Shut-off Valve CLV-2

Pneumatic Shut-off valve



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

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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 behavior when handling the product

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

1.3 Intended use

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

1.4 Persons authorized to use the product

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

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

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

1.5 Foreseeable misuse

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

- Use of non-specified consumables, contaminated lubricants, or lubricants with air inclusions.
- Use of C3 versions in areas with aggressive, corrosive substances (e.g., high salt load).
- Use of plastic parts in areas with high exposure to ozone, UV light, or ionizing radiation.
- Use to supply, convey, or store hazardous substances and mixtures as defined in the CLP Regulation (EC 1272/2008) or GHS with acute oral, dermal, or inhalation toxicity or substances and mixtures that are marked with hazard pictograms GHS01-GHS06 and GHS08.
- Use to supply, convey, or store Group 1 fluids classified as hazards as defined in the Pressure Equipment Directive (2014/68/EU) Article 13 (1) a).
- Use to supply, convey, or store gases, liquefied gases, dissolved gases, vapors, or fluids whose vapor pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible operating temperature.
- Use in an explosion protection zone.
- Use without proper securing against excessively high pressures, in the case of pressurized products.
- Use outside of the technical data and limits specified in this manual.

1.6 Referenced documents

In addition to this manual, the following documents must be observed by the respective target group:

- Company instructions and approval rules

If applicable:

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

1.7 Prohibition of certain activities

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

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

1.8 Painting plastic components and seals

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

1.9 Safety markings on the product

No safety markings on the product

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

1.10 Note on the type plate

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

1.11 Emergency shutdown

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

1.12 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.

1.13 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. Lubricants

2.1 General information

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

2.2 Material compatibility

Lubricants must generally be compatible with the following materials:

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

Metal steel, grey iron, brass, copper, aluminium

2.3 Temperature characteristics

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

2.4 Ageing of lubricants

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

2.5 Avoidance of malfunctions and hazards

To avoid malfunctions or hazards, please observe the following:

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

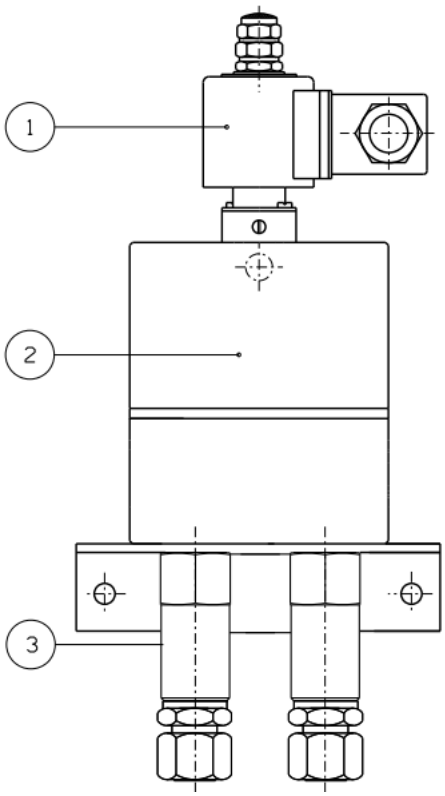
3. Overview, functional description

3.1 General Description

CLV-2 is an electrically controlled pneumatic shut-off valve. In the grease lubrication system, the lubrication channels controlled by one pumping center are separated from each other with shut-off valves. The CLV-2 –valve can also be used directly from the machine to be lubricated (interlocking), if needed. When the machine to be lubricated starts, it opens the valve and makes it possible to lubricate the machine during pressurization.

3.2 CLV-2 shut-off valve design

Fig. 1



Shut-off valve as assembly (360457)

Legend of Fig. 1:
1 Solenoid valve
2 Pressure air cylinder
3 Two spring-loaded check valves.

4. Technical data

Table 1

Technical Specification

Quantity	Value	Unit	Description
t	-10…+50	°C	operation temperature
p	4–7	bar	pressure range
U	24 ±10% 115 ±10%; 50/60 230 ±10%; 50	V DC V AC, Hz V AC, Hz	control voltage

Coil

- The power consumption of a DC- coil is 9 W and of an AC- coil a continuous 8 W, a peak value of 26 VA.
- With control voltage 24 V DC, the coil plug must be equipped with an over voltage protector.

4.1 Connections

Inputs

- lubricant (2 pcs), female thread G 3/8” or NPT 3/8”
- pressure air, female thread G 1/8” or NPT 1/8”
- control voltage, 24 V DC or 115 V AC or 230 V AC

Outputs

- lubricant (2 pcs), female thread G 3/8” or NPT 3/8”

4.2 Symbols

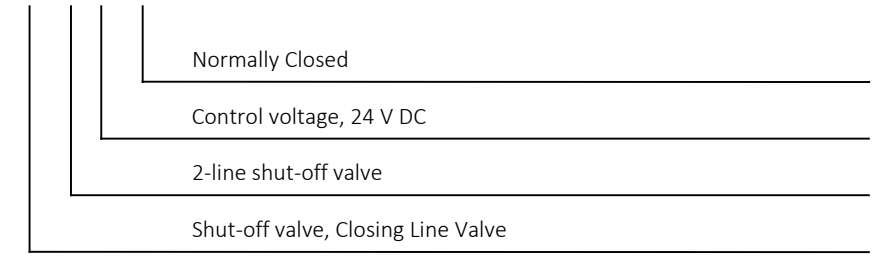
Table 2

Symbols

CLV-2-xxx-yy-U	Abbreviation	Description
CLV:	CLV	Shut-off valve, Closing Line Valve
2:	2	2-line shut-off valve
xxx:	24	control voltage, 24 V DC ±10%
	115	control voltage, 115 V AC ±10% 50/60 Hz
	230	control voltage, 230 V AC ±10% 50 Hz
yy:	NC	De-energized closed, Normally Closed
	NO	De-energized open, Normally Open
U:	no symbol	connections, G-female threads
	U	connections, NPT-female threads

Example:

CLV-2-24-NC



Connections: G-female threads

5. Delivery, returns, storage

5.1 Delivery

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

5.2 Return shipment

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

Fig. 2



Marking of return shipments

5.3 Storage

The following conditions apply to storage:

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

5.4 Storage temperature range

For parts not filled with lubricant, the permitted storage temperature is the same as the permitted ambient temperature range (see “Technical data4. ”).

6. First start-up

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

6.1 Inspections prior to initial start-up

Table 3

Inspections prior to initial start-up

Activity to be done	YES	NO
All mechanical components assembled and tightened properly as per the toques given	☐	☐
There are no visible leakages at the connections, joints and on the tubes	☐	☐
The supply line has been laid correctly	☐	☐
No visible damage, contamination and corrosion	☐	☐
Ensure proper mounting of protection and monitoring equipment for correct function	☐	☐

6.2 Inspections during initial start-up

Table 4

Inspections during initial start-up

Activity to be done	YES	NO
No unusual noises, vibrations, accumulation of moisture, or odours present	☐	☐
No unwanted escape of lubricant (leakages) from connections	☐	☐
Lubricant is supplied free from bubbles	☐	☐

7. Operation

A solenoid valve controls the operation of the pressure air cylinder of the CLV-2 –shut-off valve. The control voltage to the solenoid valve is connected either from a lubrication control unit or from the interlocking system of the machine to be lubricated.
The solenoid valve is provided with a manual control screw, which enables manual control if needed, for example in case of a power failure.
The indicator located at the bottom of the shut-off valve (Fig. 3, Fig. 4) is visible when the check valves are open.

NOTE
The shut-off valve must be installed in vertical position so that the indicator is on the bottom side.

7.1 Control voltage impact on shut-off valve

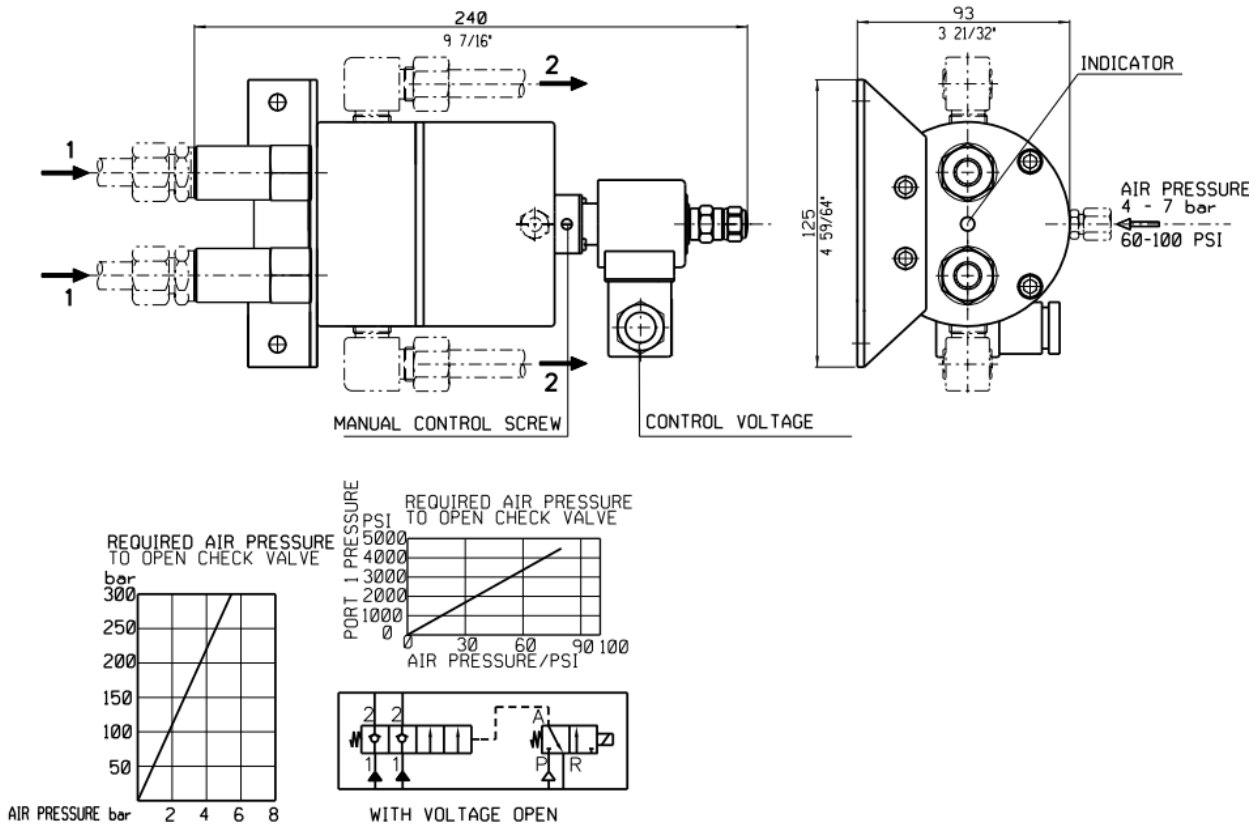
NOTE
If the feeding of the pressure air to the shut-off valve breaks off, the valve stays closed.

The NC-type of shut-off valve is (normally) closed when de-energized and it will open when energized. The check valve needs a sufficient high amount of pneumatic air pressure (4-7 bar) to be able to open and to stay open (Refer Fig. 4)

Table 5

NC-type		Air pressure	
		Yes	No
Control voltage	No	Closed	Closed
	Yes	Open	Closed

Fig. 3



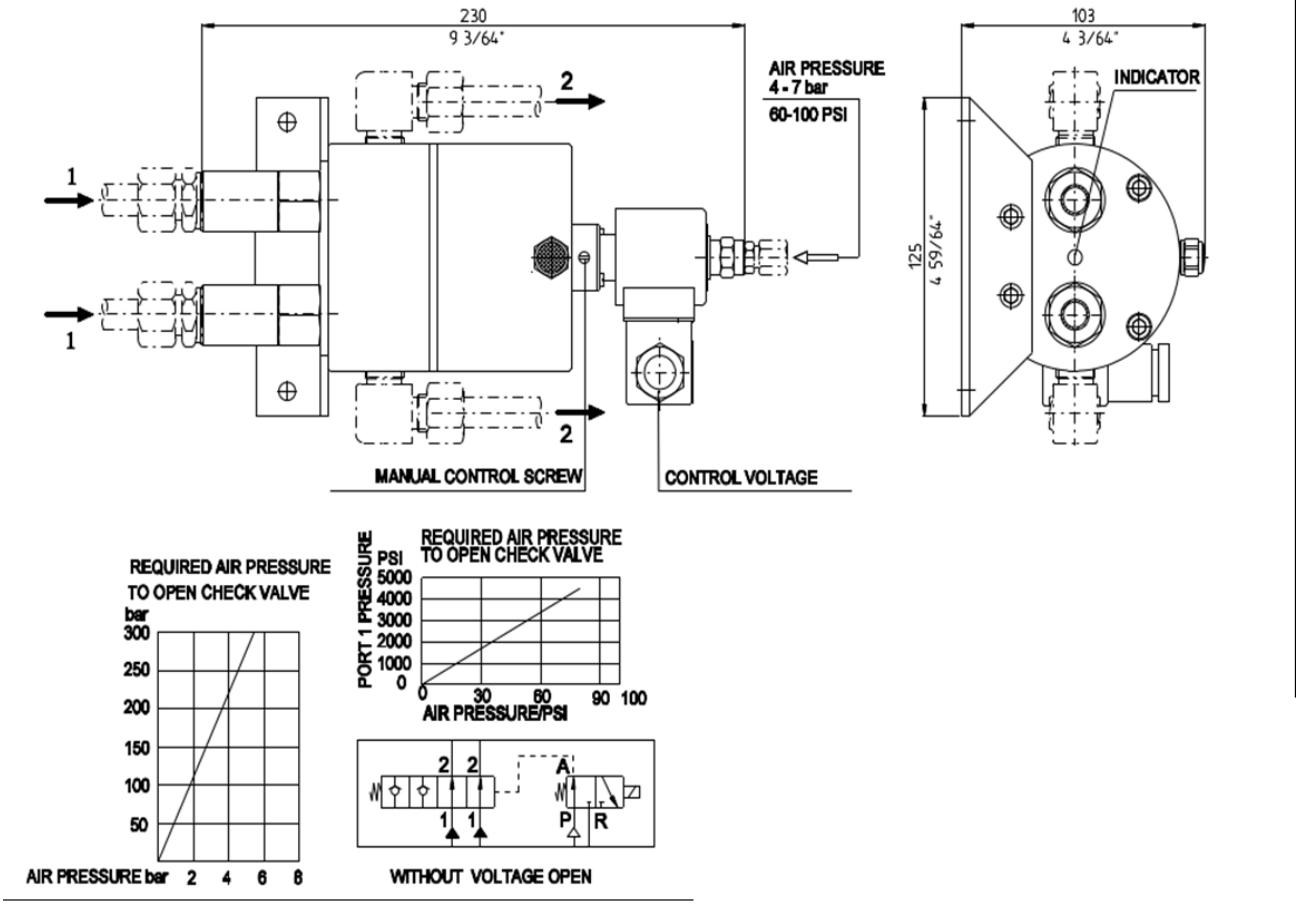
Control voltage and pressure air impact on a NC-type shut-off valve (360641)

The NO-type of shut-off valve is (normally) open when de-energized and it will close when energized. The check valve needs a sufficient amount of pressure air to be able to stay open (Refer Fig 3).

Table 6

NO-type		Air pressure	
		Yes	No
Control voltage	No	Open	Closed
	Yes	Closed	Closed

Fig. 4



Control voltage and pressure air impact on a NO-type shut-off valve (360640)

7.2 Manual Operation

If the Maxilube -system is designed with shut-off valves, open the shut-off valve of the channel to be pressurized before the pressurization of the piping so that the lubricant can be distributed to the lubrication points after the shut-off valve.

In a multi-channel system, the shut-off valve of the channel to be pressurized is opened by turning the manual control screw of the shut-off valve 90° clockwise. This way lubricant can be distributed to the channel to be pressurized. Refer Fig. 2 or Fig. 3.

Finally, turn the manual control screw of the opened shut-off valve 90° counter-clockwise to close the valve.

See also SKF Maxilube changeover valve unit/ Manual operation.

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 by the operator based on the operating conditions. If needed, use the below table for regular maintenance activities.

Table 7

Checklist Maintenance

Activity to be done	YES	NO
All mechanical connections carried out correctly and tightened properly as per the given torques	☐	☐
All lubrication lines checked for damages and leakages	☐	☐
No visible damage and corrosion on the metallic parts	☐	☐
Any dismantled protection and monitoring equipment have been reassembled and checked for correct function	☐	☐
No unusual noises, vibrations, accumulation of moisture or odours present	☐	☐
Product protected with adequate pressure control valve/protective guard	☐	☐
Any warning labels on the product are present and in proper condition	☐	☐
The performance data correspond to the specifications stated in the Chapter 4 Technical data	☐	☐

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 injury and objects hitting



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

⚠ WARNING



Serious injury from contact with or inhalation of hazardous substances







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

10. Repairs

⚠ WARNING



Risk of injury

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



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



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



- Cover any adjacent live or moving parts

11. Shutdown, disposal

11.1 Temporary shutdown

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

11.2 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.

11.3 Disposal

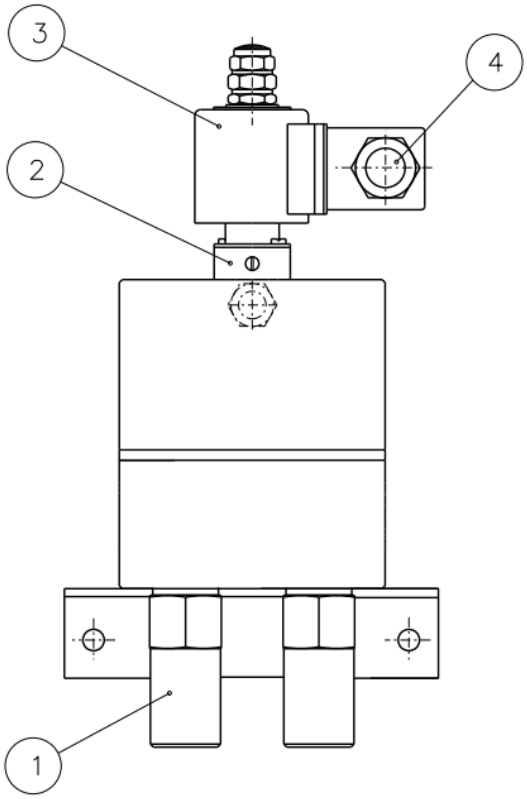
The waste producer/operator must dispose of the various types of waste in accordance with the applicable laws and regulations of the country in question.

12. Spare parts

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

12.1 Spare parts for CLV-2 shut off valve

Fig. 5



CLV-2 Shut-off Valve (360457)

Table 8

Spare Part list

Item No.	Description	Spare part no.	Material	Details Draw
1	Check Valve	12385338	462149	G3/8- NPT 1/4
		12385336	462148	G3/8- G3/8
2	Solenoid valve (contains coil)	12602100	Lucifer	230 VAC NO
		12601900		230 VAC NC
		12602050		120 VAC NO
		12601850		120 VAC NC
		12602000		24 VDC NO
		11601250		24 VDC NC
3	Coil	12601700	Lucifer	230 VAC
		12601650		120 VAC
		11601400		24 VDC
4	Plug	11601450	MPM-712 DIN43650-A	230 VAC, 115VAC
		12600292	GDML 2011GB LED 24	24 VDC

13. Appendices, 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 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.)

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