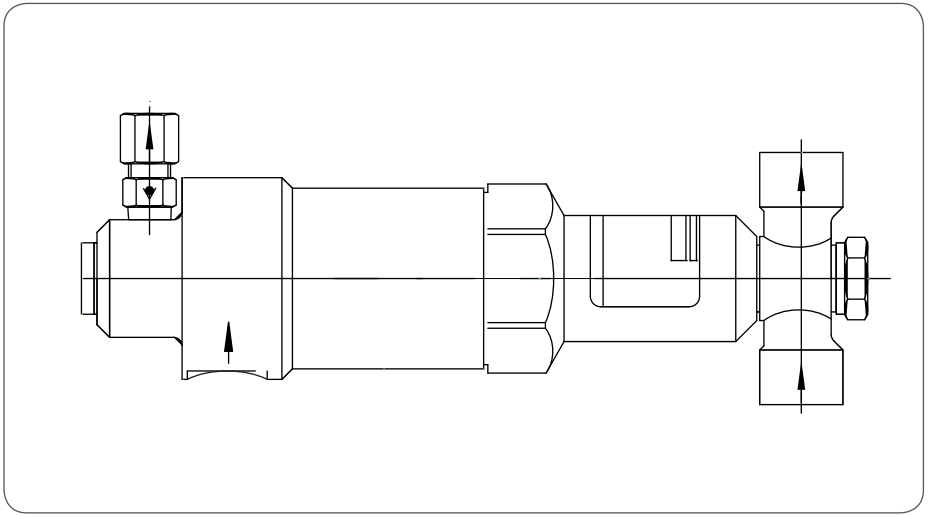
Grease extraction pump 24-1560-3515

Component Lifecycle Manual (CLM)

EN



Version 01

Grease extraction pump

Masthead

The component lifecycle manual has been prepared in accordance with the established standards and rules for technical documentation VDI 4500 and EN 292.

Service

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

SKF Lubrication Systems Germany AG

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

Service 2
Explanation of safety and informational symbols and safety signal words 4

1. Safety instructions 5
1.1 Intended use 5
1.2 Authorized personnet 5
1.3 Electric shock hazard 6
1.4 System pressure hazard 6
1.5 Compressed air hazard 6
1.6 Hydraulic pressure hazard 6

2. Lubricants 7
2.1 General information 7
2.2 Selection of lubricants 7
2.3 Approved lubricants 8

3. Transport, delivery, and storag 9
3.4 Disclaimer of liability 10
3.1 Lubrication units 10
3.2 Electronic and electrical devices 10
3.3 General notes 10
3.4 Disclaimer of liability 10

4. Assembly 11
4.1 Setup and attachment 11
4.2 Assembly drawing 12
4.3 Assembly of the grease extraction pump 13

5. Functional description 14
5.1 Pump Operation 14
5.2 Functional diagrams 15

6. Commissioning 16
6.1 Commissioning and recommissioning 16

7. Dismantling and disposal 16
7.1 Temporary shutdown 16
7.2 Permanent shutdown 16

8. Maintenance 17

9. Malfunction 18
9.1 Pump malfunctions / lubrication System 18

10. Technical data 19

11. Accessories 20

12. Spare parts 21

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.

- ❍ Arrow indicators
- ❍ Labels for fluid connections

You are responsible!

Please read the component lifecycle manual thoroughly and follow the safety instructions.

Hazard symbols

General hazard
DIN 4844-2-W000

Electrical voltage/current
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
- ➔ Points out other facts, causes, or consequences
- ☞ Provides additional information

1. Safety instructions

The described component 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 component may only be used in proper technical condition and in observance of the "component lifecycle manual." In particular, any malfunctions which may affect safety must be remedied immediately.

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

1.1 Intended use

The grease extraction pump 24-1560-3515 is designed for extracting used grease from the bearing outlet and conveying it to a collection tank.
Any other usage is deemed non-compliant with the intended use and could result in damage, malfunction, or even injury.

The grease extraction pump is to be classified as a component ("Komponente") according to the VDMA Position Paper "Umsetzung der Maschinenrichtlinie 2006/42/EG in Zentralschmiertechnik" (implementation of the Machinery Directive 2006/42/EC in centralized lubrication systems).
The grease extraction pump is referred to as a component in the following.

1.2 Authorized personnel

Only qualified technical personnel may install, operate, maintain, and repair the component described in this manual. Qualified technical personnel are persons who have been trained, assigned and instructed by the operator of the final product into which the described component 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 component 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 components.

Danger!
Performing work on an energized component may result in serious injury or death.
Assembly, maintenance and repair work may only be performed on components/products that have been de-energized by qualified technical personnel. The supply voltage must be switched off before opening the 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 component is pressurized during operation. The component must therefore be depressurized before starting assembly, maintenance or repair work, or any system modifications or system repairs.

Depending on the model design, the component may be able to be operated with compressed air. Through the use of the appropriate compressed air quality class, compressed air preparation can be optimized and machine downtime and higher maintenance costs avoided. The compressed air to be used here must comply with at least quality class 5 as defined by ISO 8573-1:

- Max. particle size 40 µm
- Max. particle density 10mg/m^3
- Pressure dew point 7°C
- Water content max. 7800 mg/m^3
- Residual oil content max. 25 mg/m^3

1.6 Hydraulic pressure hazard

The described component is pressurized during operation. The component/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 component may be able to be operated hydraulically.

2. Lubricants

2.1 General information

All components from SKF Lubrication Systems Germany AG may be used only for their intended purpose and in accordance with the information in this manual.

Intended use is the use of the components 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 device, 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 materials of any kind, especially the materials classified as hazardous by EC Directive 67/548/EEC, Article 2, Para. 2, may only be filled into SKF centralized lubrication systems and components and delivered and/or distributed with the same after consultation with and written approval from SKF Lubrication Systems Germany AG. No components manufactured by SKF Lubrication Systems Germany AG 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 Germany AG.
SKF Lubrication Systems Germany AG considers lubricants to be a component of the system design which must 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

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.
The bearings/friction points that require lubrication, their expected load during operation, and the expected ambient conditions are taken into account during selection, with consideration of economic and environmental aspects.

If required, SKF Lubrication Systems Germany AG 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 Germany AG 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 Germany AG from the company's Service department.

2.3 Approved lubricants

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

Different lubricants must not be mixed, as mixing may result in damage and necessitate costly and complicated cleaning of the components/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 components can be operated using lubricants that meet the specifications in the technical data. Depending on the component 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 due to the risk of slipping and injury. Beware of any lubricant leaking out during assembly, operation, maintenance, and 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. Follow the safety instructions on the lubricant's safety data sheet. The safety data sheet for a lubricant can be requested from the lubricant manufacturer.

3. Transport, delivery, and storage

SKF Lubrication Systems Germany AG components 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; the components must be protected from mechanical effects such as impacts. The transport packaging must be marked "Do not drop!".

Warning!
Do not drop the component.

There are no restrictions for land, air or sea transport.
After receipt of the shipment, the component(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 AG components 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 component(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.

3.4 Disclaimer of liability

SKF Lubrication Systems Germany AG 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.

4. Assembly

4.1 Setup and attachment

- see Figure 1

The component 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. Make sure there is adequate air circulation to prevent the component from overheating. For the maximum permissible ambient temperature, see "Technical data."

The grease extraction pump component can be mounted as desired.
The extraction pump can be attached directly to the extraction point via the G 1/4“ pump inlet using screw unions or double nipples. An additional bracket may be necessary, depending on the application.
This could be a bracket provided by the customer or a mounting clip (D = 42 mm).

Pump drive and pump relief are performed via the control ports P1 and P1` (usually with a MonoFlex centralized lubrication system). Both ports have a thread of size M16x1.5. The main lines on the control ports P1 / P1' must be screwed leak-tight.
The used grease collection line is connected via the check valve opposite the pump inlet. The hose connection port is 6 mm. The used grease line should be connected to the customer's used grease collection tank. When connecting, refer to the customer-specific piping plan.

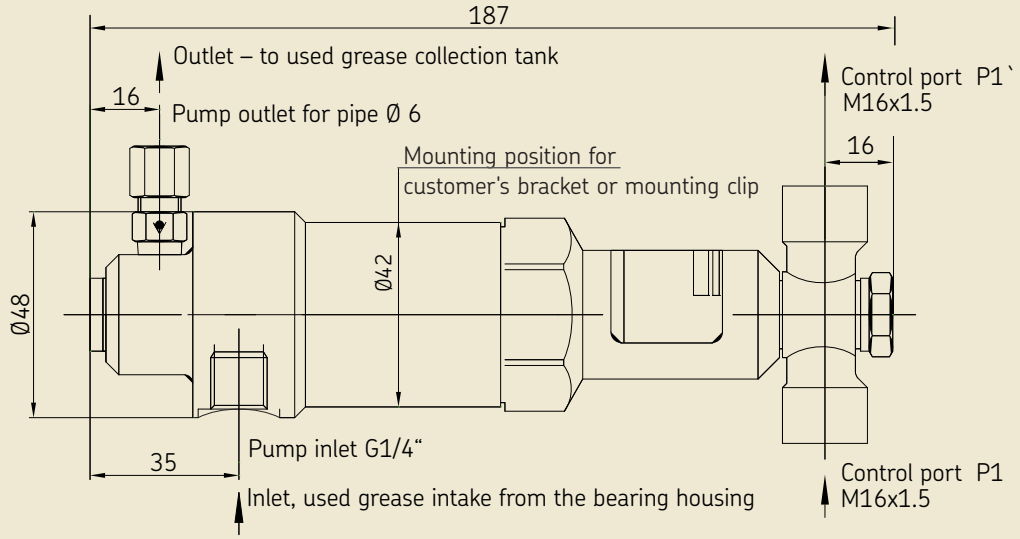
During assembly and during any drilling work, always pay attention to the following:

- Existing supply lines must not be damaged by assembly work.
- Other units must not be damaged by assembly work.
- The component must not be installed within range of moving parts.
- The component 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 grease extraction pump

Minimum installation clearance: (187 mm + 30 mm clearance) = 217 mm



4.3 Assembly of the grease extraction pump

Warning!
When drilling the assembly holes for the mounting clip or the bracket provided by the customer, 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.

The extraction pump is to be mounted directly onto the extraction point via the G 1/4“ pump inlet using screw unions or double nipples. An additional bracket may be necessary, depending on the application.
This could be a bracket provided by the customer or a mounting clip (D = 42 mm).

For mounting equipment, see Chapter 11, Accessories.

- Screw the customer's screw union (or double nipple) into the suction point
- Screw the pump inlet port (G 1/4“) on the grease extraction pump into the screw union (or double nipple)
- Align the grease extraction pump, while making sure the screw union is properly sealed
- Connect a control line provided by the customer (coming from the grease lubrication pump) to control port P1 (M16x1.5)
- Connect one end of a control line provided by the customer (to connect grease extraction pump to grease extraction pump) to control port P1` (M16x1.5) and connect the other end of this control line to control port P1 on the following grease extraction pump
- On the last grease extraction pump, connect one end of a customer-provided control line to control port P1` and connect the other end of this control line to the inlet of the next MonoFlex single-line distributor

or:

- On the last grease extraction pump, connect one end of a customer-provided control line to control port P1` and mount the other end of this control line on the oil return of the grease lubrication pump
- Connect a used grease collection line provided by the customer to the check valve (pump outlet G1/4“)
- Check all connections to ensure they are properly sealed

The control lines on the grease extraction pump must be connected to the component in such a way that no forces can be transferred to the assembled component (stress-free connection).

5. Functional description

5.1 Pump operation

see Figure 2

The pump operates according to the same principle as a hydraulically powered single-piston pump. The grease extraction pump is designed to extract used grease from bearings and pump it into one or more collection tanks. Any number of grease extraction pumps can be installed in series in the main lubricant line of a single-line centralized lubrication system, according to the number of extraction points required.
The pumps are driven by an existing single-line centralized lubrication pump with pressure relief.

Pressure phase
When pressure in the main line rises, the delivery piston is pushed by the hydraulic piston across the intake hole and up to the stop screw. After the delivery piston moves across the intake hole, the amount of grease in front of the delivery piston is discharged through the check valve to the pump outlet and into the used grease collection line.

Suction phase
When the pressure in the main line is relieved, the two pistons are pushed into their initial positions by the built-in pressure springs. The check valve is closed. As the delivery piston moves across the intake hole, the used grease is suctioned through the pump inlet by the negative pressure generated in the intake chamber The intake chamber fills up, and the next delivery stroke can begin.

5.2 Functional diagrams

Fig. 2 Functional diagram of grease extraction pump

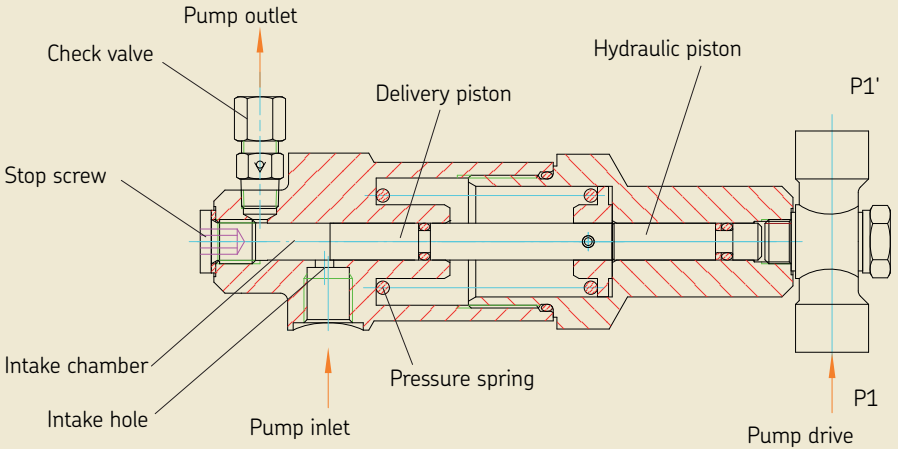
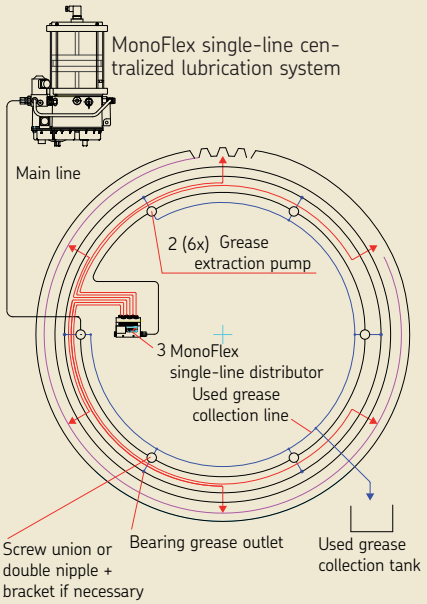


Fig. 3 System example: pitch bearing



6. Commissioning

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

Warning!
Only fill using clean lubricant. Contaminated lubricants can result in severe system malfunction.

6.1 Commissioning and recommissioning

The pump is delivered in an operational state and can be used immediately following proper installation. Ensure that the connections are properly sealed.

7. Dismantling and disposal

7.1 Temporary shutdown

The described component can be temporarily shut down by disconnecting the control line connections. The safety instructions must be observed when doing so.

If the component 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 component, follow the instructions in the "Assembly" chapter.

7.2 Permanent shutdown

If the component 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 (especially in the case of used grease) disposed of properly. Observe the local regulations and laws regarding the disposal of lubricants.

The component can also be returned to SKF Lubrication Systems Germany AG for disposal, in which case the customer is responsible for reimbursing the costs incurred.

The parts are recyclable.

8. Maintenance

The grease extraction pump operates without maintenance, though the following points must be observed:

Warning!
Performing work on energized components may result in serious injury or death. Assembly, maintenance, and repair work may only be performed on components that have been de-energized by qualified technical personnel.

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

Do not allow any cleaning agent to enter the interior of the component during cleaning.

It is not necessary to clean the interior of the component if the component is operated normally and intercompatible lubricants are used. The interior of the component must be cleaned if incorrect or contaminated lubricant is accidentally filled into the component. If this occurs, please contact the Service department of SKF Lubrication Systems Germany AG for assistance.

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

Only original spare parts from SKF Lubrication Systems Germany AG may be used. Unauthorized alterations to components and the use of non-original spare parts and accessories are prohibited and nullify the statutory warranty.

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

9. Malfunction

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

Dismantling of the components or individual parts of a component 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 AG.

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

Warning!
Performing work on energized components may result in serious injury or death. Assembly, maintenance, and repair work may only be performed on components that have been de-energized 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

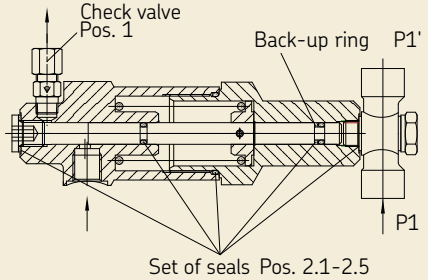
Malfunctions table

Malfunction	Grease extraction pump does not pump grease
General remedy	Check the functioning of the single-line pump
	Check the control lines (main lubricant line) for leaks, tighten if necessary
Remedy for grease extraction pump	Check connections for leaks, tighten if necessary
	Replace the seals of both pistons (O-rings and back-up ring), making sure that the back-up ring is installed in the correct position - see Figure 4
	Clean the check valve, replace if necessary - see Figure 4

10. Technical data

Type designation: grease extraction pump 24-1560-3515

Fig. 4 Pump cross-section



Characteristics

Design	Grease extraction pump
Mounting position	any
Ambient temperature	-25 °C to 75 °C
Dry weight	1.4 kg
Pump housing	Galvanized steel
Number of outlets	1
Displacement/drive volume per stroke	1.25 cm^3
Actuating pressure min.	70 bar (at 30 bar relief pressure)
Operating pressure max.	300 bar
Relief pressure	30 bar

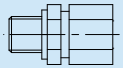
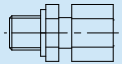
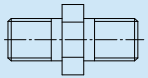
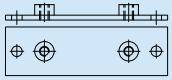
Lubricants [1])

Pumped medium	Oils or greases up to NLGI Grade 2

1) Synthetic and biodegradable oils and greases require approval from SKF.

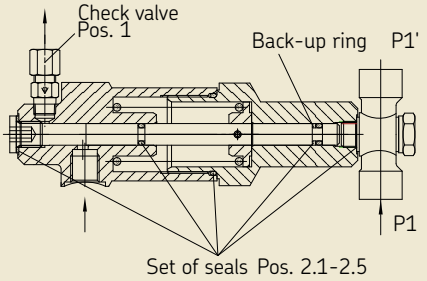
11. Accessories

Accessories

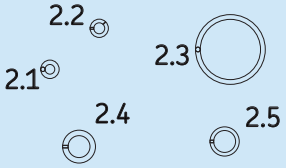
Quantity	Description	Order number	Drawing
Screw unions			
1	Screw union (G1/4) GE-R	410-403W	
1	Screw union (G1/4) EVGE-LR	441-110-162	
2	Sealing ring	508-108	
1	Double nipple G1/4	96-0014-5280	
Mounting clip			
1	Pair of clamp halves (Stauff) D=42	96-5042-0185	
1	Weld-on plate (Stauff)	96-7005-0185	
2	Cheese-head screws	DIN912-M6x50-8.8	

12. Spare parts

Fig. 5 Positioning of spare parts



Spare parts list

Item	Description	Order number	Drawing
1	Check valve	VPKM-RV-S4	
2.1 to 2.5	Set of seals	24-0404-2120	

951-230-003-EN (08.2010)

If the component is supplied together with the applicable component lifecycle manual, that manual must be read and followed. Not all lubricants can be fed using centralized lubrication systems. SKF can, on request, inspect the suitability of the lubricants 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 materials of any kind, especially the materials classified as hazardous by EC Directive 67/548/EEC, Article 2, Para. 2, 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 AG
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 AG
2. Industriestrasse 4 ·68766 Hockenheim · Germany

Tel. +49 (0)62 05 27-0 · Fax +49 (0)62 05 27-101
www.skf.com/lubrication