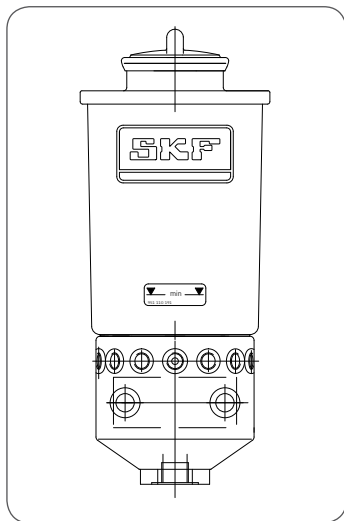


SP/EY28 Hydraulic Single-Piston Pump

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

EN



SP/EY28 Hydraulic Single-Piston Pump

Masthead

These assembly instructions with associated operating instructions in accordance with EC Machinery Directive 2006/42/EC are an integral part of the described product and must be kept for future use.

These assembly instructions with associated operating instructions were compiled in accordance with the established standards and rules for technical documentation, VDI 4500 and EN 292.

© SKF Lubrication Systems Germany GmbH

This documentation is protected by copyright. SKF Lubrication Systems Germany GmbH reserves all rights, including those to the photo-mechanical reproduction, duplication, and distribution by means of special procedures (e.g., data processing, data media, and data networks) of this documentation in whole or in part.

Subject to changes in contents and technical information.

Service

If you have technical questions, please contact the following offices:

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

EC Declaration of Incorporation	4	4.4.1 Version A with weld-on plate	15	6. Commissioning	24
Explanation of safety and informational symbols and safety signal words	5	4.4.2 Version B with mounting plate	15	6.1 Commissioning / recommissioning	24
1. Safety instructions	7	4.4.3 Hydraulic control port	16	7. Shutdown / disposal	25
1.1 Intended use	7	4.4.4 Attachment of metering elements	16	7.1 Temporary shutdown	25
1.2 Authorized personnel	7	4.5 Lubrication line connection	16	7.2 Permanent shutdown	25
1.3 Electric shock hazard	8	4.6 Lubrication line arrangement	17	8. Maintenance	26
1.4 System pressure hazard	8	4.7 Note on the rating plate	18	9. Malfunction	27
1.5 Compressed air hazard	8	Operating instruction		9.1 Pump malfunctions / lubrication system	28
1.6 Hydraulic pressure hazard	8	1. Safety instructions	20	10. Technical data	29
2. Lubricants	9	2. Lubricants	20	11. Accessories	30
2.1 General information	9	3. Transport, delivery, and storage	21	12. Spare parts	32
2.2 Selection of lubricants.	9	3.1 Lubrication units	21		
2.3 Approved lubricants	10	3.2 Electronic and electrical devices	21		
2.4 Lubricants and the environment	10	3.3 General notes	21		
2.5 Lubricant hazards	11	4. Assembly	22		
3. Overview	11	4.1 Information on assembly	22		
4. Assembly...	12	4.2 Assembly of pump unit	22		
4.1 Setup and attachment	12	5. Functional description	23		
4.2 Assembly drawing	13	5.1 Pump operation-see Figure 3	23		
4.3 Characteristics single-piston pump	14	5.2 Functional diagram of SP/EY28	23		
4.4 Mounting the single-piston pump	15				

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: SP/EY28 Hydraulic Single-Piston Pump
Type: SP/EY*
Item numbers: 745-901-*
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:

<u>Standard</u>	<u>Edition</u>
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, 2017/03/02

Jürgen Kreuzkämper
Manager R&D Germany
SKF Lubrication Business Unit



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



Explanation of safety and informational symbols and safety signal words

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

Please heed these instructions and proceed with special care in such cases. Please forward all safety instructions to other users.







Instructions attached directly to the machines/grease lubrication pump units, such as rotational directional arrows and fluid connection labels, must be followed. Replace such signs if they become illegible.



You are responsible!

Please read the assembly and operating instructions thoroughly and follow the safety instructions.

Hazard symbols






-  **General hazard**
DIN 4844-2-W000
-  **Electricity**
DIN 4844-2-W008
-  **Hot surface**
DIN 4844-2-W026
-  **Danger of being drawn into machinery**
BGV 8A
-  **Slip hazard**
DIN 4844-2-W028
-  **Warning of potentially explosive atmosphere**
DIN 4844-2-W021

Safety signal words and their meaning

Signal word Meaning

- Danger!** Danger of bodily injury
- Warning!** Danger of damage to property and the environment
- Note!** Provides additional information

Informational symbols

-  **Note**
-  Prompts an action
-  Used for itemizing
-  Refers to other facts, causes, or consequences
-  Provides additional information

Assembly instructions in accordance with Machinery Directive 2006/42/EC, Annex VI

The assembly instructions fulfill the aforementioned Machinery Directive with regard to “partly completed machinery.” Partly completed machinery, which includes the product described herein, is only intended to be incorporated into or assembled with other machinery or other partly completed machinery or equipment, thereby forming machinery to which the above-mentioned Directive applies.

1. Safety instructions



The operator of the described product must ensure that the assembly instructions are read and understood by all persons tasked with the assembly, operation, maintenance, and repair of the product. The assembly instructions must be kept readily available.



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

The described product is manufactured in accordance with the generally accepted rules and standards of industry practice and with occupational safety and accident prevention regulations. Risks may, however, arise from its usage and may result in physical harm to persons or damage to other material assets. Therefore the product may only be used in proper technical condition and in observance of the assembly instructions. In particular, any malfunctions which may affect safety must be remedied immediately.



In addition to the assembly instructions, statutory regulations and other general regulations for accident prevention and environmental protection must be observed and applied.

1.1 Intended use

The SP/EY28 hydraulic single-piston pump is a hydraulically driven piston pump with a drive volumetric flow ≥ 1.5 l/min at an operating pressure of 60 to 200 bar. The pump is used to supply oils classified under ISO VG in centralized lubrication systems at $> 25\text{mm}^2/\text{s}$. Any other usage is deemed non-compliant with the intended use and could result in damage, malfunction, or even injury.

1.2 Authorized 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 described product 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.

1.3 Electric shock hazard

Electrical connections for the described product may only be established by qualified and trained personnel authorized to do so by the operator, and in observance of the local conditions for connections and local regulations (e.g., DIN, VDE). Serious injury or death and property damage may result from improperly connected products.



Danger!

Performing work on an energized pump or product may result in serious injury. Assembly, maintenance, and repair work may only be performed on products that have been de-energized by qualified technical personnel. The supply voltage must be switched off before opening any of the product's components.

1.4 System pressure hazard



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.

1.5 Compressed air hazard



The described product is pressurized during operation. The product must therefore be depressurized before starting assembly, maintenance or repair work, or any system modifications or system repairs. Depending on the model design, the product may be able to be operated with compressed air.

1.6 Hydraulic pressure hazard



The described product is pressurized during operation. The product must therefore be depressurized before starting assembly, maintenance or repair work, or any system modifications or system repairs.

Depending on the model design, the product may be able to be operated hydraulically.

2. Lubricants

2.1 General information



All products from SKF Lubrication Systems may be used only for their intended purpose and in accordance with the information in the product's assembly 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. assembly instructions/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 lubricants nor hazardous substances may only be fed after consulting with and obtaining written approval from SKF Lubrication Systems. SKF Lubrication Systems considers lubricants to be a component of the system design which must be factored into the selection of products 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



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



Warning!

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.

The 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.



If required, SKF Lubrication Systems can help customers to select suitable products 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. Lubricants can 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.

2.3 Approved lubricants



Only lubricants approved for the product may be used. Unsuitable lubricants can lead to failure of the product and damage to property.



Different lubricants must not be mixed, as mixing may result in damage and necessitate 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 described product 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.

Oils and base oils may be mineral, synthetic, and/or rapidly biodegradable. 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 permissible limit 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



Lubricants can contaminate soil and bodies of water. 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 that 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



Centralized lubrication systems must always be free of leaks. Leaking lubricant is hazardous. It creates a 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 without delay.

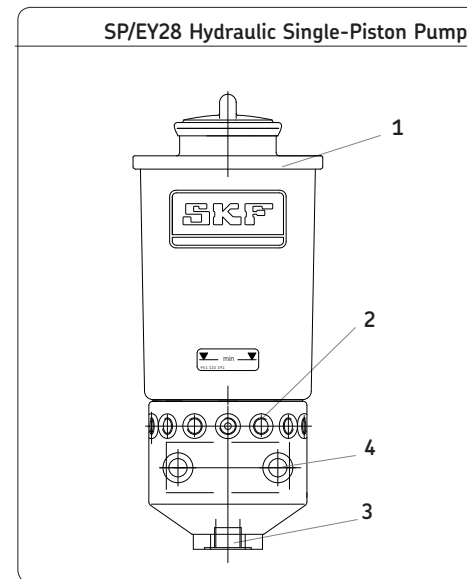
Lubricant leaking from centralized lubrication systems is a serious hazard. Leaking lubricant can create risks that may result in physical harm to persons or damage to other material assets.



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

Lubricants are hazardous substances. The safety instructions on the lubricant's safety data sheet must be strictly followed. The safety data sheet for a lubricant can be requested from the lubricant manufacturer.

3. Overview



Item Description

- | Item | Description |
|------|--|
| 1 | Lubricant reservoir with filler socket |
| 2 | Pump inlets for connection of check valves |
| 3 | Inlet for hydraulic control line |
| 4 | Mounting support |

4. Assembly

4.1 Setup and attachment

The product should be protected from humidity and vibration, and should be mounted so that it is easily accessible, allowing all further installation work to be done without difficulty. Ensure that there is sufficient air circulation to prevent excessive heating of the product. For the maximum permissible ambient temperature, see "Technical data."

The hydraulic single-piston pump may only be installed vertically. There are two options for wall mounting:

(see assembly drawing)

- a) Attachment, e.g. to the machine frame, using a weld-on plate (item 1) with a welding seam at least 4 mm deep all around.
- b) Attachment, e.g. to the machine frame, using a mounting plate (item 3). This requires two tapped bores (M10-15/20 deep).

The pump is screwed on using two cheese-head screws with thread size M10.

The required fixing parts are listed in the "Accessories" chapter.

Required tightening torque: 50 Nm

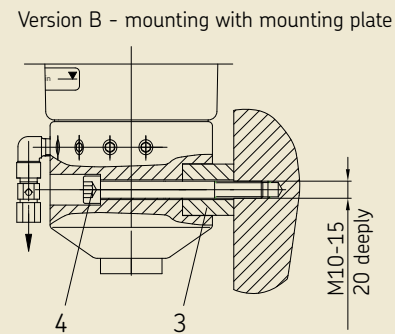
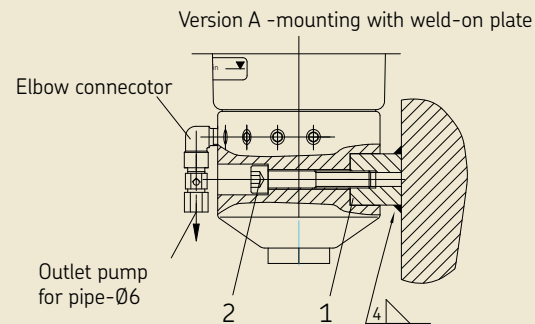
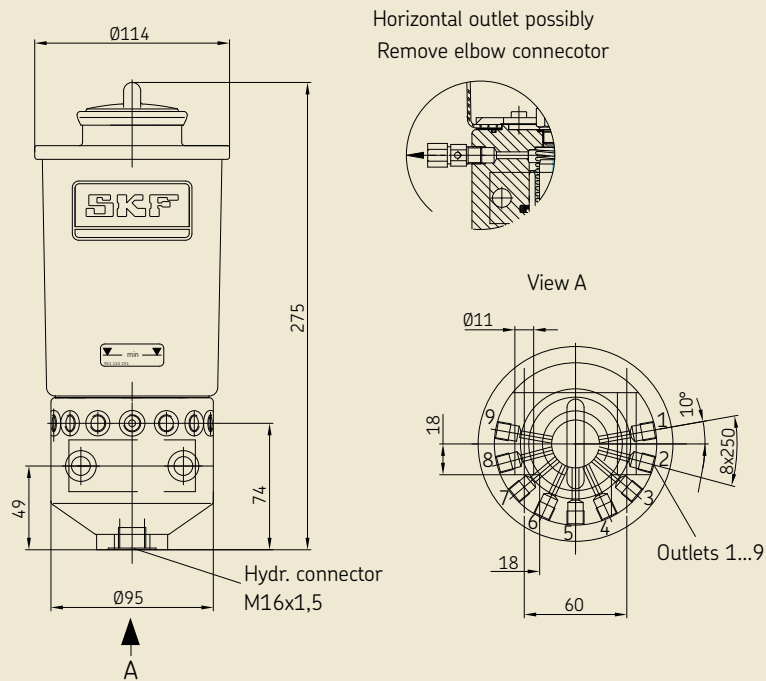
During assembly and especially when drilling, always pay attention to the following:

- Existing supply lines must not be damaged by assembly work.
- Other units must not be damaged by assembly work.
- The product must not be installed within range of moving parts.
- The product must be installed at an adequate distance from sources of heat.

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

4.2 Assembly drawing

Fig. 1 Assembly drawing for SP/EY28



4.3 Characteristics of SP/EY28 single-piston pump

Characteristics

Design.....Hydraulic single-piston pump
Mounting position.....Vertical
Ambient temperature.....-20°C to 80 °C
Dry weight3.7 kg

Pump housing.....GG25
Reservoir design.....Trogamid T (Pa6-3T)
Reservoir capacity1 liter

Number of outlets.....1 to 9
Delivery rate per stroke.....4.5, 6.0, 7.5 cm³
Operating pressure.....60 to 200 bar
Drive volume.....≥ 1.5 l/min

Lubricants ¹⁾

MediumOils classified under ISO VG > 25 mm²/s

1) Synthetic and biodegradable oils require approval from SKF.

4.4 Mounting the single-piston pump



Warning!

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.



Warning!

Do not tilt or drop the hydraulic single-piston pump!

The hydraulic single-piston pump is to be mounted using two DIN 912 M10x60 8.8 (version A) screws.

A screw size of DIN 912-M10x90-8.8 is required if a mounting plate (version B) is used to fasten the unit.



For mounting equipment, see the "Accessories" chapter.

4.4.1 Version A with weld-on plate



Warning!

Burn risk during welding

- Place the weld-on plate (1) onto the mounting point and align it horizontally.
- Gently attach the weld-on plate (1).
- Carefully screw the single-piston pump onto the weld-on plate using mounting screws (2).
- Recheck the mounting position of the single-piston pump for sufficient clearance.
- Remove the single-piston pump and weld the weld-on plate as specified with a fillet weld at least 4 mm deep all around.
- Clean and grind the welding seam.
- Fix the single-piston pump onto the weld-on plate using mounting screws (2x DIN 912-M10x60-8.8) (2).
- Gently tighten the mounting screws.
- Align the single-piston pump and tighten the mounting screws with following tightening torque:

Tightening torque: 50 Nm

4.4.2 Version B with mounting plate

- Apply the drilling pattern for the mounting plate (3) onto the mounting point and center-punch the drilling points (2x).
- Mount the single-piston pump with mounting plate onto the drilling pattern.
- Recheck the mounting position of the single-piston pump for sufficient clearance.
- Drill threads (M10, thread depth 15 mm) according to the drilling pattern.
- Clean tapped bores to remove drilling chips.
- Fix the single-piston pump and mounting plate to the tapped bores using mounting screws (2x DIN 912-M10x90-8.8) (4).
- Gently tighten the mounting screws.
- Align the single-piston pump and tighten the mounting screws with the following tightening torque:

Tightening torque: 50 Nm

4.4.3 Hydraulic control port

The hydraulic line must be connected to the product in such a way that no forces can be transferred to the assembled product (stress-free connection).



Danger!

Ensure that the hydraulic supply is depressurized before connecting the product to the hydraulic supply.



Warning!

The maximum hydraulic oil pressure indicated for operation of the hydraulically operated products must not be exceeded.

- Screw hydraulic control line provided by customer (with sealing ring if necessary) into pump port (M16x1.5).
- After connecting the control line, check the pump port to ensure it is properly sealed.



Note!

The volumetric flow is only distributed well if the hydraulic flow (drive volumetric flow) moves in a pulsed manner. The volumetric flow should be ≥ 1.5 l/min (see Page 14, "Characteristics").

4.4.4 Attachment of metering elements

Various metered quantities can be achieved by using restrictors.



Note!

The differing delivery line lengths must also be taken into account when using restrictors. The lengths must be determined and tested for each new application.

The following restrictors (accessories) can be used:

SKF restrictors of series:
VD1-102 to VD1-109
VD2-102 to VD2-109

4.5 Lubrication line connection

The lubrication line must be connected to the hydraulic single-line piston pump in such a way that no forces can be transferred to the MonoFlex single-line distributors once assembled (stress-free connection).



Danger!

The fittings used to connect the lubrication line should be designed for the maximum operating pressure of the product. If they are not, the lubrication line system needs to be protected from excessive pressure by means of a pressure-limiting valve.

For operating pressures up to 45 bar as can occur especially in single-line piston distributor systems, SKF fittings for solderless pipe unions can be used (double tapered sleeves or tapered sleeves). For higher operating pressures up to 250 bar as can occur especially in progressive centralized lubrication systems, SKF cutting-sleeve screw unions conforming to DIN 2353 can be used. If using fittings from other manufacturers,

pay careful attention to the assembly instructions and technical specifications provided by the manufacturer.

- Screw lubrication lines provided by the customer into the restrictor (see 4.4.4).
- Check the lubrication line connection to ensure it is properly sealed.
- ☞ All unused outlets must be closed.
- Close all unused outlets - see the "Accessories" chapter.
- ☞ If necessary, horizontal pump outlets can be achieved by removing the elbow - see the assembly drawing.

4.6 Lubrication line arrangement

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

The main lubricant line must be dimensioned in accordance with the maximum operating pressure occurring in the lubrication unit used and the displacement of that lubrication unit. If possible, the main lubricant line should rise upward from the lubrication unit and be ventable at the highest point on the lubrication line system.

Lubricant distributors at the end of the main lubricant line must be installed such that the outlets of the lubricant distributors point upwards. If the system configuration requires that the lubricant distributors be arranged below the main lubricant line, they should not be placed at the end of the main lubricant line. The pipes, hoses, shutoff valves and directional control valves, fittings, etc. that will be used must be designed for the maximum operating pressure of the lubrication unit, the permissible temperatures, and the lubricants that will be delivered. The lubrication line system also

needs to be protected from excessive pressure by means of a pressure-limiting valve. All products of the lubrication line system such as pipes, hoses, shutoff valves and directional control valves, fittings, etc. must be carefully cleaned before assembly. No seals in the lubrication line system should protrude inward in a way that disrupts the flow of the lubricant and could allow contaminants to enter the lubrication line system.



Warning!

Lubrication lines must always be free of leaks. Lubrication lines should always 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. When the cross-section does change, the transition should be gentle. The flow of lubricant in the lubrication lines should not be impeded by the incorporation of sharp bends, angle valves, or flap valves. Unavoidable changes in the cross-section in

lubrication lines must have smooth transitions. Sudden changes of direction should be avoided if possible.



Warning!

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 without delay.

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.



Warning!

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

Lubricants are hazardous substances. The safety instructions on the lubricant's safety data sheet must be strictly followed. The safety data sheet for a lubricant can be requested from the lubricant manufacturer.

4.7 Note on the rating plate

The rating plate on the oil lubrication pump unit provides important data such as the type designation, order number, barcode, and serial 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 table.

Fig. 2 Key data from rating plate

Description	
Part No.	

SP/EY28 Hydraulic Single-Piston Pump

Operating instructions associated with assembly instructions

acc. to EC Dir. 2006/42/EC for partly completed machinery

1. Safety instructions

General information



Warning!

These operating instructions must be read and properly understood by the assembler and the responsible technical personnel/operator before assembly and commissioning.

The safety instructions listed in Chapter 1, "Safety instructions," in the assembly instructions also apply without restrictions to these operating instructions.



In addition to the operating instructions, general statutory regulations and other binding regulations for accident prevention and for environmental protection (recycling/disposal) must be observed and applied.

SKF Lubrication Systems Germany GmbH shall not be responsible for damages:

- Caused by contaminated or unsuitable lubricants
- Caused by the installation of non-original SKF components or SKF spare parts
- Caused by inappropriate usage
- Resulting from improper assembly, configuration, or filling
- Resulting from improper response to malfunctions
- Caused by independent modification of system components
- Only media approved for these types of pump units may be used. Unsuitable media may result in pump unit failure and potentially severe injury or death and property damage.

2. Lubricants



Warning!

The information on lubricants listed in Chapter 2, "Lubricants," in the assembly instructions also applies without restrictions to these operating instructions.

3. Transport, delivery, and storage

SKF Lubrication Systems 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!".



Warning!

Do not tilt or drop the product.

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

After receipt of the shipment, the product(s) must be inspected for damage and for completeness according to the shipping documents. Keep the packaging material until any discrepancies have been resolved.

SKF Lubrication Systems Germany GmbH products are subject to the following storage conditions:

3.1 Lubrication units

- Ambient conditions: dry and dust-free surroundings, storage in well ventilated dry area
- Storage time: max. 24 months
- Permissible humidity: < 65%
- Storage temperature: 10 - 40°C
- Light: avoid direct sun or UV exposure and shield nearby sources of heat

3.2 Electronic and electrical devices

- Ambient conditions: dry and dust-free surroundings, storage in well ventilated dry area
- Storage time: max. 24 months
- Permissible humidity: < 65%
- Storage temperature: 10 - 40°C
- Light: avoid direct sun or UV exposure and shield nearby sources of heat

3.3 General notes

- The product(s) can be enveloped in plastic film to provide low-dust storage.
- Protect against ground moisture by storing on a shelf or wooden pallet.
- 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: Check for corrosion. If there are signs of corrosion, reapply anti-corrosive agents.
- Drives must be protected from mechanical damage.

4. Assembly

4.1 Information on assembly

The assembly procedure for the hydraulic single-piston pump is described in detail in the assembly instructions associated with these operating instructions. Information/instructions about assembling the single-piston pump beyond the scope of the assembly instructions are contained later in this chapter.

4.2 Assembly of pump unit

- Assembly must be performed in accordance with the included assembly instructions and the additional information/instructions contained in this chapter.

5. Functional description

5.1 Pump operation

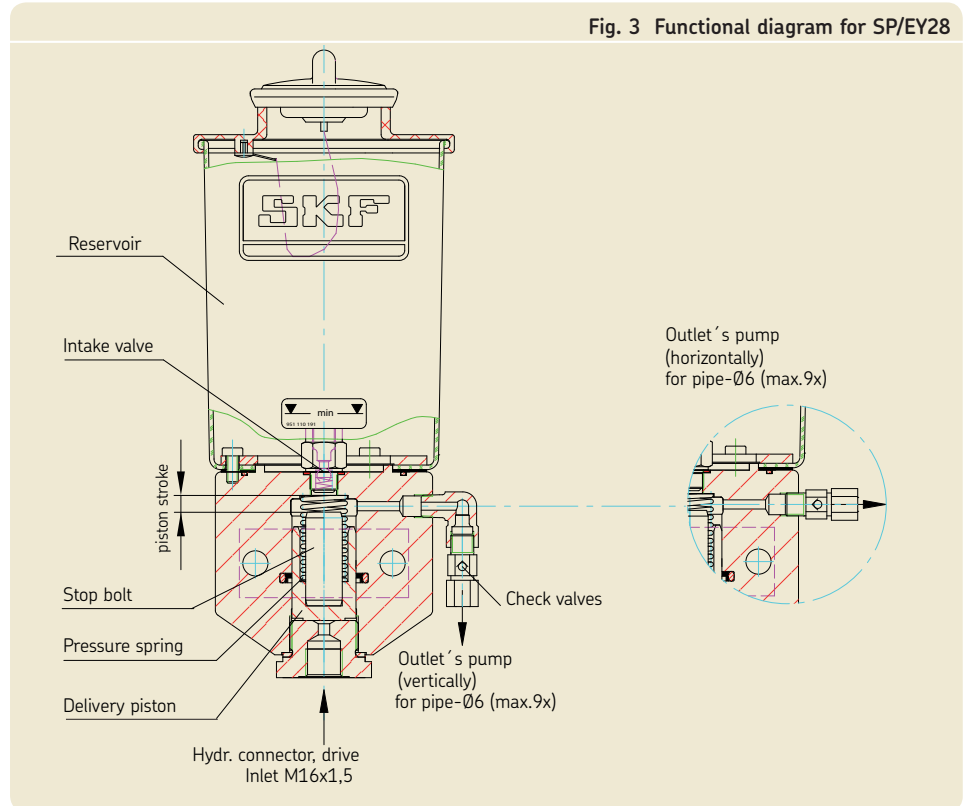
-see Figure 3

The single-piston pump is hydraulically driven. When pressure rises, the delivery piston moves to its upper end position (intake valve closes). In doing so, it pushes the medium in front of it into the attached lubrication lines (max. 9) via the check valves attached to the pump outlets.


The fed medium discharges at all pump outlets simultaneously and is equally distributed according to the number of outlets. **The piston stroke** and thus the displacement are set by a corresponding stop bolt.


The suction stroke occurs when the hydraulic pressure is relieved on the drive. The pressure spring pushes the delivery piston to its lower end position. The check valves on the outlets close, which causes return flow. Negative pressure is simultaneously generated above the delivery piston. The set quantity of medium then flows through the intake valve from the reservoir for the next delivery stroke.


5.2 Functional diagram of SP/EY28



6. Commissioning

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

 **Warning!** Only fill with clean lubricant and an appropriate device. Contaminated lubricants can result in severe system malfunction. The lubricant reservoir must be filled without introducing bubbles.

 **Warning!** Different lubricants must not be mixed, as mixing may result in damage and necessitate 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.

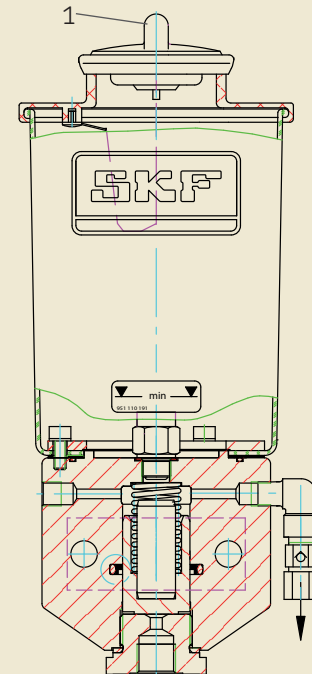
6.1 Commissioning / recommissioning

-see Figure 4

Fill the reservoir with medium (oil).

- Remove the reservoir cover (1) from the filler socket and place it aside.
- ☞ Pay attention to the pump characteristics; see the "Technical data" chapter.
- Fill with medium (oil), max. 1 liter.
- Place reservoir cover (1) onto the filler socket and close it tight.

Fig. 4 Sectional view of SP/EY28



7. Shutdown / disposal

7.1 Temporary shutdown

The product can be temporarily shut down by disconnecting the hydraulic supply connections. The safety instructions must be observed when doing so.

If the product is to be shut down for an extended period of time, follow the instructions in Chapter 3, "Transport, delivery, and storage," in this manual.

To recommission the product, follow the instructions in the "Assembly" and "Commissioning" chapters.

7.2 Permanent shutdown

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

Lubricants can contaminate soil and bodies of water.



Warning!



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.

8. Maintenance

The SP/EY28 hydraulic single-piston pump operates without maintenance, though the following points must be observed:



Warning!

Performing work on a pressurized pump or product may result in serious injury or death. Assembly, maintenance, and repair work may only be performed on products that have been depressurized by qualified technical personnel.

Products from SKF Lubrication Systems Germany GmbH 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 products can be cleaned using mild cleaning agents that are compatible with the products' materials (non-alkaline, non-soap). For safety reasons, the products should first be disconnected from the hydraulic supply.

Do not allow any cleaning agent to enter the interior of the product during cleaning. It is not necessary to clean the interior of the product if the product 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.



Dismantling of the products or individual parts of a product within the statutory warranty period is not permitted and voids any claims.



Only original spare parts from SKF Lubrication Systems Germany GmbH may be used. Unauthorized alterations to products and the use of non-original spare parts and accessories are not permitted and nullify the statutory warranty.

SKF Lubrication Systems Germany GmbH shall not be held liable for damages resulting from improperly performed assembly, maintenance or repair work on the products.



Only fill with clean oil. The purity of the lubricants used is the decisive factor in the service life of the pump and the lubricated machinery elements. Only add oil via the filler socket.

9. Malfunction

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



Dismantling of the product or individual parts of a product within the statutory warranty period is not permitted and voids any claims.



All assembly, maintenance and repair work beyond this scope must be performed by the Service department of SKF Lubrication Systems Germany GmbH.



Only original spare parts from SKF Lubrication Systems Germany GmbH may be used. Unauthorized alterations to products and the use of non-original spare parts and accessories are not permitted.



Warning!

Performing work on a pressurized pump or product may result in serious injury or death. Assembly, maintenance and repair work may only be performed on products that have been depressurized by qualified technical personnel.



Warning!

Lubrication systems are pressurized during operation. Lubrication systems must therefore be depressurized before starting assembly, maintenance or repair work, or any system modifications or system repairs.

9.1 Pump malfunctions / lubrication system

Pump malfunctions, malfunctions in lubrication system

Malfunction	Cause	Remedy
No delivery	Intake valve contaminated or defective	● Clean intake valve, replace if necessary
	Check valve defective	● Replace check valve
Excessive medium metered to lubrication points	Metering elements too large	● Check metering elements, replace if necessary
	Piston seal defective	● Replace piston seal; ensure correct mounting position.

10. Technical data



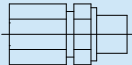
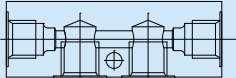
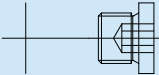




For technical data and characteristics,
see the assembly instructions, page 14.

11. Accessories

Table 1 of 2, Pump accessories

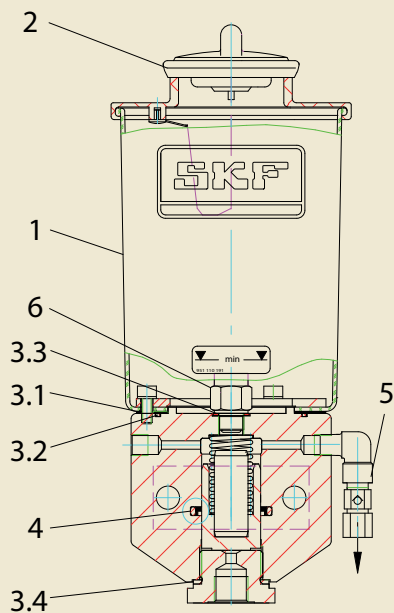
Item	Description	Order number	Drawing
1	Weld-on plate	44-1152-2727	
2	Cheese-head screw	DIN912-M10x60-8.8	
3	Mounting plate	44-1152-2729	
4	Cheese-head screw	DIN912-M10x90-8.8	
5	Plastic tubing	WVN715R06x1.25+A89	
6-12			

Table 2 of 2, Pump accessories

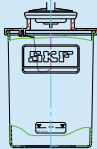
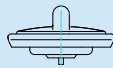
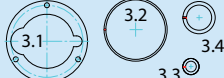
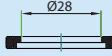
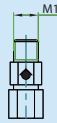
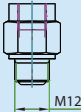
Item	Description	Order number	Drawing
6	Straight connector	406-423	
7	Connecting piece	44-2151-6450	
8	Screw plug	DIN908-M10x1-5.8	
9	Cheese-head screw	DIN912-M4x22-8.8	
10	Sealing ring	504-019	
11	Threaded socket	406-203	
12	Brush	992-000-289	

12. Spare parts

Fig. 4 Positioning of spare parts for SP/EY28



Spare parts list

Item	Description	Order number	Drawing
1	Reservoir, 1 liter	24-0712-2125	
2	Filler cap	996-000-321	
3.1 to 3.4	Set of seals	24-0404-2120	
4	Piston sealing ring	44-0411-2083	
5	Check valve	VPKM-RV-S4	
6	Intake valve	217-000.U20	

951-170-029-EN (2017/03)

The contents of this publication are the copyright of the publisher and may not be reproduced in whole or in part without permission of SKF Lubrication Systems Germany GmbH. 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

