SKF ST-102-C2P Control Centre

Date:	**8.6.2022**
Document no.:	**ST-102-C2P**
Version: 1G	

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

EU Declaration of Conformity in accordance with Directive 2014/30/EU

The manufacturer hereby declares under its sole responsibility conformity of the product described below with all relevant harmonization legislation of the European Union at the time of placing on the market.

Designation:	Control centre for centralised lubrication systems
Type:	ST-102 & ST-102P
Item number:	115006xx
Year of manufacture:	See type plate

The following Directives and standards were applied in the applicable areas:
2011/65/EU: RoHS II
2014/30/EU: Electromagnetic Compatibility

– EN 61000-6-4:2011
– EN 61000-6-2:2005
– CISPR 25, 30...1000MHz
– ISO 11452-2, 100...2000MHz
– ISO 11452-4, 20...200MHz
– ISO 7637-2: 1, 2a, 2b, 3a, 3b, 4

Muurame, 10.6.2022
Juha Kärkkäinen
Design Office Manager
SKF Lubrication Management

Anssi Manninen
Product Specialist
Electronic

Manufacturer: Oy SKF Ab Finland Teollisuustie 6 40951 Muurame FINLAND

UK Declaration of Conformity pursuant to the Electromagnetic Compatibility Ordinance 2016 No. 1091

The manufacturer hereby declares under its sole responsibility conformity of the product described below with all relevant harmonization legislation of the United Kingdom at the time of placing on the market.

Designation:	Control centre for centralised lubrication systems
Type:	ST-102 & ST-102P
Item number:	115006xx
Year of manufacture:	See type plate

The following regulations and standards were applied in the applicable areas:

- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 No. 3032
- Electromagnetic Compatibility Ordinance 2016 No. 1091

– EN 61000-6-4:2011
– EN 61000-6-2:2005
– CISPR 25, 30...1000MHz
– ISO 11452-2, 100...2000MHz
– ISO 11452-4, 20...200MHz
– ISO 7637-2: 1, 2a, 2b, 3a, 3b, 4

Muurame, 10.6.2022
Juha Kärkkäinen
Design Office Manager
SKF Lubrication Management

Anssi Manninen
Product Specialist
Electronic

Manufacturer: Oy SKF Ab Finland Teollisuustie 6 40951 Muurame FINLAND

Masthead

Manufacturer
Oy SKF Ab
Teollisuustie 6 P.O Box 80
40951 Muurame, Finland
Email: skf-lube@skf.com
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

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

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

- Repairs or modifications to the hardware.

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.

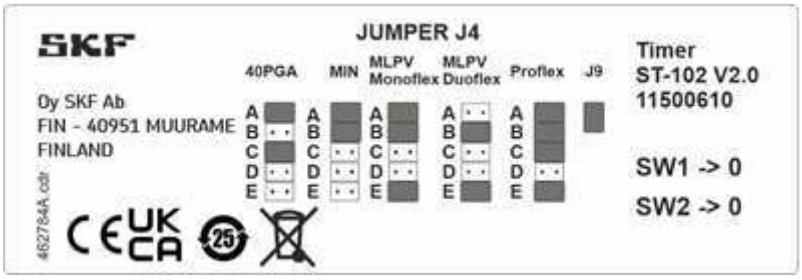
1.10 Safety markings on the product

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.

Fig. 1



Example- type plate from the ST102 V2.0 controller (11500610). Jumper settings can be different in each model!

1.12 Notes on CE marking

CE marking is effected following the requirements of the applied directives requiring a CE marking:

- 2014/30/EC Electromagnetic Compatibility
- 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS II)

1.13 Notes related to the UKCA marking

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

1.14 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.

1.15 Emergency shutdown

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

1.16 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.

1.17 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

2. Delivery, returns, storage

2.1 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.

2.2 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. 4

Marking of return shipments

2.3 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).

2.4 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”).

2.4.1 Lithium batteries

Lithium batteries may only be shipped in undamaged condition. If lithium batteries are shipped separately, the contacts must be protected against short circuit (e.g. by masking). Lithium batteries must not move in the packaging. For air transport, the respective valid IATA regulations regarding packaging, labelling, quantity limits and declaration of the shipment must be observed.

3. Cleaning

3.1 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.

3.2 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.

3.3 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.

If products have ultrasonic sensors, the active sensor surface must be cleaned with a cloth when it becomes contaminated.

	Read and follow the safety precautions and general instructions in this manual and also in the SKF manual *"Safety and general instructions for lubrication systems."* Failure to follow these instructions may result in serious injury or damage to the lubrication system or the lubricated equipment.

4. SKF ST-102-C2P control centre

4.1 Operation

Control centre ST-102-C2P controls two progressive (ProFlex) lubrication channels implemented with a Multilube pump according to the lubrication parameters set. Lubrication cycle, maximum pressurisation time and the desired number of pulses generated by the progressive distributor sensor are set for both channels as parameters during pressurisation.

The ST-102 control centre also includes a function button for controlling the lubrication system and accessing various monitoring functions. There are three LED indicators above the function button: lubrication channel indicators 1 and 2 and pump indicator P. These indicators indicate the current stage of the lubrication cycle in each lubrication channel.

The lubrication cycle, maximum pressurisation time and other lubrication system timing parameters are also set using the function button and the LED indicators. The function button can also be used for executing functions such as extra lubrication, alarm acknowledgement and interruption of pressurisation, depending on the lubrication programme stage.

The control centre includes a power failure memory. Therefore, if there is a power outage, the programme will continue from the stage at which it was when the outage occurred in both channels. Furthermore, if the control centre is in alarm mode during the outage, the line which generated the alarm will automatically be lubricated. This way, the system can recover automatically from alarm status without being reset by the user.

4.2 Use of the function button

The function button has three LED indicators – 1, 2 and P – and the SET button. The function button is used in the dual-channel lubrication system for the monitoring and control of both lubrication channels.

4.2.1 Channel selection and operation of the LED indicators

Lubrication channel 1 or 2 can be selected by pressing the function button briefly.

- Indicator 1 is lit. Lubrication channel 1 is selected.
- Indicator 2 is lit. Lubrication channel 2 is selected.

When lubrication is in progress and the user does not select the channel with the function button, the function button indicators 1 or 2 and P are always lit when pressurisation for the channel in question begins.

When lubrication channel 1 is lubricated, the channel indicator 1 and the pump indicator P are lit.

When lubrication channel 2 is lubricated, the channel indicator 2 and the pump indicator P are lit.

NOTE

When an alarm is triggered, the channel in question is displayed automatically. See the alarms in Section 2.2.2 Indicators above the function button

4.3 Indicators above the function button

Status	Meaning
Indicator 1 is lit	Channel 1 is selected for display. Lubrication interval for channel 1.
Indicator 2 is lit	Channel 2 is selected for display. Lubrication interval for channel 2.
Indicators 1 and P are lit	Lubrication is in progress in channel 1. Channel 1 is being pressurised.
Indicators 2 and P are lit	Lubrication is in progress in channel 2. Channel 2 is being pressurised.
Indicator 1 is flashing	Pulse alarm in channel 1.
Indicator 2 is flashing	Pulse alarm in channel 2.
Indicator 1 is lit and P is flashing	Reservoir low level alarm. Channel 1 is selected for display.
Indicator 2 is lit and P is flashing	Reservoir low level alarm. Channel 2 is selected for display.
Indicator 1 or 2 flashes or is switched off for a moment (50 ms)	Progressive distributor sensor's function indicator. Pulse signal received from the sensor.
None of the indicators are lit	See the troubleshooting table.
All indicators are lit	See the troubleshooting table.
Indicators 1, 2 and P are flashing in alternately	See the troubleshooting table.

When the control centre's power is turned on, one of the indicators - **1, 2 or P -** is always lit.

4.4 Starting the functions

Depending on the lubrication programme status, the function button can be used for performing various actions:

Lubrication programme status	**Action**
Lubrication interval	Initiate extra lubrication
Pressurisation	Interrupt pressurisation
Alarm	Reset alarm

The function is run by pressing the button until all three indicators are lit (approximately 2 seconds).

ST-102-C2P function button

4.5 Changing lubrication parameter settings using the function button

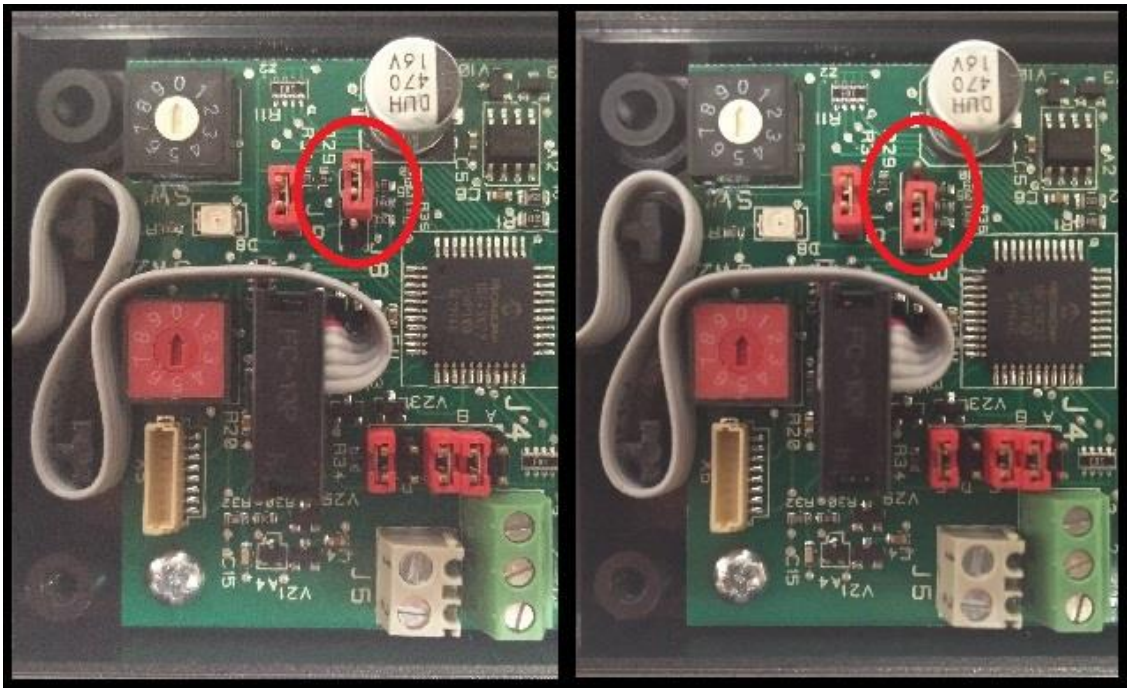
The function is always targeted at the channel selected for display.

The button allows users to set the lubrication interval, maximum pressurisation time and the required number of lubrication pulses.

ST-102-C2P control centre's circuit board selector switch J8 is used for selecting the lubrication cycle and maximum pressurisation timetables.

When J8 is in position 1, the time settings in accordance with tables **J8:1** are in use.

When J8 is in position 2, the time settings in accordance with tables **J8:2** are in use.



Selector switch J8 in position 1. J8:1 **Selector switch J8 in position 2. J8:2**

4.5.1 Setting the lubrication cycle

Select channel 1 or 2 by pressing the button briefly.

Press the button for 5 seconds until the indicator 1 begins to flash rapidly.

Now the lubrication interval can be set. Indicator P indicates the current value of the lubrication cycle. P flashes 1-10 times. After this, there will be a 2-second pause and indicator P will again flash 1-10 times. The current set value of the lubrication cycle can be found in the following table depending on the position of the selector switch J8.

J8:1	
Number of flashes	**Lubrication cycle (minutes)**
1	5
2	10
3	15
4	20
5	30
6	45
7	60
8	80
9	100
10	120

J8:2	
Number of flashes	**Lubrication cycle (min)**
1	20
2	25
3	30
4	35
5	40
6	45
7	50
8	55
9	60
10	65

To increase the lubrication cycle setting by one increment, briefly press the function button. When the highest setting is reached, the setting cycle starts from the beginning.

To exit the lubrication cycle setting and save it in the circuit board memory, hold the function button for approximately 5 seconds, after which all three indicators will light up.

4.5.2 Setting the maximum pressurisation time

Select channel 1 or 2 by pressing the button briefly.

Press the button for approximately 10 seconds in normal operation mode until the indicator 2 begins to flash quickly.

Now the maximum pressurisation time can be set. The number of flashes of indicator P shows the current lubrication cycle according to the following table.

J8:1	
Number of flashes	**Maximum pressurisation time (min)**
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9

J8:2	
Number of flashes	**Maximum pressurisation time (min)**
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

To change the pressurisation time, select the correct pressurisation time from the table above and press the button as many times as there are flashes indicated in the table. After reaching the biggest number, pressing the button will start cycling numbers from the beginning.

To exit the setting mode and save the setting in the circuit board memory, hold the button for approximately 5 seconds, after which all three indicators will light up.

NOTE

If the maximum pressurisation time is set as zero, the lubrication channel will be closed and no lubrication measures will be conducted. The lubrication channel cannot be closed if the selector switch J8 is in position 2.

4.5.3 Setting the progressive distributor pulse count setting

Select channel 1 or 2 by pressing the button briefly.

When the system is in its normal status, hold the button for approximately 15 seconds until indicators 1 and 2 start flashing rapidly.

Now the pulse count can be set. Indicator P will flash several times. The number of flashes corresponds to the current pulse count setting, see the following table.

Number of flashes	**Number of pulses**
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9

To change the pulse number setting, select the correct number of pulses from the table above and press the button as many times as there are flashes indicated in the table. After reaching the biggest number, pressing the button will start cycling numbers from the beginning.

NOTE

If the pulse number is set to zero (0), the pump will always operate for the set maximum pressurisation time.

4.5.4 Saving the set values and exiting the setting mode

To exit the setting mode and save the setting in the circuit board memory, hold the button for approximately 5 seconds, after which all three indicators will light up.

4.5.5 Exiting the setting mode without saving settings

If you leave the device in setting mode for 3 minutes, the system will automatically exit from the mode without saving any new values.

Correspondingly, if the control centre’s power is turned off in the setting mode, the changes will not be saved.

4.6 ST-102-C2P control centre components

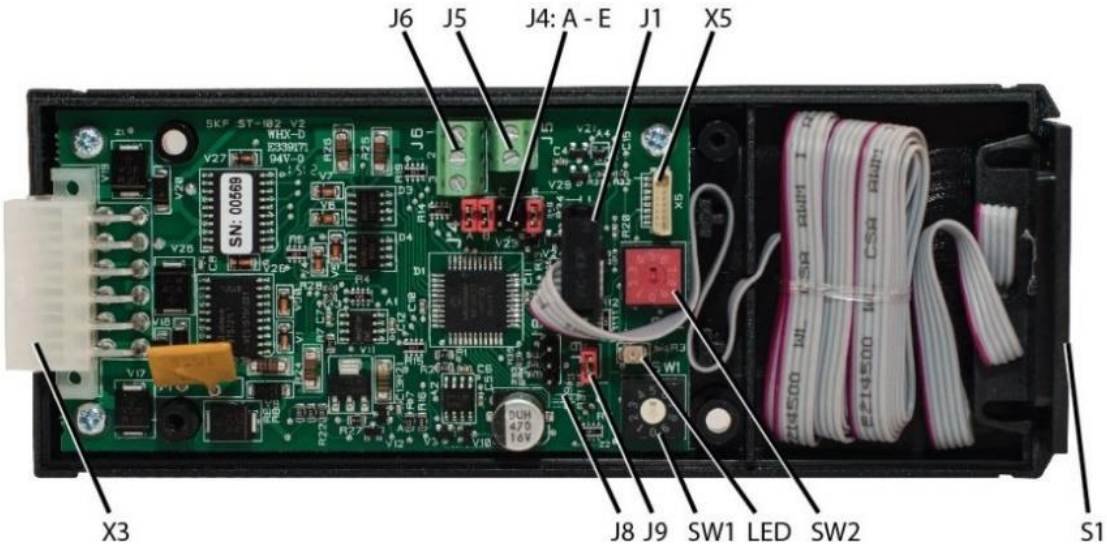


Image 1. ST102 control centre components

Symbol	Component	Function
S1	Button	User interface
J1	Connector	User interface connector
J4A	Jumper	Programme selector switch
J4B	Jumper	Programme selector switch
J4C	Jumper	Programme selector switch
J4D	Jumper	Programme selector switch
J4E	Jumper	Programme selector switch
J5	Screw terminal	No activity ST-102-C2P
J6	Screw terminal	External alarm indicator connector
J8	Jumper	Lubrication schedule table selector switch
J9	Jumper	Extra function selector switch
SW1	Rotary switch	No activity ST-102-C2P
SW2	Rotary switch	No activity ST-102-C2P
LED	LED indicator	Indicator
X3	Connector	Power supply and pump control
X5	Connector	Programming connector

4.7 Settings of the lubrication system

Changes in the circuit board options will take effect after the system has been restarted.
It is recommended to make adjustments in the control centre with the power turned off.

4.7.1 Lubrication programme selector switches

ST-102-C2P control centre settings:

J4:A	Open
J4:B	Closed
J4:C	Closed
J4:D	Open
J4:E	Closed
J9	Closed
J8	In position 1 or 2
SW1	Position 0
SW2	Position 0

NOTE

Lubrication parameters can be set using the control panel. Circuit board rotary switches SW1 and SW2 must be set to zero (0).

NOTE

If the settings are not made according to the table above, all indicators on the control panel will flash in succession and the lubrication programme will not initiate.

NOTE

The meaning of the position of the selector switch J8 is explained in Section 2.4.

4.7.2 ST-102-C2P power input and signal connector, X3

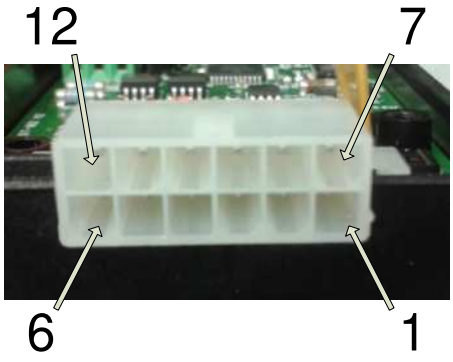


Image 2. Connector X3

Electrical connections, Molex connector (X3)

Connector X3	Signal
X3:1	0 V
X3:2	Supply voltage (+), 12 V DC or 24 V DC
X3:3	Supply voltage (–), 0 V DC
X3:4	0 V
X3:5	Pulse sensor, channel 1 (+)
X3:6	Pulse sensor, channel 2 (+)
X3:7	0 V
X3:8	Multilube valve control (+)
X3:9	Multilube pump control (+)
X3:10	0 V
X3:11	Multilube low limit switch (+)
X3.12	Multilube heating control (+)

4.7.3 External alarm indicators (J6)

Two external indicators (max: 5 W) can be connected to the J6 connector. When the system is in alarm status, indicator output voltage is on. The output voltage corresponds to the ST-102 control centre's supply voltage. If a single indicator is used for both alarms, outputs 1 and 3 can be connected together.

Alarm output connector (J6)

Connector	Signal
J6:1	Alarm output 1 (+), pulse alarm
J6:2	0 V
J6:3	Alarm output 2 (+), low-level alarm

4.8 Technical information

Operating temperature range	–30...+80 °C
Protection class	IP30
Dimensions	26 x 60 x 160 mm (w x h x d)
Operating voltage	12 or 24 VDC (10.5 to 32 VDC)
Power consumption	Depends on the lubrication system being controlled, 0...4 A
Fuse	Self-resetting fuse, 4 A, on the circuit board
Control inputs	2 pcs, pulse input from the progressive distributor Lubricant reservoir low level switch 10 to 32 VDC, 12 mA max.
Control outputs	Pump control, 5 A max. Line valve control, 2 pcs, 2 A max, or Line valve control, 1 pc, heating control, 1 pc, 2 A max.
Electrical connections	12-pole Molex w/ power supply and control outputs Three-pole screw terminal for alarm indicators, 2 pcs
User interface	Function button and three indicators: 1, 2 and P
Alarms	Alarms are indicated with indicators above the function button - Pulse alarm, connection for indicator, 5 W max. - Reservoir low level alarm, connection for indicator, 5 W max.
Lubrication control programmes	Dual-channel ProFlex
System configuration	Using selector switches on the circuit board
Lubrication parameter setting	Set with the function button Lubrication cycle, pressurisation time, pulse count For both channels
Power failure memory	Lubrication parameters, lubrication programme status
EMC tests	EN61000-6-4, EN61000-6-2 CISPR 25, 30...1000 MHz ISO 11452-2, 100...2000 MHz ISO 11452-4, 20...200 MHz ISO7637-2: 1, 2a, 2b, 3a, 3b, 4

4.9 Troubleshooting table

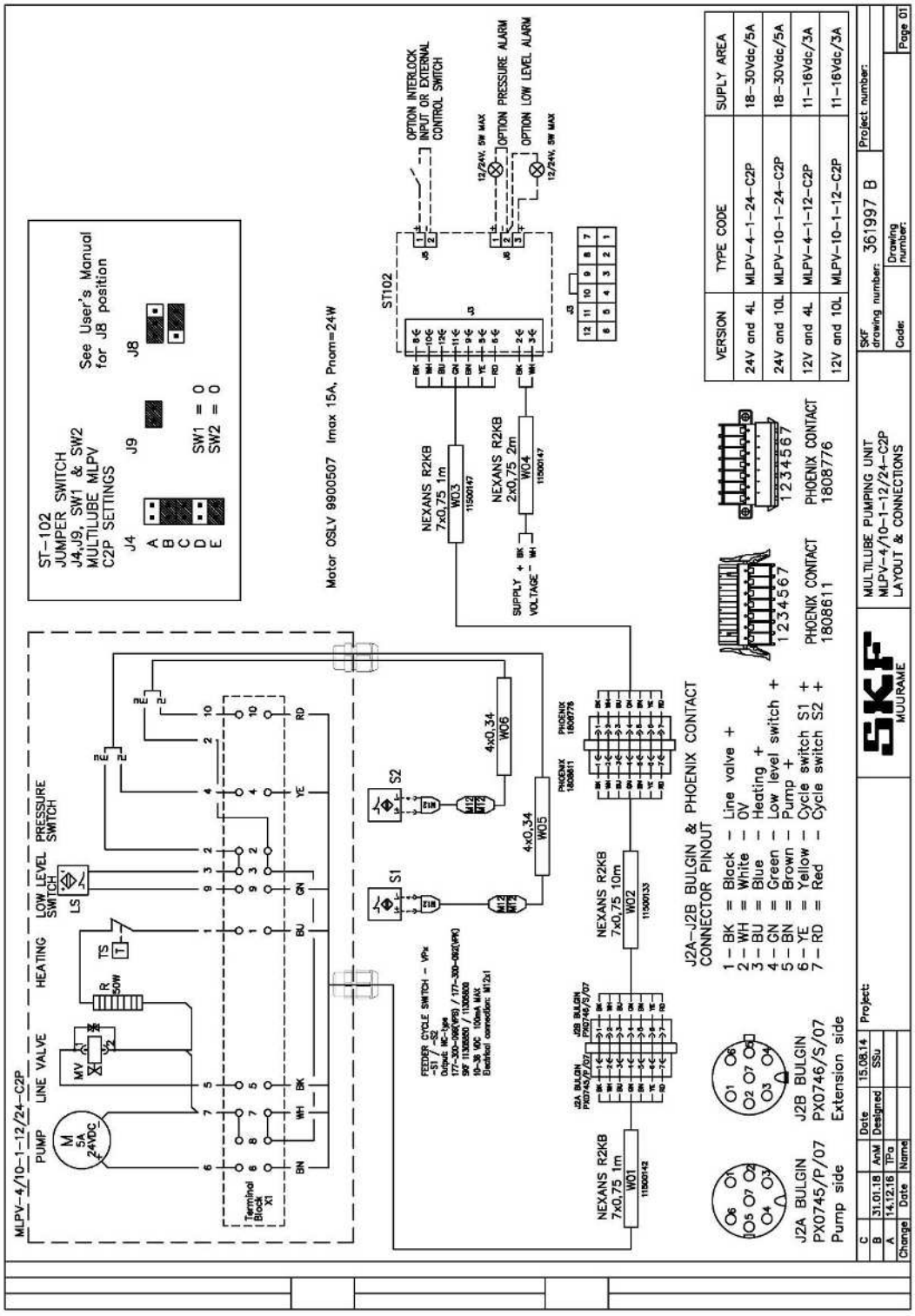
Description of malfunction	Cause of malfunction	Solution
User interface indicators do not light up.	The control centre receives no power. Blown control panel LED indicators Circuit board thermal fuse has been activated	Check the supply voltage. Change the button. Turn off the power for a while and turn the power back on.
All user interface indicators are continuously lit.	Insufficient timer operating voltage (<10.5 V). Timer does not start.	Check the supply voltage. Replace the timer.
All user interface indicators flash in succession.	Selector switches J4:A–E or J9 are incorrectly set. Setting in circuit board rotary switches SW1 and/or SW2 other than zero.	Check the settings indicated in Section 2.6.1 *Changing the lubrication system settings from the circuit board.*
Indicator 1 is flashing, Channel 1 is displayed. Pulse alarm in channel 1 *)	Header piping is leaking.	Locate and repair the leakage.
	There is air in the pumping unit or the header piping.	Remove air from the pumping unit or the header piping. Reset the alarm.
	Wrong lubricant.	Check the suitability of the lubricant from the equipment manufacturer.
	The distributor is stuck.	Verify which distributor is affected and replace the distributor.
	The pulse sensor is faulty.	Replace the pulse sensor.
	The pulse sensor cable is damaged.	Repair or replace the cable.
	Malfunction in the SKF Multilube pumping centre.	Locate and repair the malfunction or contact the equipment supplier.

Indicator 2 is flashing Channel 2 is displayed. Pulse alarm in channel 2 *)	Header piping is leaking.	Locate and repair the leakage.
	There is air in the pumping unit or the header piping.	Remove air from the pumping unit or the header piping. Reset the alarm.
	Wrong lubricant.	Check the suitability of the lubricant from the equipment manufacturer.
	The distributor is stuck.	Verify which distributor is affected and replace the distributor.
	The pulse sensor is faulty.	Replace the pulse sensor.
	The pulse sensor cable is damaged.	Repair or replace the cable.
	Malfunction in the SKF Multilube pumping centre.	Locate and repair the malfunction or contact the equipment supplier.
Indicator 1 is lit and P is flashing. Channel 1 is displayed. Reservoir low level alarm Indicator 2 is lit and P is flashing. Channel 2 is displayed. Reservoir low level alarm	Lubricant reservoir is empty.	Fill the lubricant reservoir. Reset the alarm.

*) Pulses received from the pulse sensors are displayed as short, 50 millisecond flashes, the pulse sensor of channel 1 in indicator 1 and the pulse sensor of channel 2 in indicator 2.

5. Appendix

5.1 Wiring diagram



5.2 China RoHS Table

部件名称 (Part Name)	有毒害物质或元素 (Hazardous substances)					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr(VI))	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (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.)