

# MULTILUBE PUMPING UNIT MLPI



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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

The manufacturer 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 the manufacturer

Designation: Electrically driven pump to supply lubricant during intermittent operation within a centralized lubrication system  
Type MLPI-A-B-115-C-D-E  
MLPI-A-B-230-C-D-E

Furthermore, the following directives and standards were applied in the respective applicable areas:

2011/65/EU: ROHS II including the addition (EU) 2015/863

2014/35/EU: Low Voltage Directive

2014/30/EU: Electromagnetic Compatibility (Industry)

EN ISO 12100:2010	IEC 61010-1:2010	EN 61000-6-2:2005/AC:2005	EN 61000-6-4:2007/A1:2011
EN IEC 63000:2018			

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.

Muurame, 15.6.2021  
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Electronic

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

The manufacturer 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.

Designation: Electrically driven pump to supply lubricant during intermittent operation within a centralized lubrication system  
Type MLPI-A-B-115-C-D-E  
MLPI-A-B-230-C-D-E

Furthermore, the following regulations and standards were applied in the respective applicable areas:

- Ordinance on the restriction of use of certain hazardous substances in Electrical and Electronic Equipment 2012 No. 3032
- Electrical Equipment Regulations 2016 No. 1101

EN ISO 12100:2010	IEC 61010-1:2010	EN 61000-6-2:2005/AC:2005	EN 61000-6-4:2007/A1:2011
EN IEC 63000:2018			

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 UK legislation Supply of Machinery (Safety) Regulations 2008 No. 1597 and all other applicable Directives.

Muurame, 18.6.2021  
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Description of the essential health and safety requirements according to 2006/42/EC, Annex I, which have been applied and complied with. Any basic health and safety requirements not listed here are not relevant to this product.

**Appendix to Declaration of Incorporation in accordance with 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 fulfilled. Any essential health and safety requirements not listed here are not relevant to this product.

Table 1

Appendix to Declaration of Incorporation  
Valid for: MLPI lubrication pumps

No.:	Essential health and safety requirement	Applicable:	Fulfilled:
1.1.1	Definitions	Yes	Yes
1.1.2	Principles of safety integration	Yes	Yes
1.1.3	Materials and products	Yes	Partially <sup>1)</sup>
1.1.5	Design of machinery to facilitate its handling	Yes	Yes
1.1.6	Ergonomics	Yes	Partially <sup>2)</sup>
1.2	Control systems	Yes	Yes
1.2.1	Safety and reliability of control systems	Yes	Yes
1.2.3	Starting	Yes	Yes
1.2.6	Failure of the power supply	Yes	Yes
1.3	Protection against mechanical hazards	Yes	Yes
1.3.1	Risk of loss of stability	Yes	Yes
1.3.2	Risk of break-up during operation	Yes	Yes
1.3.4	Risks due to surfaces, edges or angles	Yes	Yes
1.3.7	Risks related to moving parts	Yes	Yes
1.3.9	Risks of uncontrolled movements	Yes	Yes
1.5	Risks due to other hazards	Yes	Yes
1.5.1	Electricity supply	Yes	Yes
1.5.15	Risk of slipping, tripping, or falling	Yes	Yes
1.6	Maintenance		
1.6.1	Machinery maintenance	Yes	Yes
1.6.2	Access to operating positions and servicing points	Yes	Partially <sup>3)</sup>
1.6.4	Operator interventions	Yes	Yes
1.7	Information	Yes	Yes
1.7.1	Information and warnings on the machinery	Yes	Yes
1.7.1.1	Information and information devices	Yes	Yes
1.7.2	Warning of residual risks	Yes	Yes
1.7.3	Marking of machinery	Yes	Yes
1.7.4	Instructions	Yes	Yes

- 1) Not completely fulfilled: Hazards due to the lubricant used must be assessed by the operator on the basis of the Safety Data Sheet (SDS) and, if necessary, protective measures must be taken.
- 2) Not completely fulfilled: The operator must ensure that the pump is integrated into the higher-level machine in such a way that the pump can be operated and filled ergonomically.
- 3) Not completely fulfilled: The operator must ensure that the pump is integrated into the higher-level machine in such a way that the pump can be operated without danger.

# Masthead

## **Manufacturer**

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[www.skf.com/lubrication](http://www.skf.com/lubrication)

## **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 .....	7
1. Safety instructions .....	8
1.1 General safety instructions .....	8
1.2 General electrical safety instructions .....	8
1.3 General behaviour when handling the product .....	8
1.4 Intended use .....	8
1.5 Persons authorized to use the product .....	9
1.6 Foreseeable misuse .....	9
1.7 Referenced documents .....	9
1.8 Prohibition of certain activities .....	9
1.9 Painting plastic components and seals .....	9
1.10 Safety markings on the product .....	9
1.11 Notes on the type plate .....	10
1.12 Note on Low Voltage Directive .....	10
1.13 Note on Pressure Equipment Directive .....	10
1.14 Notes related to the UKCA marking .....	10
1.15 Notes on EAC mark .....	10
1.16 Note on China RoHS mark .....	10
1.17 Emergency shutdown .....	11
1.18 Assembly, maintenance, fault, repair .....	11
1.19 First start-up, daily start-up .....	11
1.20 Residual risks .....	12
2. Lubricants .....	13
2.1 General information .....	13
2.2 Material compatibility .....	13
2.3 Temperature properties .....	13
2.4 Aging of lubricants .....	13
2.5 Avoidance of faults and hazards .....	13
2.6 Solid lubricants .....	13
3. Overview, design & operation .....	14
4. User interfaces IF-103 and IF103-CH2 .....	15
4.1 Systems .....	15
4.2 Main components .....	16
4.2.1 Indicators IF-103 .....	16
4.2.2 Indicators IF-103-CH2 .....	17
4.2.3 Buttons, single- and dual-line systems .....	17
4.2.4 Buttons, progressive system .....	18
4.2.5 Display .....	18
4.3 Operation .....	19
4.3.1 Display power saving mode .....	19
4.3.2 Interval counting .....	19
4.3.3 Pressurization .....	19
4.3.4 Extra lubrication .....	19
4.3.5 Phase codes for normal mode and alarm mode .....	20
4.3.6 Normal mode displays .....	21
4.3.7 Pressure and pulse displays for lines .....	21
4.3.8 Displaying the number of pulses .....	22
4.3.9 Power failure .....	22
4.3.10 Alarms .....	22
4.4 Settings .....	23
4.4.1 Entering the password .....	23
4.4.2 Entering settings .....	23
4.4.3 Lubrication cycle counter .....	24
4.4.4 Setting the lubrication cycle C .....	24
4.4.5 Setting pressurisation time P .....	24
4.4.6 Setting the low limit pressure PLo .....	24
4.4.7 Setting the high limit pressure PHi .....	25
4.4.8 Pulse PP1 .....	25
4.5 Technical specifications & codes .....	25
5. Technical data .....	26

5.1 MLPI technical specifications .....	26
5.2 Hydraulic connection diagrams .....	27
5.3 Connections .....	27
5.4 Type identification code .....	28
5.5 Dimensions .....	29
5.6 Installation.....	29
5.7 Connection of the lubrication line .....	30
5.8 Electrical connections .....	31
6. Delivery, returns, storage .....	32
6.1 Delivery .....	32
6.2 Return shipment.....	32
6.3 Storage .....	32
6.4 Storage temperature range .....	32
6.5 Storage conditions for products filled with lubricant .....	33
6.5.1 Storage period up to 6 months.....	33
6.5.2 Storage period between 6 and 18 months .....	33
6.5.3 Storage period more than 18 months.....	33
7. First start-up.....	34
7.1 Inspections prior to initial start-up .....	34
7.2 Inspections during initial start-up.....	34
7.3 Operation .....	34
7.4 Filling the lubricant reservoir of the pumping unit.....	35
8. Maintenance and repair .....	36
8.1 Maintenance .....	36
9. Cleaning .....	37
9.1 Basics .....	37
9.2 Interior cleaning .....	37
9.3 Exterior cleaning .....	37
9.4 Cleaning the filter of the filling connection.....	38
10. Faults, causes, and remedies .....	38
11. Repairs.....	39
11.1 Emptying the reservoir through the pumping block plug by pumping.....	40
11.2 Emptying the reservoir through the pumping block plug with pressurized air .....	41
11.3 Emptying the reservoir through the filling connection.....	41
11.4 Changing of pump element.....	42
11.5 Changing of line valve.....	43
12. Shutdown, disposal .....	45
12.1 Temporary shutdown .....	45
12.2 Permanent shutdown, disassembly .....	45
12.3 Disposal .....	45
13. Spare parts and repair kit.....	46
14. Multilube repair kit, item number 11390140 .....	47
15. Appendix .....	48
15.1 Connection diagrams colors.....	48
15.2 MLPI-XX-P-230-IF103 (12389911 & 12389913).....	48
15.3 MLPI-XX-2-230-IF103-EPT (12389922 & 12389923) .....	49
15.4 MLPI-XX-X-230-IF103-PSE (12389914 & 12389918).....	50
15.5 China RoHS Table.....	51

# 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 sub steps. 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 electrical safety instructions

- Electrical devices must be kept in proper condition. This must be ensured by periodic inspections in accordance with the relevant applicable standards and technical rules. The type, frequency, and scope of the inspections must be determined in accordance with the risk assessment to be carried out by the operator. Work on electrical components may be performed only by qualified electricians. Connect the electrical power only in accordance with the valid terminal diagram and in observance of the relevant regulations and the local electrical supply conditions.
- Work on electrical components may be performed only in a voltage-free state and using tools suitable for electrical work. Do not touch cables or electrical components with wet or moist hands.
- Fuses must not be bridged. Always replace defective fuses with fuses of the same type.
- Ensure proper connection of the protective conductor for products with protection class I. Observe the specified enclosure rating.
- The operator must implement appropriate measures to protect vulnerable electrical devices from the effects of lightning during use. The electrical device is not furnished with a grounding system for the dissipation of the respective electric charge and does not have the voltage strength necessary to withstand the effects of lightning.

## 1.3 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.

## 1.4 Intended use

Supply of lubricants.

The product is intended solely for installation in another machine.

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.



## 1.5 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 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.

### **Specialist in electrics**

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

## 1.6 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.

## 1.7 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.

## 1.8 Prohibition of certain activities

- Replacement of or modifications to the pistons of the pump elements
- Repairs or modifications to the drive

## 1.9 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.

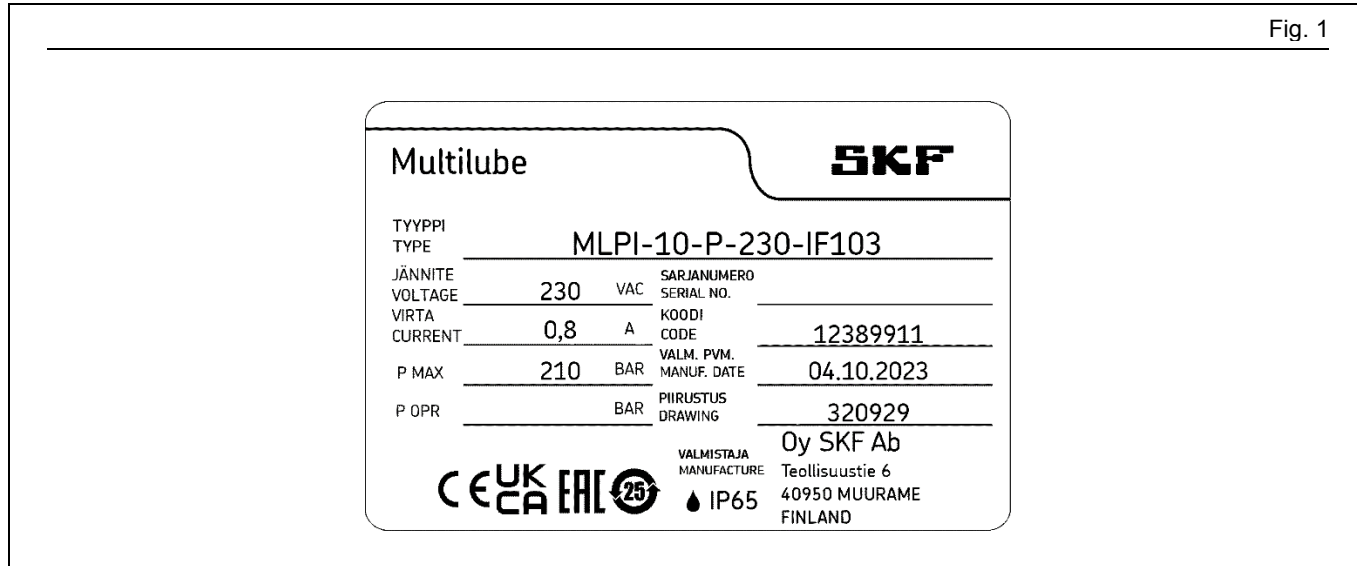
## 1.10 Safety markings on the product

### **NOTE**

Further to the findings of the workplace risk evaluation the operating company has to attach additional markings (e. g. warnings, signs giving orders, prohibition signs or labelling as specified by CLP / GHS), where appropriate.

## 1.11 Notes 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.



Type identification plate

## 1.12 Note on Low Voltage Directive

The protection objectives of the Low Voltage Directive 2014/35/EU are met in accordance with Annex I, No. 1.5.1 of the Machinery Directive 2006/42/EC.

## 1.13 Note on Pressure Equipment Directive

Due to its performance characteristics, the product does not reach the limit values defined in Article 4, Paragraph 1, Subparagraph (a) (ii) and is excluded from the scope of Pressure Equipment Directive 2014/68/EU in accordance with Article 1, Paragraph 2 Subparagraph (f).

## 1.14 Notes related to the UKCA marking



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

## 1.15 Notes on EAC mark



The EAC conformity marking confirms the product's conformity with the applicable legal provisions of the Eurasian customs union.

## 1.16 Note on China RoHS mark



The China RoHS marking confirms that there is no danger to persons or the environment from the regulated substances contained within the intended period of use (number in the circle) of the product.

## 1.17 Emergency shutdown

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

## 1.18 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.

## 1.19 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

## 1.20 Residual risks

<b>Residual risks</b>									
Residual risk	Possible in life cycle						Prevention/ remedy		
Personal injury/ material damage due to falling of raised parts	A	B	C		G	H	K	Keep unauthorized persons away. No people may remain under suspended loads. Lift parts with adequate lifting devices.	
Personal injury/ material damage due to tilting or falling of the product because of non-observance of the stated tightening torques		B	C		G			Observe the specified tightening torques. Fix the product to components with adequate load-bearing capacities only. If no tightening torques are stated, apply tightening torques according to the screw size characteristics for 8.8 screws.	
Personal injury/ damage to material due to spilled or leaked lubricant		B	C	D	F	G	H	K	Be careful when connecting or disconnecting lubricant feed lines. Always use suitable hydraulic screw connections and lubrication lines for the stated pressures. Do not mount lubrication lines to moving parts or friction points. If this cannot be avoided, use spring coils respectively protective conduits.
Fire hazard or damage to the pump due to an operation with defective electrical components, e.g. Connection cables and plugs.		B	C	D	E	F	G	H	Check the electrical components with regard to damages before the first usage and then at regular intervals. Do not mount cable to moving parts or friction points. If this cannot be avoided, use spring coils respectively protective conduits.
Damage to the pump due to non-observance of the admissible relative duty cycle.			C	D					Operate the pump within the admissible relative duty cycle only.
Damage to the pump due to an installation at the place of use without the mounting brackets and washers provided for this purpose.		B	C	D		G			Mount pump only with the mounting brackets and washers provided for this purpose.

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

## 2. Lubricants

### 2.1 General information

Lubricants are selected specifically for the relevant application. The manufacturer or operator of the machine should ideally make the selection in consultation with the supplier of the lubricant. If you have no or little experience in selecting lubricants for lubrication systems, please contact us. We would be happy to assist you in selecting suitable lubricants and components to build a lubrication system optimized for your application. Consider the following points when selecting/using lubricants. This will spare you potential downtime and damage to the machine or lubrication system.

### 2.2 Material compatibility

The lubricants must generally be compatible with the following materials:

- Plastics: ABS, CR, FPM, NBR, NR, PA, PET, PMMA, POM, PP, PS, PTFE, PU, PUR
- Metals: steel, gray cast iron, brass, copper, aluminum

### 2.3 Temperature properties

The lubricant used must be suitable for the specific ambient temperature of the product. The viscosity approved for proper functioning must neither be exceeded at low temperatures nor fall too low at high temperatures. For the approved viscosity, see the "Technical data" chapter.

### 2.4 Aging of lubricants

Based on experience with the lubricant used, checks should be conducted at regular intervals defined by the operator, to determine whether the lubricant needs to be replaced due to aging processes (oil separation). In case of doubt regarding the continued suitability of the lubricant, it must be replaced before the system is started up again. If you do not yet have any experience with the lubricant used, we recommend conducting a check after just one week.

### 2.5 Avoidance of faults and hazards

To avoid faults and hazards, please observe the following:

- When handling lubricants, observe the relevant safety data sheet (SDS) and any hazard labeling on the packaging.
- Due to the large number of additives, some lubricants that meet the pumpability requirements specified in the manual are not suitable for use in centralized lubrication systems.
- Whenever possible, always use SKF lubrication greases. They are ideal for use in lubrication systems.
- Do not mix lubricants. This can have unpredictable effects on the properties and usability of the lubricant.
- Use lubricants containing solid lubricants only after technical consultation with SKF.
- The lubricant's ignition temperature has to be at least 50 Celsius above the maximum surface temperature of the components.

### 2.6 Solid lubricants

Solid lubricants may only be used after prior consultation with SKF. When solid lubricants are used in lubrication systems, the following rules generally apply:

**Graphite:**

- Maximum graphite content 8%
- Maximum grain size 25 µm (preferably in lamellar form)

**MoS<sub>2</sub>:**

- Maximum MoS<sub>2</sub> content 5%
- Maximum grain size 15 µm

**Copper:**

- Lubricants containing copper are known to lead to coatings forming on pistons, bore holes, and mating surfaces. This can result in blockages in the centralized lubrication system.

**Calcium carbonate:**

- Lubricants containing calcium carbonate are known to lead to very heavy wear on pistons, bore holes, and mating surfaces.

**Calcium hydroxide:**

- Lubricants containing calcium hydroxide are known to harden considerably over time, which can lead to failure of the centralized lubrication system.

**PTFE, zinc, and aluminum:**

- For these solid lubricants, it is not yet possible to define any limit values for use in lubrication systems on the basis of existing knowledge and practical experience.

### 3. Overview, design & operation

The pumping unit is designed for pumping lubricant into central lubrication system.

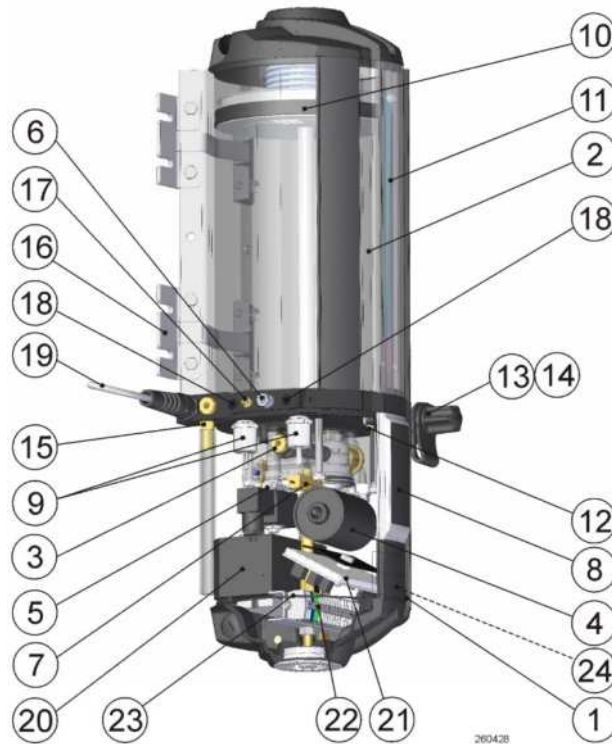
Pumping unit comprises of a body (1) and a lubricant reservoir (2).

The body comprises of a pump element (3), an electric motor (4), a line valve (5), a safety valve (6), a venting screw (17), a heating element (7), lubricant connections (18), a power supply (20) and terminal block (23). Pumping unit is controlled by a user interface (8) and a circuit board (21). If external control is used, user interface and circuit board are replaced with relays (24). Pumping unit is equipped with a pressure sensor (9) for each line which can be replaced with an external pressure control unit.

The lubricant is stored in the reservoir (2). The follower plate (10) rests on the lubricant and presses it down in the direction of the pump elements by spring force. As a result, the suction behaviour of the pump improves and the pump can also be used for rotating applications.

The lubricant reservoir includes a follower piston (10), level indicator (11) and low level switch (12). The filling connector of the lubricant reservoir (13) is equipped with a filter (14). The overfill relief valve (15) prevents the reservoir from being overfilled. The pumping unit also includes one or two supporting block (16) depending on reservoir size.

Fig. 2



## 4. User interfaces IF-103 and IF103-CH2

IF-103 is available in two versions. IF-103 (SKF item no. 11500710), for the control of single- and dual-line and progressive Multilube lubrication systems.

IF-103-CH2 (SKF item no. 12501475), for the control of single-line and progressive, single- or dual-channel Multilube lubrication systems.

The user interface is used for programming lubrication, acknowledging alarms and monitoring lubrication events.

### 4.1 Systems

In single-line systems, a lubrication cycle includes a single pressurization process. The increase in pressure is monitored either with a pressure transmitter or switch and the decrease in pressure is only monitored if a pressure transmitter is used.

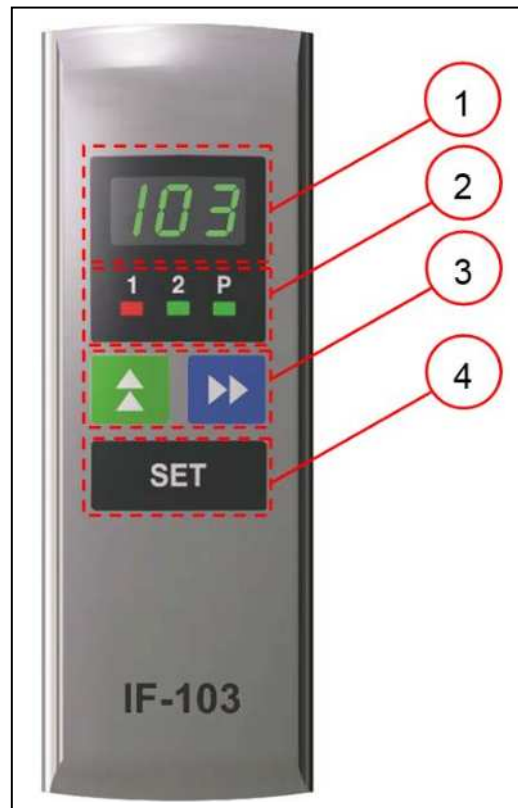
In dual-line systems, a lubrication cycle includes two pressurization processes, one for each line. The increase and decrease in pressure is monitored either with a pressure transmitter or switch.

In progressive systems, a lubrication cycle includes a single pressurization process. The system's operations are monitored with a pulse sensor mounted on the distributor, and the system must achieve the set the number of pulses within the set pressurization time. The progressive system may also be used without a pulse sensor, in which case a single pressurization step lasting for the duration of the set pressurization time will be performed per lubrication cycle.

The Multilube two-channel system (IF-103-CH2) may be either a single-line or progressive system. Lubrication cycles, pressurization times and pressure and pulse values may be set separately for each channel in accordance with the system type. The channels cannot be pressurized simultaneously. Lubrication history is not in use in the dual-channel models.

## 4.2 Main components

The IF-103 user interface includes a display (pos.1), LED-signals for lubrication lines and pressurization (pos.2), browsing buttons (pos.3) and setting/function button (SET) (pos.4).



### 4.2.1 Indicators IF-103




Indicator	Description
1	The green LED lights up when main line 1 is being pressurized. The green LED is on during the interval when main line 1 was pressurized last. The red LED blinks when main line 1 is in pressure alarm mode.
2	The green LED lights up when main line 2 is being pressurized. The green LED is on during the interval when main line 2 was pressurized last. The red LED blinks when main line 2 is in pressure alarm mode.
P	The green LED lights up when the pressurization phase is in progress. The red LED blinks when the pumping unit is in low level alarm mode.



#### 4.2.2 Indicators IF-103-CH2




Indicator	Description
<b>1</b>	A green LED is lit when lubrication channel 1 is selected on the display. A red LED blinks when lubrication channel 1 is in pressure alarm mode. A red LED is lit when channel 1 has not been selected, but it is in alarm mode.
<b>2</b>	A green LED is lit when lubrication channel 2 is selected on the display. A red LED blinks when lubrication channel 2 is in pressure alarm mode. A red LED is lit when channel 2 has not been selected, but it is in alarm mode.
<b>P</b>	A green LED is lit when the pressurization is in progress on the channel shown on the display. A red LED is lit when the pumping unit is in low level alarm mode.

#### 4.2.3 Buttons, single- and dual-line systems

Button	Description
	In normal operation mode, this button is used for browsing the values of settings on the display. In settings mode, the button is used for changing the value on the display.
	In normal operation mode, this button is used for browsing line pressure displays. In settings mode, the button is used for moving to the next character of the display. When browsing the settings values, the button is used for returning to normal mode.
	In normal operation mode, this button is used for starting an extra lubrication cycle, stopping pressurization or acknowledging an alarm. In settings mode, the button is used for saving the changed value. When browsing the settings values, the button is used for entering the setting mode.

When a button is pressed, all green LEDs light up for a moment. This indicates that the information about a button being pressed has been transmitted forward.

#### 4.2.4 Buttons, progressive system

1 Button	Description
	In normal operation mode, this button is used for browsing the values of settings on the display. In settings mode, the button is used for changing the value on the display.
	In normal mode, this button is used for showing the distributor's pulse counter on the display. In settings mode, the button is used for moving to the next character of the display. When browsing the settings values, the button is used for returning to normal mode.
	In normal operation mode, this button is used for starting extra lubrication, stopping lubrication or acknowledging an alarm. In settings mode, the button is used for saving the changed value. When browsing the settings values, the button is used for entering the setting mode.

When a button is pressed, all green LEDs light up for a moment. This indicates that the information about a button being pressed has been transmitted forward.

#### 4.2.5 Display

The user interface has a display of 3 characters and 3 decimal points.

The display shows the time; in pressure transmitter operation also pressure and in the progressive system also the distributor's pulse counter is shown.

##### Time display

The value set for the lubrication cycle and the elapsed interval are shown on the display as hours and minutes. A decimal point is used to separate hours and minutes.

Time displayed	Display format	Example
0 min – 59 min	<b>H.MM</b>	12 min = <b>0.12</b>
1 h - 9 h 59 min	<b>H.MM</b>	1 h 20 min = <b>1.20</b>
10 h – 99 h 50 min	<b>HH.M</b>	12 h 50 min = <b>12.5</b>
100 h – 999 h	<b>HHH.</b>	120 h = <b>120.</b>

The settings value for the maximum pressurization time and elapsed pressurization time are shown on the display as seconds without the decimal point.

## 4.3 Operation

### 4.3.1 Display power saving mode

In normal mode, the display shifts to power save mode when the buttons have not been used for three minutes. In power saving mode, the display only shows blinking decimal points. Lubrication cycles are performed according to the settings values. The display returns to the normal mode if any button is pressed or if there is an alarm.

### 4.3.2 Interval counting

With the IF103 user interface in normal mode, the display shows the time elapsed since the last pressurization in hours and minutes. Green LED indicator of line **1** or **2** shows which line has been pressurized last.

With the IF-103-CH2 interface in normal mode, the display shows the time elapsed since the last pressurization of the selected channel as hours and minutes.

Interval time is always counted, except when

- the system is in alarm mode, or no voltage is present
- the interlocking switch is closed
- the system is turned off (maximum pressurization time = 0)

### 4.3.3 Pressurization

The pressurization time is shown on the display in seconds. The green LED indicator of line **1** or **2** shows which line is being pressurized. The green LED indicator **P** indicates that pressurization is in progress.

The pressurization can be interrupted by pressing **SET**.

The CH2 user interface shows the pressurization of the selected channel, for example when channel 1 (**CH1**) is selected, the indicators **1** and **P** are lit during pressurization.

### 4.3.4 Extra lubrication

An extra lubrication cycle can be started if the system is not currently in alarm mode, turned off or pressurizing.

Extra lubrication is started in normal mode by pressing **SET** when the display shows the time elapsed since the last pressurization.

In a dual-line lubrication system, both lines are pressurized once. The next line in the set pressurization sequence is pressurized first. In a single line lubrication system, the line is pressurized once.

In the progressive system, a single pressurization step is carried out.

With the IF-103-CH2 user interface, a single pressurization step is carried out for the selected channel.

The extra lubrication cycle can be stopped by pressing **SET**.

In pressure transmitter -operated single- and dual-line systems, the discharge of pressure from the lines is measured. New pressurization starts only after pressure in the lines falls below the set low limit value.

In pressure switch -operated single- and dual-line systems, the discharge of pressure from the lines is waited for. A new pressurization will not start until after a configured delay.

During the pressure discharge in single- and dual-line systems, the display shows the phase code **dc**.

#### 4.3.5 Phase codes for normal mode and alarm mode

In normal or alarm mode, the phase code corresponding to the program phase is shown on the display.

Phase code	Description
<b>dC</b>	Waiting for pressure discharge ( <b>disCharge</b> )
<b>Loc</b>	The interlocking switch is closed ( <b>Locked</b> )
<b>OFF</b>	System is turned off
<b>AGr</b>	Lubricant reservoir low level alarm ( <b>Alarm, Grease</b> )
<b>ALP</b>	Low level alarm, single- and dual-line systems (the line pressure does not rise high enough during the pressurization time) ( <b>Alarm, Low Pressure</b> ) Lubrication pulse count alarm, progressive systems (the number of lubrication pulses was not achieved during the pressurization time) ( <b>Alarm, Low Pulses</b> )
<b>AHP</b>	High pressure alarm, single- and dual-line systems (the line pressure has not dropped low enough when the pressurization phase starts) ( <b>Alarm, High Pressure</b> )
<b>Aln</b>	An alarm from the operation indicators of the SKF Doser monitor. The code is used in the dual-line system equipped with the SKF Doser monitors. ( <b>Alarm, Indicator</b> )

### 4.3.6 Normal mode displays

The normal mode displays show the settings values of the lubrication program and can be browsed with the **↑** button. When the **↑** button is pressed, the codes shown on the display change in the following order:

Code on the display	Description
<b>CH1, CH2</b>	The lubrication channel selected on the display. Press the SET-button to move to another channel when the code is displayed. The code is only used in the IF-103-CH2 model
<b>Cou</b>	Lubrication cycle counter (Cycle <b>C</b> ounter)
<b>C</b>	Value configured for the lubrication cycle [h.mm] (Lubrication <b>C</b> ycle)
<b>P</b>	The maximum pressurization time setting [s] (Lubrication, <b>P</b> ressurization time)
<b>PLo</b>	Low pressure limit setting [bar/psi] ( <b>P</b> ressure, <b>L</b> ow limit) The code is only used in the pressure transmitter mode in single- and dual-line systems
<b>PHi</b>	The high pressure limit setting [bar/psi] ( <b>P</b> ressure, <b>H</b> igh limit) The code is only used in the pressure transmitter mode in single- and dual-line systems
<b>PP1</b>	Configured number of sensor pulses, 0...100 ( <b>P</b> ulses <b>p</b> er <b>1</b> pressurization) The code is used only in progressive systems

The lubrication cycle counter reading uses a decimal point as a thousands separator. The maximum reading of the counter is **49.9** = 49,999.

The unit of pressure on the display is bar or psi, depending on the choice made in the basic settings. The psi reading uses decimal point as a thousands separator. For example., **1.02** = 1,020 psi.

### 4.3.7 Pressure and pulse displays for lines

#### Pressure transmitter operation

In pressure transmitter operation, line pressure displays can be selected with the **→** button. Pressing the button will show the line 1 pressure display first. The display alternates between the code **P1** and the pressure display of line 1. Pressing the button again will show the line 2 pressure display. The display alternates between the code **P2** and the pressure display of line 2. If line 2 does not exist, the program will revert to showing the phase code. To show the phase code after line 2 pressure display, press the **→** button.

If no signal from the pressure transmitter is detected, the display shows the code **\_ \_ \_**.

## Pressure switch operation

In pressure switch mode, status of the line pressure switches can be shown by pressing the ➔ button. Pressing the button will first display the status of the line 1 pressure switch. The display alternates between the code **P1** and the pressure switch status of line 1. Pressing the button again will display the status of the line 2 pressure switch. The display alternates between the code **P2** and the pressure switch status of line 2.

Code **on** indicates that the pressure switch contacts are closed, and code **oF** indicates that the pressure switch contacts are open.

### 4.3.8 Displaying the number of pulses

When the device is in pulse sensor mode, pressing the ➔ button displays the number of pulses counted during pressurization. Pressing the button will first display the number of pulses counted in line 1. Code **P1** and the read pulse amount in line 1 are displayed in turns. The number of pulses counted is saved in the memory and can be read on the display during the interval.

### 4.3.9 Power failure

The setpoints and program status are preserved in the memory also during a power failure. Once the power is restored, the operation will resume from the state it was before the power failure. Any interrupted pressurization will restart from the beginning for the same line. The interval time is not counted during power failures.

### 4.3.10 Alarms

The system is in alarm mode when the red LED indicator line **1**, line **2** or pressurization **P** is blinking.

#### Low level alarm AGr

If the lubricant reservoir is empty, i.e. the low level limit switch is closed, the system triggers a low level alarm, stops pressurization and goes into alarm mode. In such a case, the code **AGr** blinks on the display and the red pressurization LED **P** also blinks. Pressurization will restart for the same line when the low level switch has opened and the alarm has been acknowledged by pressing **SET**.

#### High level alarm AHP

If the pressure in a line is not low enough when pressurization phase starts, the code **AHP** blinks on the display and the red LED indicator **1** or **2** the corresponding line blinks.

**In pressure transmitter operation**, an alarm is triggered if the line pressure is above the configured low limit when pressurization starts. Pressurization will restart for the same line when the pressure level has fallen below the low limit value and the alarm has been acknowledged by pressing **SET**.

**In pressure switch operation**, an alarm is triggered if the pressure switch is closed when pressurization starts. Pressurization will restart for the same line when the pressure switch opens and the alarm has been acknowledged by pressing **SET**.

## Low level alarm ALP

If the pressure in the line does not rise high enough during pressurization, the code **ALP** blinks on the display and the red LED **1** or **2** of the corresponding line also blinks.

**In pressure transmitter operation**, an alarm is triggered if the line pressure does not reach the configured high limit within the configured maximum pressurisation time. Pressurization will restart for the same line when the alarm has been acknowledged by pressing **SET**.

**In pressure switch operation**, an alarm is triggered if the line pressure switch does not close within the configured maximum pressurisation time. Pressurization will restart for the same line when the alarm has been acknowledged by pressing **SET**.

## An alarm from the operation indicators of the SKF Doser monitor Aln

The SKF Doser monitors are in use when the parameter **LGI** has been set to YES.

An alarm will be triggered when the SKF Doser monitor does not detect any doser operation during a lubrication cycle. The display shows the code **Aln**. Unlike in other alarms, lubrication continues normally despite the alarm. The alarm can be acknowledged by pressing **SET**.

## 4.4 Settings

The values in the settings are lubrication system's control values, for example lubrication cycle and maximum pressurization time.

All settings are password-protected.

In the dual-channel model, the channel (CH1 or CH2) for which you want to make changes must be selected first.

### 4.4.1 Entering the password

1. Press the **↑** button until the code of the setting you wish to change is shown on the display.
2. Press the **SET** button.
3. The display will show the code **PPP**.
4. After a few seconds, the first character on the display will start to blink.
5. Use the **↑** button to select the first digit of the password.
6. Press the **→** button to move to the next character.
7. When you have entered all three numbers of the password, press the **SET** button.
8. If the password has been entered correctly, the code **ACC** will be displayed, and you have 10 minutes to change the settings values.
9. If the password has not been entered correctly, the code **Err** will be displayed and the display will return to normal mode.

<b>NOTE!</b>	The password for settings values is <b>103</b> .
--------------	--

### 4.4.2 Entering settings

1. Press the **↑** button until the code of the setting you wish to change is shown on the display.
2. Press the **SET** button
3. The first digit of the value to be set starts to blink on the display.
4. Select the desired number by pressing the **↑** button.
5. Move to the next digit by pressing the **→** button.
6. Store the value pressing the **SET** button.
7. To exit the settings mode, press the **→** button. The display will automatically return to normal mode after 1 minute if no buttons are pressed.

### 4.4.3 Lubrication cycle counter

The lubrication cycle counter can be reset as necessary.

8. Press the **↑** button, until the lubrication cycle counter code **Cou** is shown on the display.
9. Reset the counter by pressing the **SET** button.

### 4.4.4 Setting the lubrication cycle C

The lubrication cycle setpoint is an application-specific value that is determined at the system's design stage. The lubrication cycle value is displayed as hours and minutes. A decimal point is used to separate hours and minutes. The value's decimal point can be moved as follows.

1. Press the **↑** button until the code **C** of the setting you wish to change is shown on the display.
2. Press the **SET** button
3. Set the desired value with the buttons **↑** and **→**.
4. Press the **→** button.
5. The decimal point will start to blink.
6. Move the decimal point to the desired location with the **↑** button.
7. Store the set value by pressing the **SET** button.

The lubrication cycle can be set between 0 min – 999 h.

### 4.4.5 Setting pressurisation time P

The pressurisation time setpoint is an application-specific value, which is determined during the system's commissioning. This value is given as seconds. The value is determined by measuring the time used to achieve the set pressure value or pulse count, and any changes caused by external factors, such as temperature, to the pressurisation time are added to it. As a rule of thumb, the measured pressurisation time can be doubled.

1. Press the button until the code **P ↑** of the setting you wish to change is shown on the display.
2. Press the **SET** button
3. Set the desired value with the buttons **↑** and **→**.
4. Store the set value by pressing the **SET** button.

The maximum pressurization time can be set between 0 s – 999 s.

### 4.4.6 Setting the low limit pressure PLo

The low limit pressure is only set in the pressure transmitter mode in single- and dual-line systems. The setpoint for the low limit pressure is determined on the basis of the dosing systems in use; for example when dual-line SKF SG or SGA dosing systems are used, the setpoint must be 50 bar lower than the high pressure, e.g. 50 bar.

1. Press the button until the code **PLo ↑** of the setting you wish to change is shown on the display.
2. Press the **SET** button
3. Set the desired value with the buttons **↑** and **→**.
4. Store the set value by pressing the **SET** button.



#### 4.4.7 Setting the high limit pressure PHi

The high limit pressure is only set in the pressure transmitter mode in single- and dual-line systems. The setpoint for the high limit pressure is determined on the basis of the dosing systems in use; for example, when dual-line SKF SG or SGA dosing systems are used, the setpoint must be at least 50 bar higher than the low pressure, e.g. 120 bar.

1. Press the button until the code **PHi** ↑ of the setting you wish to change is shown on the display.
2. Press the **SET** button
3. Set the desired value with the buttons ↑ and →.
4. Store the set value by pressing the **SET** button.

#### 4.4.8 Pulse PP1

The pulse setting is only available for Multilube models intended for progressive systems.

The pulse sensor pulse count for line 1 is set with the code **PP1**. The number of pulses of the pulse sensor can be configured between 0 – 100. If the number of pulses is set to 0, the lines are pressurized over the entire configured maximum pressurization time. If the number of pulses is set to 0, the alarm **ALP** is not in use.

In the CH2 model, the channel for which changes are made must be selected first.

1. Press the button until the code **PP1** ↑ of the setting you wish to change is shown on the display.
2. Press the **SET** button
3. Set the desired value with the buttons ↑ and →.
4. Store the set value by pressing the **SET** button.

#### 4.5 Technical specifications & codes

Quantity	Value	Unit	Description
t	-40...+80	°C	Ambient temperature range
U <sub>in</sub>	8	V	Supply voltage from pumping unit circuit board
	45 x 140 x 17 (W x H x D)	mm	Dimensions
	Polycarbonate		Material, casing
	IP67		Protection class

Code	Description 1	Description 2
11500710	IF-103 USER INTERFACE	1- and 2-line systems and progressive systems
12501475	USER INTERFACE IF-103-CH2	dual-channel 1-line and progressive systems

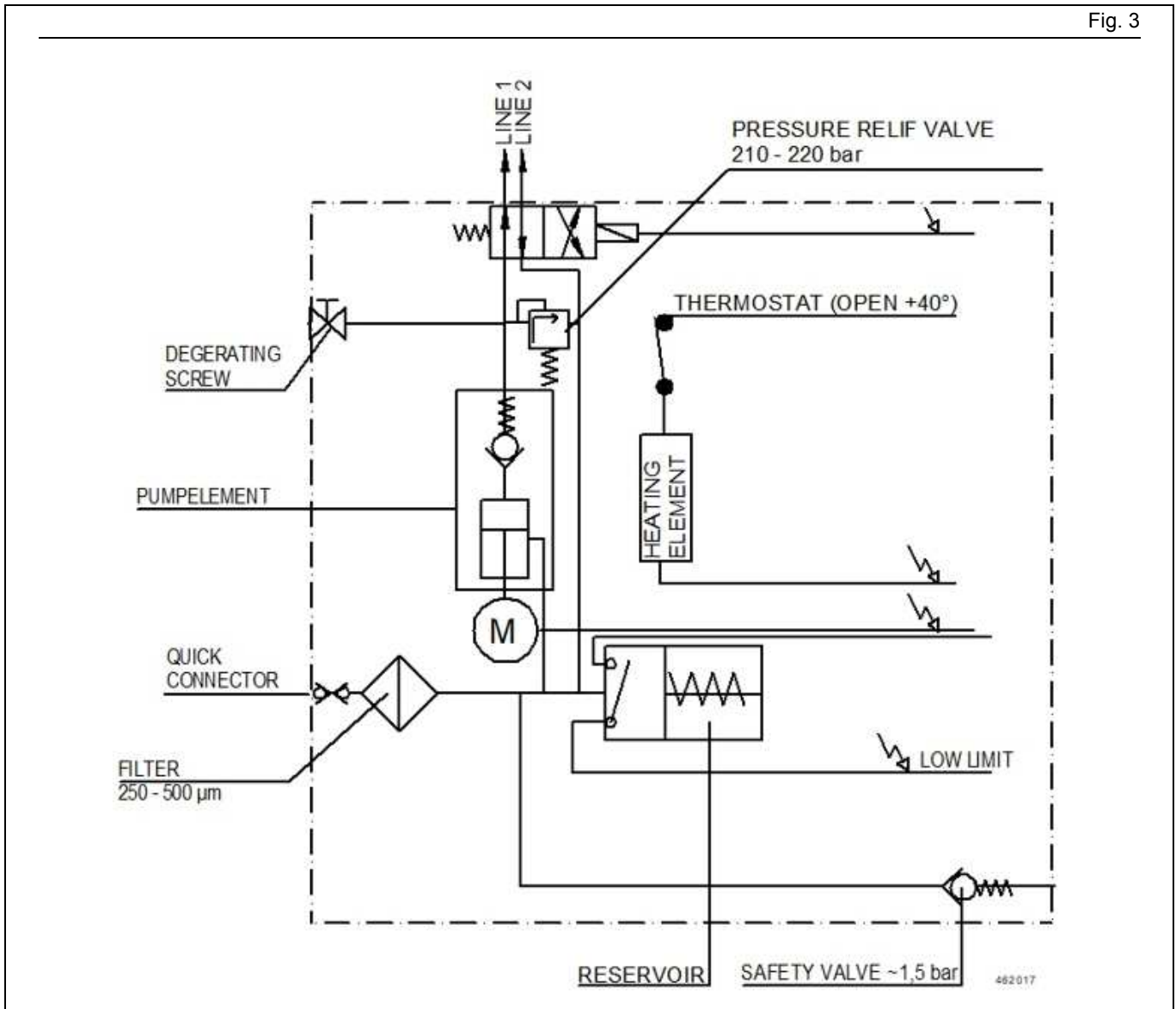
## 5. Technical data

### 5.1 MLPI technical specifications

General technical data			
Max operating pressure	210 bar max.	Installation position <sup>2)</sup>	vertical & horizontal
Ambient temperature <sup>1)</sup>	-30 °C to 60 °C	sound pressure level	< 70 dB (A)
Pumping capacity	13 g/min	Weight (empty)	20 kg (4 liter) 23 kg (10 liter)
Reservoir volume	4 & 10 liter nominal		
Dimensions			
4 l reservoir	274x538x244		
10 l reservoir	274x720x244		
Approved lubricants	Lubrication greases from NLGI 0 up to NLGI 2		
Electrical data			
Rated voltage	24 VDC, 115 VAC & 230 VAC		
Max. power consumption	150 W		
Recommended back-up fuse	6 - 10 A		
Nominal speed	48 rpm		
Relative duty cycle	S3		
Degrees of protection	IP65 (IEC 60529)		
Max. switching voltage (alarm output)	115V		
Max. switching current (alarm output)	1A		

## 5.2 Hydraulic connection diagrams

Fig. 3



## 5.3 Connections

### Input

- pressure switch, 2 pcs, closing contact  
or pressure transmitter, 2 pcs, 4–20 mA / 0–250 bar, 2-wire type
- interlocking, lubrication points in operation when external interlocking switch is open

### Output

- lubricant, 2 pcs, female thread G 1/4"
- alarm, potential-free contact open in alarm mode, load 115V / 1A max.

Cable channels in the intermediate plate

- M20x1,5 cable gland, 2 pcs, for 6-13 mm cable diameters
- M16x1,5 cable gland, 1 pcs, for 5-10 mm cable diameters

Check electrical connection diagrams of the specific pump design from appendix.

## 5.4 Type identification code

MLPI-A-B-C-D-E	Abbreviation	Description
MLPI:	MLPI	SKF Multilube pump for industrial use
A:	4	Lubricant reservoir volume, 4 l
	10	Lubricant reservoir volume, 10 l
B:	1	Number of lines, single line system
	2	Number of lines, dual line system
	P	Progressive system
	C2P	Two channel progressive system
	OS	Single line oil system
C:	24	Power input, 24 V DC
	115	Power input, 115 V AC
	230	Power input, 230 V AC
D:	IF103	User interface, IF-103
	24	External control unit, control voltage 24 V DC
E:	PSE	Pressure control unit, built-in pressure sensor
	EPT	Pressure control unit, external pressure control unit

MLPI-4-2-230-IF103-PSE

Pressure control unit, built-in pressure sensor

User interface, IF-103

Power input, 230 V

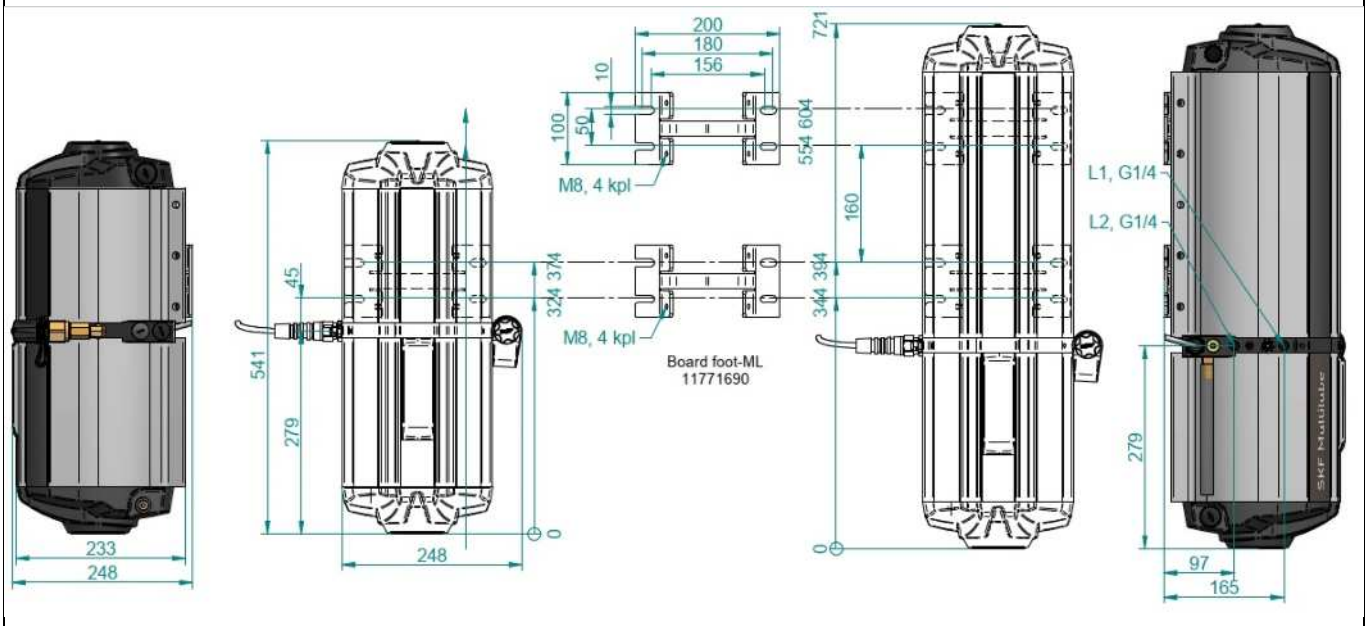
Number of lines, 2-line system

Lubricant reservoir volume, 4 l

SKF Multilube pump for industrial use

## 5.5 Dimensions

Fig. 4



## 5.6 Installation

Only qualified technical personnel may install the products described in these Instructions. During installation, pay attention to the following:

- Be careful not to damage other devices during installation.
- The product must not be installed within the range of moving parts.
- The product must be installed at an adequate distance from sources of heat and cold.
- Observe the product's IP protection class when selecting the installation position.
- Make sure that MIN/MAX reservoir markings, the low level switch indicator and other visual indicators are fully visible.
- Protect the product against humidity, dust and vibrations and install it in an easily accessible position to ensure all other installation work can be carried out without any problem.
- Fasten the pumps MLPI-4L with one bracket and four M8 screws and MLPI-10L with two bracket and eight M8 screws. The minimum allowable property class for the fastening screws is 8.8 and tightening torques 20Nm

### ⚠ WARNING



Check that MLPI pump has fixed a proper way by using installation kit (11390564). Dropping or falling pump may cause serious injury to personnel.

### NOTICE

Drill the mounting bores on non-load-bearing parts of the superior machine only. Fastening must not be done on two parts moving against one another (e. g. machine bed and machine assembly). Make sure to use the enclosed mounting brackets and washers for mounting and observe the specified tightening torques.

## 5.7 Connection of the lubrication line

### WARNING



#### Electric shock

Work on electrical components must be carried out by electrical specialists only. Before carrying out any work on electrical components, take at least the following safety measures:

- Disconnect and secure against being switched on again
- Verify that no power is being applied.
- Earth and short-circuit the product.
- Where needed, cover neighboring units that are live.

### CAUTION



#### Risk of falling

Exercise care when dealing with lubricants. Bind and remove spilled or leaked lubricants immediately.

### NOTICE

#### **Damage to the superior machine due to incorrect planning of the centralized lubrication system**

**All components for setting up the centralized lubrication system must be designed for the maximum operating pressure, the permissible ambient temperature range, the required output volume and the lubricant to be delivered.**

Observe the following installation instructions for safe and smooth operation:

- Observe the generally applicable and internal regulations for the laying of pressurized tubes or hose lines.
- Only use clean, prefilled components and lubrication lines.
- Protect each lubrication line on the pump against too high pressure by means of a suitable pressure control valve.
- The main lubrication line should be laid preferably rising with a possibility to vent it at its highest point. Lubrication lines shall generally be laid in such way that there can never be created air pockets at any point.
- The lubricant flow should not be impeded by the installation of sharp elbows, angle valves, gaskets protruding to the inside, or cross-section changes (big to small). Provide unavoidable changes of the cross sections in the lubrication lines with as smooth transitions as possible.
- Connect lubrication lines in such way that no forces are transferred to the product (tension-free connection).
- Lay lubrication lines in such way that they cannot be kinked, jammed or chafed.

## 5.8 Electrical connections

### WARNING



Electrical connections must only be made by qualified electricians. Operating voltage must be shut off before touching any parts with power supply. Operating voltage must be shut off before opening any parts of the unit.

### WARNING

Check supply voltage from the pump name plate (24, 115 or 230 V AC). Pump is equipped with a 3 m power cord for connecting to the electrical network. Connection to the network is made next to the pump with a plug or by using a connection box equipped with a 2-pole switch (for example SKF code 10543062).

Observe the following installation instructions for safe connection:

- Electrical connection must be carried out according to the prescriptions of the standard series DIN VDE 0100 respectively IEC 60364
- Connect the electric lines in such way that no mechanical forces are transferred to the product
- Protect the pump with a suitable external fuse (see connection diagram)

Carry out the electrical connection according to the connection type of the specified pump.

1. Tailor the required cables according to the respective connection diagram or use prefabricated cables for the connection.
2. Connect plugs and corresponding sockets with each other and secure them against loosening according to the protection type specified by the plug-in connection. This is the only way to ensure a safe connection and compliance with the degree of protection.

### NOTICE

Connect the cables in such way that no forces are transferred to the product.

## 6. Delivery, returns, storage

### 6.1 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.

### 6.2 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.



Marking of return shipments

### 6.3 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).

### 6.4 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").



## 6.5 Storage conditions for products filled with lubricant

For products filled with lubricant, the permitted storage temperature range is:

Minimum	+ 5 °C	[+41 °F]
Maximum	+ 35 °C	[+95 °F]

If the storage temperature range is not maintained, the following steps for replacing the lubricant may not lead to the desired result under certain circumstances.

### 6.5.1 Storage period up to 6 months

Filled products can be used without implementing additional measures.

### 6.5.2 Storage period between 6 and 18 months

#### **Pump**

- Connect the pump to its power source.
- Switch on the pump and run it until about 4 ccm of lubricant comes out of every outlet.
- Disconnect the pump from its power source.
- Remove and dispose of the lubricant that came out.

#### **Metering devices:**

- Remove all connecting lines and, if necessary, plug screws.
- Connect the pump containing fresh lubricant suitable for the intended purpose to the metering device manifold in such a way that the metering device manifold connection on the opposite side is open.
- Run the pump until fresh lubricant is discharged at the metering device manifold.
- Remove the discharged lubricant.
- Reinstall the plug screws and connecting lines.

#### **Lines:**

- Remove pre-installed lines
- Ensure that both ends of the line are open
- Fill the lines completely with fresh lubricant

### 6.5.3 Storage period more than 18 months

To prevent faults, the manufacturer should be consulted before start-up. The basic procedure for removal of the old lubrication filling corresponds to that for storage periods between 6 and 18 months.

## 7. First start-up

In order to warrant safety and function, a person assigned by the operator must carry out the following inspections. Immediately eliminate detected deficiencies. Deficiencies may be remedied by an authorized and qualified specialist only.

7.1 Inspections prior to initial start-up		
	YES	NO
Electrical connection carried out correctly	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical connection carried out correctly	<input type="checkbox"/>	<input type="checkbox"/>
The performance data of the previously indicated connections correspond to the specifications stated in the Technical data	<input type="checkbox"/>	<input type="checkbox"/>
All components, such as lubrication lines and metering devices, have been correctly installed	<input type="checkbox"/>	<input type="checkbox"/>
No visible damage, contamination and corrosion	<input type="checkbox"/>	<input type="checkbox"/>
Any dismantled protection and monitoring equipment have been reassembled and checked for correct function	<input type="checkbox"/>	<input type="checkbox"/>
All safety-relevant markings on the product are available and in proper condition	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Inspections during initial start-up		
No unusual noises, vibrations, accumulation of moisture, or odors present	<input type="checkbox"/>	<input type="checkbox"/>
No unwanted escape of lubricant (leakages) from connections	<input type="checkbox"/>	<input type="checkbox"/>
Lubricant is supplied free from bubbles	<input type="checkbox"/>	<input type="checkbox"/>
Bearings and friction points are provided with the planned amount of lubricant	<input type="checkbox"/>	<input type="checkbox"/>

### 7.3 Operation

**When pressurization begins, the control starts the pump and opens the line valve. In pressure sensor and pressure transmitter operation the pump stops when pressure exceeds the set high limit and starts, when the pressure goes below the set high limit.**

**In pressure switch operation the pump stops, when the pressure switch closes and restarts, when the pressure switch opens. After the set pressurization time, the control stops the pump and pressure discharges from the line to the lubricant reservoir.**

**If the lubricant level in the reservoir drops to the low limit level during pumping, the reservoir low level switch sends an alarm to the control and pumping is stopped. The alarm can be disabled by filling the lubricant reservoir and resetting the alarm.**

#### NOTICE

Possible damage to the pump and air in the lubrication system  
In case of pumps without low-level signal, regularly check the filling level and refill lubricant on time.

## 7.4 Filling the lubricant reservoir of the pumping unit

### NOTICE

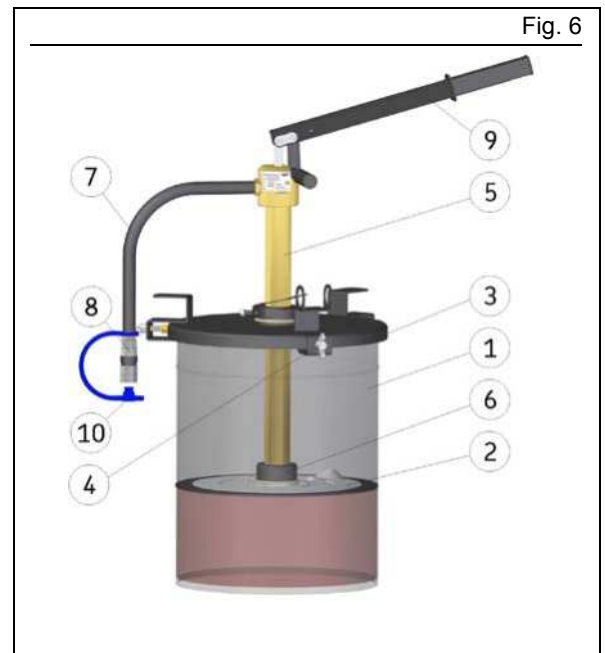
**Do not fill the reservoir without the filter and the pressure relief valve which protect the reservoir**

### NOTICE

Filter (15) of the filling connector has to be cleaned regularly and replaced if necessary. Cleaning and replacing has to be performed when the reservoir is empty

Lubricant reservoir of the pumping unit is filled through the filling connector which is equipped with a filter.

1. Ensure that the surroundings of the pumping unit are clean. Impurities in the system pre-vent trouble-free operation and cause damage when reaching the lubrication point.
2. Remove the lid from the lubricant reservoir (1) and press the follower plate (2) tightly to the reservoir above the lubricant. Follower plate is not used with fluid lubricants, as it does not remain on the surface.
3. Place the lid (3) on top of the lubricant reservoir. Fasten the lid with wing screws (4) on the lubricant reservoir.
4. Place the pump (5) through the lid into the follower plate central unit (6).
5. Connect the lubricant hose (7) to the pump.
6. Fill the lubricant hose by pumping by hand.
7. Connect the quick connector (8) to the lubricant hose.
8. Connect the quick connector to the pumping unit filling connector.
9. Fill the lubricant reservoir of the pumping unit by pumping slowly by hand.
10. Filling of the lubricant reservoir can be followed at the level indicator. To prevent overfill-ing, the pumping unit is equipped with a safety valve.
11. Turn the pump handle (9) to upright position so that pressure discharges to the lubricant reservoir.
12. Disconnect the quick connector from the pumping unit filling connector.
13. Fasten the protecting cap of the pumping unit filling connector.
14. Fasten the protecting cap (10) of the filling device quick connector.



## 8. Maintenance and repair

### 8.1 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, if necessary, by the operator based on the operating conditions. If needed, copy the table for regular maintenance activities.

Checklist Maintenance		
Activity to be done	YES	NO
Electrical connection carried out correctly	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical connection carried out correctly	<input type="checkbox"/>	<input type="checkbox"/>
The performance data of the previously indicated connections correspond to the specifications stated in the Technical data	<input type="checkbox"/>	<input type="checkbox"/>
All components, such as lubrication lines and metering devices, have been correctly installed	<input type="checkbox"/>	<input type="checkbox"/>
No visible damage, contamination and corrosion	<input type="checkbox"/>	<input type="checkbox"/>
Any dismantled protection and monitoring equipment has been reassembled and checked for correct function	<input type="checkbox"/>	<input type="checkbox"/>
Any warning labels on the product are present and in proper condition	<input type="checkbox"/>	<input type="checkbox"/>
No unusual noises, vibrations, accumulation of moisture, or odors present	<input type="checkbox"/>	<input type="checkbox"/>
No unwanted escape of lubricant (leakages) from connections	<input type="checkbox"/>	<input type="checkbox"/>
Lubricant is supplied free from bubbles	<input type="checkbox"/>	<input type="checkbox"/>
Bearings and friction points are provided with the planned amount of lubricant	<input type="checkbox"/>	<input type="checkbox"/>

## 9. Cleaning

### 9.1 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.

### 9.2 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.

### 9.3 Exterior cleaning

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

#### WARNING



#### **Risk of fatal electric shock**



Cleaning work may only be performed on products that have been de-energized first. When cleaning electrical components, be mindful of the IP enclosure rating.

#### 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.



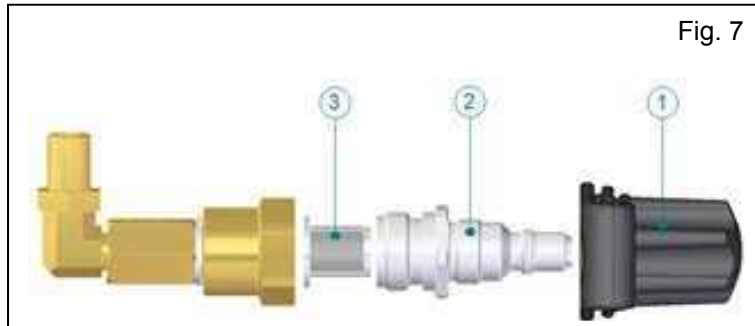
## 9.4 Cleaning the filter of the filling connection

Filter of the filling connector (15) has to be cleaned regularly and replaced if necessary. Cleaning and replacing has to be performed when the reservoir is empty. Proceed as follows:

1. Open filling connector's cap (1)
2. Loosen the filling connection at its hexagon (2) with a fork wrench AF 27.
3. Remove filter (3).
4. Clean filter with appropriate detergent and dry, e.g. with compressed air.
5. Fill the filter, quick connector and the filter hosing with grease
6. Mount all parts again in reverse order.

### Tightening torques:

7.1 Filling connection (AF 27) 20 Nm  $\pm$  2.0 Nm



## 10. Faults, causes, and remedies

Fault	Possible cause	Remedy
Pump does not run	<ul style="list-style-type: none"><li>• Power supply to the pump is interrupted<ul style="list-style-type: none"><li>○ Superior machine is switched off</li><li>○ Connection cable of pump is loose or defective</li><li>○ - External fuse is defective</li></ul></li><li>• Pump is in the pause time mode</li><li>• Pump motor is defective</li><li>• Internal cable break</li></ul>	
Pump runs, but does not supply lubricant or supplies an insufficient amount of lubricant.	<ul style="list-style-type: none"><li>• Air in the reservoir and / or in the pumping block.</li><li>• Defective pump element</li><li>• Blockade, fault within the centralized lubrication system</li><li>• Defective pressure relief valve</li><li>• Too high lubricant consistency (at low temperatures)</li><li>• Too low lubricant consistency (at high temperatures)</li><li>• Wrong setting of pump lubrication time and pause time on the superior machine control.</li></ul>	<ul style="list-style-type: none"><li>• Check whether one of the indicated faults is present and remedy it in the frame of responsibilities.</li><li>• Faults outside of your own responsibility have to be reported to your superior to initiate further measures.</li><li>• If the fault cannot be determined and remedied, please contact our Customer Service.</li></ul>

## 11. 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
- Depressurize the product
- Isolate the product, and lock and tag it out
- Check to ensure live voltage is no longer present
- Cover any adjacent live parts

Disconnect power from the Multilube, relief pressure from the lines and empty the reservoir.

Fig. 8



Pressure can be relieved through the venting screw or by opening line connectors

Best way to empty the reservoir is to remove the plug from the pumping block and start the pump.



## 11.1 Emptying the reservoir through the pumping block plug by pumping

Fig. 9



Remove flange nut from bottom (19 mm wrench).



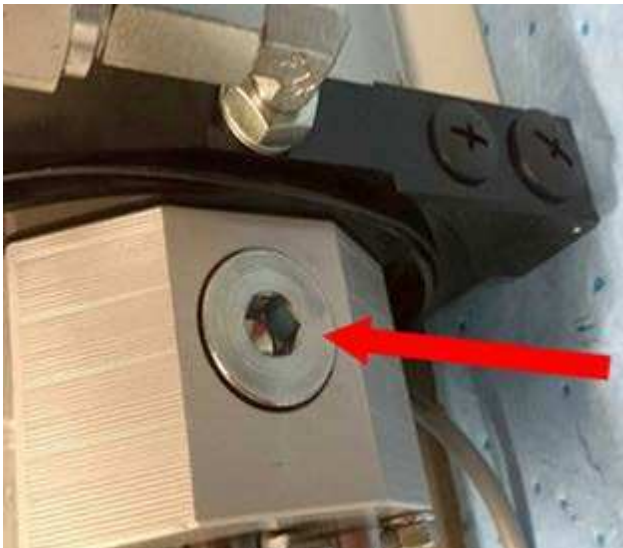
In AC models disconnect the ground wire (17 mm wrench).



In IF-130 models disconnect the IF-103 wire from the circuit board.



Remove the lower shell with IF-103 user interface.



Removing the allen key plug from the pumping block. Note that the plug is very tight, so you need to hit the allen key (12 mm) with a hammer to loosen it.



Set the pressurisation time (P) to 999 seconds and start pumping (press **SET**).

After reservoir is completely empty, check the filter, clean or replace and fill with grease if needed. Start filling the reservoir again and **make sure that no air gets in the reservoir.**



## 11.2 Emptying the reservoir through the pumping block plug with pressurized air

Fig. 10

If there is no electricity available reservoir can be emptied using pressurized air.  
Remove the plug as shown in Figure no. 9.  
Pressurize the reservoir through the air breather using max 2 bar pressure.



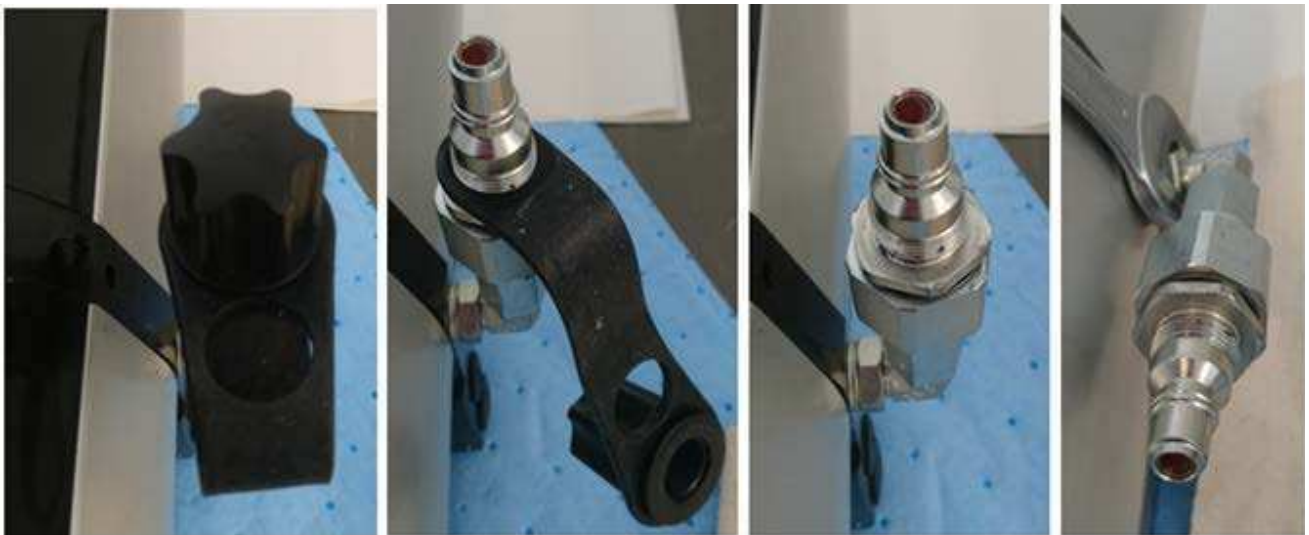
Air breather in the top left side of the Multilube Use pressurized air until the reservoir is completely empty.

After reservoir is completely empty, fill the filter, quick connector and the filter hosing with grease and put them back together. Start filling the reservoir again and **make sure that no air gets in the reservoir.**

## 11.3 Emptying the reservoir through the filling connection

Fig. 11

Emptying the reservoir is not so effective as through the pumping block plug but can be done if plug cannot be removed.



Remove the protective cap from filling connection. Loosen the connector (19 mm wrench) from the Multilube body and turn the connection downwards. Grease may start flowing immediately after filling connection and filter are removed. Even if grease starts flowing the flow will stop in some point before the reservoir is completely empty. Pressurized air is needed get all the grease out as shown in figure no. 10.

After reservoir is completely empty, fill the filter, quick connector and the filter hosing with grease and put them back together. Start filling the reservoir again and **make sure that no air gets in the reservoir.**

## 11.4 Changing of pump element

Fig. 12

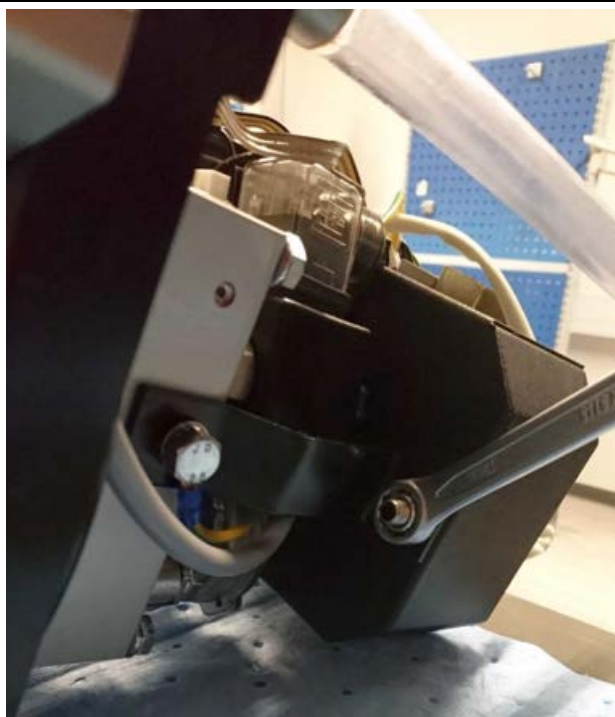


To replace a pump element, proceed as follows:

1. Unscrew the defective pump element (27 mm socket) at its hexagon out of the pump housing
2. Fill the new pumping element with grease and screw a new pump element into the pumping block. Tightening torque 40 Nm + 2.0 Nm

## 11.5 Changing of line valve

Fig. 13

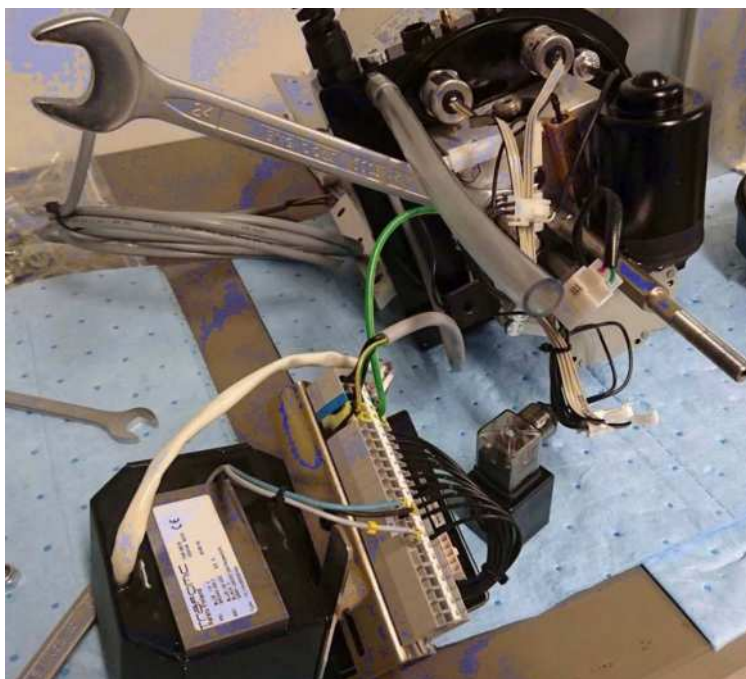


Remove the nut which holds the power supply unit (13 mm wrench).



Disconnect power supply and pressure sensor connectors from the circuit board.

Fig. 14



Remove terminal strip, circuit board and power supply unit.

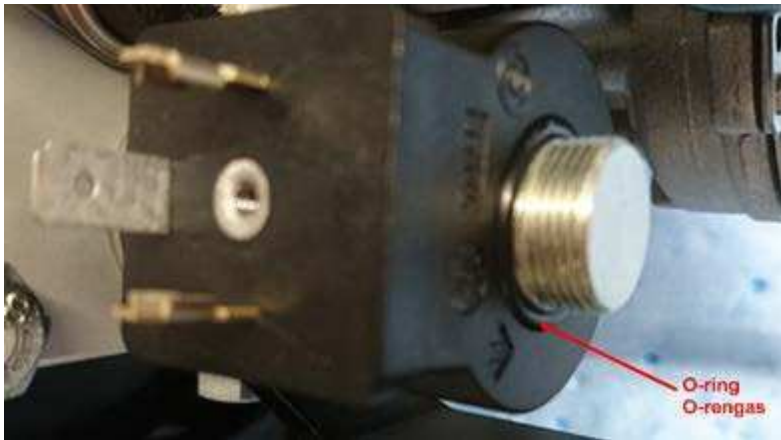


Remove Line valve nut and coil.





Remove line valve body (24 mm wrench) and fill the new body with grease and screw it in the place.



Install the coil and the other O-ring to the valve rod and then install the valve nut.

Assembling in reverse procedure.

## 12. Shutdown, disposal

### 12.1 Temporary shutdown

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

### 12.2 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.

### 12.3 Disposal

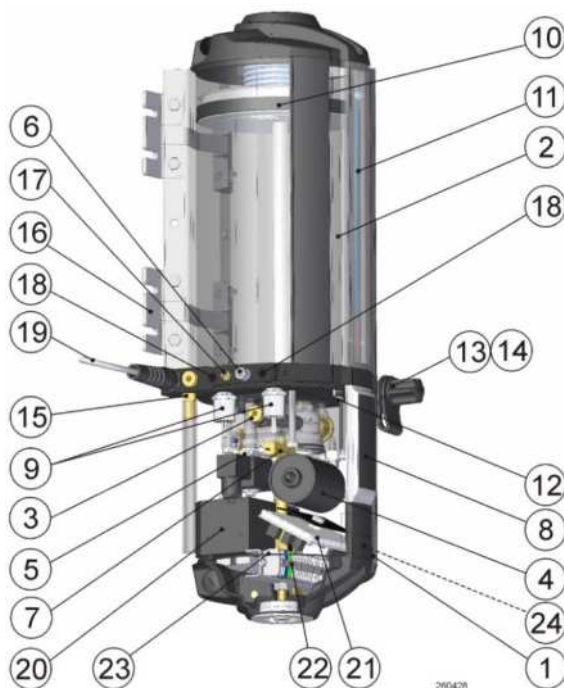
The waste producer/operator must dispose of the various types of waste in accordance with the applicable laws and regulations of the country in question.

## 13. Spare parts and repair kit

### ⚠ CAUTION

Repair or maintenance work may be carried out only with the spare parts and accessories offered by SKF for the respective product. Spare parts may be used exclusively for replacement of identical defective parts. Modifications with spare parts on existing products are not allowed.

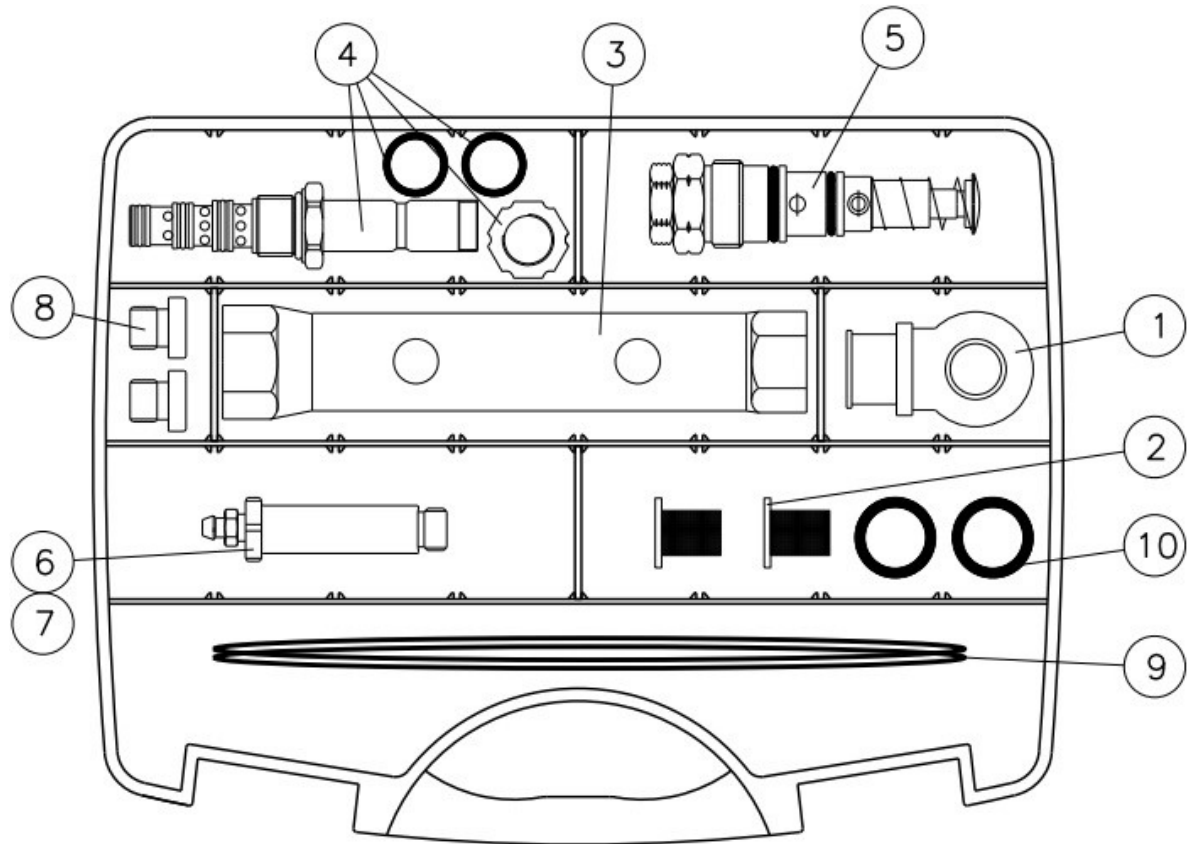
Fig. 16



Part	Description	Item number
3	PUMP ELEMENT-3 2K	11771002
4	ELECTRICAL MOTOR ML	11540100
5.1	OD.14.40.58.30.00 VALVE BODY	11600965
5.2	OD.02.17.01.30.OC 24VDC COIL	11601068
6	SAFETY VALVE	11403031
7	THERMOSTAT	10543105
8	IF-103 USER INTERFACE	11500710
	IF-103-CH2 USER INTERFACE	12501475
9	PRESSURE SENSOR-ML	12389735
11	LEVEL INDICATOR L=185 ML	11771545
	LEVEL INDICATOR L=365 ML	11771548
12	LOW LEVEL SWITCH-MLP	11770477
13	FILTER 250MIC	11770415
14	PROTECTING CAP - ML	11400790
20	POWER SUPPLY	11501000
21	ST-103 CIRCUIT BOARD	11500705
24	MICRO RELAY BOSCH 24 V (only with external control)	10545740

## 14. Multilube repair kit, item number 11390140

Fig. 17



361294

Part	Description	Item number	QTY
10	O-RING	11680650	2
9	O-RING	11680330	2
8	ALLEN SCREW PLUG G1/4"	12644590	2
7	BLEED SCREW	12407848	1
6	EXTENSION TO BLEED SCREW	11408620	1
5	PUMP ELEMENT	11771002	1
4	LINEVALVE	11600965	1
3	SOCKET WRENCH	11790058	1
2	FILTER ELEMENT	11770415	2
1	LINE VALVE'S COIL	11601068	1

Parts 6 and 7 are use in Multilube models manufactured prior year 2015





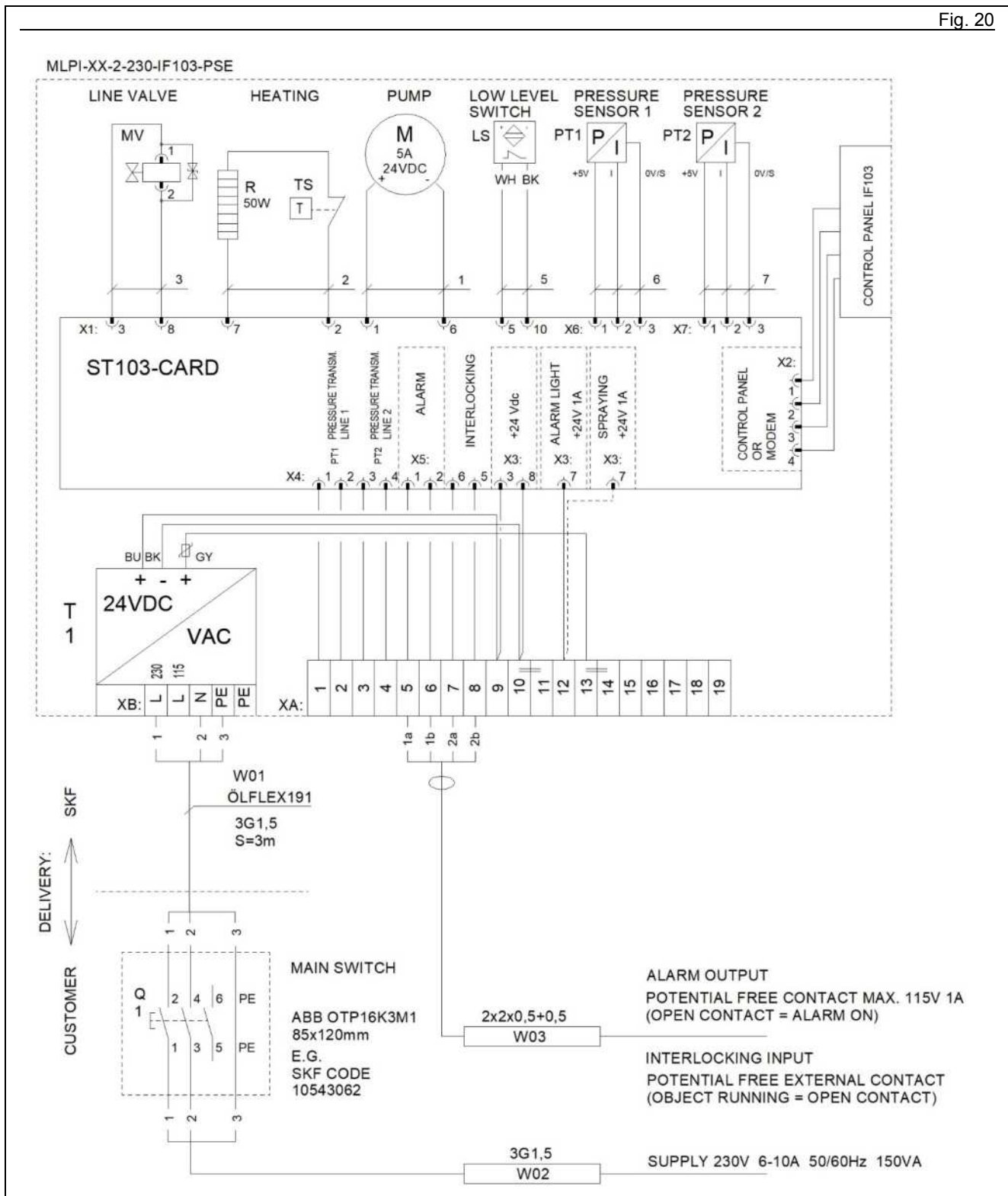
## Fig. 19



Models MLPI-4-1-230-EPT (12389925) & MLPI-10-1-230-EPT (12389924) will be connected like above but pressure sensor 2 does not exist.

## 15.4 MLPI-XX-X-230-IF103-PSE (12389914 & 12389918)

Fig. 20



15.5 China RoHS Table

部件名称 (Part Name)	有毒害物质或元素 (Hazardous substances)					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ether (PBDE)
用钢和黄铜加工的零件 (Components made of machining steel and brass)	X	0	0	0	0	0
本表格依据SJ/T11364的规定编制 (This table is prepared in accordance with the provisions of SJ/T 11364.)						
0 :	表示该有毒有害物质在该部件所有均质材料中的含量均在GB/T 26572 规定的限量要求以下。 (Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.)					
X :	表示该有毒有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572标准规定的限量要求。 (Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.)					