

ZPU 02



Operating Instructions

Pump ZPU 02 ATEX

EU Declaration of Conformity according to ATEX Directive 2014/34/EU, Annex X

The manufacturer, SKF Lubrication Systems Germany GmbH, Walldorf Plant, Heinrich-Hertz-Str. 2- 8, DE - 69190 Walldorf hereby declares, under its sole responsibility, conformity of the device

Designation: Electrically operated pump for the supply of lubricants within a centralized lubrication system

Type: ZPU 02

Part numbers: 661-46622-6 | 661-46622-9 | 661-46758-2 | 661-47091-6 | 6610-00000035

complies with all essential safety and health requirements of ATEX directive 2014/34/EU and the safety and health requirements of machinery directive 2006/42/EC (see appendix to the EU declaration of conformity) at the time of placing on the market.

The technical documentation according

- o ATEX Directive 2014/34/EU Annex VIII No. 2 has been compiled and filed with the conformity assessment body (CE0123).
- o Machinery Directive 2006/42/EC Annex VII Part B has been compiled.

We undertake to transmit these in electronic form in response to a reasoned request by the national authorities. The manufacturer is authorized for the technical documentation.

Furthermore, the following Directives and (harmonized) standards were applied in the applicable areas:

Directives

2011/65/EU RoHS II

2014/30/EU Electromagnetic Compatibility t

EN ISO 12100:2010

EN 1127-1:2019

EN IEC 63000:2018

EN 809:1998+A1:2009/AC2010

EN ISO 80079-36:2016

EN 60204-1:2018

EN ISO 80079-37:2016

Standards

The device 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 ATEX Directive 2014/34/EU, Machinery Directive 2006/42/EC, and all other applicable Directives.

Walldorf, 25.02.2026

Wilhelm Burger
COO Managing Director
SKF Lubrication Systems Germany GmbH



Operating Instructions

Pump ZPU 02 ATEX

UK Declaration of Conformity pursuant to the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (2016 No. 1107)

The manufacturer, SKF Lubrication Systems Germany GmbH, Walldorf Plant, Heinrich-Hertz-Str. 2- 8, DE - 69190 Walldorf hereby declares, under its sole responsibility, conformity of the device

Designation: Electrically operated pump for the supply of lubricants within a centralized lubrication system
Type: ZPU 02
Part numbers: 661-46622-6 | 661-46622-9 | 661-46758-2 | 661-47091-6 | 6610-00000035

complies with all essential safety and health requirements of the regulation The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 No. 1107, and the applicable health and safety requirements of the Supply of Machinery (Safety) Regulations 2008 No. 1597 (see appendix to the EU declaration of conformity) at the time of placing on the market.

The technical documentation according to:

- The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 No. 1107 has been compiled and filed with the conformity assessment body (CE0123).
- Supply of Machinery (Safety) Regulations 2008 No. 1597 has been compiled.

We undertake to transmit these in electronic form in response to a reasoned request by the national authorities. The authorized representative for the compilation of the technical documentation is SKF (U.K.) Limited, 2 Canada Close, Banbury, Oxfordshire, OX16 2RT, GBR. The following regulations and standards were applied in the applicable areas:

Regulations

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

EN ISO 12100:2010	EN 1127-1:2019	EN IEC 63000:2018
EN 809:1998+A1:2009/AC2010	EN ISO 80079-36:2016	
EN 60204-1:2018	EN ISO 80079-37:2016	

The device must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (2016 No. 1107), the Supply of Machinery (Safety) Regulations 2008 (2008 No. 1597) and all other applicable regulations.

Walldorf, 25.02.2026

Wilhelm Burger
COO Managing Director
SKF Lubrication Systems Germany GmbH

Operating Instructions

Pump ZPU 02 ATEX

Essential health and safety requirements according to 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.

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
Regarding 1.1.3: 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.			
1.1.5	Design of machinery to facilitate its handling	YES	YES
1.1.6	Ergonomics	YES	Partially
Regarding 1.1.6 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.			
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	Partially
Regarding 1.3.2 Not completely fulfilled: The operator must protect the lubrication system against excessive pressure. For this purpose, a pressure relief valve with max. 350 bar opening pressure must be provided on each pump element.			
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
1.5.6	Fire	YES	YES
1.5.8	Noise	YES	YES
1.5.11	External radiation	YES	YES
1.5.13	Emissions of hazardous materials and substances	YES	YES
1.5.15	Risk of slipping, tripping, or falling	YES	YES
1.6	Servicing	YES	YES
1.6.1	Machinery maintenance	YES	YES
1.6.2	Access to operating positions and servicing points	YES	YES
Regarding 1.6.2 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 without danger.			
1.6.4	Operator interventions	YES	YES
1.7	Information	YES	YES
1.7.1	Information and warnings on the machinery	YES	YES

Operating Instructions

Pump ZPU 02 ATEX

1.7.1.	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	Operating instructions/assembly instructions	YES	YES
1.7.4.	General principles for the drafting of operating instructions/assembly instructions	YES	YES
1.7.4.	Contents of the operating instructions/assembly instructions	YES	YES
1.7.4.	Sales literature	YES	YES

Declaration of conformity

Table of contents

<i>EU Declaration of Conformity according to ATEX Directive 2014/34/EU, Annex X</i>	2
<i>UK Declaration of Conformity pursuant to the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (2016 No. 1107)</i>	3
1. Guidelines	9
1.1 Warnings	9
1.2 Illustrations	10
1.3 Addresses of manufacturer	10
1.4 Warranty	11
1.5 Disclaimer	11
1.6 Copyright / Integration of the instructions	11
2. Safety information	12
2.1. Emergency stopping of the pump	12
2.2. Intended use	12
2.3. Explosion protection class	12
2.4. Expiry of the ATEX certification	12
2.5. Pump operation	13
2.6. Foreseeable misuse	13
2.7. Painting of plastic parts	14
2.8. Prohibition of certain activities	15
2.9. Conversions or modifications	15
2.10. Inspections	15
2.11. Markings on the pump	16
1.1. Note on UKCA marking	16
1.2. Other applicable documents	17
1.3. Sources of hazard	17
1.4. Moving, rotating parts	17
1.5. Energies	17
1.6. Lubricants	18
1.7. Explosive substances at the location of use	18
1.8. Existing residual risks	19
1.9. Persons authorized to operate the pump	23
1.10. Operator	23
1.11. Specialist for maintenance and repairs in potentially explosive atmospheres	23
1.12. Briefing of external technicians	23
1.13. Provision of personal protective equipment	23
1.14. Safety recommendations to be complied with	24

Operating Instructions

Pump ZPU 02 ATEX

1.15.	General behaviour when handling the machine	24
1.16.	Explosion protection	25
1.17.	Safety-related protective and emergency devices must	28
1.18.	Transport / installation / maintenance / repairs / servicing	29
1.19.	Initial commissioning / daily start-up	32
1.20.	Cleaning	32
1.21.	Inspection of the delivery	33
1.22.	Returns	33
1.23.	Disposal	33
2.	Lubricant	34
2.1.	Selection of lubricants	34
2.2.	Specification	35
2.3.	Ageing of lubricants	35
3.	Technical data	36
3.1.	Ambient temperature	36
3.2.	Operating pressure	36
3.3.	Installation position	36
3.4.	sound pressure level	36
3.5.	Maximum set-up height	36
3.6.	Maximum dust thickness	36
3.7.	Gear ratio	36
3.8.	Weight	36
3.9.	reservoir	37
3.10.	Space requirements	38
3.11.	Electrical connection	39
3.12.	IP type of protection	39
3.13.	Pump element assemblies	40
3.14.	Tightening torques	41
3.15.	Output	42
3.16.	Connections / outlets	42
3.17.	Filling possibilities	42
3.18.	Rotational direction of the pump	42
3.19.	Permitted speeds	42
3.20.	Painting	43
3.21.	Notes related to the type identification plate	43
3.22.	Notes related to the CE marking	44
3.23.	Reference on Low Voltage Directive 2014/35/EU	44
3.24.	Reference on Pressure Equipment Directive 2014/68/EU	44
3.25.	Storage until the first use	45
4.	Technical data of the motor	46
5.	Technical data of the capacitive sensor	47
6.	Brief description of the pump	48
7.	Installation and commissioning	50
7.1.	Filling of the reservoir	50

7.2.	<i>Inadvertent filling with incorrect lubricant</i>	51
7.3.	<i>Electrical connection of the motor to the operator's network</i>	51
7.4.	<i>Inspections prior to initial start-up</i>	52
7.5.	<i>Activation of the pump</i>	53
8.	<i>Standard operation</i>	53
8.1.	<i>Daily start-up</i>	53
8.2.	<i>Inspections</i>	53
8.3.	<i>Filling of the reservoir during operation</i>	54
8.4.	<i>Cleaning</i>	54
9.	<i>Maintenance</i>	55
9.1.	<i>Maintenance of pump</i>	55
9.2.	<i>Maintenance of gear unit</i>	56
9.3.	<i>Maintenance of the SEW motors</i>	56
9.4.	<i>Measurement of the insulation resistance</i>	57
9.5.	<i>Maintenance of gear unit</i>	57
10.	<i>Troubleshooting</i>	58
11.	<i>Declarations of conformity of the purchase parts</i>	62

1. Guidelines

As you read these instructions, you will notice a number of depictions and symbols which are to facilitate the navigation and understanding of these instructions. For reasons of better legibility, in these instructions we mainly use the male form for general references. Of course, the female form is also always intended.

Text representations	Meaning
Bold print	Highlighting of particularly important words or passages
• List 1	Marks lists
○ List 2	Marks lists
(parenthesis)	Item numbers
➤ Instructions	Instructions to personnel. These always appear in chronological order.

1.1 Warnings

Activities which generate actual hazards (to life and limb or possible damage to the material) are marked by warnings. Definitely observe the instructions given in the warnings. The following warnings are possible.

Warning level	Consequence	Probability
 DANGER	Death/ serious injury	imminent
 WARNING	Death/ serious injury	possible
 CAUTION	Minor injury	possible
NOTICE	Property damage	possible

1.2 *Illustrations*

The illustrations used refer to a specific product. In the case of other products or product versions they may have a schematic character only. The basic functions, however, do not change.

1.3 *Addresses of manufacturer*

Address of manufacturer plants	Authorized party placing the product on the market locally
Manufacturer SKF Lubrication Systems Germany GmbH E-mail: Lubrication-germany@skf.com www.skf.com/lubrication	Great Britain SKF (U.K.) Limited, 2 Canada Close, Banbury, Oxfordshire, OX16 2RT, GBR.
Werk Walldorf Heinrich-Hertz-Straße 2-8 69190 Walldorf Deutschland Tel: +49 (0) 6227 33-0 Fax: +49 (0) 6227 33-259	North-America SKF Lubrication Business Unit Lincoln Industrial 5148 North Hanley Road, St. Louis, MO. 63134 USA
Werk Berlin Motzener Straße 35/37 12277 Berlin Deutschland Tel. +49 (0)30 72002-0 Fax +49 (0)30 72002-111	South-America SKF Argentina Pte. Roca 4145, CP 2001 Rosario, Santa Fe

1.4 *Warranty*

The instructions do not contain any information on the warranty. This can be found in our general terms and conditions.

1.5 *Disclaimer*

Observation of these instructions is the prerequisite for safe operation and the achievement of product characteristics and performance levels. The manufacturer shall bear no liability for damages - of any kind - resulting from the non-observance of these instructions.

1.6 *Copyright*

© Copyright SKF. All rights reserved.

2. Safety information

Safety information is to be read and observed by any persons entrusted with works on the machine or by those persons who supervise or instruct the before-mentioned group of persons. It is prohibited to commission or operate the machine prior to reading the Instructions. These Instructions must be kept at an accessible location for further use.

2.1. *Emergency stopping of the pump*

In case of an emergency stop the pump by:

- Switching off the machine or system in which the pump has been integrated.

2.2. *Intended use*

Supply of lubricants within a centralized lubrication system following the specifications made in these Instructions and the stated explosion protection class:

Pump versions E and V Progressive systems.

Pump version F: Dual-line systems up to a line length of 50 m

2.3. *Explosion protection class*

See declaration of conformity / type identification plate.

2.4. *Expiry of the ATEX certification*

The ATEX certificate for this product expires through:

- Use not in accordance with the intended purpose
- Unauthorized modifications.
- Use of non-original spare parts.
- Non-observance of these instructions and other applicable Instructions.
- Use of non-specified lubricants.
- Non-observance of the specified maintenance, refilling and repair intervals.
- Operation with damaged, lacking ATEX painting or ATEX painting done wrongly later on and not complying with the standards applicable for ATEX.

2.5. Pump operation

Operation is permitted only, if in compliance with:

- All information given in these instructions or stated in the referenced documents.
- All laws and regulations to be complied with by the user.
- Information on explosion protection according to directive 1999/92/EC (ATEX 137).
- ATEX approval.

2.6. Foreseeable misuse

Any other use and purpose of the pump than the ones described before are strictly prohibited. It is expressly forbidden to be used:

- outside the indicated operating temperature range
- with non-specified means of operation.
- with contaminated lubricants or lubricants with air inclusions.
- with lubricants the temperature of which exceeds the maximum admissible ambient temperature.
- without adequate pressure control valve.
- in areas with aggressive or corrosive materials (e.g. high ozone pollution). These may affect seals and painting.
- in areas with harmful radiation (e. g. ionising radiation).
- to supply, transport, or store hazardous substances and mixtures in accordance with annex I part 2-5 of the CLP regulation (EC 1272/2008) and marked with GHS01 - GHS06 and GHS08 hazard pictograms.

- to feed, forward, or store gases, liquefied gases, dissolved gases, vapours, or fluids whose vapour pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at the maximum permissible operating temperature.
- to feed, forward, or store lubricants containing volatile solvents.
- in explosive gas and vapour atmospheres, the ignition temperature of which is smaller than 125 % of the maximum surface temperature.
- in explosive dust atmospheres, the minimum ignition and glow temperature of which are smaller than 150% of the maximum surface temperature.
- In a different, more critical potentially explosive atmosphere than stated on the type identification plate of the pump used.
- with damaged or lacking ATEX painting or ATEX painting done wrongly later on. The painting must comply with the standards valid for ATEX.

2.7. *Painting of plastic parts*

Painting of any plastic parts or seals of the described products is expressly prohibited. Remove or tape plastic parts completely before painting the superior machine

2.8. *Prohibition of certain activities*

The following activities may be carried out by manufacturer specialists or authorized persons only due to potential sources of faults that may not be visible for the user, or due to legal regulations:

- Repairs / changes to the drive
- Replacement of or changes to the pistons of the pump elements

2.9. *Conversions or modifications*

Unauthorized conversions or modifications may result in unforeseeable impacts on safety. Therefore, any unauthorized reconstructions or changes are expressly prohibited.

2.10. *Inspections*

The following inspections were carried out prior to delivery:

- Inspections following ATEX
- Electrical inspections following DIN EN 60204-1 / VDE 0113-1.
- Safety and functional tests

2.11. Markings on the pump

	Warning of dangerous electrical voltage
	Hand injury warning During operation of the pump, never remove the lid and reach into the reservoir. Risk of trapping or shearing off hands and fingers!
	Equipotential bonding connections

2.12. Note on UKCA marking

	The UKCA marking confirms the conformity of the product with the applicable directives of Great Britain.
---	--

2.13. Other applicable documents

In addition to these instructions, the following documents must be observed by the respective target group:

- Operator's explosion protection document.
- Operational instructions and release provisions by the operator.
- Instructions of the components required to set up the centralized lubrication system.
- Safety data sheet (MSDS) of the lubricant used.

Gear

Rehfuss

- Instructions for the SM type series

Motors

SEW

- Explosion-protected three-phase motors EDR71
Documentation no.: 19402007

Where appropriate:

- Project planning documents
- Other relevant documents for the integration of the pump into the superior machine.

The owner must supplement these documents by the respective valid national or regional regulations laid down by the country in which the product is to be used. If the product is sold or transferred, any associated documents must be passed on to the subsequent operator as well.

2.14. Sources of hazard

The pump has been designed, built and tested using state-of-the-art technology. It will have left our company only after having passed a safety test and acceptance. Like for all complex machines, also for this pump there may still be involved potential sources of hazard, For example:

2.15. Moving, rotating parts

- Drive, stirring paddles

2.16. Energies

- Electricity
- Temperature (hot/ cold surfaces)

- Position energy (raised components)
- Parts subject to (operating) pressure
- Parts subject to spring tension

2.17. Lubricants

- Grease/ oil

2.18. Explosive substances at the location of use

- Gases, dusts

2.19. Existing residual risks

Residual risks	Remedy
Operation in potentially explosive area	
Deviating installation position. Loss of correct low-level signal function.	Maintain installation position ($\pm 5^\circ$). Correct installation position, if necessary.
Heat-up of non-lubricated lubrication points in the area of ignition temperature through undetected faults within the centralized lubrication system.	The operator must check thoroughly whether an operation without low-level signal leads to a new hazard potential (e.g. through heat-up of bearing points on the machine in the area of ignition temperature). If this cannot be ascertained, provide a low-level signal or suitable organisational measures for monitoring of the bearing point temperature.
Heat-up of components in the area of ignition temperature or formation of a potentially explosive atmosphere through whirling up of dust.	Avoid dust accumulation and remove dust regularly. Select a location of installation with as little dust as possible.
Strong heating up of the motor in case of high load or failure of the motor circuit breaker.	Switch the pump off. Let parts cool down, eliminate cause. Replace the motor circuit breaker or adjust it correctly.
Loosening of plug-in connections under voltage.	de-energise the pump. Secure plug-in connections against inadvertent loosening by means of safety clips.
Generation of electrostatic charges or sparks through unsuitable clothing or tools.	Within potentially explosive atmospheres use ESD clothing and tools only.
Generation of sparks through dropping parts.	Secure parts against falling. Cover parts in order to avoid the formation of sparks.
Missing or insufficient grounding.	Check the grounding on the pump.
Bringing catalytic, unstable or pyrophoric substances into a potentially explosive area.	Ensure that none of these substances gets into the potentially explosive area. Have all substances approved by the operator.
Use of isolating amplifiers to operate the low-level sensor in potentially explosive areas.	Mount / use isolating amplifiers outside potentially explosive areas only.

Operating Instructions

Pump ZPU 02 ATEX

Residual risks	Remedy
Transport lifecycle	
Tilting or falling of parts during transport, e.g. over inclines.	Secure parts against tilting or falling during transport (e.g. using tapes, belts, ropes, etc.).
Installation life cycle	
Dropping of lifted parts or tools.	No people may remain under suspended loads. Keep unauthorized persons away. Secure suspended loads using suitable hoisting equipment (e.g. tapes, belts, ropes, etc.).
Falling of parts due to insufficient fixing to the machine.	Fix parts only to machine parts with sufficient load capacity. Observe the weight. Observe the stated tightening torques. If no tightening torques are stated, the tightening torques are to be applied to the screw size for 8.8 screws.
Electric shock when connecting the pump.	Prior to connection of the pump, de-energize all affected electrical components of the machine. If necessary, please observe discharge times. The electrical connection may be carried out by commissioned and qualified electricians only and in accordance with the connection diagram.

Operating Instructions

Pump ZPU 02 ATEX

Residual risks	Remedy
Installation life cycle	
People slipping due to floor contamination with spilled or leaked lubricant.	Take care when filling. Bind and remove leaked or spilled lubricant immediately with a suitable agent. Observe the legal or company regulations on dealing with oils and greases and contaminated parts.
Ripping out or damage to lines when assembling movable machine parts (e.g. pivot arm).	If possible, do not mount onto movable parts. Should this not be possible, use flexible hose lines of sufficient length.
Deviating installation position. - Foreign objects falling into the motor air intake. - Borehole for drainage of condensation water is no longer at the lowest point of the motor.	Installation of a suitable protective roof over the air intake. Deviating installation position only, if the formation of condensation water has been completed. Remove condensation with suitable suction device.
Commissioning/ operation/ maintenance lifecycle	
Lubricant spraying out due to incorrect screw connection of components or lines.	Tighten all parts with appropriate tightening torques. Use suitable hydraulic screw connections and lines for the stated pressures. Check these prior to commissioning for correct connection and damage.
Contact with the stirring paddle when filling from the top during operation of the pump.	Fill preferably via the filling connection. Fill only from the top when the pump is not moving. When filling, do not reach into the reservoir.

Operating Instructions

Pump ZPU 02 ATEX

Residual risks	Remedy
Lifecycle Commissioning/ operation/ maintenance	
Electric shock through reduced insulation resistance.	Check the formation of condensation water in the motor regularly. If applicable, drain off condensation water at the drain plug. Check the insulation resistance regularly.
Electric shock when connecting the pump.	Prior to connection of the pump, de-energize all affected electrical components. If necessary, please observe discharge times. The electrical connection may be carried out by commissioned and qualified electricians only and in accordance with the connection diagram.
Fault lifecycle	
Severe heat-up or defect of motor through blockage.	Switch the pump off. Let parts cool down, eliminate cause.
Disposal lifecycle	
Contamination of the environment with lubricants and wetted parts.	Dispose of the parts following the valid legal and company regulations.

2.20. Persons authorized to operate the pump

2.21. Operator

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

2.22. Specialist for maintenance and repairs in potentially explosive atmospheres

A person who is qualified by training and experience to identify and assess possible risks and hazards during work on the machine or partial components in potentially explosive areas and to initiate suitable measures to prevent such risks. The specialist has knowledge of the different ignition protection types, installation procedures and zone divisions. The specialist is familiar with the rules and regulations relevant for the job and the explosion protection, in particular with ATEX directive 2016/34 EU.

2.23. Briefing of external technicians

Prior to commencing the activities, external technicians must be informed by the operator of the company safety provisions, the applicable accident prevention regulations to be maintained, and the functions of the superordinate machine and its protective devices.

2.24. Provision of personal protective equipment

The operator must provide suitable personal protective equipment for the respective location of operation and the purpose of operation. For work in potentially explosive atmospheres this also includes ESD clothing and ESD tools.

2.25. Safety recommendations to be complied with

2.26. General behaviour when handling the machine

- The pump may be used only in awareness of the potential dangers, in proper technical condition, and according to the information in these instructions.
- Familiarize yourself with the functions and operation of the product. The specified assembly and operating steps and their sequences must be observed.
- Any unclear points regarding proper condition or correct assembly/ operation must be clarified. Operation is prohibited until issues have been clarified.
- Keep unauthorized persons away from the pump.
- Precautionary operational measures and instructions for the respective work must be observed.
- Responsibilities for different activities must be clearly defined and observed. Uncertainty seriously endangers safety.
- Safety-related protective and emergency devices must not be removed, modified or affected otherwise in their function and are to be checked at regular intervals for completeness and function.
- Remedy occurring faults in the frame of responsibilities. Immediately inform your superior in the case of faults beyond your competence.
- Do not open the reservoir lid during operation. Do not reach into the reservoir.
- Wear personal protective equipment always.
- When handling lubricants or operating materials, adhere to the respective safety data sheets.
- Never use parts of the centralized lubrication system or of the machine as standing or climbing aids.

2.27. Explosion protection

- Always behave so that explosion hazards are avoided.
- A written work approval from the operator is required prior to working in potentially explosive areas. Keep unauthorized persons away.
- There must be no indications that parts of the explosion protection are missing or are not working. Should such indications become apparent, switch off the machine and inform a superior without delay.
- Measures for explosion protection must never be deactivated, modified or bypassed.
- Transport damages can result in the loss of the explosion protection. If transport damages can be seen, do not assemble the product nor put it into operation.
- It is forbidden to bring in ignition sources such as sparks, open flames and hot surfaces in potentially explosive areas.
- Check the machine at regular intervals in line with the operating conditions for damage which may represent an ignition risk as well as with regard to correct functioning. An inspection must be carried out every 12 months at the latest.
- The ignition temperature of the ambient explosive gas and vapour atmospheres must be greater than 125 % of the maximum surface temperature.
- The minimum ignition and glow temperature of the ambient explosive dust atmospheres must be greater than 150 % of the maximum surface temperature.

- The limits of use related to explosion protection are clearly defined by the device categories, gas and dust groups as well as temperature classes stated in the explosion protection marking. In any case, also if dust group IIIC is specified, light-metal dusts as explosive ambient media are prohibited.
- The filling-level monitoring must be ensured by the operator at a high degree of safety.
- The product may be filled via the reservoir lid only, if there is no potentially explosive atmosphere. Filling via the filling port is also possible with a potentially explosive atmosphere. Connect the filler pump to the equipotential bonding of the pump.
- The product may be cleaned only, if there is no potentially explosive atmosphere.
- The ignition temperature of the lubricant must lie at least 50 K over the maximum surface temperature of the components.
- In case of products without electrical filling level control make sure to check the lubricant filling level at regular intervals.
- Only use tools and clothing which are permitted for use in potentially explosive areas (ESD).
- Transport, installation, repairs and work on electrical components may only be carried out, if it has been ensured that the atmosphere is not potentially explosive.

- Repairs or modifications to machines which are protected against explosions may be carried out only by the manufacturer or by a workshop recognized by a named institution and confirmed in writing. If the work is not carried out by the manufacturer, the repairs must be approved by a named expert and confirmed in writing. The repairs are to be marked by a repair sign on the machine, stating the following: Date - executing company – type of repair - if applicable, expert's code.
- All parts of the grounding concept must be correctly available and connected with the superordinate machine.
- If transport lugs are dismantled after set-up, the threaded bores must be permanently sealed in accordance with the protection class.
- Handle the materials so that no sparks generated by tilting, falling, sliding, rubbing, impacting, etc. If needed, cover materials with suitable means.
- Never disconnect plug-in connections when energized. Secure plug-in connections against inadvertent manual disconnection with the safety clips.
- The operator must check critically whether operation without a low-level signal might lead to a new risk potential (e.g. through heat-up of bearing points on the machine in the area of ignition temperature in the case of lacking lubrication). If this cannot be ascertained, provide a low-level signal or suitable organisational measures for monitoring of the bearing point temperature.

- Avoid dust accumulation and remove dust immediately. Dust accumulations have a thermally insulating effect and, if whirled up, generate the formation of a potentially explosive atmosphere.
- The product must be integrated in the operator's lightning protection concept.
- All parts are to be checked regularly for corrosion. Replace the affected parts.
- Terminal boxes must be firmly closed and the cable break-throughs correctly sealed.
- Additional electrical monitoring devices must be firmly connected and correctly adjusted.

2.28. Safety-related protective and emergency devices must

- Safety-related protective and emergency devices must not be removed, modified or affected otherwise in their function and are 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.
- Depending on the equipment variant of the pump the following safety-related protective and emergency devices are available:
- Sensor for filling-level monitoring (depending on the product)
- Overload / thermal circuit breaker of the electric motor
- Pressure relief valves
- Equipotential bonding

2.29. Transport / installation / maintenance / repairs / servicing

- All relevant persons (e.g., operating personnel, supervisors) must be informed of the respective activity prior to starting any work. Observe the precautionary operational measures and work instructions.
- If protective and safety equipment has to be dismantled, it must be reassembled immediately after finishing the work, and then checked for correct function.
- Ensure through suitable measures that movable or detached parts are immobilized during the work and that no limbs can be caught in between by inadvertent movements.
- Carry out transport using only suitable hoisting equipment.
- If transported separately (e. g. repair) lift the motor by means of the transport lugs or eye bolts. Ensure that transport lugs or eye bolts are firmly seated. Do not carry any further load on the transport lugs or eye bolts. Do not transport motors on the fan cover.
- All the parts to be mounted onto the shaft end of the motor have to be dynamically balanced according to the balancing system of the motor. With a direct coupling, ensure that the parts align precisely.
- Assemble the product only outside of the operating range of moving parts, at an adequate distance from sources of heat or cold.
- Dry wet, slippery surfaces.
- Cover hot or cold surfaces accordingly.

- Prior to performing work, de-energize and depressurize the pump and secure it against unauthorized switch-on. Work on electrical components must be carried out by electrical specialists only. Observe any waiting periods for discharging, if necessary.
- Carry out electrical connections only according to the information in the valid wiring diagram and taking the relevant regulations and the local connection conditions into account.
- Do not touch cables or electrical components with wet or damp hands.
- Maintenance and repair work can be subject to restrictions in low or high temperatures (e.g. changed flow properties of the lubricant). Therefore, where possible, try to carry out maintenance and repair work at room temperature.
- Carry out all works on electrical components using voltage insulated tools only.
- Fuses must not be bypassed Always replace fuses by such of the same type.
- Ensure correct grounding of the electrical system.
- Undertake drilling at non-critical, non-load bearing parts only. Use any available boreholes. Do not damage lines and cables when drilling.
- Observe possible abrasion points. Protect the parts accordingly.

- Other units of the machine or vehicle must not be damaged or impaired in their function by the installation of the centralized lubrication system.
- All components used must be designed for:
 - maximum operating pressure
 - maximum/ minimum temperature
 - lubricant to be supplied
 - required ATEX zone
 - operating/ ambient conditions at the location of use
- Parts of the centralized lubrication system must never be subjected to torsion, shearing or bending.
- Check all parts prior to use for contamination and clean, if necessary. Lubricant lines should be primed with lubricant prior to installation. This makes the subsequent ventilation of the system easier.
- Observe the specified tightening torques. When tightening, use a calibrated torque wrench.
- When working with heavy parts use suitable lifting tools.
- Avoid mixing up or wrong assembly of dismantled parts. Mark these parts accordingly.

2.30. Initial commissioning / daily start-up

Ensure that:

- All safety devices are completely available and functional.
- All connections are correctly connected.
- All parts are correctly installed.
- All warning labels on the machine are completely available, highly visible and undamaged.
- Illegible or missing warning labels are replaced without delay.
- The pump is correctly earthed.

2.31. Cleaning

- Risk of fire and explosion when using inflammable cleaning agents. Only use non-flammable cleaning agents suitable for the purpose.
- Do not use any aggressive cleaning agents.
- Do not use sharp-edged tools for cleaning (e.g. cooling fins of the motor).
- Do not use steam jet or high pressure cleaners. Electrical components may be damaged. Observe the IP protection class.
- Cleaning work on energized components may be carried out by electrical specialists only.
- Do not touch cables or electrical components with wet or damp hands.
- Mark damp areas accordingly.
- Remove dust accumulations regularly. Do not whirl up dust whilst doing so.

2.32. Inspection of the delivery

The delivery must be inspected for completeness based on the delivery papers. Transport damages must be reported to the forwarder immediately. Keep the packaging material until any discrepancies are resolved.

2.33. Returns

Clean all parts and pack them properly before returning them. Mark returns on the packaging as follows.

	Do not burden / this side up!
	Protect against moisture
	Handle with care!
	Fragile, do not throw!

2.34. Disposal

At the end of its service life, the pump must be dismantled correctly and disposed of according to the respective valid provisions. It is forbidden to use parts of a pump that is to be disposed of or to assemble these parts to make a new pump.

3. Lubricant

Lubricants are used specifically for certain application purposes. In order to fulfil their tasks, lubricants must fulfil various requirements to varying extents.

The most important requirements for lubricants are:

- Reduction of abrasion and wear
- Corrosion protection
- Noise minimisation
- Protection against contamination or penetration of foreign objects
- Cooling (primarily with oils)
- Longevity (physical/ chemical stability)
- Compatibility with as large a number of materials as possible
- Economic and ecological aspects

3.1. *Selection of lubricants*

A suitable lubricant is selected already when designing the machine and forms the basis for the planning of a centralized lubrication system.

The selection is made by the manufacturer/ operator of the machine, preferably together with the lubricant supplier based on the requirement profile defined by the specific application.

Should you have little or no experience with the selection of lubricants for centralized lubrication systems, please contact SKF. You will avoid possible costly downtimes through damage to your machine/ system or damage to the centralized lubrication system.

3.2. Specification

Lubricants of the following consistencies can generally be conveyed using SKF centralized lubrication systems.

- Lubricating greases up to NLGI 2
- solids content up to 5 % maximum
- Mineral oils with a viscosity of minimum 40 mm²/s at +40 °C

Lubricants must be compatible with the following materials:

- steel, grey iron, brass, copper, aluminium
- NBR, FPM, ABS, PA, PUR

NOTICE

Risk of damage to the machine or system

Do not mix lubricants. This may have unforeseeable effects on the usability and therefore on the function of the centralized lubrication system.

Due to the multitude of possible additives, it is possible that individual lubricants, which - according to the manufacturer's data sheets - fulfil the necessary specification, are not in fact suitable for use in centralized lubrication systems (e.g. incompatibility between synthetic lubricants and materials). In order to avoid this, always use lubricants tested by SKF.

Please contact the SKF Service Department for an overview of lubricants tested by SKF.

3.3. Ageing of lubricants

After a prolonged downtime, the lubricant must be inspected prior to recommissioning as to whether it is still suitable for use due to chemical or physical ageing. We recommend that you undertake this inspection already after a machine downtime of 1 week. If doubts arise as to the suitability of the lubricant, please replace it prior to recommissioning and, if necessary, undertake initial lubrication manually.

4. Technical data

The technical data refer to a use of the pump in a 50 Hz power grid.
A use in other power grids, e.g. 60 Hz, is prohibited.

4.1. Ambient temperature

661-46622-6 661-46622-9 661-46758-2 661-47091-6	II 2G Ex h IIC T4 Gb	II 2D Ex h IIIC T120°C Db
6610-00000035	II 2G Ex h IIC T3 Gb	II 2D Ex h IIIC T135°C Db

4.2. Operating pressure

350 bar max.

All system parts must be designed for the maximum operating pressure. Each pump element must be secured against higher pressures using a suitable pressure control valve.

4.3. Installation position

Vertical, i.e. reservoir at top. Maximum deviation $\pm 5^\circ$

4.4. sound pressure level

< 70 dB (A)

4.5. Maximum set-up height

1000 m above sea level.

4.6. Maximum dust thickness

< 5 mm

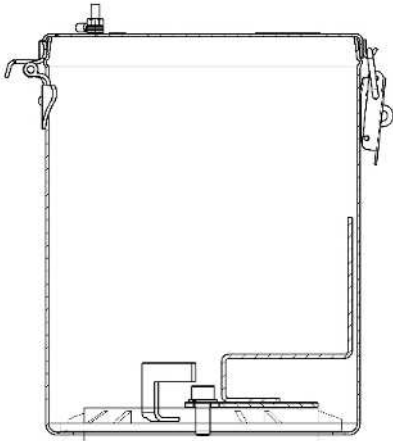
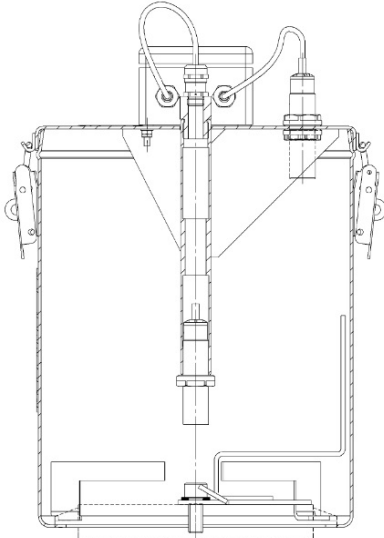
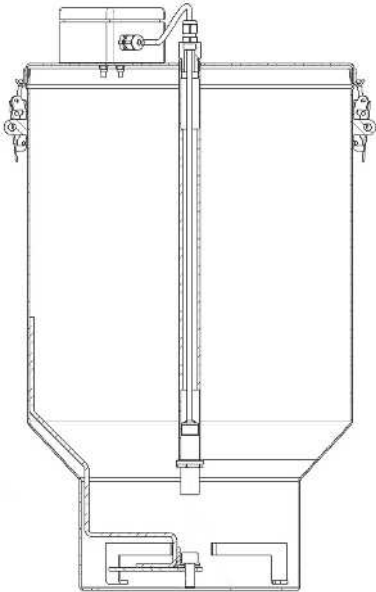
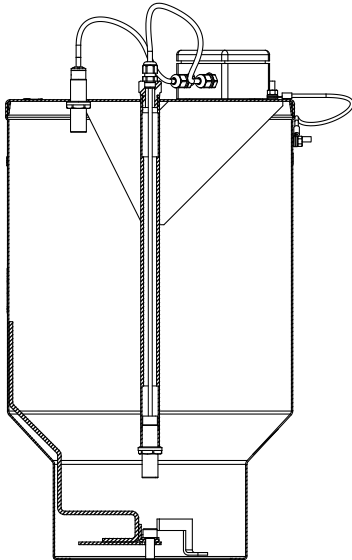
4.7. Gear ratio

i = 97:1

4.8. Weight

The weight of the empty pump varies between approx. 37 kg and approx. 42 kg depending on the equipment variant.

4.9. reservoir

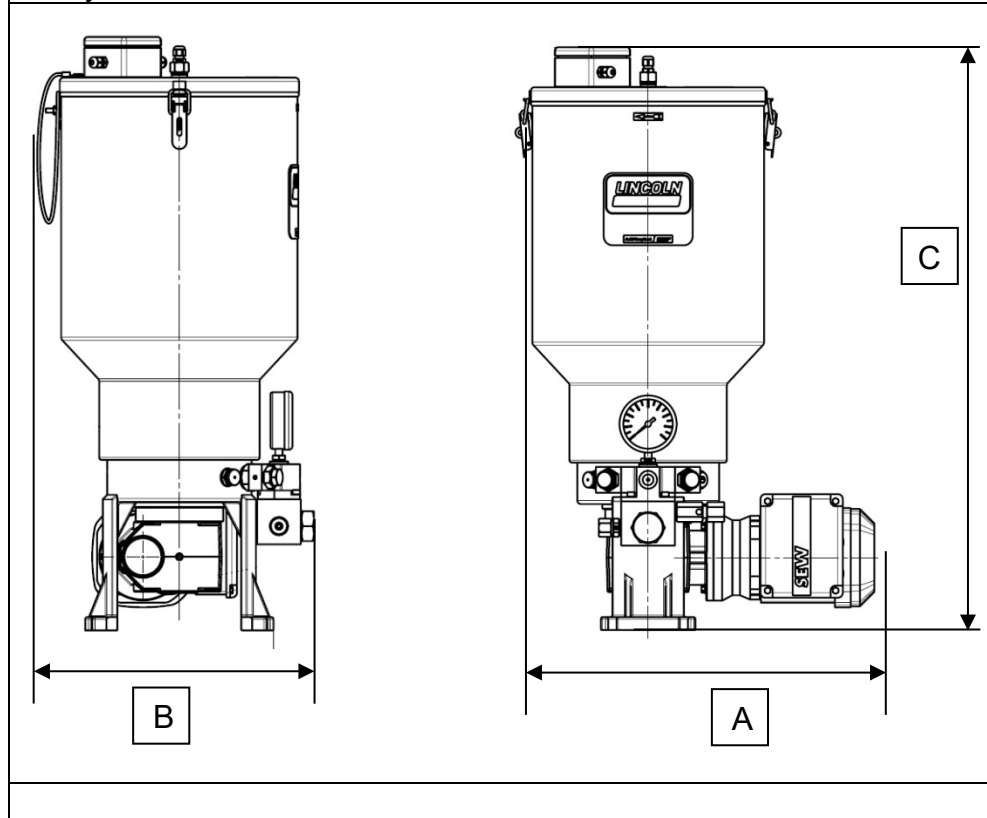
10 XYN Part no.: 660-77404-1 	10 XB Part no.: 660-46720-3 
30 XL Part no.: 660-46611-9 	30 XB Part no.: 660-17133-1 

4.10. Space requirements

Reservoir size	Width A	Depth B	Height C
10 XYN	approx. 500 mm	approx. 400 mm	approx. 580 mm
10 XB	approx. 500 mm	approx. 400 mm	approx. 640 mm
30 XL	approx. 600 mm	approx. 400 mm	approx. 815 mm
30 XB	approx. 600 mm	approx. 400 mm	approx. 815 mm

The actual space requirements depend on the dimensions of the baseplate, the type of reservoir, and, if applicable, the coupling. It is recommended that 100 mm are allowed in each direction outside of the baseplate for maintenance and inspections works.

The distance between the motor air intake and any obstacle must total to at least 40 mm. Ensure that the air can flow into the motor without hindrance. Outflowing air must not be sucked in again directly.



4.11. Electrical connection

In addition to the general valid installation prescriptions for electrical systems, the electrical connection is carried out in accordance with the applicable national ATEX regulations, for example:

- ElexV
- EN 60079 – 14
Electrical systems in explosive areas
- EN 50281 – 1-2
Electrical equipment for use in areas with combustible dust
- VDE 0100 (installation of high-voltage systems up to 1000 V)

Tolerance voltage $\pm 5 \%$

Tolerance frequency $\pm 2 \%$

The waveform and mains symmetry must be maintained so that the motor heat-up remains within the permitted limits.

For VAC motors only

Tolerance voltage $\pm 5 \%$

Tolerance frequency $\pm 2 \%$

The waveform and mains symmetry must be maintained so that the motor heat-up remains within the permitted limits. The distance to any voltage-carrying or conductive parts has to correspond to the minimum values following DIN EN / IEC 60079-7 / -15.

Nominal voltage	Distance to motors Ex category 2	Distance to motors Ex category 3
Up to 500 V	5 mm	8 mm
Over 500 V up to 690 V	5.5 mm	10 mm

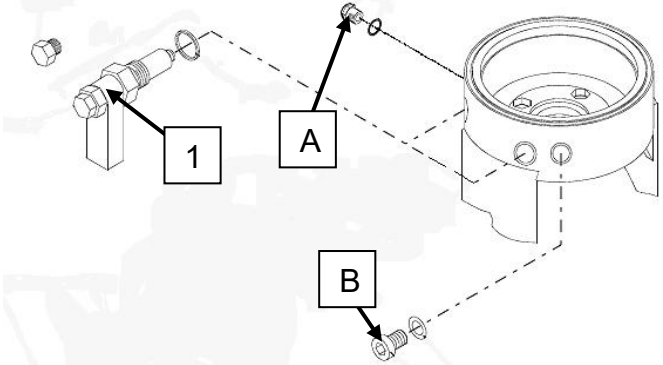
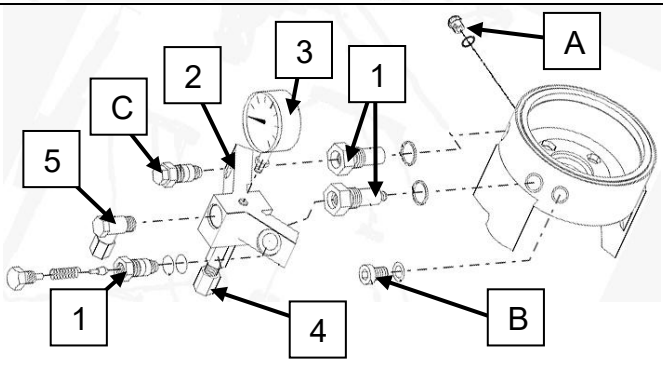
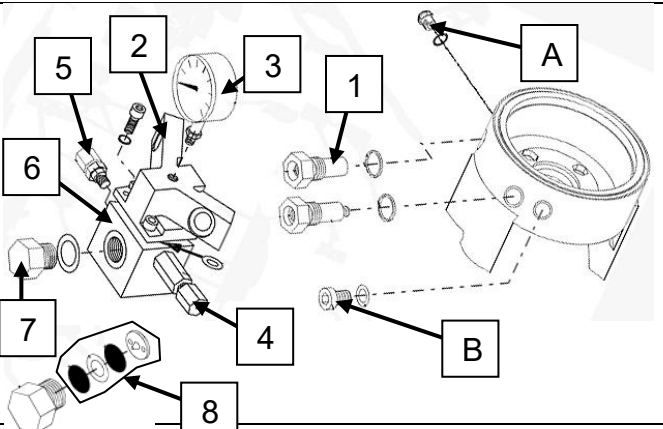
4.12. IP type of protection

Gear
IP 65

Sensor
IP 67

Motor
See type identifica-
tion plate

4.13. Pump element assemblies

Version E: (1) Pump elements (1-2) (A) Flat lubrication fitting (B) Cap screw	
Version V: (1) Pump elements (1-2) (2) Bride to combine output volumes (3) Pressure gauge (4) Pressure control valve (5) Fitting for the supply line (A) Flat lubrication fitting (B) Cap screw (C) Fixing screw	
Version F: (1) Pump elements (2) Bride to combine output volumes (3) Pressure gauge (4) Pressure control valve (5) Fitting for the supply line (6) Filter block (7) Hollow screw for filter unit (8) Filter unit (A) Flat lubrication fitting (B) Cap screw	

4.14. Tightening torques

Component / Pump element assembly		Tightening torques
E	Pump element with pump housing	30 Nm
V	Pump cylinder with pump housing	30 Nm
	Valve to pump cylinder (bridge)	100 Nm
	Stop screw with pump cylinder	30 Nm
	Pressure gauge with bridge	55 Nm
	Pressure control valve with bridge	30 Nm
	Fitting for supply line with bridge	30 Nm
F	Pump cylinder with pump housing	30 Nm
	Valve to pump cylinder (bridge)	100 Nm
	Pressure gauge with bridge	55 Nm
	Bridge with filter block	10 Nm
	Pressure control valve with filter block	30 Nm
	Fitting for supply line with filter block	30 Nm
	Hollow screw to filter block	100 Nm
	Flat lubrication fitting to pump housing	20 Nm
	Closure screw with housing	20 Nm
	Pressure control valve in the pump element	6 Nm
	Stirring paddle to shaft	25 Nm
	Terminal box with reservoir lid	4 Nm
	Grounding connection lid / reservoir	8 Nm
	Pump to foundation	18 Nm
	Reservoir with pump housing	25 Nm
If no tightening torques are stated, the tightening torques are to be applied to the screw size for 8.8 screws.		

4.15. Output

Flow rate per pump element
approx. 0.98 ccm/ stroke

This information applies for lithium-saponified greases of NLGI class 2 at +20 °C and 100 bar counterpressure. Deviating conditions such as grease class, temperature and counterpressure may lead to a deviation in the flow rate. This should be taken into account when designing the lubrication points.

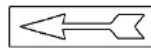
4.16. Connections / outlets

- 2 x Pump element
- 1 x Flat lubrication fitting
- 1 x Return line (cap screw)
(Tube diameter 10 mm respectively G 3/8")

4.17. Filling possibilities

- via filling adapter
- via reservoir lid

4.18. Rotational direction of the pump



The rotational direction is always clockwise (CW). Observe the arrow on the reservoir. If the rotational direction deviates: Switch off the pump immediately and check the electrical connection.

4.19. Permitted speeds

	Minimum speed	Maximum speed
Grease	2.5 rpm	20 rpm
Oil	2.5 rpm	35 rpm

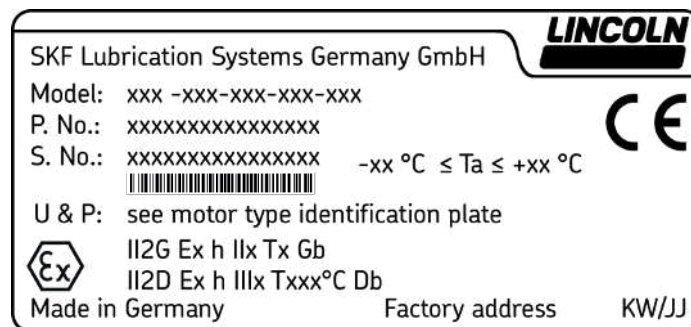
When supplying the pump without motor and gear, speeds must be maintained by selecting a suitable motor and gear.

4.20. Painting

All components of the pump are painted following the requirements of EN IEC 60079-0 (electrostatic charging). Should a new painting be required, for example, after repair or corrosion, etc., make sure to comply with the requirements of EN IEC 60079-0. Carefully mask all seals before painting. Ensure that the painting is compatible with the sealing materials employed.

4.21. Notes related to the type identification plate

The following information is stated on the type identification plate:



The type identification plate states important characteristics such as type designation, order number, and regulatory characteristics. To ensure that the loss of data due to an illegible type identification plate is avoided, the characteristics should be entered in the Instructions.

Model: _____

P. No.: _____

Series: _____

Year of construction (KW/YY) _____

Voltage: _____

Control voltage: _____

Power: _____

_____ °C ≤ Ta ≤ _____ °C

4.22. Notes related to the CE marking

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

- 2014/34/EU Directive relating to equipment and protective systems for use in explosive atmospheres (ATEX)
- 2014/30/EU Electromagnetic compatibility
- 2011/65/EU (RoHS II) Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment

4.23. Reference on Low Voltage Directive 2014/35/EU

The protective regulations of Low Voltage Directive 2014/35/EU are fulfilled according to annex II (1.2.7) of ATEX Directive 2014/34/EU.

4.24. Reference on Pressure Equipment Directive 2014/68/EU

Because of its performance data the product does not achieve the limit values defined in Article 4 (1) (a) (ii) and is therefore excluded from the scope of application of Pressure Equipment Directive 2014/68/EU following Article 1 (2) (f).

4.25. Explosion protection marking

661-46622-6 661-46622-9	II 2G Ex h IIC T4 Gb	II 2D Ex h IIIC T120°C Db
661-46758-2 661-47091-6		
6610-00000035	II 2G Ex h IIC T3 Gb	II 2D Ex h IIIC T135°C Db

4.26. Storage until the first use

- in the original packaging
- in dry rooms with little dust
- without direct sun or UV radiation
- without aggressive, corrosive substances at the place of storage
- without vibrations
- protected against pests (insects, rodents, etc.)

Temperature range: - 20 °C minimum
 + 40 °C maximum
Air humidity (relative): 90 % maximum
Storage time: 24 months max.

NOTICE

Risk of damage to the machine or system

Prior to initial use or after the storage time ends, prefilled components must be inspected and replaced, if necessary, in case the lubricant quality has changed, or filled with lubricant suitable for the application purpose.

Special storage conditions of the motor

- Do not store the motor on the fan cover.
- After a longer period of storage before commissioning, make sure to check the insulation resistance.

In case of storage > 1 year:

Make sure to observe the grease service life of the ball bearings which is reduced by 10 % per year.

5. Technical data of the motor

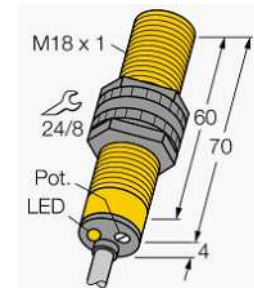
Part no.	Type of motor	ATEX no.	Manufacturer
245-13997-4	EDRS71S4	PTB10ATEX 3025/13	SEW
Valid for pumps with the part numbers: 661-46622-9 or 661-47091-6			
Rated power	0.25	kW	Code -----
Operating mode	S 1		Flange Ø 105
Rated frequency	50	Hz	
Rated speed	1405	rpm	Design B14
Rated voltage	219-241 / 380-420	VDC	Size 71
Circuit	D	Y	Shaft 14x30
Nominal current	1.5	0.86 A	
Performance factor	0.67	cos φ	
Insulation class	F / B		

Part no.	Type of motor	ATEX no.	Manufacturer
245-13997-5	EDRS71S4	PTB10ATEX 3025/13	SEW
Valid for pumps with the part numbers: 661-46622-6 or 661-46758-2			
Rated power	0.25	kW	Code -----
Operating mode	S 1		Flange Ø 105
Rated frequency	50	Hz	
Rated speed	1405	rpm	Design B14
Rated voltage	240 / 415	VDC	Size 71
Circuit	D	Y	Shaft 14x30
Nominal current	1.43	0.83 A	
Performance factor	0.67	cos φ	
Insulation class	F / B		

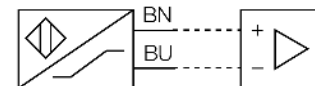
Part no.	Type of motor	ATEX no.	Manufacturer
245-00104-8	EDRS71S4	PTB10ATEX 3025/31	SEW
Valid for pumps with the part numbers: 6610-00000035			
Rated power	0,25	kW	Code -----
Operating mode	S 1		Flange Ø 105
Rated frequency	50	Hz	
Rated speed	1405	rpm	Design B14
Rated voltage	230 / 400	VDC	Size 71
Circuit	D	Y	Shaft 14x30
Nominal current	1,50	0,86 A	
Performance factor	0,67	cos φ	
Insulation class	F / B		

6. Technical data of the capacitive sensor

Type designation	Capacitive sensor (Namur)
Part number	664-34621-2 (aligned for grease) 664-34621-5 (aligned for oil)
Rated operating distance	5 mm with flush installation
Sn	7.5 mm with non-flush installation
Secured switching distance	$(0.72 \times S_n)$ mm
Hysteresis	1..... 20 %
Temperature drift	$\leq \pm 20 \%$
Repeatability	$\leq 2 \%$
Ambient temperature	-25 °C - +70 °C
Voltage	nominal 8.2 VDC
Current consumption, not activated	≤ 1.2 mA
Current consumption, activated	≥ 2.1 mA
Switching frequency	0.1 kHz
Output function	2-wire NAMUR
Internal capacity (C _i)	150 nF
Inductivity (L _i)	150 µH
Design	Threaded tube M 18 x 1
Dimensions	74 mm
Housing material	Plastic PA12-GF30
Material of active surface	Plastic PA12-GF30, yellow
Admissible pressure onto front closing cap	≤ 6 bar
Max. tightening torque	2 Nm
Housing nut	
Connection	Cable
Cable quality	Ø 5.2 LiYY, PVC, 2 m
Cable cross section	2 x 0.34 mm ²
Vibration resistance	55 Hz (1mm)
Shock resistance	30 g (11ms)
Degree of protection	IP 67
MTTF	448 years following SN 29500 40 °C
Switching status display	LED, yellow
Fine adjustment	Potentiometer
Approvals	KEMA 02 ATEX 1090X
Marking	II 2 G EX ia IIC T6 II 1D EX ia IIIC IP 67 T 115 °C max. U _i = 20 V, I _i = 20mA, P _i = 200 mW



Connection diagram

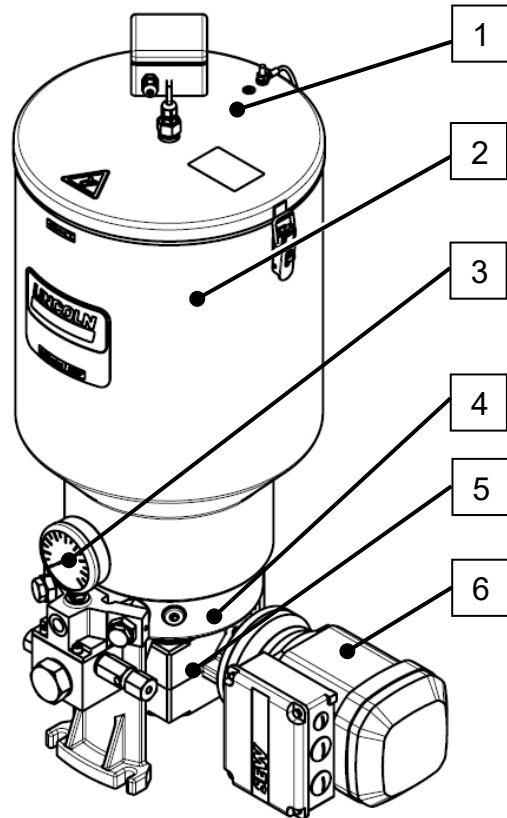


7. Brief description of the pump

 	 DANGER Risk of explosion Carry out work on electrical parts only if the atmosphere is not potentially explosive. Electric shock Disconnect the pump from the mains prior to all work on electrical parts.
--	---

The ZPU 02 pump consists of the following main components:

- (1) Reservoir lid with earthing
- (2) Reservoir with stirring paddle and earthing
- (3) **Version E:**
Pump elements (1-2)
Version V:
Bridge with pump elements and pressure gauge
Version F:
Bridge with pump elements, filter block, pressure gauge and pressure control valve
- (4) Pump housing
- (5) Gear
- (6) Motor



Operating principle:

The gear reduces the motor speed to the necessary speed of the eccentric shaft.

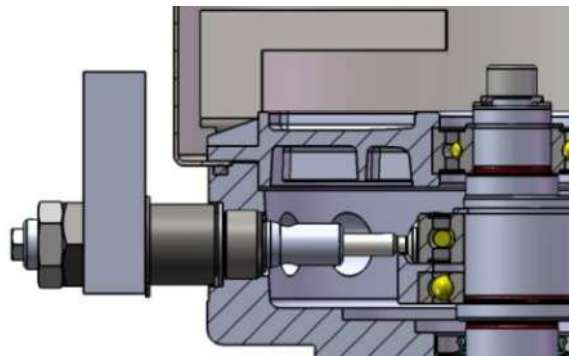
The eccentric shaft drives the pump elements and the stirring paddle.

The stirring paddle homogenizes and ventilates the lubricant and pushes it in the direction of the suction boreholes of the pump elements.

The pump elements convey the lubricant by the movement of the pistons.

It is distinguished between the suction phase (suction of lubricant out of the reservoir) and the pressure phase (supply of lubricant into the lubrication line).

If applicable, a sensor detects the filling level of the lubricant reservoir (high- respectively low-level).

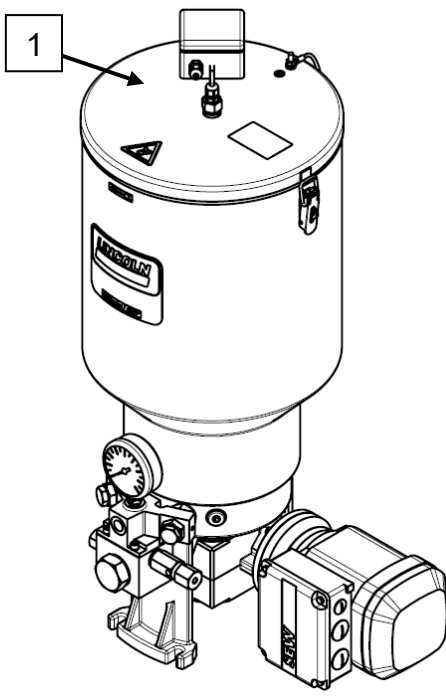


8. Installation and commissioning

8.1. Filling of the reservoir

	WARNING Risk of hand injuries caused by the stirring paddle Fill lubricant via the lid only when the pump is not moving. Never reach into the reservoir while the pump is running.
---	---

NOTICE Risk of centralized lubrication system faults When filling ensure that no dirt enters the reservoir.
--

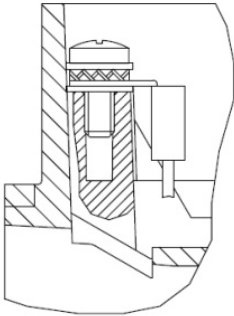
<u>Filling via the reservoir lid</u> ➤ Switch the pump off. ➤ Open the reservoir lid (1). ➤ Fill in lubricant. ➤ Close the reservoir lid (1). ➤ Switch the pump on. <u>Filling via filling adapter</u> Automatic Filling: The filler pump is controlled by the pump's high-/ low-level indication. Manual filling: Let a second person observe the filling procedure. ➤ Switch the filling pump on. ➤ Fill the reservoir ➤ Switch off the filler pump.	
--	--

8.2. *Inadvertent filling with incorrect lubricant*

Should incorrect lubricant have been filled, please proceed as follows:

- Switch off the pump and secure it against being switched on.
- Remove lubricant.
- Clean the pumps and, if applicable, the tubing system.
- Fill in lubricant of correct specification.
- Switch the pump on.
- Inform your superior to ensure that the error won't occur again.

8.3. *Electrical connection of the motor to the operator's network*

SEW motors	
Connect the feed lines following the wiring diagram inside the terminal box of the motor. When connecting the protective conductor to the protective conductor terminal, the cable lug and the housing must be separated by a washer.	 Connection of the protective conductor

8.4. *Inspections prior to initial start-up*

NOTICE

Risk of damage to the machine

Fill the feed lines with lubricant and fill the lubrication points manually. Otherwise the bearing points may become damaged due to a lack of lubricant.

Check the entire system for accordance with the intended purpose and the planning documentation.

Ensure that all parameters, characteristic values and means of operation have been correctly adjusted or are present.

If deviations are detected, they must be remedied without delay.

In order to warrant safety and function, a person assigned by the operator must inspect certain areas of the central lubrication system prior to initial commissioning. Report any detected deficiencies immediately to your superior and remedy them. Deficiencies may be remedied by an authorized and qualified specialist only. Check the following points prior to initial commissioning.

Electrics

- Electrical connections carried out correctly.
- Cable entries sealed correctly.
- The voltage and frequency of the power network correspond to the information on the type identification plate of the motor.
- Monitoring devices and additional equipment (e.g. motor circuit breaker) are correctly connected and adjusted.
- Grounding is complete.
- All parts such as lines, cables, metering devices, etc. have been correctly installed and are undamaged.

Mechanics:

- No dust accumulations present, in particular on the air intake of the motor.
- Loose or missing parts remaining (e.g. pressure relief valves, feed lines).
- Damages, deformations, or cracks.
- Smoke or smouldering spots.
- Discolorations, contaminations and/or corrosion.
- Unusual humidity.
- Unusual odours, vibrations, or sounds.
- Leakages of lubricant at connections and from lines.

8.5. Activation of the pump

The pump is activated on:

- Installation into a machine
 - By switching on the machine contact.
 - By a control provided by the customer.

9. Standard operation

9.1. Daily start-up

Below find the activities to be carried out in case of standard operation.

9.2. Inspections

With regard to the actions listed below "Inspections prior to first commissioning" the operator has to determine adequate control intervals depending on the respective operating situation of the pump.

9.3. Filling of the reservoir during operation

Fill the reservoir as described in the chapter "Installation and commissioning".

9.4. Cleaning

Execution, required protective clothes, cleaning agents and devices following the valid operational regulations of the operator.

	 DANGER
	Danger to life Risk of fire and explosion when using inflammable cleaning agents. Do not use steam jet or high pressure cleaners. Electrical components may be damaged. Do not touch cables or electrical components with wet or damp hands.
	Cleaning work on energized components may be carried out by electrical specialists only. Wear personal protective equipment always.
	   

Exterior cleaning

- Thorough cleaning of all surfaces.
- Mark and secure wet areas.

Interior cleaning

- Normally, interior cleaning is not required.

10. Maintenance

	 DANGER
	Risk of explosion Carry out work on electrical parts only if the atmosphere is not potentially explosive. Electric shock Make sure to disconnect the pump from the power supply before carrying out works on electrical parts.

10.1. Maintenance of pump

The pump is mainly maintenance-free.

However, the following parts should be inspected and, if necessary, replaced by new parts at regular intervals:

- Pressure relief valves
- Check valves
- Pump elements

and depending on the variant also

- Pressure gauge
- Filter

Pressure relief valve tolerance + 5 %/ - 10 %

If this tolerance is exceeded, the pressure relief valves must be replaced.

10.2. Maintenance of gear unit

For further relevant information on maintenance, see original Instructions by the gear manufacturer.	
Activity	Interval
Visual check for: • Leakages	Every 3,000 hours, but at least once a year
• Damages to the surface protection/ corrosion protection	Depending on the type of application and ambient conditions

10.3. Maintenance of the SEW motors

For further relevant information on maintenance, see original Instructions by the motor manufacturer.	
Activity	Interval
Check the airways and surfaces	Depending on the local degree of contamination, at the latest, however, every 4 weeks
Initial inspection	After about 500 operating hours, at the latest, however, after 1/2 a year.
Ball bearing/ radial sealing ring	Check and, if necessary, replace every 10,000 operating hours
Re-lubrication / oil change	Re-lubrication interval, grease volume and grease quality → see type identification respectively lubrication plate of the motor
Main inspection	After about 10,000 operating hours, at the latest, however, after 1 year.

10.4. Measurement of the insulation resistance

		DANGER
	Electric shock Do not touch the terminals when measuring the insulation resistance. If necessary, wear insulating gloves. Observe the manual of the insulation measurement device.	

NOTICE

Risk of damage to the motor

The voltage applied for the insulation test must not exceed 500 V.

Before the first start-up and after longer downtimes measure the insulation resistance following the standards (e. g. VDE 0100 / IEC / DIN EN 61557) valid in the country of use.

If the insulation resistance falls below the required minimum value, determine and eliminate the cause (e.g. appropriate drying of the coil, etc.).

10.5. Maintenance of gear unit

Capacitive sensor:

The capacitive sensor (product-dependent) is maintenance-free. Repairs are not possible.

11. Troubleshooting

Motor of pump does not run		
Possible cause	Visible	Remedy
Fault in the superior machine/ external control unit. Motor circuit breaker has tripped	No pump noise.	Check power supply lines/ external control/ motor circuit breaker.
Motor runs, but pump does not supply or does not supply properly		
Possible cause	Visible	Remedy
Reservoir empty	Visual check	Refill
Air pockets in the lubricant	Air bubbles in the lubricant	Vent
Suction bore of pump element is clogged.	After disassembling the pump element	Disassemble and clean the pump elements.
Defective or dirty check valve	After disassembling the pump element	Replace check valve.
Worn pump element	Low pressurization	Replace the pump element
Defective control valve/ fault at the lubrication point	Grease leaking from the pressure control valve	Determine cause. Replace pressure control valve
Blockade in the downstream lubrication system	Grease leaking from the pressure control valve	Determine cause and eliminate it.
Contaminated filter	Short deflections on the pressure gauge (fluttering)	Check and clean filter and replace, if necessary.
Faults on the change-over device	See instructions of change-over device.	See instructions of change-over device.
If the fault cannot be determined/ remedied, contact our Customer Service.		

Operating Instructions

Pump ZPU 02 ATEX

Rehfuss gear		
Fault	Possible cause	Remedy
Constant unusual running noise	Bearing damage (grinding noise)	Check oil and oil level, if required, change bearing. → Consult the manufacturer.
	Irregular tooththing (knocking noise)	→ Consult the manufacturer.
Inconstant unusual running noise	Foreign particle in the gear oil	Check oil and oil level (see original instructions of the gear manufacturer). → Consult the manufacturer)
Oil/ grease leaking from rotary shaft seal#	Defective seal	→ Consult the manufacturer.
Oil leaking from vent valve	Too much oil in the gear; vent valve dirty; frequent cold starts (foaming oil)	→ Consult the manufacturer.
Output shaft does not rotate although motor is on	Defective shaft-hub joint	Sent gear to manufacturer for repair.
For further relevant information on maintenance, see original Instructions by the gear manufacturer. Make sure to observe these at all times. # Oil/ grease leaking from the radial sealing ring (small quantities) during the run-in phase (24 hours runtime) is deemed normal (DIN 3761).		

Operating Instructions

Pump ZPU 02 ATEX

SEW motors		
Fault	Possible cause	Remedy
Motor does not start	Feed line interrupted	Check and correct connections, if necessary.
	Blown fuse	Replace fuse
	Motor circuit breaker has responded	Check correct adjustment of motor circuit breaker. If necessary, remedy the fault
	Motor circuit breaker does not switch; fault in the control program.	Check control program of motor circuit breaker and, if necessary, remedy the fault
Motor is hard to start	Motor has been designed for delta connection, but has been wired to star connection	Correct the wiring
	Voltage or frequency largely differ from the target value at least when starting the motor	Provide better grid conditions; check cross section of the feed line
Motor does not start when wired as a star connection, but only when wired as a delta connection	In case of star connection torque is not sufficient	Provided the delta starting current is not too high, immediately switch the motor on. Otherwise use larger motor or special version (after consultation)
	Contact fault on star respectively delta connection	Remedy the fault
Wrong direction of motor rotation	Motor connected wrongly	Reverse two phases
Motor hums and has a high power consumption	Defective winding	→ Consult the manufacturer. Motor must be sent to the workshop for repair
	Rotor touches	
Fuse is tripped or motor circuit breaker trips immediately	Short circuit in the line	Remedy the short circuit
	Short circuit in the motor	→ Consult the manufacturer. Motor must be sent to the workshop for repair
	Lines connected wrongly	Correct the wiring
	Short circuit on the motor	→ Consult the manufacturer. Motor must be sent to the workshop for repair
Speed decreasing significantly in case of load	Overload	Measure performance, if necessary, use larger motor or reduce load
	Voltage drops out	Increase cross section of feed line
For further relevant information on maintenance, see original Instructions by the motor manufacturer. Make sure to observe these at all times.		

Operating Instructions

Pump ZPU 02 ATEX

SEW motors		
Fault	Possible cause	Remedy
Motor heats up too much (measure the temperature)	Overload	Measure performance, if necessary, use larger motor or reduce load
	Insufficient cooling	Correct cooling air supply or open cooling air ways, if necessary, retrofit external fan
	Ambient temperature is too high	Observe admissible temperature range
	Motor is wired to delta connection instead of planned star connection	Correct the wiring
	Feed line has a loose contact (one phase is missing)	Remedy the loose contact
	Blown fuse	Search the cause and remedy (see above); replace fuse
	Mains voltage deviates by more than 5 % from the rated motor voltage. Higher voltage is very unfavourable in case of high-pole motors, as in case of a normal voltage their no-load current is already close to the rated current.	Adapt the motor to the mains voltage
	Nominal operating mode (S1 to S10, DIN 57530) exceeded, e.g. because of too high switching frequency	Adapt the nominal operating mode of the motor to the required operating conditions; if necessary, consult an expert to determine the appropriate type of drive
Extreme noise emission	Ball bearing strained, contaminated or damaged	Realign the motor, inspect the ball bearing and replace it, if necessary (see original instructions of the motor manufacturer)
	Vibration of the rotating parts	Determine cause, e.g. imbalance, and eliminate it.
	Foreign particle in the cooling airways	Clean cooling airways
For further relevant information on maintenance, see original Instructions by the motor manufacturer. Make sure to observe these at all times.		

12. Declarations of conformity of the purchase parts

Carl Rehfuß GmbH + Co. KG Antriebstechnik

- Getriebe und Getriebemotoren mit konstanten Drehzahlen / Fixed speed gearboxes and geared motors
- Elektronisch und mechanisch regelbare Antriebe / Electronic and mechanical variable speed drives
- Sonderantriebe und kundenspezifische Lösungen / Special drives and customized solutions

Buchstaltengie 5
D-72461 Albstadt
Tel.: + 49 (0) 7432 / 70 15-0
Fax: + 49 (0) 7432 / 70 15-0
Email: info@rehfuss.com
Url: www.rehfuss.com



EU-Konformitätserklärung EU Declaration of conformity

CARL REHFUSS GmbH + Co.KG

erklärt in alleiniger Verantwortung, dass die SR, FG, S, SM, SS, SSM-Getriebe für Gerätegruppe II der Kategorien 2G,2D und 3G,3D, auf die sich diese Erklärung bezieht, mit der

declares in sole responsibility that the SR,FG, S, SM,SS,SSM-gearboxes for equipment group II in category 2G,2D and 3G,3D that are subject to this declaration are meeting the requirements set forth in

ATEX – Richtlinie 2014/34/EU

ATEX – Directive 2014/34/EU

übereinstimmen.
to conform.

Angewandte Norm:
Applicable standard:

EN 1127-1:2011
EN 13463-1:2009
EN 13463-5:2011
EN 13463-8:2003
EN 60529:2000

Die technische Dokumentation für Getriebe der Kategorie 2 ist hinterlegt bei notifizierter Stelle:
The technical documentation for category 2 gearboxes is stored at the notified location:

TÜV PRODUKT SERVICE GmbH, EU-Code 0123

Ort und Datum der Ausstellung
place and Date of issuing

Albstadt 20.04.2016

Bevollmächtigter zur Ausstellung dieser Erklärung im Namen des Herstellers
authorized representative for issuing this declaration on behalf of the manufacturer

Bevollmächtigter zur Zusammenstellung der technischen Unterlagen
authorized representative for compiling the technical documents

Dipl. Ing. (FH) M. Fink

Funktion: Bereichsleiter Technik
Function: Technical Director

Handelsregister Stuttgart HRA 400233
Persönlich haftende Gesellschafterin: Pfister Verwaltungs- und
Beteiligungsgesellschaft mbH · Handelsregister Stuttgart HRB 400529
Ust-ID-Nr.: DE44844167 · Steuer-Nr.: 53099/05991

Geschäftsführer: Gerd Pfister, Dipl.-Wirt.-Ing. (FH) Michael Pfister, Dipl.-Wirt.-Ing. (FH) Tobias Pfister
Volksbank Albstadt (BLZ 653 901 20) 30 602 009 · BIC-Code: GENODE33ESA · IBAN: DE57 6539 0120 0030 6020 09
Sparkasse Zollernalb (BLZ 653 512 60) 31 704 492 · BIC-Code: SGLADE33BAL · IBAN: DE22 6535 1290 0031 7044 92
Commerzbank AG (BLZ 653 800 03) 307 234 900 · BIC-Code: DRESDE33HAN · IBAN: DE99 6538 0003 0367 2349 00

EU-Konformitätserklärung



Originaltext

900860810/DE

SEW-EURODRIVE GmbH & Co. KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

erklärt in alleiniger Verantwortung die Konformität der folgenden Produkte

Motoren der Baureihe	EDRS71.. – EDRE316..
gegebenenfalls in Verbindung mit Bremse der Baureihe	BE..
in der Ausführung	/3GD, /3G oder /3D
Kennzeichnung	II3G Ex ec IIB T3 Gc II3G Ex ec IIC T3 Gc II3D Ex tc IIB T120°C Dc II3D Ex tc IIB T140°C Dc II3D Ex tc IIC T120°C Dc II3D Ex tc IIC T140°C Dc

nach

ATEX-Richtlinie	2014/34/EU (L 96, 29.03.2014, 309-356)
------------------------	---

RoHS-Richtlinie	2011/65/EU (L 174, 01.07.2011, 88-110)
------------------------	---

angewandte harmonisierte Normen:	EN 60079-0:2012/A11:2013 EN 60079-7:2015 EN 60034-1:2010 EN 60079-31:2014 EN 50581:2012
---	--

Bruchsal 02.07.2018
Ort Datum

Dr. Hans Krattenmacher
Geschäftsführer Innovation/Mechatronik

a) b)

- a) Bevollmächtigter zur Ausstellung dieser Erklärung im Namen des Herstellers
b) Bevollmächtigter zur Zusammenstellung der technischen Unterlagen mit identischer Adresse des Herstellers

Operating Instructions

Pump ZPU 02 ATEX

EU-Konformitätserklärung Nr. 5021M
EU Declaration of Conformity No.:

TURCK

Wir/ We **HANS TURCK GMBH & CO KG**
WITZLEBENSTR. 7, D – 45472 MÜLHEIM A.D. RUHR

erklären in alleiniger Verantwortung, dass die Produkte
declare under our sole responsibility that the products

Zweidraht Näherungsschalter Typ ...-...-Y1-.../... (gemäß EN 60947-5-6 NAMUR)

Two Wire Proximity Sensors Type ...-...-Y1-.../... (according to EN 60947-5-6 NAMUR)

auf die sich die Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien durch Einhaltung der
folgenden Normen genügen:

to which this declaration relates are in conformity with the requirements of the following EU-directives by compliance with the following standards:

EMV – Richtlinie / EMC Directive	2004 / 108 / EG	15. Dez.2004 ¹
EMV – Richtlinie / EMC Directive	2014 / 30 / EU	26. Feb. 2014 ²
EN 60947-5-6:2000		
Richtlinie / Directive ATEX 100a	94 / 9 / EG	23. März 1994 ¹
Richtlinie / Directive ATEX	2014 / 34 / EU	26. Feb. 2014 ²
EN 60079-0:2012	EN 60079-11:2012	

¹: bis zum / until 19. April 2016

²: ab / as from 20. April 2016

Weitere Normen, Bemerkungen
additional standards, remarks

Zusätzliche Informationen:

Supplementary information:

Angewandtes ATEX-Konformitätsbewertungsverfahren / ATEX - conformity assessment procedure applied:

Modul B + Modul D / E / module B + module D / E

EU-Baumusterprüfbescheinigung (Modul B) KEMA 02 ATEX 1090 X / EC-type examination certificate (module B):

ausgestellt von / issued by: DEKRA Certification B.V., Kenn-Nr. / number 0344,
Utrechtseweg 310, NL-6812 AR Arnhem

Zertifizierung des QS-Systems gemäß Modul D durch:

certification of the QS-system in accordance with module D by :

Physikalisch Technische Bundesanstalt, Kenn-Nr. / number 0102,
Bundesallee 100, D-38116 Braunschweig

Mülheim, den 01.04.2016



i.V. Dr. M. Linde, Leiter Zulassungen / Manager Approvals

Ort und Datum der Ausstellung /
Place and date of issue

Name, Funktion und Unterschrift des Befugten /
Name, function and signature of authorized person

[illegible]

Operating Instructions

Pump ZPU 02 ATEX
