countries outside the scope of DIN VDE 0105 or IEC 364.



The core principles of these country-specific qualification requirements for technical personnel cannot be below those of the two standards mentioned above.

The operator of the final product is responsible for assigning tasks and areas of responsibility and for the responsibility and monitoring of the personnel. These areas must be precisely specified by the operator. The personnel must be trained and instructed if they do not possess the requisite knowledge.

Product training can also be performed by SKF in exchange for costs incurred.

The operator must ensure that its personnel have fully understood the content of the assembly instructions/operating instructions.

1.4 System pressure or hydraulic pressure hazard

	 DANGER
	<p>System pressure Hydraulic pressure</p> <p>Lubrication systems are pressurized during operation. Centralized lubrication systems must therefore be depressurized before starting assembly, maintenance, or repair work, or any system modifications or system repairs.</p>

1.5 Operation

The following must be observed during commissioning and operation.

- o All information within this manual and the information within the referenced documents
- o All laws/regulations that the operator must observe
- o The information on explosion protection according to Directive 1999/92/EC (ATEX 137), if necessary

1.6 Assembly/maintenance/malfunction/decommissioning/disposal

The following must be observed while working on the product.

- o All relevant persons (e.g., operating personnel, supervisors) must be informed of the activity prior to the start of work. Precautionary operational measures / work instructions must be observed.
- o Take appropriate measures to ensure that moving/detached parts are immobilized during the work and that no body parts can be pinched by unintended movements.
- o Assemble the product only outside the operating range of moving parts, at an adequate distance from sources of heat or cold.
- o Prior to performing work, the product and the machine/system in which the product is or will be integrated must be depressurized and secured against unauthorized activation.

1.7 Intended use

- o All work on electrical components may be performed only with voltage-insulated tools.
- o Fuses must not be bridged. Always replace fuses with fuses of the same type.
- o Ensure proper grounding of the product.
- o Drill required holes only on non-critical, non-load-bearing parts.
- o Other units of the machine/the vehicle must not be damaged or impaired in their function by the installation of the centralized lubrication system.
- o No parts of the centralized lubrication device may be subjected to torsion, shear, or bending.
- o Use suitable lifting gear when working with heavy parts
- o Avoid mixing up/incorrectly assembling disassembled parts. Label parts.

The SP/G oil lubrication pump is used for total loss oil lubrication of four-stroke engines, compressors, vacuum pumps, and in general mechanical engineering applications. Depending on their type, the pumps are either self-priming or designed for oil priming pressure.

The permissible oil viscosity is 12 to 800 mm²/s.

The values given in the Technical Data chapter must be observed.

Any other use is deemed non-compliant with the intended use and could result in damage, malfunction, or even injury.

Particular attention is called to the fact that hazardous substances and mixtures as defined in Annex I Part 2-5 of the CLP Regulation (EC 1272/2008) may only be filled into SKF centralized lubrication systems and components and delivered and/or distributed with such systems and components after consulting with and obtaining written

approval from SKF.

The products described here are neither designed nor approved for use in conjunction with gases, liquefied gases, pressurized gases in solution, vapors, or and such fluids whose vapor pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible temperature.

Unless specially indicated otherwise, products from SKF Lubrication Systems Germany GmbH are not approved for use in potentially explosive areas as defined in the ATEX Directive 2014/34/EC.

1.8 Foreseeable misuse

- o Any usage of the product differing from the aforementioned conditions and stated purpose is strictly prohibited.

Particularly prohibited are:

- o Use in another, more critical explosion protection zone, if applied as ATEX
- o Use to feed, forward, or store hazardous substances and mixtures as defined in Annex I Part 2-5 of the CLP Regulation (EC 1272/2008) that are marked with hazard pictograms GHS01-GHS06 and GHS08.
- o Use to feed / forward / store gases, liquefied gases, dissolved gases, vapors, or fluids whose vapor pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible operating temperature

1.9 Disclaimer of liability

SKF shall not be held responsible for damages:

- o Resulting from failure to comply with these instructions
- o Caused by contaminated or unsuitable lubricants
- o Caused by the installation of non-original SKF components or SKF spare parts
- o Caused by inappropriate usage
- o Resulting from improper assembly, configuration, or filling
- o Resulting from improper response to malfunctions
- o Caused by non-observance of maintenance intervals
- o Caused by independent modification of system components
- o Caused by the use of media not approved for these types of pump units
Unsuitable media may result in pump unit failure and potentially severe bodily injury or death and property damage.

1.10 Referenced documents

In addition to this manual, the following documents must be observed by the respective target group:

- o Operational instructions and approval rules
- o Project planning documents and other relevant documents, if provided

The operator must supplement these documents with applicable national regulations for the country of use.

This documentation must be included if the product is sold or transferred.

1.11 Existing residual risks

Residual risk	Remedy
Life cycle: Assembly	
Risk of slipping (slippery surface) due to contamination by leaked lubricant	<ul style="list-style-type: none"> • Promptly apply suitable binding agents and remove the leaked or spilled lubricant. • Follow statutory and company regulations for the handling of lubricants.
Thermal hazard due to external heat transfer	<ul style="list-style-type: none"> • Wear personal protective equipment (gloves) or perform work only when the product is cooled down.
Tearing/damage to supply and lubricant lines when installed on moving machine components	<ul style="list-style-type: none"> • Do not install on moving machine components. If this cannot be avoided, use flexible supply and lubricant lines.
Life cycle: Commissioning / operation	
Lubricant spraying out due to faulty fitting of threaded connections on lubricant lines	<ul style="list-style-type: none"> • Tighten all threaded connections to the appropriate torques (where specified). Use threaded connections and lubricant lines suitable for the indicated operating pressures. Check all threaded connections and lubricant lines for correct connection and damage before putting into operation.
Thermal hazard due to external heat transfer	<ul style="list-style-type: none"> • Wear personal protective equipment (gloves) or perform work only when the product is cooled down.
Risk of slipping (slippery surface) due to contamination of floor by leaked lubricant	<ul style="list-style-type: none"> • Promptly apply suitable binding agents and remove the leaked lubricant • Follow statutory and company regulations for the handling of lubricants.
Life cycle: Setup and retrofit / malfunction and troubleshooting / maintenance and repair / decommissioning and disposal	
Risk of slipping (slippery surface) due to contamination of floor by leaked lubricant	<ul style="list-style-type: none"> • Promptly apply suitable binding agents and remove the leaked or spilled lubricant. • Follow statutory and company regulations for the handling of lubricants.
Thermal hazard due to external heat transfer	<ul style="list-style-type: none"> • Wear personal protective equipment (gloves) or perform work only when the product is cooled down.

2. Lubricants

2.1 General information

NOTE

All products from SKF Lubrication Systems may be used only for their intended purpose and in accordance with the information in the product's operating instructions.

Intended use is the use of the products for the purpose of providing centralized lubrication/lubrication of bearings and friction points using lubricants within the physical usage limits which can be found in the documentation for the devices, e.g., operating instructions and the product descriptions, e.g., technical drawings and catalogs.

Particular attention is called to the fact that hazardous substances and mixtures as defined in Annex I Part 2-5 of the CLP Regulation (EC 1272/2008) may only be filled into SKF centralized lubrication systems and components and delivered and/or distributed with such systems and components after consulting with and obtaining written

approval from SKF.

No products manufactured by SKF Lubrication Systems are approved for use in conjunction with gases, liquefied gases, pressurized gases in solution, vapors, or such fluids whose vapor pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible temperature.

Other media which are neither lubricant nor hazardous substance may only be fed after consultation with and written approval from SKF Lubrication Systems.

SKF Lubrication Systems considers lubricants to be an element of system design that must always be factored into the selection of components and the design of centralized lubrication systems. The lubricating properties of the lubricants are critically important in making these selections.

2.2 Selection of lubricants

NOTE

Observe the instructions from the machine manufacturer regarding the lubricants that are to be used.

The amount of lubricant required at a lubrication point is specified by the bearing or machine manufacturer. It must be ensured that the required quantity of lubricant is provided to the lubrication point. The lubrication point may otherwise not receive adequate lubrication, which can lead to damage and failure of the bearing.

Selection of a lubricant suitable for the lubrication task is made by the machine/system manufacturer and/or the operator of the machine/system in cooperation with the lubricant supplier.

When selecting a lubricant, the type of bearings/friction points, the expected load during operation, and the anticipated ambient conditions must be taken into account. All economic and environmental aspects must also be considered.

2.3 Approved lubricants

NOTE

If necessary, SKF Lubrication Systems can help customers to select suitable components for feeding the selected lubricant and to plan and design their centralized lubrication system.

Please contact SKF Lubrication Systems if you have further questions regarding lubricants. It is possible for lubricants to be tested in the company's laboratory for their suitability for pumping in centralized lubrication systems (e.g., "bleeding"). You can request an overview of the lubricant tests offered by SKF Lubrication Systems from the company's Service department.

NOTE

Only lubricants approved for the product may be used; see the Technical Data chapter. Unsuitable lubricants can lead to failure of the product and to property damage.

NOTE

Different lubricants must not be mixed together. Doing so can cause damage and require costly and complicated cleaning of the product/lubrication system. It is recommended that an indication of the lubricant in use be attached to the lubricant reservoir in order to prevent accidental mixing of lubricants.

The product described here can be operated using lubricants that meet the specifications in the technical data. Depending on the product design, these lubricants may be oils, fluid greases, or greases.

Mineral, synthetic, and/or rapidly biodegradable oils and base oils can be used. Consistency agents and additives may be added depending on the operating conditions.

Note that in rare cases, there may be lubricants whose properties are within the permissible limits values but whose other characteristics render them unsuitable for use in centralized lubrication systems. For example, synthetic lubricants may be incompatible with elastomers.

2.4 Lubricants and the environment



NOTE

Lubricants can contaminate soil and waterways. Lubricants must be used and disposed of properly. Observe the local regulations and laws regarding the disposal of lubricants.

It is important to note that lubricants are environmentally hazardous, flammable substances which require special precautionary measures during transport, storage, and processing. Consult the safety data sheet from the lubricant manufacturer for information regarding transport, storage, processing, and environmental hazards of the lubricant that will be used.

The safety data sheet for a lubricant can be requested from the lubricant manufacturer.

2.5 Lubricant hazards

	<div data-bbox="651 250 989 318">WARNING</div> <p>Lubricants Oil lubrication pumps must always be free of leaks. Leaking lubricant is hazardous due to the risk of slipping and injury. Beware of any lubricant leaking out during assembly, operation, maintenance, or repair of centralized lubrication systems. Leaks must be sealed off without delay.</p>
---	---

Lubricant leaking from centralized lubrication systems is a serious hazard. Leaking lubricant can create risks that may result in physical harm to persons or damage to other material assets.

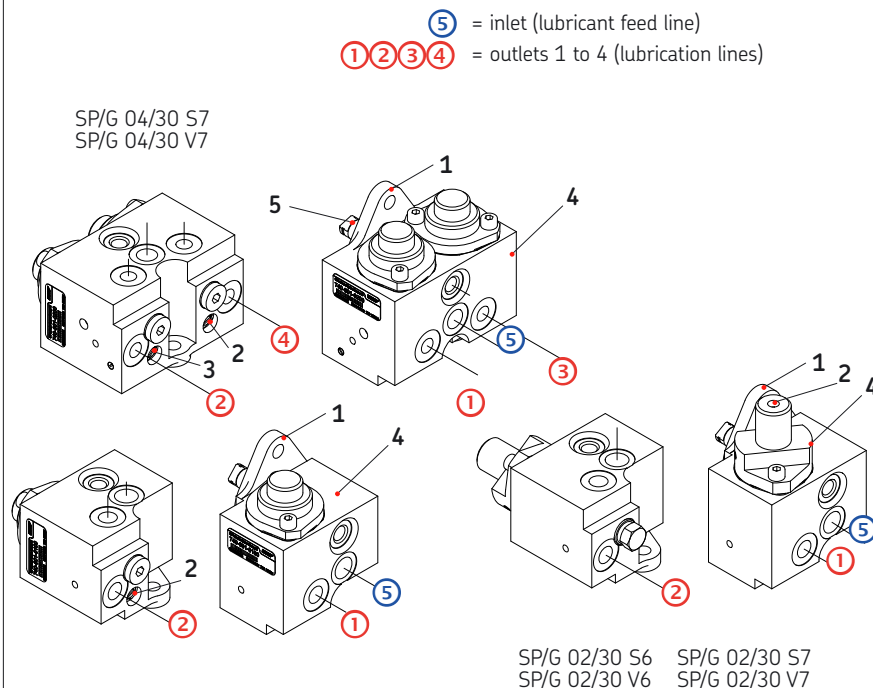
NOTE

Follow the safety instructions on the lubricant's safety data sheet.

3. Overview

3.1 Overview of the SP/G series and its components

Overview and components of the SP/G series



Components of the SP/G series

Item	Description	Chapter
1	Flange	4.8
2	Delivery volume adjustment screw 1 for outlet 1 and outlet 2	
3	Displacement adjustment screw 2 for outlet 3 and outlet 4	
4	Pump housing	
5	Drive shaft	

Note:

SP/G pump series are available in designs that are self-priming or operate with priming pressure.

In self-priming designs (code letter "S"), the lubricant/oil is drawn by the pump, while designs with priming pressure (code letter "V") have lubricant/oil primed at a pressure of 2 to 6 bar at the pump inlet.

NOTE!

Outlets must not be closed.

4. Assembly

4.1 General information

Only qualified technical personnel may install, operate, maintain, and repair the oil lubrication pumps described in the assembly instructions. Qualified technical personnel are persons who have been trained, assigned and instructed by the operator of the final product into which the described oil lubrication pump is incorporated.

Such persons are familiar with the relevant standards, rules, accident prevention regulations, and operating conditions as a result of their training, experience, and instruction. They are qualified to carry out the required activities and in doing so recognize and avoid potential hazards.

The definition of qualified personnel and the prohibition against employing non-qualified personnel are laid down in DIN VDE 0105 and IEC 364.

Before assembling/setting up the product, the packaging material and any shipping braces (e.g., plugs) must be removed. The packaging material must be preserved until any discrepancies are resolved.

NOTE

Observe the technical data (Chapter 9).



WARNING

Personal injury/property damage
Drill assembly holes in such a way that no lines, units, or moving parts are damaged or their function impaired.

Maintain safety clearances and comply with regulations for assembly and accident prevention.

4.2 Setup and attachment

The SP/G oil lubrication pump should be installed in an easily accessible position, allowing all further installation work to be done without difficulty.

The technical data for the SP/G oil lubrication pump is contained in these assembly and operating instructions. These documents can be downloaded from the homepage of SKF Lubrication Systems Germany GmbH.

NOTE

Outlets must not be closed.

During assembly and especially when drilling, always pay attention to the following:


- o Supply lines must not be damaged by assembly work.
- o The installation work must not damage other units.

- o The product must be installed at an adequate distance from sources of heat.
- o Oil lubrication lines should be laid with a rising gradient.
- o Maintain safety clearances and comply with local regulations for assembly and accident prevention.

Assemble and commission oil lubrication pumps of the SP/G series according to the following sequence:

- o Prepare the mounting surface.
- o Attach the SP/G oil lubrication pump.
- o Connect the lubricant feed line.
- o Connect the lubricant line.

- o Vent the oil lubrication pump and lubricant lines.

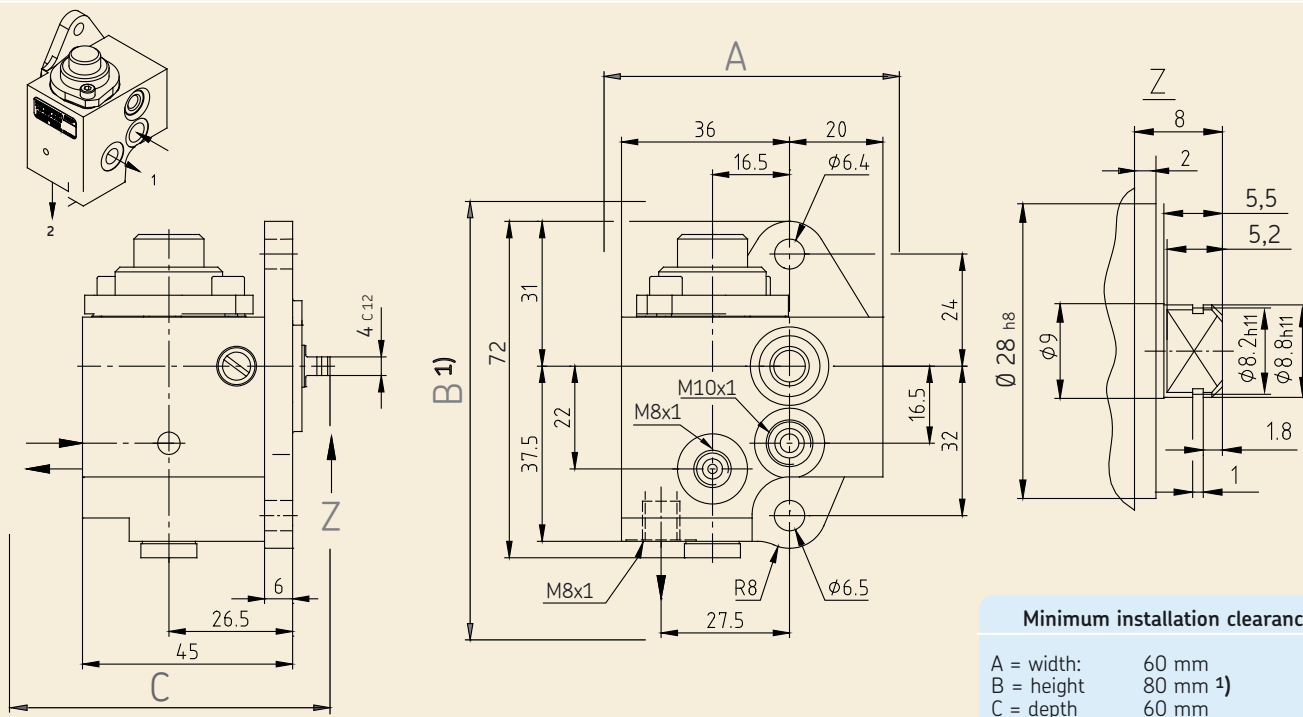
	 WARNING
	Supply lines or moving parts When drilling the assembly holes, you must be careful of any supply lines or other units, as well as of other hazards such as moving components. Maintain safety clearances and comply with local regulations for assembly and accident prevention.

4.2.1 Minimum mounting dimensions

To ensure enough space for maintenance work and for any disassembly of the product, ensure that the minimum mounting dimensions (Figs. 1 and 4) are maintained.

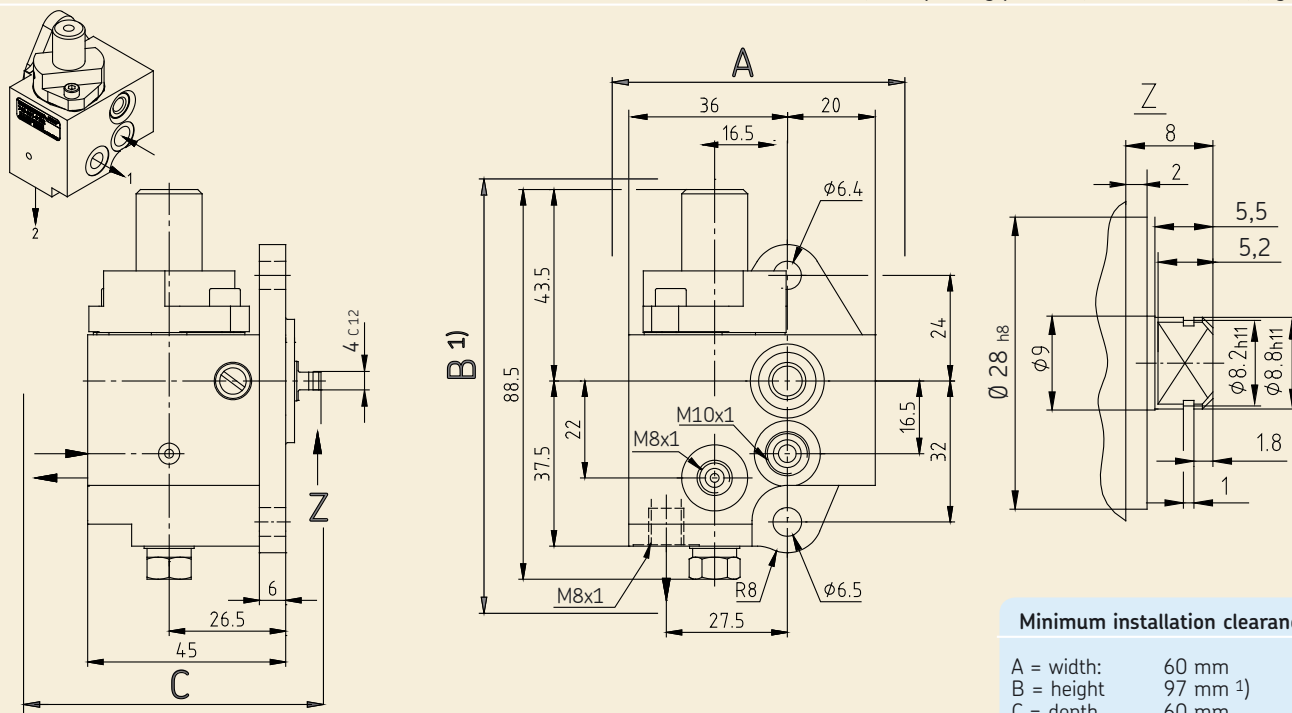
4.3 Assembly drawings with minimum installation dimensions

Installation dimensions of SP/G 02/...S, self-priming, with two outlets, Fig. 1



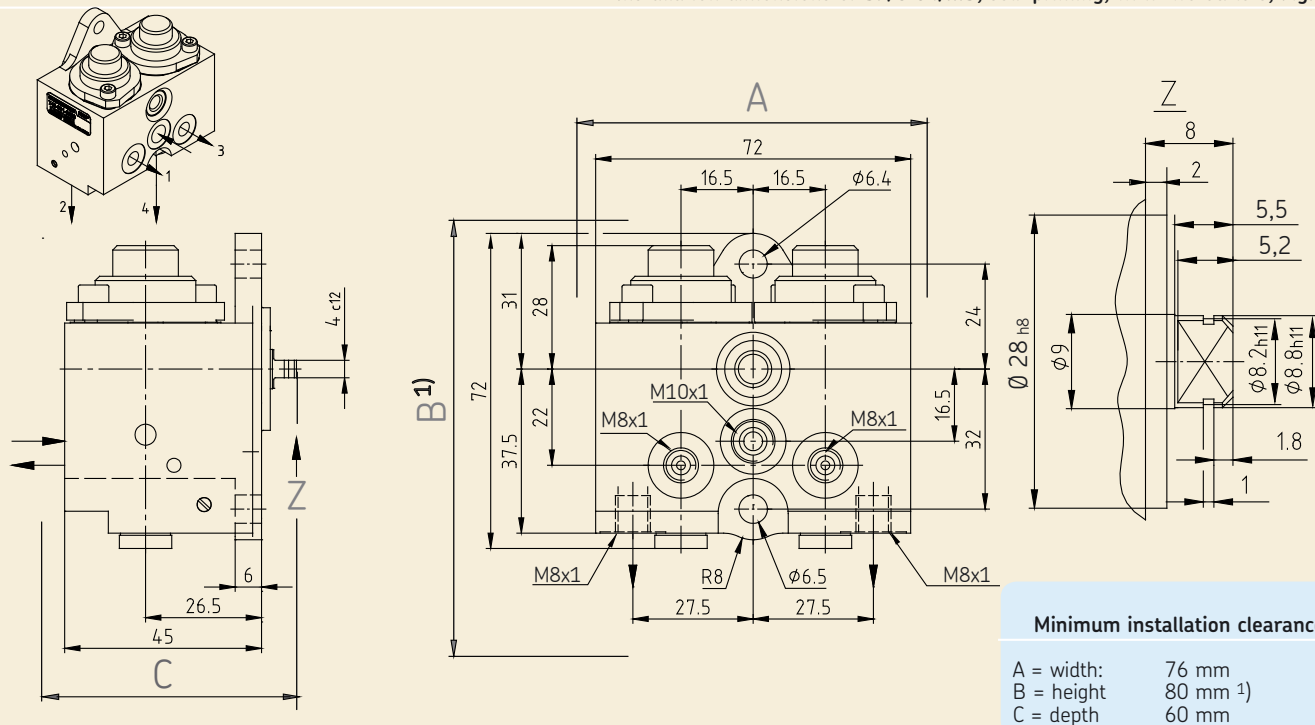
1) Maintain clearance for volume adjustment (flat tip screwdriver), Chap. 6.4.2.

Installation dimensions of SP/G 02/...V, with priming pressure, with two outlets, Fig. 2

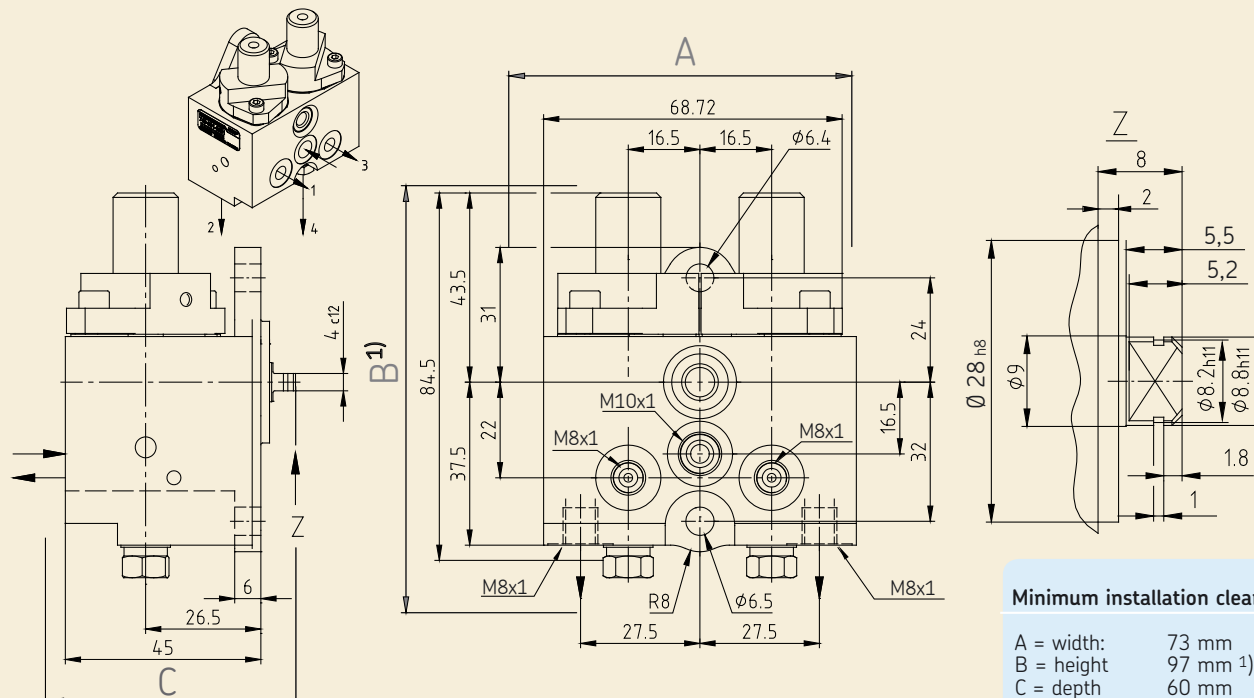


1) Maintain clearance for volume adjustment (flat tip screwdriver), Chap. 6.5.1.

Installation dimensions of SP/G 04/...S, self-priming, with two outlets, Fig. 3



Installation dimensions of SP/G 04/...V, with priming pressure, with four outlets, Fig. 4



1) Maintain clearance for volume adjustment (flat tip screwdriver), Chap. 6.5.3.

4.4 Preparing the mounting surface

☞ See Figure 5

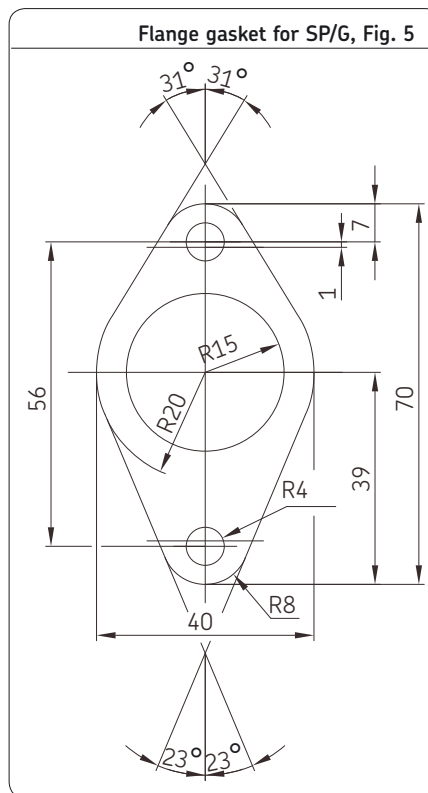
The mounting surface for the SP/G must be free of dust particles, machining chips, rust, and paint residue. If necessary, clean this surface prior to flanging.

A seal can be used depending on the condition of the mounting surface, e.g., surface roughness, flatness, and evenness. See Figure 5 for the dimensions of the seal.

- Clean surface to remove foreign particles.
- Deburr surface if necessary.

If a seal is necessary:

- Establish a seal as shown in Fig. 5



4.5 Attaching the SP/G oil lubrication pump

☞ See Figure 6

Fastening material to be provided by the customer:

- o Cheese-head screws with hexagon socket (2x) acc. to DIN EN ISO 4762 M6x15-8.8
- o Washers (2x) acc. to ISO 7090- 6-200-HV
- Check to make sure that the SP/G moves easily by rotating the drive shaft several times using the coupling pin (1).
- ☞ If the drive shaft rotates with difficulty or in jerks, lubricate its bearing with several drops of oil. Repeat the procedure until the drive shaft rotates easily.
- Check the flange face (2) of the SP/G for any contamination and clean again if necessary.

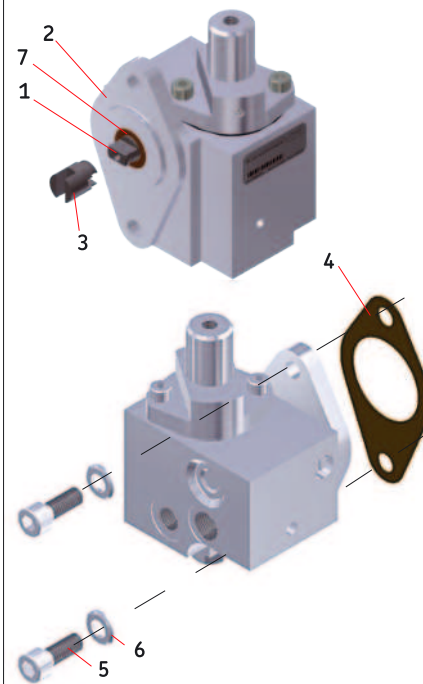
- Rotate the coupling pin (1) of the SP/G so that it fits into the coupling part/drive slot (3) (provided by customer or see Accessories) without difficulty during subsequent mounting.
 - If a seal (4) is used, lightly grease the seal and position the flange face (2).
- ☞ During subsequent assembly, it must be possible to fit the coupling pin (1) into the customer's coupling part/drive slot (3) without difficulty.
- If necessary, rotate the coupling pin again according to the position of the drive slot.
 - Carefully place and align the SP/G on the flanging surface.
 - Apply cheese-head screws (2x) (5) with associated washers (6) on the SP/G and tighten gently.

- Align the SP/G again and tighten with **10 Nm torque**.

**Note!**

During pump operation, there is lower oil discharge between the plain bearing (7) and drive shaft (1) as a function of the system's design. The oil film is diverted into the customer's drive mechanism.

Attaching the oil lubrication pump, Fig. 6





4.6 Lubrication line arrangement



When arranging the lubricant feed line and lubrication point lines, observe the following instructions in order to ensure that the entire centralized lubrication system functions smoothly.

All components of the lubrication line system such as tubes, hoses, shutoff valves, directional control valves, fittings, etc. must be carefully cleaned before assembly. No seals in the lubrication line system should protrude inwards in a way that disrupts the flow of the lubricant and could allow contaminants to enter the lubrication line system. Lubrication lines must be arranged so that air pockets cannot form anywhere. Avoid changes in the cross-section of the lubrication line from small to large cross-sections in the direction of flow of the lubricant. The flow of lubricant in the lubrication lines must not be impeded by the incorporation of sharp bends, tube bends, angle valves, or flap valves.

Unavoidable changes in the cross-section in lubrication lines must have smooth transitions.

Sudden changes of direction must be avoided.

	 CAUTION
	Environmental pollution Lubrication lines must always be free of leaks. Lubricants can contaminate soil and waterways. Lubricants must be used and disposed of properly. Observe the local regulations and laws regarding the disposal of lubricants.

	 CAUTION
	Slipping hazard Centralized lubrication systems must always be free of leaks. Leaking lubricant is hazardous due to the risk of slipping and injury. Beware of any lubricant leaking out during assembly, operation, maintenance, or repair of centralized lubrication systems. Leaks must be sealed off without delay.

4.7 Connecting the lubricant feed line and lubricant lines

☞ See Figure 7

Use a seamless steel, stainless steel, or copper tube for the lubricant feed line. Cut the tube to the required length with a tube cutter (do not saw!) and deburr. Then clean the tube with compressed air.

In the self-priming version, arrange the 6 mm line as short as possible; it must not exceed a length of 200 mm.

Avoid tight bends.

The lubricant feed line must be connected in a stress-free position.

The customer must ensure that only clean lubricating oil is fed to the SP/G oil lubrication pump. If necessary, install a filter ($\leq 25 \mu\text{m}$).

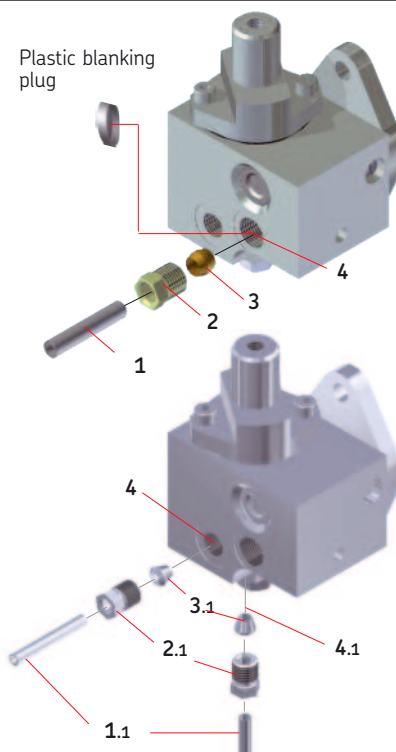
In the self-priming design, the distance between the customer's reservoir bottom and the suction strainer must be at least 8 mm.

- Remove the plastic blanking plug.
- Push the lubricant feed line ($\varnothing 6\text{mm}$)

(1) through the union nut (2) and conical ring (3).

- Push the lubricant feed line (1) into the pump's inlet bore (4) until the stop position.
- Gently tighten the union nut (2) and align the lubricant feed line to the lubricant supply.
- Tighten the union nut (2).
- Connect the lubricant feed line (1) to the customer's lubricant reservoir.
- Repeat the assembly procedure on the lubrication lines (1.1-4.1) (2x or 4x).

Attaching the lubrication lines, Fig. 7



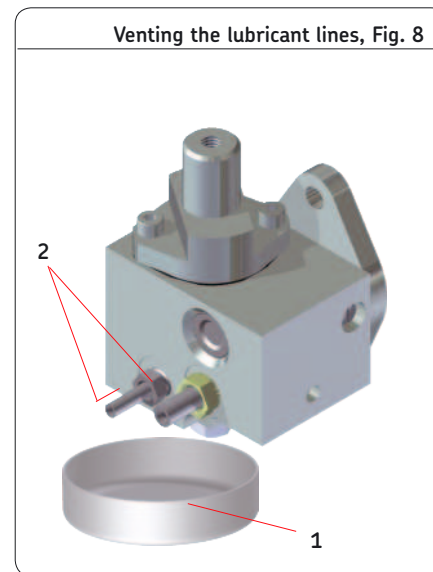
4.8 Venting the oil lubrication pump and lubricant lines

☞ See Figure 8

The venting procedure requires that the oil lubrication pump (Chapter 4.5) and the lubrication feed line and lubrication lines (Chapter 4.7) already be installed.

	WARNING
	Follow the safety instructions! During the following startup of the oil lubrication pump and adjustment of the delivery volume, observe the safety instructions from the manufacturer of the product/machine/system into which the SP/G has been installed. Work on the SP/G cannot be performed within the range of moving parts.

- Position the oil pan (1) below the oil lubrication pump.
- Switch on the customer's drive for the oil lubrication pump.
- On the oil lubrication pump, loosen the union nut (2) on one of the lubrication lines until lubricant discharges at the line.
- As soon as bubble-free lubricant discharges, tighten the union nut (2).
- Repeat the venting procedure at the end of the lubrication line as well as on all remaining lubricant lines connected to the SP/G.



4.9 Note on the rating plate

The rating plate on the SP/G oil lubrication pump provides important key data such as type designation and serial number (or customer number).

To avoid loss of this data in case the rating plate becomes illegible, these characteristics should be entered in the following table.

- Enter key data from rating plate in the following table.

The diagram shows a rating plate with the following fields:

- Type designation**: A field with a small circular icon to its right.
- Serial number**: A field with a small circular icon to its right. Below this field is a checkbox labeled "Made in Germany".
- Production date**: A field with a small circular icon to its right.

Below the rating plate is a table with three rows for recording the data:

SP/G Oil Lubrication Pump

with external drive for total loss oil lubrication

**Operating instructions associated
with assembly instructions**

1. Safety instructions

1.1 General information

NOTE

The operator of the product described here must ensure that the operating instructions are read and understood by all persons responsible for assembly, operation, maintenance, and repair of the product. In addition to the operating instructions, general statutory regulations and other regulations for accident prevention and environmental protection must be observed and applied.

2. Lubricants

NOTE

The safety instructions listed in Chapter 2 "Lubricants" of the assembly instructions also apply without restriction to these operating instructions.

The operator of the product described here must ensure that the operating instructions are read and understood by all persons responsible for assembly, operation, maintenance, and repair of the product. In addition to the operating instructions, general statutory regulations and other regulations for accident prevention and environmental protection must be observed and applied.

3. Delivery, returns, and storage

SKF Lubrication Systems Germany GmbH products are packaged in accordance with standard commercial practice according to the regulations of the recipient's country and DIN ISO 9001. During transport, safe handling must be ensured and the product must be protected from mechanical effects such as impacts. The transport packaging must be marked "Do not drop!"

Immediately after receipt, the delivery must be checked for completeness according to the shipping documents. Any transport damage must be reported to the transport company immediately. The packaging material should be preserved until any discrepancies are resolved.

All parts must be cleaned and properly packed before return shipment (i.e., according to the requirements of the recipient country).

4. Assembly

4.1 Information on assembly

The assembly procedure for the product is described in detail in the assembly instructions (Chapter 4) associated with these operating instructions.

3.2 General notes

There are no restrictions for land, air, or sea transport.

The following must be marked on the packaging of return shipments:

- o Do not top load / This side up
- o Keep dry
- o Handle with care, Do not drop

The following conditions apply to storage:

3.1 Lubrication units

Ambient conditions: dry and dust-free surroundings, storage in well ventilated dry area

- o Storage time: Max. 24 months
- o Permissible humidity: < 65%
- o Storage temperature: + 10 to +40°C
- o Light: Avoid direct sun or UV exposure and shield nearby sources of heat

- o The product(s) can be enveloped in plastic film to provide low-dust storage.
- o Protect against ground moisture by storing on a shelf or wooden pallet.
- o Bright-finished metallic surfaces, especially wearing parts and assembly surfaces, must be protected using long-term anti-corrosive agents before storage.

At approx. 6-month intervals:

- o Check for corrosion. If there are signs of corrosion, reapply anti-corrosive agents.
- o Drives must be protected from mechanical damage.

5. Design and function

5.1 General information

☞ See Figure 1

Oil lubrication pumps of the SP/G series are small, compact, maintenance-free piston pumps with external drive. They are used in four-stroke engines, compressors, vacuum pumps, and in general mechanical engineering applications.

The SP/G is available as a self-priming pump or a pump with priming pressure. The pumps in suction operation produce an outlet pressure from 0 to 3 bar depending on the lubricant, speed, and ambient influences.

At outlet pressures from 3 to 9 bar, the customer must provide admission pressure (priming pressure) for smooth pump operation. This admission pressure corresponds to the outlet pressure minus a pressure differential of $\Delta P = 3$ bar.

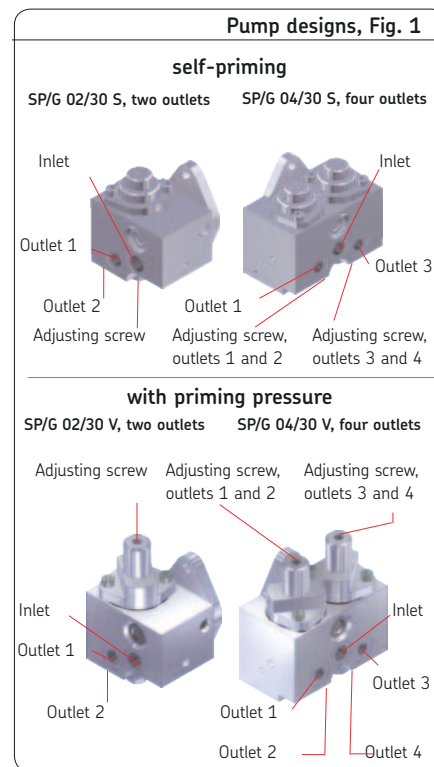
The SP/G series is available in designs with a delivery volume from 0 to 55 cm³/stroke per outlet and 0 to 70 cm³/stroke per outlet.

Designs with two or four outlets are available.

The delivery volume is set using an adjusting screw that also controls two outlets. The outlets assigned to a working piston can be consolidated into one lubricant line. In this case, the delivery volume setting (delivery volume adjusting screw) must be turned back to half of the previous delivery volume (stroke movement of the working piston reduced by half).

The drive speed of SP/G oil lubrication pumps is between 300 and 3000 rpm.

The drive can rotate in either direction during pump operation, though the direction must not be changed during operation.



5.2 Functional description of the SP/G

☞ See Figure 2

Oil lubrication pumps of the SP/G series are available as self-priming pumps or pumps with priming pressure.

The oil lubrication pumps have a lubricant inlet (1) and either two or four outlets (2/3).

The delivery volume is set using an adjusting screw (4) for outlets 1 and 2 (2/3). Designs with four outlets include an additional adjusting screw.

The common lubricant inlet (1) is located below the axis of the drive shaft (5).

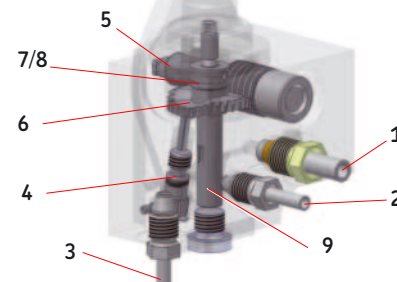
The drive shaft (5) with worm drive powers a cam plate (6) equipped with an external gear. This is permanently joined to the working piston (9) via a drag coupling (7) with a brake spring (8) and a spring pin.

The working piston (9) completes one full revolution for every 30 revolutions of the drive shaft (5) (30:1 transmission ratio).

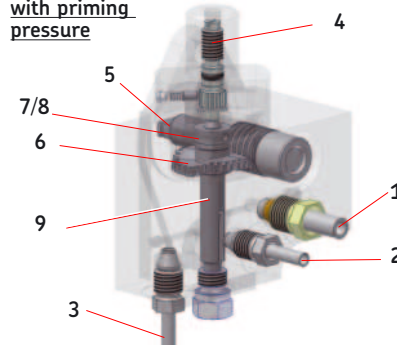
The working piston with cam plate moves up and down twice and discharges at each of the two lubricant outlets (2/3) the lubricant volume defined by the adjusting screw (4). The drag coupling (7) with integrated brake spring (8) switches automatically between clockwise and counterclockwise rotation. The switchover is delayed, with the change in the direction of cam plate rotation (6) occurring only after 90° / one-quarter revolution of the cam plate or after 7.5 revolutions of the drive shaft (5).

Design of the SP/G, Fig. 2

self-priming



with priming pressure



5.2.1 Self-priming design (S)

☞ See Figure 3

The self-priming SP/G can independently prime lubricant up to a maximum suction head of 200 mm.

The customer must install a suction strainer between the bottom of the lubricant reservoir and the intake tube. The minimum distance to the reservoir bottom should be 8 mm.

In the self-priming SP/G, the piston stroke is defined by the axial clearance of the cam plate (1) between the pressure pin (2) and straight pin (3).

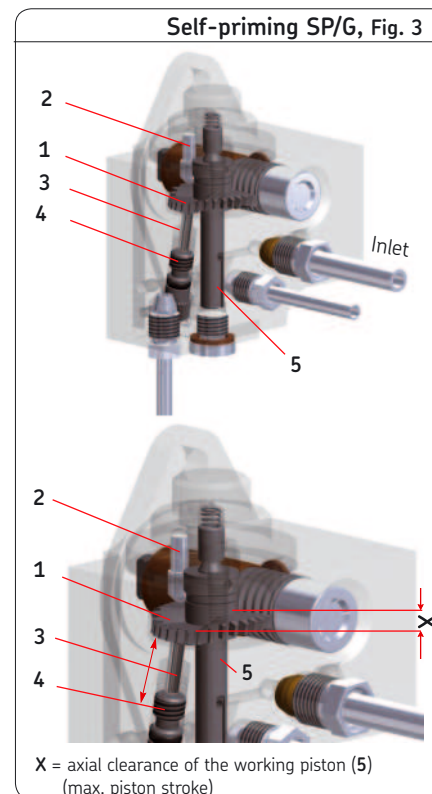
The straight pin (3), which limits the axial clearance of the cam plate, can be adjusted by turning the adjusting screw (4). The pressure pin (2), however, is permanently installed in the lid.

Turning the adjusting screw (4) counter-clockwise reduces the delivery rate. Turning counterclockwise to the stop position halts delivery. The working piston (5) then performs only a rotation without a stroke.

Function:

Suction (stroke motion) is forced by the adjusting screw (4) via the straight pin (3). When the drive shaft (6) rotates, it lifts the cam plate (1), which also lifts the working piston (5).

The pressure pin (2) integrated in the lid of the SP/G presses on the cam plate (1) and ensures that the cam plate is always applied to the straight pin (3). This ensures a continuous upward, downward, and rotary movement of the working piston (5) associated with the cam plate.



5.2.2 Priming pressure design (V)

☞ See Figure 4

To ensure proper function of the SP/G design with priming pressure, the lubricant at the pump outlet must have a priming pressure of 2 to 6 bar.

In the SP/G with priming pressure, the piston stroke is defined by the axial clearance between the upper piston stop on the adjusting screw (1) and the cam plate (2) on the pressure pin (3).

The upper piston stop can be adjusted using the adjusting screw (1). The pressure pin (3) is permanently installed in the lid.

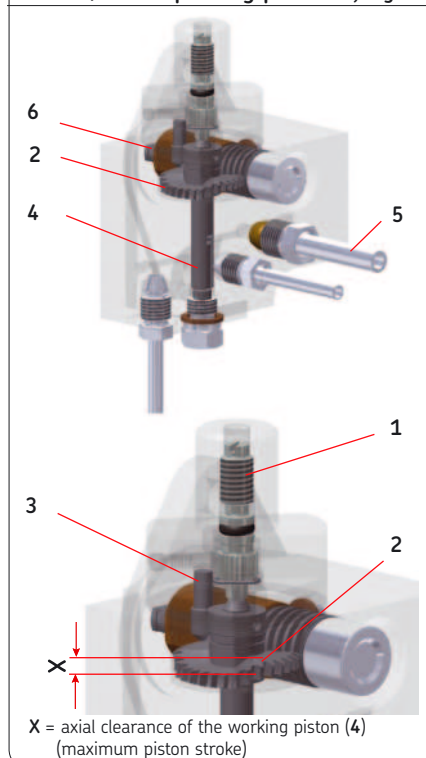
Turning the adjusting screw (1) clockwise reduces the delivery rate. Turning clockwise to the stop position completely halts delivery.

The working piston (4) then performs only a rotation without a stroke.

Function:

The lubricant under priming pressure of 2 to 6 bar at the inlet (5) lifts the working piston (4), which also lifts the cam plate (2) and presses it against the pressure pin (3). When the drive shaft (6) rotates, the cam plate (2) on the pressure pin (3) rolls off and the working piston (4) makes a continuous upward and downward movement. The maximum stroke is limited by the adjusting screw (1).

SP/G with priming pressure, Fig. 4



5.2.3 SP/G feeding operation

☞ See Figures 5 and 6

Assuming that:

The SP/G is driven clockwise as seen from the flange.

The cam plate thus rotates counterclockwise as viewed from the lid.

At the start of the suction stroke, the piston is at its lower stop position (at 0°).

While it turns, it completes an upward movement and draws the lubricant from the inlet through the milled slots in the piston surface (in this position, the long piston groove) and brings it to the chamber created below the piston. If the piston continues to rotate, it closes the inlet hole. After a further rotation of 90°, it releases the outlet hole in the cylinder for outlet 1 during the downward movement.

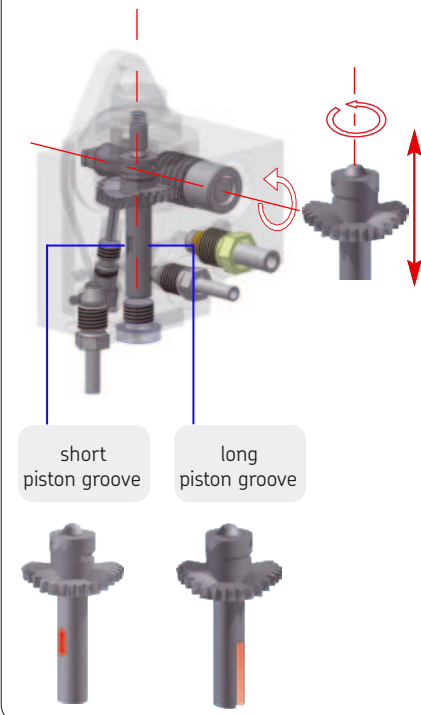
Lubricant is discharged at outlet 1.

After a further rotation of 90° (total rotation of 180°) and upward movement of the working piston, the lubricant is again suctioned from the inlet through the long piston groove and moves (via the long piston

groove) to the chamber created below the piston.

After a further 90° rotation (total rotation of 270°) and the downward movement completed in the process, the outlet hole for outlet 2 is released. The lubricant in the lower chamber is discharged at outlet 2 via the long piston groove. This means that one revolution of the working piston causes one piston stroke per outlet.

Piston groove on working piston, Fig. 5



6. Operation/decommissioning and disposal

The oil lubrication pumps of the SP/G series described here function automatically. The oil lubrication pumps, the lubricant feed line, and the lubricant lines should, however, be subjected to visual inspection on a regular basis.

The lubricant fill level in the customer's lubricant reservoir should be subjected to visual inspection on a regular basis. An inadequate lubricant level may result in destruction of the oil lubrication pump.

NOTE

Only fill using clean lubricant and an appropriate device. Contaminated lubricants lead to system malfunctions. The customer's lubricant reservoir must be filled without introducing bubbles.

NOTE

Observe the instructions from the machine manufacturer regarding the lubricants that are to be used.

6.1 General information

The lubricant fill level in the lubricant reservoir should be subjected to visual inspection on a regular basis. If the lubricant fill level is too low, lubricant needs to be topped up.

6.1.1 Influence of drive speed and lubricant viscosity

The influence of drive speed and oil viscosity on the delivery characteristics of the SP/G pump series is very low and is generally insignificant when planning the delivery volume in the specified viscosity range (see Technical Data).

6.2 Commissioning

Inspect all hydraulic connections before commissioning the SP/G oil lubrication pump.

6.3 Adjusting the delivery volume

☞ See Figure 7

Oil lubrication pumps of the SP/G series are set to full stroke by default. In customer designs with a predefined delivery volume, the delivery volume screw is plugged with red sealing wax. In this case, the volume can be modified only with the consent of the manufacturer of the product/machine/system into which the SP/G was installed.

The delivery volume is set using a finely adjustable notch system. Turning the delivery volume screw reduces the delivery volume for lubrication points 1 and 2 or lubrication points 3 and 4. The direction of rotation that reduces the delivery rate depends on the pump design.



In self-priming pumps, the lubricant is reduced by turning the delivery volume counterclockwise. In pump designs with priming pressure, the same is performed by turning clockwise.



The delivery volume can be set precisely

using the delivery volume tables and the number of notches passed when turning the delivery volume screw.

The delivery volume can be reduced from maximum to almost zero.

In order to set the delivery volume, the lubrication system must be properly assembled and vented as specified in the SP/G assembly instructions.

	<div style="background-color: #FFD700; padding: 5px; text-align: center;">  WARNING </div> <p>Be careful of moving parts! Work on the SP/G cannot be performed within the range of moving parts.</p>
---	---

	<div style="background-color: #FFD700; padding: 5px; text-align: center;">  WARNING </div> <p>Follow the safety instructions! During the following startup of the oil lubrication pump and adjustment of the delivery volume, observe the safety instructions from the manufacturer of the product/machine/system into which the SP/G has been installed.</p>
---	--

NOTE
<p>The outlets assigned to a working piston can be consolidated into one lubricant line. In this case, the delivery volume setting (delivery volume adjustment screw) must be turned back to half of the previous delivery volume (stroke movement of the working piston reduced by half).</p>

6.4 Adjusting the delivery volume on self-priming pumps (SP/G ...S)

On pumps already set to full stroke:

- Switch on the customer's drive for the oil lubrication pump.
- Apply a suitable flat tip screwdriver (1) to the delivery volume screw (2).
- To reduce the delivery volume, turn the flat tip screwdriver (1) counterclockwise.
- Set the delivery volume based on the number of notches passed and the delivery volume tables (Figs. 7 to 9).

On pumps that have already been configured:

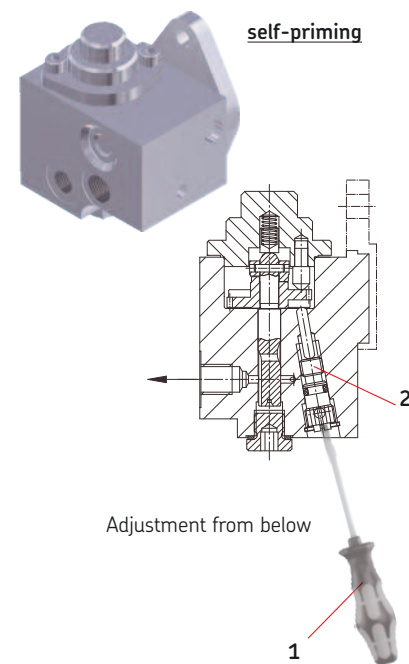
- ☞ When performing subsequent adjustment of the delivery volume, first set the pump to its maximum delivery volume (full stroke). Only then can the delivery volume be reduced.
- Switch on the customer's drive for the oil lubrication pump.

- Apply a suitable flat tip screwdriver (1) to the delivery volume screw (2).
- Set the pump to full stroke by turning the flat tip screwdriver (1) clockwise.

Then:

- To reduce the delivery volume, turn the flat tip screwdriver (1) counterclockwise.
- Set the delivery volume based on the number of notches passed and the delivery volume tables (Figs. 7 to 9).

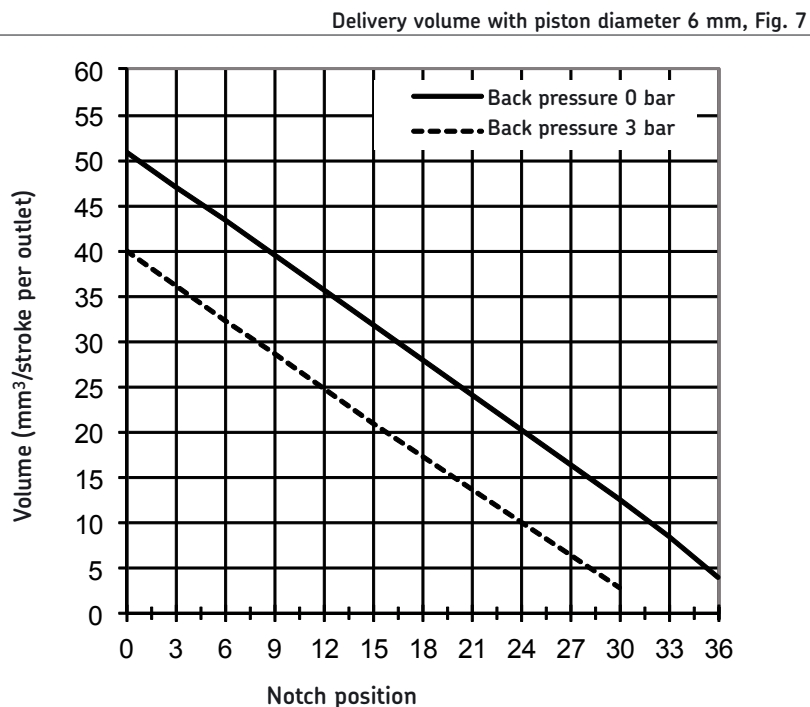
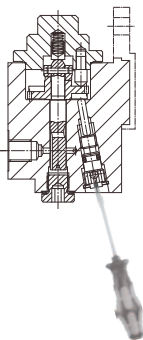
SP/G... S Adjusting the delivery volume, Fig. 6



6.4.1 Adjustment chart, SP/G 02/30 S6 - piston Ø 6

**Pump design: self-priming,
with 2 outlets,
delivery piston diameter 6 mm
Order No. 740-801-0100**

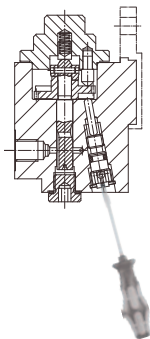
Priming pressure at inlet: < 0 bar
(200 mm intake tube height with tube 6x1)
Back pressure at outlet: 0 bar/3 bar



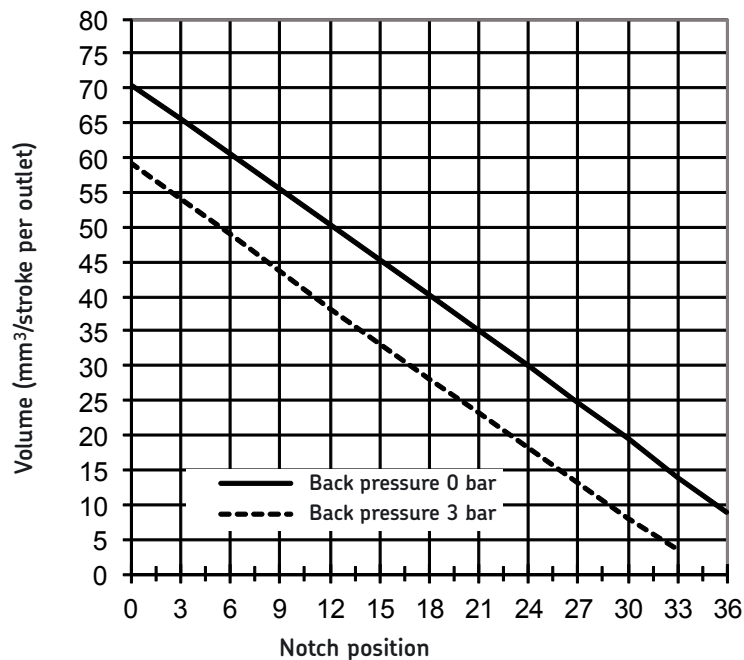
6.4.2 Adjustment chart, SP/G 02/30 S7 - piston Ø 7

**Pump design: self-priming,
with 2 outlets,
delivery piston diameter 7 mm
Order No. 740-801-0101**

Priming pressure at inlet: < 0 bar
(200 mm intake tube height with tube 6x1)
Back pressure at outlet: 0 bar/3 bar



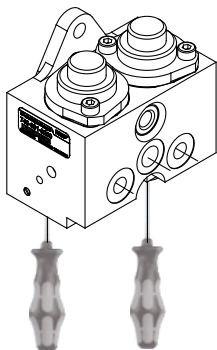
Delivery volume with piston diameter 7 mm, Fig. 8



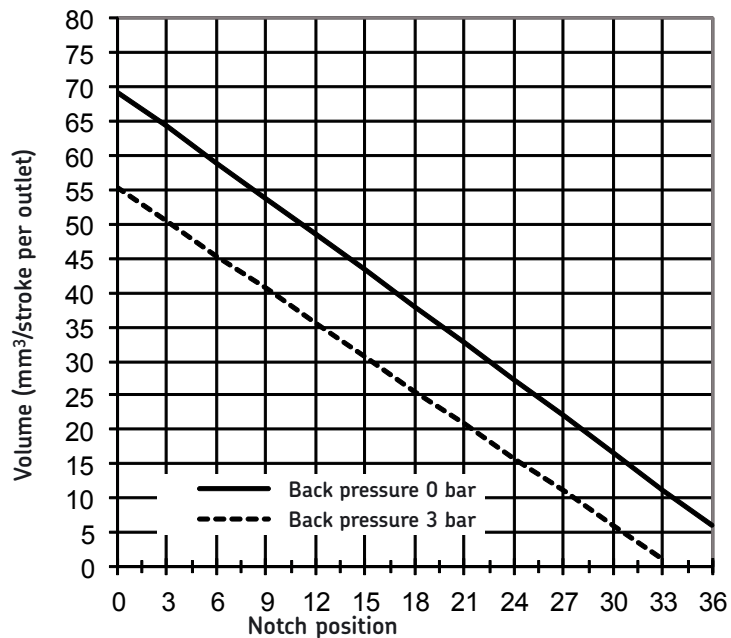
6.4.3 Adjustment chart, SP/G 04/30 S7 - 2x piston Ø 7

**Pump design: self-priming,
with 4 outlets,
delivery piston diameter 7 mm
Order No. 740-801-0200**

Priming pressure at inlet < 0 bar
(200 mm intake tube height with tube 6x1)
Back pressure at outlet 0 bar/3 bar



Delivery volume with piston diameter 7 mm, Fig. 9



6.5 Adjusting the delivery volume on pumps with priming pressure (SP/G... V)

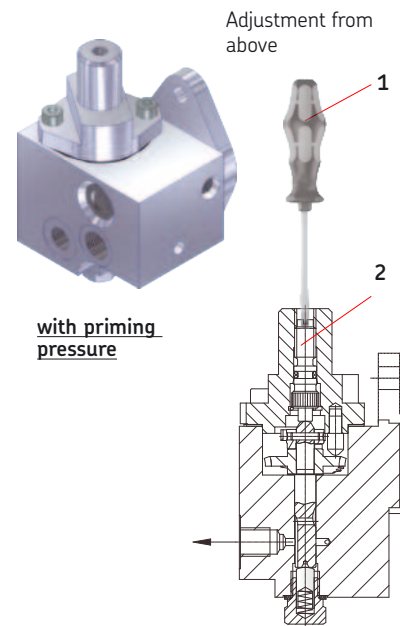
On pumps already set to full stroke:

- Switch on the customer's drive for the oil lubrication pump.
- Apply a suitable flat tip screwdriver (1) to the delivery volume screw (2).
- To reduce the delivery volume, turn the flat tip screwdriver (1) clockwise.
- Set the pump to full stroke by turning the flat tip screwdriver (1) counter-clockwise.
- Then:**
- To reduce the delivery volume, turn the flat tip screwdriver (1) clockwise.
- Set the delivery volume based on the number of notches passed and the delivery volume tables (Figs. 11 to 13).

On pumps that have already been configured:

- ☞ When performing subsequent adjustment of the delivery volume, first set the pump to its maximum delivery volume (full stroke). Only then can the delivery volume be reduced.
- Switch on the customer's drive for the oil lubrication pump.

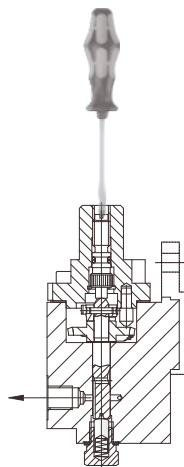
SP/G... V Adjusting the delivery volume, Fig. 10



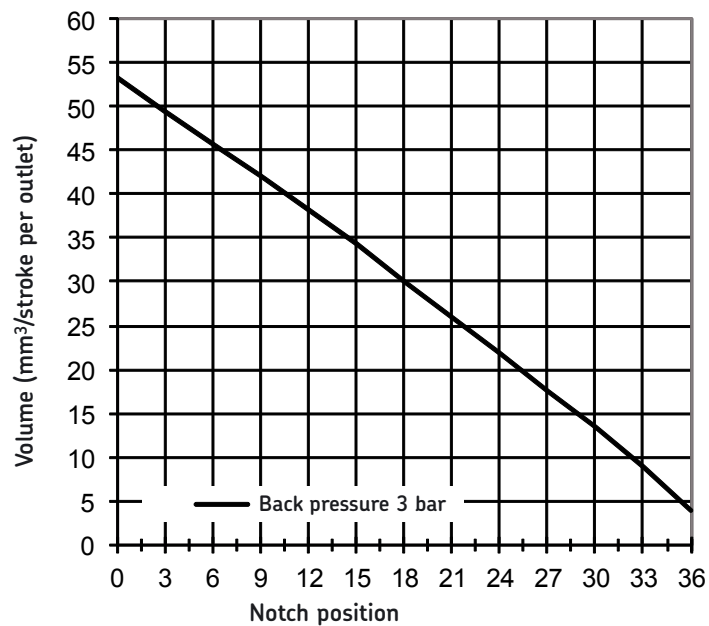
6.5.1 Adjustment chart, SP/G 02/30 V6 - piston Ø 6

Pump design: Priming pressure,
with 2 outlets,
delivery piston diameter 6 mm
Order No. 740-801-0102

Back pressure at outlet: 3 bar



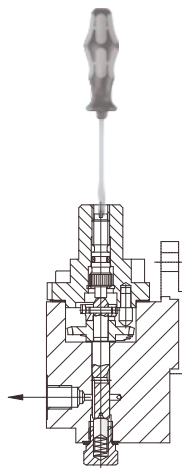
Delivery volume with piston diameter 6 mm, Fig. 11



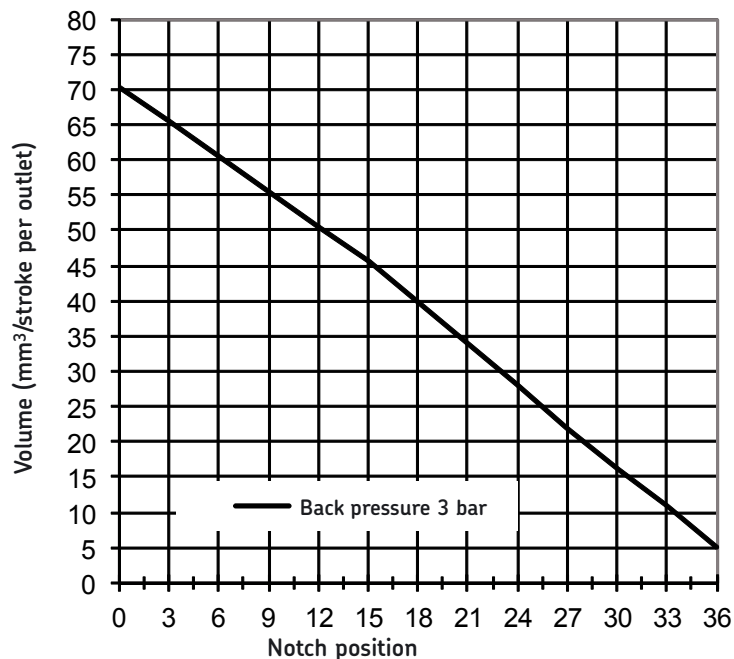
6.5.2 Adjustment chart, SP/G 02/30 V7 - piston Ø 7

Pump design: Priming pressure,
with 2 outlets,
delivery piston diameter 7 mm
Order No. 740-801-0103

Back pressure at outlet: 3 bar



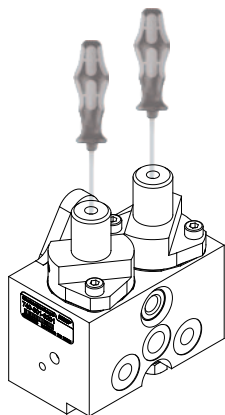
Delivery volume with piston diameter 7 mm, Fig. 12



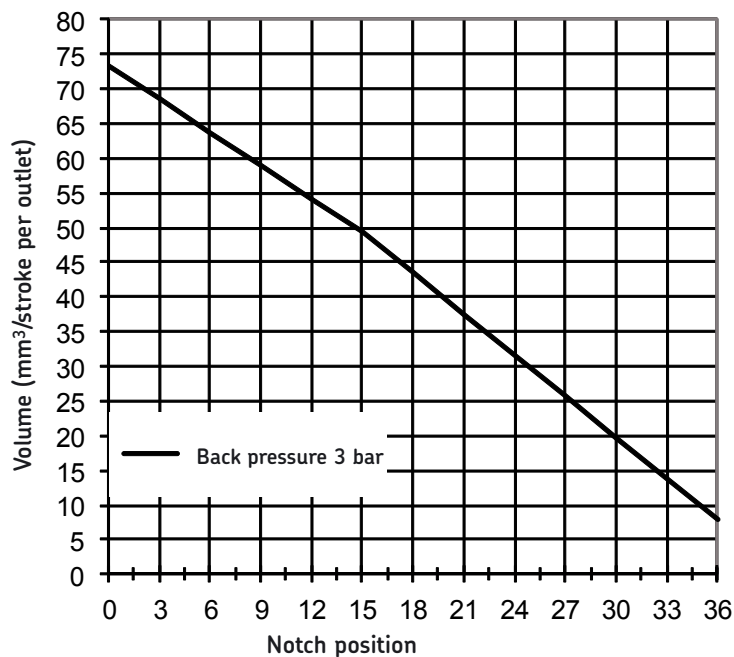
6.5.3 Adjustment chart, SP/G 04/30 V7 - 2x piston Ø 7

Pump design: Priming pressure,
with 4 outlets,
delivery piston diameter 7 mm
Order No. 740-801-0201

Back pressure at outlet 3 bar



Delivery volume with piston diameter 7 mm, Fig. 13





6.6 Temporary decommissioning

Temporary decommissioning of the SP/G is not provided for. The pump would need to be removed and stored as described in the Chapter "Transport, delivery, and storage."

To recommission the product, follow the instructions in the Chapter "Assembly" in the assembly instructions.

6.7 Decommissioning and disposal


If the product will be permanently shut down, the local regulations and laws regarding the disposal of contaminated equipment must be observed.

	 CAUTION
	Environmental pollution Lubricants can contaminate soil and waterways. Lubricants must be used and disposed of properly. Observe the local regulations and laws regarding the disposal of lubricants.

The product can also be returned to SKF Lubrication Systems Germany GmbH for disposal, in which case the customer is responsible for reimbursing the costs incurred. The parts are recyclable.

7. Maintenance

7.1 General information

	<div data-bbox="177 225 529 288">  DANGER </div> <p>Centralized lubrication systems are pressurized during operation. Centralized lubrication systems must therefore be depressurized before starting maintenance or repair work or any machine modifications or machine repairs.</p>
--	---

Oil lubrication pumps of the SP/G series are low-maintenance. However, all connections and fittings must be regularly inspected for proper seating to ensure proper function and to prevent hazards from arising.

If necessary, the product's exterior can be cleaned using mild cleaning agents that are compatible with the product's materials (non-alkaline, non-soap).

Do not allow any cleaning agent to enter the interior of the SP/G during cleaning. It is not necessary to clean the interior of the SP/G if it is operated normally and intercompatible lubricants are used.

The interior of the product must be cleaned if incorrect or contaminated lubricant is accidentally filled into the product. If this occurs, please contact the Service department of SKF Lubrication Systems Germany GmbH for assistance.

NOTE

Dismantling of the SP/G or individual parts thereof within the statutory warranty period is prohibited and voids any claims.

Perform a visual check of the oil lubrication pump and its connecting lines at regular intervals. The control intervals depend on the amount of lubricant required, the purity of the lubricant used, and the bearings requiring lubrication. Due to the application-specific conditions, the customer defines and maintains the control intervals.

The following maintenance and repair work must be performed on a regular basis:

- o Inspect the lubricant feed line and the lubrication point lines.
- o Inspect the fill level in the customer's lubricant reservoir.
- o Inspect the oil lubrication pump for leaks on a regular basis.
- o Visually inspect the bearing's lubrication, if possible.

8. Malfunctions, causes, and remedies

The following tables provide an overview of possible malfunctions and their causes. Contact the SKF Service department if you cannot remedy the malfunction.

NOTE

Dismantling of the SP/G or individual parts thereof within the statutory warranty period is prohibited and voids any claims.

8.1 Malfunctions on SP/G oil lubrication pump unit

Fault analysis and rectification, Table 1

Malfunction	Possible cause	Rectification
SP/G does not feed lubricant	o Metering stroke is set too low	• Increase metering stroke; see Chapter 6.3
	o Air inclusion	• Disconnect lubrication lines, set metering stroke to maximum, reconnect lubrication lines once bubble-free oil discharges
	o Operating viscosity is too high	• Change the oil if necessary
	o Influence by foreign substances, contamination	• Replace the pump
	o Drive coupling is defective	• Replace the coupling; see the Accessories chapter
SP/G feeds too much lubricant	o Metering stroke is set too high	• Reduce metering stroke; see Chapter 6.3
	o Priming pressure is too high	• Check priming pressure, reduce if necessary
	o Pump is worn out	• Replace the pump

9. Technical data

9.1 SP/G with 2 outlets

SP/G 02/30 S6 = self-priming, delivery piston diameter 6 mm

SP/G 02/30 S7 = self-priming, delivery piston diameter 7 mm

SP/G 02/30 V6 = with priming pressure, delivery piston diameter 6 mm

SP/G 02/30 V7 = with priming pressure, delivery piston diameter 7 mm

Technical data, Table 2

Model	SP/G 02/30 S6	SP/G 02/30 S7	SP/G 02/30 V6	SP/G 02/30 V7
Mat. No.	740-801-0100	740-801-0101	740-801-0102	740-801-0103
Supply	self-priming		priming pressure	
Outlets (delivery line) / lubrication points	2			
Adjusting screws for delivery rate regulation	1			
Delivery rate per outlet at full stroke without back pressure	0.042 cm³/stroke	0.058 cm³/stroke	0.042 cm³/stroke	0.058 cm³/stroke
Piston	Ø 6 mm	Ø 7 mm	Ø 6 mm	Ø 7 mm
Full stroke	1.5 mm			
Internal transmission ratio	30:1			
Drive speed 1)	300 - 3000 rpm			
Max. operating temperature	+100 °C			
Max. suction head 2)	200 mm		-	-
Permissible pressure at inlet 3)	0 bar		2-6 bar	
Pressure increase over inlet pressure (back pressure)	Up to 3 bar			
Lubricant	Mineral oils and environmentally friendly and synthetic oils			
Operating viscosity 3)	12 - 800 mm²/s			
Oil cleanliness	≤ 25 µm			
Power requirement approx. (dep. on back pressure)	0.02 – 0.03 kW			
Weight	Approx. 0.74 kg		Approx. 0.77 kg	

1) Pump driveshaft speed; consult with SKF's Service department if too high or too low. 2) Consult with SKF's Service department if too high.

3) Consult with SKF's Service department in case of deviation.

9.2 SP/G with 4 outlets

SP/G 04/30 S7 = self-priming, delivery piston diameter 7 mm

SP/G 04/30 V7 = with priming pressure, delivery piston diameter 7 mm

Technical data, Table 3

Model	SP/G 04/30 S7	SP/G 04/30 V7
Mat. No.	740-801-0200	740-801-0201
Supply	self-priming	priming pressure
Outlets (delivery line) / lubrication points	4	
Adjusting screws for delivery rate regulation	2	
Delivery rate per outlet at full stroke without back pressure	0.058 cm ³ /stroke	
Piston	Ø 7 mm	
Full stroke	1.5 mm	
Internal transmission ratio	30:1	
Drive speed ¹⁾	300 - 3000 rpm	
Max. operating temperature	+100 °C	
Max. suction head ²⁾	200 mm	-
Permissible pressure at inlet ³⁾	0 bar	2-6 bar
Pressure increase over inlet pressure (back pressure) ³⁾	Up to 3 bar	
Lubricant	Mineral oils and environmentally friendly and synthetic oils	
Operating viscosity ³⁾	12 - 800 mm ² /s	
Oil cleanliness	≤ 25 µm	
Power requirement approx. (dep. on back pressure)	0.04 - 0.05 kW	
Weight	Approx. 1.10 kg	Approx. 1.16 kg

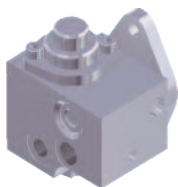
1) Pump driveshaft speed; consult with SKF's Service department if too high or too low.

2) Consult with SKF's Service department if too high.

3) Consult with SKF's Service department in case of deviation.

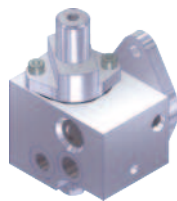
9.3 Usage range of the SP/G series as a function of priming pressure to back pressure

Relation of priming pressure to back pressure, Fig. 14



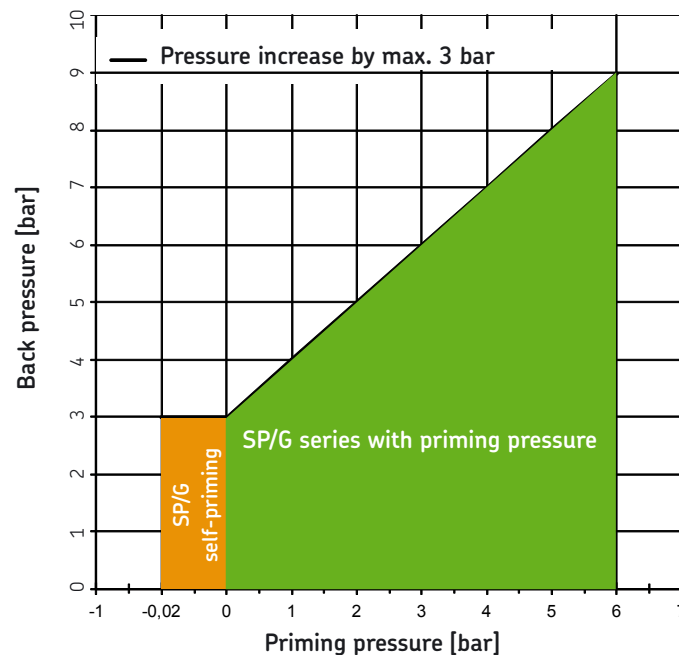
Suction operation
supported

SP/G 02/30 S6
SP/G 02/30 S7
SP/G 04/30 S7



Priming pressure
supported

SP/G 02/30 V6
SP/G 02/30 V7
SP/G 04/30 V7

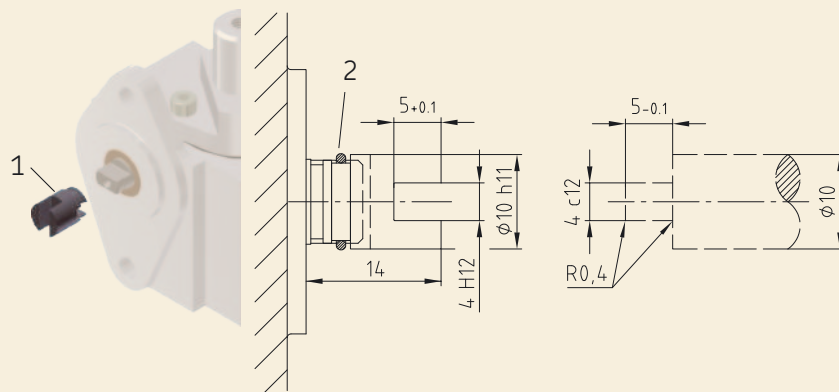


10. Accessories

Accessories, Table 4

Description	Order No.
Inlet screw unions	
Standard for tube diameter 6 mm	
Double tapered ring for tube Ø 6 mm	406-001
Socket union M10x1 – tube Ø 6 mm (WAF 10)	406-002
Alternative inlet screw unions	
for tube Ø 4 mm (M10x1 taper, design LL)	404-403
for tube Ø 6 mm (M10x1 taper, design LL)	406-423
for tube Ø 6 mm (cutting sleeve, design L)	406-403
for tube Ø 8 mm (M10x1 taper, design LL)	441-008-511
for tube Ø 10 mm (M10x1 taper, design LL)	410-443
Outlet screw unions	
Standard for tube diameter 4 mm	
Double tapered ring for tube Ø 4 mm	404-001
Socket union M8x1 tube Ø 4 mm (WAF 8)	404-002
Alternative outlet screw unions	
for tube Ø 4 mm (M8x1 taper) (LL)	404-413
for tube Ø 6 mm (M8x1 taper) (LL)	406-443

Coupling element with snap ring, Fig. 15



Coupling element with snap ring, Table 5

Item	Description	Order No.
1	Coupling element	44-1202-2038
2	Snap ring for coupling element	44-0606-6302

11. Appendix

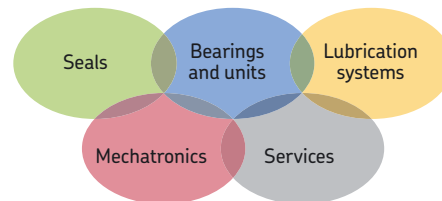
951-170-219-EN

February 2017

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) without permission of SKF. Every care has been taken to ensure the accuracy of the information contained in this publication. However, no liability can be accepted for any loss or damage, whether direct, indirect, or consequential, arising out of use of the information contained herein.

All SKF products may be used only for their intended purpose as described in these assembly instructions with associated operating instructions. If assembly/operating instructions are supplied together with the products, they must be read and followed. Not all lubricants can be fed using centralized lubrication systems. SKF can, on request, inspect the suitability of the lubricant selected by the user for pumping in centralized lubrication systems. Lubrication systems and their components manufactured by SKF are not approved for use in conjunction with gases, liquefied gases, pressurized gases in solution, vapors or such fluids whose vapor pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible temperature.

Particular attention is called to the fact that hazardous substances and mixtures as defined in Annex I Part 2-5 of the CLP Regulation (EC 1272/2008) may only be filled into SKF centralized lubrication systems and components and delivered and/or distributed with such systems and components after consulting with and obtaining written approval from SKF.



SKF Lubrication Systems Germany GmbH

Motzener Strasse 35/37 · 12277 Berlin · Germany
PO Box 970444 · 12704 Berlin · Germany

Tel. +49 (0)30 72002-0

Fax +49 (0)30 72002-111

www.skf.com/lubrication

SKF Lubrication Systems Germany GmbH

2. Industriestrasse 4 · 68766 Hockenheim · Germany

Tel. +49 (0)62 05 27-0

Fax +49 (0)62 05 27-101

www.skf.com/lubrication

