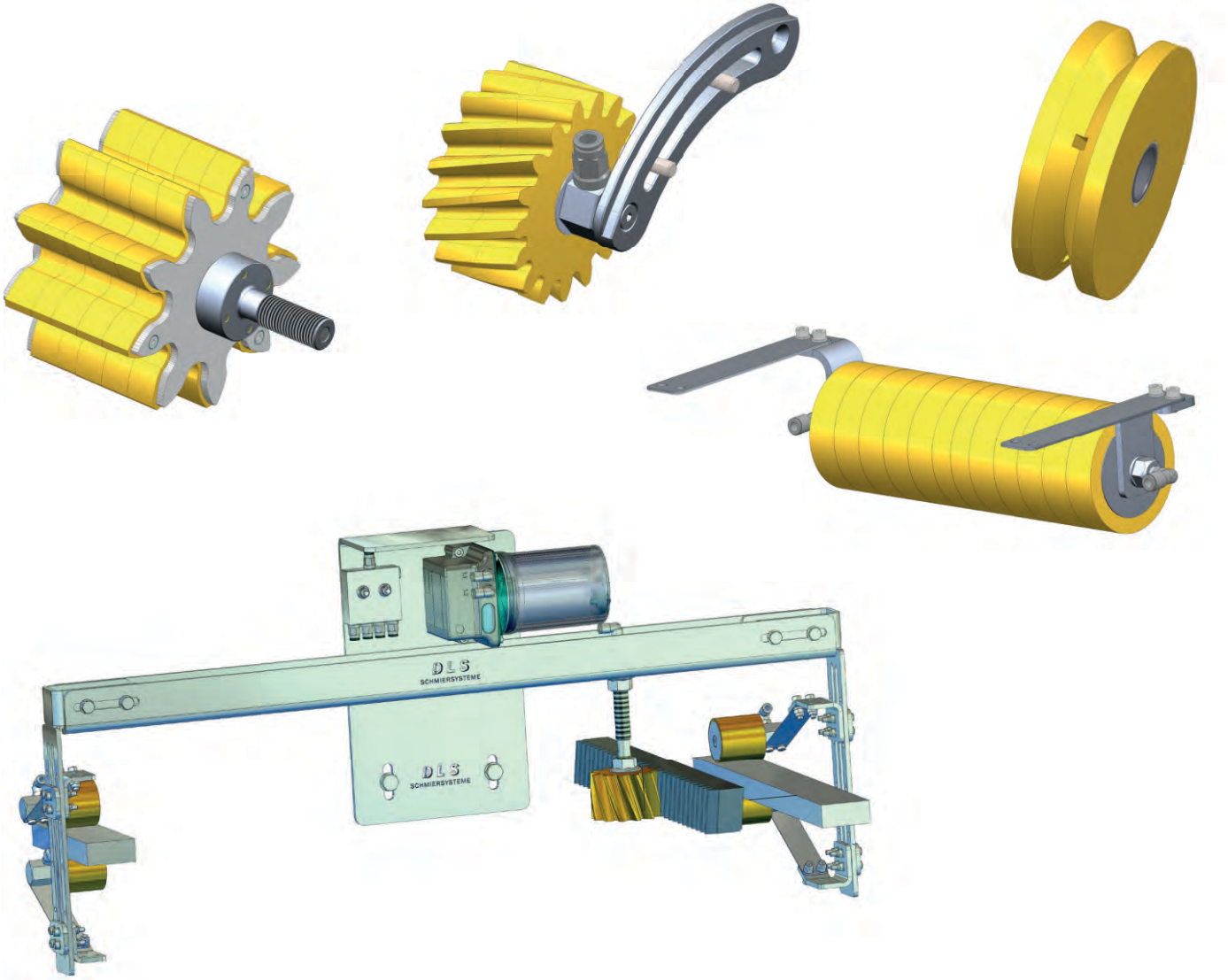
بلبرینگ اسکوئی

(اسکو صنعت تاوریژ)

OBC
Oskoyi Ballbearing Company

Smart Lubrication

promote - monitor - distribute - apply



From conception to design and dimensioning right to installation and assembly:
all dependable, competent and solid from a single source.

Our team of experienced engineers and technicans look forward to your challenges.

- ✓ Longtime experince and practical knowledge of industrial drive engeeniering and controlled minimum quantity lubrication.
- ✓ Solid and checked quality “made in Germany”.
- ✓ conceptual design, dimensioning and calculation of the relubrication quantity for you application
- ✓ complete CAD-Data for integration in your construction and dokumentation.
- ✓ Standard is on stock.
- ✓ Extensive accessories and system connection range.
- ✓ Ready-to-install, filled and vented components.
- ✓ Local install-service (on request).
- ✓ Special designs (own constructions), all parameters free, fast and inexpensive, ideal for single parts, small and big series.

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فکس : (021) 33985603

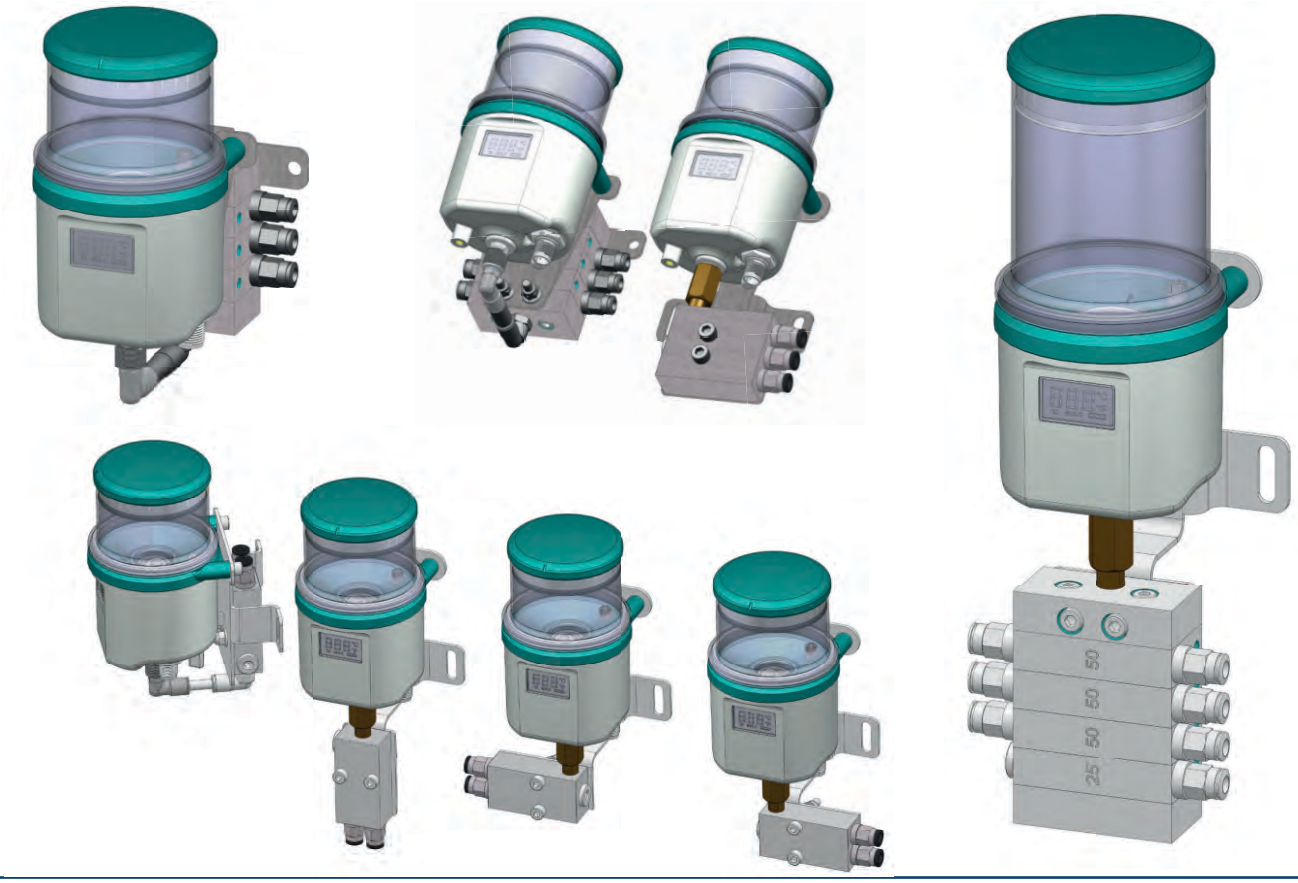
The Compact: FlexxPump 125.

+ Automatical relubrication unit for 24 V / battery-driven
+ For grease-lubricant

+ Time- or pulse-controlled
+ Single-gates Lubrications-points
+ 1 outlet; with distributors expandable
+ Grease up to NLGI Class 2
+ pressure switchable up to 12 / 50 bar
+ 125 / 250 cc grease in cartridge
+ Quantity per cycle 0.15 cc

+ Integrable to PLC with error messages
+ Additional optical filling level control
+ IP Class: IP 54
+ Operating temperature -20 °C ... +70 °C

System accessories FlexxPump 125. Or redy-to-install components.



site : www.1OBC.com
Email : Borhan772000@yahoo.com

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The Middle: FlexxPump 400 / 500.

+ Automatical relubrication unit for 24 V / battery-driven
+ FlexxPump 400 for grease-lubricant
+ FlexxPump 500 for oil-lubricant

+ Time- or pulse-controlled
+ Single- or multiplegates Lubrications-points
+ 1...4 outlets; with distributors expandable
+ Grease up to NLGI Class 2
+ Pressure up to 70 bar
+ 400 / 250 cc grease in cartridge
+ Quantity per cycle 0.15 cc

+ Integrable to PLC with error messages
+ Mounting position random (FlexxPump 400)
+ IP Class: IP 65
+ Operating temperature -20 °C ... +70 °C

The Great: FlexxPump 1500 / 2000.

+ Automatical relubrication unit for 24 V
+ FlexxPump 1500 for grease-lubricant
+ FlexxPump 2000 for oil-lubricant

+ Time- or pulse-controlled
+ Single- or multiplegates Lubrications-points
+ 2...10 outlets; with distributors expandable
+ Grease up to NLGI Class 2
+ Pressure up to 70 bar
+ 1500 cc grease in bellow
+ Quantity per cycle 0.15 cc

+ Integrable to PLC with error messages
+ Mounting position random (FlexxPump 1500)
+ IP Class: IP 65
+ Operating temperature -20 °C ... +70 °C

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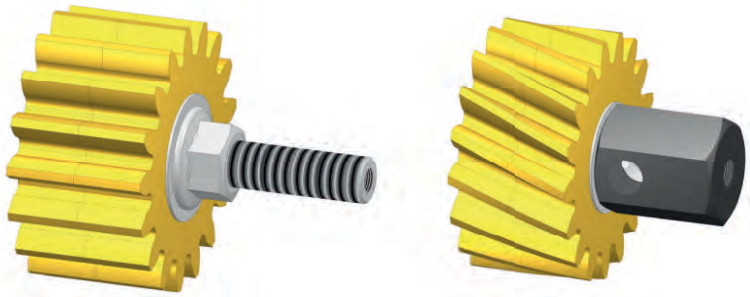
PU-Lubrication Pinions.

For relubrication for open tooth systems

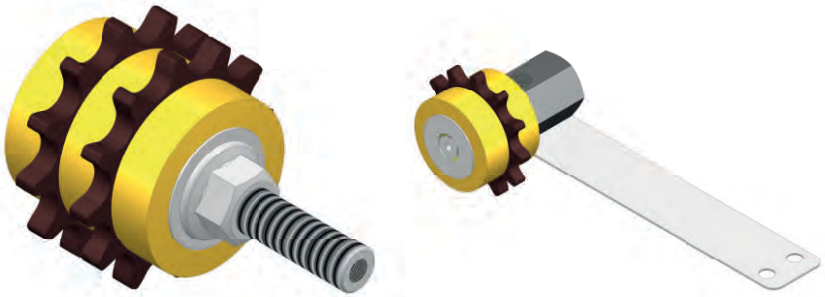
+ Operating temperature -30°C ... +150 °C
+ Low weight
+ Sleeve-Bearings
+ Geometry free selectable
+ Special rackets possible
+ For Lubricant up to NLGI Class 2



PU-Lubrication sprocklets.

For relubrication for chain drives

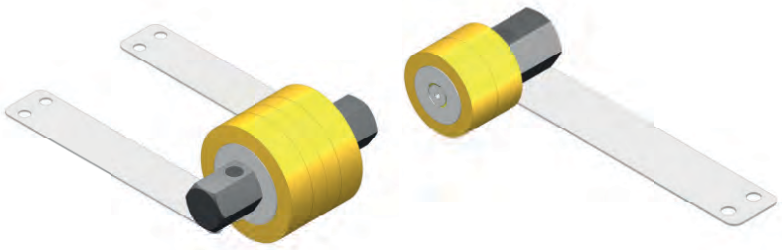
+ Speed > 2 m/s
+ Different mountings
+ Sleeve bearings (rolling bearings on request)
+ For chain lubricant < 30.000 cSt
+ Excellent dry-running properties



PU-Lubrication-Rolls.

For relubrication for chain drives and linear guide

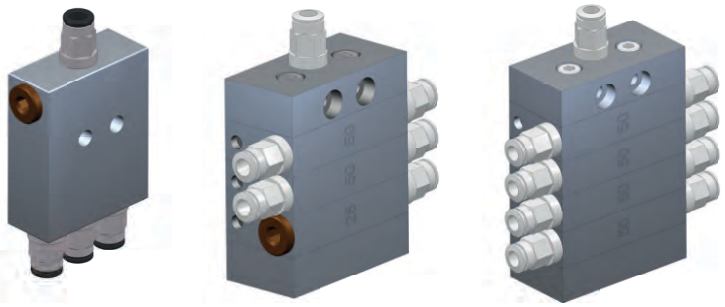
+ For grease or oil Lubrication
+ Grease up to NLGI Class 2 / oil < 30.000 cSt
+ Diameter up to 600 mm
+ Contours free selectable
+ Excellent dry-running properties
+ Covers and housings on request



Distributors.

For needs-based distributing of Lubricant

+ Distributor concerted to FlexxPump-series
+ Different dosage volume
+ High dosing accurancy of all distributors
+ Lightweight design
+ For grease- and oil-lubricants

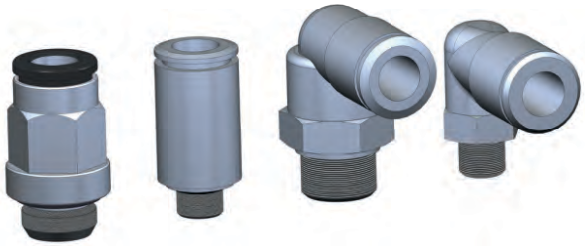


Lubricants.

Selected (high-)performance Lubricants for your application.

Connectors.

Connecting the lubrication system with your lubrication point



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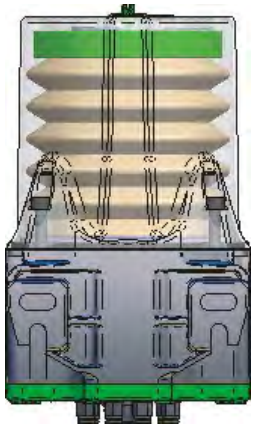
Labeling

FlexxPump 1500 is marked with a label (including serial number and CE-symbol).



Serial number

CE – symbol

Manufacturer:

DLS Schmiersysteme GmbH

Gewerbering 5, 82140 Olching, Germany

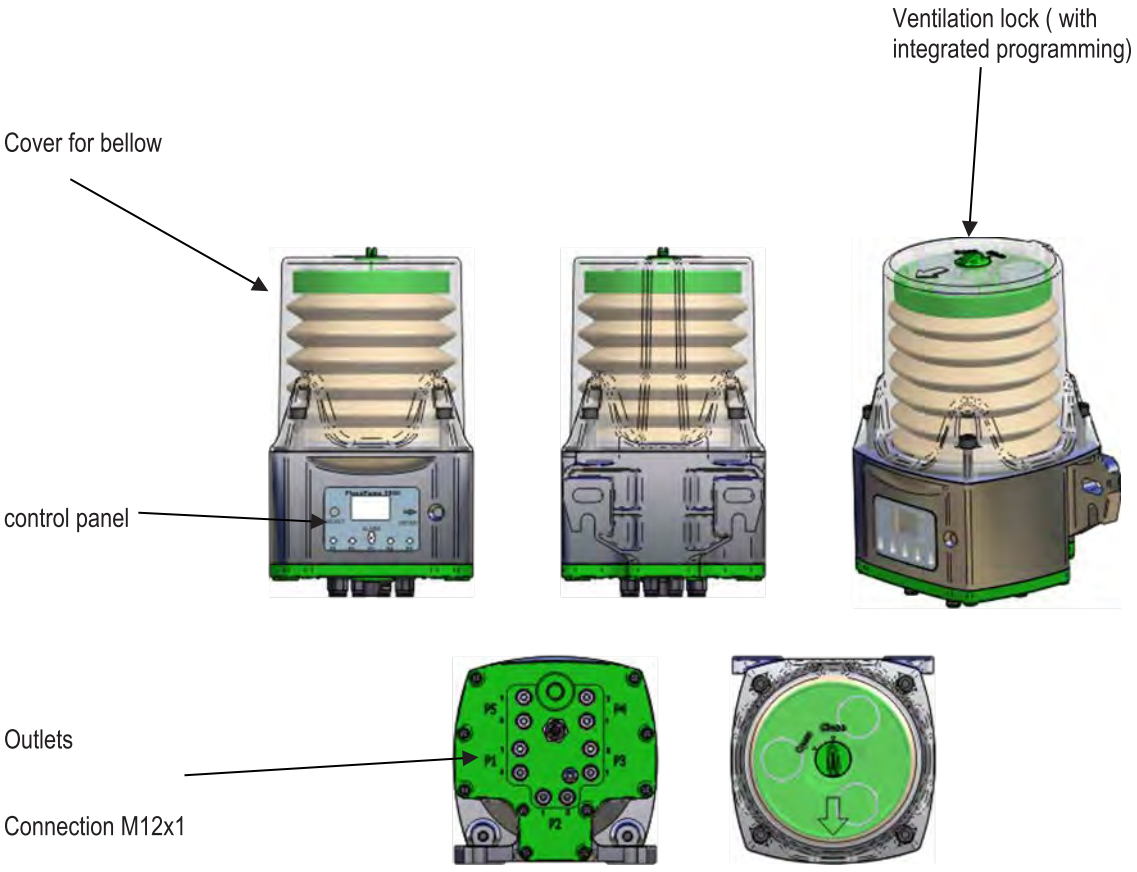
Tel.: +49–8142–65069–0, Fax: +49–8142–65069–29

Email: mail@DLS-schmiersysteme.de,

Website: www.DLS-schmiersysteme.de

Overview

The setup of your FlexxPump 1500 is easy. This user manual will learn you the basic operation and adjustments.



Important remark: unused outlets must remain open to avoid damage to the pump!

General safety details

Everybody who is involved with the installation, start-up, maintenance and operation of the FlexxPump 1500 must read these instructions carefully!

Use in accordance with guide

Attention !

- The FlexxPump 1500 is **only** allowed for **industrial use**.
- The FlexxPump 1500 may only be put into service, if it is integrated or attached to another machine and will be operated together with that machine.
- The FlexxPump 1500 may only be used according to the technical data (see chapter “technical data”)
- Unauthorized structural changes at the FlexxPump 1500 are not permitted. We do not assume liability for damages of persons or machines which result from that.
-
- Other uses or uses beyond those described above cannot be considered to be in
- Accordance with the regulations.

Extent of warranty

Warranties concerning operating safety, reliability and capacity, are only granted under the following conditions:
Assembly, installation, maintenance and repair are only carried out through trained specialist. Hazardous hot or cold machine parts must be shielded to prevent touching.

- The FlexxPump must be used according to the instructions in the technical operating manual
- The rated technical data must not be exceeded in any case.
- Retrofitting and repair work on the FlexxPump may only be done by TriboServ or trained agents.

General safety information

Basic information, which must be followed during service, operation and maintenance, are listed as follows.

It is absolutely essential that the end user reads the operator's manual / user guide before installation and start up.

In addition to this, it must be permanently available at the site.

IMPORTANT

Please pay attention, to the safety instructions in this chapter as well as special security cautions that are mentioned throughout the user guide.

This symbol warns of electrical voltage.

Safety instructions which, if not complied with, may endanger persons, are marked Specifically with the general hazard symbol.

Attention

this heading is used if inaccurate compliance or non-compliance with the Operating Instruction or specified work procedures etc. may result in damage.

Remark !

Points out special information

Instructions attached directly to the machine, must be strictly followed and maintained in completely readable condition!

Qualification and training of the personnel

The operation, maintenance, service and installation personnel must have appropriate qualifications for this work. Responsibility and supervision of the personnel must be clearly defined by the end user / operator. If the personnel do not have the necessary knowledge, they must be trained and instructed. The operator must ensure that the personnel have completely understood the contents of the user information.

Non-observance of the safety information can be dangerous

Not observing the safety information can lead to danger for people, environment and machines. Not observing the safety information can mean the loss of any or all damage claims. In special cases, non-observance can, for example, lead to the following dangers:

- Failure of important plant functions.
- Failure of prescribed methods of maintenance and preventive maintenance.
- Endangering people due to electrical, mechanical and chemical effects.
- Endangering the environment due to leaks of dangerous materials.

Safety information for operators/operating staff

- Hot or cold machine parts are hazardous and must be protected from touching. The protection on "moving or rotating parts" must not be removed.
- In case of dangerous lubricant leaks media proper disposal not endangering environment or people must be ensured.
- Legal Regulation must be observed and complied.
- Eliminate any danger due to electrical power.

Safety information for maintenance, inspection and assembly work

- All maintenance, inspection and installation work may only be carried out by trained specialists who have been informed appropriately by studying the user information closely.
- All work must only be carried out when machine is shut down and while wearing appropriate protective clothing. Always comply with the procedures for shutting the machine down that are described in the operating manual. All the safety and protective equipment must be replaced immediately after completing work. Environmentally hazardous substances that endanger the environment must be disposed in accordance with local regulations. Secure the system during maintenance and repair work, against intentional or unintentional operation. Dispose of used lubricants in accordance with the safety data sheets of the lubricant manufacturer.

Alterations and manufacture of spare parts without authority

Rebuilding or altering the FlexxPump 1500 are only allowed after consultation with the manufacturer. Original spare parts and accessories authorized by the manufacturer are for safety purposes. Using other parts results in loss of liability for claims resulting out of this. For components, retrofitted by the operator, DLS Schmiersysteme does not assume guarantee nor claims for damages.

Prohibited methods of operation

Operational security of the FlexxPump 1500 is only guaranteed if it is operated in accordance with the operating instructions. The limit values stated in the technical data must not be exceeded under any circumstances.

General risk reference

All components of the system are designed in accordance with the prevailing regulations of the construction of technical machines, in regards to operational safety and accident prevention. Operation outside of these constraints can lead to dangers for the user respectively third persons or other technical facilities. The FlexxPump therefore may fulfil only in technically fault-free condition its intended use. This may only be carried out under compliance of the safety regulations and the attention of the operator's manual. Therefore please regularly inspect the pump and its attachments for possible damage or leaks

Transport and storage

Use suitable lifting gear for transport.
Do not throw or expose the FlexxPump 1500 to strong shock loads.
Store the FlexxPump 1500 in a cool and dry place to avoid corrosion of the system's individual parts.

Pay attention to the current safety- and accident prevention instructions during the transport. Wear suitable protection equipment if necessary!

Installation instruction

The following conditions have to be satisfied during the installation of this FlexxPump 1500, thus it can be assembled, with other parts, to a complete machine without affecting the safety and health of humans:

The housing of the FlexxPump 1500 should not be exposed to direct sunlight and / or radiant heat preventing the formation of condensation.

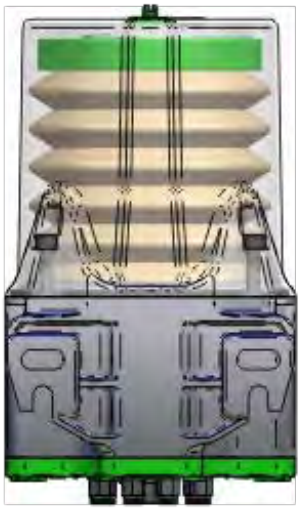
Electrical connection

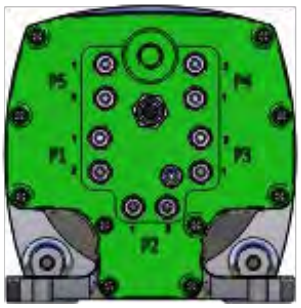
- Have the electric power supply connected only by a trained electrician!
- Connection and wiring of the electric components should be done by an expert trained in this field.
- Check that the voltage requirements correspond to the existing power supply voltage!

Maintenance / repair

- Disconnect the voltage feed, before starting with maintenance or repair.
- Maintenance and repair work may only be done with the system shut down.
- Check the surface temperature of 50 °C, due to danger of burning by radiant heat. Always wear heat-resistance gloves! Protect the system from activation during maintenance and repair work!

FlexxPump 1500 basics

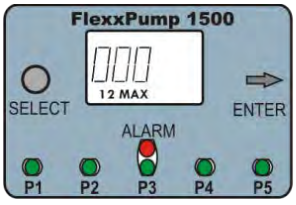


Definitions

Lubrication pump designed for applications with minimal amounts of lubricant:

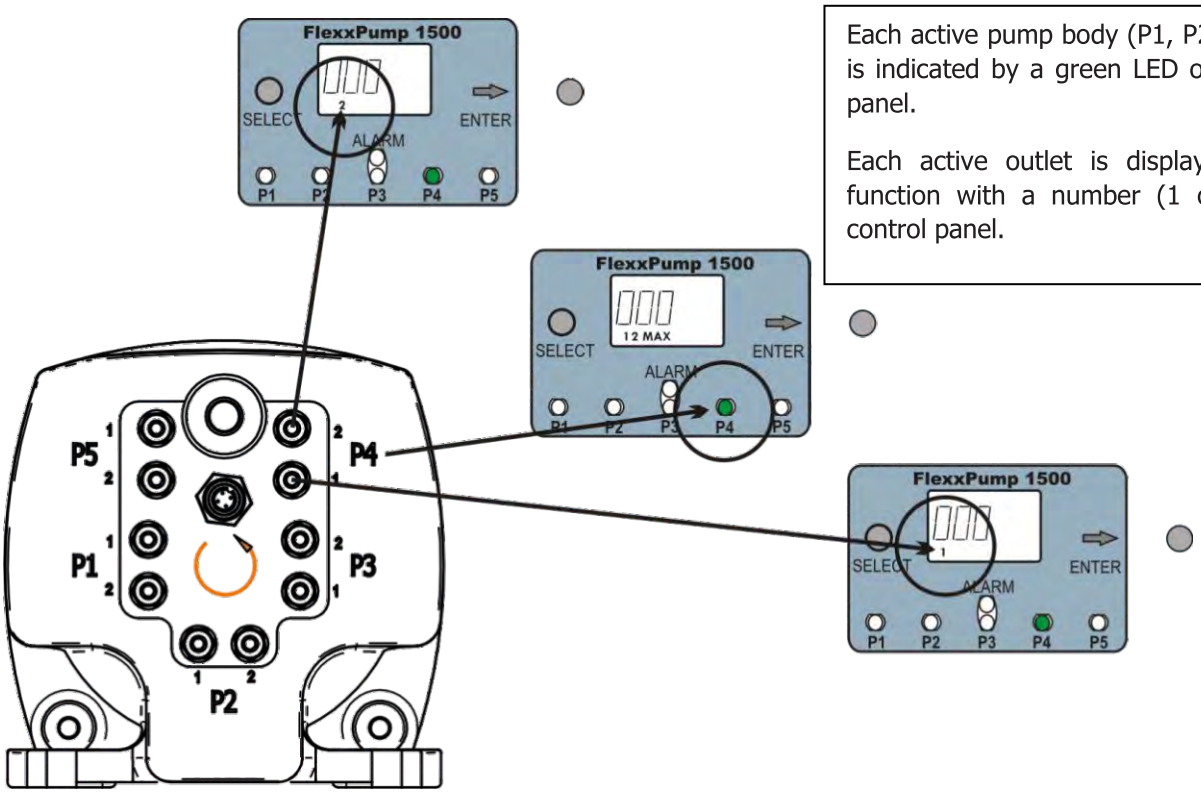
- Depending on the configuration FlexxPump 1500 is available with up to 5 pumpunits (P1, P2, P3, P4, P5), each with 2 outlets.
- 1 pump unit is the housing for 2 piston pumps. 1 pump unit is dispensing equal quantities from both outlets.
- Minimum quantity lubrication means the controlled and efficient supply of a lubrication point with selected, high performance lubricants
- Run = back pressure control – preventive check on a lubrication point: The measurement of the back pressure is done during the dispensing pumping process and the result will be shown on the display. The displayed value is a first orientation over the pressure range.

Control panel



Pumpunit P1 ... P5:	display green LED
Error messages (ALARM):	display red LED

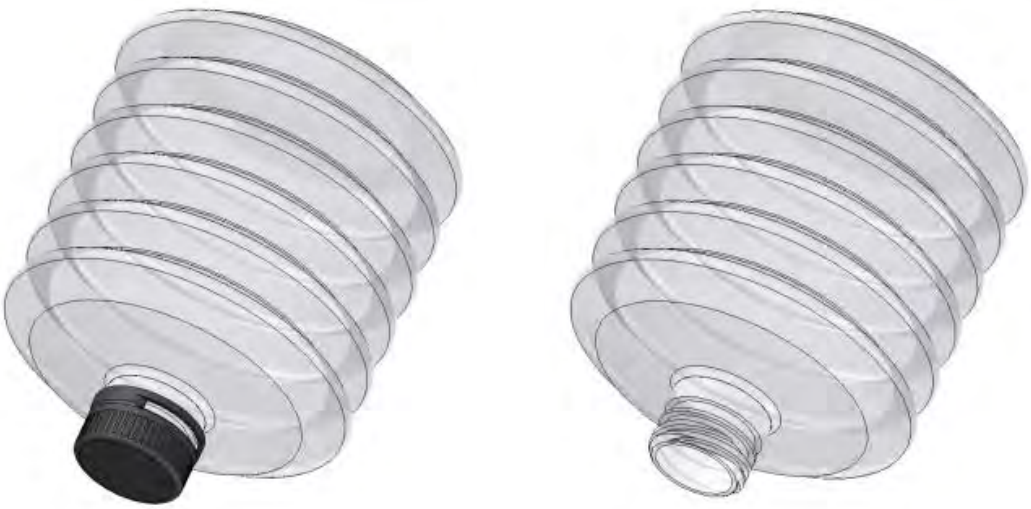
Identification pump units and outlets



Each active pump body (P1, P2, P3, P4, P5) is indicated by a green LED on the control panel.

Each active outlet is displayed during a function with a number (1 or 2) on the control panel.

Grease pouch / bellow



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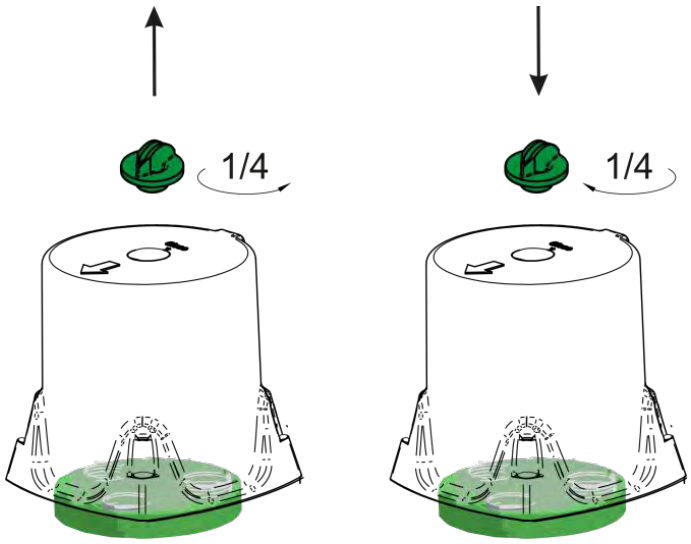
How it works

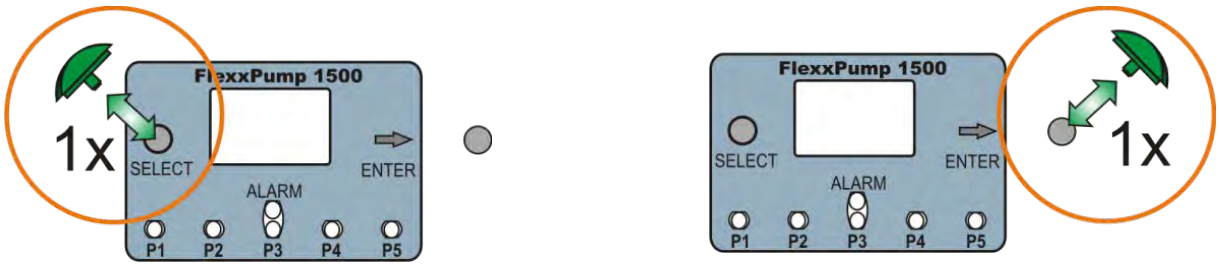
After connecting and activating FlexxPump 1500, the piston pump starts to work and pumps the lubricant in small quantities to the outlets. The integrated microprocessor controls the function. Delivery rates and pause time between the lubrication intervals can be individually set.
The FlexxPump 1500 uses a four-pin socket to connect a M12X1 plug allowing communication with the machine controller. An external 24 VDC power supply is used to switch ON and OFF (voltage 24 VDC- 5% / +10%), supplied to PIN 1). When voltage is supplied the lubrication pump is in operating condition. If there are no errors (Pump OK) the input voltage will be transferred to the output signal (PIN 4) indicating all is OK. Once the voltage supply to PIN 1 is stopped (switched OFF), the pump rests and saves the current operating conditions in memory. When the pump is turned back on the saved operating conditions will be continued. PIN 4 relays the operating condition.

Basic operation

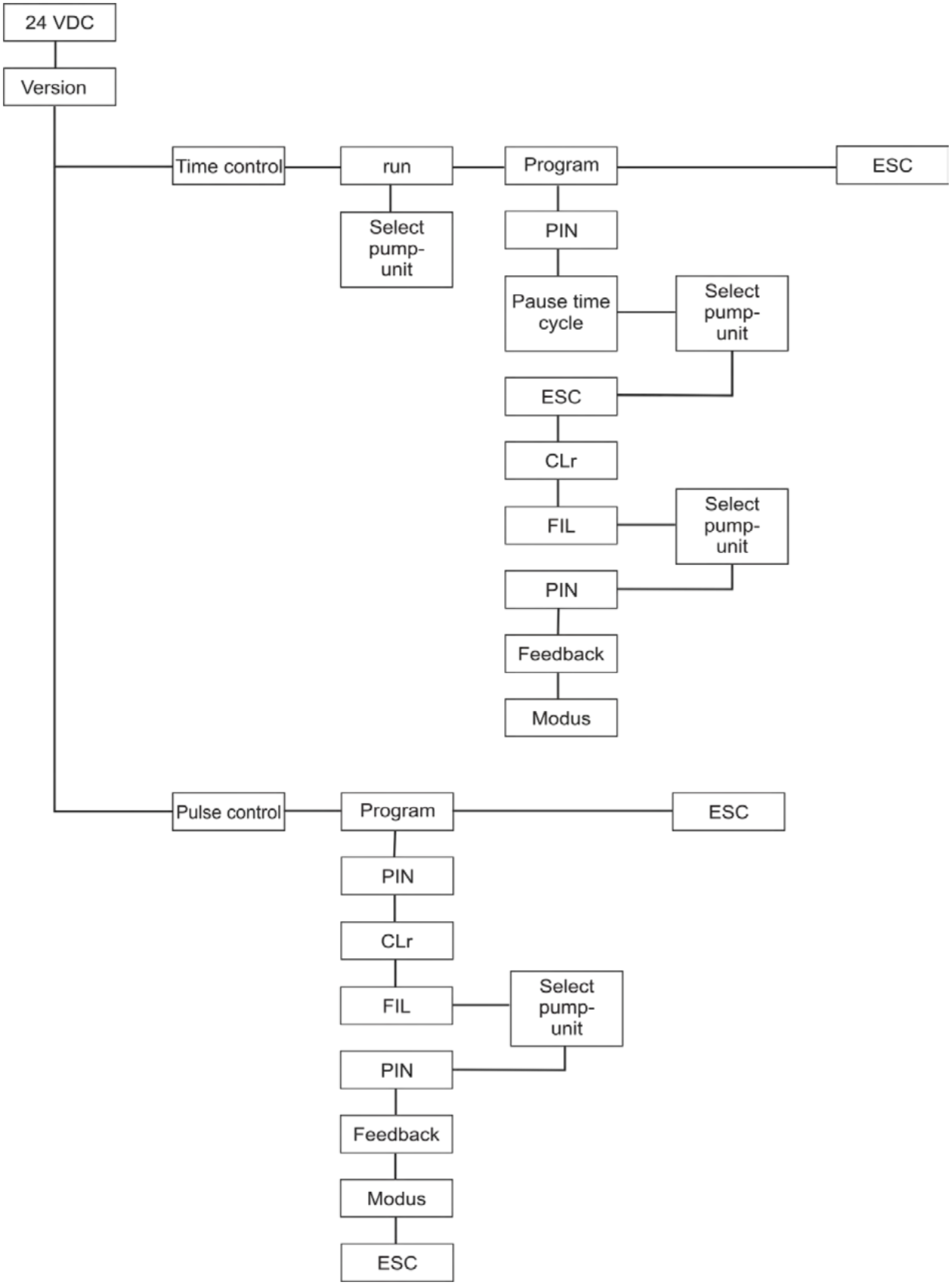
All changes to the settings are made with the programming key (ventilation lock). Open the ventilation lock (turn clockwise to OPEN) and remove the cover. The nose of the cover is your operating / programming key. If there are no desired changes to the settings, please set your operating / programming key back at its place and close the ventilation lock (turn counter clockwise to CLOSE).



SELECT:	Change settings - touch the operating pad with the operating / programming key
ENTER:	Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout:	If no interaction takes place for a period, the device automatically returns to the previous display mode.



Start: Menu



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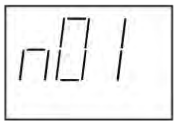
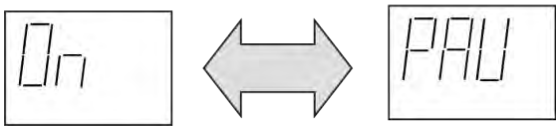
Start: Visual display

Apply operating voltage

Softwareversion: n01 … n99



Operating mode

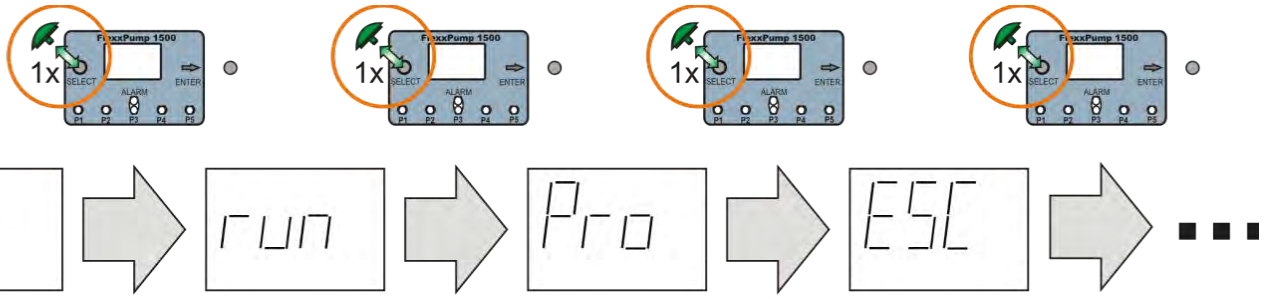


Operating mode
Pulse control

Next see mode time control or pulse control.

Mode: time control

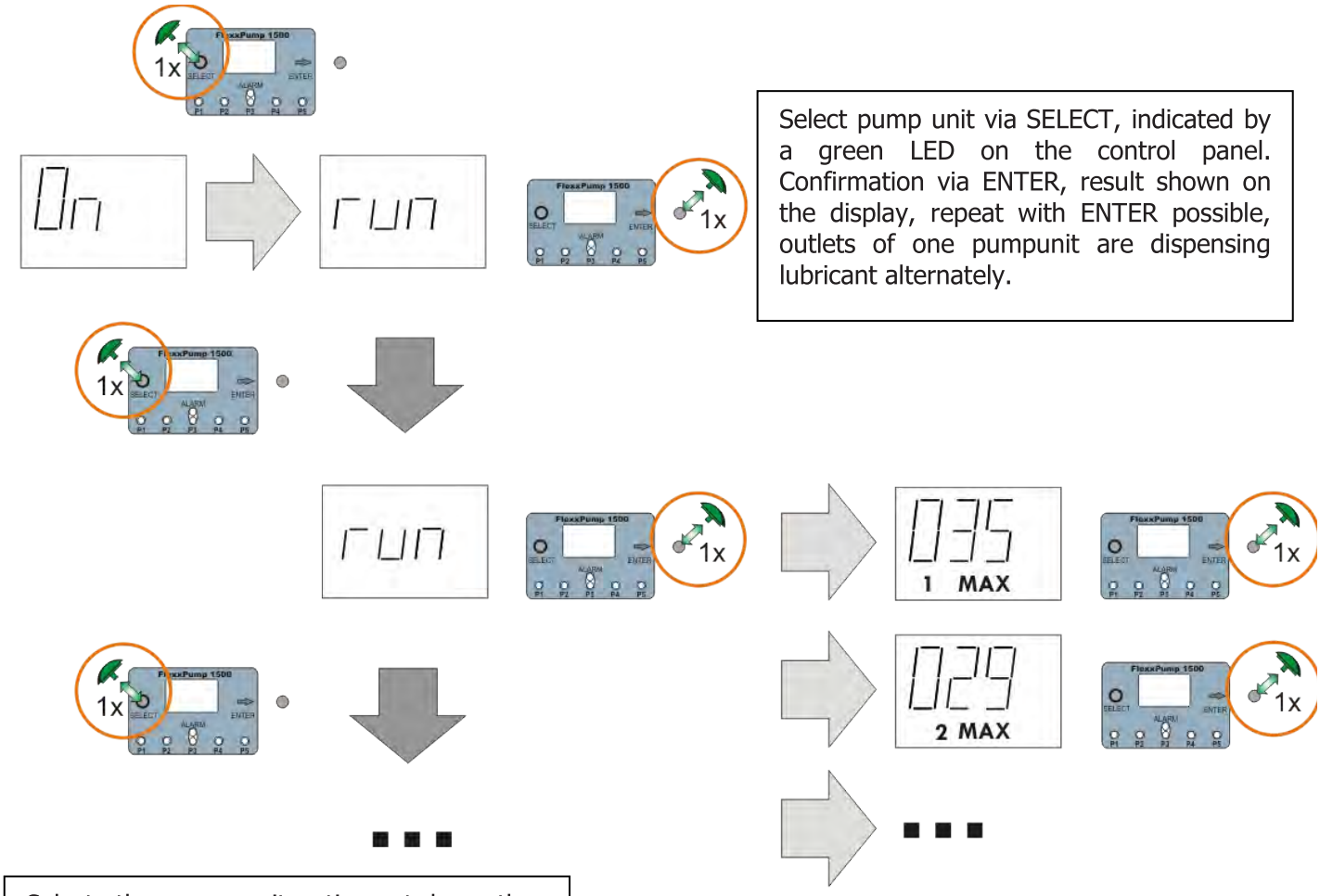
SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.



On: Operating mode – time control
run: Run = back pressure control – preventive check on a lubrication point: The measurement of the back pressure is done during the dispensing pumping process and the result will be shown on the display. The displayed value is a first orientation over the pressure range.
Pro: Other functions, PIN code protected
ESC: Key to leave and return to the main menu

run – back pressure control – preventive check on a lubrication point

SELECT:	Change settings - touch the operating pad with the operating / programming key
ENTER:	Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout:	If no interaction takes place for a period, the device automatically returns to the previous display mode.



Select pump unit via SELECT, indicated by a green LED on the control panel. Confirmation via ENTER, result shown on the display, repeat with ENTER possible, outlets of one pumpunit are dispensing lubricant alternately.

Select other pump unit or timeout: leave the menu

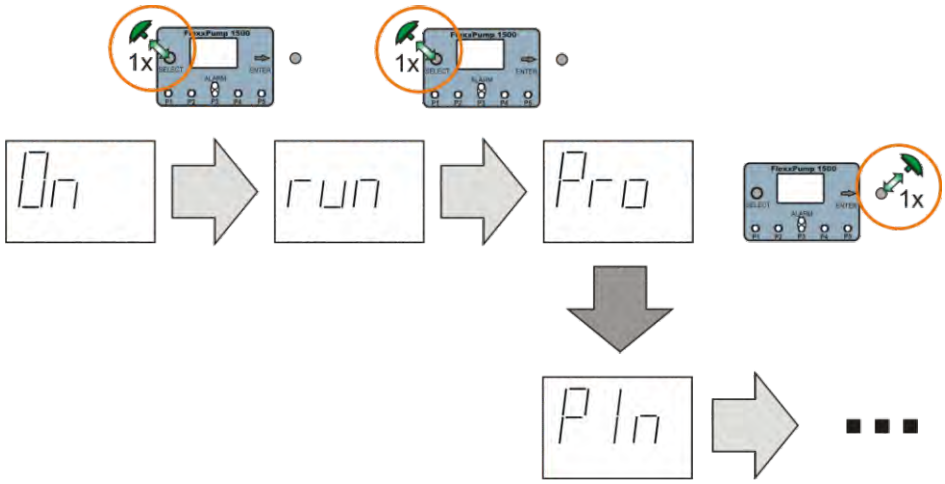
Pro program, menu – content

a) Enter PIN
b) Input delivery rates and pause time for every pumpunit
c) ESC: Return to the previous display mode
d) CLr: Clear - delete error messages and delete filling cycles
e) FIL: Filling - de airing the pump, for example – start up, prefilling tubes …
f) Change PIN
g) Change Feedback – Pump function control
h) Change operating mode: Time control / pulse control

Pro programm, PIN code protect

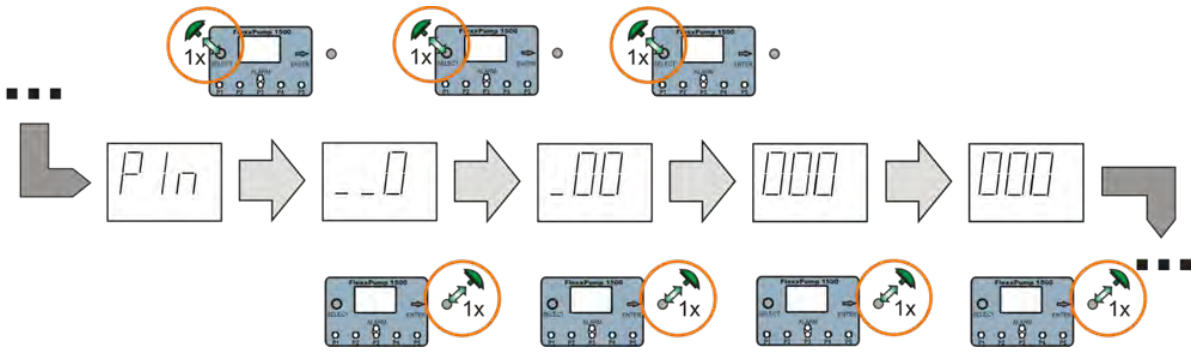
Selection of other menu items with PIN entry possible-

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.



Enter PIN, factory setting PIN: 000 (Master PIN see service)

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.



Input break (pause) time (H: TIME = time between the lubrication intervals in hours) and cycle (C: CYCLE = lubrication quantity) for every pump unit

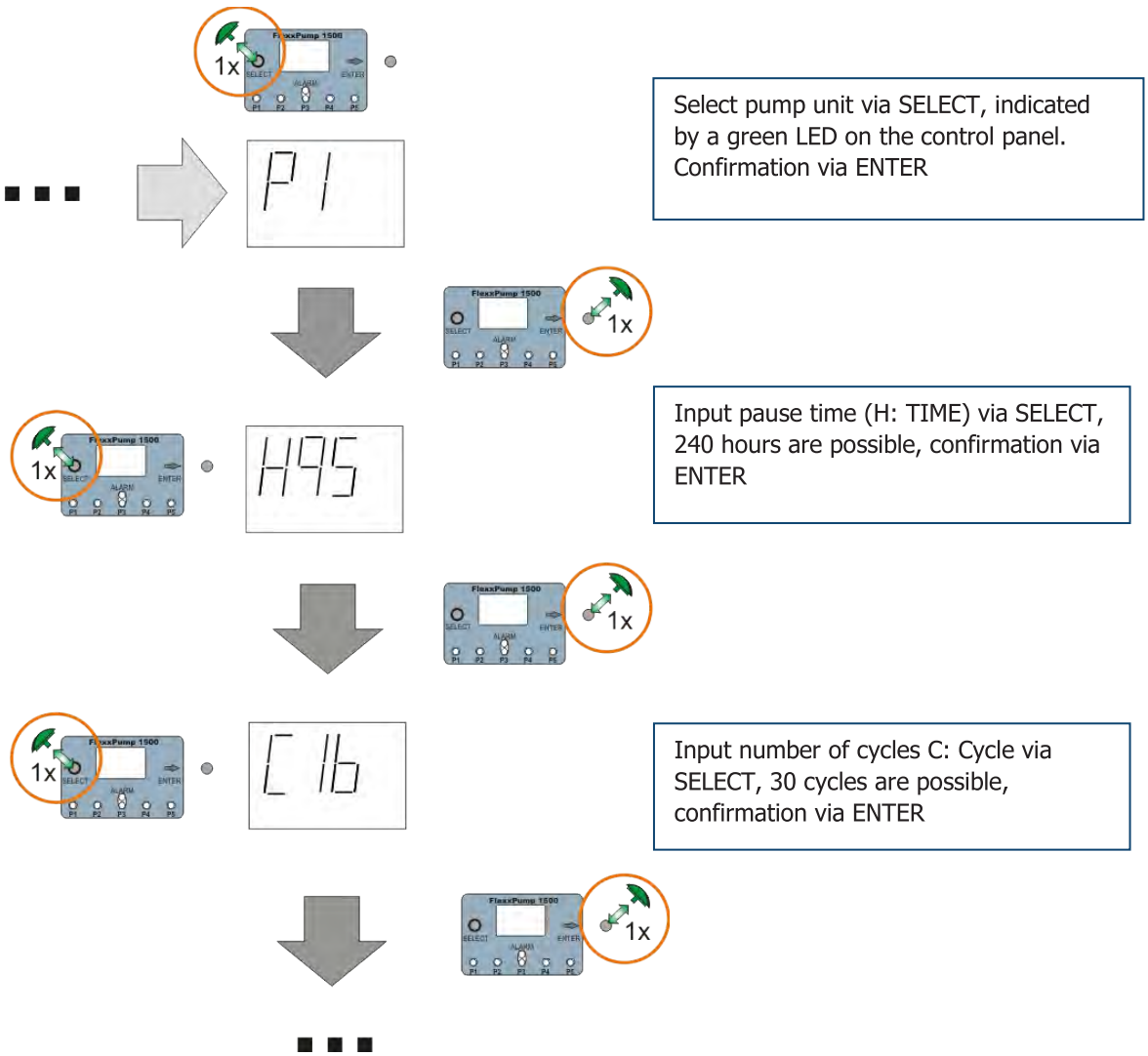
Input H: Time (pause time) = time between the lubrication intervals in hours (1 to 240 h are possible)
Display: possible number -> H 0 to H 99 -> after -> 100 to 240, remark: 240h = 10 days
When H. TIME = 0, it is impossible to input cycles.

Input C: CYCLE (number of cycles) = delivery rate of one period (1 to 30 are possible, 1 cycle = 0,15 cm^3)

Pump unit can be turned off by setting C: CYCLE = 0

Factory setting for every pump unit: H: TIME = 4h, C: CYCLE = 1

SELECT:	Change settings - touch the operating pad with the operating / programming key
ENTER:	Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout:	If no interaction takes place for a period, the device automatically returns to the previous display mode.

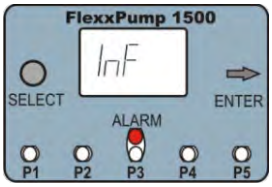


Select other pump unit or timeout: leave the menu.
Important: Changes of the parameters are only applied

Attention !

FlexxPump 1500 is designed for minimum quantity lubrication.

The microprocessor calculates from the inputs of pause time and numer of cycles a comparison value. If this value is too high, a reduction in the lifetime of FlexxPump 1500 is accepted consciously.

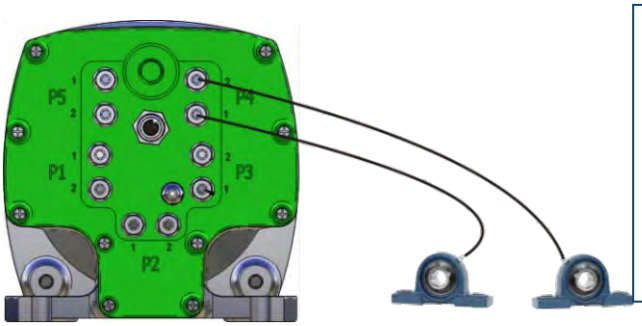


Warning: The ALARM LED flashes on the control panel and the display shows "InF" (for information) for 10s. During this 10s, the operation of FlexxPump 1500 is blocked.

Acceptable Design

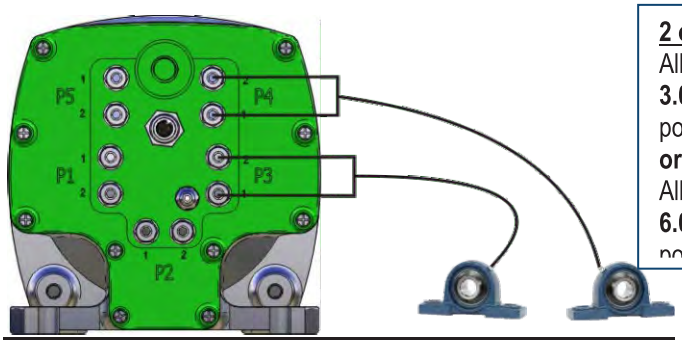
Attention: FlexxPump 1500 is designed for minimum quantity lubrication
A higher demand for lubricant at one lubricating point the outlets of different pump units can be combined externally.
Important remark: unused outlets must remain open to avoid damage to the pump!

Examples:

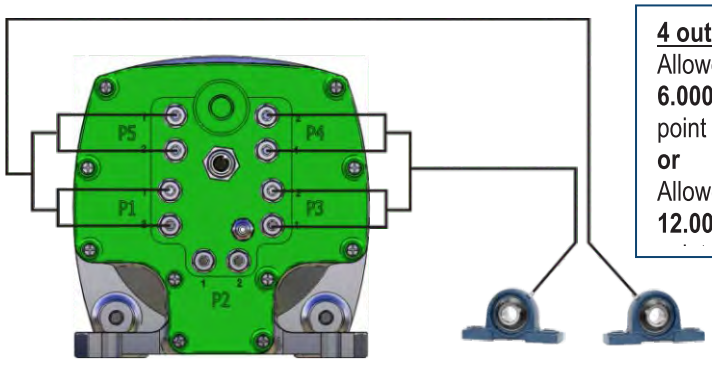


1 outlet supplying 1 lubrication point:

Allowed amount of lubricant for 1 lubrication point = max. **1.500cm³ a year** = 1 pouch a year for 1 lubrication point
or
Allowed amount of lubricant for 2 lubrication point = max. **3.000cm³ a year** = 2 pouches a year for 2 lubrication points



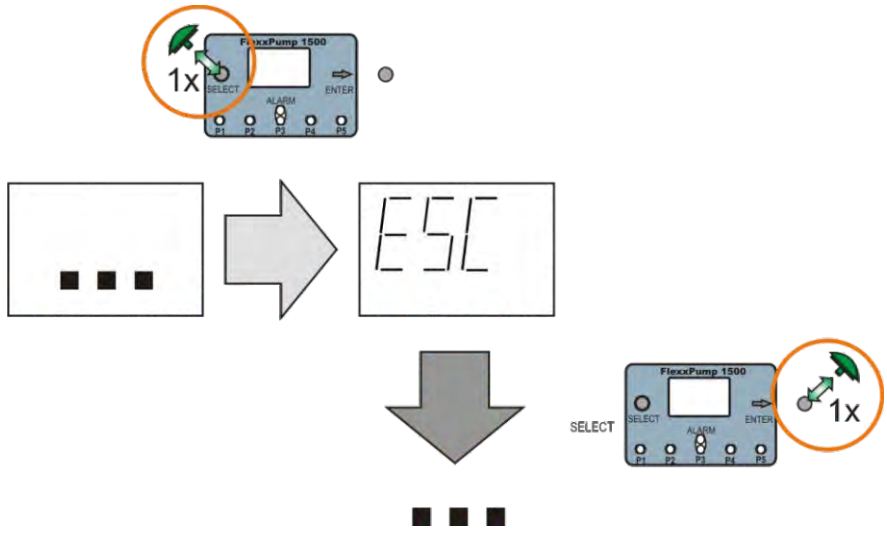
2 outlets supplying 1 lubrication point:
Allowed amount of lubricant for 1 lubrication point = max. **3.000cm³ a year** = 2 pouches a year for 1 lubrication point
or
Allowed amount of lubricant for 2 lubrication point = max. **6.000cm³ a year** = 4 pouches a year for 2 lubrication points



4 outlets supplying 1 lubrication point:
Allowed amount of lubricant for 1 lubrication point = max. **6.000cm³ a year** = 4 pouches a year for 1 lubrication point
or
Allowed amount of lubricant for 2 lubrication point = max. **12.000cm³ a year** = 8 pouches a year for 2 lubrication

ESC – Return to the previous display mode

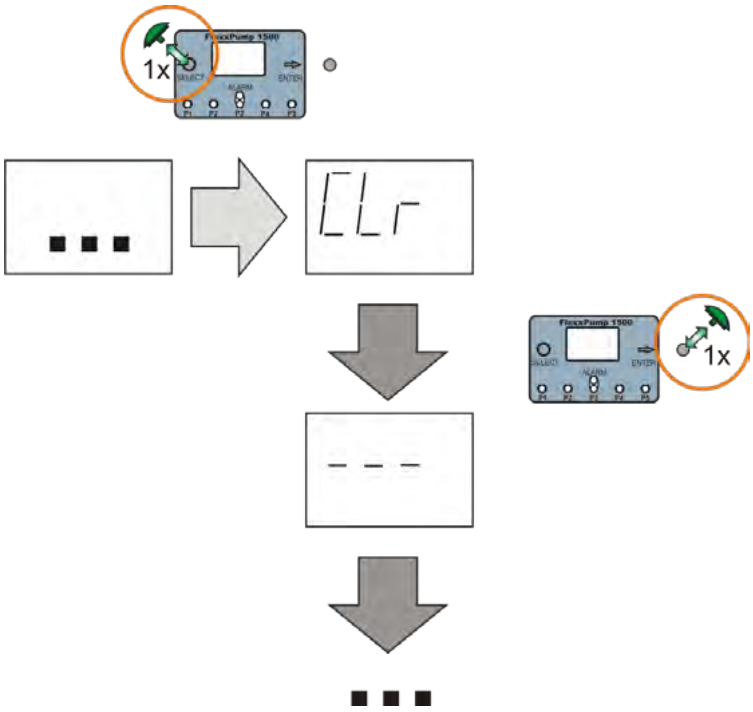
SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.



CLr – Clear - delete error messages and delete filling cycles

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

See also error messages



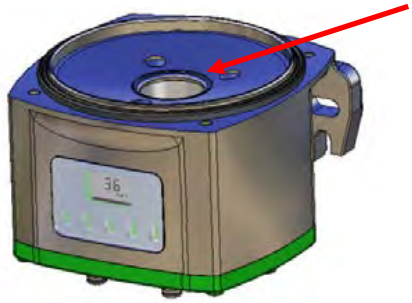
FIL – Filling - de airing the pump, for example – start up, prefilling tubes …

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

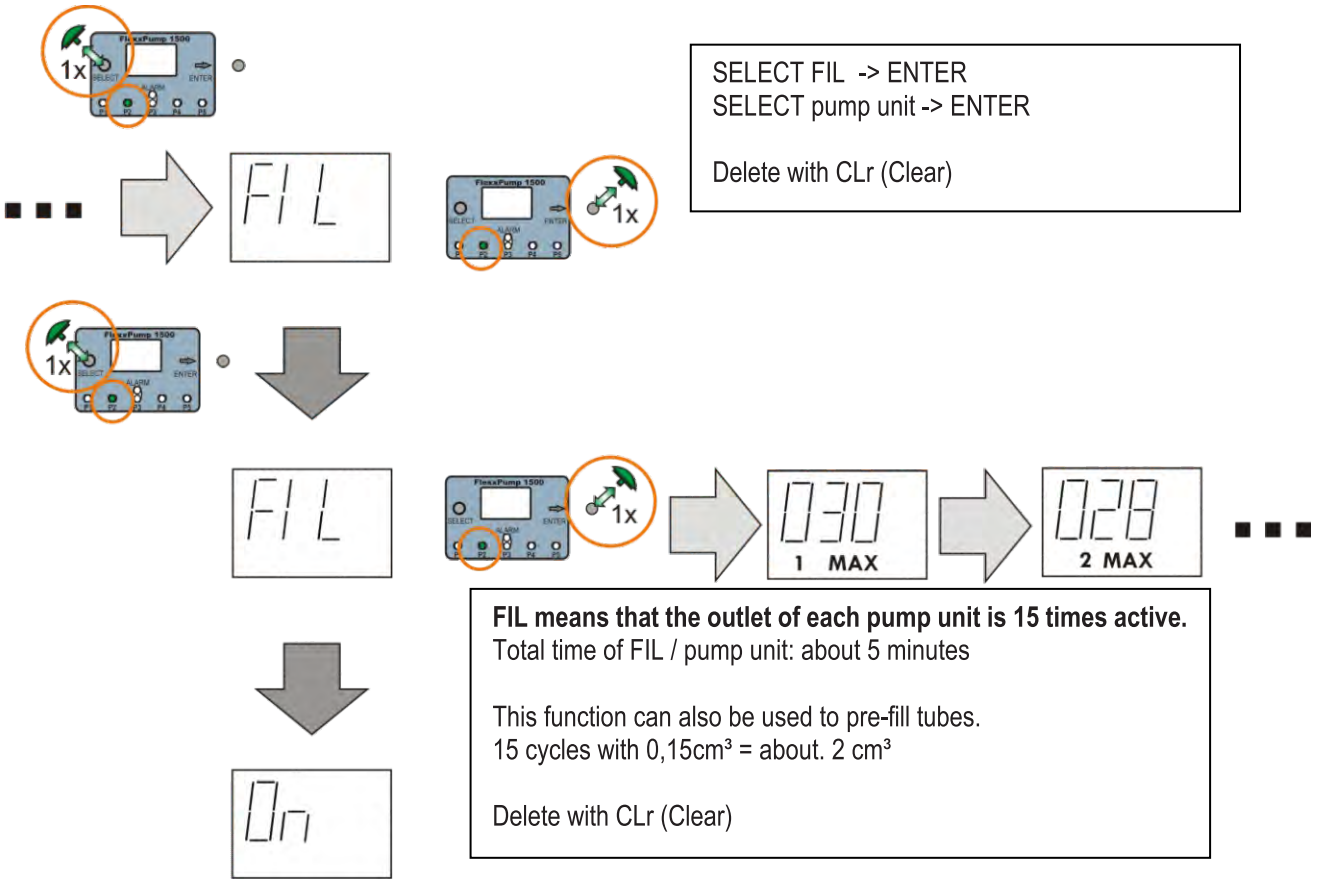
Attention: FlexxPump 1500 lubrication pumps must be vented at initial operation. Each pump unit must be vented separately. The operation is completed when lubricant is visible at the outlet.

Initial startup:

Attention !



Prefill housing inlet with 50 ml of suitable lubricant (same as content of pouch)
Attention: Low level indicator in the inlet must not be damaged.
Then place grease pouch and start FIL function.



SELECT FIL -> ENTER
SELECT pump unit -> ENTER

Delete with CLr (Clear)

FIL means that the outlet of each pump unit is 15 times active.
Total time of FIL / pump unit: about 5 minutes

This function can also be used to pre-fill tubes.
15 cycles with 0,15cm³ = about. 2 cm³

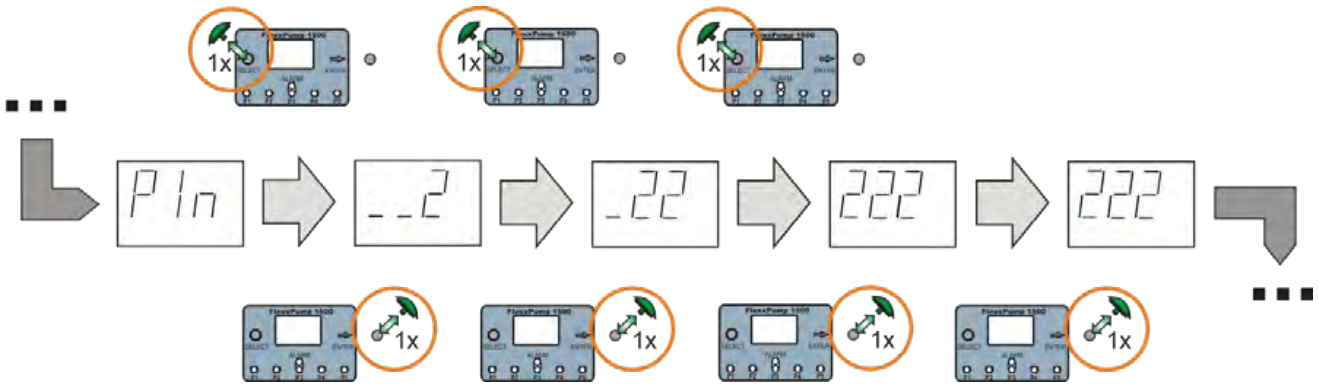
Delete with CLr (Clear)

Select other pump unit (Pro -> PIN -> FIL) or timeout: leave the menu.

Change PIN, factory setting PIN: 000 (Master PIN see service)

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

Example: Change PIN to 222



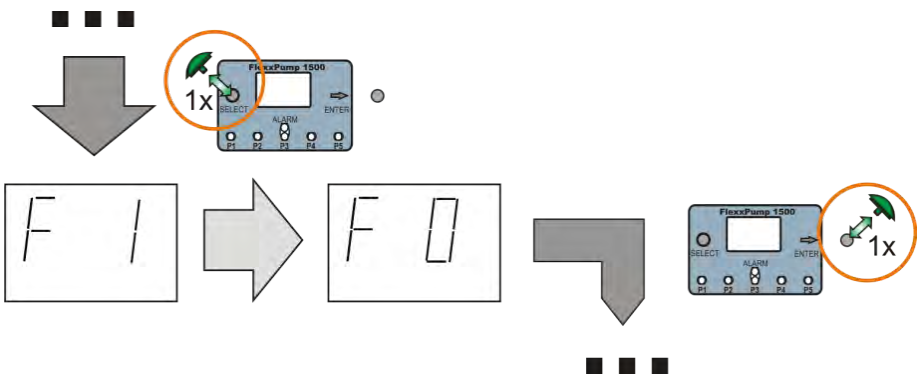
The new PIN is saved.

Change Feedback (Pump function control)

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

Feedback = Pump function control: after receiving a correct pulse signal at PIN 2, the pump starts to work. During the function of the pump (about 7 s) the output signal at PIN 4 is switching from High (+ 20...30 VDC) to Low (0 V). By counting the signals of the pump function control there is a possibility to estimate the delivered quantity of lubricant and the remaining quantity in the lubricant reservoir (delivery rate per pulse signal =0,15 cm³).

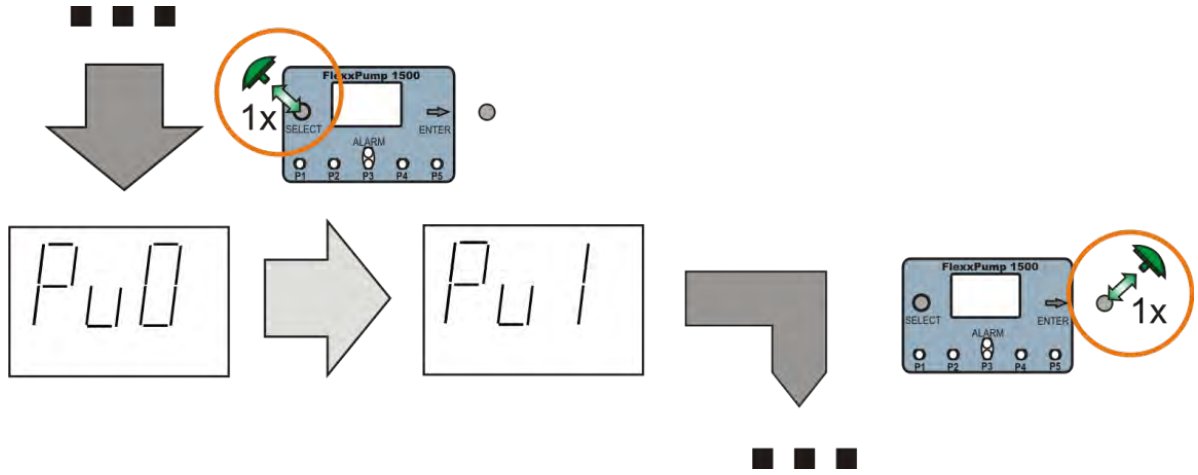
Factory setting: F 1 = Feedback “on”
Alternative: F 0 = Feedback „off“



Change operating mode: Time control / pulse control

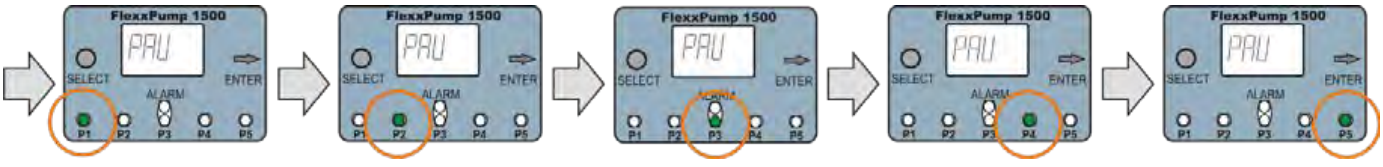
SELECT:	Change settings - touch the operating pad with the operating / programming key
ENTER:	Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout:	If no interaction takes place for a period, the device automatically returns to the previous display mode.

Factory setting:	Time control Pu0 = Time control „on“, pulse control „off“ “On” appears on the control panel and activated pump units flashing in sequence (indicated by a green LED).
Alternative:	Pulse control Pu1 = Pulse control „on“, time control „off“ “PAU” appears on the control panel and installed pump units flashing in sequence (indicated by a green LED).



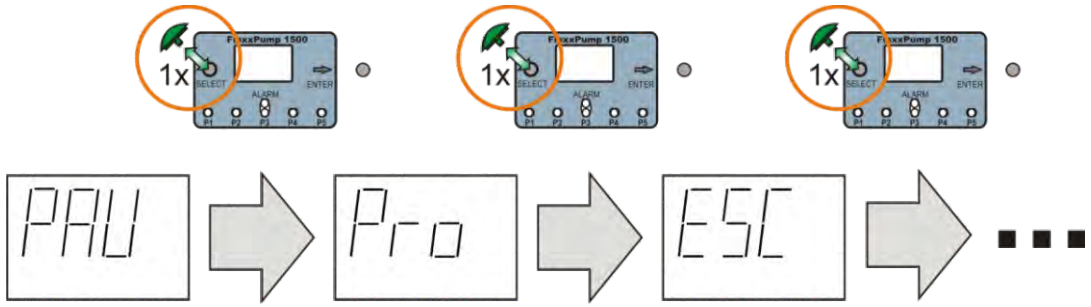
Example time control (5 activated pump units)

Example pulse control (5 installed pump units)



Mode: Pulse control

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

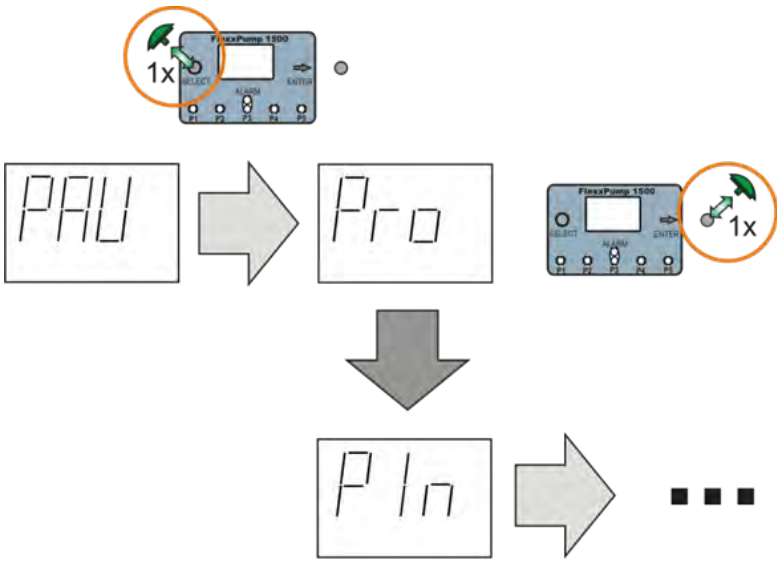


PAU: Pulse control
Pro: Other functions, PIN code protected
ESC: Key to leave and return to the main menu

Pro program, menu – content

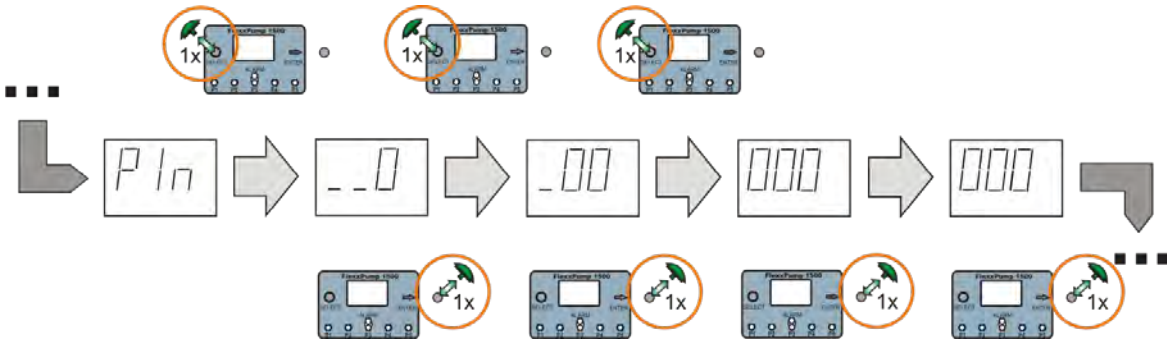
a) Enter PIN
b) CLr: Clear - delete error messages and delete filling cycles
c) FIL: Filling - de airing the pump, for example – start up, prefilling tubes …
d) Change PIN
e) Change Feedback – Pump function control
f) Change operating mode: Time control / pulse control
g) ESC: Return to the previous display mode

Pro program, PIN code protected



Enter PIN, factory setting PIN: 000 (Master PIN see service)

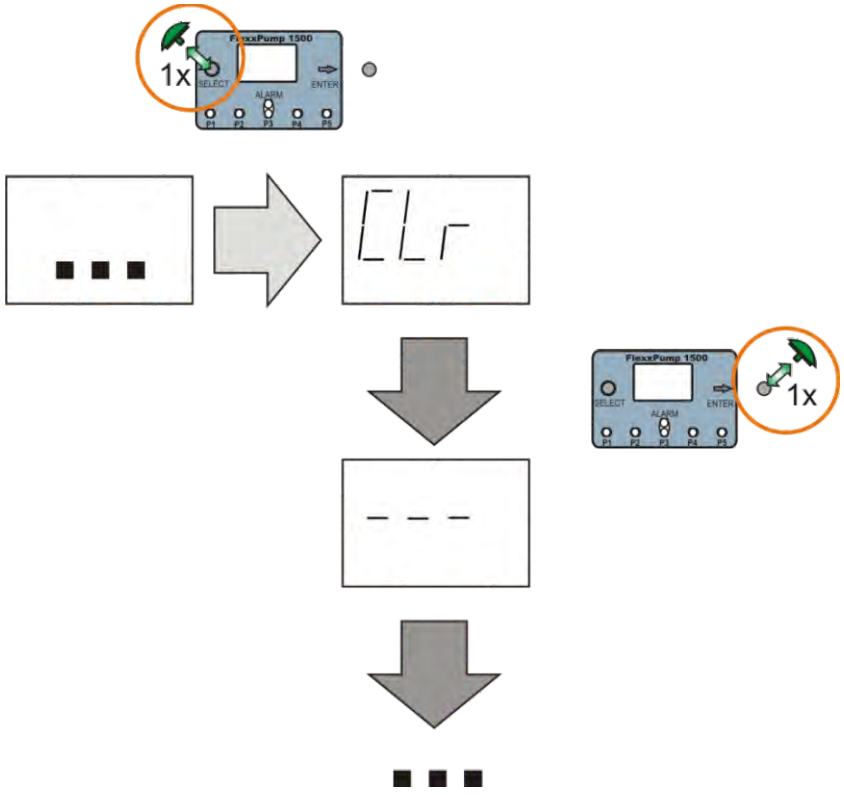
SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.



CLr – Clear - delete error messages and delete filling cycles

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

See also error messages



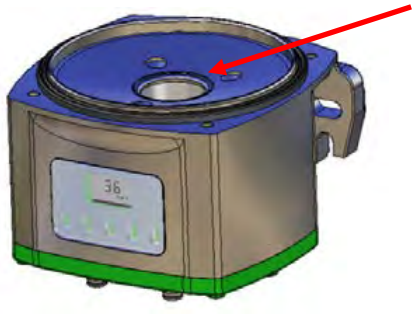
FIL – Filling - de airing the pump, for example – start up, prefilling tubes …

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes - touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

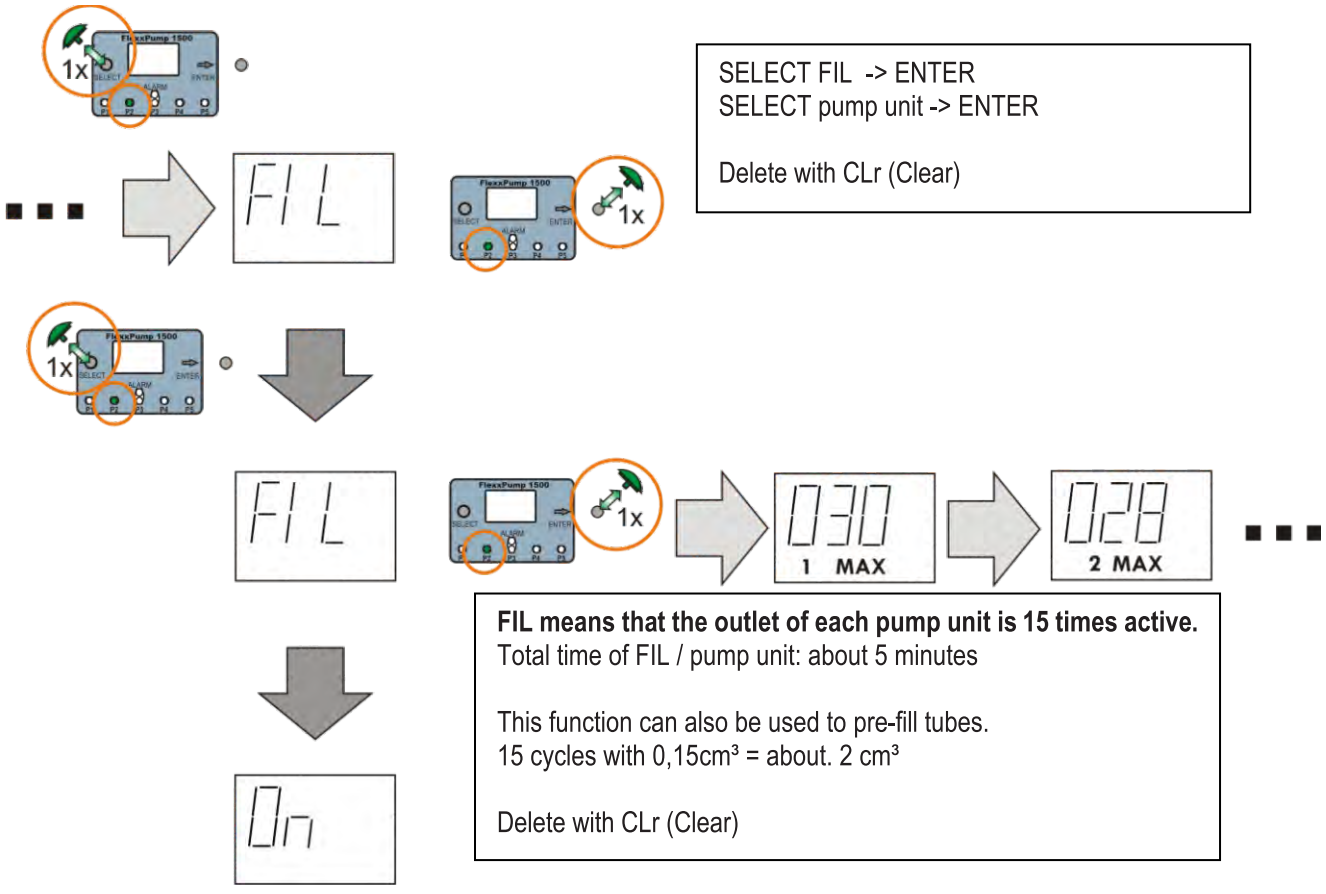
Attention: FlexxPump 1500 lubrication pumps must be vented at initial operation. Each pump unit must be vented separately. The operation is completed when lubricant is visible at the outlet.

Initial startup

Attention !



Pref-fill housing inlet with 50 ml of suitable lubricant (same as content of pouch)
Attention: Low level indicator in the inlet must not be damaged.
Then place grease pouch and start FIL function.



SELECT FIL -> ENTER
SELECT pump unit -> ENTER

Delete with CLr (Clear)

FIL means that the outlet of each pump unit is 15 times active.
Total time of FIL / pump unit: about 5 minutes

This function can also be used to pre-fill tubes.
15 cycles with 0,15cm³ = about. 2 cm³

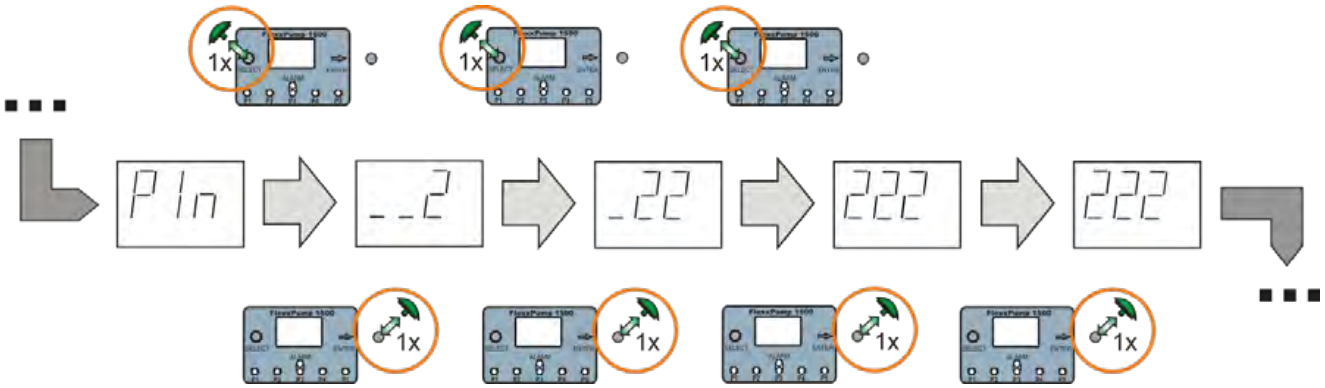
Delete with CLr (Clear)

Select other pump unit (Pro -> PIN -> FIL) or timeout: leave the menu.

Change PIN, factory setting PIN: 000 (Master PIN see service)

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

Example: Change PIN to 222



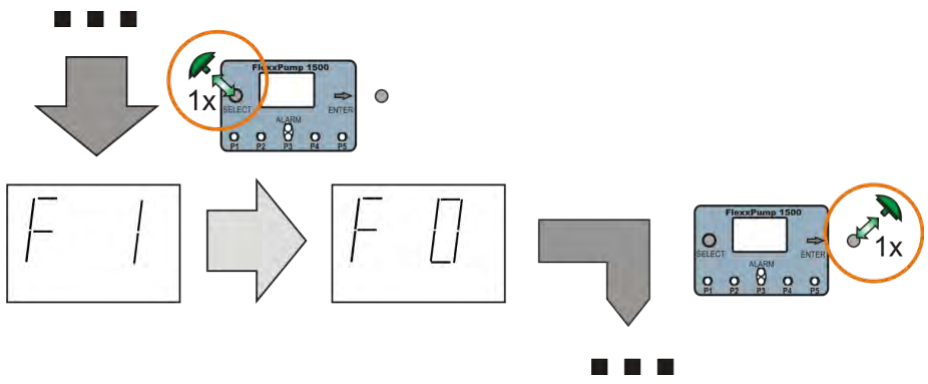
The new PIN is saved.

Change Feedback (Pump function control)

SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.

Feedback = Pump function control: after receiving a correct pulse signal at PIN 2, the pump starts to work. During the function of the pump (about 7 s) the output signal at PIN 4 is switching from High (+ 20...30 VDC) to Low (0 V). By counting the signals of the pump function control there is a possibility to estimate the delivered quantity of lubricant and the remaining quantity in the lubricant reservoir (delivery rate per pulse signal =0,15 cm³).

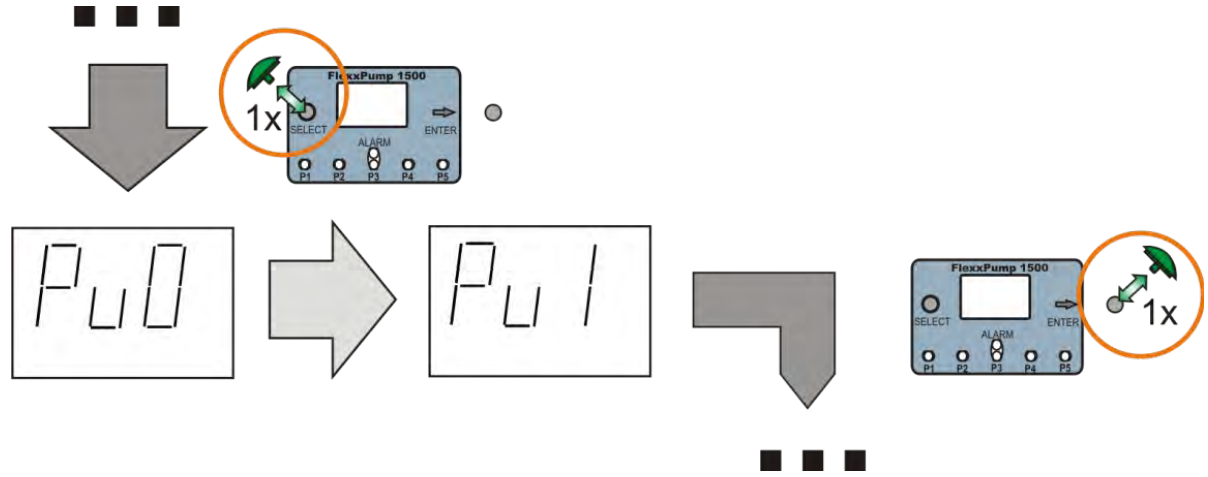
Factory setting: F 1 = Feedback “on”
Alternative: F 0 = Feedback „off“



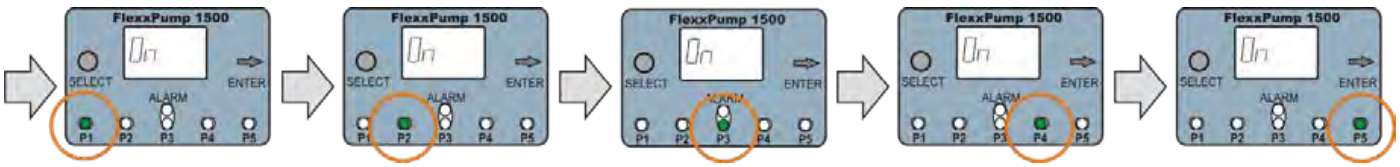
Change operating mode: Time control / pulse control

SELECT:	Change settings - touch the operating pad with the operating / programming key
ENTER:	Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout:	If no interaction takes place for a period, the device automatically returns to the previous display mode.

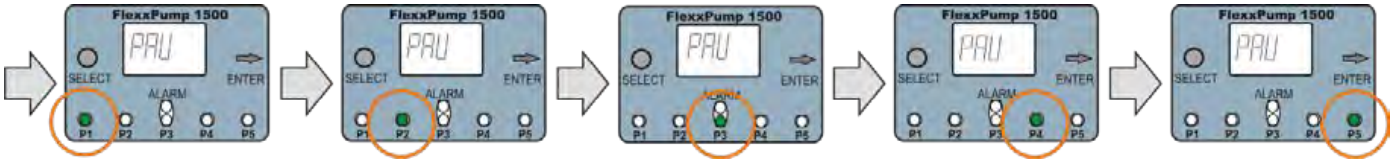
Factory setting:	Time control Pu0 = Time control „on“, pulse control „off“ “On” appears on the control panel and activated pump units flashing in sequence (indicated by a green LED).
Alternative:	Pulse control Pu1 = Pulse control „on“, time control „off“ “PAU” appears on the control panel and installed pump units flashing in sequence (indicated by a green LED).



Example time control (5 activated pump units)



Example pulse control (5 installed pump units)



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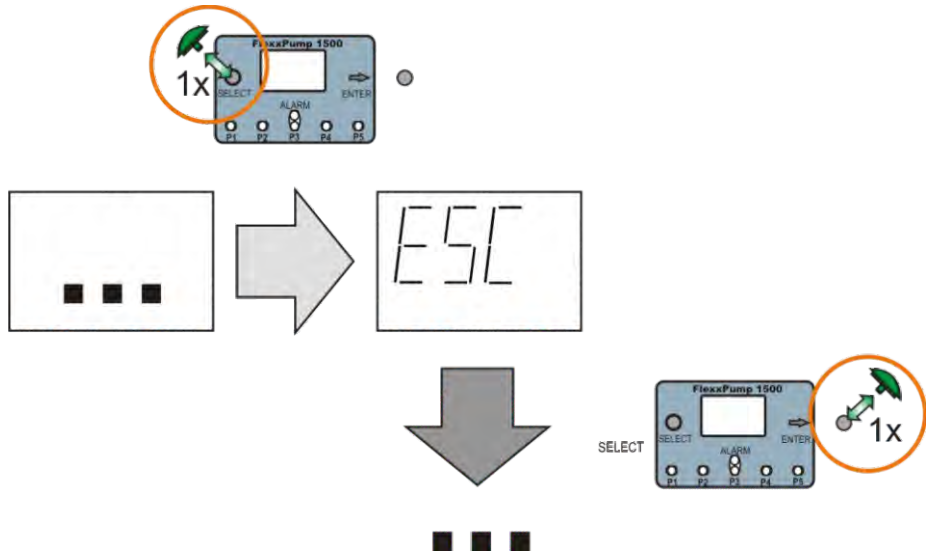
ESC – Return to the previous display mode

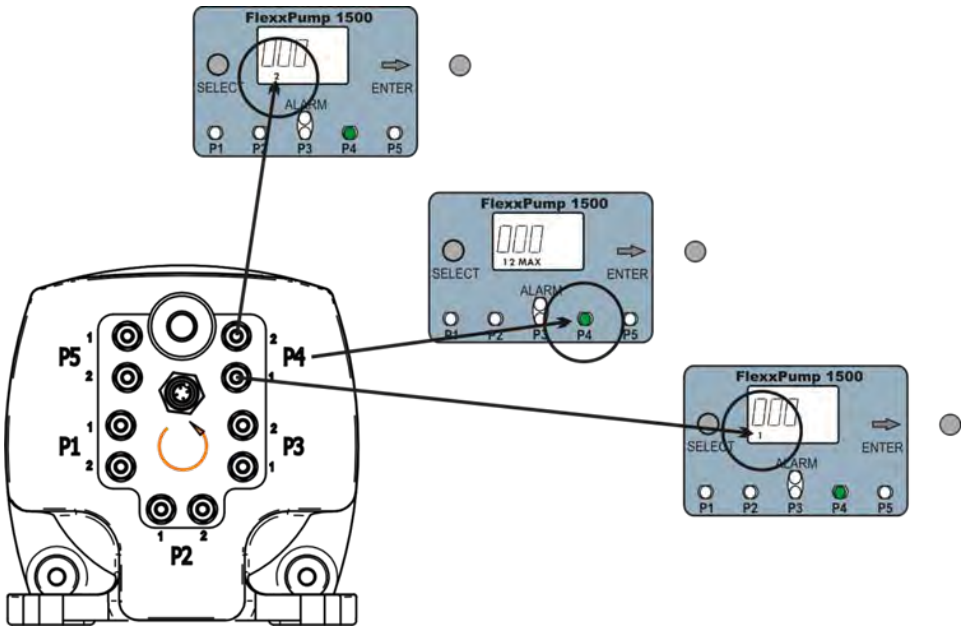
SELECT: Change settings - touch the operating pad with the operating / programming key
ENTER: Confirmation of all changes -touch the operating pad with the operating / programming key. The display flashes 2 times for confirmation.
Timeout: If no interaction takes place for a period, the device automatically returns to the previous display mode.



Pulse signals to activate the outlets

Indication in seconds, accuracy ± 0,2 s, time between two signals > 20 s
Remark: During receiving a correct pulse signal at PIN 2, the display “PAU” flashes for confirmation. The green LED’s (indicating the pump units) are not now active.

Identification pump units and outlets

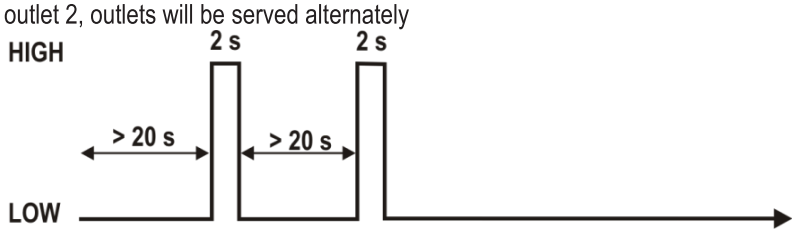


Pulse signals to activate pump unit 1 – outlet 1 or outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 2s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

Pulse signals to activate pump unit 1 – outlet 1 and outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 2s, time between two signals > 20 s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

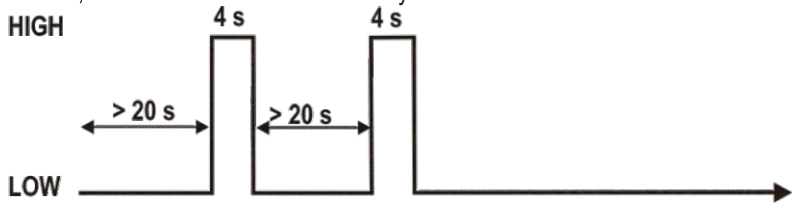


Pulse signals to activate pump unit 2 – outlet 1 or outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 4s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

Pulse signals to activate pump unit 2 – outlet 1 and outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 4s, time between two signals > 20 s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately



Pulse signals to activate pump unit 3 – outlet 1 or outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 6s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

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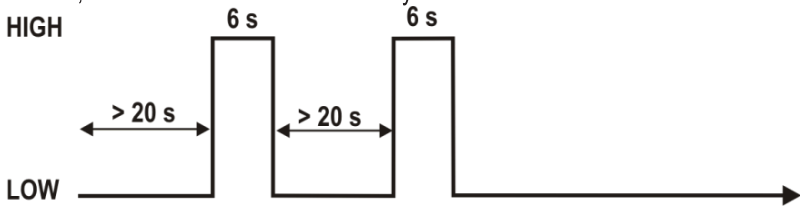
Pulse signals to activate pump unit 3 – outlet 1 and outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 6s, time between two signals > 20 s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

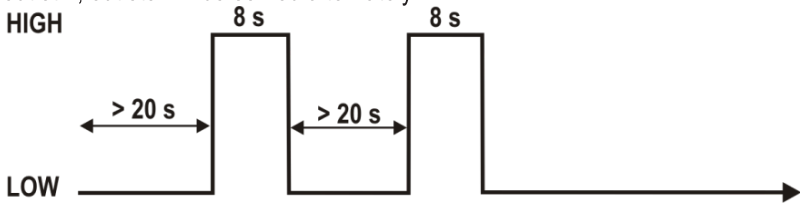


Pulse signals to activate pump unit 4 – outlet 1 or outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 8s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

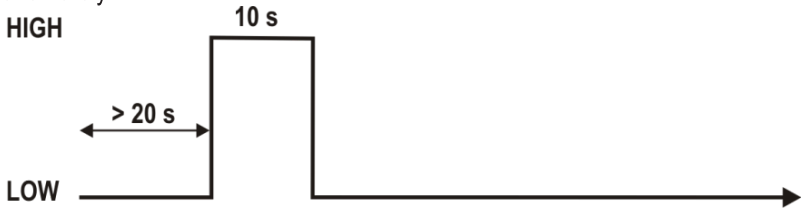
Pulse signals to activate pump unit 4 – outlet 1 and outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 8s, time between two signals > 20 s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately



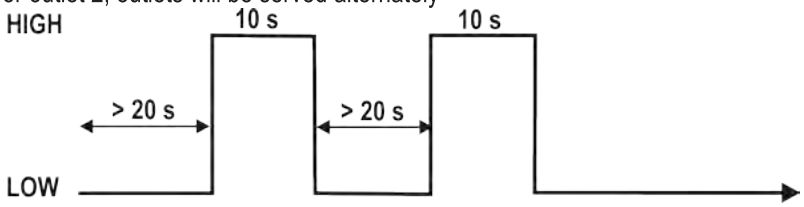
Pulse signals to activate pump unit 5 – outlet 1 or outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 10s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately



Pulse signals to activate pump unit 5 – outlet 1 and outlet 2

Delivery rate per pulse signal: 0,15cm³, indication: 10s, time between two signals > 20 s, start of delivery rate at outlet 1 or outlet 2, outlets will be served alternately

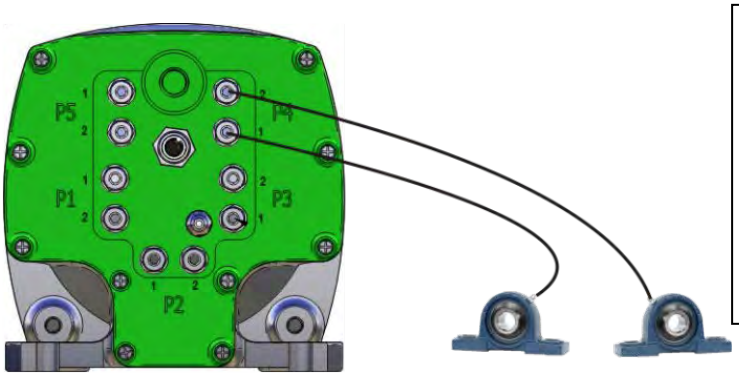


Remark: A new pulse signal can be started sooner if the feedback signal (F 1 = feedback „on") is analyzed.
Requirement: After reaching normal pump running there is a clear High signal for at least 5s.

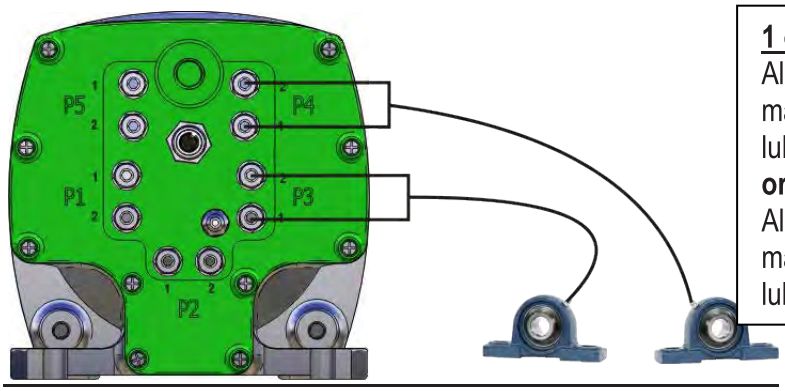
Acceptable Design

Attention: FlexxPump 1500 is designed for minimum quantity lubrication
A higher demand for lubricant at one lubricating point the outlets of different pump units can be combined externally. Important remark: unused outlets must remain open to avoid damage to the pump!

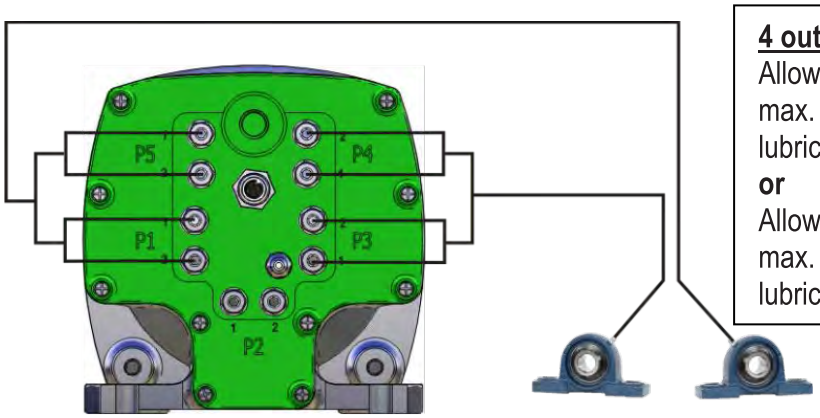
Examples:



1 outlet supplying 1 lubrication point:
Allowed amount of lubricant for 1 lubrication point = max. **1.500cm³ a year** = 1 pouch a year for 1 lubrication point
or
Allowed amount of lubricant for 2 lubrication point = max. **3.000cm³ a year** = 2 pouches a year for 2 lubrication points



1 outlet supplying 1 lubrication point:
Allowed amount of lubricant for 1 lubrication point = max. **1.500cm³ a year** = 1 pouch a year for 1 lubrication point
or
Allowed amount of lubricant for 2 lubrication point = max. **3.000cm³ a year** = 2 pouches a year for 2 lubrication points



4 outlets supplying 1 lubrication point:
Allowed amount of lubricant for 1 lubrication point = max. **6.000cm³ a year** = 4 pouches a year for 1 lubrication point
or
Allowed amount of lubricant for 2 lubrication point = max. **12.000cm³ a year** = 8 pouches a year for 2 lubrication points

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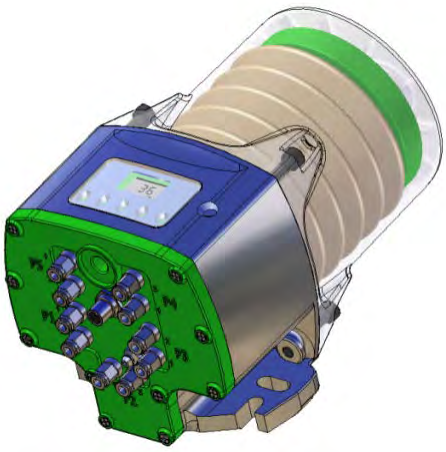
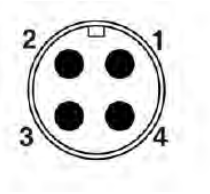
Connector PIN assignment, connection to FlexxPump 1500





Connector PIN assignment M 12 x 1

PIN 1: Input voltage + 24 VDC (-5% to +10%), stabilized operating voltage 24 VDC, color brown

PIN 2: Input pulse signal to activate pump unit, color white

PIN 3: Ground (GND), color blue

PIN 4: Output Signal, color black

Details (all data refer to 24 VDC)

Peak current Imax (during pump operation), approx. 350 mA, typically < 200 mA, Standby current (stand by mode) < 50 mA, typically 20 mA

The outlet signal (PIN4) can be charged with max. 100mA

The peak current increases by the sampled output current: for example 350 mA + 100 mA = 450 mA

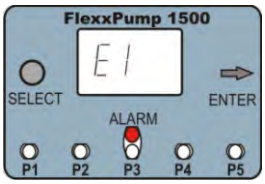
Output signal (PIN 4): High (24VDC) = OK, LOW (0 V) = Error

Warning: **The exit is not short-circuit proof.**

A time delay fuse 1A is normally required.

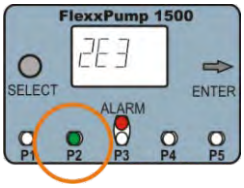
Error messages, faults

General:	**Display on the control panel + LED**
Mode time control	**Details appear on the control panel and activated pump units flashing in sequence (indicated by a green LED).**
Mode pulse control	**Details appear on the control panel and installed pump units flashing in sequence (indicated by a green LED).**
E1: Low Level	**Output signal PIN 4 = Low (0 V)**
Root cause:	The lubricant reservoir / grease pouch is empty. The pump will stop!
Corrective action	Replace grease pouch. The error message is cleared automatically. Pump will continue to run as per active program.
Control panel	ALARM (red LED) is flashing, Display: E1

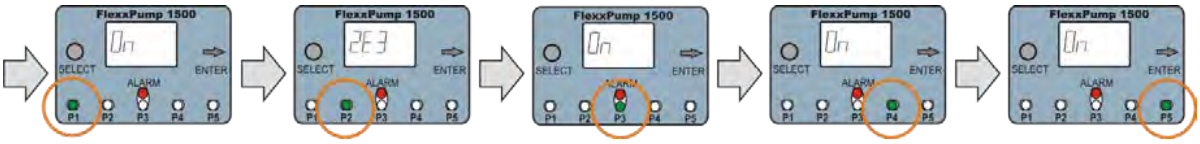


E2: not assigned
E3: Pump unit works too slowly - Output signal PIN 4 = Low (0 V)

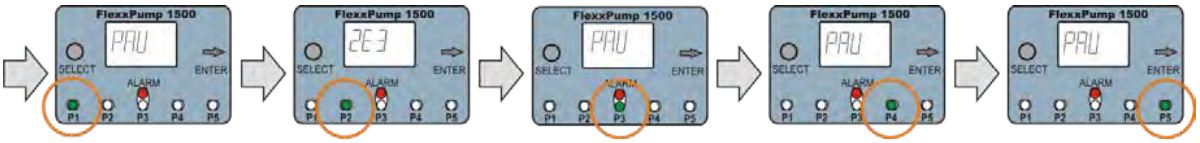
Root cause:	Low-voltage, pump unit does not work in specified time. This pump unit will stop!
Corrective action	Eliminate cause, delete error in the program Pro with Clr. Pump will continue to run.
Control panel	ALARM (red LED) is flashing, Display: Number of pump unit + E3 = 2E3



Example time control (5 activated pump units)

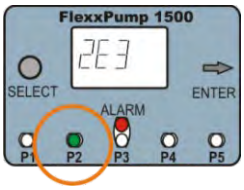


Example pulse control (5 installed pump units)

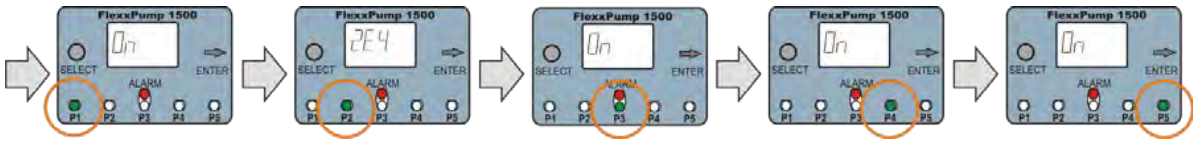


E4: Internal electrical fault: Output signal PIN 4 = Low (0 V)

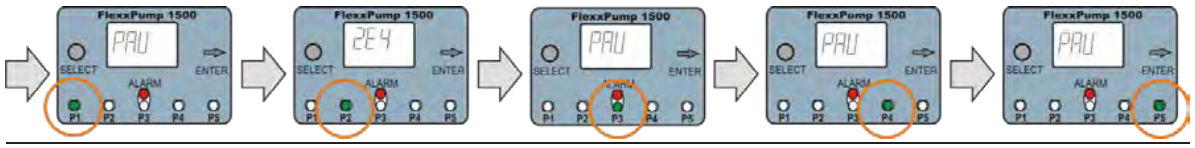
Root cause:	Internal electrical fault. This pump unit will stop
Corrective action:	Delete error in the program Pro with Clr. Pump will continue to run. After another error message E4 send the pump to revision.
Control panel:	ALARM (red LED) is flashing, Display: Number of pump unit + E4 = 2E4



Example time control (5 activated pump units)



Example pulse control (5 installed pump units)

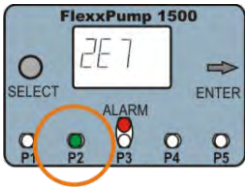


E5: not assigned

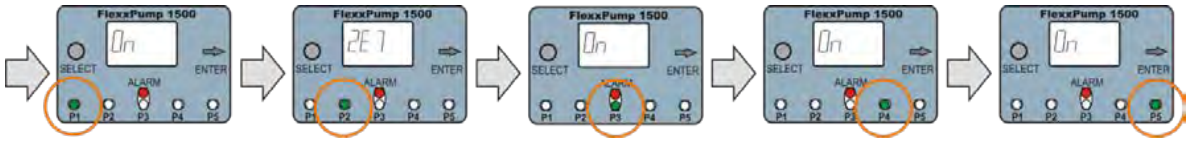
E6: not assigned

E7: Back pressure too high / over-current: output signal PIN 4 = Low (0 V)

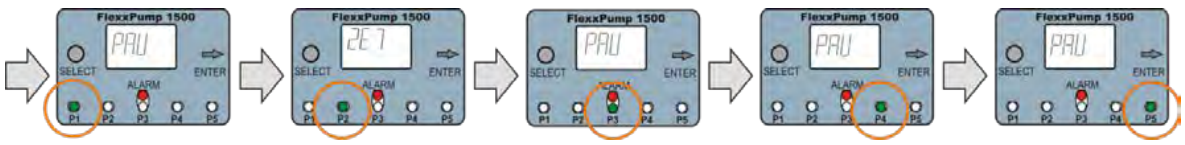
Root cause:	Back pressure was measured 3 x too high. The lubrication point could be clogged, the tube length could be too long or the grease is too stiff or has hardened. This pump unit will stop!
Corrective action	Trace reason for high back pressure >70bar and correct it, Delete error in the program Pro with Clr. Pump will continue to run.
Control panel:	ALARM (red LED) is flashing, Display: Number of pump unit + E7 = 2E7



Example time control (5 activated pump units)



Example pulse control (5 installed pump units)



E8: not assigned

System error	Trace reason and correct it, Delete error in the program Pro with Clr. Memory will not be erased.
Master PIN:	**321**

The master PIN 3 – 2 – 1 can be entered to entry into the Pro program.

Service: FlexxPump 1500

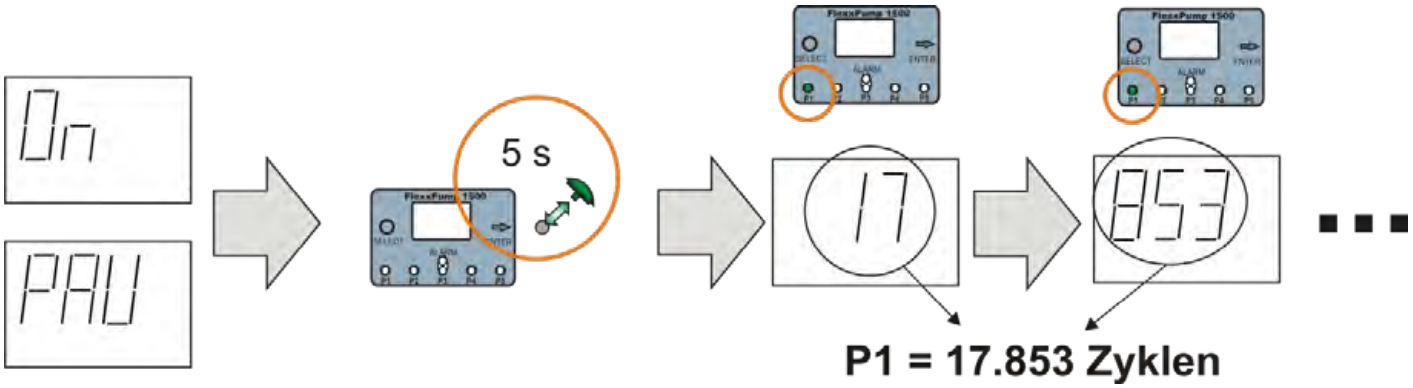
FlexxPump 1500 is designed for minimum quantity lubrication

A service for the verification of the performance of FlexxPump 1500 is recommended. Service interval is 50,000 cycles per pump unit. 50,000 cycles correspond 9.000 cm ³ lubricant.

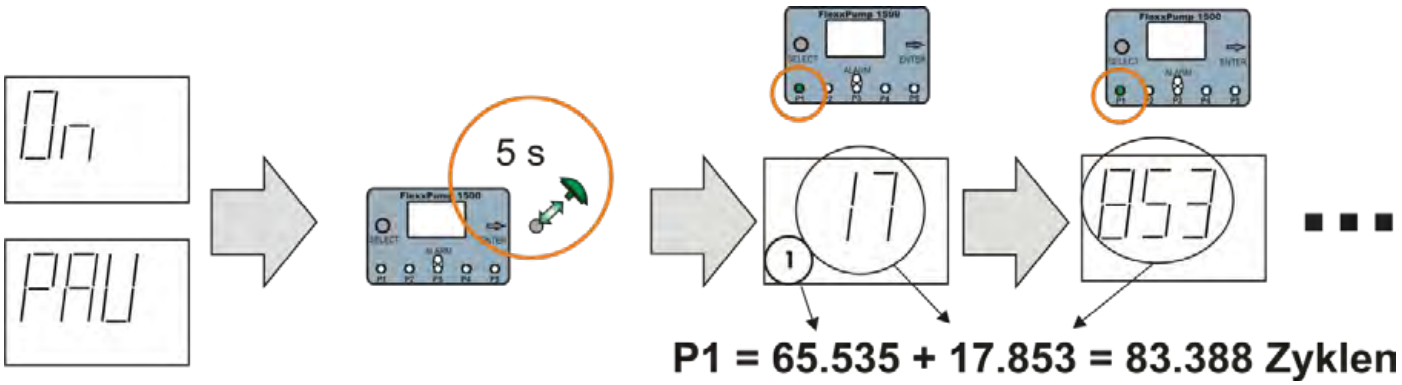
Readout of the device memory

The number of cycles can be determined by reading the device memory:

Touch for 5s the operating pad (ENTER) with the programming key. Then remove the programming key. The display shows in sequence the number of cycles for every installed pump unit. The cycles are counted to 65,535.



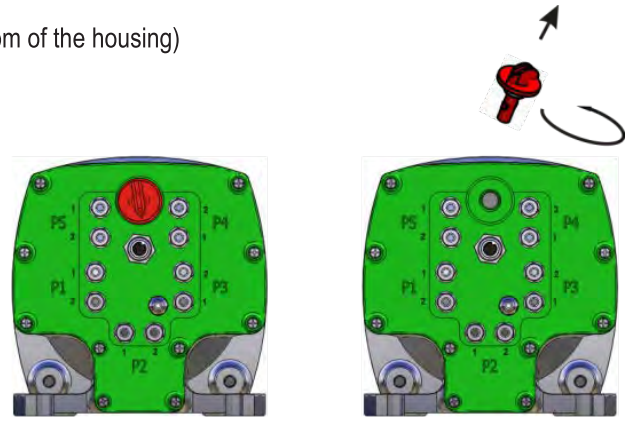
Thereafter, an overflow occurs. Number 1 appears in the display. The cycles are counted again, starting with number 1. 65.535 must be added to the displayed number. A service of the pump unit is strongly recommended in order to ensure the performance of FlexxPump 1500.



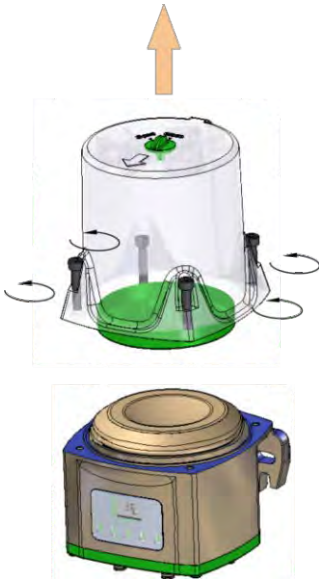
Any further, except for the change of grease pouches, is not required

Service: FlexxPump 1500 – replacement of grease pouch

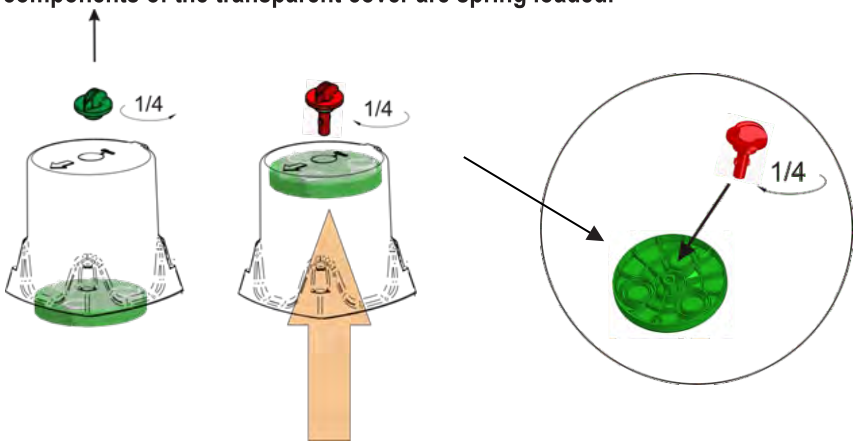
1. Observe the safety instructions
2. Remove locking pin (bottom of the housing)



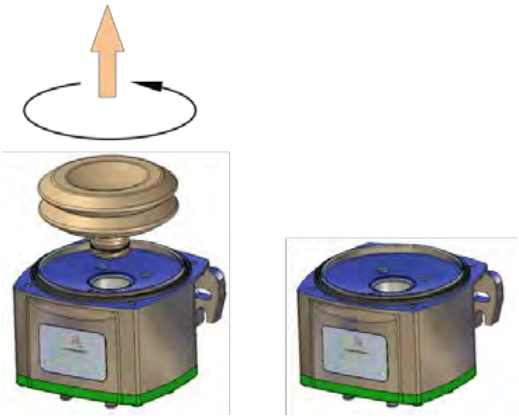
3. Remove transparent cover: **Attention: The internal components of the transparent cover are spring-loaded.**



4. Remove the programming key, lock press plate with red locking pin.
Attention: The internal components of the transparent cover are spring-loaded.

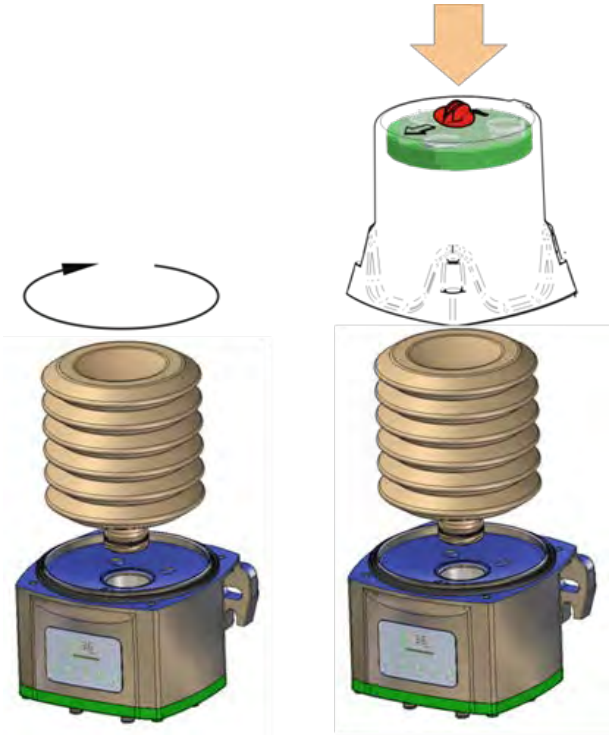


5. Remove grease pouch

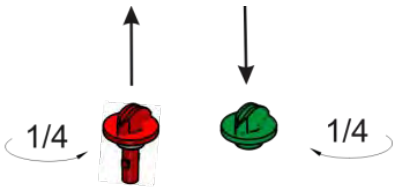


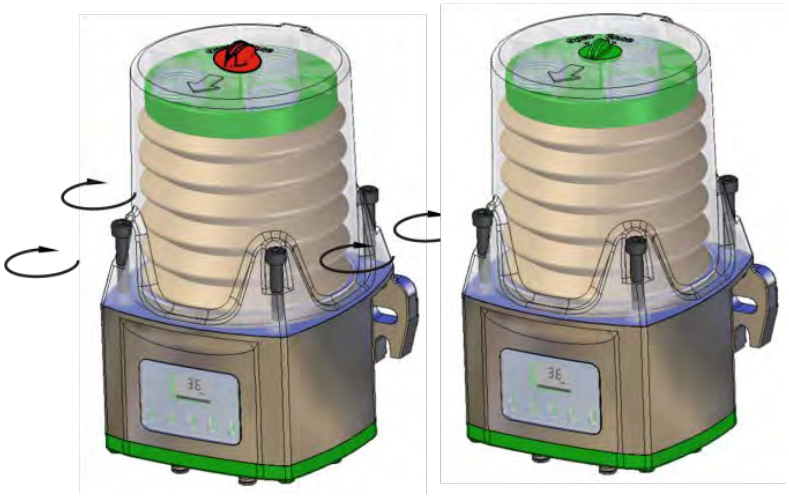
6. Remove protection from the new cartridge

7. Place the cartridge on the inlet, place the prepared transparent cover

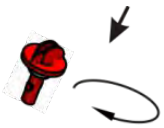


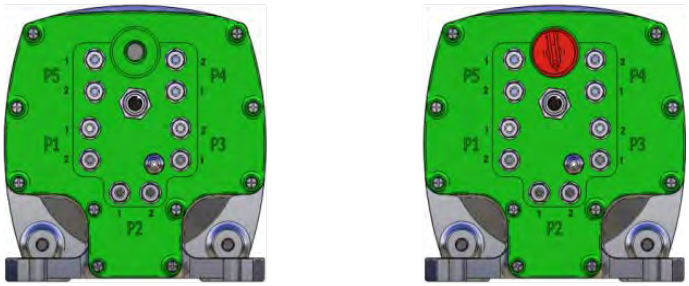
8. Reinstall the housing while turning the screws with torque 5 Nm, remove the locking pin, reinstall programming key





9. Reinstall locking pin: **Attention: Function of the pump only after installation of locking pin!**



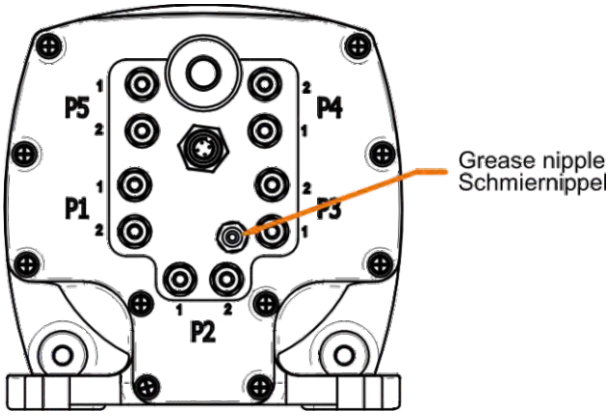


10. The error message is cleared automatically

11. Vent if required (see section FIL)

12. Pump will continue to run as per active program.

Service: FlexxPump 1500 – filling via grease nipple (bottom of the housing) – optional

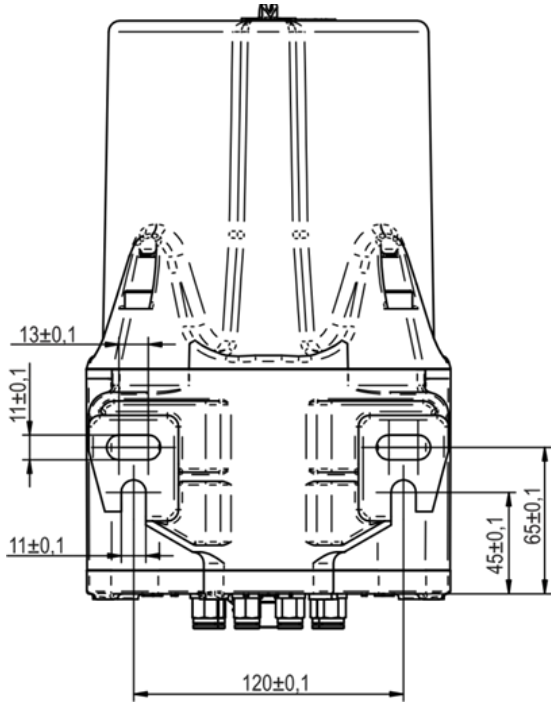


General recommendations

- ✓ At low temperatures (< 0 ° C) (max. 3 cycles) small quantities of lubricant are recommended in combination with short pause time.
- ✓
- ✓ For difficult applications with high backpressure
- ✓ - shorten your tube as much as possible
- ✓ - minimum inner diameter is 4mm Ø for tube lenth < 4m
- ✓ - minimum inner diameter is 5mm Ø for tube lenth > 4m and outdoor installation

Mounting FlexxPump 1500

2 srews Ø 10mm, for example M10x80 are required for a safe installation of your FlexxPump 1500.



Technical data FlexxPump 1500

Storage/volume	1500cm³ grease pouch
Lubricant	oil or grease up to NLGI 2
Function / principle	piston pump
Delivery rate per cycle	0,15 cm³
Number of outlets	up to 10
Connection	high pressure tube Ø 6mm or Ø 8mm outside
Operating pressure	max. 70 bar, 1,000 psi
Operating voltage	24 VDC
Operating temperature	-20°C to +70°C
Dimensions, max.	Width x height x depth, 160 x 255 x 165 mm (without tube fitting)
Weight, without lubricant	approx. 4000g
Integrated Control	micro processor controlled
Pressure monitoring	integrated, electronic (monitoring backpressure)
Low level monitoring	integrated, reedcontact
Connector	M12 x 1, 4-pole for connection with PLC
Protection class	IP 54
Combination with progressive systems	possible
Material housing:	Aluminium

Disposal

Remark !

When disposing lubricant the waste disposal instructions of the lubricant manufacturer must be observed!
Disposal of the FlexxPump 1500: observe the regional valid laws and regulations

The empty lubricant bellows /pouches contain lubricant remains!

Please dispose with other oil contaminated garbage

Acessories

Please take note of our complete accessory program in the product catalog. You can find lubricants, prefilled tubes, tube connectors, installation aids, connector cables and many more useful parts.

DLS
SCHMIERSYSTEME
DIRECT LUBRICATION SYSTEMS

User Guide
FlexxPump 400/500 DLS

(24 VDC power supply)

Valid for Part.-No.:

135-140-210 – 135-240-210 – 135-340-210 – 135-440-210 – 135-240-212

135-150-210 – 135-250-210 – 135-350-210 – 135-450-210 – 135-250-212

تلفن : (021) 33913364 - 33951660
فکس : (021) 33985603

Welcome to DLS Schmiersysteme!

Thank you very much for deciding to use our FlexxPump DLS. Make sure that you familiarize yourself with the user guide of this unit and the accessories supplied with this unit. This manual contains important safety information.

Preface and General Information

The FlexxPump DLS is an extraordinary compact lubrication pump for oil and grease up to NLGI 3. The pump requires 24 VDC power supply. The lubricant reservoir (400 cm^3) is in the bellow cartridge / pouch or contains maximum 500 ml Oil. Supply pressure is up to 70 bar (1,000 psi). The FlexxPump DLS is available with up to 4 outlets and is therefore the best solution for applications with limited lubrication points.

Warning

The pump is designed for use in normal industrial environments, inside or outside, but is not suitable for mounting on mobile equipment such as trucks. Only use original FlexxPump cartridge bellow and original spare parts. Unoriginal spare parts can damage the FlexxPump.

Scope of supply

Standard scope of supply FlexxPump DLS:

- lubrication pump FlexxPump DLS
- tube connectors attached to the outlets, suitable for 6 x 4 flexible tube

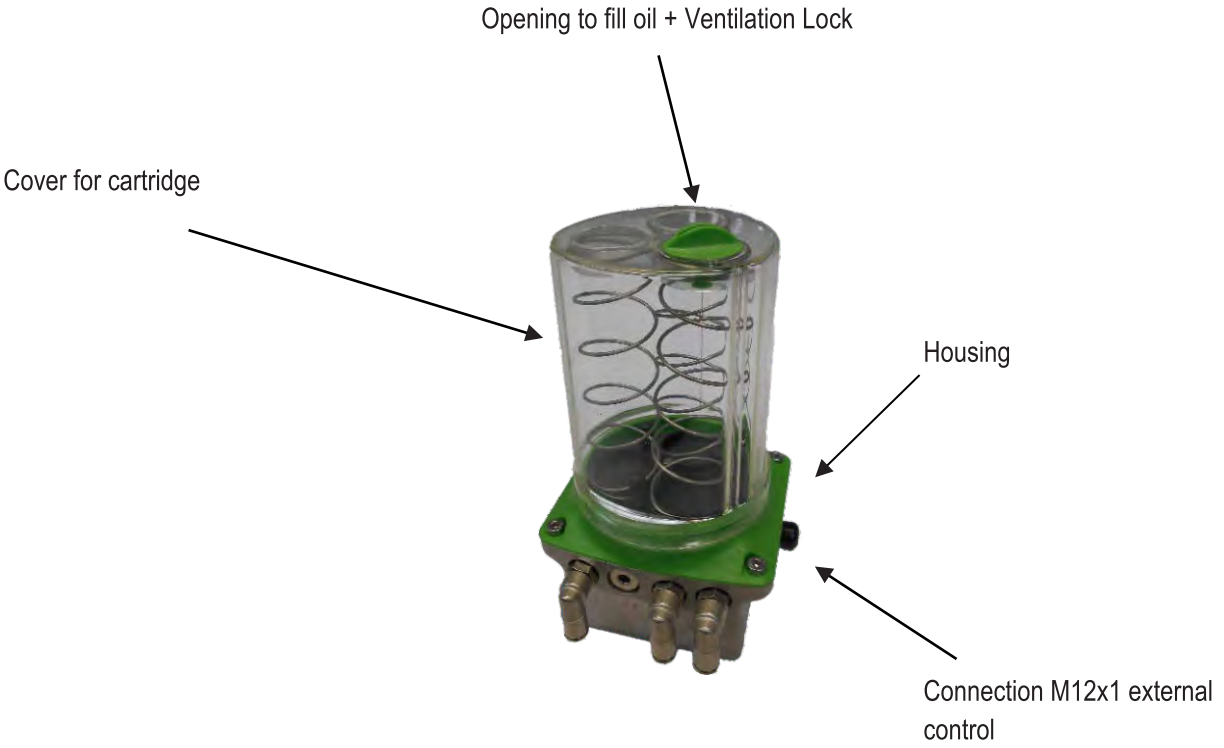
Labeling

The lubrication pump is clearly marked with a label (including serial number) at the bottom of the housing. CE-symbol is clearly marked on the label.

Manufacturer:
DLS Schmiersysteme GmbH
Gewerbering 5
D-82140 Puchheim
Tel.: +49 (0)8142 / 65069-0
Fax: +49 (0)8142 / 65069-29
E-mail: info@DLS-schmiersysteme.de
Web: www.DLS-schmiersysteme.de

Overview

The setup of your FlexxPump is easy. This user manual will learn you the basic operation and adjustments.



Note: Never close one outlet because the Piston pump could be damaged!

General safety details

Everybody who is involved with the installation, start-up, maintenance and operation of the FlexxPump must read these instructions carefully!

Use in accordance with guide

The FlexxPump is **only** allowed for **industrial use**.
The FlexxPump may only be put into service, if it is integrated or attached to another machine and will be operated together with that machine.
The FlexxPump may only be used according to the technical data (see chapter “technical data”)
Unauthorized **structural changes** at the FlexxPump are **not permitted**. We do not assume liability for damages of persons or machines which result from that.

Attention! **Other uses or uses beyond those described above cannot be considered to be in accordance with the Regulation.**

Extent of warranty

Warranties concerning operating safety, reliability and capacity, are only granted under the following conditions: Assembly, installation, maintenance and repair are only carried out through trained specialist. Hazardous hot or cold machine parts must be shielded to prevent touching.
-The FlexxPump must be used according to the instructions in the technical operating manual
-The rated technical data must not be exceeded in any case.
-Retrofitting and repair work on the FlexxPump may only be done by DLS Schmiersysteme GmbH or trained agents.

General safety information

Basic information, which must be followed during service, operation and maintenance, are listed as follows.

It is absolutely essential to read the operator's manual / user guide by respective technical staff / technical operator before installation and start up.

In addition to this, it must be permanently available at the site

IMPORTANT

Please pay attention, not only to the safety instructions under this main point, but also to those special security cautions that are mentioned on the other pages.

This symbol warns of electrical voltage

Safety instructions which, if not complied with, may endanger persons, are marked specifically with the general hazard symbol.

Attention!

This heading is used if inaccurate compliance or non-compliance with the operating Instructions or specified work procedures etc. may result in damage.

Remark

Points out special information.

Notes attached directly at the machine, must be followed strictly and preserved in completely readable condition!

Qualification and training of the personnel

The operation, maintenance, service and installation personnel must have appropriate qualifications for this work. Responsibility and supervision of the personnel must be clearly defined by the end user / operator. If the personnel do not have the necessary knowledge, they must be trained and instructed. The operator must ensure that the personnel have completely understood the contents of the user information.

Non-observance of the safety information can be dangerous

Not observing the safety information can lead to **danger for people**, environment and machines.
Not observing the safety information can mean the loss of any or all damage claims. In special cases, non-observance can, for example, lead to the following dangers:

- Failure of important plant functions.
- Failure of prescribed methods of maintenance and preventive maintenance.
- Endangering people due to electrical, mechanical and chemical effects.
- Endangering the environment due to leakages of dangerous materials.

Safety information for operators/operating staff

- Hot or cold machine parts are hazardous and must be protected from touching. The protection on "moving or rotating parts" must not be removed.
- In case of leakages of dangerous media proper disposal not endangering environment and people must be ensured.
- Legal Regulation must be observed and complied.
- Eliminate any danger due to electrical power.

Safety information for maintenance, inspection and assembly work

All maintenance, inspection and installation work may only be carried out by trained specialists who have been informed appropriately by studying the user information closely.
All work must only be carried out when machine is shut down and while wearing appropriate protective clothing. Always comply with the procedures for shutting the machine down that are described in the operating manual. All the safety and protective equipment must be replaced immediately after completing work. Environmentally hazardous substances that endanger the environment must be disposed in accordance with local regulations. Secure the system during maintenance and repair work, against intentional or unintentional operation. Dispose of used lubricants in accordance with the safety data sheets of the lubricant manufacturer.

Alterations and manufacture of spare parts without authority

Rebuilding and altering the FlexxPump is only allowed after consultation with the manufacturer. **Original spare parts** and accessories authorized by the manufacturer are for **safety** purposes. Using other parts results in loss of liability for claims resulting out of this. For components, retrofitted by the operator, DLS Schmiersysteme GmbH does not assume guarantee nor claims for damages.

Prohibited methods of operation

Operational security of the FlexxPump is only guaranteed if it **is operated in accordance with the operating instructions**. The limit values stated in the technical data must not be exceeded under any circumstances.

General risk reference

All components of the system are designed in accordance with the prevailing regulations of the construction of technical machines, in regards to operational safety and accident prevention. Operation outside of these constraints can lead to dangers for the user respectively third persons or other technical facilities. The FlexxPump therefore may fulfil only **in technically fault-free condition** its intended use. This may only be carried out under compliance of the safety regulations and the attention of the operator's manual.
Therefore please **regularly inspect** the pump and its attachments for possible **damage** or **leaks**

Transport and storage

Use suitable lifting gear for transport.
Do not throw or expose the FlexxPump to strong shock loads.
Store the FlexxPump in a cool and dry place to avoid corrosion of the system's individual parts.

Pay attention to the current safety- and accident prevention instructions during the transport. Wear suitable protection equipment if necessary!

Installation instruction

The following conditions have to be satisfied during the installation of this FlexxPump, thus it can be assembled, with other parts, to a complete machine without affecting the safety and health of humans:
The housing of the FlexxPump should not be exposed to direct sunlight and / or radiant heat preventing the formation of condensation.

Electrical connection

- Have the electric power supply connected only by a trained electrician!
- Connection and wiring of the electric components should be done by an expert trained in this field.
- Check the voltage details with the existing power supply voltage!

Maintenance / Repair

Disconnect the voltage feed, before starting with **maintenance or repair.**
Maintenance and repair work may only be done with the system shut down.
Check the surface temperature of 50 °C, due to danger of burning by radiant heat. Always wear heat-resistance gloves! Protect the system from activation during maintenance and repair work!

How it works:

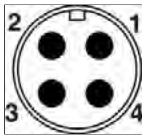
When you activate the FlexxPump, the piston pump starts to work and pump the lubricant in small quantities to the outlets. The integrated microprocessor controls the function. Communication with the machine controller is necessary. Delivery rates and time between the lubrication intervals can be individually set by pulse signals.

-Connecting and installing the FlexxPump
-Start up
-Ready to go

Connector PIN assignment M12x1

The FlexxPump uses a four-pin socket to connect a M12X1 plug allowing communication with the machine controller. An external 24 VDC power supply is used to switch ON and OFF (voltage of +20 ....up to +30 VDC, supplied to PIN 1). When voltage is supplied the lubrication pump is in operating condition. If there are no errors (Pump OK) the input voltage will be transferred to the output signal (PIN 4) indicating all is OK. Once the voltage supply to PIN 1 is stopped (switched OFF), the pump rests and saves the current operating conditions in memory. When the pump is turned back on the saved operating conditions will be continued. PIN 4 relays the operating condition.

Connector PIN assignment M 12 x 1



PIN 1: input voltage +20...30 VDC, color brown

PIN 2: activation of the individual pump outlets color white

PIN 3: Ground (GND), color blue

PIN 4: Output Signal, color black

Details:

Peak current Imax (during pump operation) approx. 350 mA, typically < 200 mA,
Standby current (standby mode) < 20 mA
Output signal PIN 4: High (+20…30 VDC) = OK
Low = 0 V = Error
The outlet signal, PIN4, can be charged with maximal 300mA.
Warning: the exit is not short-circuit proof
A time delay fuse 1A is normally required.

Output signal: in case of empty lubricant reservoir: PIN 4 generates an alternating high and low signal, switching with 0,5 Hz.

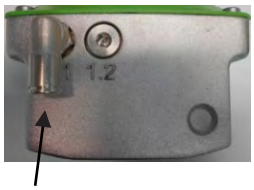
Pump function control: after receiving a correct pulse signal at PIN 2, the pump starts to work. During the function of the pump (about 7 s) the output signal at PIN 4 is switching from High (+ 20...30 VDC) to Low (0 V). By counting the signals of the pump function control there is a possibility to estimate the delivered quantity of lubricant and the remaining quantity in the lubricant reservoir (delivery rate per pulse signal =0,15 cm^3).

Pulse signal to activate the outlets (indication in seconds, accuracy ± 02.s or ± 10% time between two pulse signals: minium 15 s

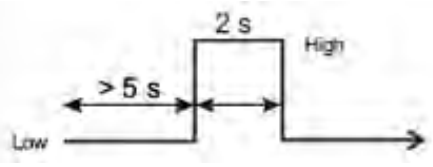
Identification of the pump outlets

1.1 1.2 2.1 2.2

Activate 401DLS /501 DLS



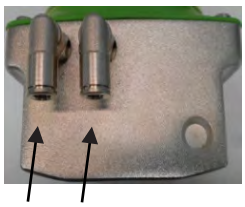
1.1



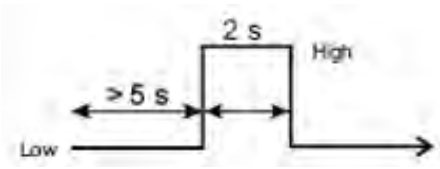
Delivery rate per pulse signal: 0,15 cm³

Activate 402 DLS / 502 DLS

Outlet 1.1 or 1.2

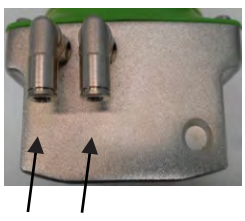


1.1 1.2

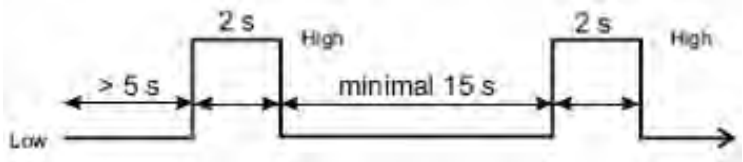


Delivery rate per pulse signal: 0,15 cm³ (each outlet)
Start of delivery rate = outlet 1.1 or 1.2
Outlets will be served alternately

Outlet 1.1 and 1.2



1.1 1.2



Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 1.1 or 1.2, outlets will be served alternatly

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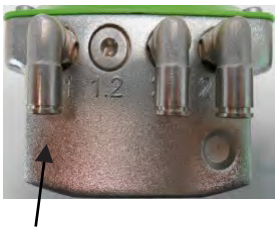
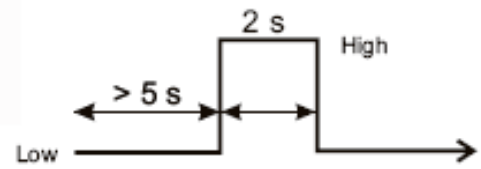
Activate 403 DLS / 503 DLS



1.1

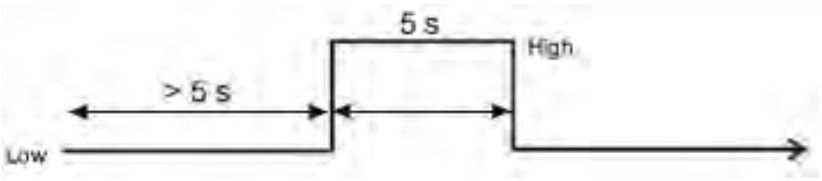
Outlet 1.1



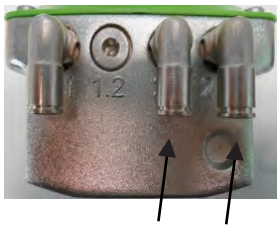
Delivery rate per pulse signal: 0,15cm³

Outlet 2.1 or 2.2

2.1 2.2

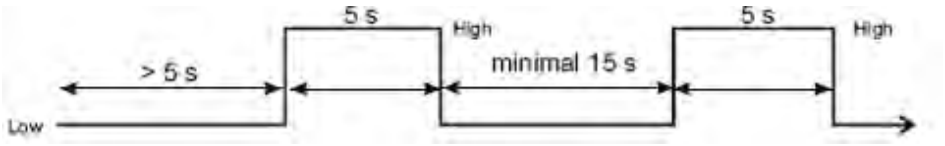


Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 2.1 or 2.2, outlets will be served alternatly

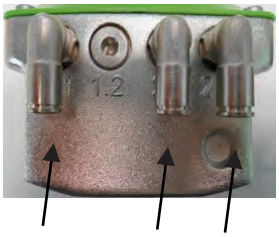


2.1 2.2

Outlet 2.1 and 2.2

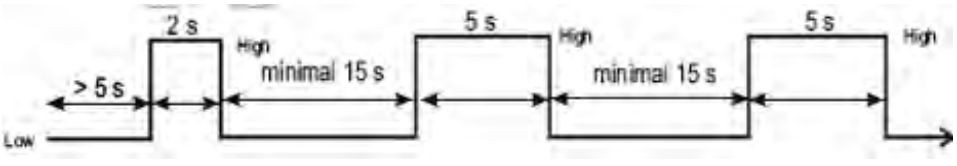


Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 2.1 or 2.2, outlets will be served alternatly



1.1 2.1 2.2

Outlet 1.1 and 2.1 and 2.2



Delivery rate per pulse signal: 0,15 cm³ (each outlet)., outlets will be served alternatly

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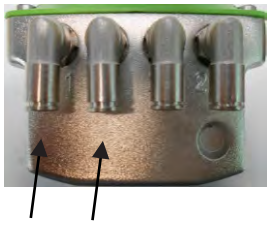
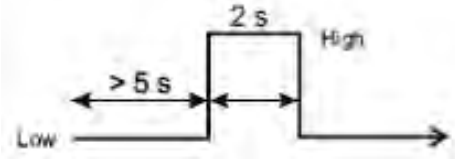
فکس : (021) 33985603

Activate 404 DLS / 504 DLS

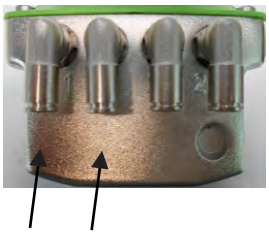


1.1 1.2

Outlet 1.1 or 1.2

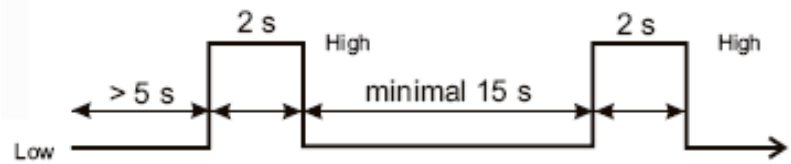


Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 1.1 or 1.2, outlets will be served alternatly



1.1 1.2

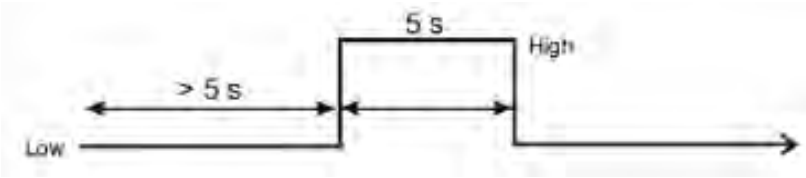
Outlet 1.1 and 1.2



Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 1.1 or 1.2, outlets will be served alternatly

2.1 2.2

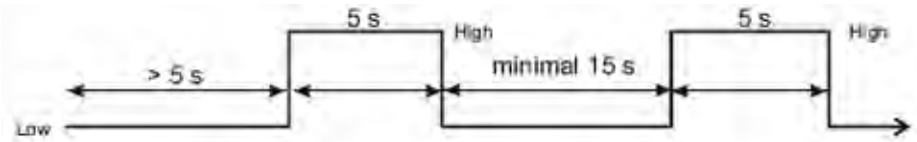
Outlet 2.1 or 2.2



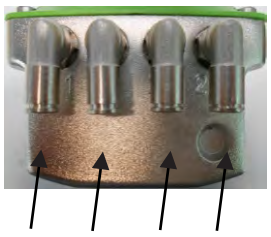
Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 2.1 or 2.2, outlets will be served alternatly

2.1 2.2

Outlet 2.1 and 2.2

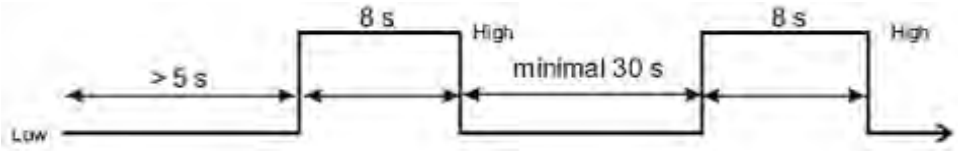


Delivery rate per pulse signal: 0,15 cm³ (each outlet). Start of delivery rate = outlet 2.1 or 2.2, outlets will be served alternatly



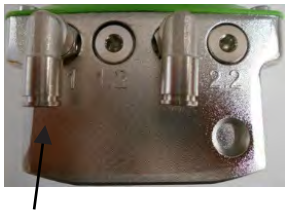
1.1 1.2 2.1 2.2

Outlet 1.1 and 2.1 and 2.2

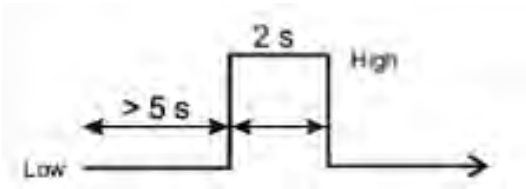


Delivery rate per pulse signal: 0,15 cm³ (each outlet). Outlets will be served alternatly. Time between two pulse sigals: minimum 30s

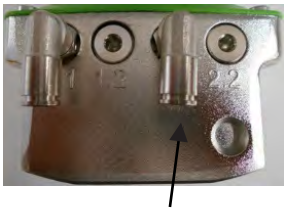
Activate 422 DLS / 522 DLS



1.1

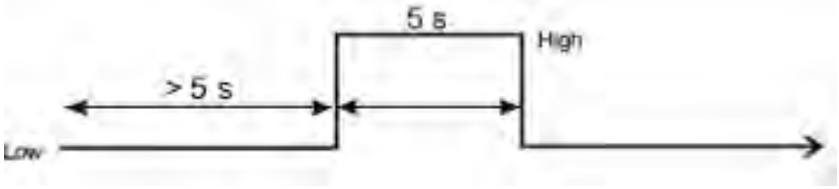


Delivery rate per pulse signal: 0,15cm³

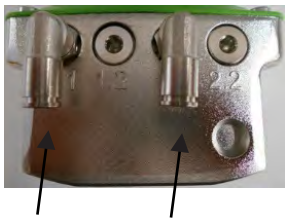


2.1

Outlet 2.1

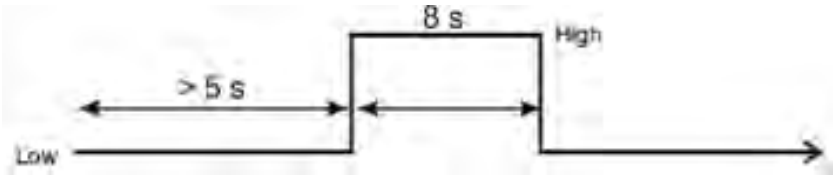


Delivery rate per pulse signal: 0,15cm³



1.1 2.1

Outlet 1.1 and 2.1



Delivery rate per pulse signal: 0,15 cm³ (each outlet). Time between two pulse sigals: minimum 30s

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Function: Extra dispensing cycle

a) **De airing of pump** : High signal on Pin 2 for 12 seconds: extra lubricant cycle will be started to each pump element to exhaust air inclusions. Can be repeated a view times until all air is removed.

b) **Prefilling of tubing**:
After de airing the pump extra lubrication cycles can be used to prefill tubing or fill the supply tubes to the lubrication point.
High signal on Pin 2 for 12 seconds: extra lubricant will be supplied to outlet.

Model 401DLS/501 DLS:	outlet 1.1: 20 x 0,15 cm^3=3,0 cm^3	
Model 402DLS/502 DLS:	outlet 1.1: 10 x 0,15 cm^3=1,5 cm^3	outlet 1.2: 10 x 0,15 cm^3=1,5 cm^3
Model 403DLS/503 DLS:	outlet 1.1: 20 x 0,15 cm^3=3,0 cm^3 outlet 2.1: 10 x 0,15 cm^3=1,5 cm^3	outlet 1.2: closed outlet 2.2: 10 x 0,15 cm^3=1,5 cm^3
Model 404DLS/504 DLS:	outlet 1.1: 10 x 0,15 cm^3=1,5 cm^3 outlet 2.1: 10 x 0,15 cm^3=1,5 cm^3	outlet 1.2: 10 x 0,15 cm^3=1,5 cm^3 outlet 2.2: 10 x 0,15 cm^3=1,5 cm^3
Model 422DLS/522 DLS:	outlet 1.1: 20 x 0,15 cm^3=3,0 cm^3 outlet 2.1: 20 x 0,15 cm^3=3,0 cm^3	outlet 1.2: closed outlet 2.2: closed

Error messages / faults: The dedicated error message is given to PIN 4

E1: Empty lubricant reservoir: PIN 4 generates an alternating high and low signal, switching with 0,5 Hz.

Root cause: The lubricant reservoir or the bellow cartridge is empty. The pump will stop!

Corrective action: replace bellow cartridge. Pump will continue to run as per active program.

E2: Back pressure too high / over-current: Output Signal = Low

Root cause: Back pressure was measured 3 x too high. The lubrication point could be clogged, the tube length could be too long or the grease is too stiff or has hardened. The pump will stop!

Corrective action: Trace reason for high back pressure >70bar and correct it.

Switch unit „OFF“ and „On“ again. The error message will be reset to 0. The pump will start again as per program in memory.

System error: Switch unit „OFF „and „On“ again.

Service: replacement of cartridge

Any further service is not necessary.

1. Press the housing, turn right and remove it

2. Take off the empty cartridge

3. Remove protection from the new cartridge

4. Lubricate O-Ring of the new cartridge slightly

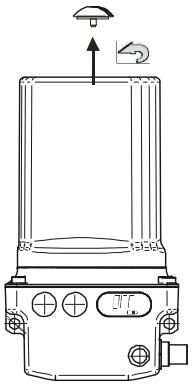
5. Place the cartridge on the inlet

6. Place the pump upright on flat surface

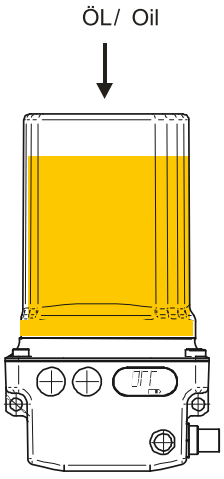
Service: Filling Oil

Any further service is not necessary.

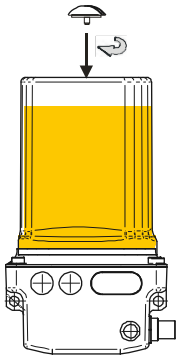
1. Take out ventilation lock
(turn CLOSE to OPEN)



2. Fill oil



3. Install the ventilation lock and close it
(turn OPEN to CLOSE)



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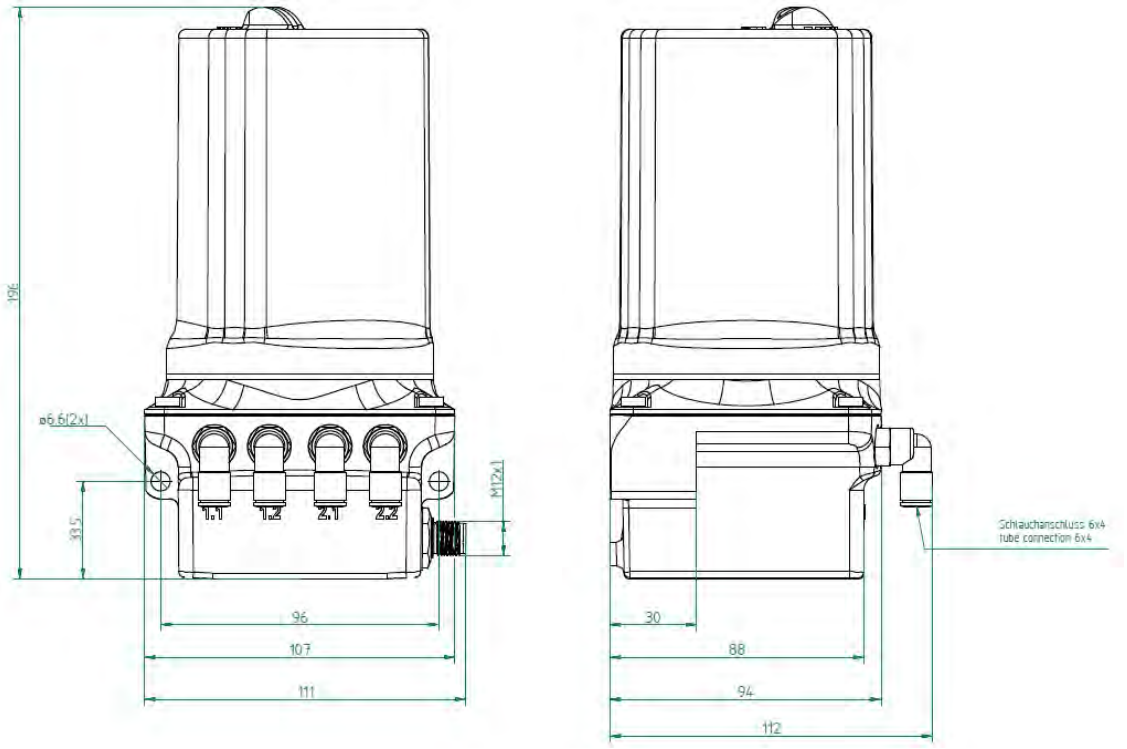
(اسکو صنعت تاوریژ)

OBC
Oskoyi Ballbearing Company

Technical Data



Storage/volume	cartridge 400cm³ or max. 500ml oilreservoir
Lubricant	oil or grease up to NLGI 3
Function / principle	piston pump
Delivery rate per pulse signal	0,15 cm³
Number of outlets	Up to 4
Connection	high pressure tube 6 x 4 (flexible tube Ø 6mm outside and Ø 4mm inside)
Operating pressure	Max. 70 bar
Operating temperature	-20 to +70°C
Dimensions, max.	
Width x height x depth	112 x 196 x 94 mm
Weight, without lubricant	1120g
Integrated Control	microprocessor controlled
Pressure monitoring (monitoring backpressure)	integrated, electronic
Level monitoring	integrated, reed contact
Battery monitoring	integrated, LCD
Connector	M12 x 1, 4-pole for connection with PLC
Operating voltage	24 VDC
Protection class	IP 65 (= suitable for under water operation up to 1 m)
Combination with progressive systems	possible

Mounting FlexxPump

2 srews Ø 6mm, for example M6x40 are required for a safe installation of your FlexxPump. The optimum tightening torque of the screw is 5 Nm. 3 points at the back assure a safe support

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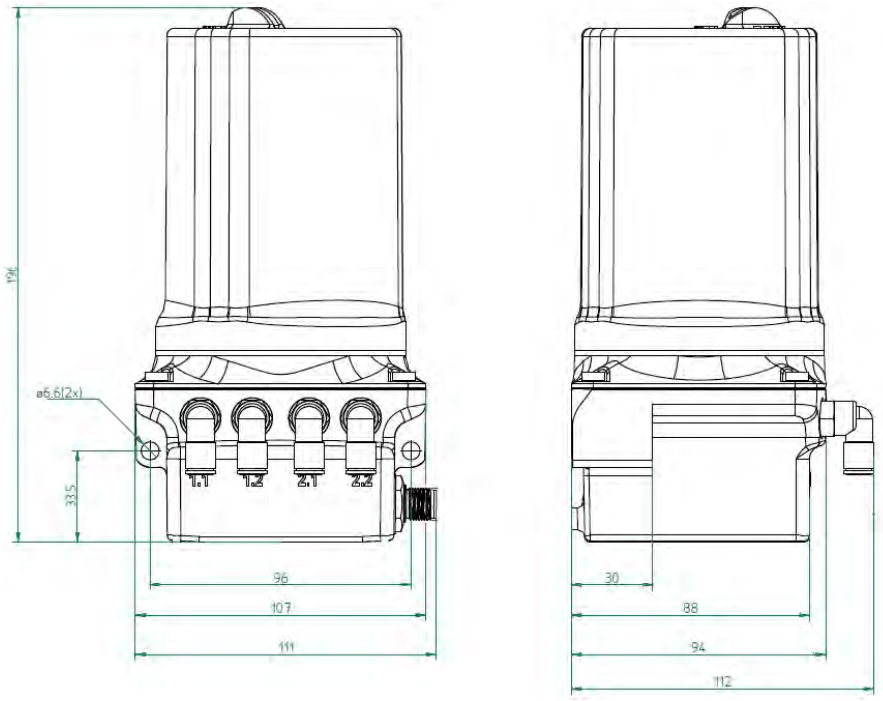


Recommened tube length

Keep in mind:
- For low temperature
- For stiff grease, more than NLGI 2
- For difficult applications with high backpressure

➔ Shorten your tube as much as possible
➔ Minimum inner diameter is 4mm Ø
➔ Avoid reductions of the inner tube

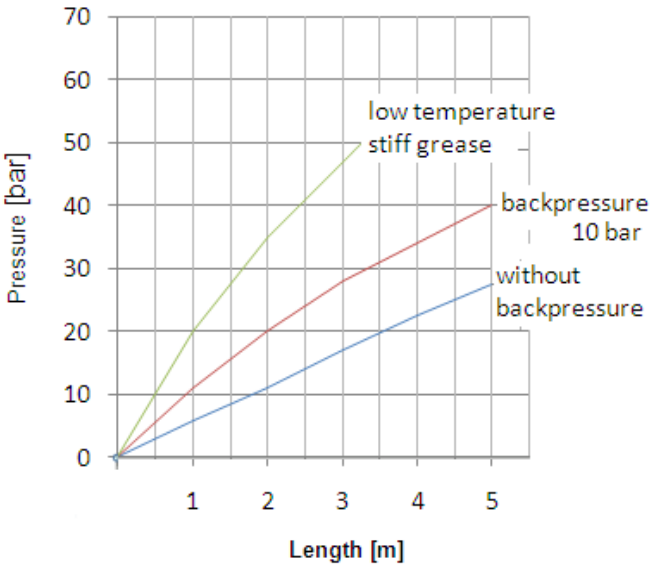


Chart: Required pressure vs. tube length (tested with tubes 6 x 4 mm)

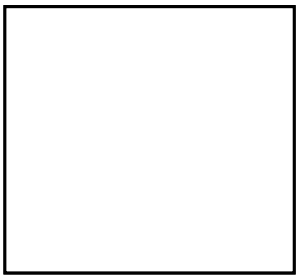
Acessories

Tube/Hose 6mm outer diameter, 4mm inner diameter, Material PA12 hard, pressure resistance 70bar, black, minimal bending radius 30mm

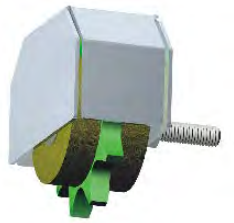
Tube/hose connectors, quick connector for tube/hose OD 6mm, different thread sizes

Adapter for lubrication points

4-pol cable with M12x1 plug



Lubrication Pinions material: PU



Lubrication Sprockets

Tube can be delivered pre filled with grease! This ensures lubricant supply from the very beginning and a save and easy installation of the tube/hose

Disposal

Remark !

When disposing lubricant the waste disposal instructions of the lubricant manufacturer must be observed!
Disposal of the FlexxPump: observe the regional valid laws and regulations.

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فکس : (021) 33985603

DLS
SCHMIERSYSTEME
DIRECT LUBRICATION SYSTEMS

User Guide
FlexxPump 400 (24VDC)

135-140-100 / 135-140-101

135-240-100 / 135-240-101

- Power supply with 24 VDC
- operating time up to 36 months
- Lubricant up to NLGI 3
- integrated back pressure monitoring

Welcome to DLS Schmiersysteme!

Whether you plan to use your FlexxPump for oil or grease, you have made an excellent choice. To learn all about your FlexxPump device take a look through your user guide – it will acquaint you with key features and functions of your device and address any questions that you may have.
Learn how to use your FlexxPump safely and keep it working at its best.

Preface and General Information

FlexxPump is an extraordinary compact lubrication pump for oil and grease up to NLGI 3, also suitable for greases containing solid lubricants. The pump is for 24 VDC power supply and needs external electricity. The lubricant reservoir (400 cm³) is in the bellow cartridge / pouch. Supply pressure is up to 70 bar.

Depending on the configuration, the FlexxPump is available with 1 (part no.
135-140-100/ 135-140-101) or 2 outlets (part no. 135-240-100/ 135-240-101) and is therefore the best solution for applications with limited lubrication points.

Typical applications are electric motors, ventilators, and compressors. Due to the compact dimensions, the FlexxPump can be used for retrofitting. Many other applications are possible.

Warning

Use the FlexxPump to lubricate machinery only.
Use only FlexxPump bellow cartridges and battery packs.
Replacement non genuine batteries could destroy electronics

Scope of supply

Standard delivery includes:

- FlexxPump, compact lubrication pump
- Tube connector, attached to the outlet, suitable for flexible tube 6 x 4
  (Ø 6mm outside and Ø 4mm inside diameter),
  maximum pressure up to 70 bar
- User guide

Other equipment according to customers' specifications on request:

Upon delivery make sure to check if the delivered goods correspond to your order. DLS Schmiersysteme GmbH will not accept liability for subsequent claims of any shortcomings. Please immediately forward any claims:
- of noticeable transport damage: directly to your forwarder
- of noticeable faults, shortcomings or defects: directly to us.

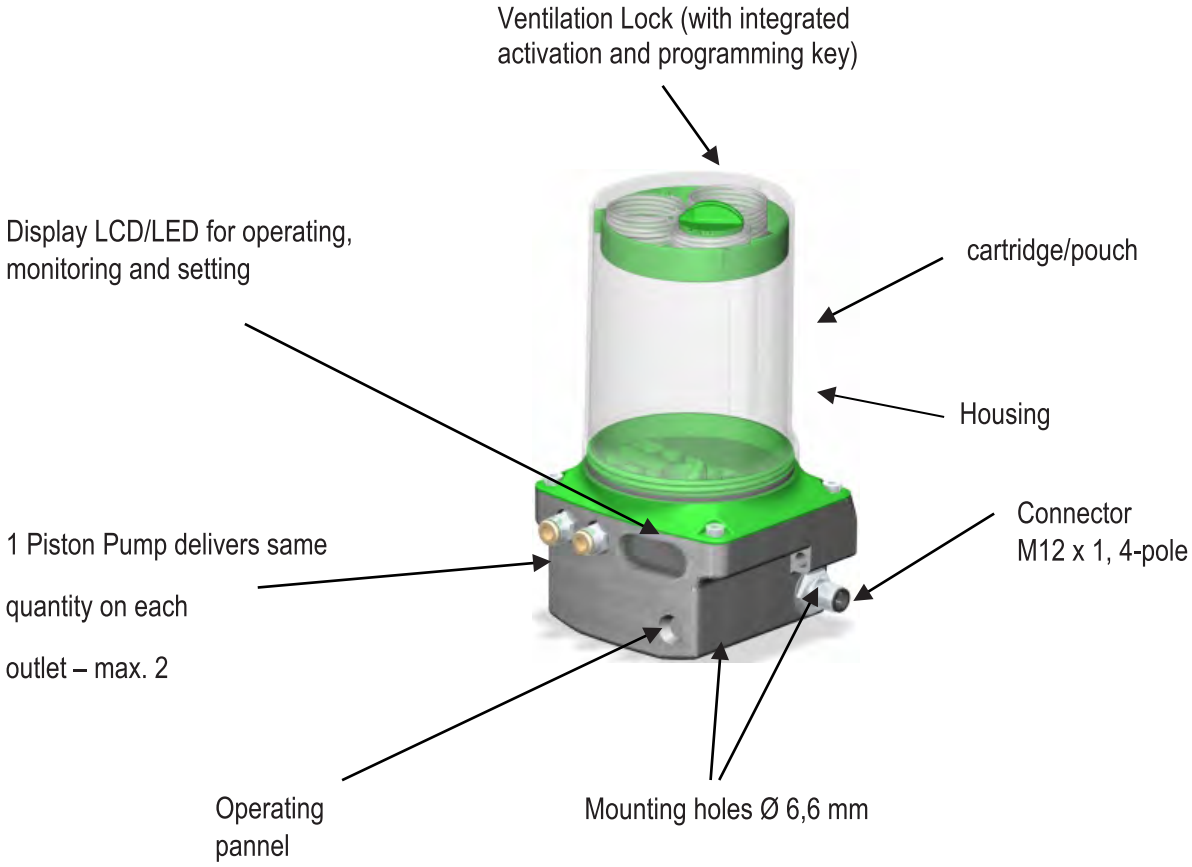
Labeling

The lubrication pump is clearly marked with a label which includes a short description of the lubrication pump and the used lubricant; furthermore it shows the DLS Schmiersysteme Part numbers.

Manufacturer:
DLS Schmiersysteme GmbH
Gewerbering 5
D-82140 Puchheim
Tel.: +49 (0)8142 / 65069-0
Fax: +49 (0)8142 / 65069-29
E-mail: info@DLS-schmiersysteme.de
Web: www.DLS-schmiersysteme.de

Overview

Below a quick overview of the FlexxPump



Note: Never close one outlet because the Piston pump could be damaged!

General safety details

Everybody who is involved with the installation, start-up, maintenance and operation of the FlexxPump must read these instructions carefully!

Use in accordance with guide

The FlexxPump is **only** allowed for **industrial use.** The FlexxPump may only be put into service, if it is integrated or attached to another machine and will be operated together with that machine. The FlexxPump may only be used according to the technical data (see chapter “Technical Data”).
Unauthorized **structural changes** of the FlexxPump are **not permitted**. We do not assume liability for damages of persons or machines which result from that.

Additional directives for use in accordance with the regulations:

- Pay attention to all notes in the operator’s manual / user guide.
- Carry out all maintenance work.
- **Follow** all appropriate regulations for the **work safety** and **accident prevention** during life of the FlexxPump.
- Only qualified and authorized personnel can carry out the required work on the FlexxPump

Attention! **Other uses or uses beyond those described above cannot be considered to be in accordance with the Regulation.**

Extent of warranty

Warranties concerning operating safety, reliability and capacity, are only granted under the following conditions:
Assembly, installation, maintenance and repair are only carried out through trained specialist. Hazardous hot or cold machine parts must be shielded to prevent touching.

- The FlexxPump must be used according to the instructions in the technical operating manual.
- The rated technical data must not be exceeded in any case.
- Retrofitting and repair work on the FlexxPump may only be done by DLS Schmiersysteme GmbH.

General safety information

Basic information, which must be followed during service, operation and maintenance, are listed as follows.

It is absolutely essential to read the operator’s manual / user guide by respective technical staff / technical operator before installation and start up.

In addition to this, it must be permanently available at the site

IMPORTANT

Please pay attention, not only to the safety instructions under this main point, but also to those special security cautions that are mentioned on the other pages.

This symbol warns of electrical voltage

Safety instructions which, if not complied with, may endanger persons, are marked specifically with the general hazard symbol.

Attention! This heading is used if inaccurate compliance or non-compliance with the operating Instructions or specified work procedures etc. may result in damage.

Remark Points out special information.

Notes attached directly at the machine, must be followed strictly and preserved in completely readable condition!

Qualification and training of the personnel

The operation, maintenance, service and installation personnel must have appropriate qualifications for this work. Responsibility and supervision of the personnel must be clearly defined by the end user / operator. If the personnel do not have the necessary knowledge, they must be trained and instructed. The operator must ensure that the personnel have completely understood the contents of the user information.

Non-observance of the safety information can be dangerous

Not observing the safety information can lead to **danger for people**, environment and machines.
Not observing the safety information can mean the loss of any or all damage claims. In special cases, non-observance can, for example, lead to the following dangers:

- Failure of important plant functions.
- Failure of prescribed methods of maintenance and preventive maintenance.
- Endangering people due to electrical, mechanical and chemical effects.
- Endangering the environment due to leakages of dangerous materials.

Safety information for operators/operating staff

- Hot or cold machine parts are hazardous and must be protected from touching. The protection on "moving or rotating parts" must not be removed.
- In case of leakages of dangerous media proper disposal not endangering environment and people must be ensured.
- Legal Regulation must be observed and complied.
- Eliminate any danger due to electrical power.

Safety information for maintenance, inspection and assembly work

All maintenance, inspection and installation work may only be carried out by trained specialists who have been informed appropriately by studying the user information closely.
All work must only be carried out when machine is shut down and while wearing appropriate protective clothing. Always comply with the procedures for shutting the machine down that are described in the operating manual. All the safety and protective equipment must be replaced immediately after completing work. Environmentally hazardous substances that endanger the environment must be disposed in accordance with local regulations. Secure the system during maintenance and repair work, against intentional or unintentional operation. Dispose of used lubricants in accordance with the safety data sheets of the lubricant manufacturer.

Alterations and manufacture of spare parts without authority

Rebuilding and altering the FlexxPump is only allowed after consultation with the manufacturer. **Original spare parts** and accessories authorized by the manufacturer are for **safety** purposes. Using other parts results in loss of liability for claims resulting out of this. For components, retrofitted by the operator, DLS Schmiersysteme GmbH does not assume guarantee nor claims for damages.

Prohibited methods of operation

Operational security of the FlexxPump is only guaranteed if it **is operated in accordance with the operating instructions**. The limit values stated in the technical data must not be exceeded under any circumstances.

General risk reference

All components of the system are designed in accordance with the prevailing regulations of the construction of technical machines, in regards to operational safety and accident prevention. Operation outside of these constraints can lead to dangers for the user respectively third persons or other technical facilities. The FlexxPump therefore may fulfil only **in technically fault-free condition** its intended use. This may only be carried out under compliance of the safety regulations and the attention of the operator's manual.
Therefore please **regularly inspect** the pump and its attachments for possible **damage** or **leaks**

Transport and storage

Use suitable lifting gear for transport.
Do not throw or expose the FlexxPump to strong shock loads.
Store the FlexxPump in a cool and dry place to avoid corrosion of the system's individual parts.

Pay attention to the current safety- and accident prevention instructions during the transport. Wear suitable protection equipment if necessary!

Installation instruction

The following conditions have to be satisfied during the installation of this FlexxPump, thus it can be assembled, with other parts, to a complete machine without affecting the safety and health of humans:

Electrical connection

- Have the electric power supply connected only by a trained electrician!
- Connection and wiring of the electric components should be done by an expert trained in this field.
- Check the voltage details with the existing power supply voltage!

Maintenance / Repair

Disconnect the voltage feed, before starting with **maintenance or repair.**
Maintenance and repair work may only be done with the system shut down.
Check the surface temperature of the FlexxPump, due to **danger of burning** by radiant heat.
Always wear heat-resistant gloves! Protect the system from activation during maintenance and repair work!

Function/Principle

Putting your FlexxPump into operation, the piston pump starts to work and pump the lubricant in small quantities to the outlets. The integrated microprocessor controls the delivery rates and the operating times, which can be individually set.

How it works:

- Connecting and installing the FlexxPump

- Start up

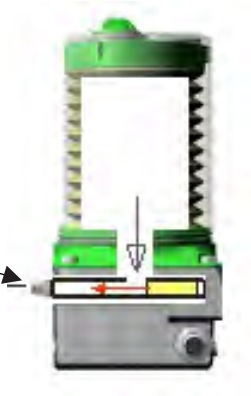
- Basic settings:

- Set individual operating time (running time of the cartridge) (P1)

- Set individual delivery rate (number of strokes) (P2)

- Ready to go

Integrated Check Valve Protecting your pump against backpressure



P1: Operating time (running time) of the cartridge? Max. 36 month

P2: Delivery rate of one period (number of strokes)?

Special:

Quick testing back pressure in your lube line and lube points: To check your system, the piston pump supplies small quantities of lubricant into your lubricationlines . The microprocessor measures the backpressure between the lubrication point and the pump. The displayed value is the grease pressure in your tube in {bar}.

Settings

Basic settings (P1: operating time / cartridge = 12 months and P2: delivery rate of one period = 1 stroke of the piston pump) can be easily changed in the individual settings.

Chart: Operating time and delivery rate vs. different settings

135-140-10x (1 outlet)	**P1 setting = Operating time per cartridge (400cm³) in months**						
Operating time (months)	**1**	**3**	**6**	**12**	**18**	**24**	**36**
Result: Needed amount of lubricant (cm³)	400	133	67	33	22	17	11
	P2 setting = Delivery rate of one period						
Number of strokes	**1**	**5**	**10**	**20**	**30**		
Delivery rate of one period (cm³)	**0,15**	**0,75**	**1,5**	**3,0**	**4,5**		
Result: number of delivery rates per cartridge	2700	540	270	135	90		
135-240-10x (2 outlets)	**P1 setting = Operating time per cartridge (400cm³) in months**						
Operating time (months)	**1**	**3**	**6**	**12**	**18**	**24**	**36**
Result: Needed amount of lubricant for one outlet (cm³)	200	67	33	17	11	8	6
	P2 setting = Delivery rate of one period						
Number of strokes	**1**	**5**	**10**	**20**	**30**		
Delivery rate of one period (cm³)	**0,15**	**0,75**	**1,5**	**3,0**	**4,5**		
Result: number of delivery rates for one outlet per cartridge	1350	270	135	68	45		

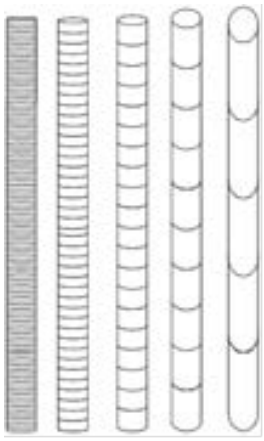
Example 135-240-100: Depending on the selected operating time, the lubrication point will be supplied with lubricant more often with small quantity or less frequently with larger quantities in longer time periods. The total amount of lubricant delivered for the same operating time doesn't vary. For P2 = 1, the lubrication point is served 1350 times with 0,15 cm³, if P2 = 5, 270 times with 0,75cm³, if P2 = 10, 135 times with 1,5 cm³, if P2 = 20, 68 times with 3,0 cm³, if P2 = 30, 45 times with 4,5 cm³. Steps between are allowed.

Using the chart

1. Operating time / cartridge : - green range -
   Required amount of lubricant each months (for one outlet)
   Please note individual setting: **(P1)**

2. Delivery rate of one period / number of strokes: - blue range -
   Required amount of lubricant of one period (for one outlet)
   Please note individual setting: **(P2)**

Picture: Total amount of the lubricant through the whole service life is not depending on the delivery rate for one period.

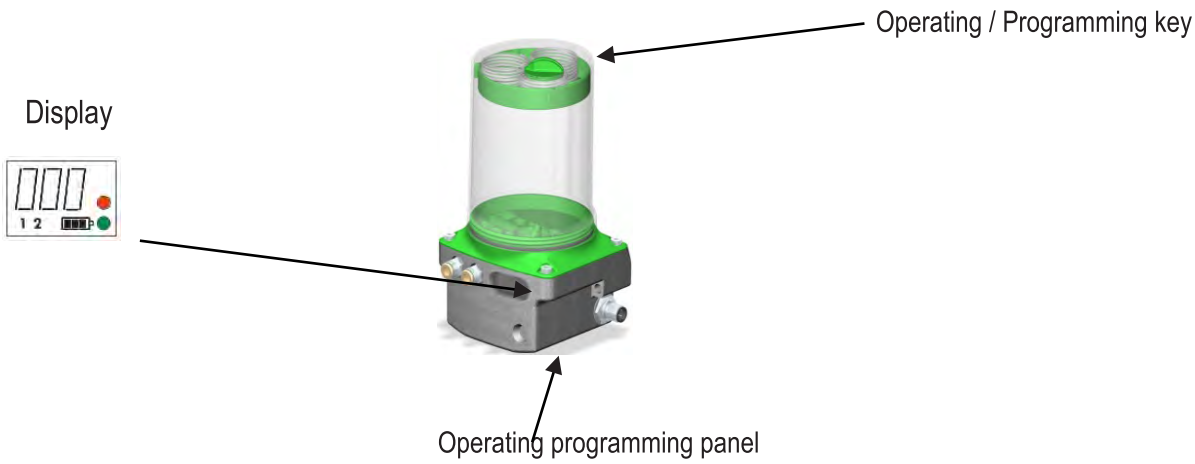


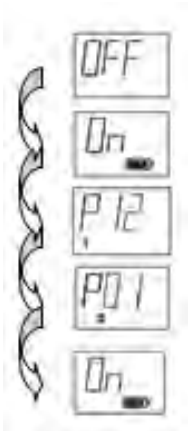
P_2 small: small amounts of lubricant, but therefore smaller period time between 2 lubricant tasks.

P_2 great: bigger amounts of lubricant; but therefore longer period time between 2 lubrication tasks.

The total amount of the lubricant depends only on the emptying time P1.

Settings (switch on / switch off / individual settings)





1. Open the ventilation lock (turn CLOSE to OPEN) and remove the cover. The nose of the cover is your **operating / programming key.**

2. To **switch** the FlexxPump **on**, touch the operating pad with the operating / programming key. Hold the operating / programming key on the operating / programming pad until the red LED on the display lights 3 times, and then remove the operating / programming key.

3. Display changes from „OFF“ to „On“: basic settings and power supply are shown at the display:
   a) first P1 operating time / cartridge (basic setting 12 months)
   b) second P2 delivery rate (= number of strokes, each 0,15 cm³, basic setting 1)

4. Display „On“ for 3 sec., if there are no desired changes of the settings please set your operating / programming key back at its place and close the ventilation lock (turn OPEN to CLOSE).

5. **Change to individual settings: While the display is flashing „On“, touch the operating button until the red LED flashes two times (at the display), then remove the operating button:**

   a) P_1 operating time setting: Touching the pad with the button will change the display (1 to 36 is possible); holding the button on the pad causes the display to “run”, short touches will cause the display to increase by 1. Enter the desired setting; when the pad is not touched for more than 2 sec. the display moves on with the next step P2.

   b) P2 delivery rate setting: Touching the pad with the button changes the display (1 to 30 is possible); holding the button on the pad causes the display to “run”, short touches will cause the display to increase by 1. Enter the desired setting; when the pad is not touched for more than 2 sec., setting is finished and data will be saved.
   .

   c) Please return your operating button back at its place and close the ventilation lock OPEN => CLOSE.

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فکس : (021) 33985603

6. Display changes to „On“, first delivery of lubricant:

   a) In the first 2 seconds only 1 or 2 and the power supply symbol are displayed. 1 or 2 represents the actual served pump exit. Green LED lights up during motor operation.

   b) Then a number is displayed that represents the actual pressure up to the lubrication point. After completion of pumping the maximum measured pressure is displayed. The indication is in “bar”…0.15 is therefore 15 bar. The pump can only detect values with an accuracy of + / - 15 %. This is sufficient to estimate the situation of the lubrication point.

   c) LED lights green every 60 sec if the pump works correctly according to the saved settings.

7. **Special: Quick check back pressure testing and quick delivering of extra lubricant**
   Touch the operating / programming key to the operating / programming pad until the red LED flashes twice (at the display), after that remove the key and the display will cycle through the screens shown in step 6.

8. **Filling function:** deaerate the pump
   Use the action pin to touch the action area, wait 7 x red flashing signal (LED in the display), then remove the action pin. After this, each pump element is controlled and a special donations are made per output. Pump body is dearating.

Model 401/501	Output 1.1:30 x 0,15cm³=4,5cm³
Modell 402/502	Output 1.1: 15 x 0,15cm³=2,25cm³ Output 1.2: 15 x 0,15cm³=2,25cm³

9. **Switch OFF:** Touch the operating / programming key to the pad until the red LED flashes 3 times (at the display), after that remove the operating key. Display changes from „On“ to „OFF“: All settings are saved. (Touching the pad for a longer time will not switch unit “On” or “OFF”.

Functional problems (error shown on LCD / LED)

Function control is simple:

- LED, green: flashing all 60 sec. during operation, indicates everything is OK

- LED, red: indicates empty cartridge, low power supply level (power supply has to be checked), max. backpressure = system must be checked up to the lubrication point), fault, or control for settings

Error Reports:

E1: **empty**, LED, red, is flashing every 5 sec.
Reason: cartridge is empty or missing
The pumping will be stopped!
Correction measures: change or reinstall cartridge.
Pump will work again according to settings.

E2: **Backpressure more than 70 bar,** LED, red, is flashing every 5 sec
Error report only after 3 successive back pressure measurements that are too high.
Correction measures: Check your system up to the lubrication point –

Possible causes are a blockage at the lubrication point, too long tubing or too stiff grease.
The pumping will be stopped!
Eliminate the cause of high backpressure (>70bar). Switch off your FlexxPump and switch it on again (the integrated error controller will be reset). The pump is running again.

E3: **Power supply level is too low,** LED, red, is flashing every 5 sec,
The piston pump is stopped.
Correction measures: power supply has to be checked.

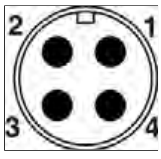
In any other case of system disorder: Your FlexxPump has to be reset. Switch off your FlexxPump and switch it on again (the integrated error controller is reset). Your settings are saved.

Connector PIN assignment M12x1

The FlexxPump uses a four-pin socket to connect a M12X1 plug. With this interface the controller of the machine communicates. Power supply 24 VDC (input voltage of +20 .... up to +30 VDC, PIN 1). To be switched ON and OFF the FlexxPump 135-140-10x / 135-240-10x requires input voltage of +20 ... up to +30 VDC (PIN1). When voltage is supplied the lubrication pump is in operating condition.

If there are no errors (Pump OK) the input voltage will be transferred to the exit, ground (PIN 4) if the voltage supply is stopped (switched OFF), the pump rests and saves the current operating conditions in memory. When the pump restarts (switched ON) the saved operating conditions will be continued. PIN 4 will relay the operating condition. Messages about the status of the lubrication pump will be displayed in the integrated display.

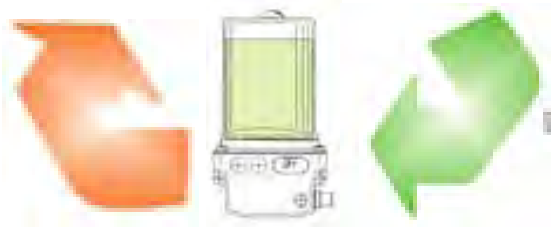
With this combination of information, both the supply of the lubrication points at the machine (depending on the machine running time) and the local and contemporary control of the lubrication system can be realized.



Connector PIN assignment M 12 x 1
PIN 1: Input voltage +20...30 VDC, color brown
PIN 2: no assignment, color white
PIN 3: Ground (GND), color blue
PIN 4: Output signal, color black

Details:
PIN 1: Input voltage +20...30 VDC
PIN 2: no assignment
PIN 3: Ground
PIN 4: High = operating mode (=OK)
Low = Error (Type of Error shown in display)

Service: replacement of cartridge



Any further service is not necessary.

1. Switch off the pump: Display – report „OFF“

2. Take out Ventilation lock
(turn CLOSE to OPEN)

3. Press the housing, turn
right and remove it

4. Take off the empty cartridge

5. Remove protection from the new cartridge

6. Lubricate O-Ring of the new cartridge slightly

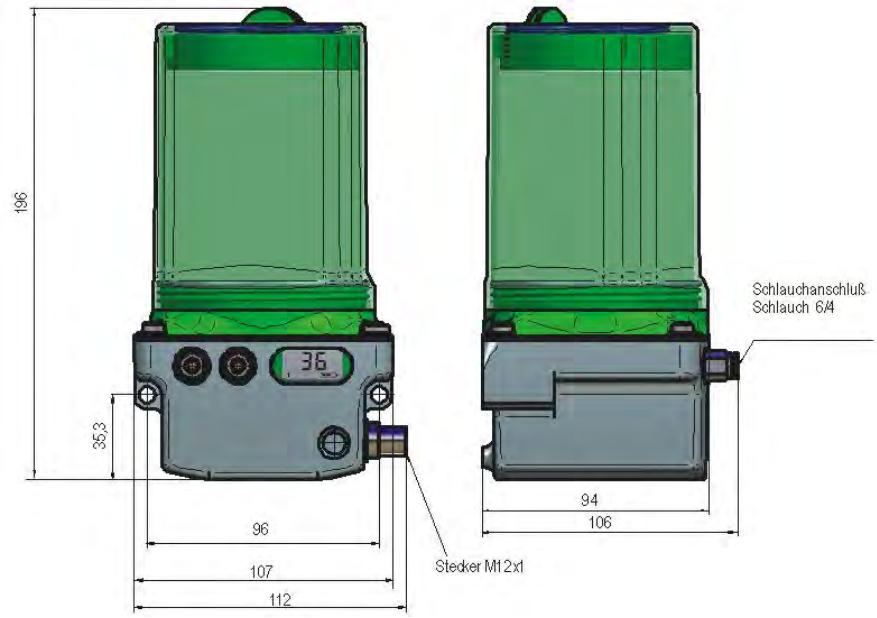
7. Place the cartridge on the inlet

8. Place the pump upright on flat surface

9. Install the ventilation lock and close it
(turn OPEN to CLOSE)

10. The pump is ready to be switched on
Use operation / programming key to
switch ON-OFF

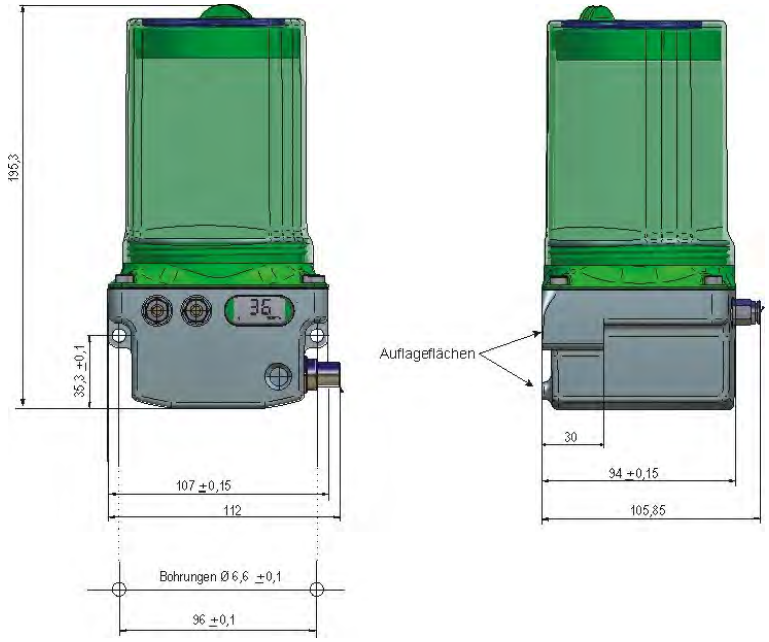
Technical Data



Storage/volume	cartridge 400cm³
Lubricant	oil or grease up to NLGI 3 also containing solid lubricants
Function / principle	piston pump
Delivery rate per interval	0,15 cm³
Delivery rate per period	0,15 to 4,5 cm³
Number of strokes/cartridge	134-140-10x: 2700 135-240-10x: 1350 each outlet
Number of outlets	134-140-10x: 1 outlet 134-240-10x: 2 outlets
Connection	high pressure tube 6 x 4 (flexible tube with outer diameter Ø 6mm and Ø 4mm inside diameter) maximum pressure up to 150 bar
Operating time/cartridge	1…36 months
Operating pressure	Max. 70 bar
Operating temperature	-20 to +70°C
Dimensions, max.	
Width x height x depth	112 x 196 x 94 mm
Weight, without lubricant	1120g
Integrated Control	microprocessor controlled
Pressure monitoring (monitoring backpressure)	integrated, electronic
Level monitoring	integrated, reed contact
Battery monitoring	integrated, LCD
Connector	M12 x 1, 4-pole
Operating voltage	24 VDC
Protection class	IP 65 (= suitable for under water operation up to 1 m)
Combination with progressive systems	possible
Accessory	integrated backpressure information, additional lubricant, system control testing

Mounting FlexxPump

2 screws Ø 6mm, for example M6x40 are required for a safe installation of your FlexxPump. The optimum clamping force of the screw is 5 Nm. 3 points at the back assure a safe hold



Recommened tube length

Keep in mind:
- For low temperature
- For stiff grease, more than NLGI 2
- For difficult applications with high backpressure

- ➔ Shorten your tube as much as possible
- ➔ Minimum inner diameter is 4mm Ø
- ➔ Avoid reductions of the inner tube

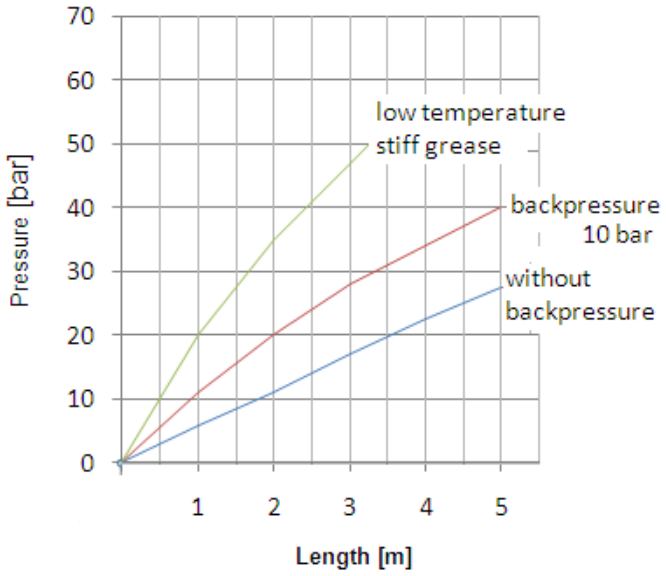


Chart: Required pressure vs. tube length (tested with tubes 6 x 4 mm)

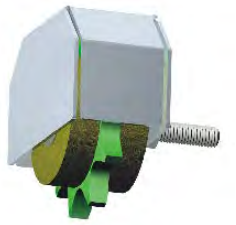
Acessories

Tube/Hose 6mm outer diameter, 4mm inner diameter, Material PA12 hard, pressure resistance 70bar, black, minimal bending radius 30mm

Tube/hose connectors, quick connector for tube/hose OD 6mm, different thread sizes

Adapter for lubrication points

4-pol cable with M12x1 plug



Lubrication Sprockets

Tube can be delivered pre filled with grease! This ensures lubricant supply from the very beginning and a save and easy installation of the tube/hose

Disposal

Remark !

When disposing lubricant the waste disposal instructions of the lubricant manufacturer must be observed!
Disposal of the FlexxPump: observe the regional valid laws and regulations.

DLS
SCHMIERSYSTEME
DIRECT LUBRICATION SYSTEMS

User Guide
FlexxPump 400B

135-140-000 135-140-001 135-140-010 135-140-011
135-240-000 135-240-001 135-240-010 135-240-011

(Battery Version)

- Power supply with 3 VDC – battery pack
- operating time up to 36 months
- Lubricant up to NLGI 3
- integrated back pressure monitoring

Welcome to DLS Schmiersysteme!

Whether you plan to use your FlexxPump for oil or grease, you have made an excellent choice. To learn all about your FlexxPump device take a look through your user guide – it will acquaint you with key features and functions of your device and address any questions that you may have.
Learn how to use your FlexxPump safely and keep it working at its best.

Preface and General Information

FlexxPump is an extraordinary compact lubrication pump for oil and grease up to NLGI 3, also suitable for greases containing solid lubricants. The pump is equipped with a battery pack for self-sufficient power supply and does not need external electricity. The lubricant reservoir (400 cm³) is in the bellow cartridge / pouch. Supply pressure is up to 70 bar.

Depending on the configuration, the FlexxPump is available with 1 (part no. 135-140-000/ 135-140-001/ 135-140-010/ 135-140-011) or 2 outlets (part no.135- 240-000/ 135-240-001/ 135-240-010/ 135-240-011) and is therefore the best solution for applications with limited lubrication points.

Typical applications are electrical motors, ventilators, and compressors. Due to the compact dimensions, the FlexxPump can be used for retrofitting. Many other applications are possible.

Warning

Use the FlexxPump to lubricate machinery only.
Use only FlexxPump bellow cartridges and battery packs.
Replacement non genuine batteries could destroy electronics

Scope of supply

Standard delivery includes:

- FlexxPump, compact lubrication pump
- Tube connector, attached to the outlet, suitable for flexible tube 6 x 4 (Ø 6mm outside and Ø 4mm inside diameter), maximum pressure up to 70 bar
- User guide

Other equipment according to customers' specifications on request:

Upon delivery make sure to check if the delivered goods correspond to your order. DLS Schmiersysteme GmbH will not accept liability for subsequent claims of any shortcomings. Please immediately forward any claims:
- of noticeable transport damage: directly to your forwarder
- of noticeable faults, shortcomings or defects: directly to us.

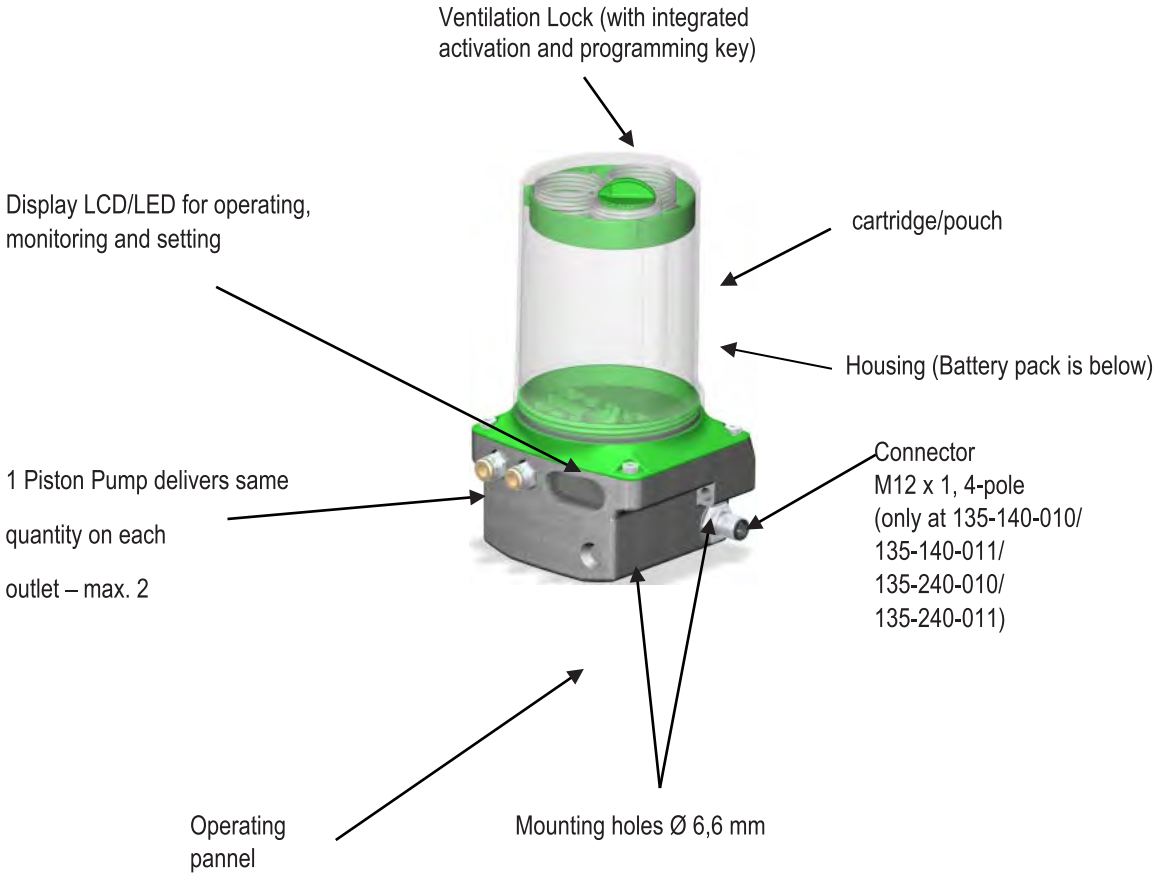
Labeling

The lubrication pump is clearly marked with a label which includes a short description of the lubrication pump and the used lubricant; furthermore it shows the DLS Schmiersysteme Part numbers.

Manufacturer:
DLS Schmiersysteme GmbH
Gewerbering 5
D-82140 Olching
Tel.: +49 (0)8142 / 65069-0
Fax: +49 (0)8142 / 65069-29
E-mail: info@DLS-schmiersysteme.de
Web: www.DLS-schmiersysteme.de

Overview

Below a quick overview of the FlexxPump



Note: Never close one outlet because the Piston pump could be damaged!

General safety details

Everybody who is involved with the installation, start-up, maintenance and operation of the FlexxPump must read these instructions carefully!

Use in accordance with guide

The FlexxPump is **only** allowed for **industrial use.** The FlexxPump may only be put into service, if it is integrated or attached to another machine and will be operated together with that machine. The FlexxPump may only be used according to the technical data (see chapter “Technical Data”).
Unauthorized **structural changes** of the FlexxPump are **not permitted**. We do not assume liability for damages of persons or machines which result from that.

Additional directives for use in accordance with the regulations:

- Pay attention to all notes in the operator’s manual / user guide.
- Carry out all maintenance work.
- **Follow** all appropriate regulations for the **work safety** and **accident prevention** during life of the FlexxPump.
- Only qualified and authorized personnel can carry out the required work on the FlexxPump

Attention! **Other uses or uses beyond those described above cannot be considered to be in accordance with the Regulation.**

Extent of warranty

Warranties concerning operating safety, reliability and capacity, are only granted under the following conditions:
Assembly, installation, maintenance and repair are only carried out through trained specialist. Hazardous hot or cold machine parts must be shielded to prevent touching.

- The FlexxPump must be used according to the instructions in the technical operating manual.
- The rated technical data must not be exceeded in any case.
- Retrofitting and repair work on the FlexxPump may only be done by DLS Schmiersysteme GmbH.

General safety information

Basic information, which must be followed during service, operation and maintenance, are listed as follows.

It is absolutely essential to read the operator's manual / user guide by respective technical staff / technical operator before installation and start up.

In addition to this, it must be permanently available at the site

IMPORTANT

Please pay attention, not only to the safety instructions under this main point, but also to those special security cautions that are mentioned on the other pages.

This symbol warns of electrical voltage

Safety instructions which, if not complied with, may endanger persons, are marked specifically with the general hazard symbol.

Attention!

This heading is used if inaccurate compliance or non-compliance with the operating Instructions or specified work procedures etc. may result in damage.

Remark

Points out special information.

Notes attached directly at the machine, must be followed strictly and preserved in completely readable condition!

Qualification and training of the personnel

The operation, maintenance, service and installation personnel must have appropriate qualifications for this work. Responsibility and supervision of the personnel must be clearly defined by the end user / operator. If the personnel do not have the necessary knowledge, they must be trained and instructed. The operator must ensure that the personnel have completely understood the contents of the user information.

Non-observance of the safety information can be dangerous

Not observing the safety information can lead to **danger for people**, environment and machines.
Not observing the safety information can mean the loss of any or all damage claims. In special cases, non-observance can, for example, lead to the following dangers:

- Failure of important plant functions.
- Failure of prescribed methods of maintenance and preventive maintenance.
- Endangering people due to electrical, mechanical and chemical effects.
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- Hot or cold machine parts are hazardous and must be protected from touching. The protection on "moving or rotating parts" must not be removed.
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Therefore please **regularly inspect** the pump and its attachments for possible **damage** or **leaks**

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Use suitable lifting gear for transport.
Do not throw or expose the FlexxPump to strong shock loads.
Store the FlexxPump in a cool and dry place to avoid corrosion of the system's individual parts.

Pay attention to the current safety- and accident prevention instructions during the transport. Wear suitable protection equipment if necessary!

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The following conditions have to be satisfied during the installation of this FlexxPump, thus it can be assembled, with other parts, to a complete machine without affecting the safety and health of humans:

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- Have the electric power supply connected only by a trained electrician!
- Connection and wiring of the electric components should be done by an expert trained in this field.
- Check the voltage details with the existing power supply voltage!

Maintenance / Repair

Disconnect the voltage feed, before starting with **maintenance or repair.**
Maintenance and repair work may only be done with the system shut down.
Check the surface temperature of the FlexxPump, due to **danger of burning** by radiant heat.
Always wear heat-resistant gloves! Protect the system from activation during maintenance and repair work!

Function/Principle

Putting your FlexxPump into operation, the piston pump starts to work and pump the lubricant in small quantities to the outlets. The integrated microprocessor controls the delivery rates and the operating times, which can be individually set.

How it works:

- Connecting and installing the FlexxPump

- Start up

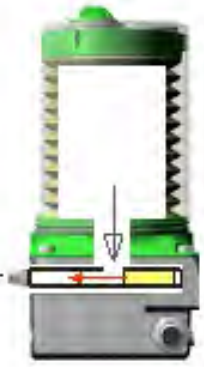
- Basic settings:

- Set individual operating time (running time of the cartridge) (P1)

- Set individual delivery rate (number of strokes) (P2)

- Ready to go

Integrated Check Valve Protecting your pump against backpressure



P1: Operating time (running time) of the cartridge? Max. 36 month

P2: Delivery rate of one period (number of strokes)?

Special:

Quick testing back pressure in your lube line and lube points: To check your system, the piston pump supplies small quantities of lubricant into your lubricationlines . The microprocessor measures the backpressure between the lubrication point and the pump. The displayed value is the grease pressure in your tube in {bar}.

Settings

Basic settings (P1: operating time / cartridge = 12 months and P2: delivery rate of one period = 1 stroke of the piston pump) can be easily changed in the individual settings.

Chart: Operating time and delivery rate vs. different settings

135-140-0x (1 outlet)	**P1 setting = Operating time per cartridge (400cm³) in months**						
Operating time (months)	**1**	**3**	**6**	**12**	**18**	**24**	**36**
Result: Needed amount of lubricant (cm³)	400	133	67	33	22	17	11
	P2 setting = Delivery rate of one period						
Number of strokes	**1**	**5**	**10**	**20**	**30**		
Delivery rate of one period (cm³)	**0,15**	**0,75**	**1,5**	**3,0**	**4,5**		
Result: number of delivery rates per cartridge	2700	540	270	135	90		
135-240-0x (2 outlets)	**P1 setting = Operating time per cartridge (400cm³) in months**						
Operating time (months)	**1**	**3**	**6**	**12**	**18**	**24**	**36**
Result: Needed amount of lubricant for one outlet (cm³)	200	67	33	17	11	8	6
	P2 setting = Delivery rate of one period						
Number of strokes	**1**	**5**	**10**	**20**	**30**		
Delivery rate of one period (cm³)	**0,15**	**0,75**	**1,5**	**3,0**	**4,5**		
Result: number of delivery rates for one outlet per cartridge	1350	270	135	68	45		

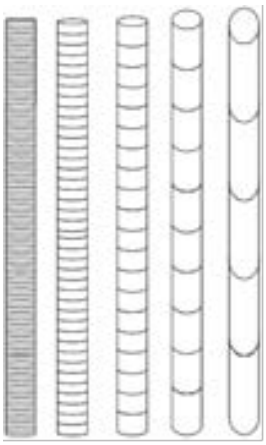
Example 135-240-000: Depending on the selected operating time, the lubrication point will be supplied with lubricant more often with small quantity or less frequently with larger quantities in longer time periods. The total amount of lubricant delivered for the same operating time doesn't vary. For P2 = 1, the lubrication point is served 1350 times with 0,15 cm³, if P2 = 5, 270 times with 0,75cm³, if P2 = 10, 135 times with 1,5 cm³, if P2 = 20, 68 times with 3,0 cm³, if P2 = 30, 45 times with 4,5 cm³. Steps between are allowed.

Using the chart

1. Operating time / cartridge : - green range -
   Required amount of lubricant each months (for one outlet)
   Please note individual setting: **(P1)**

2. Delivery rate of one period / number of strokes: - blue range -
   Required amount of lubricant of one period (for one outlet)
   Please note individual setting: **(P2)**

Picture: Total amount of the lubricant through the whole service life is not depending on the delivery rate for one period.

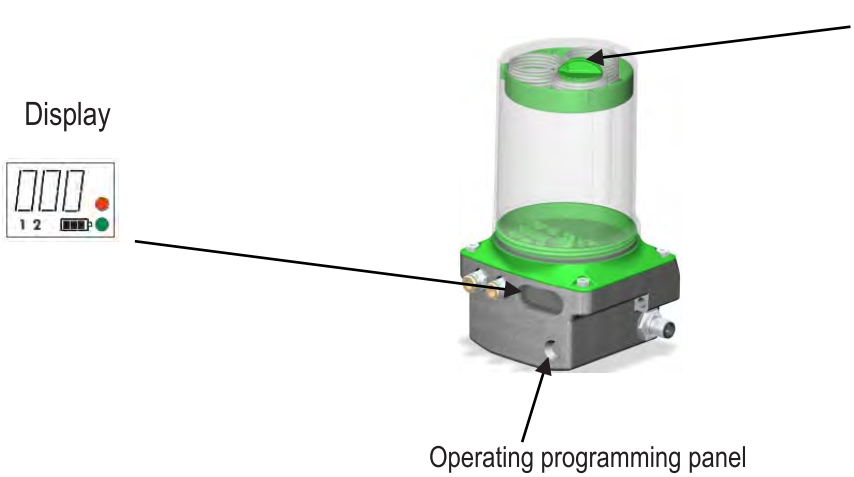


P_2 small: small amounts of lubricant, but therefore smaller period time between 2 lubricant tasks.

P_2 great: bigger amounts of lubricant; but therefore longer period time between 2 lubrication tasks.

The total amount of the lubricant depends only on the emptying time P1.

Settings (switch on / switch off / individual settings)



1. Open the ventilation lock (turn CLOSE to OPEN) and remove the cover. The nose of the cover is your **operating / programming key.**

2. To **switch** the FlexxPump **on**, touch the operating pad with the operating / programming key. Hold the operating / programming key on the operating / programming pad until the red LED on the display lights 3 times, and then remove the operating / programming key.

3. Display changes from „OFF“ to „On“: basic settings and power supply are shown at the display:
   a) first P1 operating time / cartridge (basic setting 12 months)
   b) second P2 delivery rate (= number of strokes, each 0,15 cm³, basic setting 1)

4. Display „On“ for 3 sec., if there are no desired changes of the settings please set your operating / programming key back at its place and close the ventilation lock (turn OPEN to CLOSE).

5. **Change to individual settings: While the display is flashing „On“, touch the operating button until the red LED flashes two times (at the display), then remove the operating button:**

   a) P_1 operating time setting: Touching the pad with the button will change the display (1 to 36 is possible); holding the button on the pad causes the display to “run”, short touches will cause the display to increase by 1. Enter the desired setting; when the pad is not touched for more than 2 sec. the display moves on with the next step P2.

   b) P2 delivery rate setting: Touching the pad with the button changes the display (1 to 30 is possible); holding the button on the pad causes the display to “run”, short touches will cause the display to increase by 1. Enter the desired setting; when the pad is not touched for more than 2 sec., setting is finished and data will be saved.
   .

   c) Please return your operating button back at its place and close the ventilation lock OPEN => CLOSE.

6. Display changes to „On“, first delivery of lubricant:

   a) In the first 2 seconds only 1 or 2 and the power supply symbol are displayed. 1 or 2 represents the actual served pump exit. Green LED lights up during motor operation.

   b) Then a number is displayed that represents the actual pressure up to the lubrication point. After completion of pumping the maximum measured pressure is displayed. The indication is in “bar”…0.15 is therefore 15 bar. The pump can only detect values with an accuracy of + / - 15 %. This is sufficient to estimate the situation of the lubrication point.

   c) LED lights green every 60 sec if the pump works correctly according to the saved settings.

7. **Special: Quick check back pressure testing and quick delivering of extra lubricant**
   Touch the operating / programming key to the operating / programming pad until the red LED flashes twice (at the display), after that remove the key and the display will cycle through the screens shown in step 6.

8. **Filling function :** Ventilate the pump
   Touch the action surface with the action pen.
   duration: Wait 7 x red flashing signal (LED in the display) , then remove action pin after that each pump element is driven and carried out additional discharges per output .
   Pump body is ventilating
   outlet 1.1:30 x 0,15cm³=4,5cm³
   outlet 1.1: 15 x 0,15cm³=2,25cm³
   outlet 1.2: 15 x 0,15cm³=2,25cm³

401/501
402/502

9. **Switch OFF**: Touch the operating / programming key to the pad until the red LED flashes 3 times (at the display), after that remove the operating key. Display changes from „On“ to „OFF“: All settings are saved. (Touching the pad for a longer time will not switch unit “On” or “OFF”.

Functional problems (error shown on LCD / LED)

Function control is simple:

- **LED, green:** flashing all 60 sec. during operation, indicates everything is OK

- **LED, red:** indicates empty cartridge, low power supply level (power supply has to be checked), max. backpressure = system must be checked up to the lubrication point), fault, or control for settings

Error Reports:

E1: **empty**, LED, red, is flashing every 5 sec.
Reason: cartridge is empty or missing
The pumping will be stopped!
Correction measures: change or reinstall cartridge.
Pump will work again according to settings.

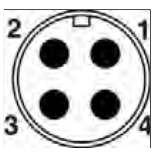
E2: **Backpressure more than 70 bar,** LED, red, is flashing every 5 sec
Error report only after 3 successive back pressure measurements that are too high.
Correction measures: Check your system up to the lubrication point –
Possible causes are a blockage at the lubrication point, too long tubing or too stiff grease.
The pumping will be stopped!
Eliminate the cause of high backpressure (>70bar). Switch off your FlexxPump and switch it on again (the integrated error controller will be reset). The pump is running again.

E3: **Power supply level is too low,** LED, red, is flashing every 5 sec,
The piston pump is stopped.
Correction measures: power supply has to be checked.

Connector PIN assignment M12x1

Only the follow FlexxPump 400B has a M12x1-Connector:
FlexxPump 401 B
135-140-010
135-140-011

FlexxPump 402 B
135-240-010
135-240-011



Connector PIN assignment M 12 x 1
PIN 1: no assignment
PIN 2: no assignment
PIN 3: Ground (GND), color: blue
PIN 4: Output signal, color: black

PIN 4: High = operating mode (=OK)
Low = Error (Type of Error shown in display)

Service: replacement of cartridge and battery

Any further service is not necessary.

1. Switch off the pump: Display – report „OFF“

2. Take out Ventilation lock
(turn CLOSE to OPEN)

3. Press the housing, turn
right and remove it

4. Take off the empty cartridge

5. Carefully remove the battery pack

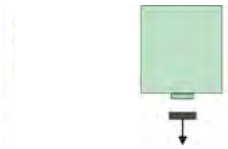
6. Carefully disconnect the battery pack

7. Connect the new battery pack
= snap into reverse-polarity protection plug

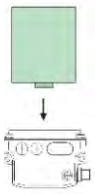
8. Install the new battery pack:
Place battery in battery compartment include cable and connector completely!

9. Remove protection from the new cartridge

10. Lubricate O-Ring of the new cartridge slightly



11. Place the cartridge on the inlet

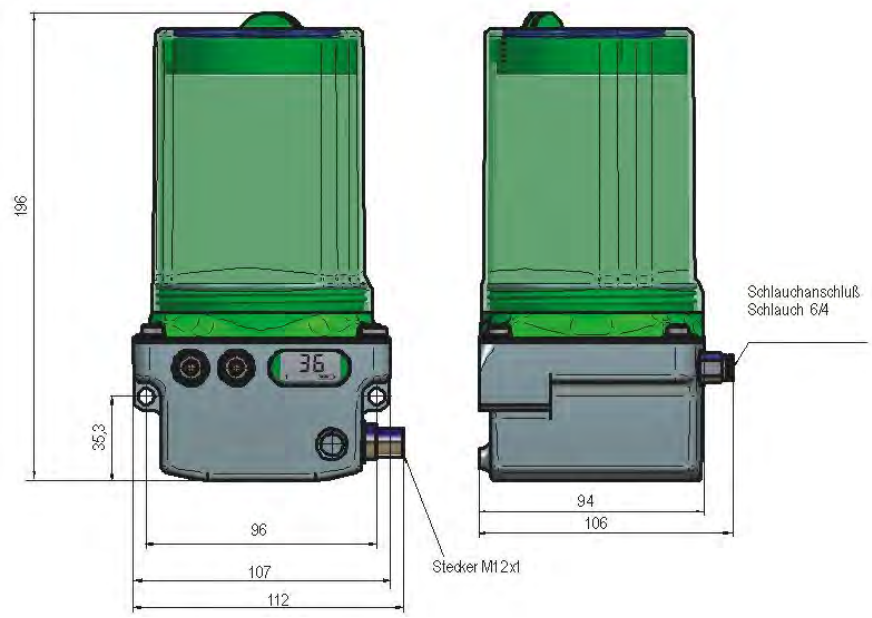


12. Place the pump upright on flat surface

13. Install the ventilation lock and close it
(turn OPEN to CLOSE)

14. The pump is ready to be switched on
Use operation / programming key to switch ON-OFF

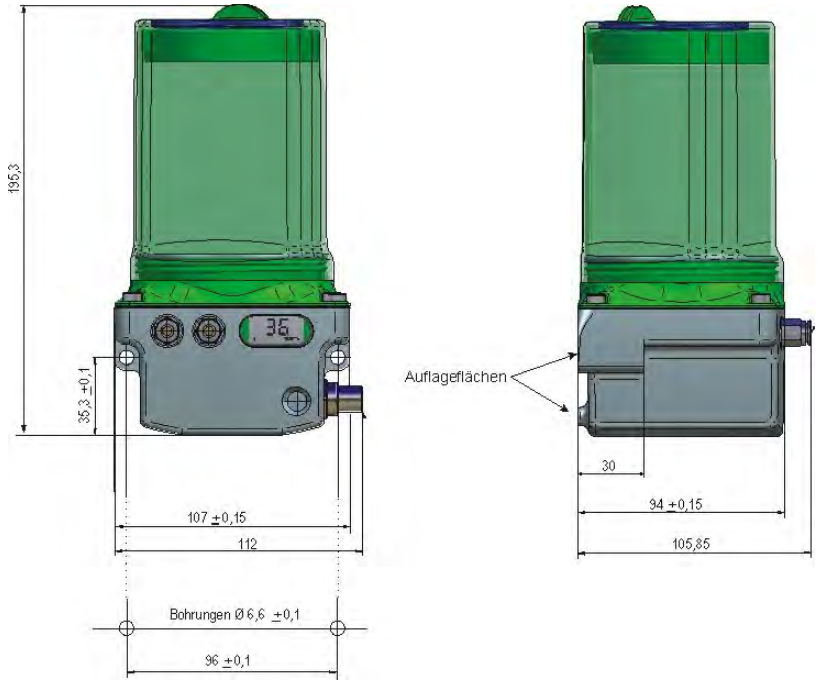
Technical Data



Storage/volume	cartridge 400cm³
Lubricant	oil or grease up to NLGI 3 also containing solid lubricants
Function / principle	piston pump
Delivery rate per interval	0,15 cm³
Delivery rate per period	0,15 to 4,5 cm³
Number of strokes/cartridge	134-140-0xx: 2700 135-240-0xx: 1350 each outlet
Number of outlets	134-140-0xx: 1 outlet 134-240-0xx: 2 outlets
Connection	high pressure tube 6 x 4 (flexible tube with outer diameter Ø 6mm and Ø 4mm inside diameter) maximum pressure up to 150 bar
Operating time/cartridge	1…36 months
Operating pressure	Max. 70 bar
Operating temperature	-20 to +70°C
Dimensions, max.	
Width x height x depth	112 x 196 x 94 mm
Weight, without lubricant	1120g
Integrated Control	microprocessor controlled
Pressure monitoring (monitoring backpressure)	integrated, electronic
Level monitoring	integrated, reed contact
Battery monitoring	integrated, LCD
Connector	M12 x 1, 4-pole
Operating voltage	3 VDC (battery) Only at 135-140-010/135-140-011/135-240-010/135-240-011
Protection class	IP 65 (= suitable for under water operation up to 1 m)
Combination with progressive systems	possible
Accessory	integrated backpressure information, additional lubricant, system control testing

Mounting FlexxPump

2 screws Ø 6mm, for example M6x40 are required for a safe installation of your FlexxPump. The optimum clamping force of the screw is 5 Nm. 3 points at the back assure a safe hold



Recommened tube length

Keep in mind:
- For low temperature
- For stiff grease, more than NLGI 2
- For difficult applications with high backpressure

- ➔ Shorten your tube as much as possible
- ➔ Minimum inner diameter is 4mm Ø
- ➔ Avoid reductions of the inner tube

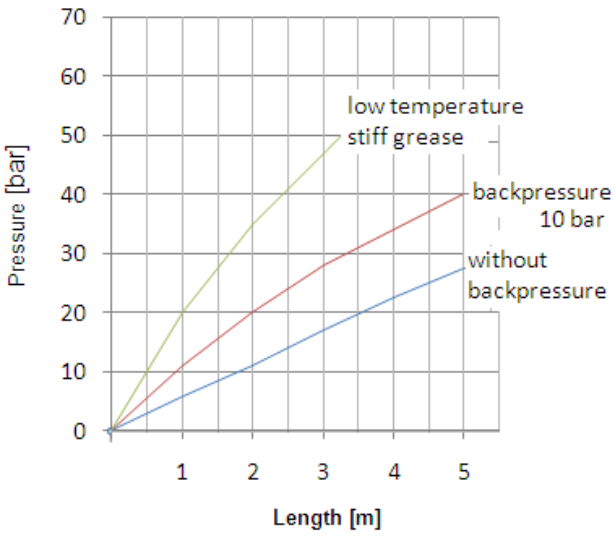
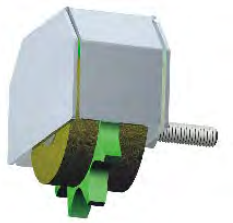


Chart: Required pressure vs. tube length (tested with tubes 6 x 4 mm)

Acessories

Lubrication Pinions material: PU



Lubrication Sprockets

Tube/Hose 6mm outer diameter, 4mm inner diameter, Material PA12 hard, pressure resistance 70bar, black, minimal bending radius 30mm

Tube/hose connectors, quick connector for tube/hose OD 6mm, different thread sizes

Adapter for lubrication points

4-pol cable with M12x1 plug

Tube can be delivered pre filled with grease! This ensures lubricant supply from the very beginning and a save and easy installation of the tube/hose

Disposal

Remark !

When disposing lubricant the waste disposal instructions of the lubricant manufacturer must be observed!
Disposal of the FlexxPump: observe the regional valid laws and regulations.

technical datasheet

FlexxPump 400 DLS – Direct Lubrication Systems

A new generation of grease or oil relubrication

Overview:

1. general information of FlexxPump 400 DLS:

FlexxPump 400 DLS is an extraordinary compact lubrication pump for oil (types 500) or grease (types 400) up to NLGI. 3, also containing solid lubricants. The FlexxPump 400 DLS requires 24V DC external supply. The lubricant reservoir is for the greasetypes 400 ccm (bellow cartridge/pouch); for the oil-types it's 500ml (directly filled in).
FlexxPump 400/500 DLS is available with up to 4 outlets and is therefore the best solution for application with limited lubrication points (up to 16) by using splitters.
Typical applications are the lubrication of **bearings**, **linear guides**, **ball screw**, **chains and open gearings or racks**. Grease or oil is distributed by our special lubrication pinions (grease or oil) or lubrication chain wheels (oil). A **combination** of different application is possibel by using only one FlexxPump 400/500 DLS.
All types of FlexxPump 400/500 DLS are directly pulse-controlled by PLC and may give a detailed error-signal to PLC back. Therfore FlexxPump 400/500 DLS is the **best solution** for OEM's or for retrofitting machienes. FlexxPump 400/500 DLS is an german innovation and solid qualitiy "made in Germany".

scale drawing FlexxPump 400 DLS:

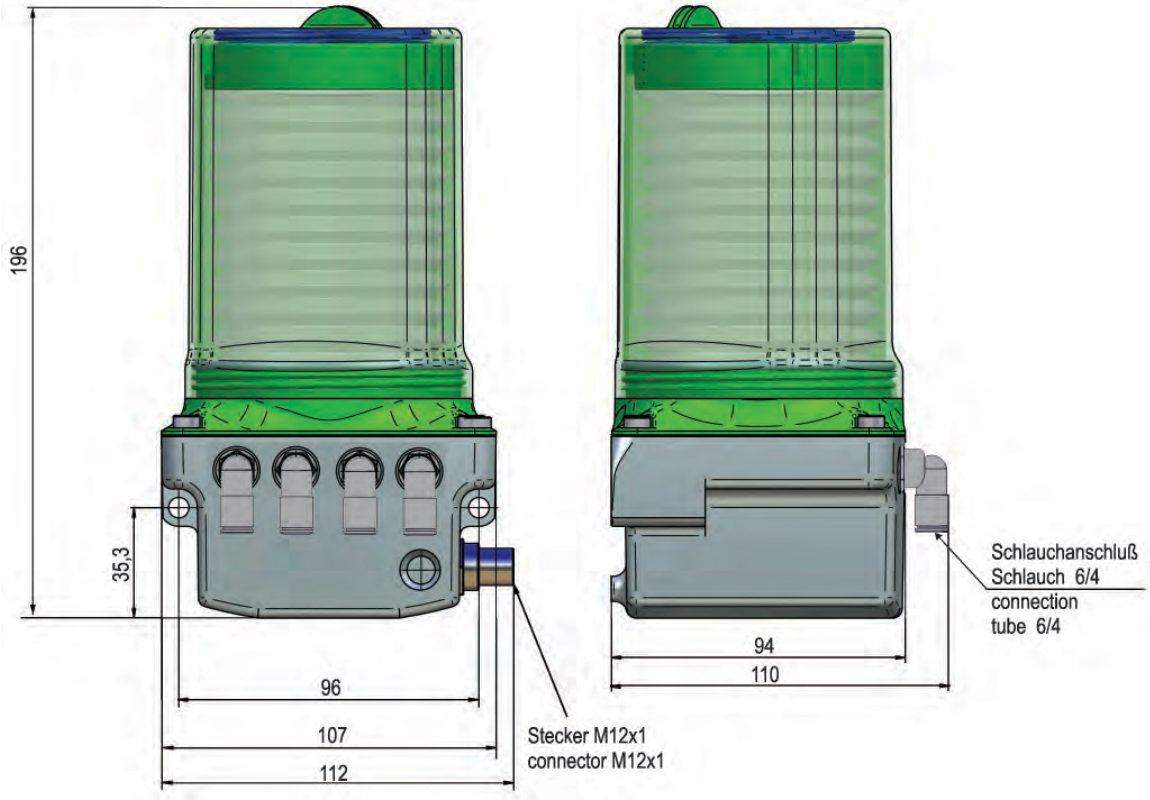


Abb. 1: Dimensions FlexxPump 400 DLS, pulse-controlled; up to 4 outlets

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technical datasheet

FlexxPump 400 DLS – Direct Lubrication Systems

A new generation of grease or oil relubrication

2. technical data of FlexxPump 400 DLS:

Dimensions, max.:	width x height x depth: 112mm x 196mm x 94mm
Weight, without lubricant:	1120g
Storage/volume:	400 ccm grease in a cartridge (types: 400) ; 500 ml oil (types: 500)
Lubricant:	oil or grease up to NLGI. 3 (also containing solid lubricants)
Function/principle:	piston pump
Delivery rate per pulse:	0.15 ccm
Number of outlets:	up to 4; right-angled and pivotable
Operating voltage:	24V DC
Operating current:	I_{max} ~ 350 mA; typical: 200 mA
Fuse:	500 mA (characteristic: delay)
Lube-connection:	high pressure tube 6x4 (flexible tube with diameter 6mm outside; 4mm inside)
Operating pressure:	max. 70 bar (1000 psi)
Operating temperature:	-25°C ... +70°C (-13F ... +160F)
Combination:	possible with progressive systems
Pressure monitoring:	integrated, electronic (monitoring backpressure)
Level monitoring:	integrated, reed-contact
electrical connection:	M 12x1; 4-pole
Protection class:	IP 65 (= suitable for underwater operation up to 1m)

3. possibel configuration:

- up 2 outlets with types: 403/404/422 (grease) respr. 503/505/544 (oil): different times/quantities of lubricant (cfr. 5)

On request:

- quantitiy of lubricant per pulse-signal (depends on the need of lubrication-point)
- ready-to-install: venting and pre-filled with grease (for short and quick mounting-times)

4. details of electrical connection

4.1 Detail: Connector M 12x1

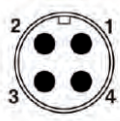
The connection from FlexxPump 400 DLS with PLC is with a male connector 4-pole M 12x1. By this electrical connection is all communication between PLC an FlexxPump 400 DLS managed including input-/output-voltage.
input voltage +20...+30 VDC at PIN 1: FlexxPump 400 DLS is ready for operation
FlexxPump DLS hasn't got an error: the input voltage is given out at PIN 4 (high); in case of an error, the voltage at PIN 4 is 0 V (low) . If the bellow/oil is empty: a 0.5 Hz pulse-signal between high and low is given out.

technical datasheet

FlexxPump 400 DLS – Direct Lubrication Systems

A new generation of grease or oil relubrication

4.2 detail: configuration connector M 12x1



PIN 1: input voltage +20 ... 30 VDC; colour: brown
PIN 2: pulse-signals for activation (cfr.: 6. + 7.); colour: white
PIN 3: GND; colour: blue
PIN 4: output voltage; colour: black

4.3 detail: current drain / error indication

- I_{max}: ca. 350 mA (start-up peak); typical: < 200 mA; stand-by: < 20 mA
- recommended: 500 mA (characteristic: delay)
- output-signals (PIN 4):
  - high (+20 ... 30 VDC) = O.K.
  - low (0 V) = error (over-current/internal error)
  - pulse-signal 0.5 Hz between high and low: bellow empty
  - max. output current: 300 mA; **Remark!** PIN 4 has not any short-circuit proof!

5. different quantities of lubricant:

- Qunatitiy of lubricant grease or oil is per puls/piston stroke at all types of FlexxPump 400/500 DLS: **0.15 ccm**.
  => 400 ccm grease <=> ~ 2,700 piston strokes / 500 ml oil <=> 3,300 piston strockes
- FlexxPump 402 DLS (502 (oil)) (2 outlets) spends eaqual qunatities at both outlets.
- For different quantities of lubricant at the ourlets, we approve:
  - FlexxPump 403 DLS (503 oil): combination of 2 eaqual and 1 different quantities of lubricant is possibel;
  - FlexxPump 402/422 DLS (504/522 oil): combination of 2 self-contained quantities of lubricant

6. number of outlets:

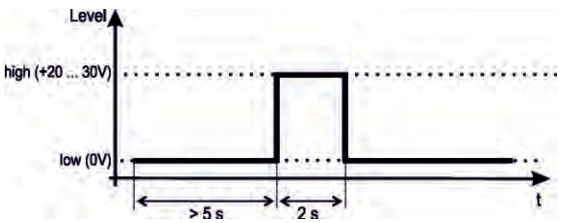
typs / outlets:

Typ 401/501: 1.1
Typ 402/502: 1.1; 1.2
Typ 403/503: 1.1; 1.2; 2.1
Typ 422/522: 1.1; 2.1
Typ 404/504: 1.1; 1.2; 2.1; 2.2

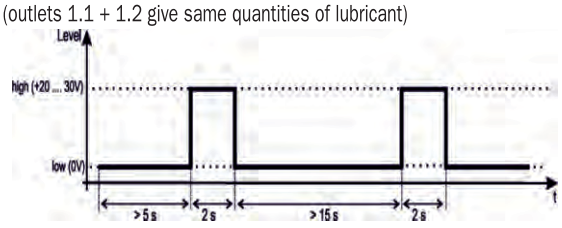
7. pulse-signals for activation outlets:

Activation of the outlets is pulse-controlled by PLC
Mind the electrical configuration! (cfr.: 4.2; 4.3)

activation 1.1



activation 1.1 + 1.2
(outlets 1.1 + 1.2 give same quantities of lubricant)



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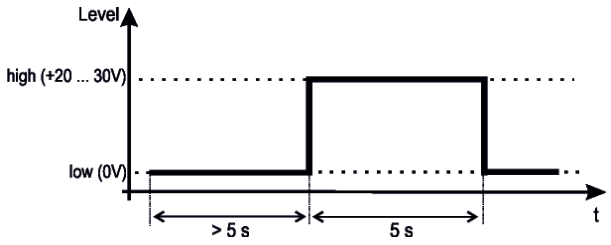
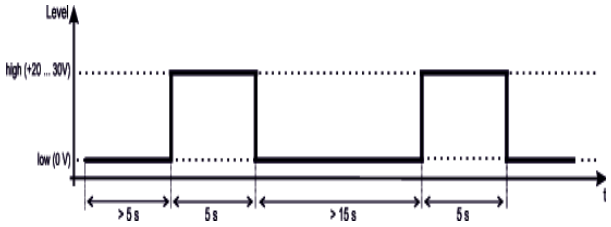
activation 2.1



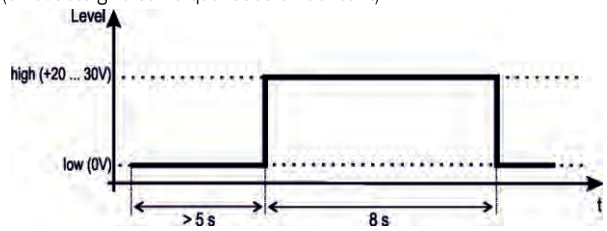
activation 2.1 + 2.2

(outlets 2.1 + 2.2 give same quantities of lubricant)



activation 1.1 + 1.2 + 2.1 + 2.2

(all outlets give same quantities of lubricant)



Remarks:

- all pulse-times in seconds (s)
- accuracy: +10%
- **Remark!** Interruption between pulse-signals: > 15 s
- initial service: 12s high => 20 strockes per pump-body

8. general map of DLS-Pumps (grease- and oil-types):

Typ	Order-No.	outlet(s)	Pump-body	grease / oil	Machine-controll (PLC / 24 V)	description
401	135-140-210	1	1	grease	✓	FlexxPump 401 DLS; pulse-controlled
402	135-240-210	2	1	grease	✓	FlexxPump 402 DLS; pulse-controlled
422	135-240-212	2	2	grease	✓	FlexxPump 422 DLS; pulse-controlled
403	135-340-210	3	2	grease	✓	FlexxPump 403 DLS; pulse-controlled
404	135-440-210	4	2	grease	✓	FlexxPump 404 DLS; pulse-controlled
501	135-150-210	1	1	oil	✓	FlexxPump 501 DLS; pulse-controlled
502	135-250-210	2	1	oil	✓	FlexxPump 502 DLS; pulse-controlled
522	135-250-212	2	2	oil	✓	FlexxPump 522 DLS; pulse-controlled
503	135-350-210	3	2	oil	✓	FlexxPump 503 DLS; pulse-controlled
504	135-450-210	4	2	oil	✓	FlexxPump 504 DLS; pulse-controlled

Other specification: on request!

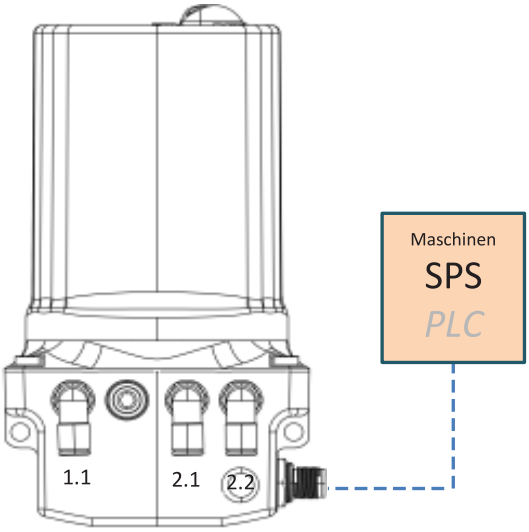
We offer our large range of products for lubrication-points:
PU-Lubrication-Pinions (gear-racks/chains) in all sizes and configurations; accecories (fittings, etc.) for lubrication-systems.
All standard-sizes are available on stock!

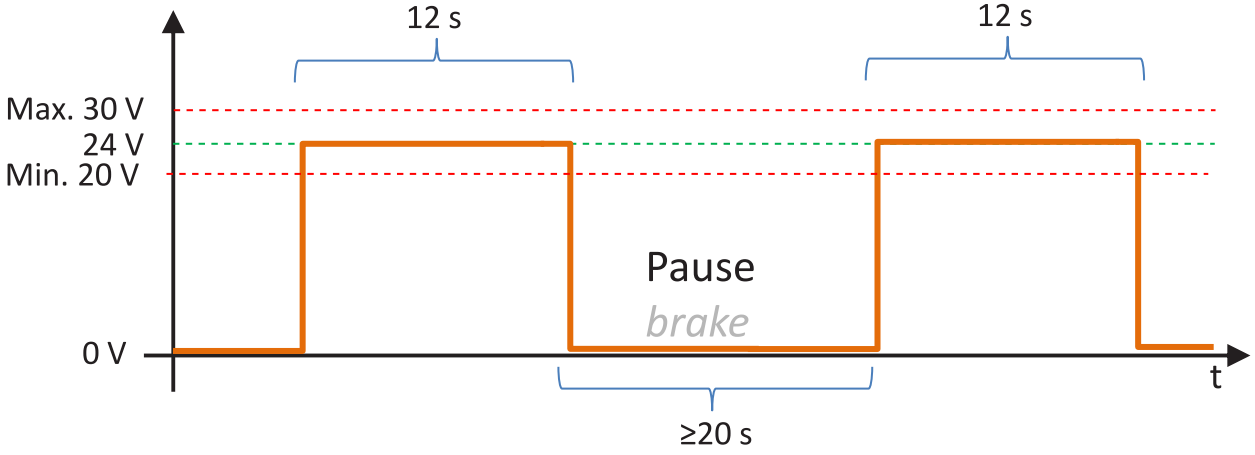
site : www.1OBC.com
Email : Borhan772000@yahoo.com

Schritt 1:

Venting the pump

403 DLS
135-340-210





To vent the pump you have to send the 12s high signal to the pump. This operation you have to do twice.

The pump execute 20 strokes immediately one after the other.

You have to repeat this operation once, because the pump need 34 strokes to be vented.

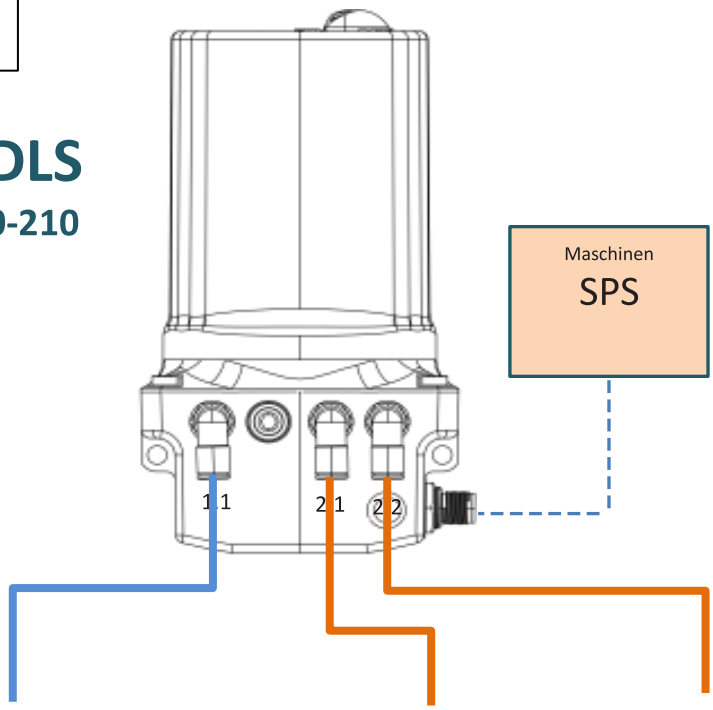
Each outlet have to show significant grease

Schritt 2:

Connect the prefilled tubes

403 DLS

135-340-210



Make sure to cut the tube right-angled.

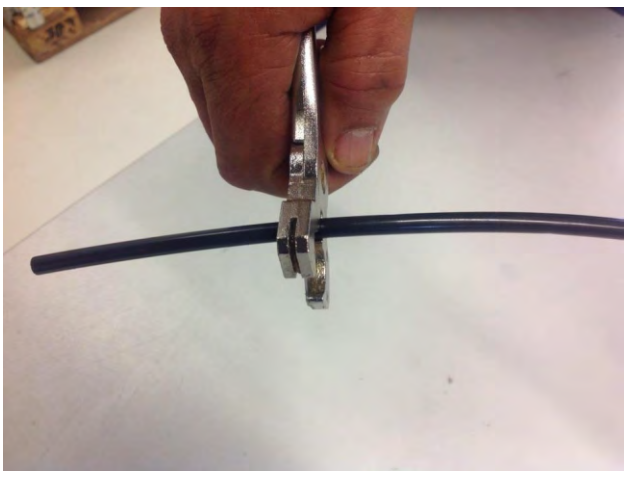
Please use only the special tube cutter!

Don´t use a knife or side cutter!

Push the tube up to the stop into the connector.

Use only tube cutter

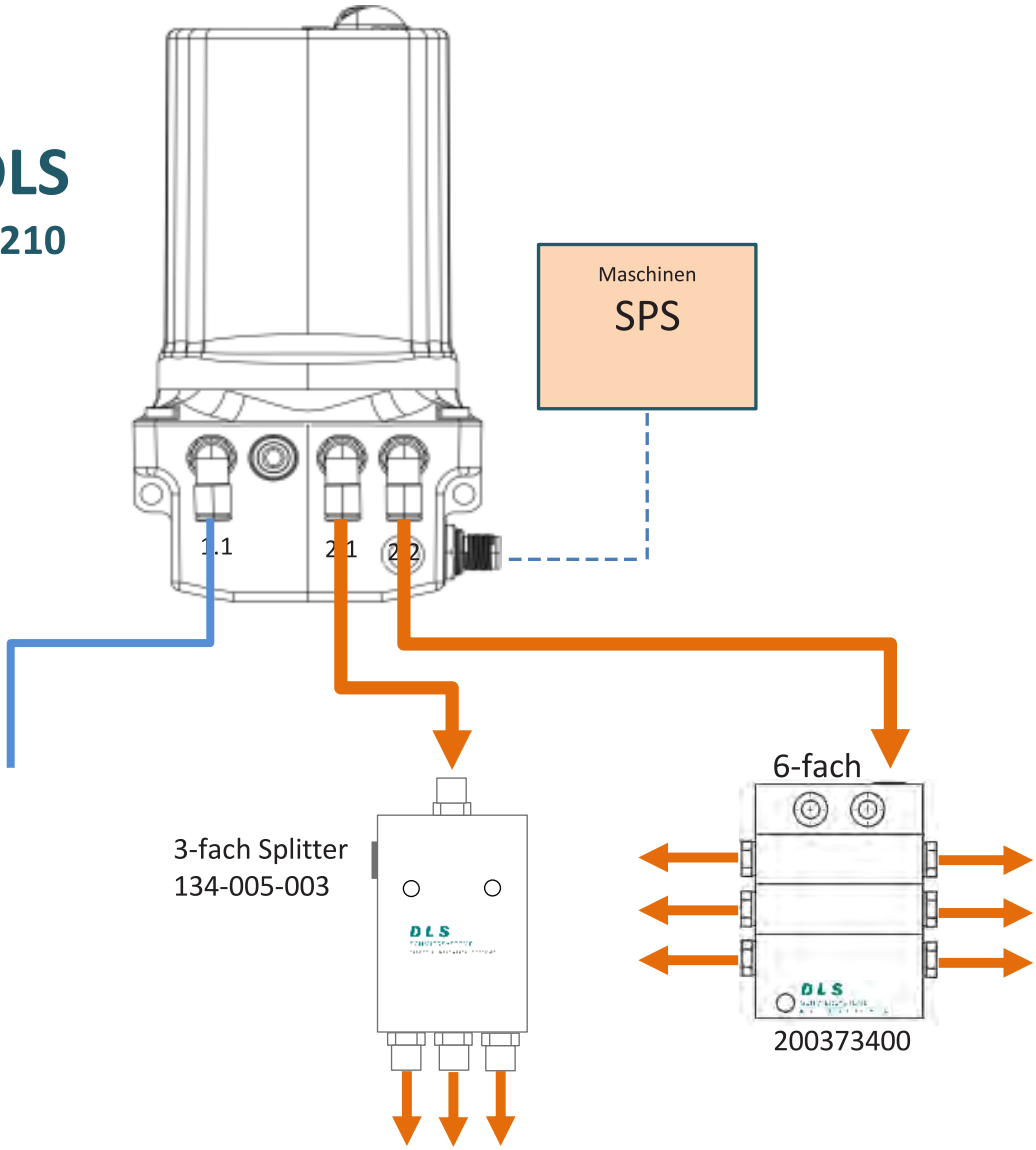
never use side cutter or a knife!



Schritt 3:

to vent the distributor

403 DLS
135-340-210



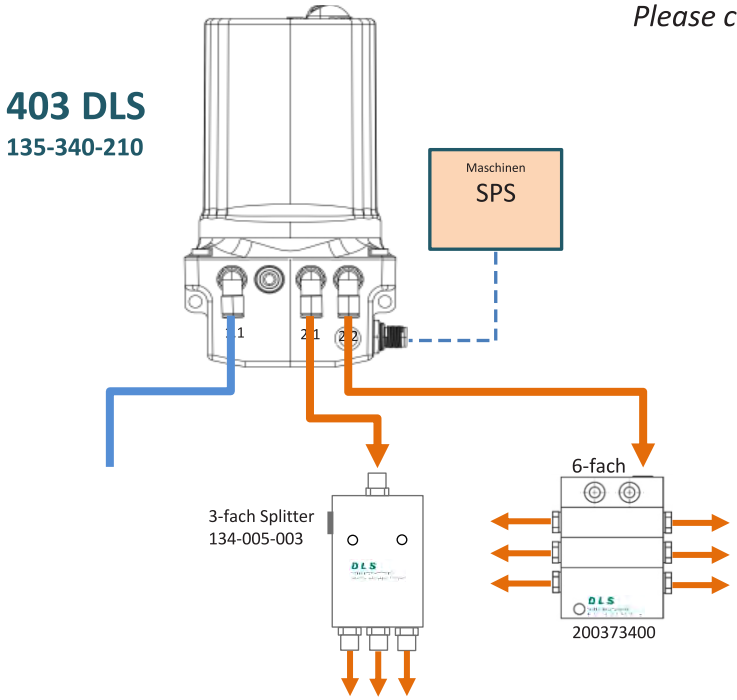
In the shown example you have to trigger the pump body 2, with the out lets 2.1 and 2.2 as long as the grease comes out of the outlets.

All distributors are normally not vented !

Schritt 4:

Lubrication of linear guidance

Please consider, linear guidance are only base greased!



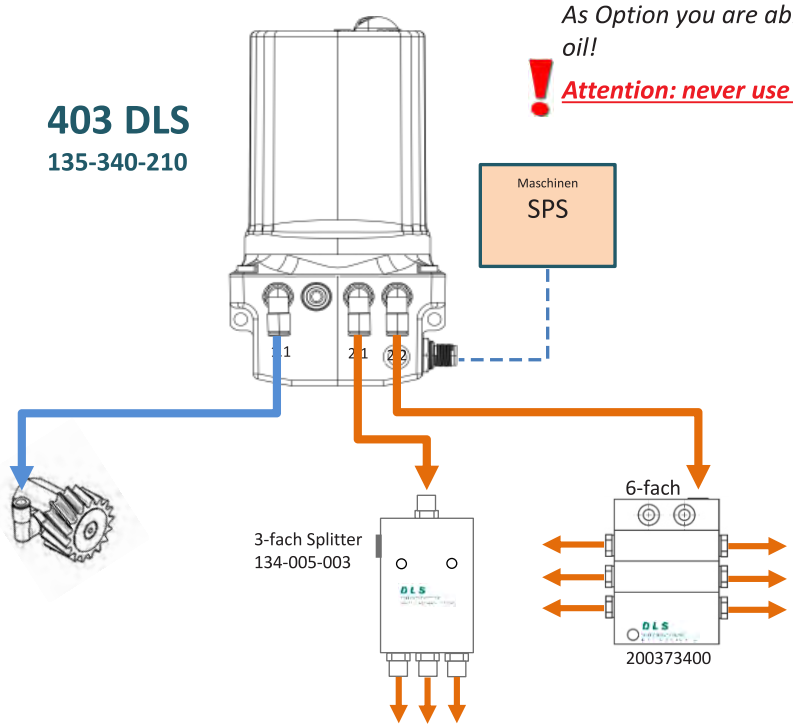
Schritt 5:

plug in the gearwheel

Please consider, DLS lubrication gearwheels are not greased or oiled!

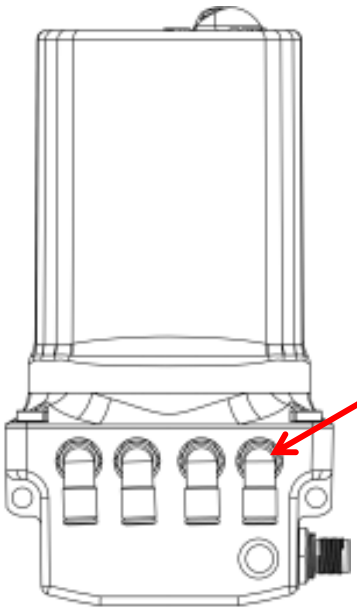
As Option you are able to order the lubrication gearwheels prefilled with oil!

Attention: never use the dry lubrication gearwheel



Futher indications how to use and mount the DLS lubrication system.

Never open the pump! The assembly is not possible without special tools! The warranty is void!



Never dismount out lets!

The pumps has to configured in advance!

If out lets has been dismounted the warranty is void!

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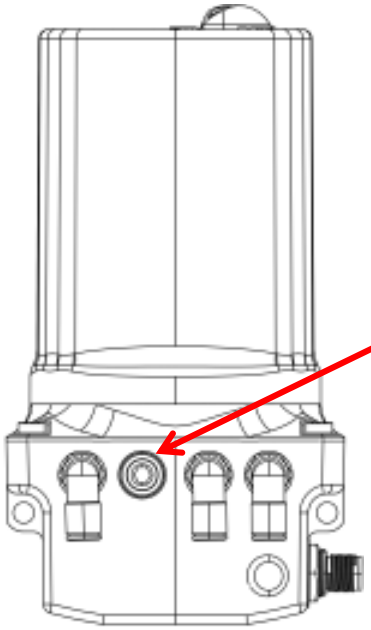
فکس : (021) 33985603



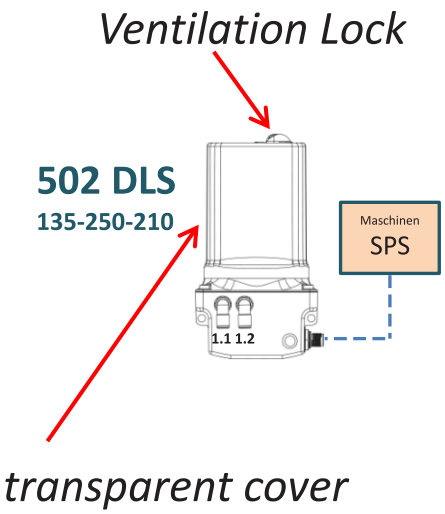
Never add outlets!

The pumps has to configured in advance!

If you add out lets the warranty is void!

site : www.1OBC.com
Email : Borhan772000@yahoo.com

Schritt 1:

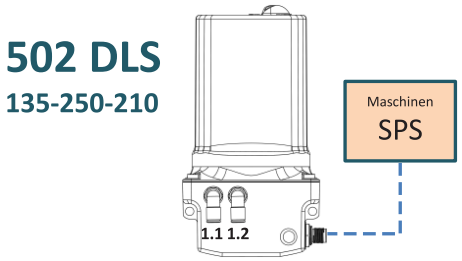


The oil has to be filled via the hole in the cover!

Never remove the transparent cover!
The waranty is void!

Schritt 2:

Venting the pump without tubes

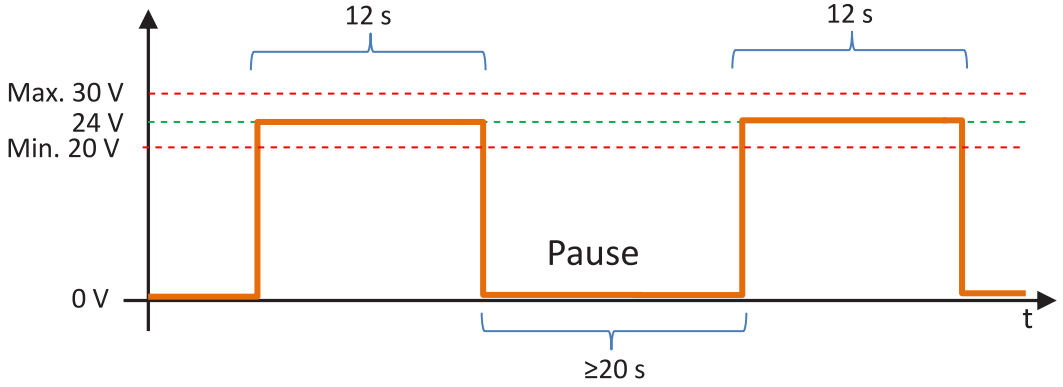


To vent the pump you have to send the 12s high signal to the pump.
This operation you have to do twice.

The pump execute 20 strokes immediately one after the other.

You have to repeat this operation once,
because the pump need 34 strokes to be vented.

Each outlet has to show significant grease



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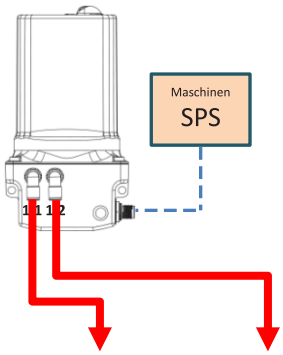
Schritt 3:

Connect the prefilled tubes

502 DLS
135-250-210



Make sure to cut the tube right-angled.

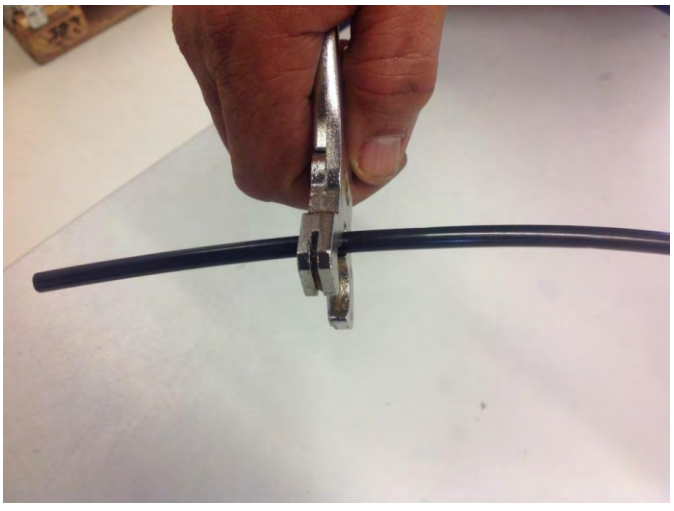
Please use only the special tube cutter!

Don´t use a knife or side cutter!

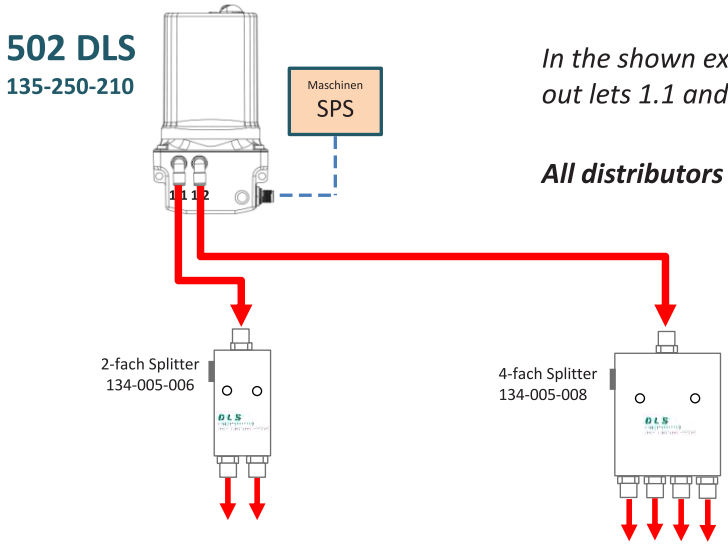
Push the tube up to the stop into the connector.

Use only tube cutter

never use side cutter or a knife!



Schritt 4:

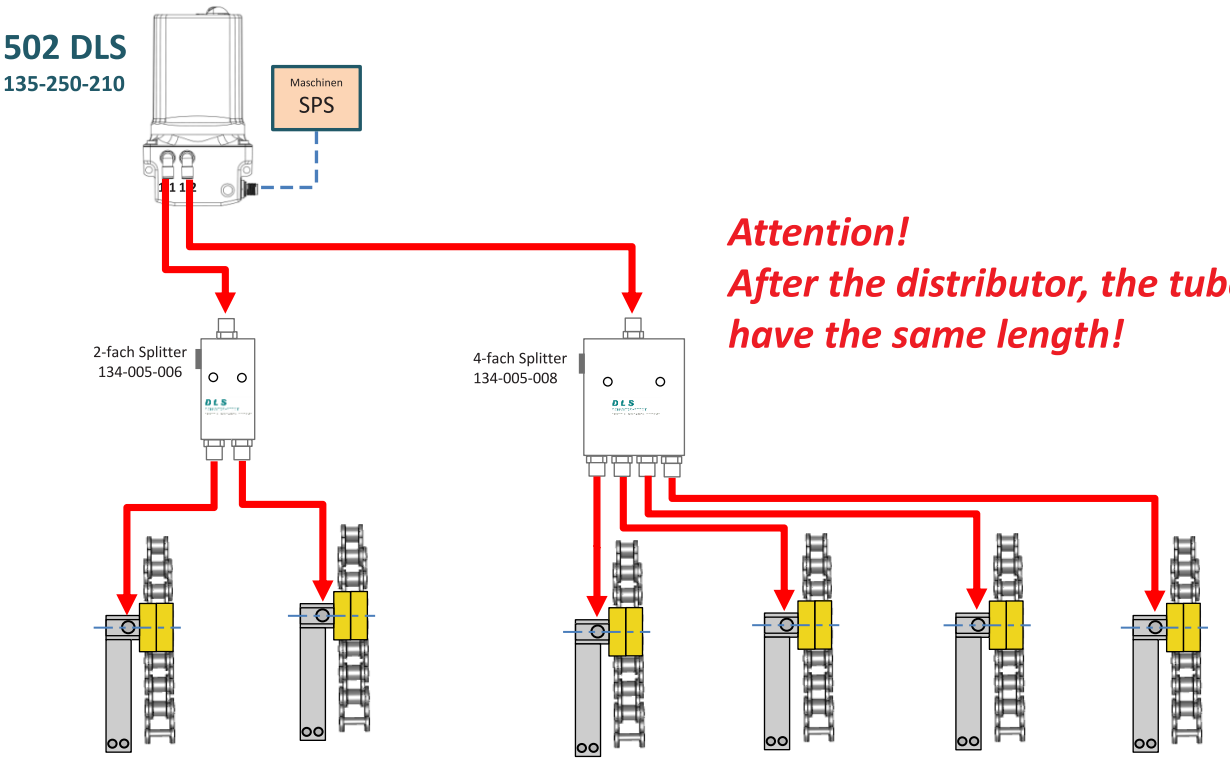


In the shown example you have to trigger the pump body 1, with the out lets 1.1 and 1.2 as long as the oil comes out of the outlets.

All distributors are normally not vented !

Schritt 5:

Connect the prefilled tubes



Attention!
After the distributor, the tubes allways have the same length!

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Futher indications how to use and mount the DLS lubrication system

Never open the pump! The assembly is not possible without special tools! The warranty is void!

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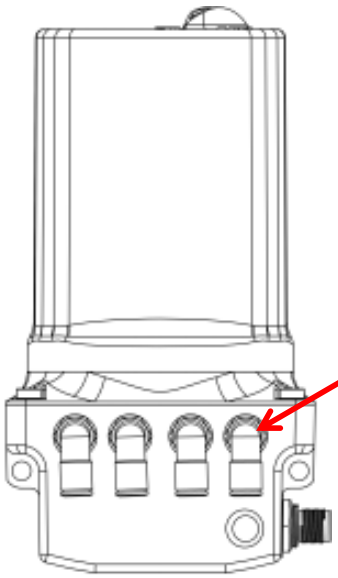
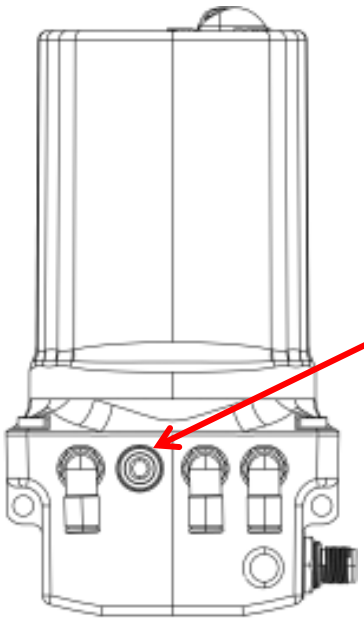


Never dismount out lets!

The pumps has to configured in advance!

If out lets has been dismounted the warranty is void!



Never add outlets!

The pumps has to configured in advance!

If you add out lets the warranty is void!

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