BIJUR DELIMON INTERNATIONAL

Operating Instructions

StaTrack 1000

Stationary
Track Lubrication

INDEX

1. General

Prior to start up, we recommend to read these operating instructions carefully as we do not assume any liability for damages and operating troubles which result from the nonobservance of these operating instructions!
Any use beyond the applications described in these operating instructions is considered to be not in accordance with the product's intended purposes. The manufacturer is not to be held responsible for any damages resulting from this: the user alone bears the corresponding risk.
As to figures and indications in these operating instructions we reserve the right to make technical changes which might become necessary for improvements.

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2. Safety

These operating instructions contain fundamental instructions which are to be observed during erection, operation and maintenance. Therefore it is absolutely necessary for the fitter and the competent qualified staff/user to read these operating instructions before installation and start-up. The operating instructions must be available at all times at the place of use of the machine/system.

Not only the general safety instructions stated under this main point "safety" are to be observed, but also the other specific safety instructions stated under the other main points.

2.1 Identification of safety warnings in the operating instructions

The safety warnings contained in these operating instructions which, if not observed, may cause dangers to people, are specially marked with general danger symbols

safety sign according to DIN 4844, warning about a danger spot ,

in case of warning about electric voltage with

safety sign according to DIN 4844, warning about dangerous electric voltage.

In case of safety instructions which, if not observed, may cause damage to the machine and its function, the word

ATTENTION

is inserted.

Instructions that are directly attached to the machine, as for example

- rotational direction arrow
- identifications for fluid connections

must be observed at all events and maintained in a fully legible condition.

- Note: There is an increased skid risk in case of spilled/leaked out lubricants. They are to be removed at once properly.

Safety sign according to DIN 4844, warning about skid risk.

2. Safety (continuation)

2.2 Personnel qualification and training

The operating, maintaining, inspecting and erecting personnel must have the appropriate qualification for such work. Area of responsibility, competence and supervision of the personnel have to be regulated by the user. If the personnel do not have the necessary knowledge, they have to be trained and given instructions. This can be effected, if necessary, by the manufacturer/supplier on behalf of the user of the machine. Furthermore, the user has to make sure that the contents of the operating instructions are fully understood by the personnel.

2.3 Dangers in case of nonobservance of the safety instructions

The nonobservance of the safety instructions may result in hazards to persons, to the environment and to the machine. The nonobservance of the safety instructions may lead to the loss of any claims for damages.

In detail, the nonobservance may for instance lead to the following hazards:

- Failure of important functions of the machine/system
- Failure of prescribed methods for maintenance and repair
- Hazard to persons by electrical, mechanical and chemical influences
- Hazard to the environment by the leakage of dangerous substances

2.4 Safety conscious working

The safety instructions stated in these operating instructions, the existing national regulations as to the accident preventation as well as possible internal working, operating and safety rules of the user are to be observed.

2.5 Safety instructions for the user/operator

- If hot or cold machine parts lead to dangers, these parts have to be protected against touch.
- Protection against touch for moving parts (e. g. coupling) must not be removed when the machine is in operation.
- Leakages (e. g. from the shaft seal) of hazardous goods to be delivered (e. g. explosive, toxic, hot) are to be removed in such a way that there is no danger to persons and environment. Legal rules are to be observed.
- Hazards caused by electrical power are to be excluded (for details please refer for instance to the rules of the VDE and the local power supply companies).

2.6 Safety instructions for maintenance, inspection and installation work

The user has to take care that all the maintenance, inspection and installation work is executed by authorized and qualified skilled personnel who have informed themselves adequately by thoroughly studying the operating instructions.

Basically, work on the machine is only to be carried out during shut-down. It is obligatory to observe the shut-down procedure described in the operating instructions.

Pumps or pump aggregates that deliver media being hazardous to health have to be decontaminated. Immediately after completion of the work, all safety and protective equipments have to be reinstalled and/or reactivated.

Dangers at the pump FZ

Danger of squeezing when closing the reservoir lid!
When filling the reservoir while the pump is in operation, do not put your hand into the reservoir. Risk of injury by scraper and agitator.
In case of drive by oscillating lever, there is an increased risk of injury in the area of the oscillating lever.
During operation, the oscillating lever drive is to be protected against unintended touch by means of appropriate covers.
When handling lubricants, avoid pollutions of the environment.
For cleaning the outside of the pump use suitable solvent-free cleansing agents. Do not use high-pressure cleaning devices.

- Advice: When working with compressed air, do wear glasses.

(DIN 4844 – Use breathing mask)

- Advice: Observe EC-Safety Data Sheet for materials of consumption and additives used and use personal protective equipment.

(DIN 4844 – Use breathing mask)

Before recommissioning, observe the points stated in section “initial start-up“.

2.7 Unauthorized conversion and manufacture of spare parts

Conversion or modifications to the machine are only permitted when agreed with the manufacturer. Original spare parts and accessories authorized by the manufacturer serve to ensure safety. The use of other parts may render the liability for consequential losses null and void.

2.8 Unacceptable modes of operation

The operational reliability of the machine supplied is only guaranteed if the machine is used in accordance with its intended purposes as per section 1 - General - of the operating instructions. The limiting values specified in the data sheet must on no account be exceeded.

2.9 Guidelines & standards

1., 2. and 3. guideline (see data sheet: R&N_2009_1_GB)

3.0 Notes on environmental protection and waste disposal

In correct operation with lubricants, the components are subject to the special requirements set by environmental legislation.

The general requirements for lubricants are specified in the respective safety data sheets.
Used lubricants are hazardous forms of waste and therefore require special supervision in the sense of § 41 paragraph 1 sentence 1 and paragraph 3 no. 1 of KrW-/AbfG (Closed-Loop Waste Management Act).

Used oils must be handled in compliance with AltölV (Waste Oil Ordinance).

The devices or components contaminated with lubricant must be disposed of by a certified waste management company.

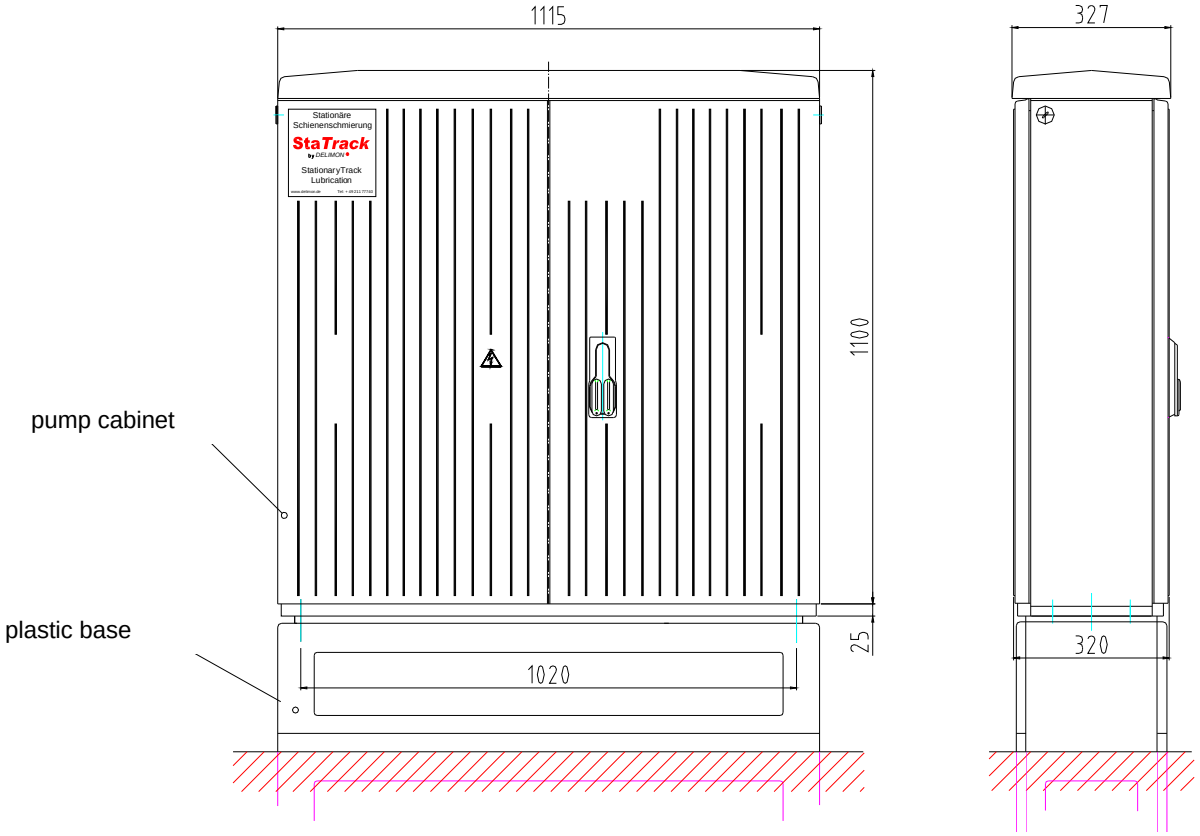
Records of proper waste management must be filed in conformance to NachwV (Ordinance on Waste Recovery and Disposal Records).

GENERAL PRODUCT CHARACTERISTICS

- Electric cabinet of plastic without base, dimensions 1115x1125x327
- Weatherproof version, -20 to +60 °C
- lockable with series key
- Pump FZ-A with 8 liter-reservoir, 8 outlets
- Siemens PLC
- Potential-free contacts
- Ultrasonic level switch

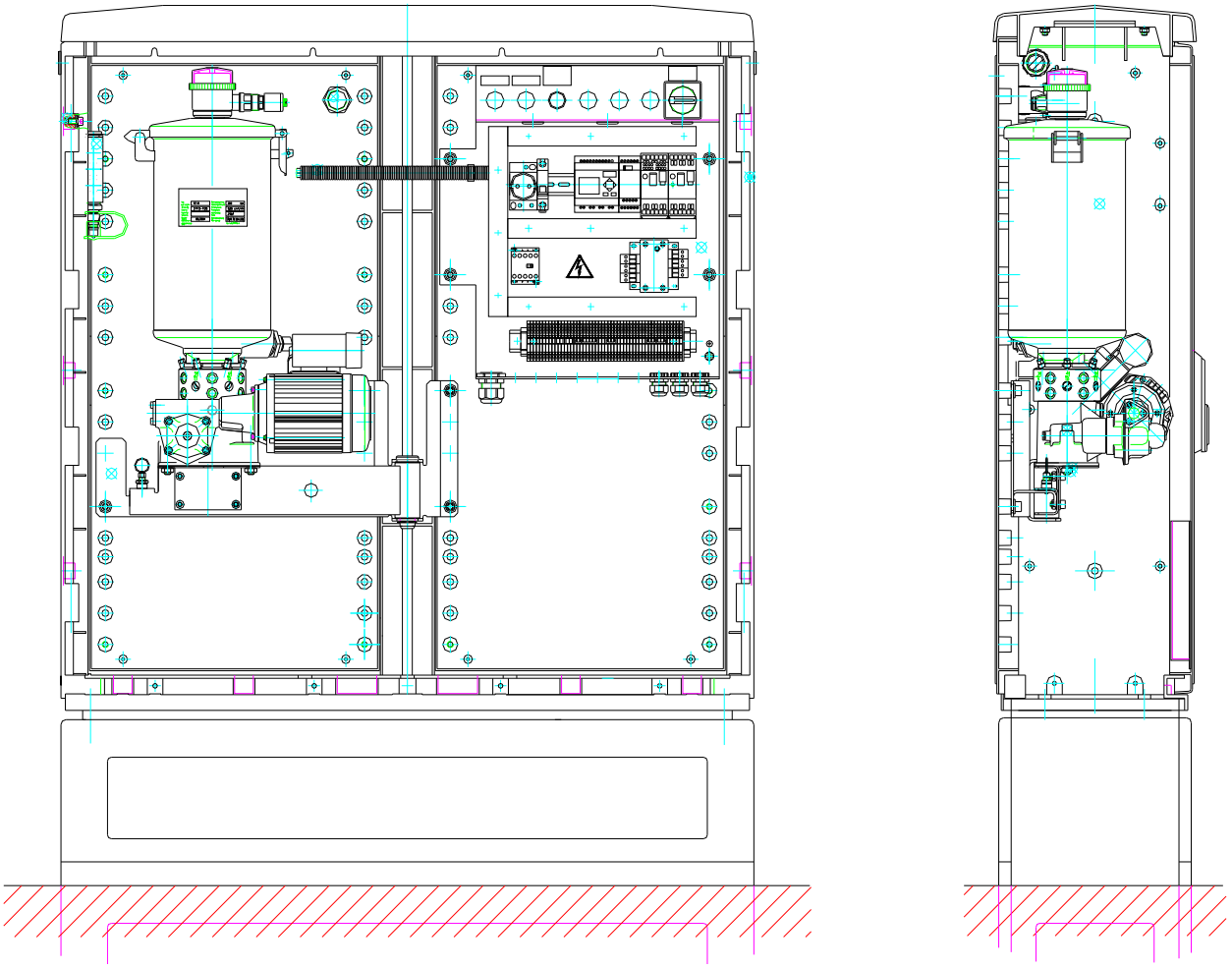
A. TYPE PUMP CABINET StaTrack

The StaTrack pump cabinet is the key component of a stationary track lubrication system.



B. CABINET

The cabinet used has a width of 1,115 mm and accommodates a central lubrication pump to feed one track with up to 8 grease points each. Also arranged in the pump cabinet is the electrical switchgear system and, in the case of solar-operated plants, the solar batteries and the solar charging regulator. An internal sonar sensor can be retrofitted, if necessary.



C. REVISION

Status A

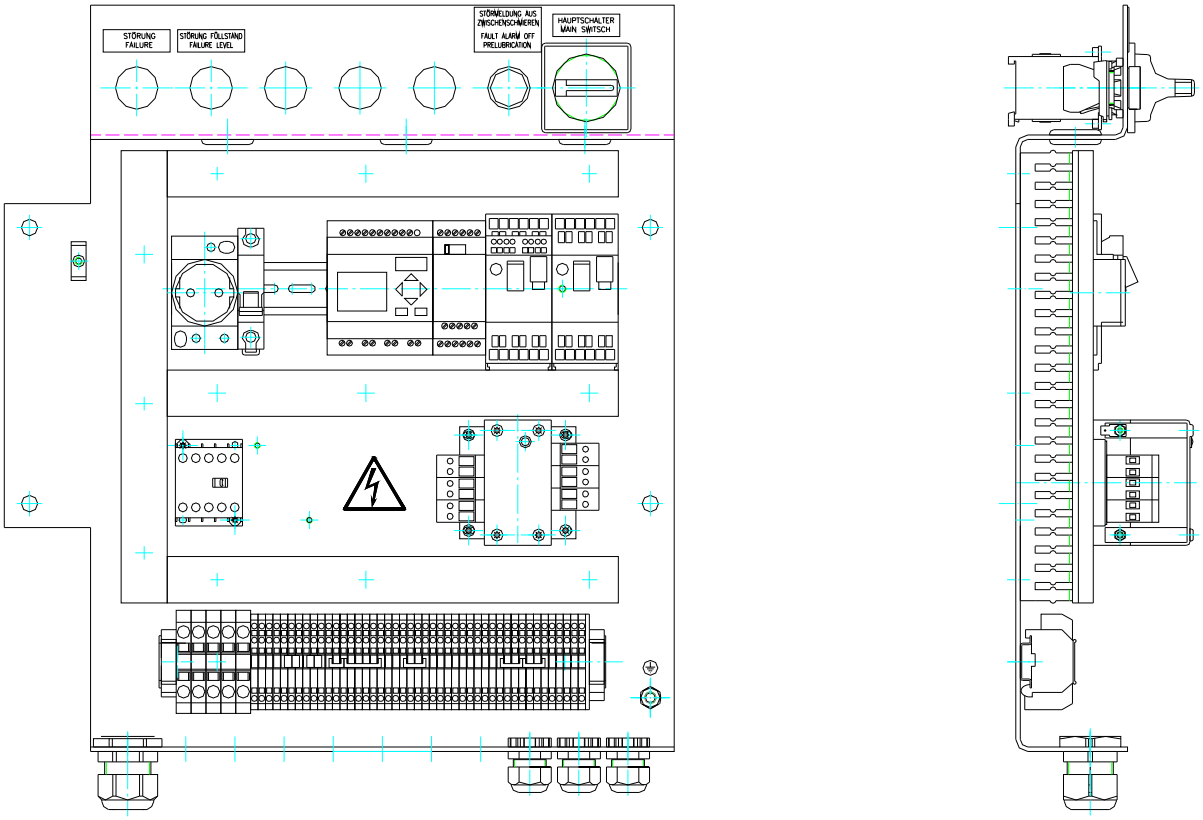
D. FILLING

It is standard that each pump cabinet comes with a high-speed coupler and a firmly installed pipe connection to the pump reservoir, thereby enabling machine-operated filling of the pump reservoir. For filling, any desired mobile pumps or pumps that are firmly installed on a service vehicle can be used which, on connecting side, must be provided with a plug socket G1/4, Art.-No. 73414-2583.

E. POWER SUPPLY

For power supply of the various types of pump cabinets, voltages of 230 V 1~, 400 V 3~ and/or infeed of 24 V DC via a solar system are provided. The electrical switchgear system is already cabled ready-for-connection with the motors of the multi-line pumps. Also, any sensors, charging regulators and other components that may be located in the pump cabinet are already connected as far as possible.

For detailed information see the pertaining catalog index.



F. VEHICLE DETECTION

The following may be used:

Contacts provided by the user and suitable for the vehicle detection, e.g. potential-free (KE) contacts being diverted from the shunt control
Overhead contacts at the aerial contact line
Sonar sensors, arranged internally or externally
Inductive sensors at the rail for the detection of the wheel

Advice: The use of sonar sensors in the pump cabinet is only possible if the detection area of the sensor is traversed exclusively by the vehicle to be detected and not by for instance other vehicles or passers-by. If this is not possible, other modes of vehicle detection such as for example

- inductive sensors at the rail for the detection of the wheel
- sonar sensors, arranged externally at an appropriate point
- overhead contacts at the aerial contact line
- potential-free contacts (KE) provided by the user.

G. ACCESSORIES

If so required, the following accessories also may be used or provided in the StaTrack cabinet:

- Sonar sensor internally
- Temperature sensor

3. Application

StaTrack pump cabinets are employed in stationary track lubrication systems and represent the basic equipment for applying a special rail lubricant to the running surface of the rail heads, the flanks of the guard or side rails in the case of grooved rail profiles, as well as other rail areas that are exposed to heavy wear; the purpose here is to minimize noise development and wear.

4. Principle of operation

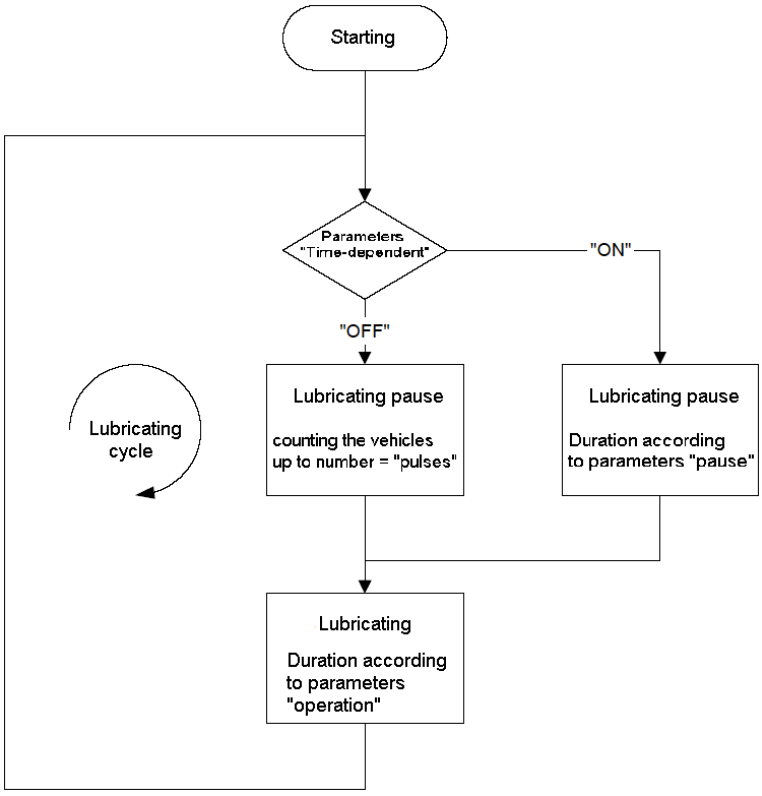
A multi-line pump with 8 adjustable outlets feeds a corresponding number of lubrication points on the rails with a defined and preset amount of lubricant. The pump is driven from an electric motor in keeping with the selected voltage level. Control is taken care of by the electrical switchgear system accommodated in the cabinet in co-action with the sensors mentioned under Item F. Further sensors such as temperature and/or rain sensors can additionally complete the line.

5. Function

5.1 Sequence

As a rule, the system performs the following cycle after starting:

1. The sequence begins with one lubrication process during which lubricant is fed to all connected lubrication points for a preset period of time. This time is adjustable (see 6.2 Parameters).
2. Lubrication completed, a lubrication pause starts whose duration is optionally determined by (see 6.2 Parameters):
   a) the number of vehicles travelling over the lubrication point. If and when the preset number of vehicles has been reached, the next lubricating process begins;
   b) a preset pause time (see 6.2 Parameters). On expiry of this time, a new lubrication process starts.



Further functions:

- It is possible to skip the lubricating pause by operating the button *Fault Signal OFF/Intermediate Lubrication.* In that case, the lubrication system restores to the beginning of the cycle and immediately starts a lubricating process.
- In the case of lubrication systems fitted with a rain sensor, the lubricating cycle is stopped as soon as the sensor signals any precipitation. When the sensor again signals dryness, the lubricating cycle is started anew from the beginning.

5. Function (Continuation)

5.2 Counting of vehicles

Signal sources

The pulses for counting the vehicles may come from various sources. Customary sources include:

a) Ultrasonic sensors reacting to the vehicle body
b) Inductive proximity switches detecting the wheels on the rail
c) Contactless overhead contact detecting the current collector/consumer of the vehicle
d) Pulses from the signalling system control of the trackway user

Evaluation of the pulses is influenced by the parameters *Response Delay Time* and *Blocking Time*.

Response Delay Time and Blocking Time

These parameters have the following meaning or function:

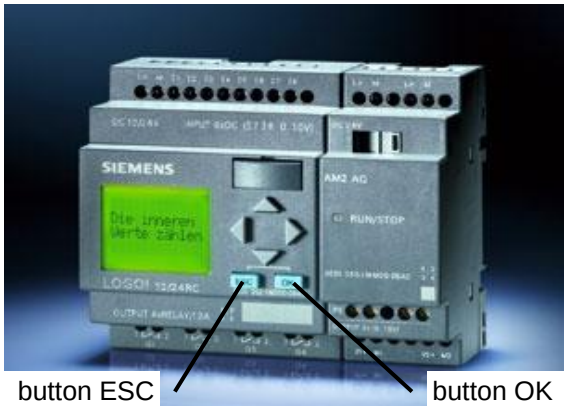
- ***Response delay time*** is the minimum period of time over which a signal must be present to be detected or recognized as passing vehicle.
- ***Blocking time*** is the time which has to expire after a vehicle has been detected or recognized before a new signal is accepted.

Depending on the type of signal source, these parameters have to be adapted:

- ***Ultrasonic sensors*** detect objects which move through the measuring area of a sensor and feature sufficient sound reflection. Normally, they are oriented to the vehicle body. To prevent small objects, that may accidentally pass through the measuring area (e.g. birds), from being detected as vehicles, an adequate response delay time must be set. The blocking time selected or set must be long enough for the vehicle to be able to completely pass the sensor during this time.
- ***Inductive proximity switches*** must detect wheels that remain in the measuring area for just a very short time. Therefore, the response delay time must be reduced to a few milliseconds (quasi 0). The blocking time selected or set must be long enough for all wheels of a vehicle to be able to completely pass the sensor during this time.
- ***Contactless overhead contacts*** must detect a current collector/consumer which remains in the measuring area of the sensor for just a very short time. Therefore, the response delay time must be reduced to a few milliseconds (quasi 0). The blocking time selected or set must be long enough for all current collectors/consumers of a vehicle to be able to completely pass the sensor during this time.
- When using ***pulses*** coming from the ***signalling system control,*** the parameters 'response delay time' and 'blocking time' are set to 0, and instead the signal source has to fulfil the following conditions:
  1. type of signal NO contact, DC 24V, load ca. 10 mA
  2. per vehicle exactly 1 pulse with a duration of at least 0.5 s

6. Parameterization of the lubrication system

6.1 LOGO Setting of parameters



1. Use the button ▼ to change over to the date display.
2. Use button ESC to switch the LOGO to operating mode 'menu selection'.
3. Use the button ▼ to position the cursor to SET PARAM.
4. Press the OK button; now you can see the first parameter.
5. Use the buttons ▲ and ▼ to scroll or browse through the parameters.
6. You can move the cursor between the individual digits of the figure by using the buttons ▶ and ◀. Use the buttons ▲ and ▼ to modify the value.
7. You can move the cursor between the individual digits of the value or figure by using the buttons ▶and ◀. Use the buttons ▲ and ▼ to modify the value.
8. Use the button OK to acknowledge or retrieve the as-set value. The ESC button serves to cancel the input.
9. Use the button ESC (repeatedly, if necessary) to return to the signal level.

6. Parameterization of the lubrication system (Continuation)

6.2 List of parameters

Name	Description	Range	Basic setting
Pulses	Duration of pause – pulses	0..999999 pulses	2
Pause	Duration of pause – time	0..999999 s	3600
Operation	Duration of lubrication (pump running time)	00:00..99:59 MM:SS	00:30
Blocking time	Blocking time / sensor inlet	00:00..99:59 SS:MS	01:00
Delay	Response delay time / sensor inlet	00:00..99:59 SS:MS	00:00
Time-dependent	Selection – time dependence	Switch ON / OFF	OFF

7. Specifications

In this section, the essential data of all main component parts are clearly outlined. The parts actually existing in the system differ according to the project and are concretely stated in the piece lists as well as in the drawings.

7.1 Technical Data - Mechanic -

Grease lubrication pump	FZ-A FZA08A
Nominal pressure	200 bar
For a short time to	250 bar
Reservoir	8 liter
Level control	Ultrasonic sensor
Ratio	215:1; 345:1 – when using DC motor
Kind of drive	3-phase A.C. motor or direct-current motor
Rotational direction of drive (acc. to arrow)	Right-hand
Outlets	8
Output volume per outlet	0....0,1 cm³ / u.p.m. Pump shaft
at 215:1 and motor 1400 U/min	0...0,65 cm³ / min
at 345:1 and motor 2500 U/min	0...0,72 cm³ / min
Connection thread	G 1/4"
Operating temperature	-20°C....+80°C
Usable lubricants	Grease according to NLGI class 000...0
Weight	18 kg

Hose line	73312-1273	73312-1253
Type	DIN 24951 - 2KT	
Nominal width (internal dia.)	DN 4 (4 mm)	DN 8 (8 mm)
Outside dia.	approx. 8,6 mm	approx. 14,5 mm
Operating pressure max. (static)	270 bar	230 bar
Length	Variable	
Bending radius min.	75 mm	115 mm
Connection	pipe stud 6 mm	pipe stud 10 mm
Hose mandrel, straight	73391-2811	73391-3433
Screw collet	73391-2821	73391-3423
Weight	0,2 kg/m	0,4 kg/m

7. Specifications (Continuation)

7.2 Technical Data - Electric -

Electrical switching facility	**66104-3416; 66104-3436; 66104-3456**
Incoming supply *	400V 50Hz, 230 50Hz, 24V DC
Control voltage	24V DC
Electronic control unit	Siemens LOGO
Dimensions (W x H x D)	450x540x120

* depending on the type of pump cabinet

Three-phase A.C. motor	**76911-5133**	
Type	1LA7063-4AB12-Z	
Design	IMB 14 K	
Nominal voltage	230/400 V; 50Hz	260/460V; 60Hz
Power rating	0,18 kW	0,21 kW
Nominal speed	1320 U/min	1620 U/min
Nominal current	0,59 A	0,58 A
Protective system	IP 55	
Weight	4,1 kg	

Direct-current motor	**76911-1634**
Type	PMD-L34EV-24-25-B14
Design	IMB 14 K
Nominal voltage	DC 24V - permanently excited
Power rating	0,18 kW
Nominal speed	2500 U/min
Nominal current	9,5 A
Protective system	IP 54
Weight	4,2 kg

Ultrasonic level switch	**76951-6011**
Operating voltage Un	20V...252V DC/AC 47...63 Hz
Current input	approx. 70 mA at 30 V DC (all relays in working position)
Switching output 1, 2 and 3	Relay
Voltage max.	150 V DC; 252 V AC
Switching current max.	3 A, ohmic
Switching current min.	90 W at 30 V DC, 750 W at 250 V DC
Operating temperature	-20 to +60 °C
Protective system acc. DIN 40050	IP 65
Weight	0,55 kg

7. Specifications (Continuation)

Ultrasonic proximity switch (Sonar sensor)	**76925-6523**	**76925-6547**
	3 RG 6....	
Type	0 13-3AD00	014-3AD00
Design	cylindrical, M30x1,5	
Acquisition range	20...130 cm	60...600 cm
Operating voltage	DC 24 V (20...30 V)	
No-load current	< 50 mA	
Outputs	1 N/O	
Sort	transistor, pnp	
Output current max.	300 mA	
Connection	Pin- and socket connector M12x1, 4-pole	
Ambient temperature	-25°C...+70°C	
Protective system	IP 65	
Weight	max. 0,24 kg	

Contactless overhead contact	**76925-6843**
Type	TLC 4 – HR-847401
Operating voltage	DC 24 V via separator stage
Outlets	Complementary
Sort	current loop 20 mA
Operating temperature	-25 to +70 °C
Protective system	IP 67
Fixing	2 feeder ears DIN 43142/44
Weight	0,55 kg

Rain and water sensor	**76951-2683**
Operating voltage Un	24 C DC
Current input	< 200 mA
Switching function	change-over contact
Protective system	IP 65
Fixing	mast holding device 74632-4243
Weight	0,65 kg

Evaluation instrument for overhead contact	**76951-3727**
Type	HR-848051
Operating voltage	DC 18...(24)...80 V
Power input	5 W
Inlet pulse divider	1:1
Sensor connection	DC 24V, max. 200 mA, electrically isolated
Outlets	Relay, change-over contact
Temperature range	-20°C ... +70°C
Protective system	IP 40 (terminals IP 10)
Weight	0,5 kg

7. Specifications (Continuation)

Solar charging regulator	76916-8727
Type	SLR 2020 D
System voltage	DC 12 / 24V
max. load current	20 A
max. modular current	20 A
max. total current at 50°C	32 A
Ambient temperature	-25°C...+50°C
Protective system	IP 65
Dimensions (W x D x H)	175x58x117
Weight	0,6 kg

Solar battery	76914-0213
Type	S12/80
Design	lead accumulator with gel-bound electrolyte
Nominal voltage	DC 12 V
Nominal capacity	80 Ah
Connections	round poles
Dimensions (L x W x H)	381 x 175 x 190 mm
Weight	23,1 kg

8. Transport and Intermediate storage

8.1 Transport

The pump aggregates are to be transported in a vertical position (provide drain-off protection). Any transport aids, such as ropes etc. are to be fastened at the foundation only.

Ensure that the packages firmly remain in their position during transport.

For transportation, all system components have to be provided with suitable transport safety facilities (if necessary).

Risk of fracture!

Advice for solar equipments:
The solar batteries will be delivered separately packed and are to be inserted in the cabinet during erection of the system. The cable bridge for the link of both batteries is attached in the cabinet.

8.2 Intermediate Storage

The centralized lubrication system must not be stored outdoors. Protect centralized lubrication system from dust and moisture. Take care that the ground is stable and capable of bearing the system.

9. Assembly and Disassembly Instructions

See Basic Documentation “Stationary Rail Lubrication System StaTrack“ and Leaflet X 01 BA 1.
Check the material supplied for completeness. Missing parts are to be reordered immediately in order to avoid assembly interruptions resulting from lack of material.

Advice for solar equipments:
Fix and orient the terminal posts in such a way that no short circuit can occur. The cell terminal (+24V) is provided with a 20A strip fuse. The connection to the regulator must be made exclusively via this fuse. The cables for the connection of the batteries incl. the bridge for the junction of the batteries are prefabricated and available in the pump cabinet.

9. Assembly and Disassembly Instructions (Continuation)

Attention:
When connecting the solar components, observe by all means the polarity. When connecting the components, observe the procedure as described in the attached technical documents.

Attention:
The electrical connection has to be made according to the circuit diagram by qualified staff only. The local rules for electrical systems are to be observed. This particularly applies to the work at the overhead network. The execution of such work is only allowed by companies possessing an approval which is valid for the network area of the user of the system.

10. Start-up and Maintenance instructions

The pump cabinet can be commissioned and serviced/repaired only together with the complete rail lubrication system (see Description "Stationary Rail Lubrication System").
Detailed information on the start-up and maintenance of the individual components can be found in the System Description as well as the pertaining documents according to the catalog index.

Advice for solar equipment:
The solar batteries themselves are maintenance-free. The carbon brushes of the motor have to be checked according to the operating instructions every 3 months, but every 1000 working hours at the latest. For the change of the carbon brushes, we recommend to remove the motor from the pump and to do this work in the electric workshop.

11. Fault finding

Fault: ***Lubrication points do not receive lubricant***
Pump works, only one or a few lubrication point(s) is/are concerned:

- Line to the lubrication point is damaged (interrupted or clogged).
- Output volume of the pump outlet adjusted too low.
  Check pump discharge with free outlet.

Fault: ***Lubrication points do not receive lubricant***
Pump works, all lubrication points are concerned:

- Store tank is empty, refill lubricant.

Fault: ***Lubrication points do not receive lubricant***
Pump does not work, hand release not possible:

- Protective motor switch released.
- Control out of order (charging regulator on total discharge protection).
- Control out of order (inverted rectifier on failure)
- Control unit (electronic module) defective.
- Carbon brushes of the motor are worn-out.

Fault: ***Lubrication points do not receive lubricant***
Pump does not work, hand release possible:

- Pulses for vehicle detection are missing, check sensor.
- Control system adjusted incorrectly.
- Control unit (electronic module) defective.

12. Plates

Name plate 32 x 110 mm

Type plate 110 x 60 mm (75511-1321)