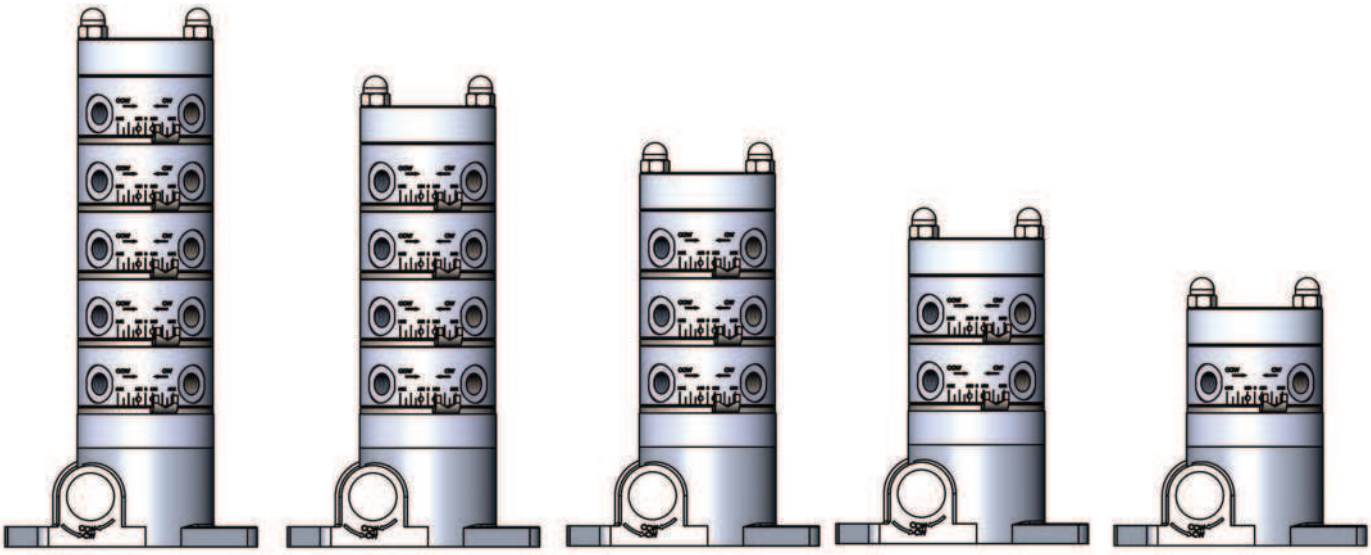
Oil Chain Lubrication Pump OCL-M

Mechanically operated oil pump



Date:	**05.12.2023**
Document no.:	**951-121-003-EN**
Version:	**03**

Read this manual before installing or commissioning the product and keep it at hand for later reference!

Original EC Declaration of Incorporation in accordance with Directive 2006/42/EC, Appendix II Part 1 B

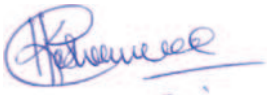
SKF Engineering and Lubrication India Pvt. Ltd., Plot 249&250, Phase-3, Bommasandra Ind. Area, Bangalore 560099 hereby declares at its sole responsibility that the partly completed machinery conforms to the essential health and safety requirements of the Machinery Directive 2006/42/EC, Annex I, marked in the Annex to the EC Declaration of Incorporation as applicable and fulfilled at the time of placing on the market.
The special technical documents were prepared following Annex VII part B. Upon justifiable request, these special technical documents can be forwarded electronically to the respective national authorities. The authorized company for the compilation of the technical documentation is SKF Lubrication Systems Germany GmbH.

Designation:	Mechanically operated oil pump for the supply of lubricant within a centralized lubrication system
Type:	Oil Chain Lubrication Pump OCL-M
Item number:	OCL-M-GX-XX-XX-XX
Year of manufacture:	See type plate

Furthermore, the following directives and standards were applied in the respective applicable areas:
2006/42/EC: Machinery Directive
EN ISO 12100:2010 EN 809:1998+A1:2009/AC:2010

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

Bengaluru, 05.04.2022
Keshava Kumar C K
Manager, R&D India



Manufacturer: SKF Engineering and Lubrication India Private Limited, 249 & 250 Bommasandra Industrial Area, Phase-3, Hosur Road, Bengaluru-560099

Original UK Declaration of incorporation according to the Supply of Machinery (Safety) Regulations 2008 No. 1597 Annex II

SKF Engineering and Lubrication India Pvt. Ltd., Plot 249&250, Phase-3, Bommasandra Ind. Area, Bangalore 560099 hereby declares under sole responsibility that the partly completed machinery complies with the essential health and safety requirements of UK legislation Supply of Machinery (Safety) Regulations 2008 No. 1597 Annex I, marked in the Annex to the EC Declaration of Incorporation as applicable and fulfilled at the time of placing on the market.
The special technical documents were prepared following Annex VII part B. Upon justifiable request, these special technical documents can be forwarded electronically to the respective national authorities. The authorized company for the compilation of the technical documentation is SKF (U.K.) Limited, 2 Canada Close, Banbury, Oxfordshire, OX16 2RT, GBR.

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Bengaluru, 05.05.2023
Mr. Keshava Kumar C K
Manager, R&D India

Manufacturer: SKF Engineering and Lubrication India Private Limited, 249 & 250 Bommasandra Industrial Area, Phase-3, Hosur Road, Bengaluru-560099

Annex to the Declaration of incorporation following 2006/42/EC, annex II, no 1 B

Description of the essential health and safety requirements according to 2006/42/EC, Annex I, which have been applied and complied with:

Table 1

Annex to the Declaration of incorporation
Valid for : OCL-M Pumps and variants

No.:	Basic safety and health requirements	Applicable:	Complied with:
1.1.1	Definitions	No	
1.1.2	Principles of safety integration	Yes	Yes
1.1.3	Materials and products	Yes	Partly[1)]
1.1.4	Lighting	No	
1.1.5	Design of machinery to facilitate its handling	No	
1.1.6	Ergonomics	Yes	Partly[2)]
1.1.7	Operating positions	No	
1.1.8	Seating	No	
1.2	Control systems		
1.2.1	Safety and reliability of control systems	No	
1.2.2	Control devices	No	
1.2.3	Starting	No	
1.2.4	Stopping	No	
1.2.4.1	Normal stop	No	
1.2.4.2	Operational stop	No	
1.2.4.3	Emergency stop	No	
1.2.4.4	Assembly of machinery	No	
1.2.5	Selection of control or operating modes	No	
1.2.6	Failure of the power supply	No	
1.3	Protection against mechanical hazards		
1.3.1	Risk of loss of stability	Yes	Yes
1.3.2	Risk of break-up during operation	Yes	Partly[3)]
1.3.3	Risks due to falling or ejected objects	No	
1.3.4	Risks due to surfaces, edges or angles	Yes	Yes
1.3.5	Risks related to combined machines	No	
1.3.6	Risks related to variations in operating conditions	No	
1.3.7	Risks related to moving parts	Yes	Partly[4)]
1.3.8	Choice of protection against risks arising from moving parts	No	
1.3.8.1	Moving transmission parts	No	
1.3.8.2	Moving parts involved in the process	No	
1.3.9	Risks of uncontrolled movements	No	
1.4	Required characteristics of guards and protective devices		
1.4.1	General requirements	No	
1.4.2	Special requirements for guards	No	
1.4.2.1	Fixed guards	No	
1.4.2.2	Interlocking movable guards	No	
1.4.2.3	Adjustable guards restricting access	No	
1.4.3	Special requirements for protective devices	No	
1.5	Risks due to other hazards		
1.5.1	Electricity supply	No	
1.5.2	Static electricity	No	
1.5.3	Energy supply other than electricity	No	
1.5.4	Errors of fitting	Yes	Yes
1.5.5	Extreme temperatures	No	
1.5.6	Fire	No	
1.5.7	Explosion	No	
1.5.8	Noise	Yes	Yes[5)]
1.5.9	Vibrations	No	
1.5.10	Radiation	No	

Table 1

Annex to the Declaration of incorporation
Valid for : OCL-M Pumps and variants

No.:	Basic safety and health requirements	Applicable:	Complied with:
1.5.11	External radiation	No	
1.5.12	Laser radiation	No	
1.5.13	Emission of hazardous materials and substances	Yes	Yes[4) 5)]
1.5.14	Risk of being trapped in a machine	No	
1.5.15	Risk of slipping, tripping and falling	Yes	Yes[4) 5)]
1.5.16	Lightning	No	
1.6	Maintenance		
1.6.1	Machinery maintenance	Yes	Yes
1.6.2	Access to operating positions and servicing points	Yes	Yes[5)]
1.6.3	Isolation of energy sources	No	
1.6.4	Operator interventions	Yes	Yes[5)]
1.6.5	Cleaning of internal parts	No	
1.7	Information		
1.7.1	Information and warnings on the machinery	No	
1.7.1.1	Information and information devices	Yes	Yes
1.7.1.2	Warning devices	No	
1.7.2	Warning of residual risks	Yes	Yes[5)]
1.7.3	Marking of machinery	Yes	Yes
1.7.4	Instructions	Yes	Yes
1.7.4.1	General principles for the drafting of instructions	Yes	Yes
1.7.4.2	Contents of the instructions	Yes	Yes
1.7.4.3	Sales literature	Yes	Yes

[1)] The product is basically designed for the use of harmless media. The components in the products contain harmless materials. The operator must check whether the material and lubricant used have certain hazardous effects (e.g. sensitization).
[2)] The integrator must ensure that the pump is integrated into the machine in such way that operation and filling of the pump are ergonomically possible.
[3)] Internal pressure relieving mechanism protects the system against any pressure build up. However operator must secure the lubrication system by installing a protective cover (customer scope)
[4)] Not relevant inside the incomplete machine (pump), only outside the incomplete machine. Here the machine integrator/operator is responsible.
[5)] The integrator must to ensure that the pump is integrated into the machine in such way that operation of the pump is possible without any risk.

Masthead

Manufacturer
SKF Engineering and Lubrication India Private Limited
249 & 250 Bommasandra Industrial Area
Phase-3, Hosur Road
Bengaluru-560099
India

Authorized local distributors
- Great Britain -
SKF (U.K.) Limited,
2 Canada Close, Banbury, Oxfordshire,
OX16 2RT, GBR.

- North America -
SKF Lubrication Business Unit
Lincoln Industrial
5148 North Hanley Road, St. Louis,
MO. 63134 USA

- South America -
SKF Argentina Pte. Roca 4145,
CP 2001 Rosario, Santa Fe

Warranty
The instructions contain no statements regarding the warranty or liability for defects. That information can be found in our General Terms of Payment and Delivery.

Training
We conduct detailed training in order to enable maximum safety and efficiency. We recommend taking advantage of this training. For further information, contact your authorized SKF dealer or the manufacturer.

Table of contents

Safety alerts, visual presentation, and layout

While reading these instructions, you will encounter various symbols, illustrations, and text layouts intended to help you navigate and understand the instructions. Their meaning is explained below.

Safety alerts:
Activities that present specific hazards (to life and limb or possible damage to property) are indicated by safety alerts. Always be sure to follow the instructions given in the safety alerts.

⚠ DANGER
These safety alerts indicate an imminent danger. Ignoring them will result in death or serious injury

⚠ WARNING
These safety alerts indicate potentially imminent danger. Ignoring them could result in death or serious injury

⚠ CAUTION
These safety alerts indicate potentially imminent danger. Ignoring them could result in minor injury

NOTICE
These safety alerts indicate a potentially harmful situation. Ignoring them could result in damage to property or malfunctions

Illustrations:
The illustrations used depict a specific product. For other products, they may have the function of a diagram only. This does not alter the basic workings and operation of the product.

Text layout:
- **First-order bulleted lists:** Items on a bulleted list start with a solid black dot and an indent.
  - **Second-order bulleted lists:** If there is a further listing of subitems, the second-order bulleted list is used.

1 **Legend:** A legend explains the numbered contents of an illustration, presented as a numbered list. Items in a legend start with a number (with no dot) and an indent.
  - **Second-order legend:** In some cases, the numbered contents of an image represent more than just one object. A second-order legend is then used.

1. **Instruction steps:** These indicate a chronological sequence of instruction steps. The numbers of the steps are in bold and are followed by a period. If a new activity follows, the numbering starts again at "**1.**"
  - **Second-order instruction steps:** In some cases, it is necessary to divide up a step into a few substeps. A sequence of second-order instruction steps is then used.

1 Safety instructions

1.1 General safety instructions

- Putting the products into operation or operating them without having read the instructions is prohibited. The operator must ensure that the instructions are read and understood by all persons tasked with working on the product or who supervise or instruct such persons. Retain the instructions for further use.
- The product may only be used in awareness of the potential dangers, in proper technical condition, and according to the information in this manual.
- Any faults that could affect safety must be remedied according to responsibility. The supervisor must be notified immediately in case of malfunctions outside one's individual scope of responsibility.
- Unauthorized modifications and changes can have an unpredictable effect on safety and operation. Unauthorized modifications and changes are therefore prohibited. Only original SKF spare parts and SKF accessories may be used.
- Any unclear points regarding proper condition or correct assembly/operation must be clarified. Operation is prohibited until issues have been clarified.
- The components used must be suitable for the intended use and the applicable operating conditions, e.g. max. operating pressure and ambient temperature range, and must not be subjected to torsion, shear, or bending.

1.2 General behaviour when handling the product

- Familiarize yourself with the functions and operation of the product. The specified assembly and operating steps and their sequences must be observed.
- Keep unauthorized persons away.
- Wear personal protective equipment always.
- Precautionary operational measures and instructions for the respective work must be observed.
- In addition to these Instructions, general statutory regulations for accident prevention and environmental protection must be observed.
- Precautionary operational measures and instructions for the respective work must be observed. Uncertainty seriously endangers safety.
- Safety-related protective and safety equipment must not be removed, modified or affected otherwise in its function and is to be checked at regular intervals for completeness and function.
- If protective and safety equipment has to be dismantled, it must be reassembled immediately after finishing the work, and then checked for correct function.
- Remedy occurring faults in the frame of responsibilities. Immediately inform your superior in the case of faults beyond your competence.
- Never use parts of the centralized lubrication system or of the machine as standing or climbing aids.

1.3 Intended use

Supply of lubricant to lubrication points.
Spare parts should only be used to replace faulty components of identical construction.
Use is only permitted within the scope of commercial or economic activity by professional users, in compliance with the specifications, technical data, and limits specified in this manual.

1.4 Persons authorized to use the product

Operator
A person who is qualified by training, knowledge and experience to carry out the functions and activities related to normal operation. This includes avoiding possible hazards that may arise during operation.

Specialist in electrics
Person with appropriate professional education, knowledge and experience to detect and avoid the hazards that may arise from electricity.

Specialist in mechanics
Person with appropriate professional education, knowledge and experience to detect and avoid the hazards that may arise during transport, installation, start-up, operation, maintenance, repair and disassembly.

1.5 Foreseeable misuse

Any usage of the product other than as specified in this manual is strictly prohibited. Particularly prohibited are:

- Use of non-specified consumables, contaminated lubricants, or lubricants with air inclusions.
- Use of C3 versions in areas with aggressive, corrosive substances (e.g., high salt load).
- Use of plastic parts in areas with high exposure to ozone, UV light, or ionizing radiation.
- Use to supply, convey, or store hazardous substances and mixtures as defined in the CLP Regulation (EC 1272/2008) or GHS with acute oral, dermal, or inhalation toxicity or substances and mixtures that are marked with hazard pictograms GHS01-GHS06 and GHS08.
- Use to supply, convey, or store Group 1 fluids classified as hazards as defined in the Pressure Equipment Directive (2014/68/EU) Article 13 (1) a).
- Use to supply, convey, or 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.
- Use in an explosion protection zone.
- Use without proper securing against excessively high pressures, in the case of pressurized products.
- Use outside of the technical data and limits specified in this manual.

1.6 Referenced documents

In addition to this manual, the following documents must be observed by the respective target group:
- Company instructions and approval rules

If applicable:
- Safety data sheet of the lubricant used
- Project planning documents
- Supplementary information regarding special designs of the pump. This you will find in the special system documentation.
- Instructions for other components for setting up the centralized lubrication system.

1.7 Prohibition of certain activities

- Replacement of or modifications to the pistons of the pump elements
- Repairs or modifications to the drive.
- Alterations to the control circuit board beyond adjustment of lubrication times and interval times or replacement in case of defect.
- Alterations to the power supply board beyond replacement in case of defect.

1.8 Painting plastic components and seals

The painting of any plastic components and seals of the products described is prohibited. Completely mask or remove plastic components before painting the main machine.

1.9 Safety markings on the product

No safety markings on the product

NOTE

In accordance with the results of the workstation risk assessment, additional labels (e.g., warnings, safety signs, prohibition signs, or labels in accordance with CLP/GHS) are to be attached by the operator if necessary.

1.10 Note on the type plate

The type plate provides important data such as the type designation, order number, and sometimes regulatory characteristics. To avoid loss of this data in case the type plate becomes illegible, it should be entered in the manual.

1.11 Note on UKCA marking

The UKCA conformity marking confirms the product's conformity with the applicable legal provisions of Great Britain.

1.12 Emergency shutdown

This is done by a course of action to be defined by the operator.

1.13 Assembly, maintenance, fault, repair

Prior to the start of this work, all relevant persons must be notified of it. At a minimum, the following safety measures must be taken before any work is done:
- Unauthorized persons must be kept away
- Mark and secure the work area
- Cover adjacent live parts
- Dry any wet, slippery surfaces or cover them appropriately
- Cover hot or cold surfaces appropriately

Where applicable:
- Depressurize
- Isolate, lock and tag out
- Check to ensure live voltage is no longer present
- Ground and short-circuit.

The product should be protected as much as possible from humidity, dust, and vibration, and should be installed so that it is easily accessible. Ensure an adequate distance from sources of heat or cold. Any visual monitoring devices present, such as pressure gauges, min./max. markings, or oil level gauges must be clearly visible. Observe the mounting position requirements.

Drill required holes only on non-critical, non-load-bearing parts of the operator's infrastructure. Use existing holes where possible. Avoid chafe points. Immobilize any moving or detached parts during the work. Adhere to the specified torques.

If guards or safety devices need to be removed, they must be reinstalled immediately following conclusion of work and then checked for proper function.

Check new parts for compliance with the intended use before using them.

Avoid mixing up or incorrectly assembling disassembled parts. Label parts. Clean any dirty parts.

1.14 First start-up, daily start-up

Ensure that:
- All safety devices are fully present and functional
- All connections are properly connected
- All parts are correctly installed
- All warning labels on the product are fully present, visible, and undamaged
- Illegible or missing warning labels are immediately replaced.

1.15 Residual risks

Table 2

Residual risks

Residual risk	Possible in life cycle	Prevention/ remedy
People slipping due to floor contamination with spilled or leaked lubricant.	B C D E F G H K	• Exercise caution when connecting the product's hydraulic connections • Bind and remove leaked or spilled lubricant immediately with a suitable agent • Follow the operational instructions for handling lubricants and contaminated parts
Tearing or damaging of lines when installed on moving machine parts	B C D	• Operator must ensure that the pump is not mounted on the moving parts of the machine • Ensure lubrication lines do not come in contact with the moving parts of machine during installation and operation
**Too high system oil pressure, thus destruction of lubrication system components	B C D F G	• Operator must secure the lubrication system against excessive pressure • Recommend to install protective cover (customer scope) across the pressure boundary • Periodic check for line back pressure to ensure no blockage of lines (System pressure < the maximum permissible operating pressure) is recommended (customer scope). In the event of system pressure exceeding 15 bar, will result in damage to the push-in fittings causing pressure relief and leakage of oil • The pump is fitted with internal pressure relieving function to avoid pressure build up in a closed outlet port
Lubricant spraying out due to incorrect screw connection of components or lines.	B C	• Tighten all mechanical connections and joints with the appropriate tightening torques • Use hydraulic fittings and lines suitable for the indicated pressures. These must be checked for proper connection and damage prior to commissioning.

Life phases: A = transport, B = installation, C = initial start-up, D = operation, E = cleaning, F = maintenance, G = fault, repair, H = shutdown, K = disposal

** Recommended max operating pressure is 10 bar. The Push-in fittings are selected to withstand up to 15 bar line pressure. In such events, hose, push-in fitting rupture and oil leakage may occur.

2 Lubricants

2.1 General information

Lubricants are selected specifically for the respective application. The selection is made by the manufacturer or operator of the machine, preferably together with the lubricant supplier. Should you have little or no experience with the selection of lubricants for lubrication systems, please contact us. We will be pleased to support you in the selection of suitable lubricants and components for the construction of a lubrication system optimized for the respective application. Please observe the following points when selecting/using lubricants. You will avoid possible downtimes and damages to your machine or the lubrication system.

2.2 Material compatibility

Lubricants must generally be compatible with the following materials:

- Plastics: ABS, CR, FPM, NBR, NR, PA, PET, PMMA, POM, PP, PS, PTFE, PU, PUR

Metal steel, grey iron, brass, copper, aluminium

2.3 Temperature characteristics

The lubricant used must be suitable for the specific ambient temperature of the product. The viscosity required for proper operation of the product must not be exceeded in case of low temperatures nor fall below specification in case of high temperatures. Specified viscosity, see chapter Technical data.

2.4 Ageing of lubricants

Depending on the experience with the lubricant used, it should be checked at regular intervals to be determined by the operator whether the lubricant needs to be replaced due to ageing processes (bleeding). If there is any doubt as to the further suitability of the lubricant, it must be replaced before recommissioning. If you have no experience with the lubricant used, we recommend testing after only one week.

2.5 Avoidance of malfunctions and hazards

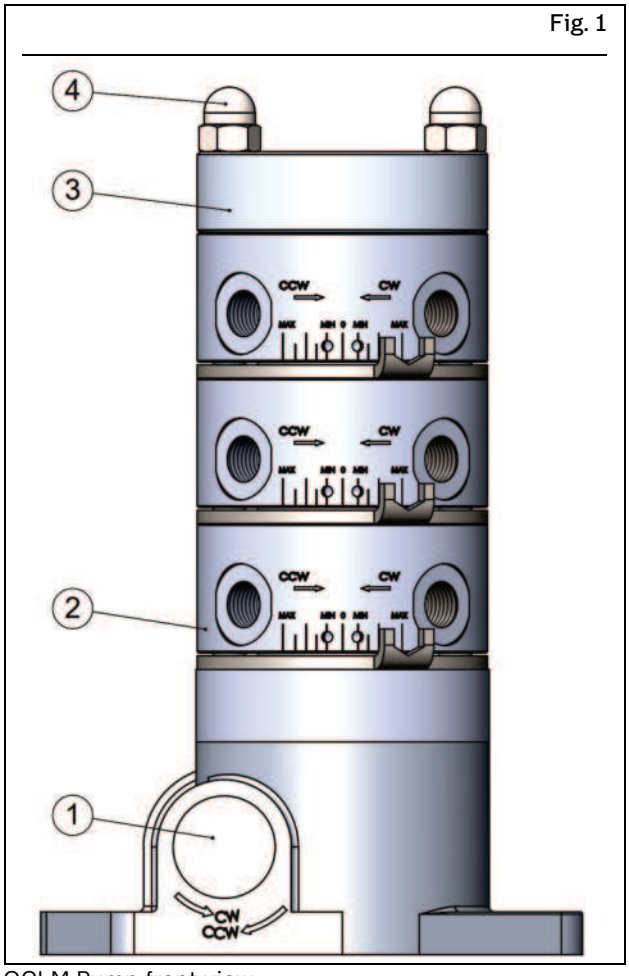
To avoid malfunctions or hazards, please observe the following:

- When handling lubricants, observe the relevant safety data sheets (SDS) and hazard designations on the packaging, if any.
- Due to the large number of additives, individual lubricants which meet the requirements for pumpability specified in the instructions may not be suitable for use in centralized lubrication systems.
- Always use SKF lubrication greases, if possible. These are optimally suited for use in lubrication systems.
- Do not mix lubricants. This may have unforeseeable effects on the characteristics and on the usability of the lubricant.
- The ignition temperature of the lubricant must lie at least 50 K over the maximum surface temperature of the components.

3 Overview, functional description

3.1 Main components of OCL-M

Fig. 1



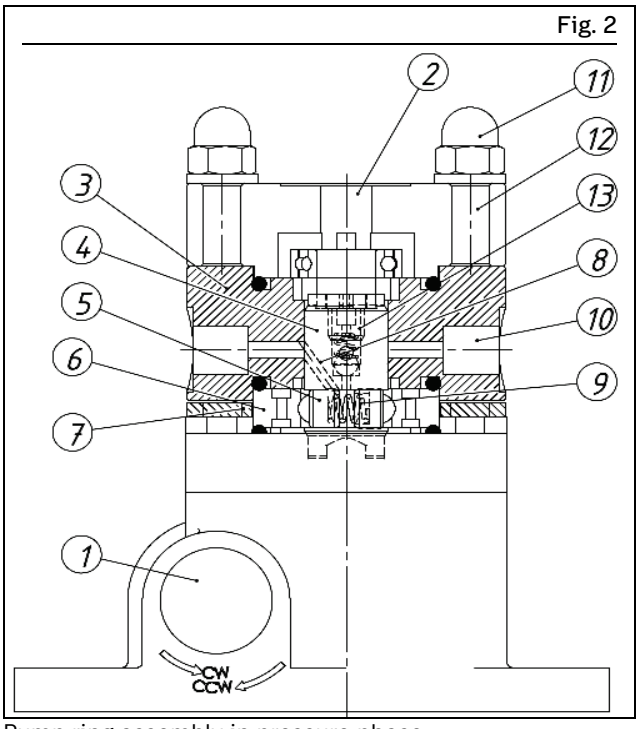
OCLM Pump front view

Legend of Figure 1:
1 Gear box assembly
2 Pump ring assembly
3 Oil inlet plate
4 Dome nut and screw rod

Refer Figure 1, In its basic design, the OCL-M pump is comprised of a gearbox drive assembly (1), oil inlet plate (3) with the lubricant inlet and at least one pump ring assembly (2). Pump rings are assembled by a set of screw rods and dome nuts (4)

3.2 OCL-M Pump design

Fig. 2



Pump ring assembly in pressure phase

Legend of Figure 2:
1 Gear box assembly
2 Oil inlet (lubricant inlet / pump inlet) plate
3 Pump ring assembly
4 Pump shaft
5 Radial pistons
6 Flow adjusting disc
7 Holding disc
8 Control bore on pump shaft
9 Spring
10 Oil outlet (lubricant outlet / pump outlet)
11 Dome nut
12 Screw rod
13 Relief valve

The pump ring assembly shown in Figure 2 , is comprised of a pump ring (3), a pump shaft (4) with two radial pistons (5) and the flow adjusting disc with elliptical inner contour (6), which is attached to the holding disc (7).The pump ring (3) houses the suction grooves and the pressure bores. The pump shaft (4) , which also acts as the drive shaft for the next pump ring via the slotted coupling, is designed as a rotary valve.

The two radial pistons (5) are held together by a spring (9) and are pressed against the inner elliptical contour of the flow adjusting disc (6) due to spring force.

3.3 Mode of operation

As the pump shaft rotates, the two radial pistons (5) move apart due to the spring loading, until the outer dead center is reached. During this period, the control bore in the pump shaft (8) connects the space between two

radial pistons with a lubricant inlet in the pump ring. This is the suction phase.

As the pump shaft continues to rotate, due to the elliptically shaped flow adjusting disc (6), the radial pistons move closer against the spring force, until the inner dead center is reached.
During this period, the control bore (8) in the pump shaft connects the space between the two radial pistons (5) with a lubricant outlet (10) in the pump ring. This is the pressure phase.

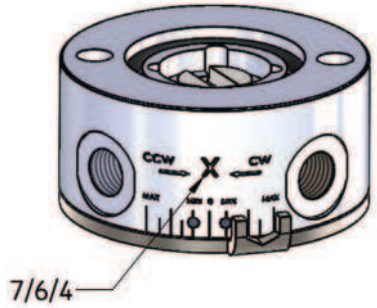
The displacement can be varied continuously (after loosening the screw rod) by adjusting the position of the holding disc (attached to flow adjusting disc) as per the marking provided on the pump ring (please refer Figure 3).

The stroke of the two radial pistons remains the same in every phase variation; it is fully effective or only partially effective, depending on the setting of the holding disc.

3.4 Pump Ring Assembly

There are three pump ring variants available as shown in Table 3.

Fig. 3



Pump ring assembly

Table 3

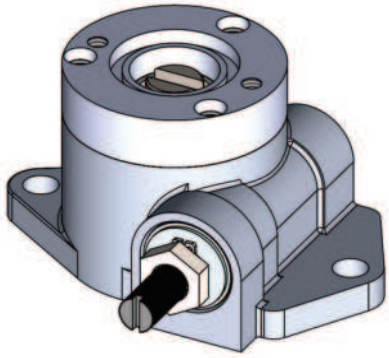
Pump ring assembly (refer Figure **3**)

Pump ring marking (X)	Pump ring variant	Pump piston diameter (mm)
7	D7	Ø7
6	D6	Ø6
4	D4	Ø4

3.5 Gear box assembly

Below are the gear box variants available for the OCL-M Pump (refer Table 4 for details).

Fig. 4



Gear box assembly

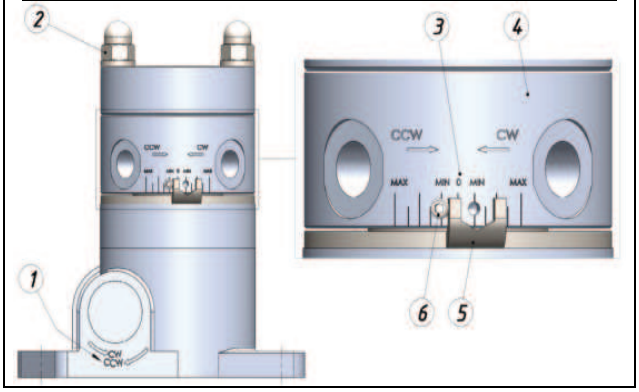
Table 4

Gear box assembly

Gear box assembly variants	Ratio
G1	1:6.75
G2	1:27

3.6 Gear box direction marking and flow adjustment

Fig. 5



Gear box marking and flow adjustment setting

Legend for Figure 5:
1 Indication of direction of drive rotation
2 Dome nut and screw rod
3 Rotation direction scale
4 Pump ring
5 Holding disc
6 Grub screw M3

Drive shaft on the pump gear box is coupled to the superior machine's drive shaft. Based on the direction of drive rotation (1) (CW or CCW), user can vary the pump output from MAX to MIN by adjusting the holding disc (5) position on the pump ring (4) as per the below steps:

1. Check the direction of drive rotation (1), by looking from the end as shown in Figure 5
2. Switch off the pump to ensure pump is in standstill state
3. Slightly loosen the dome nuts (2)
4. Adjust the holding disc (5) to the required position on the direction scale (3) either in CW or CCW side (MIN to MAX) as per the procedure:
- If the direction of drive rotation (1) is CW, then adjust the flow only in CW side from MIN to MAX
- If the direction of drive rotation (1) is CCW, then adjust the flow only in CCW side from MIN to MAX

5. Output setting : After completion of holding disc setting, the user can fix the grub screw (6) as shown in Figure 5 (near to MIN marking) to avoid any accidental change of position of holding disc on the direction scale.

6. After the flow adjustment setting, evenly tighten the dome nuts (2) by hand before applying the specific torque of 3+/-1 Nm

NOTICE

Direction of rotation

Improper selection of direction of rotation (CW/CCW) on the drive side (marked on the gear box) and on the direction scale (CW/CCW) on the pump ring could create air / oil suction from the outlet lines, resulting in the malfunctioning of the pump.

Always follow the correct steps as stated in this chapter.

The output of the OCL-M pump for oil (reference viscosity 36 mm^2/s) for 2 different gear ratios and 3 different piston diameter options are given in Figure 8 to Figure 12 of chapter "4.3 Selection of the pump".

$$\text{Piston stroke rate } Z = \frac{\text{Drive speed [n]}}{\text{Gear ratio [i]}}$$

The maximum operating pressure varies according to the operating viscosity of the lubricating medium. Restrictions apply to the permitted operating viscosity at piston stroke rates > 50 rpm:

NOTE

- The individual pump ring can be set to not less than 1/3 capacity
- Any setting between MIN to 0 could lead to no output condition
- The unused outlets can be plugged to an extent of 3 ports per pump ring
- A provision of internal relieving mechanism (refer Fig 2/13) is provided at each pump shaft to relieve the excessive pressure from the closed ports
- There is an intentional gap between holding disc and the adjacent pump rings. So, the holding disc may be slack with the pump rings when the dome nut is loosened

4 Technical data

Table 5

General Technical Data

Parameter	Value
Mounting position	Any
Weight of pump	~1 Kg (with 1 pump ring) ~1.3 Kg (with 2 pump rings) ~1.6 Kg (with 3 pump rings) ~1.9 Kg (with 4 pump rings) ~2.2 Kg (with 5 pump rings)
Type	Radial piston pump
Max. operating pressure	10 bar
Number of stackable pump rings	Max. 5
Outlet ports per pump ring	4
Displacement variability per pump ring	Continuously variable
Displacement per outlet (D7) for one revolution of the pump shaft	Approx. 0.02 cm^3 to Approx. 0.06 cm^3
Displacement per outlet (D6) for one revolution of the pump shaft	Approx. 0.015 cm^3 to Approx. 0.04 cm^3
Displacement per outlet (D4) for one revolution of the pump shaft	Approx. 0.007 cm^3 to Approx. 0.015 cm^3
Drive speed	30 to 1300 rpm
Lubricant	Mineral oils
Operating temperature range	0 °C to +70 °C
Permitted operating viscosity	32 to 2000 mm^2/s
Main line hose inside diameter	8 mm
Adjustable Output	Yes , all 4 outlets of a pump ring will deliver the same output
Lubricant Inlet Port	G 1/8 BSP (F)
Lubricant Outlet Port	G 1/8 BSP (F)
No of Possible Outlets	4 - 20
Gearbox	Worm and worm wheel
Ratio	1:6.75, 1:27

4.1 Tightening torques

Fig. 6

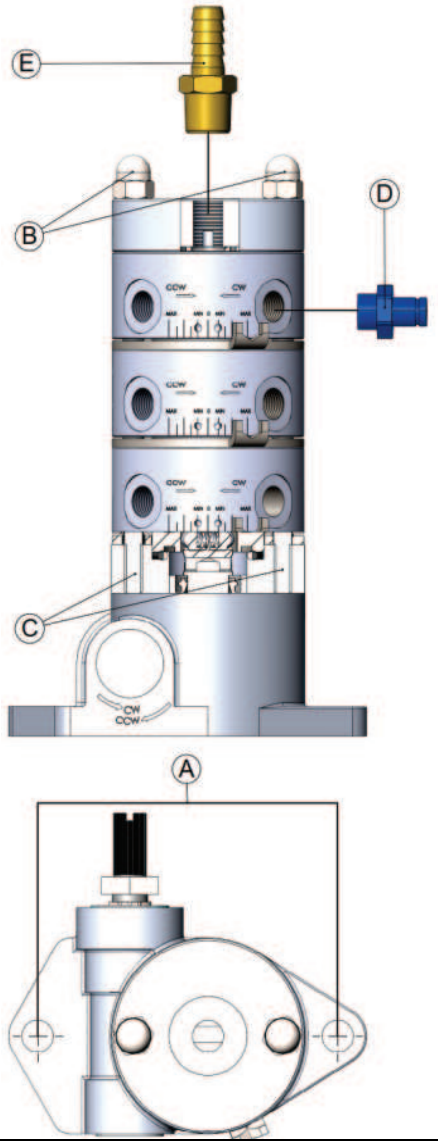
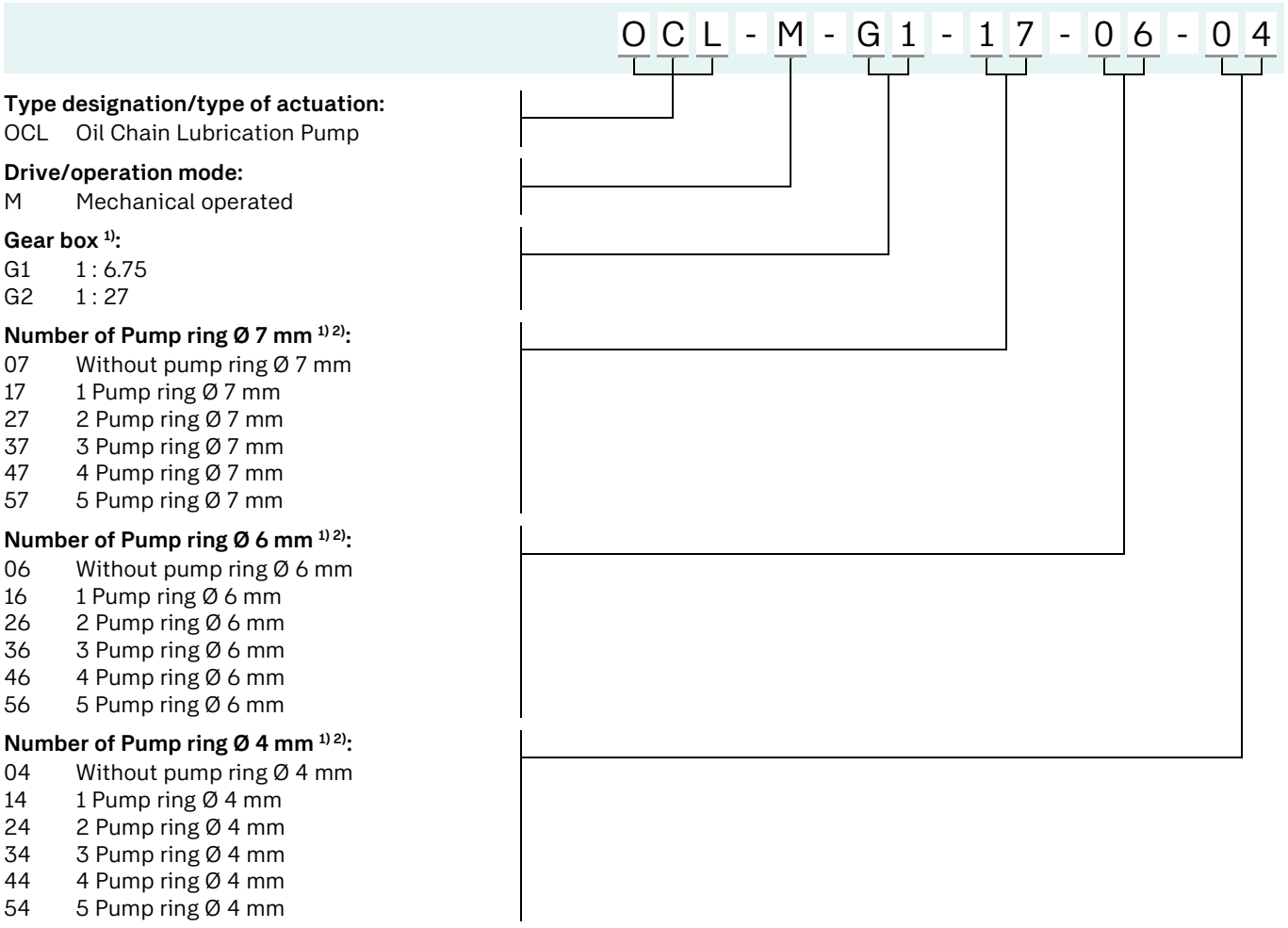


Table 6

Tightening torques

Reference	Part	Tightening torques	
A	Pump mounting holes	5 Nm ± 1.0 Nm	3.688 ft.lb ± 0.74 ft.lb
B	Dome nut	3 Nm ± 1.0 Nm	2.212 ft.lb ± 0.74 ft.lb
C	Screw rod	5 Nm ± 0.5 Nm	3.688 ft.lb ± 0.37 ft.lb
D	Push-in fittings	1 Nm ± 0.5 Nm	0.737 ft.lb ± 0.37 ft.lb
E	Barb fitting	2 Nm ± 1.0 Nm	1.475 ft.lb ± 0.74 ft.lb

4.2 Type identification code OCL-M



Type designation/type of actuation:
OCL Oil Chain Lubrication Pump

Drive/operation mode:
M Mechanical operated

Gear box [1]:
G1 1 : 6.75
G2 1 : 27

Number of Pump ring Ø 7 mm [1] [2]:
07 Without pump ring Ø 7 mm
17 1 Pump ring Ø 7 mm
27 2 Pump ring Ø 7 mm
37 3 Pump ring Ø 7 mm
47 4 Pump ring Ø 7 mm
57 5 Pump ring Ø 7 mm

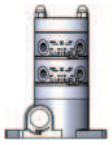
Number of Pump ring Ø 6 mm [1] [2]:
06 Without pump ring Ø 6 mm
16 1 Pump ring Ø 6 mm
26 2 Pump ring Ø 6 mm
36 3 Pump ring Ø 6 mm
46 4 Pump ring Ø 6 mm
56 5 Pump ring Ø 6 mm

Number of Pump ring Ø 4 mm [1] [2]:
04 Without pump ring Ø 4 mm
14 1 Pump ring Ø 4 mm
24 2 Pump ring Ø 4 mm
34 3 Pump ring Ø 4 mm
44 4 Pump ring Ø 4 mm
54 5 Pump ring Ø 4 mm

[1] For a pump, only one combination can be selected at a time.
[2] For a selected gear box type, total number of pump rings possible: Min 1 to Max 5.

Table 7

Examples of OCL-M pump configurations

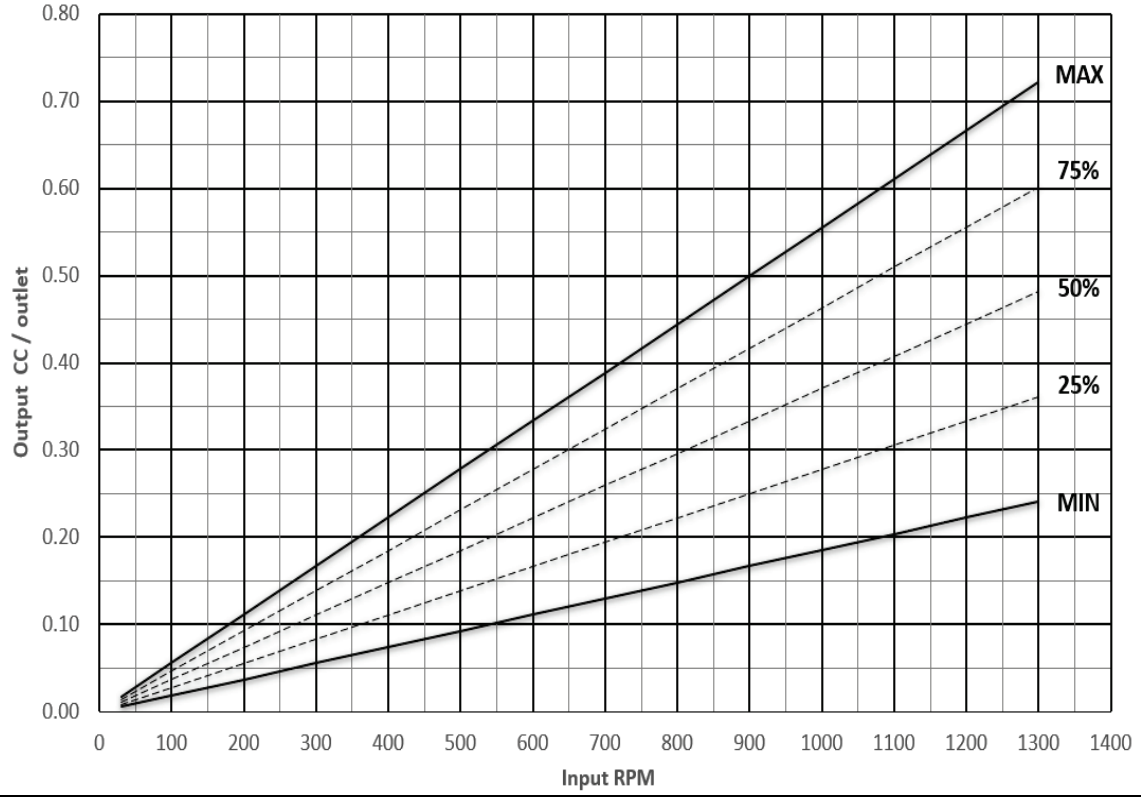
Type identification code	Description	No. of pump rings	Pump picture
OCL-M-G1-14	OCL-M pump with 1:6.75 gear box and 1 pump ring Ø 4 mm	1	
OCL-M-G1-17-16	OCL-M pump with 1:6.75 gear box and 1 pump ring Ø 7 mm and 1 pump ring Ø 6 mm	2	
OCL-M-G2-17-16-14	OCL-M pump with 1:27 gear box and 1 pump ring Ø 7 mm, 1 pump ring Ø 6 mm and 1 pump ring Ø 4 mm	3	
OCL-M-G2-17-16-24	OCL-M pump with 1:27 gear box and 1 pump ring Ø 7 mm, 1 pump ring Ø 6 mm and 2 pump rings Ø 4 mm	4	
OCL-M-G1-27-26-14	OCL-M pump with 1:6.75 gear box and 2 pump rings Ø 7 mm, 2 pump rings Ø 6 mm and 1 pump ring Ø 4 mm	5	

4.3 Selection of the pump

1. For the pump selection, user must check the equipment drive speed (RPM) of the equipment (preferably from the equipment user manual) and output range (Min to Max) required for the application

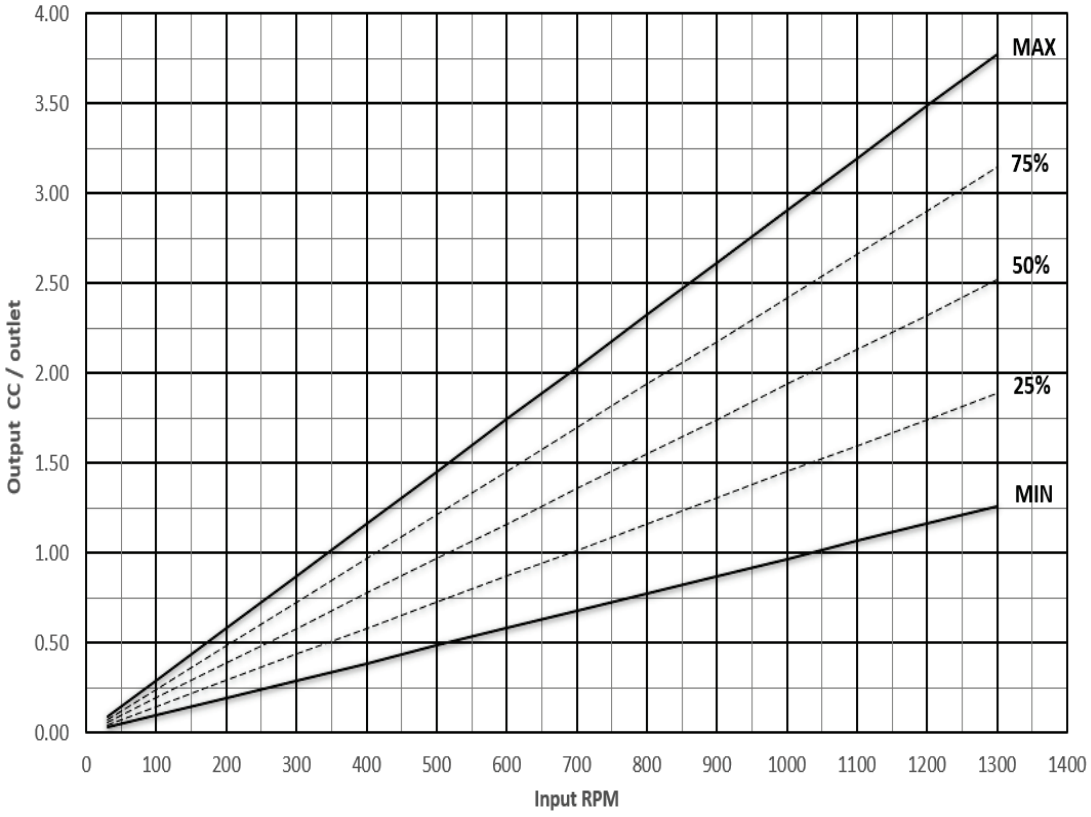
2. User must refer charts in figure 7 through figure 12 and then select the pump ring type and gear box type based on the application requirement

Fig. 7



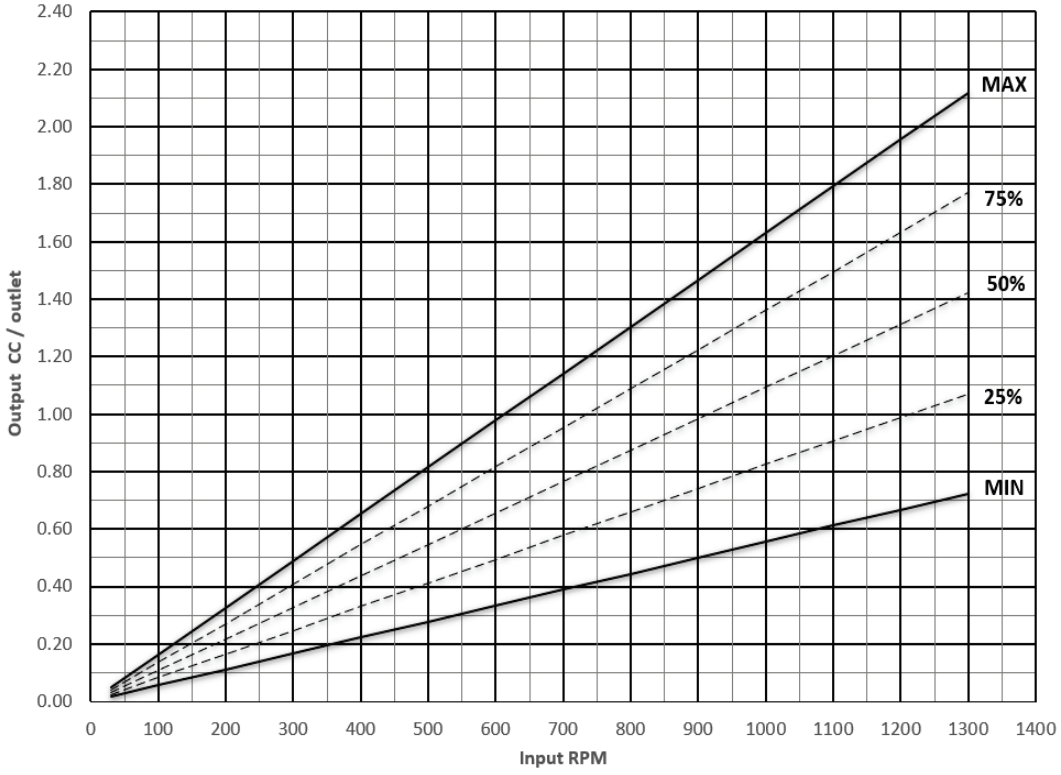
Flow rate chart for pump ring D4 with gear ratio 1:27

Fig. 8



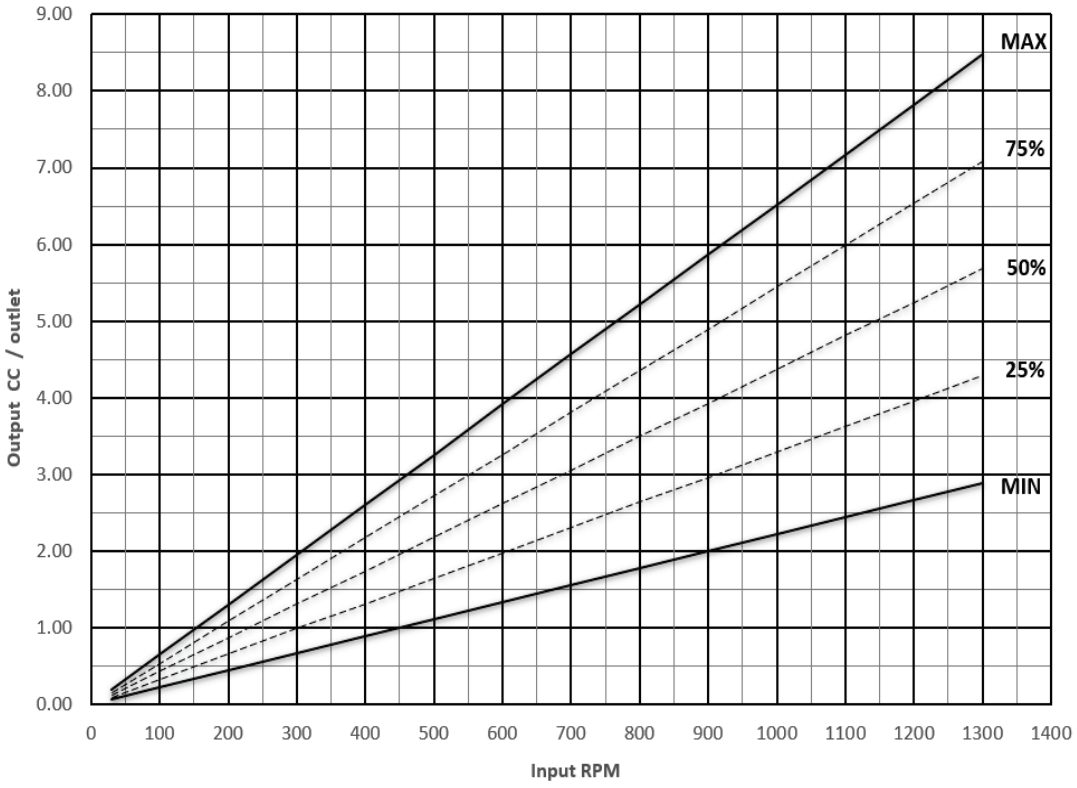
Flow rate chart for pump ring D4 with gear ratio 1:6.75

Fig. 9



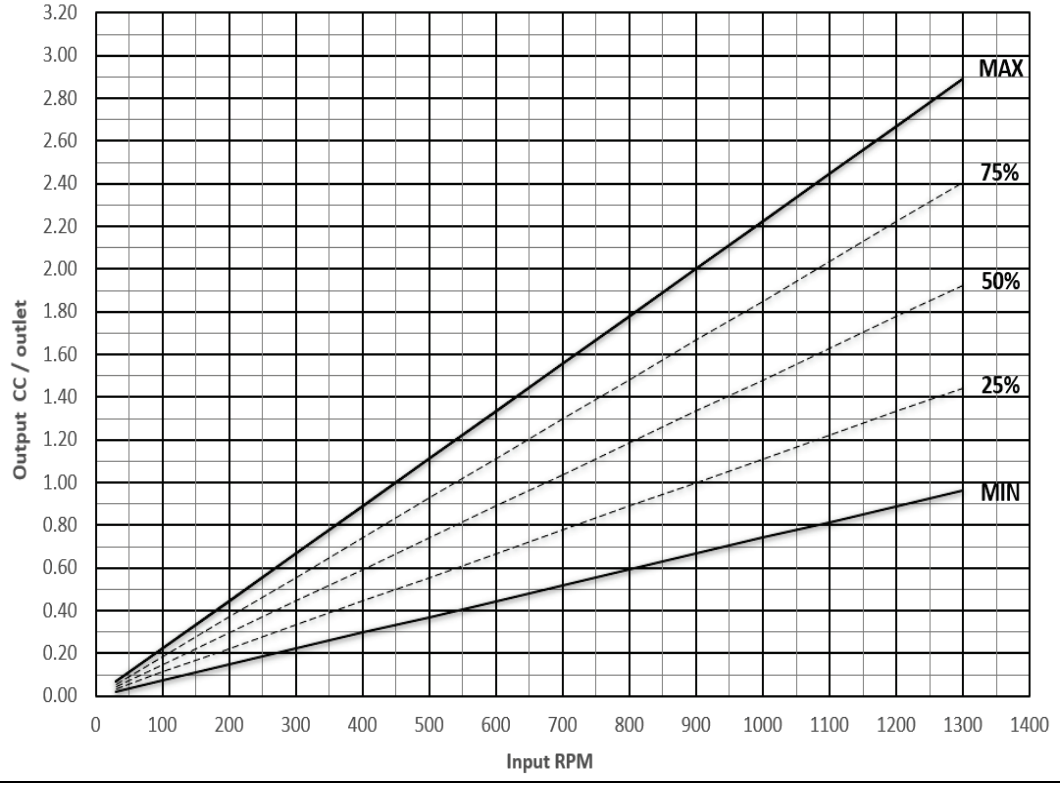
Flow rate chart for pump ring D6 with gear ratio 1:27

Fig. 10



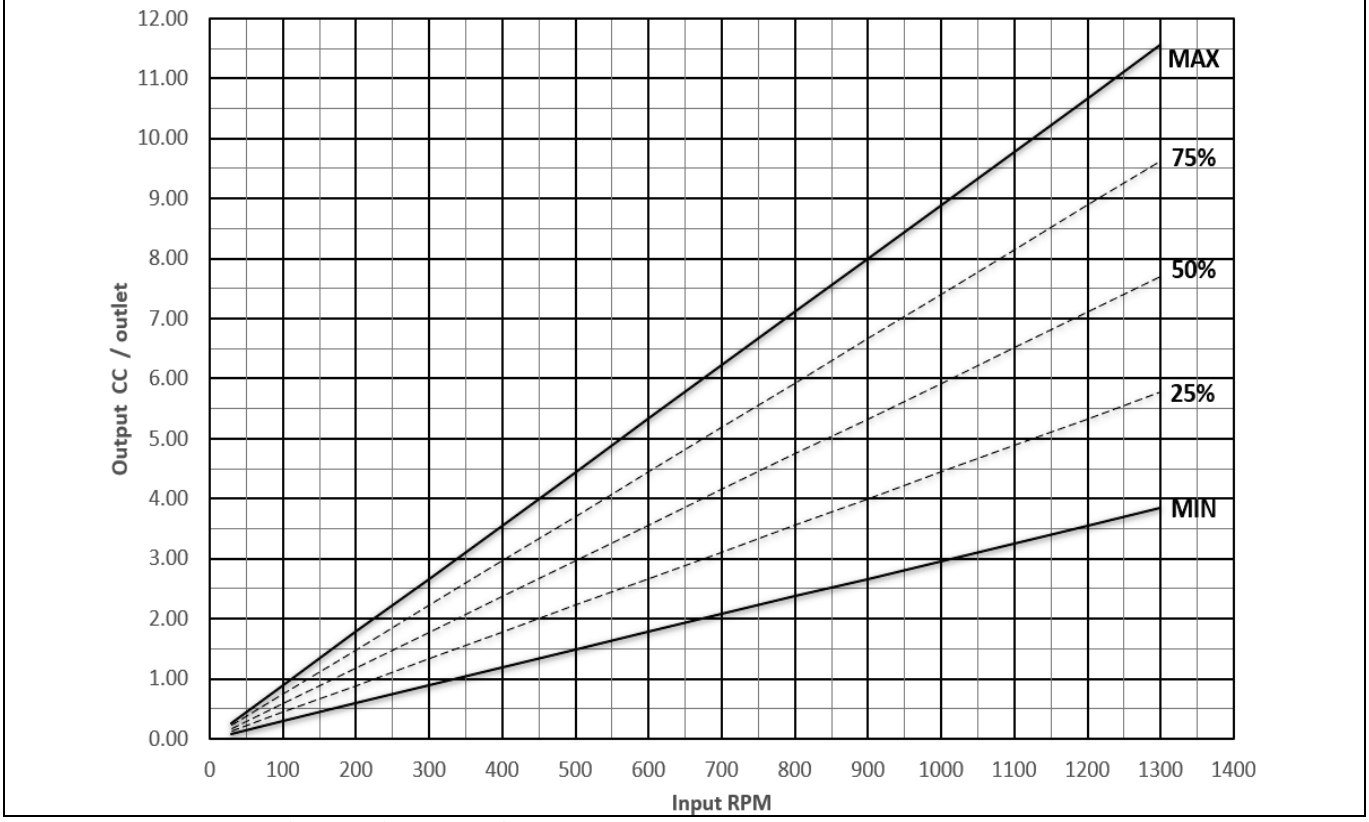
Flow rate chart for pump ring D6 with gear ratio 1:6.75

Fig. 11



Flow rate chart for pump ring D7 with gear ratio 1:27

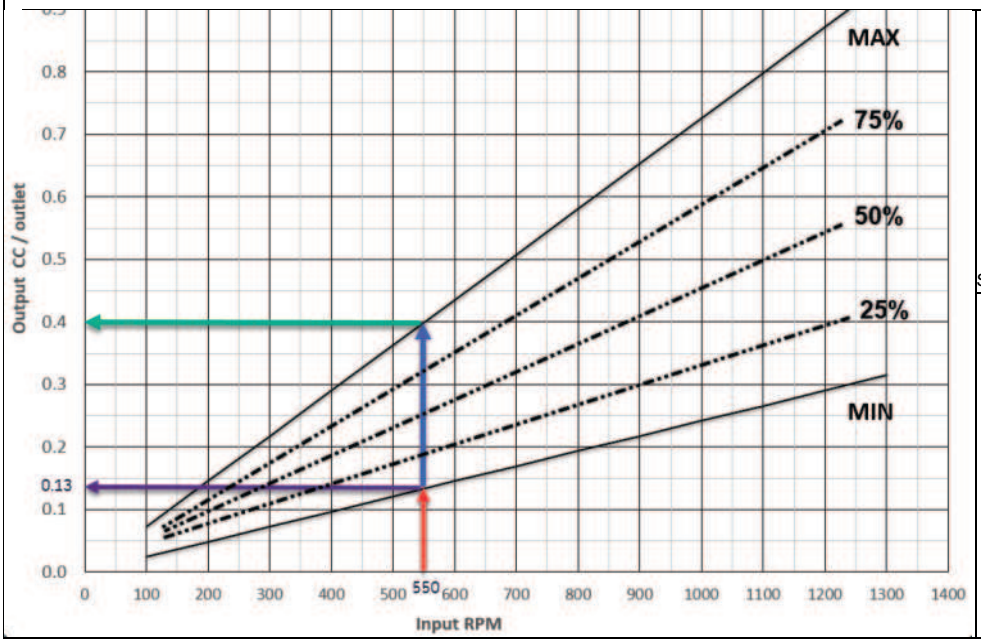
Fig. 12

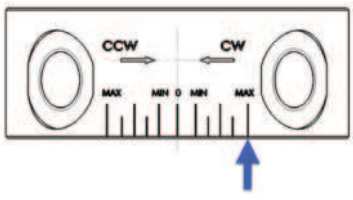


Flow rate chart for pump ring D7 with gear ratio 1:6.75

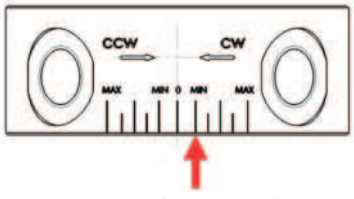
4.3.1 Example of selecting a pump ring and gear box types based on application

Fig. 13





Maximum setting



Minimum setting

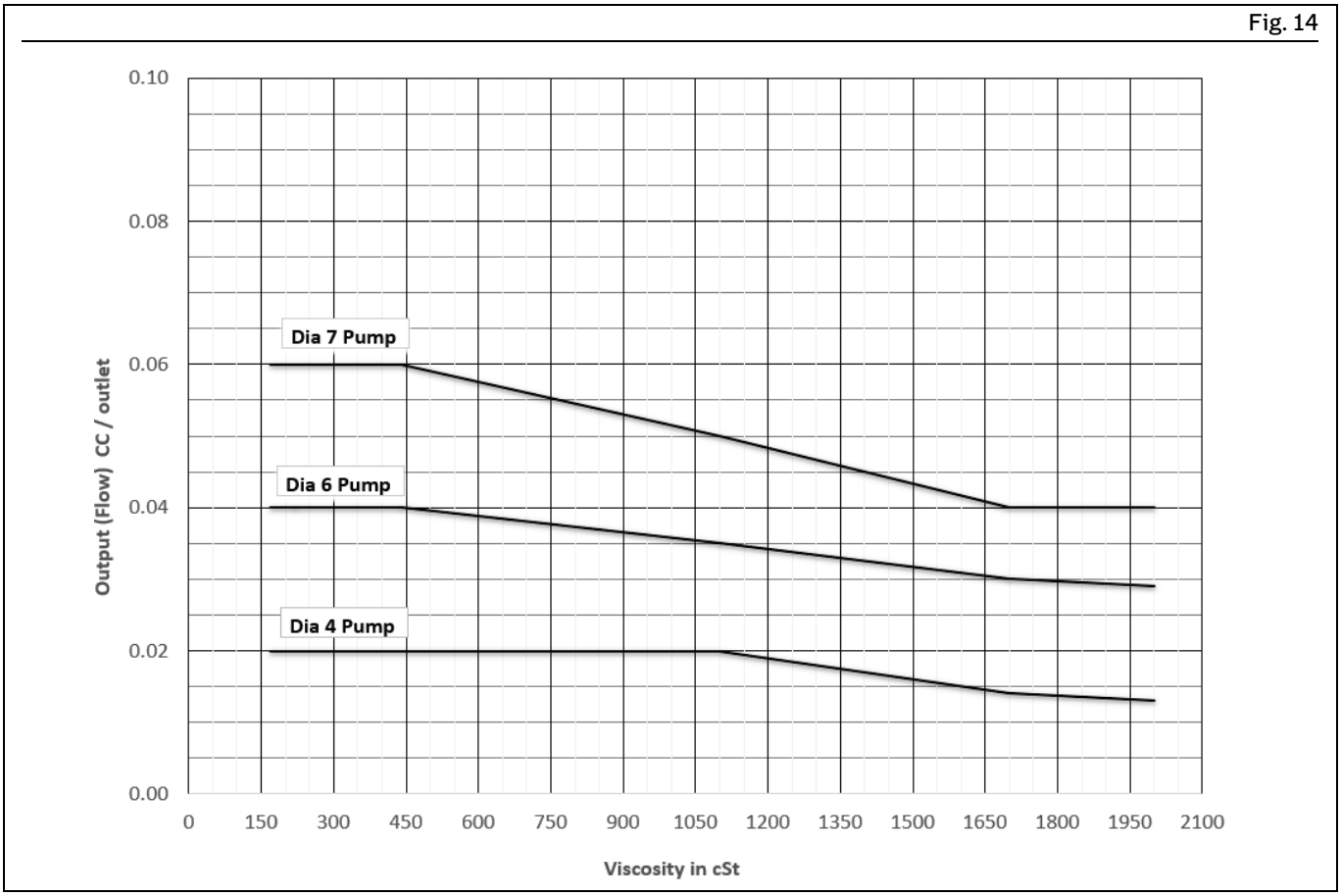
Example of pump selection

Refer figure 13
If the drive shaft speed (input RPM) is 550 RPM and if the minimum required output 0.15 cc/outlet and maximum required output 0.4 cc/outlet, then:

1. Locate the input RPM on the X Axis at 550 RPM
2. Move up to cut the minimum and maximum flow lines mentioned
3. Verify that the range of outputs (cc/outlet) required by the application is within the intersection points of the RPM line with the minimum and maximum lines on the selected graph
4. Then chose the pump combination
5. If the output range is not suitable, please refer to the other graphs and repeat the steps 1 to 4 to select a suitable pump ring and gearbox combination
6. Once the output range, gear box and pump ring type is selected, further output adjustments can be made by referring to chapter 3.6

4.4 Flow v/s Viscosity of oil

Fig. 14



Flow v/s Viscosity of oil

5 Delivery, returns, storage

5.1 Delivery

After receipt of the shipment, it must be inspected for any shipping damage and for completeness according to the shipping documents. Immediately inform the transport carrier of any shipping damage. The packaging material must be preserved until any discrepancies are resolved.

5.2 Return shipment

Before return shipment, all contaminated parts must be cleaned. If this is not possible or practical, e.g. if it would impede fault detection in the case of complaints, the medium used must always be specified. In the case of products contaminated with hazardous substances as defined by GHS or CLP regulations, the safety data sheet (SDS) must be sent with the product and the packaging must be labelled in accordance with GHS/CLP. There are no restrictions for land, air, or sea transport. The choice of packaging should be based on the specific product and the stresses to be expected during transport (e.g., necessary anti-corrosion measures in the case of shipment by sea). In the case of wooden packaging, the applicable import regulations and the IPPC standards must be observed. Required certificates must be included in the shipping documents. The following information, as a minimum, must be marked on the packaging of return shipments.

Fig. 15

Marking of return shipments

5.3 Storage

The following conditions apply to storage:

- Dry, low-dust, vibration-free, in closed rooms
- No corrosive, aggressive substances at the storage location (e.g., UV rays, ozone)
- Protected against animals (insects, rodents)
- If possible, keep in the original product packaging
- Protected from nearby sources of heat or cold
- In the case of large temperature fluctuations or high humidity, take appropriate measures (e.g., heating) to prevent the condensation of water
- Before usage, check products for damage that may have occurred during storage. This applies in particular to parts made of plastic (due to embrittlement).

5.4 Storage temperature range

For parts not filled with lubricant, the permitted storage temperature is the same as the permitted ambient temperature range (see “Technical data”).

6 Assembly

Ensure to perform below steps before doing the system installation.

6.1 Preparation for Installation

1. Ensure all components are received correctly as per the packing list provided.
2. Ensure all required tools are in place.

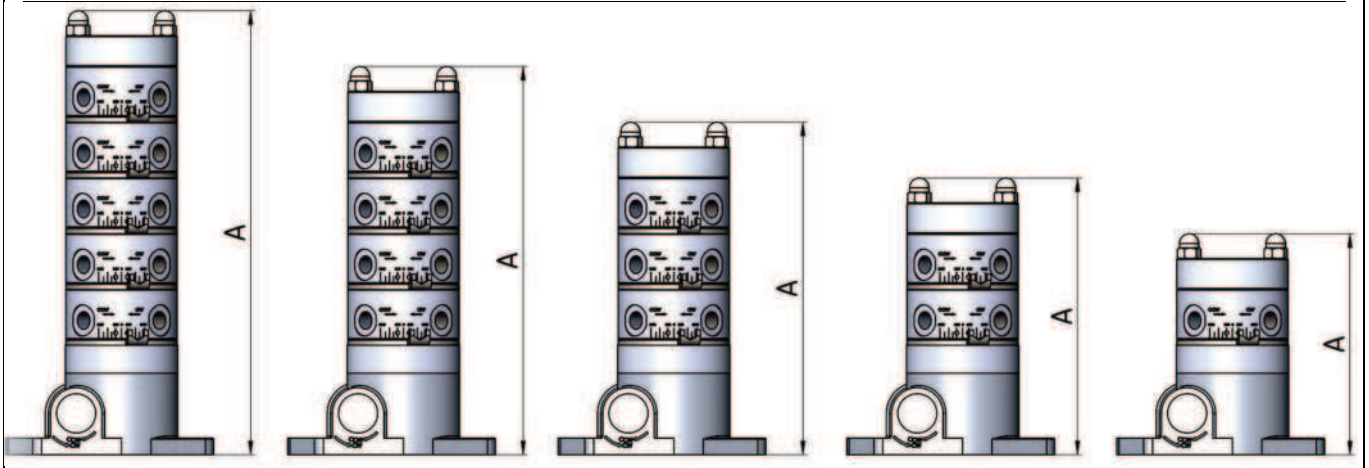
6.2 Plan for Installation

1. Identify the machine's drive shaft that will drive the OCL-M pump and plan the position of the pump closer and in-line with the equipment's drive shaft location
2. The location of the OCL-M pump shall preferably be at a lower elevation than the reservoir
3. Check the operating manual of the superior machine for the speed of the drive shaft. Make sure, the pump ring and gear box combination selected is in-line with the drive shaft speed to deliver the required output (refer chapter 4.3). Adjust the dosage of the pump as per the procedure mentioned in chapter "3.6Gear box direction marking and flow adjustment"
4. Choose the type of adapter (threaded / welded) to be used (optional) between drive shaft and connecting hose
5. If the threaded adapter type is selected, make sure that the drilling and tapping is not affecting the strength of the drive shaft. Consult the original equipment manufacturer, in case of any doubt.
6. Select the position of the reservoir on the machine and ensure there is enough room for installation
7. Identify the position for the brushes
8. Check the thickness of the mounting plate on the machine, where the system will be installed and identify the location for the mounting holes
9. Prepare a schematic layout of the system. Ensure that the lubrication lines do not interfere with moving parts of the superior machine.

6.3 Pump installation dimensions

Ensure sufficient space for maintenance work or for attachment of further components to the pump to build a centralized lubrication system by leaving a free space of at least 100 mm on each direction in addition to the stated dimensions.

Fig. 16

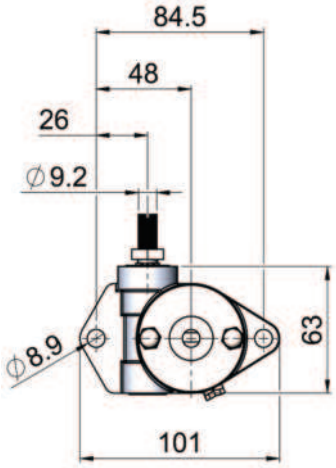


5 Pump rings | 4 Pump rings | 3 Pump rings | 2 Pump rings | 1 Pump ring

Installation dimensions (front view)

* Refer to Table 8 for more details

Fig. 17



Installation dimensions (top view)

Table 8

Installation dimensions

Gear ratio G1	Gear ratio G2	Number of pump rings *	Dimension (A)	Number of outlets
1:6.75	1:27	1	107 mm	4
1:6.75	1:27	2	134 mm	8
1:6.75	1:27	3	161 mm	12
1:6.75	1:27	4	188 mm	16
1:6.75	1:27	5	215 mm	20

* Dimensions in table 8 are same for D4, D6 and D7 pump rings

6.4 Installation and mounting of OCL-M pump

NOTICE

Risk of damage to the superior machine and to the pump

Avoid drilling the mounting holes on the load carrying member of the superior machine.
Fastening must not be done on two parts moving against one another

1. Hold the pump mounting bracket (Fig. 18/1) at the identified position on the machine and mark the drilling location (M8 screws)
2. Drill and tap holes on the machine, where the pump mounting bracket is to be fitted
3. Hold and fix the pump mounting bracket (Fig. 18/1) with 4 x M8 screws (Fig. 18/2)
4. Check the metering setting of the pump and change if necessary according to chapter “3.6Gear box direction marking and flow adjustment”
5. Assemble the push-in fittings (Fig. 18/3) at the pump outlets
6. Plug the unused outlet ports with suitable closure plugs
7. Align the pump on the slots provided on the pump mounting bracket (Fig. 18/1). Insert 1 x M8 screw, nut and washer (Fig. 18/2) on any one of the mounting holes on the pump. Rotate the pump by 90 Degrees (in order to provide access to the screw driver for priming the pump mentioned in chapter 6.12 and hand tighten the screw. Do not fasten the pump completely at this point.

⚠ CAUTION

High pressure pump outlets
Risk of injury due to pump outlet pressure

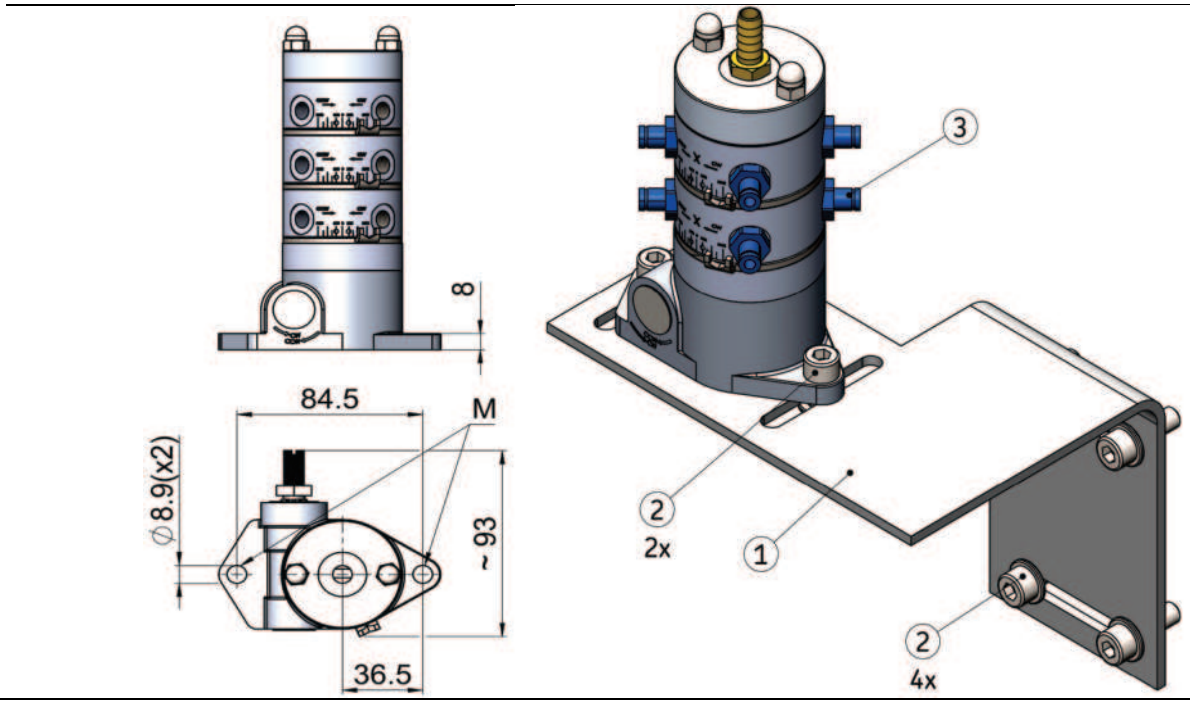
- Pressure at the closed outlet can reach up to 80 bar. Do not open the closure plugs when the pump is in operation.
- Always follow safety precautions and depressurize the system before approaching near the closed outlets of the pump

Pump mounting is carried out at the mounting holes M (Fig. 18/M)

NOTE

- It is possible to mount the pump in any direction, but it is recommended to mount the pump in upright position, wherever possible

Fig. 18



Pump mounting holes (M)

6.5 Equipment drive shaft end connection

1. Make sure the equipment drive shaft end diameter (Fig. 19/2) is between 9 mm to 10 mm to be able to properly couple it to the pump drive shaft using the standard hydraulic hose (Fig. 19/3). If not, select a suitable adapter (thread / weld type) (Fig. 19/4), as per the spare parts set table 19. [1)]

2. Perform drill and tap or welding on the equipment drive shaft (Fig. 19/2) based on the type of adapter (Fig. 19/4) selected in step 1 [1)]

3. Connect one end of the adapter to the equipment drive shaft (Fig. 19/2). [1)]

4. Measure the axial distance “X” and cut the hose length (Fig. 19/3) (within +/-1 mm tolerance) to connect to the pump drive shaft (Fig. 19/1)

5. Insert the two clamps (Fig. 19/5) on either side of the hose by ensuring sufficient space for ease of tightening and avoid any interference with the adjacent parts.

6. Assemble one end of the hose to the free end of the equipment drive shaft (Fig. 19/2) and fasten using the hose clamp (Fig. 19/5)

7. Connection of the other end of hose to the pump drive shaft to be carried out after priming of the pump as explained in chapter 6.12)

[1] If no adapter is required/selected, skip the steps 1, 2 and 3

NOTE

Tightening torque for hose clamp screws = 2 Nm ± 0.5 Nm (1.475 ft.lb ± 0.37 ft.lb
Tightening torque for threaded adapter = 3 Nm ± 1.0 Nm (2.212 ft.lb ± 0.74 ft.lb)

⚠ CAUTION

Risk of hand crushing

Hand injury or crushing may occur due to the rotating drive shaft assembly

Rotation of pump drive is permitted only when the equipment cover is closed. Don't reach into the rotating drive shaft assembly area during operation

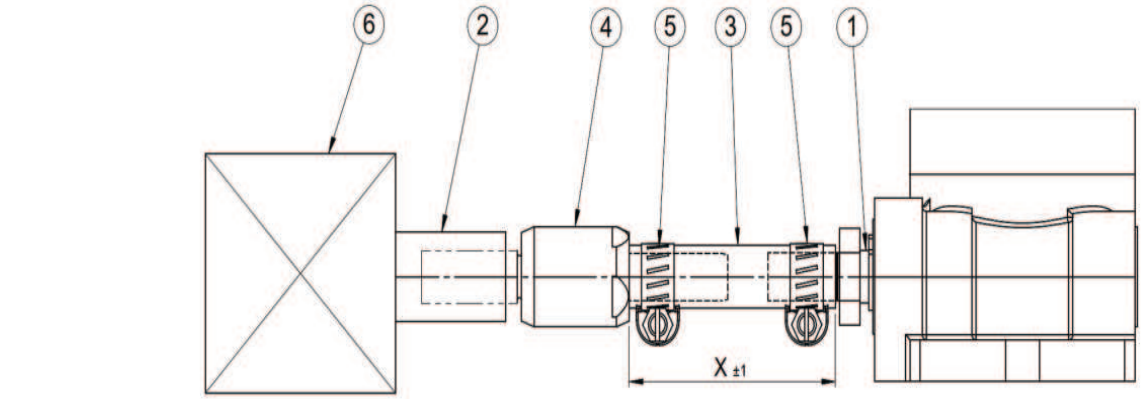
⚠ CAUTION

Risk of objects hitting

Injuries from drive shaft components hitting the body due to improper assembly

Stay away from the driving shaft area during operation or commissioning. Ensure equipment drive is detached from pump drive during commissioning and trouble shooting

Fig. 19



Connecting pump drive shaft with equipment's drive shaft, by threaded/welded adapter and hose

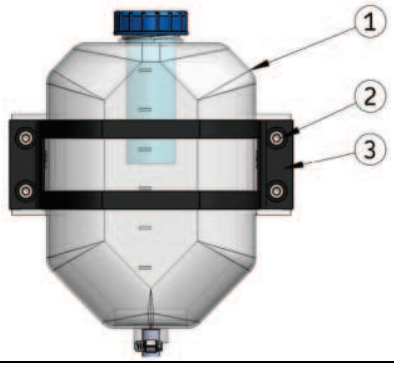
6.6 Installation of reservoir

NOTE

- When the reservoir is mounted below the pump level, the main-line running length of the hose (Fig. 21/4) shall not exceed 1.5 meter
- When the reservoir is mounted above the pump level, the maximum recommended main-line running length of the hose shall not exceed 3 meter

1. Hold the reservoir (Fig.20/1) with clamp (Fig.20/3) at the identified position on the machine and mark the drilling locations (M8 screws)
2. Drill holes and tap
3. Fix the reservoir (Fig.20/1) with clamp (Fig.20/3) using 4 x M8 bolts (Fig.20/2) with a tightening torque: 5 Nm ± 1.0 Nm (3.688 ft.lb ± 0.74 ft.lb)

Fig. 20

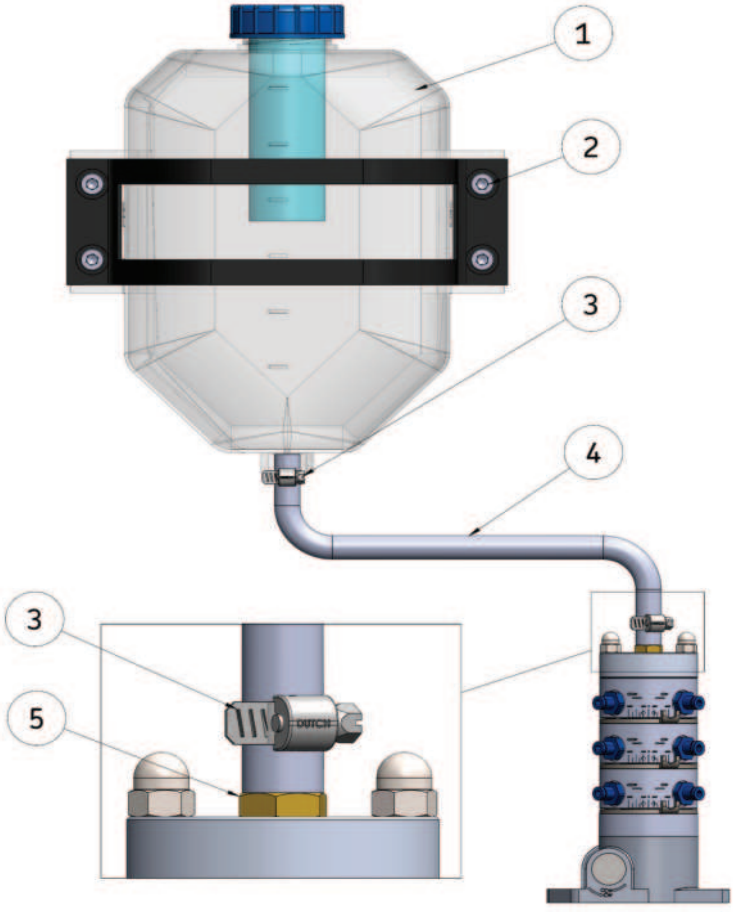


Reservoir mounting on the machine

6.7 Connection of main lubrication lines (reservoir with pump)

1. Plan the routing of the lubrication inlet line between reservoir and OCL-M pump and suitably cut the hose to the required length
2. Assemble the barb fitting (Fig. 21/5) into the pump inlet
3. Insert the hose clamps (Fig. 21/3) on both hose ends (i. e. at reservoir outlet and pump inlet)
4. Connect one end of the main line hose (Fig. 21/4) with the reservoir outlet (Fig. 21/3) and another end to the pump inlet fitting (Fig. 21/5)
5. Tighten the hose clamps (Fig. 21/3) at both ends (Tightening torque 2 Nm ± 0.5 Nm)

Fig. 21



Installation of the reservoir and pump connection (main line)

6.8 Installation of Brushes

NOTE

- When using brushes or felt strips ensure even distribution of the lubricant volume on the entire width of the chain.
- Assemble the brush or felt strip on the brush mounting bracket to ensure positive engagement of brushes to the chain or lube point.

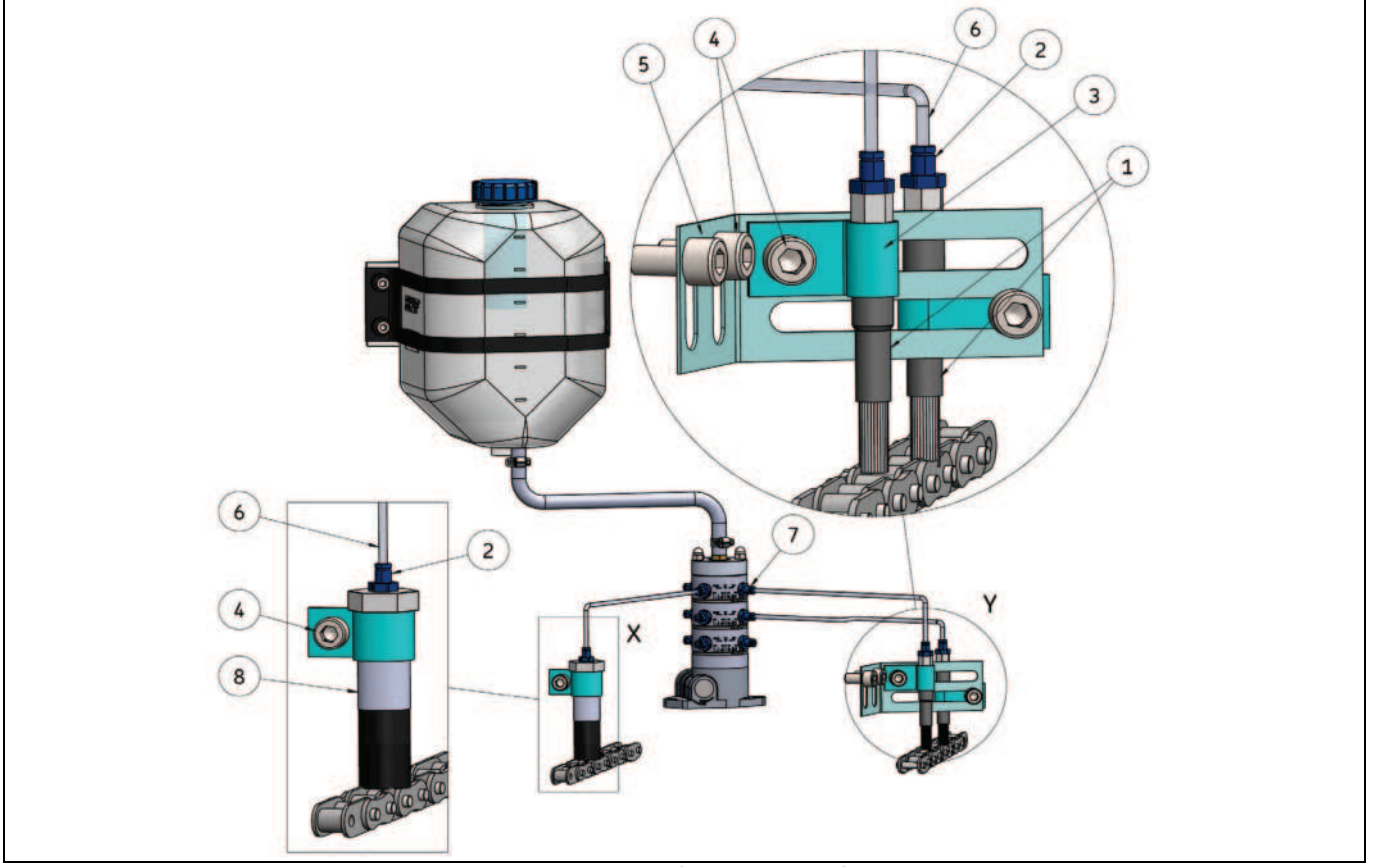
1. Mark the position of mounting holes. Drill & tap M10 holes on the equipment where the brush mounting bracket (Fig. 22/5) needs to be fixed
2. Fix the brush mounting bracket (Fig. 22/5) to the equipment by M10 screws (Fig. 22/4) provided in the kit
3. Screw the push-in fitting (Fig. 22/2) into the brush (Fig. 22/1)
4. Insert the brush assembly (Fig. 22/1) into the clamp (Fig. 22/3)
5. Align the brush assembly with chain's top face joints to ensure positive engagement and tighten the screws (Fig. 22/4) between the clamp (Fig. 22/3) and brush mounting bracket (Fig. 22/5) to secure the brush in its position
6. If two brushes per chain are used, repeat the steps 3, 4, and 5 for the second brush assembly

X: Single brush assembly D25 type (Fig. 22/8) mounted on a chain
Y: Two brush assemblies D9 type (Fig. 22/1) mounted on a chain

6.9 Connection of the feeder lines (pump outlet to brush)

1. Lay the lubrication lines (Fig. 22/6) according to layout plan
2. Insert the outlet tubes (Fig. 22/6) into the push-in fittings (Fig. 22/2) at the pump outlets (Fig. 22/7)
3. Connect the tube from pump outlet to the push-in fittings on the brush assembly (Fig. 22/2)
4. Use protection helix on lubrication lines, if necessary
5. Bundle the lubrication lines properly with cable ties, if necessary

Fig. 22



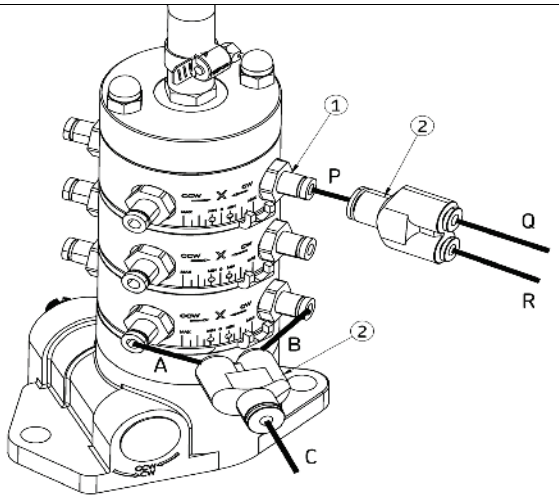
Installation of brush assembly and connection to feeder lines (pump to brush)

6.10 Pump outlet ports configurations

1. Pump outlet ports can be combined to get the desired output by using a Y-connector (Fig. 23/2).
2. Figure 23 shows the following options of combining outlets using a Y-connector:
- Pump outlet P (Fig. 23/1) can be split into two outputs Q and R, can be connected to two brush inlets (feeder lines)
- Pump outlets A and B (Fig. 23/1) of the same pump ring are joined to get a combined output C, which can be connected to brush (feeder line)

3. Close the unused ports using the closure plugs provided (max. up to 3 ports per pump ring)

Fig. 23



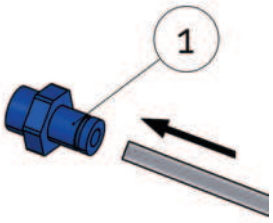
Combining pump outlets by Y connectors

6.11 Installation of the lubrication lines using push-in fittings

Connection of the tube:
1. Push the tube in the direction of the arrow into the hole of push-in fitting (Fig. 24/1) until it stops. These push-in fittings are used in the pump outlet and brush inlet locations.

Disconnection of the tube:
1. Hold the push-in fitting (Fig. 24/1) and pull out the tube

Fig. 24



Lubrication line connection by push-in fittings

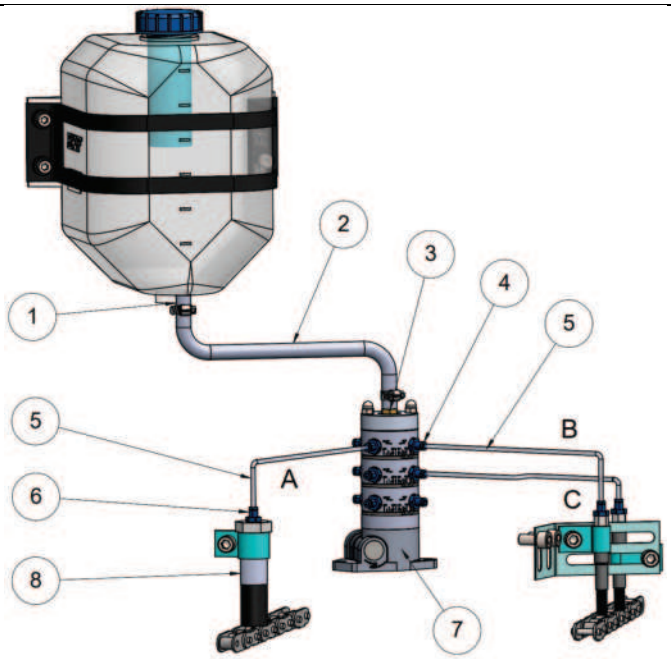
NOTE
For any further help, please contact our customer support or service team.

6.12 Initial priming and pre-start procedure

1. Pump is delivered without pre-filling of lubricants
2. Fill the reservoir with appropriate chain oil (recommended by SKF) up to the MAX level marking on the reservoir
3. Drive the pump manually with a battery screwdriver until the oil is sucked from the reservoir, fills the pump and reaches the brush inlets through the feeder lines
4. Ensure the main line (reservoir to pump) and feeder lines (pump outlet to brush inlet) are filled before coupling to the equipment's drive
5. Ensure there are no leakages at joints during this stage

Legend of Figure 25:
1 Reservoir outlet
2 Main lubrication line
3 Pump inlet connection / Barb fitting
4 Pump outlet – Push-in fitting
5 Feeder lines
6 Brush inlet – Push-in fitting
7 OCL-M pump
8 Brush assembly
A: Feeder line for chain with one D25 brush assembly
B and C: Feeder lines for a chain with two D9 brush assemblies

Fig. 25



Overall chain lubrication system with OCL-M

6.13 Pump drive end connection

1. Loosen the hose clamp(Fig. 20/3) at the pump inlet.
2. Rotate the pump back to its original position. Align back the mounting holes in the slots on the pump mounting bracket and tighten the 2x M 8 screws (Fig. 17/2), nuts and washers by applying the required torque. (Refer chapter 4.1)
3. Connect the other end of hose (Fig. 18/3) to the pump drive shaft (Fig. 18/1) and fasten using hose clamp (Fig. 18/5). Refer chapter 6.5
4. Tighten the hose clamp (Fig. 20/3) again at the pump inlet

NOTE
- Tightening torque for M8 screws = 5 Nm ± 1.0 Nm

6.14 General Instructions: Lubrication line connection

⚠ CAUTION

Lubricants leaking from lubrication lines
Risk of slipping and injury

- Leaking lubricant is hazardous due to the risk of slipping and injury.
- During assembly, operation, maintenance and repair of centralized lubrication systems watch out for leaking lubricant. Leaks must be sealed immediately.
- Leaking lubricant may result in harm to persons or damage to material assets.
- Exercise caution when handling with lubricants. Immediately remove any leaked lubricants.

⚠ CAUTION

High Pressure Lubrication lines
Hose rupture due to excess pressure and injury

- User must check whether suitable measures are to be taken to reduce the risk of over pressure in the hoses. Read the instructions before attending pressure lines.
- Recommended to install a pressure relief valve or install a protective cover (customer scope)
- Usage of all relevant personal protective equipment is recommended during maintenance, trouble shooting

NOTICE

Damage to the higher-level machine caused by faulty planning of the centralized lubrication system
All parts for the construction of the centralized lubrication system must be designed for the maximum operating pressure that occurs, the permissible ambient temperature range, the required delivery volume and the lubricant to be delivered.

Observe the following mounting instructions for safe and trouble-free operation:

- Generally valid regulations and company regulations regarding the laying of pressurized pipe and hose lines must be observed.
- Use only clean, pre-filled components and lubrication piping.
- Secure every lubricant line at the pump against excessive pressure by using a suitable pressure relief valve (only in the case of pumps without an internal pressure relief valve).
- The main lubricant line should be arranged ascending and allow for bleeding at the highest point. Lubrication lines should always be arranged in such a way that the air inclusions are avoided from anywhere.
- Install lubricant metering devices at the end of the main lubricant line such that the outlets of the lubricant metering devices point upwards wherever possible.
- If the system configuration requires that the lubricant metering devices be arranged below the main lubricant line, they should not be placed at the end of the main lubricant line.
- The flow of lubricant should not be impeded by the mounting of sharp bends, angle valves, flap valves, seals protruding inward, or changes in cross-section (large to small). Unavoidable changes in the cross-section in lubrication lines must have smooth transitions.
- Connect the lubricant lines in such a way that no mechanical forces are transferred to the product (stress-free connection).
- Lubrication piping is to be positioned in such a way that they cannot become kinked, pinched or frayed.

7 First start-up

In order to warrant safety and proper functioning of the system, a person assigned by the operator must carry out the following inspections before start-up. Immediately eliminate detected deficiencies, if found. Deficiencies may be remedied by an authorized and qualified specialist only.

7.1 Inspections prior to initial start-up

Table 9

Inspections prior to initial start-up

Activity to be done	YES	NO
All mechanical components assembled and tightened properly as per the toques given	☐	☐
Pump and reservoir have been mounted correctly	☐	☐
There are no visible leakages at the connections, joints and on the tubes	☐	☐
Pump configuration corresponds to the intended use	☐	☐
The supply line has been laid correctly	☐	☐
The reservoir has been filled with suitable lubricant within the recommended levels (MIN/MAX)	☐	☐
No visible damage, contamination and corrosion	☐	☐
Ensure proper mounting of protective equipment	☐	☐
Flexible connecting shaft (hose) is properly secured and protected	☐	☐

7.2 Inspections during initial start-up

Table 10

Inspections during initial start-up

Activity to be done	YES	NO
No unusual noises, vibrations, accumulation of moisture, or odours present	☐	☐
No unwanted escape of lubricant (leakages) from connections	☐	☐
Lubricant is supplied free from bubbles	☐	☐
Bearings and friction points are provided with the planned amount of lubricant	☐	☐

8 Operation

SKF products operate automatically to the greatest possible extent.
During operation the following notes should be observed to ensure a trouble-free operation of the centralized lubrication system:

- Checks of the lubricant transport in the lubrication lines
- Checks of the lubrication status of the lubrication points
- Visual checks of the lubricant filling level in the lubricant reservoir
- If the lubricant level is too low, refill the suitable lubricant as described in chapter 8.1

NOTICE

Possible damage to the pump and air trap in the lubrication system
In case of pumps, regularly check the filling level and refill lubricant on time to avoid the air bubble trap inside the lubrication system

8.1 Filling the reservoir with lubricant

Always fill a clean and bubble free lubricant into the reservoir as per the below procedure:
1. Unscrew the reservoir cap (Fig. 26/1)
2. Fill the clean oil through the strainer insert (Fig. 26/2) up to MAX filling level mark
3. Tighten and close the reservoir cap (Fig. 26/1)

NOTICE

System failure due to contaminated lubricant or use of unsuitable filling device
- Use a suitable filling device (strainer) to fill in clean lubricant. Contaminated lubricants may result in serious system failures.
- Ensure bubble-free filling of the lubricant reservoir
- Do not remove the strainer provided while refilling.
- Always keep the reservoir cap closed to avoid contamination

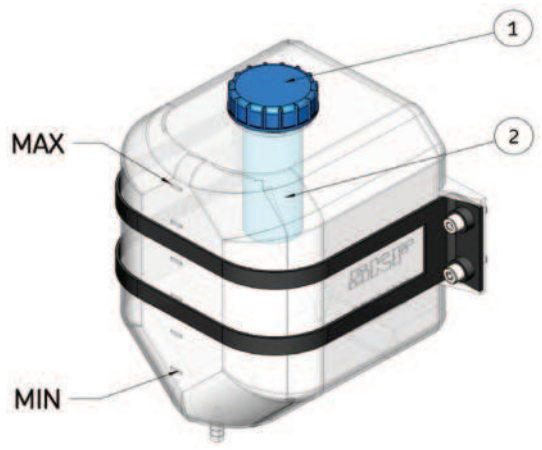
NOTICE

Damages when using different lubricants
- Different lubricants must not be mixed.
- Doing so may cause damage and require costly and complicated cleaning of the pump unit or 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.

NOTICE

Fill bubble free lubricant
Always fill the reservoir with clean and bubble free (air free) lubricant up to the MAX marking only. Over filling above the MAX marking, may cause oil leakage from the reservoir, in case of a strong terrain incline exceeding 20°.

Fig. 26



Reservoir filling - MAX/MIN levels

8.2 Drain the reservoir

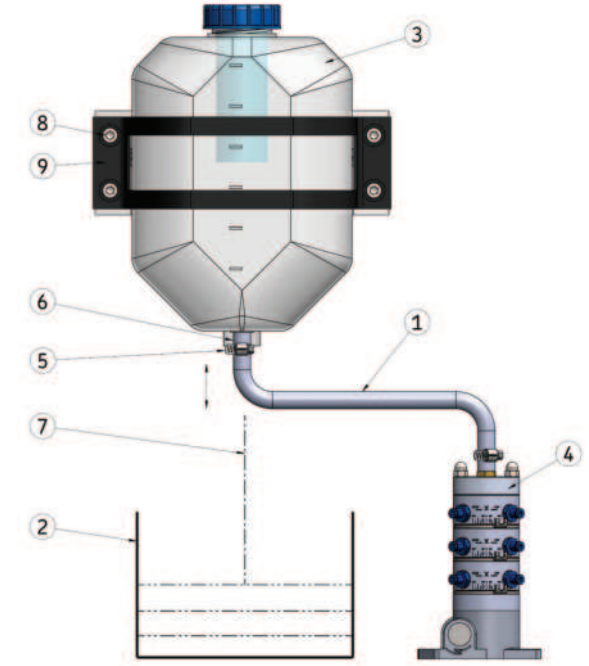
Follow the below procedure to drain out used or contaminated oil from the reservoir:
1. Keep a collecting bin (Fig. 27/2) to collect the used or contaminated oil from the reservoir (Fig. 27/3)
2. Disconnect the main line hose (Fig. 27/1) between reservoir and pump (Fig. 27/4) by loosening the hose clamp (Fig. 27/5) and drain oil into the collecting bin
3. Properly dispose the drained oil as per the local standard disposal procedures
4. Connect the hose back to the reservoir before the next fill

NOTICE

Lubricants leaking from leaky lubrication lines may pollute ground and waters.

- Lubrication lines must be absolutely leakproof
- Lubricants may pollute ground and waters
- Lubricants must be handled and disposed of properly
- Follow the regional laws and prescriptions regarding disposal of the lubricants

Fig. 27



Drain the reservoir

9 Maintenance

9.1 Maintenance

Regular and appropriate maintenance is a prerequisite to detect and clear faults in time. The specific timelines have to be determined, verified at regular intervals and adapted by the operator based on the operating conditions. If needed, use the below table for regular maintenance activities.

Table 11

Checklist Maintenance

Activity to be done	YES	NO
All mechanical connections carried out correctly and tightened properly as per the given torques	☐	☐
Oil strainer mounted inside the reservoir filling port	☐	☐
All lubrication lines checked for damages and leakages	☐	☐
Check whether there are contaminations on the drive shaft, e. g. dust, straw and wound up parts	☐	☐
No visible damage and corrosion on the metallic parts	☐	☐
Any dismantled protection and monitoring equipment has been reassembled and checked for correct function	☐	☐
No unusual noises, vibrations, accumulation of moisture or odours present	☐	☐
Check if there are any visible contamination in the reservoir	☐	☐
Lubricant is supplied free from bubbles	☐	☐
Chains, bearings and friction points to be lubricated are provided with the planned amount of lubricant	☐	☐
Product protected with adequate protective guard	☐	☐
The performance data correspond to the specifications stated in the Chapter 4 Technical data	☐	☐

10 Cleaning

10.1 Basics

Cleaning should be carried out in accordance with the operator's own company rules, and cleaning agents and devices and the personal protective equipment to be used should likewise be selected in accordance with those rules. Only cleaning agents compatible with the materials may be used for cleaning. Completely remove any cleaning agent residue left on the product and rinse with clear water. Unauthorized persons must be kept away. Use signage to indicate wet areas.

10.2 Interior cleaning

The interior normally does not need to be cleaned. The interior of the product must be cleaned if incorrect or contaminated lubricant accidentally enters the product. Please contact our Service department.

10.3 Exterior cleaning

Do not allow any cleaning fluid to enter the interior of the product during cleaning.

⚠ WARNING

Risk of injury and objects hitting

Cleaning work may only be performed on the products only after disengaging the connection from the equipment drive shaft to prevent any accidental physical injuries

⚠ WARNING

Serious injury from contact with or inhalation of hazardous substances

Wear personal protective equipment. Observe the safety data sheet (SDS) of the hazardous substance. Avoid contaminating other objects or the environment during cleaning.

11 Faults, causes, and remedies

Table.12

Fault Table

Fault	Possible cause	Remedy
No oil flowing to the lubrication point / poor lubrication	• Oil reservoir empty	• Fill the reservoir, vent and prime the pump
	• Fitting or line towards the brush or the felt strip leaking	• Check fittings and lines. Replace the damaged components, if necessary.
	• Brush or felt strip clogged or worn	• Replace defective or clogged brush or felt strip
	• Defective pump ring	• Check and replace pump ring, if necessary
	• Dirt in releif valve	• Contact SKF customer support
Excessive lubrication	• Wrong metering volume	• Check output volume (see chapters 4Technical data and 4.3Selection of the pump) • If necessary, adjust the volume by referring to chapter 3.6Gear box direction marking and flow adjustment
Pump does not supply lubricant, no pressurization	• Not enough lubricant in the reservoir	• Check Reservoir level and refill lubricant
	• Wrong lubricant	• Remove the wrong lubricant from the entire centralized lubrication system and refill fresh lubricant. The replaced lubricant must be disposed of properly as per the local guidelines.
	• Air bubble trapped in the system	• Vent the system until the bubble free lubricant flows from outlets
	• Defective inside parts	• Please contact our customer service and disassemble pump considering the safety instructions and replace defective parts
Power transmission from equipment to pump is interrupted	• Pump Shaft coupled with equipment drive not running, because of loosening or wear out of clamps and connecting joints	• Tighten the hose clamps and/or adapter threads, if necessary • Disassemble the pump drive shaft from the machine • Check for any worn out hose and clamps. Replace, if necessary. • Contact our Customer service team for any support
Excessive line pressure	• Blockage of outlet lines/brushes	• Any pressure build up beyond 15 bar will cause damage to the push-in fittings resulting in leakage. Replace the failed push-in fittings after clearing the line blockage considering safety instructions

NOTE

If the faults cannot be determined and remedied, please contact our Customer Service

12 Repairs

⚠ WARNING

Risk of injury
At a minimum, the following safety measures must be taken before any repairs:

- Unauthorized persons must be kept away
- Mark and secure the work area
- Use personal protective equipment as necessary

- Depressurize the product
- Isolate the product, and lock and tag it out

- Cover any adjacent live or moving parts

13 Shutdown, disposal

13.1 Temporary shutdown

Temporary shutdowns should be done by a course of action to be defined by the operator.

13.2 Permanent shutdown, disassembly

Permanent shutdown and disassembly of the product must be planned properly by the operator and conducted in compliance with all applicable laws and regulations.

13.3 Disposal

The waste producer/operator must dispose of the various types of waste in accordance with the applicable laws and regulations of the country in question.

14 Spare parts

Spare parts may be used exclusively for replacement of identical defective parts. Modifications with spare parts on existing products are not allowed.

14.1 Spare parts for OCL-M kit

Table 13

OCL-M pump mounting bracket set

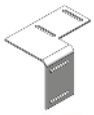
Spare part no.	Description	Quantity		Image
6770-02502-3	OCL-M pump mounting bracket set	1	Pcs	
		2	Pcs	

Table 14

OCL-M reservoir set

Spare part no.	Description	Quantity		Image
6770-02503-3	OCL-M reservoir set	1	Pcs	
		1.5	meters	
		2	Pcs	
		1	Pcs	

Table 15

Oil hose set

Spare part no.	Description	Quantity		Image
6770-02504-3	Oil hose set	4	Pcs	
		4	Pcs	
		12	meters	

Table 16

Brush assembly D9 set

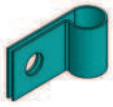
Spare part no.	Description	Quantity		Image
6770-02505-3	Brush assembly D9 set	4	Pcs	
		4	Pcs	
		4	Pcs	
		4	Pcs	
		4	Pcs	

Table 17

Brush assembly D25 set

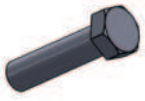
Spare part no.	Description	Quantity		Image
6770-02506-3	Brush assembly D25 set	4	Pcs	
		4	Pcs	
		4	Pcs	
		4	Pcs	

Table 18

Brush D9 mounting plate set

Spare part no.	Description	Quantity		Image
6770-02507-3	Brush D9 mounting plate set	4	Pcs	
		8	Pcs	

Table 19

OCL-M pump drive shaft connecting set

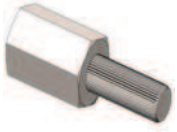
Spare part no.	Description	Quantity		Image
6770-02501-3	OCL-M pump drive shaft connecting set	1	Pcs	
		2	Pcs	
		1	Pcs	
		1	Pcs	

Table 20

Flexible tube helix 3/8” black

Spare part no.	Description	Quantity		Image
6770-02509-4	Flexible tube helix 3/8” black (25 meters)	1	Pcs	

Table 21

Flexible tube conduit 3/8” polyamide

Spare part no.	Description	Quantity		Image
6770-02508-4	Flexible tube conduit 3/8" polyamide (12 meters)	1	Pcs	

Table 22

GI metallic flexible conduit 3/8”

Spare part no.	Description	Quantity		Image
6770-02510-4	GI metallic flexible conduit 3/8" (12 meters)	1	Pcs	

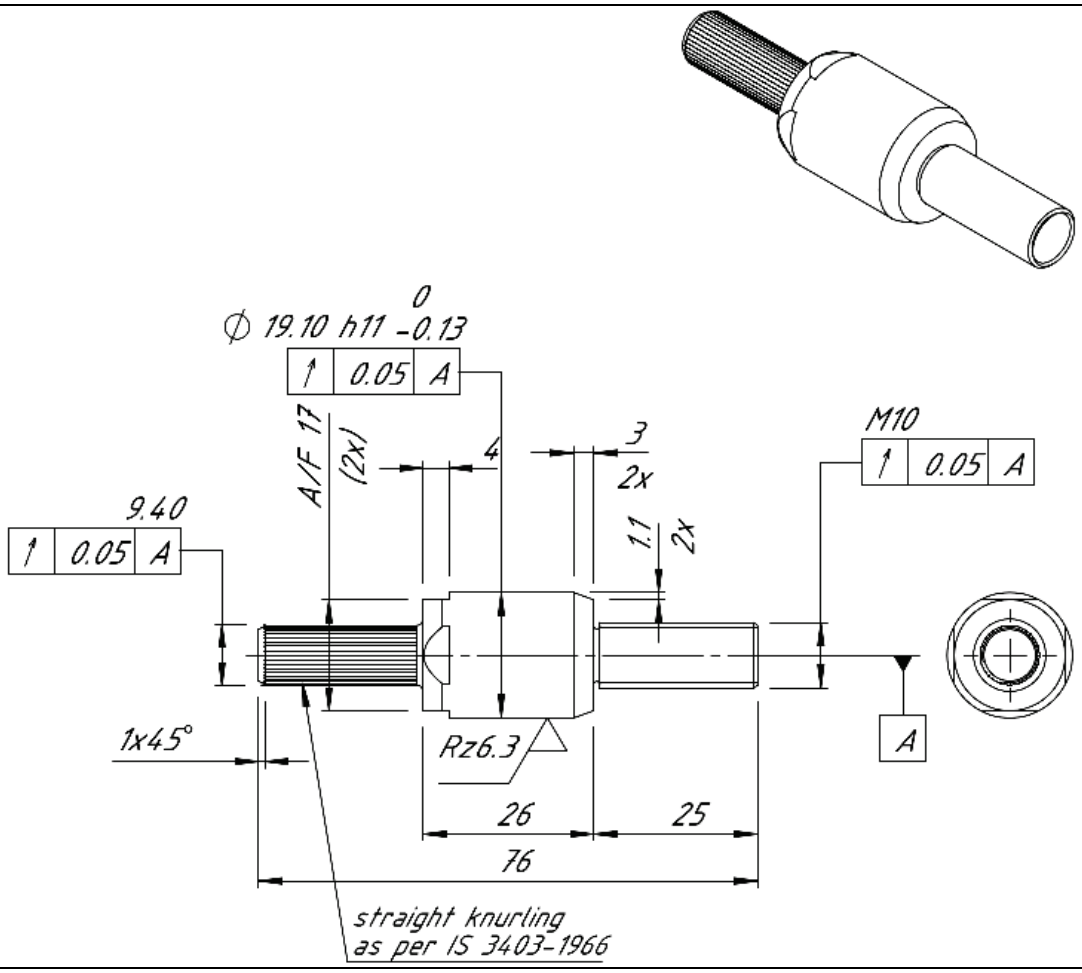
Table 23

Y-Connector set

Spare part no.	Description	Quantity	Image
6770-02513-4	Y-Connector set	4 Pcs	

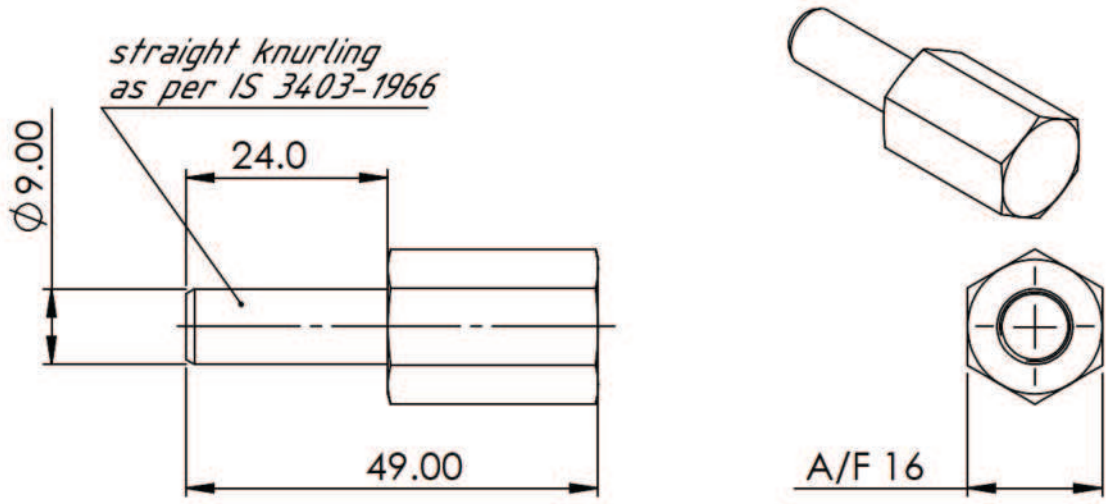
14.2 Details of Adapters -threaded and welded

Fig. 28



Adapter Threaded

Fig. 29



Adapter Welded

skf.com/lubrication

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