Lubrication System QLS 421 for Trailers and Semitrailers

B-Q42 1-000 a09

Subject to modificaitons

810-55405-1

This User Manual was provided by order of the

- Manufacturer	- by the
Lincoln GmbH	EdiDoc GmbH
Heinrich-Hertz-Str. 2-8	Erzberger Str. 8
D-69169 Walldorf	**D-68753 Waghäusel**

Phone: +49 (6227) 33-0
Fax: +49 (6227) 33-259
E-Mail: Lincoln@lincolnindustrial.de

Table of Content

Subject to modificaitons

Introduction

Explanation of Symbols Used

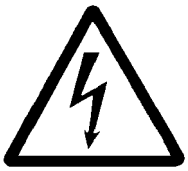
The following description standards are used in this manual:

Safety Instructions

Structure of safety instructions:

- Pictogram
- Signal word
- Danger text
  - Danger note
  - How to avoid danger

The following pictograms are used in this manual and are combined with the corresponding signal words:

 1013A94	 4273a00	 6001a02
- ATTENTION	**- ATTENTION**	**- NOTE**
- CAUTION	**- CAUTION**	**- IMPORTANT**
- WARNING	**- WARNING**	

The signal words give the seriousness of danger if the following text is not observed:

ATTENTION	refers to faults or damages on machines.
CAUTION	refers to bad damages and possible injuries.
WARNING	refers to possible dangerous injuries.
NOTE	indicates improved operation of the device.
IMPORTANT	indicates special operating features of the device.

Example:


1013A94

ATTENTION!

When making use of other than the tested spare parts, serious damage may affect your device.

Therefore, for the operation of your device always use original parts made by Lincoln GmbH.

Furthermore, you will find the following text symbols in this manual:

- Listing of applicable statements
  - Subpoint of applicable statements

1. Determination of the number or sequence of contents

➲ Procedural instruction

User's Responsibility

To ensure the safe operation of the unit, the user is responsible for the following:

1. The pump / system shall be operated only for the intended use (see next chapter "Safety Instructions") and its design shall neither be modified nor transformed.
2. The pump / system shall be operated only if it is in a proper functioning condition and if it is operated in accordance with the maintenance requirements.
3. The operating personnel must be familiar with this Owner Manual and the safety instructions mentioned within and observe these carefully.

The correct installation and connection of tubes and hoses, if not specified by Lincoln GmbH, is the user's responsibility. Lincoln GmbH will gladly assist you with any questions pertaining to the installation.

Environmental Protection

Waste (e.g. used oil, detergents, lubricants) must be disposed of in accordance with relevant environmental regulations.

Service

The personnel responsible for the handling of the pump / system must be suitably qualified. If required, Lincoln GmbH offers you full service in the form of advice, on-site installation assistance, training, etc. We will be pleased to inform you about our possibilities to support you purposefully.
In the event of inquiries pertaining to maintenance, repairs and spare parts, we require model specific data to enable us to clearly identify the components of your pump / system. Therefore, always indicate the part, model and series number of your pump / system.

Safety Instructions

Appropriate Use

The lubrication system QLS 421 has been designed for initial and retrofit installation. It has been designed for the automatic lubrication of commercial vehicles and construction machines.
The lubrication system QLS 421 is able to deliver greases up to NLGI - class 2 or fluid greases of NLGI - class 000 or 00.

- Use the QLS 421 exclusively to supply lubricants.
- The QLS 421 is adequate for intermittent operation only.
- The QLS 421 is adequate for feeding max. 18 lube points per lubricating cycle.

Misuse

Any use of the QLS 421 that is not expressly mentioned in this User Manual will be regarded as misuse.
If the QLS 421 is used or operated in a different manner other than specified, any claim for warranty or liability will be null and void.

6001a02

NOTE

If personal injury or material damage occurs as a result of inappropriate operation, e.g. if the safety instructions are ignored or resulting from an incorrect installation of the QLS 421, no claims or legal actions may be taken against Lincoln GmbH.

Exclusion of Liability

The manufacturer of the centralized lubrication system QLS 421 will not accept any liability for damage:

- Caused by insufficient lubricant
  - due to irregular filling of the reservoir
  - due to wrong programming of the internal or external controller
  - due to wrong planning and layout of the downstream lubricant distribution.
- caused by the use of contaminated lubricants.
- due to the use of lubricants which are not or are only conditionally pumpable in centralized lubrication systems.
- caused by connection to a wrong supply power.
- caused by an environmentally inadequate disposal of used or contaminated lubricants or parts that were in touch with lubricants.
- caused by unauthorized modification of system components.
- caused by the use of unapproved parts (voids the pump warranty).

Regulations for Prevention of Accidents

- To prevent accidents, observe all city, state and federal safety regulation of the country in which the product will be used.

Avoid the operation with
- unapproved parts.
- insufficient or contaminated lubricants.

General Safety Instructions

- Lubrication systems QLS 421
  - are designed state-of-the-art.
  - can be assembled for safe operation.
  - must be filled regularly without air inclusions with clean lubricant recommended by the manufacturer (see “List of Lubricants” 2.0-40001).
- Incorrect use may result in bearing damage caused by poor or excessive lubrication.
- Do not overpressurize reservoir when filling the pump. Refill QLS 421 pump with clean lubricant.
- Each outlet needed must be equipped with an appropriate check valve.

6001a02

IMPORTANT

Do not paint the pump!

Before painting a machine or commercial vehicle, remove or cover the pump completely.

- Any modifications must be subject to prior consultation with the manufacturer of the QLS 421.

Operation, Repair and Maintenance

1013A94

ATTENTION!

Malfunction because of dirt!

When executing any maintenance or repair works on the QLS 421, ensure absolute cleanliness.

4273a00

WARNING!

Before maintenance or repair of pumps switch off their power supply.

1013A94

ATTENTION!

*After the fault message *** EE *** the following programming may result in **poor lubrication**:*
- Pause time (P1 & P2) …….. < 6 hours
- Number of lube times (P3) ….. > 1 / cycle

1013A94

CAUTION!

It is not allowed to use the pump in potentially explosive fields.

Safety Instructions, continuation

Operation/Maintenance

Lincoln Quicklub centralized lubrication systems

- must be operated only with installed pressure relief valve.
- must be operated with attached or connected SSV metering device make Lincoln GmbH.
- must be refilled in regular intervals with clean and recommended [1] lubricant without air entrapments.

[1] see recommendation of the user or the manufacturer of the vehicle

- operate automatically. However, a regular check (approx. every 2 days) should be made to ensure that lubricant is emerging from all lubrication points.

Repair

Repairs should only be performed by authorized personnel who are familiar with the repair instructions.

Operation with bayonet plug

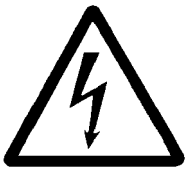
Protective measures to be applied for appropriate operation with bayonet plugs:
"Functional extra-low voltage with safe isolation" /
"Protective Extra-Low Voltage" (PELV)
Standards:
DIN EN 60204 Teil1: 2007-07 / IEC 204-1 /
DIN VDE 0100 Teil 410: 2007-06 / IEC 364-4-41

Disposal

Dispose of used or contaminated lubricants as well as of parts that were in touch with lubricant according to the legal regulations pertaining to environmental protection. Make sure to observe the safety data sheets of the lubricants used.

Installation

- Any safety equipment already fitted to the vehicle:
  - should not be modified or made ineffective;
  - should only be removed for the purpose of fitting the system;
  - must be reinstalled after fitting the system.
- Keep Quicklub centralized lubrication systems away from sources of heat. Adhere to the operating temperature.
- Use only original Lincoln spare parts (see Parts Catalog) or parts approved by Lincoln.
- Adhere to:
  - the installation instructions of the vehicle manufacturer as regards all drilling and welding procedures.
  - the specified minimum distances between the boreholes and the upper/lower rim of the frame or between two boreholes.



4273a00

ATTENTION!

Consider residual ripple of max. ±5 % to connect pumps with direct current version (in relation to the operating voltage acc. to DIN 41755).

ADR

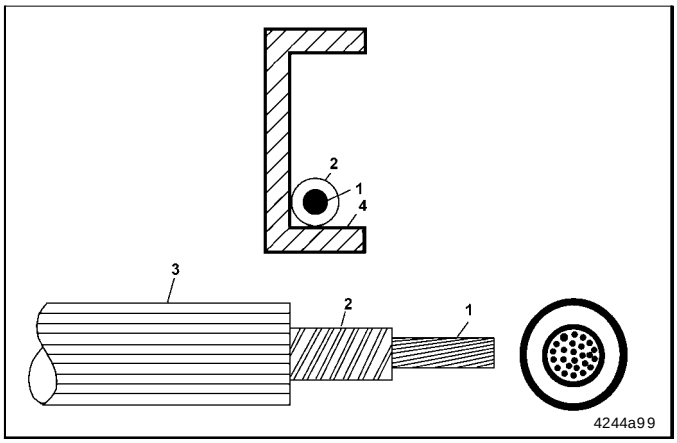
1. The ADR Quicklub central lubrication pump complies with the design regulations of annex B of the ADR[1] and with the GGVS [2].

   [1] ADR = act governing the road haulage of hazardous materials valid for Europe.
   [2] GGVS - Regulation on carriage of dangerous goods by road (valid for the Federal Republic of Germany)

2. Moreover, the pump and its electrical equipment comply with the regulations of annex B.2 (ADR / GGVS regulations for electrical equipment) according to Rn 220000 in conjunction with the transport units mentioned in Rn 10251.
3. The ADR central lubrication pump is in conformity with the protection class IP6K9K.
4. Install the ADR Quicklub centralized lubrication pump, the metering devices, lines and tube fittings as well as the electrical connection parts in accordance with the Installation Instructions. Use only original Lincoln parts.
5. After completion of the proper installation and commissioning, **the installation of the system must be certified by means of a stamp and signature of the specialized workshop or expert**. For this purpose, use the following form.
6. If the pump and the installation do not comply with the construction regulations of ADR and GGVS, the type approval is no longer valid.
7. The Operating Instructions along with the certificate duly filled in must be added to the vehicle papers. It is to be submitted at the inspection in accordance with § 6, clause 4 GGVS.

ADR Installation

Specifications for the installation of electric equipment in ADR vehicles



ADR-1 Measures of protection for electric lines

1 -	Conductor insulation	3 -	Frame
2 -	Conductor	4 -	Coating

Lines

- must be fixed by means of clamps or strips to prevent them from rubbing, sagging or getting loose,
- must be protected from shocks, stone impact and heat,
- other than in a fixed installation, must be sufficiently flexible in spite of their covering.

- The electric circuits can optionally be interrupted by single- or double-pole disconnecting switches.
- In case of single-pole disconnecting switches, the negative conductor must be able to be interrupted.

To avoid short-circuits, please note the following:

- current return lines must be insulated
- they must be connected to the vehicle frame (MASS 31) below the driver's cab (up to the back wall).
- housings and connectors must be of protection class IP 54 according to DIN 40050
- coating (pos. 3) of tube lines must be of polyurethane according to DIN VDE 0250 (only use original Lincoln ADR tubes).

Certificate for QLS 421-……-ADR

Berlin, August 06th, 2007 (QLS 421)
Report: 047-01
Component designation: TÜ.EGG.047-01

For presentation at the inspection performed according to ADR chapters 9.2.2, 9.3.7 and 9.7.8 (status 15th modification); VdTÜV-explanatory leaflet 5205; ISO 6722-4; ISO/DIS 14572; EN 40050 and EN 60079-14 by an officially authorized expert of automotive traffic.

This is to certify that the **QLS 421-ADR Centralized Lubrication Pump** has been properly installed by us in the following vehicle:

Type .....

Manufacturer .....

Model .....

Vehicle Ident. No. .....

in accordance with the works installation instructions using original parts of the manufacturer.

The original parts of **Lincoln GmbH**
Heinrich-Hertz-Str. 2-8
include: **D-69190 Walldorf**

a) Centralized lubrication pump with integrated control unit, model QLS 421-……-ADR
Component designation: TÜ.EGG.047-01
b) Add-on lubricant metering device and lubricant lines
c) Electric lines for the centralized lubrication pump in accordance with the regulations of chapter 9.2.2 of the ADR

Furthermore, this is to certify that the system has been properly installed in consideration of the construction regulations of ADR.

……., date ……
(Signature and stamp of workshop that has installed the system)

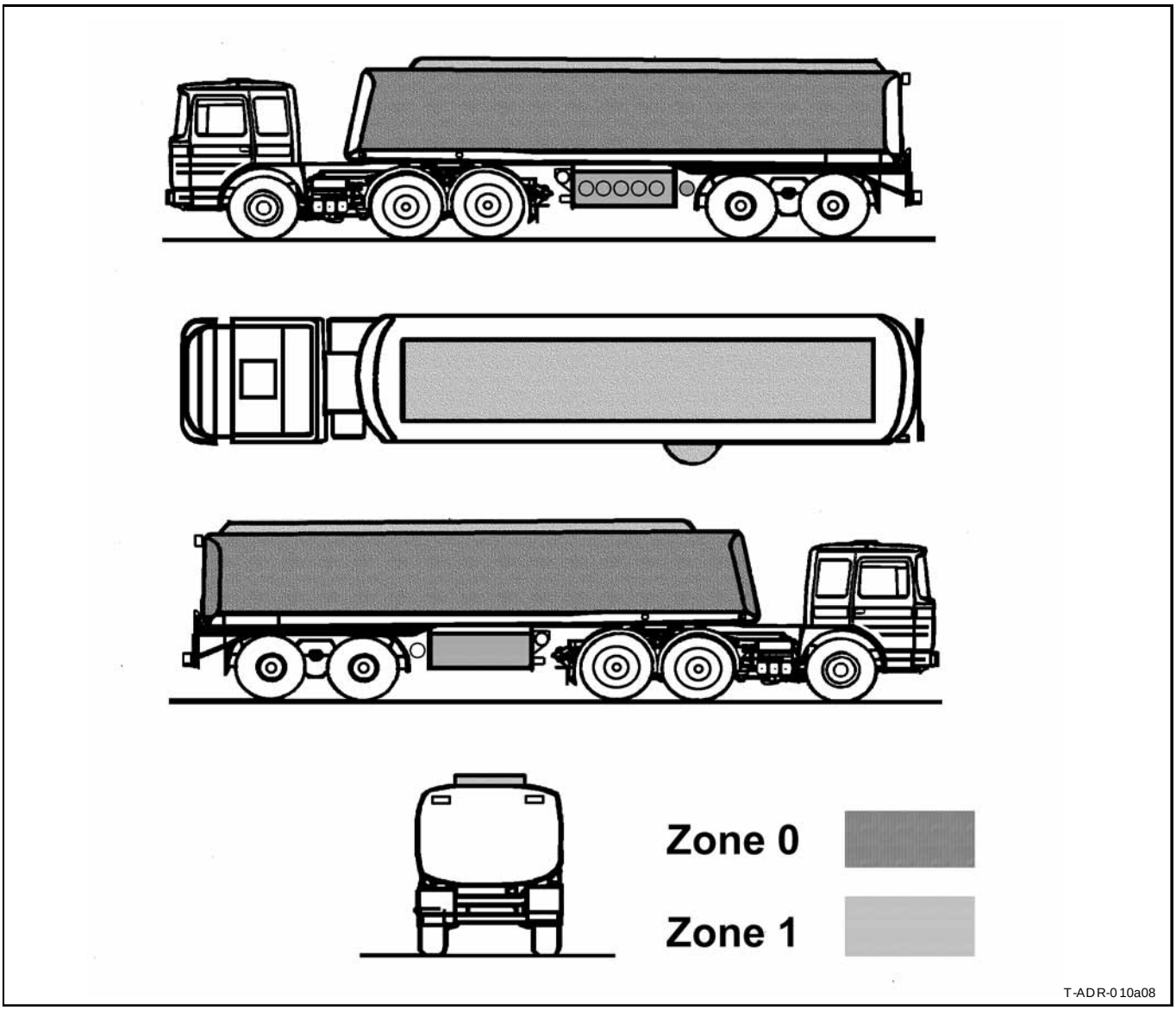
Subject to modificaitons

ADR Installation, continuation

Mounting of the Pump – Areas of Risk

- According to paragraph 9.7.8 of the ADR directive, vehicles with hazardous goods type FL are divided into zones, according to the EX prescriptions.
- These are the correspondences:
  - tank inside **zone 0**,
  - fitting cabinet **zone 1**
  - shut-off devices **zone 1**
  - venting devices **zone 1**
- Zone 2 is located around zones 0 and 1.
- The installation of the centralized lubrication system **is allowed outside of zones 0, 1 and 2, only,** whereby the extension is not determined in the ADR directive.

➲ Regarding this use the form to confirm the ADR-concurring installation.



ADR-2 Areas of risk

Installation Instructions

Pump

Mount pumps in such way that access is provided to refill and test the pump. Use drilling template to mark and drill mounting holes of the pump. Drilling template and mounting bolts are included in the package.

Pumps with mounted metering device

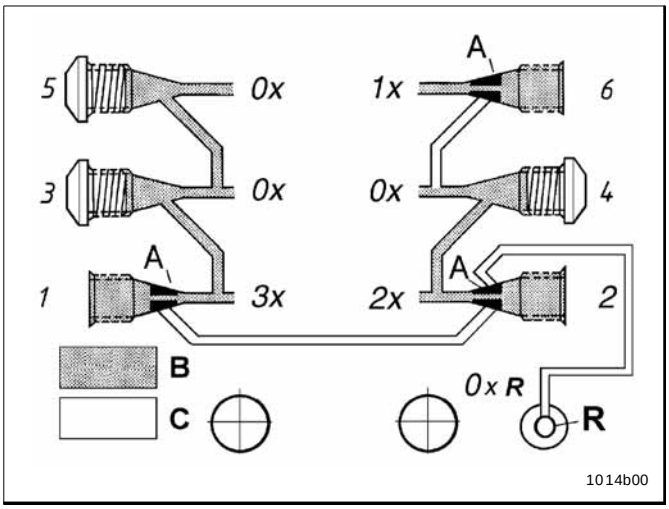


Fig. 1-1 Single double and triple lubricant output (on back side mounted divider block)

0x-3x Outlet quantity (single, double, etc.)
1-6 Outlet numbers
A Clamping ring of the check valve (see Fig. 3)
B Grease supply
C Enclosed grease
R Return to reservoir

6001a02

NOTE

Maximum internal combination of outlets:
SSV 6 = 3 / SSV 12 = 6 / SSV 18 = 9
Further combinations are possible outside the metering device by means of a tee-piece only.

Determination of the output by cross-porting of outlets

1) Single output

- A single output is the lubricant quantity fed to the lube point by a piston per stroke and outlet port. **It amounts to approx. 0.2 cm³,** see outlet 6 (fig. 1-1).

2) Double or multiple outputs

- Outputs can be increased by simply plugging the unused outlet ports with closure plugs (fig. 2, provided in the accessory kit).
- Lubricant from a plugged outlet is redirected to the next outlet on the same side of the SSV divider block in descending numerical order (see fig.1).
- Example, see fig. 1:
  By closing
  - of outlet 4, outlet 2 receives the double quantity
  - of outlets 5 and 3, outlet 1 receives the triple amount of lubricant. The connecting conduit from outlet line 1 to outlet line 2 and to the return line (R) is closed by clamping rings (A) of the check valve.
- Unused lubricant can be internally fed back to the reservoir, see paragraph ‘’direct internal feed back feature”.

6001a02

ATTENTION!

*If **outlet 2** (fig. 1-1) is connected to a lubrication point, **outlet 1 must not be closed,** see clamping ring (A) in outlet 2.*

Fig. 1-2 Closure plug (also provided in the accessory kits)

Closure plug

➲ Install a closure plug in each outlet port that is not required.

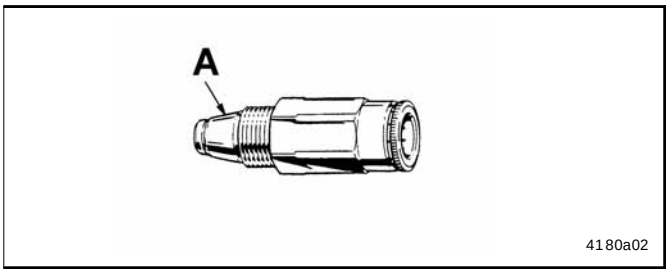


Fig. 1-3 Check valve, push-in type

A Clamping ring (brass)

Check valve

➲ For connection between pressure plastic tubes or high-pressure plastic hoses and SSV divider outlets.
➲ Install a check valve in each outlet port that is required.

Installation Instructions, continuation

Direct (internal) feedback feature

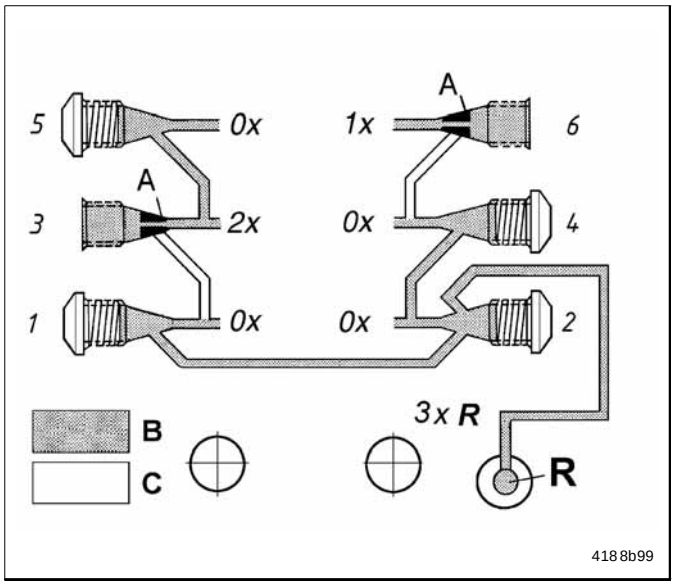


Fig. 1-4 Internal feedback of supplied lubricant, only on back-side mounted SSV divider blocks

0x-2x Outlet quantity (single, double, etc.)
1-6 Outlet numbers
A Clamping ring (brass) of the check valve
B Grease supply
C Enclosed grease
R Return line bore

- All pumps with **back-mounted SSV metering device** have the capability to feed unused lubricant back internally from closed outlets directly to the reservoir (see R, fig. 1-4).
- This procedure will start automatically, if **outlet port 2** is plugged with a closure plug.
- For lubricant return of crossported outlets always start with the **smallest outlet numbers**:
  - Outlets with even numbering: ……. e. g. 2, 4, 6
  - Outlets with odd numbering: ..... e. g. 1, 3, 5
  Lubricant quantities of **odd outlet numbers can only be returned through the internal combination of outlets 1 and 2**.
  As shown in Fig. --4, the quantities of outlets 1, 2 and 4 (3xR) are returned to the reservoir.
- The remaining outlets are to be used for the connection to the lube point or for increasing the lubricant quantity (double or triple), comp. fig. 1-1.


1013A94

ATTENTION!

Do not plug outlets number 1 or 2 *(horizontally positioned outlets) on bottom-mounted lubricant metering devices SSV 8, 12 or 18.*

In this case there exists the possibility to return unneeded lubricant quantities externally from the metering device. To do so, use relief line connection R.

Pumps with external metering device

- The pump can also be operated with an external metering device.
- To provide a directly connected lube point with lubricant or to distribute the lubricant via a downstream progressive system a connection block 1 (fig. 6-3) with P pressure and R return connection is provided.

Lubrication Points

Installing Quicklinc fittings into lube points

➲ Replace the existing lubrication fitting at the lubrication point by the corresponding Quicklinc push-in fitting.

Zerk-Lock Connections

Fig. 2-1 Place the Zerk-Lock body over the grease nipple

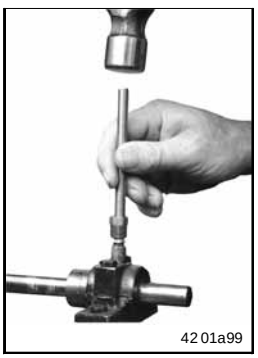


Fig. 2-2 Installation of Zerk-Locks with staking tool


6001a02

NOTE

If the lubrication fitting cannot be replaced, the Zerk-Lock connection is available as an alternative.

The Zerk-Lock fitting consists of the Zerk-Lock body, insert and a Quicklinc fitting.

➲ Place the Zerk-Lock body over the grease fitting and place the staking tool firmly against the Zerk-Lock insert.

➲ Strike the tool sharply with a hammer until the Zerk-Lock insert partially crimps onto the grease fitting (necessary only for US version).

Installation Instructions, continuation

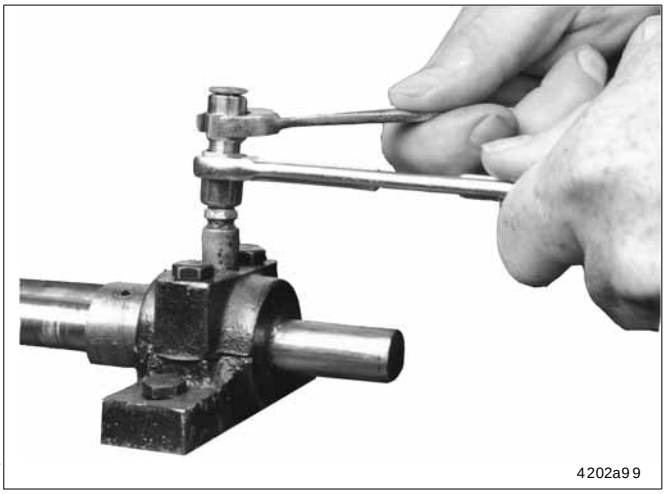


Fig. 2-3 Screwing Quicklinc fitting into the Zerk-Lock body

- Screw the Quicklinc fitting into the Zerk-Lock body and tighten until part resists further tightening (about 1-1/2 turns).

6001a02

NOTE
Quicklinc hex. is 12 mm.
Zerk-Lock body hex is 1/2 ".

- Move the Zerk-Lock and tube fitting from side to side on the grease fitting to insure the Zerk-Lock is firmly seated.

Connection of Feed Lines

Fig. 3-1 Feed line installed in the Quicklinc fitting

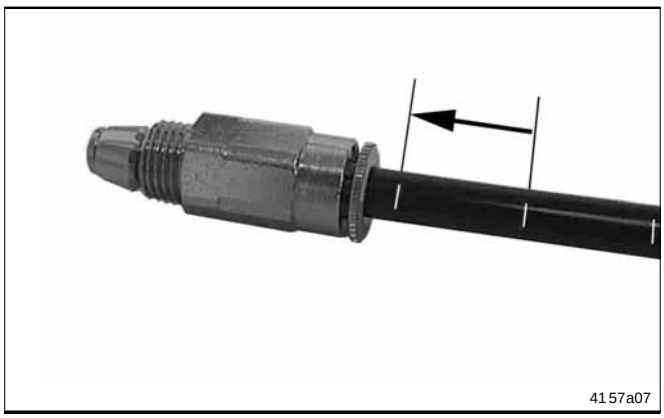


Fig. 3-2 Feed line insert into the check valve up to the next white mark

- Lay feed lines to each lubrication point with the shortest possible route. Make sure to observe the minimum bending radius.
- Measure, cut and route the feed lines (included in the kit).

6001a02

NOTE
Avoid sharp bends of the plastic tubing and the moving parts of the machine that could damage the lubrication lines. Minimum bending radius is 50 mm (2 in.).

- Secure the lubrication lines to the machine using nylon ties, clamps or straps provided in the accessory kit.
- If the feed lines are not primed, prime all lubrication feed lines before connecting them to the lube point (see paragraph "First Filling of a lubrication system").

- Connect the feed lines directly to the check valves of the divider block and to the Quicklinc fittings of the lube point.

6001a02

NOTE
Push the ends of the feed lines firmly into the Quicklinc fittings until they are fully seated in the body of the fitting. The primed feed lines are marked with white lines (fig. 3-2) to facilitate installation.

- Cut off the pressure plastic tube uprightly at one of the white lines before it is mounted.
- Then insert the feed line into the fitting up to the next white mark.
  This will ensure a correct installation of the feed line in the threaded tube fitting.

Installation Instructions, continuation

First filling of a lubrication system

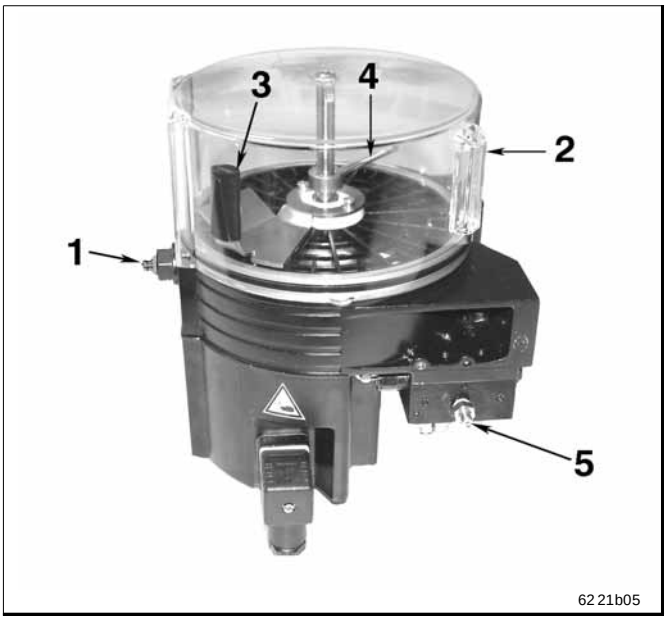


Fig. 4-1 Fill reservoir up to the "Max." marking

1 Filling nipple
2 Vent bore
3 Stirring paddle
4 Fix paddle
5 Nipple for emergency lubrication

6001a02

NOTE

In case of rear-mounted lubricant metering devices:
For transporting outlet 2 of the metering device was equipped with a check valve. Make sure to remove it before assembly, as it cannot be used when operating.

- Fill the empty reservoir up to the "Max." marking via the filling nipple 5.
  Let the QLS run until lubricant leaks from the metering device outlets.
- If necessary fill the lubrication lines via the filling nipple 5 of the metering device with an external pump.

6001a02

IMPORTANT

The filling nipple 5 can be removed temporarily to check the lubricant output.

1013A94

ATTENTION!

Risk of bursting if the reservoir is overfilled! *When filling the reservoir by means of* ***pumps with a large delivery volume do not exceed the max. filling mark.***

6001a02

IMPORTANT

When filling the reservoir the vent bore 2 must not be closed:

- so that the air can escape through the vent bore 2

- in order not to impede the proper suction behaviour of the pump during operation.

Electrical Connection

- Connect cables acc. to connection diagram (see chapter „Technical Data").

4273a00

CAUTION!

Observe safety instructions in chapter „Maintenance …", paragraph „Electrical Connection"!

Installation Instructions, continuation

Option for metric fittings (not included in the accessory kits)

SSV Connecting tube fitting, screw-type and push-in type

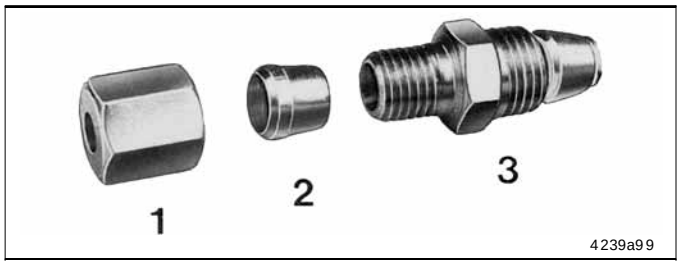


Fig. 5-1 Screw-type check valve

1 - Ferrule nut
2 Cutting ring
3 Valve body with sealing and ferrule

Connection of the pressure plastic tube or the high-pressure hose

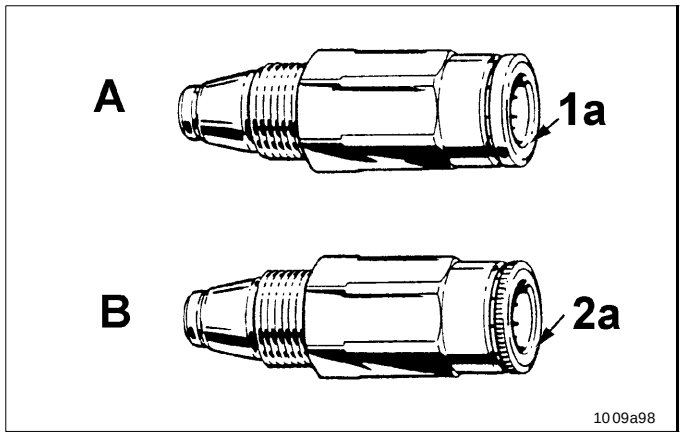


Fig. 5-2 Different types of check valves

- For high-pressure hose (Ø 4.1 x 2.3 mm) use check valve A (fig. 5-2) with reinforced collets 1a and smooth flange (part no. 226-14091-4)
- For pressure plastic tube (Ø 6 x 1.5 mm) use check valve B (fig. 5-2) with standard collets 2a and knurled flange (part no. 226-14091-2)

A Check valve with reinforced collets
B Check valve with standard collets
1a Smooth flange
2a Knurled flange

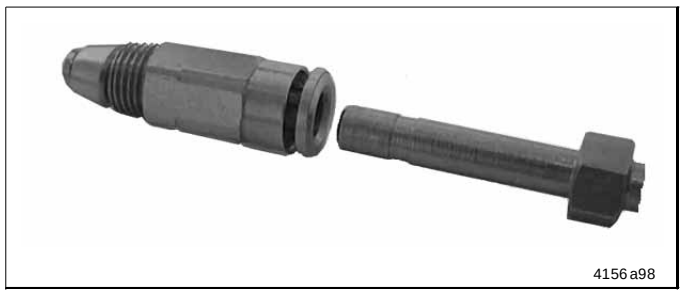


Fig. 5-3 Check valve with reinforced collets and high-pressure hose

6001a02

NOTE

On construction machines or agricultural machines use high-pressure hoses as feed lines. In such cases, the check valves of the sub-metering devices must have a reinforced collets and a smooth flange.

6001a02

IMPORTANT

Connect only high-pressure hoses (Ø 4.1 x 2.3 mm) with threaded sleeve and hose stud to the check valves with reinforced collets.

Mounting of the threaded sleeves and hose studs onto the high-pressure hose

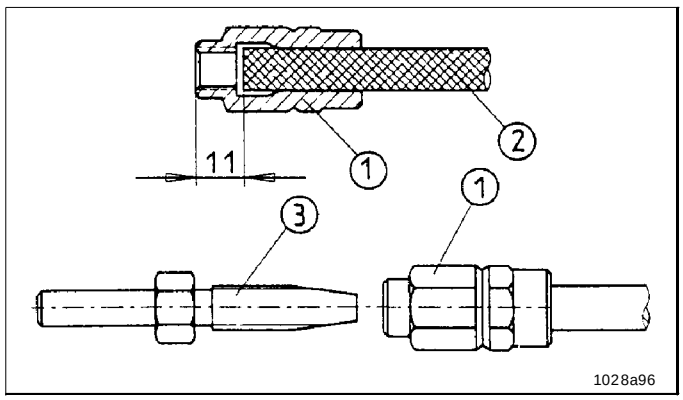


Fig. 5-4 Pre-assembly of the threaded sleeves and hose studs onto the main line

- Screw threaded sleeve 1 (fig.5-4) counterclockwise onto the high-pressure hose 2 until the illustrated dimension of 11 mm is reached.

6001a02

IMPORTANT

Oil parts 1 and 3 well before screwing them together.

- Then screw the hose stud 3 into the threaded sleeve 1.

1 Threaded sleeve
2 Main line
3 Hose stud

Identification Code – Lubrication System QLS 421

6001a02

NOTE

Any pump combinations other the above standard pumps can be composed and ordered in accordance with the valid model identification code.

Code examples:

P421	3	1	2	0	2	5	3	1
P421	9	1	4	2	2	5	3	1
P421	3	1	4	0	2	5	3	1

P421 Pump for grease

SSV Divider Block
3 SSV 6
6 SSV 12
9 SSV 18

SSV Divider Block Position
1 back mounted

Operating Voltage
2 12 VDC
4 24 VDC

Reservoir / Low-level Control
0 1-liter reservoir without low-level control
2 2-liter reservoir without low-level control

Number of possible connections
2 **1A5** - 1 connection, power supply (bayonet plug), left

Type of Plug Connector
5 Bayonet plug acc. to DIN 72585-1

Electrical Connectors
3 with socket and 10 m cable
4 with socket and 10 m cable ADR

Control p.c.b.
1 with variable stand-by and lubricating time

(Accessory kits see ”Technical Data”)

Example of an explained model number:
Pump model P42131200531- **grease pump, SSV 6 divider block mounted on the back, 24 VDC, without low-level and without dry contact, with bayonet plug, socket and 6 m cable, control p.c.b.**

Description

Lubrication System QLS 421

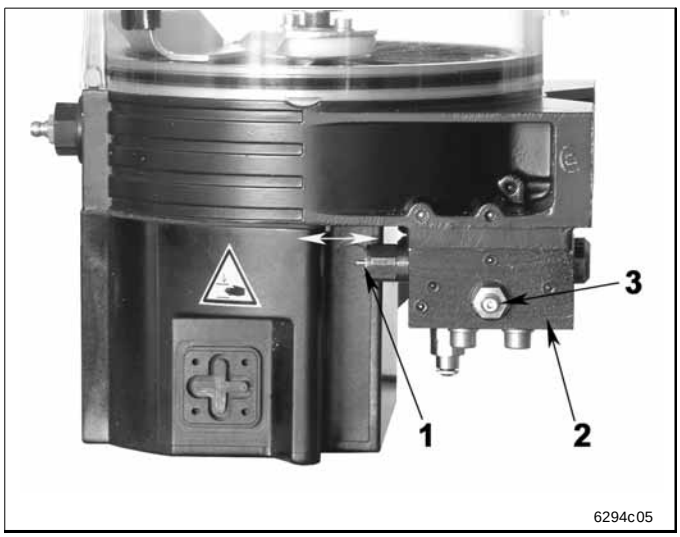


Fig. 6-1 QLS 421 with back position of the SSV divider block
1 - Control pin
2 - SSV divider block
3 - Nipple for external manual lubrication (via SSV divider block and lube lines up to the lube points)

- The QLS 421 is a complete compact lubrication system for a **maximum of 18 lubrication points per operating cycle**.
- The pump has three basic configurations:
  - SSV divider block mounted on the back (Fig. 6-1)
  - Pump without the SSV divider block attached (no Fig.).
- Standard lubrication lines are high-pressure hoses (∅ 6 x 1,5 mm; 1/4 in.), also included in accessory kit.
- After the power supply was switched on A signal from the pump timer starts the electric motor and the pumping element starts pumping the lubricant via the SSV divider block to the lubrication points.
- When the stand-by time has elapsed and all lube points have received lubricant, a full operating cycle is completed.

Subject to modificaitons

Mode of Operation

Lubrication System

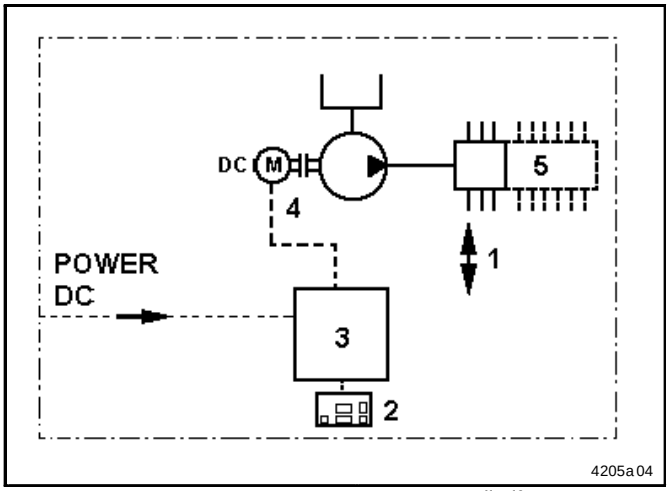


Fig. 7-1 QLS 421 schematic

1	Kontrollstift
2	Folientastatur
3	Steuerplatine
4	Pumpe
5	SSV 6, 12, 18

- The QLS 421 operates according to operating cycles (pause and lubricating times).
- The first braking initiates the stand-by time and the lubricating time at the same time.
- A division of the lube points **(option)** via sub-divider blocks and one main divider block (SSV 6, SSV 8) is possible only up to **max. 18 points per operating cycle**.

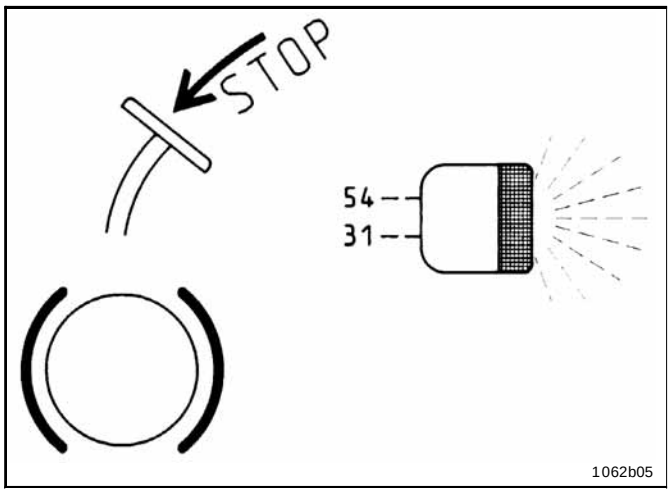


Fig. 7-2 Stop light voltage

- Mostly, trailers and semi-trailers do not have a permanent power supply. The brake-light voltage (terminal 54) renders the power supply. The operation-dependent signal of terminal 15 (ignition voltage) as provided for trucks is not available here.

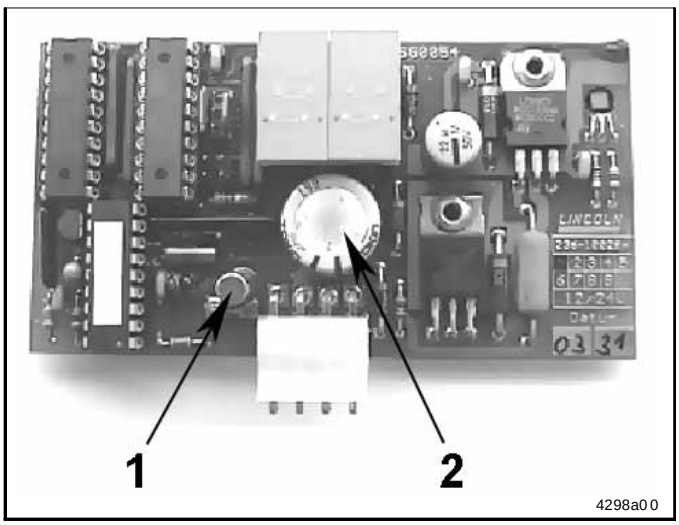


Fig. 7-3 Control p.c.b. 236-10028-1

- A motion sensor 1 (Fig. 7-3) controls the time lapse for the stand-by time integrated in the control p.c.b. It collects the movements (driving times) of the vehicle, upon which it initiates the necessary operational signal for the control of the stand-by time.
- Normally, the brake-light voltage applies only for a short term. Therefore, a capacitor is required for the time storage (see Fig. 7-3). During the braking procedure, the capacitor is charged and is available as continuous power supply for generating the operation-dependent signal.

1 - Motion sensor
2 - Capacitor

Mode of Operation, continuation

Stand-by Time (Lubricating & Pause Time)

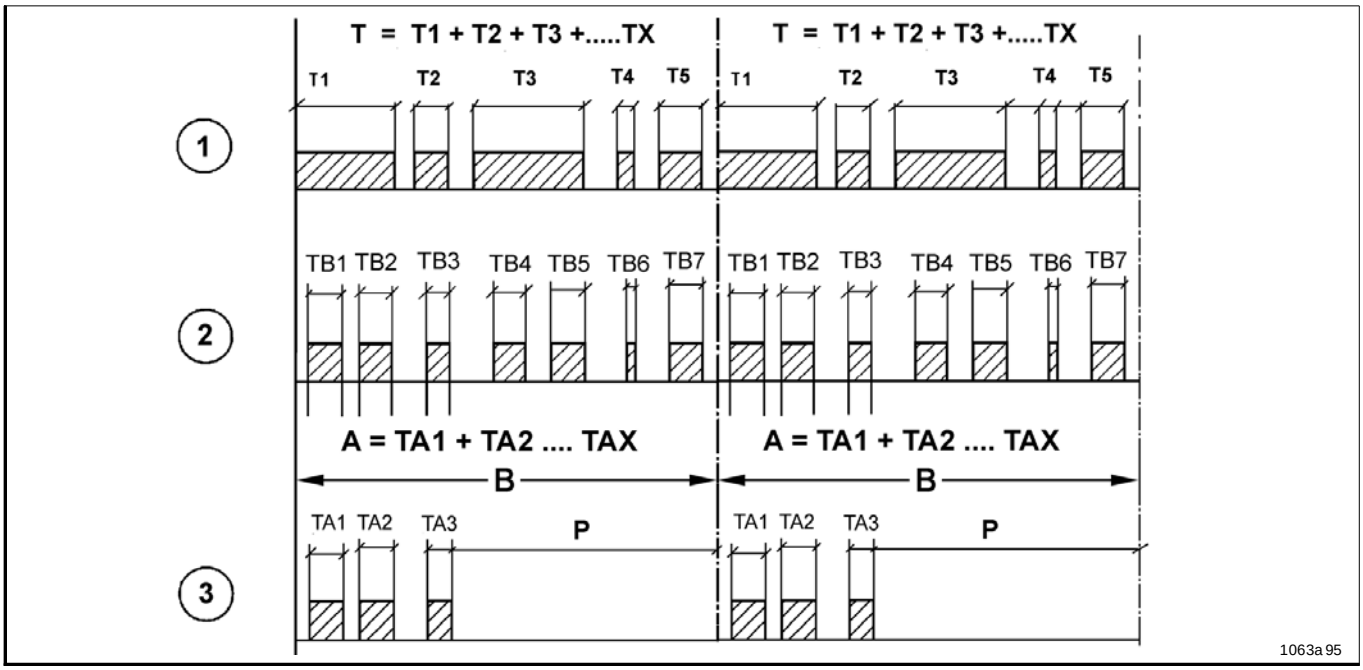


Fig. 7-4 Time lapse diagram

1 -	Stand-by time - cycles (2 shown)	T1...TX -	Individual driving times
2 -	Course of lubricating times, adjustable	TB1…TBX -	Individual brake times
3 -	Course of stand-by times, adjustable (lubricating & pause times)	A -	Adjusted lubricating time
T -	Stand-by time, adjustable	TA1…TAX -	Individual lubricating times
B -	Stand-by time	P -	Pause

Stand-by time

- The stand-by time includes
  - Lubricating time,
    during which the controller responds to the brake pulses (by actuation of the brake light) until the end of the lubricating time.
  - Pause time,
    during which the controller responds to the driving time pulses until the end of the pause time.

Pause time

- The pause time is the time range in which the controller records driving movements by means of the motion sensor 1 (see Fig. 7-4).
- During the stand-by time B lubricating time A starts lapsing first, i. e. the QLS 421 is ready to translate individual brake procedures (TB1...TBX) into single lubricating procedures (TA1...TAX, lubricating times) until the adjusted lubricating time A has lapsed.
- When the vehicle moves, the motion sensor starts the pause time (T1 ..TX).
- Each time the vehicle stops, the pause time stops as well. The electronics memorizes the times driven until then (T1...TX).
- When the vehicle moves on, the pause time continues from where it had been interrupted when the vehicle had stopped.
- Driving times are memorized until the adjusted pause time is reached.
- The controller is set up such way that within the adjusted stand-by time B a lubricating time A will lapse once. (…)

(…)

- Whenever the stand-by time B has lapsed, a new lubricating cycle starts.
- The pause time T can be adjusted on the membrane keypad from 1 to16 hours (increment 1 hour).

Lubricating time

- The lubricating time means the run time of the QLS 421, whereby the motor of the QLS 421 is switched on.
- The lubricating time lapses within the stand-by time. When the stand-by time starts, the voltage of the brake light (terminal 54) provides the motor of the QLS 421 with voltage via the control p.c.b. The motor runs during the brake procedure.
- The lubricating time TA1 (see Fig. 7-4) starts with the first actuation of the brake (TB1 = TA1, etc.).
- The duration of the brake procedure is stored and added up each time there follows another brake procedure until the adjusted lubricating time A has been reached.
- Further brake procedures (example TB4) do not result in another lubricating time until the pause time T (as well as the stand-by time B) has lapsed and starts from the beginning.
- The lubricating time TA is variable and can be adjusted from 1 to 32 minutes (increment 1 minute) on the membrane keypad.
- The lubricating time
  - depends on the lubricant requirement
  - is variable
- Longer lubricating time means more lubricant; shorter lubricating time means less lubricant.

Mode of Operation, continuation

Pressure Relief Valve

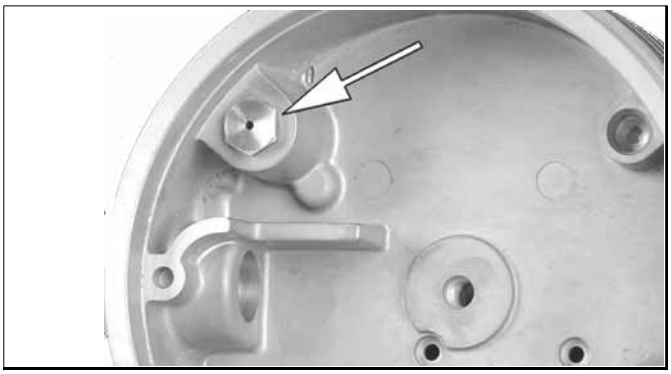


Fig. 8-1 Pressure relief valve (cartridge) in housing 4304 a00

- The QLS is protected with a pressure relief valve (cartridge).
- The pressure relief valve limits the pressure build-up in the QLS. It opens at an overpressure of 205 bar (3000 psi).
- If the pressure relief valve is actuated, this indicates that the system is malfunctioning. The lubricant flows back into the reservoir (hardly visible from outside).
- If this is the case trigger an additional lubrication and observe indicator pin 1 (Fig.6-1) on the metering device. If the indicator pin does not move, either the system is blocked or the reservoir is empty.

6001a 02

NOTE

➲ *Make sure to couple the traction vehicle before triggering an additional operating cycle.*

➲ *Provide voltage supply between the (semi-) trailer and the traction vehicle.*

➲ *Switch on the driving switch and actuate the brake pedal.*

➲ *Hit the reservoir slightly by hand to start the motion sensor.*

➲ *Then press the key for the additional lubrication (Fig. 13-2) > 2 seconds.*

Malfunction

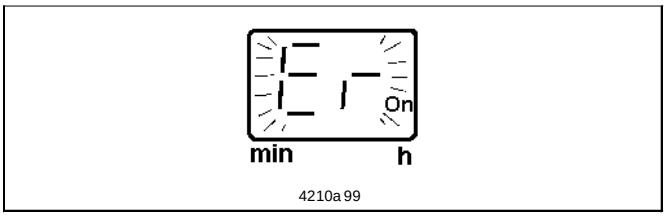


Fig. 9-1 Flashing display of a malfunction

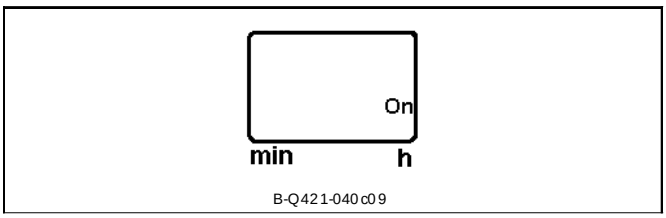


Fig. 9-2 Display without power supply

- Visible malfunctions can be:
  - defective pump ; empty reservoir
    LED display *** Er *** (Fig. 9-1)
    Precondition: applied power supply
  - power supply interrupted
    no segment or LED displayed (Fig. 9-2)
  - blockage in the downstream system (Fig. 9.3)

After refilling the lubricant reservoir or removing the malfunction with an additional lubrication the pump is ready for operation. The flashing fault indication *** Er *** disappears again. Before that the malfunction can be confirmed (Fig. 11-3).

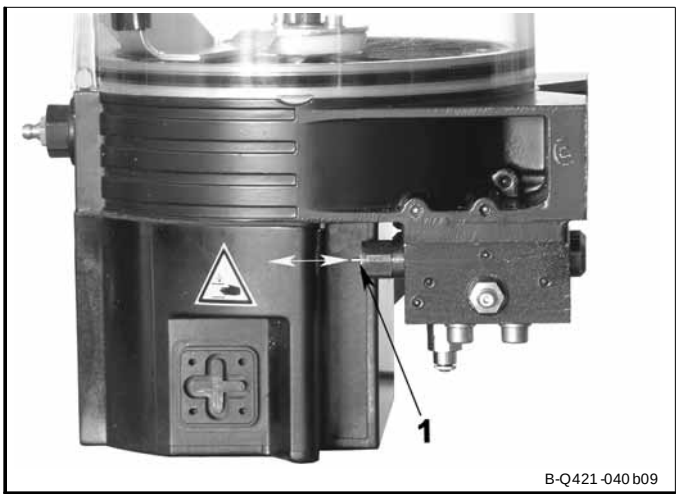


Fig. 9-3 Movement of the indicator pin during the lubricating time
1 - indicator pin

A malfunction in the downstream system can be determined by the indicator pin 1 (Fig.9-3). If during the lubricating time the indicator pin does not move to the left or to the right side, there exists a malfunction. The pump of the QLS 421 returns the grease invisibly via the pressure relief valve (Fig. 8-1) to the reservoir.

6001a02

NOTE

The point of time of the indicator pin's movement depends on the size of the attached divider block. It can take some time (max. 3 min) until the pump has supplied the amount of lubricant necessary for the indicator pin to move.

- Examination:

➲ Trigger an additional operating cycle (Fig. 13-2). If lubricant is supplied, the indicator pin 1 (Abb. 9-3) moves.

➲ Trigger further additional operating cycles until lubricant leaks from the divider block or from the lube point.

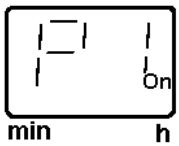
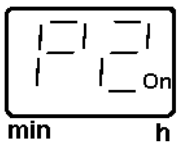
Setting and Operation

General


6001a02

NOTE
The QLS is factory-fit with the printed circuit board.

Factory Settings

Programming step	Factory setting	Description		Fig.
 4215a99	**06 .**	6 hours	Stand-by time	19
 4217a99	**. 06**	6 minutes	Lubricating time	19

Tab. 9-1 Factory parameter settings

Operator Keys

Key	Function
 4222a99	**Key for modifying the parameters in the programming step**

Fig. 9-1 Key for modifying

Other functions:

In the operating mode:
..... Trigger additional lubrication

In the programming mode:
- Continuous activation ..... Quick increasing of counter
- Individual activation ..... Increase counter by one digit
..... Change between two possible settings
..... Confirm modifications of programming
..... Terminate programming mode

Key	Function
 4214a99	**Key for switching to the next programming step**

Fig. 9-2 Key for switching

Other functions:

In the display mode:
..... Confirm malfunction

I In the programming mode:
..... Change to the next parameter setting

In the operating mode:
..... Display of current settings

Setting and Operation, continuation

Three possible modes of operation and settings can be selected on the keypad:

- **Display mode**
- **Programming mode**
- **Operating mode**

Display Mode

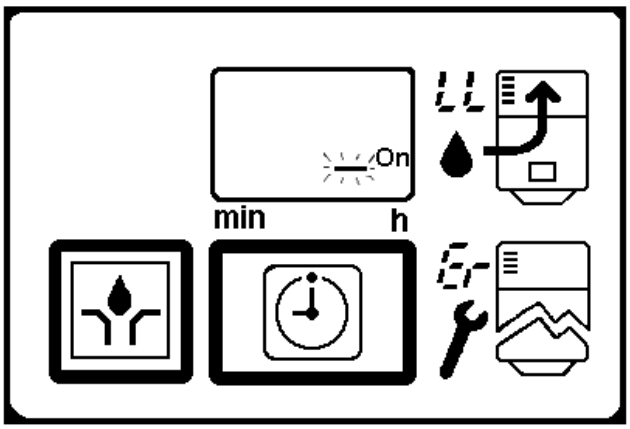


Fig. 10-1 Membrane keypad 4228c06

- Without power supply the display is dark.
- As soon as voltage is applied to the pump, the keypad is automatically in "**display mode**".
- The operating states are displayed alphanumerically via the segments and LEDs in the display.
- **In the display mode** the user receives information on functions and malfunctions of the QLS.
- Functions (segment, rotating segment display) or malfunctions are displayed with the following codes:

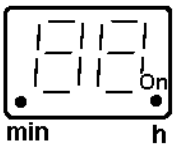
	Display
2 sec.	 4207a99

Fig. 10-2 Display test

- A test display is shown when voltage is applied, all segments and decimal points are illuminated for 2 seconds.
- Afterwards the centralized lubrication pump is ready for operation. Via machine contact or driving switch the permanent sequence of pause and lubricating times can be started and stopped.

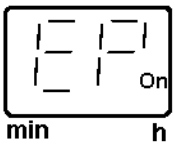
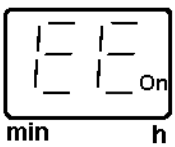
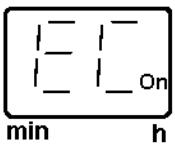
EP:	Error PAD	 4227a99
EE:	Error EEPROM	 6574b05
EC:	Error COUNTER	 B-Q400-040e09

Fig. 10-3 Fault indications of the pump

6001a02

NOTE

*If ***EP*** is displayed after the display test, this means, there is a malfunction of the operating keys (Fig. 9-1 & 9-2).*

IMPORTANT

*If *** EE *** and *** EC *** is displayed, this indicates a malfunction of the control p.c.b..*
*With the fault indication *** EE *** the control p.c.b. has to be replaced immediately.*
*With the fault indication *** EC *** all customer specific parameters will be reset to factory setting (see Tab. 9-1).*
Afterwards re-programming or correction of the parameters P1 to P– and after triggering an additional lubrication the pump is ready for operation again.
*Should the fault indication *** EC *** appear again, the control p.c.b. has to be replaced immediately.*

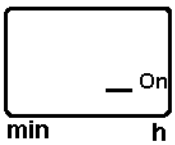
	Display
	 4279a00

Fig. 10-4 Display with segment for pause time

- The right-hand segment (On/h) indicates the available voltage supply during the pause time.
- As soon as another message is displayed, the segment turns off.
- After the pump is switched off and on again, the control p.c.b. operates from the point where it had been interrupted (e. g. after the power supply was interrupted).

6001a02

NOTE

If the interruption of power supply happens after starting within 1 minute the control p.c.b. will re-start the sequence of pause and lubricating times from the beginning.

Setting and Operation, continuation

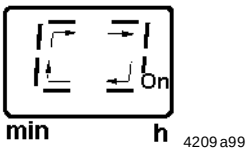
Display


Fig. 10-5 Rotating segment for lubricating time

- The lubricateng time is displayed as a rotating segment.
- The monitoring time starts together with the lubricating time.
- If at the beginning of a lubricating time (after the pause time or in the case of an additional lubrication) there exists a functional fault, the control unit does not receive any feedback from the proximity switch. After the monitoring time (**15 minutes** with AC-version or **25 minutes** with DC-version) the pump switches off. On the membrane keypad there appears the flashing signal *** Er *** (functional fault).

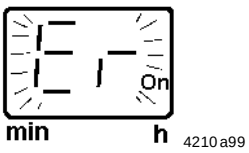
Display


Fig. 11-1 Display for a fault indication

- In the display mode the membrane keypad shows * **Er *** as flashing signal for an unacknowledged malfunction. After refilling the lubricant reservoir or removing the malfunction with an additional lubrication the pump is ready for operation. The flashing fault indication *** Er *** disappears again.
- Before that the malfunction can be confirmed (Fig. 11-3).

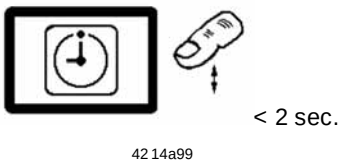
Press


Fig. 11-3 To acknowledge a malfunction

To acknowledge a malfunction:

- The flashing display changes into a continuous light by pressing the button (acknowledging). To acknowledge, press the button only briefly (< 2 sec.).
- Messages that have been acknowledged but have not yet been remedied flash again after the pump is switched off and on again.

Programming Mode

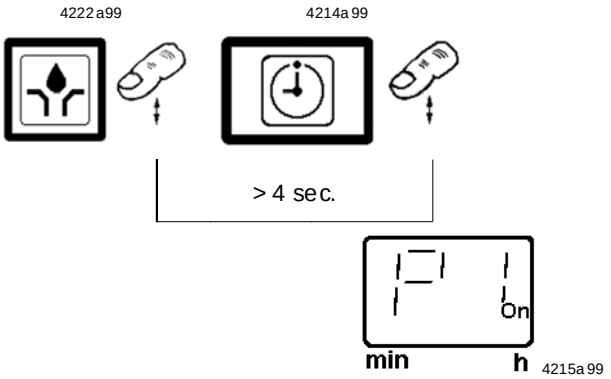
Press	Display
	

Fig. 12-1 Starting programming mode

Starting programming mode

➲ To access to the programming mode, **press both buttons** at the same time **> 4 seconds**, so that “P1” appears in the display.

When releasing the two buttons, the currently set value appears (fig. 12-2).

P1: Set stand-by time

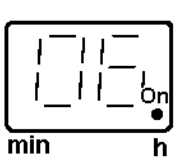
Press	Display
	

Fig. 12-2 Set stand-by time

➲ Press button.

Settings are made in one direction: …… 1, 2, 3, …16 h
Button pressed once ..... increases by 1 hour
Button pressed continuously ..... quick sequence
Factory setting: …… 06 hours

The stand-by time is indicated by a **decimal point** on the **righthand**.

Setting and Operation, continuation

P2: Set lubricating time

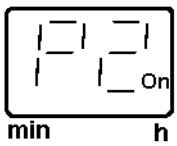
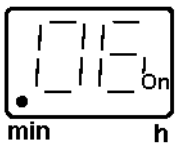
Press	Display
 4214a99	 4217a99
 4222a99	 B-Q421-040d09

Fig. 12-3 Set lubricating time

➲ Press button, so that “P2“ appears in the display.

When releasing the button, the currently set value appears.

➲ Press button.

Settings are made in one direction: …….. 1, 2, 3,...32 minutes
Button pressed once ..... increases by 1 minute
Button pressed continuously ..... quick sequence
Factory setting …….....…... 06 minutes

The lubricating time is indicated by a **decimal point** on the **lefthand**.

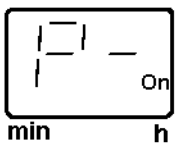
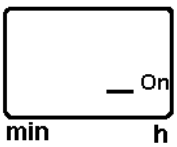
Press	Display
 4214a99	 4221a99
 4222a99	 4279a00

Fig. 12 > Completing the programming “P–“

P–: Completing the programming

➲ Press button, so that “P–“ appears in the display.


6001a02

IMPORTANT

In order to avoid a wrong program, make sure to always carry out the programming order completely, i. e. setting of P1 to “P–“ (“Completing the programming”).

➲ Press this key to complete the programming and to save the entered parameters.


6001a02

NOTE

If this button is not pressed within 30 seconds, the changed parameters are not saved and the previous programming remains valid.

IMPORTANT

After completion of the programming, check the parameter settings in the operating mode once again.

Operating Mode

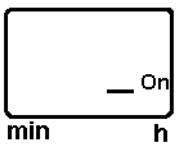
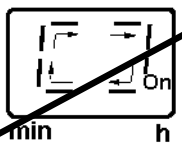
Display	
 4279a00	 4209a99

Fig. 13-1 Starting operating mode

Starting operating mode


6001a02

IMPORTANT

The operating mode is accessible only during the pause time, and cannot be operated during the lubricating time.

- Precondition: When voltage is applied, the right segment is lit. (fig. 13-1).

Setting and Operation, continuation

Triggering an additional lubrication cycle

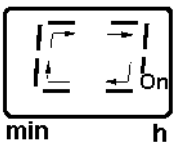
Press	Display
 >2 sec 4222a99	 4209a99

Fig. 13-2 Triggering an additional lubrication cycle

Precondition:

➲ Reset the present stand-by time:
- Couple (semi-) trailer to the traction vehicle.
- Provide voltage supply between (semi-) trailer and traction vehicle.
- Switch on driving switch and actuate brake pedal.
- Hit the reservoir slightly by hand to start the motion sensor.

➲ Press pushbutton > 2 seconds to trigger an additional lubrication cycle (Fig. 13-2).

· The lubricating time starts running. The whole runtime through a rotating segment is visible on the display. At the same time the pause time already lapsed is reset.

Display of parameters and states

Press
 >2 sec. 4214a99

➲ Press button, so that “Pi“ appears in the display.


6001a02

NOTE

*The following display sequence is shown **twice** and is cancelled after 60 seconds. The change of display occurs every two seconds.*

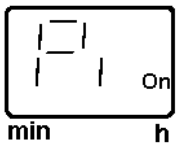
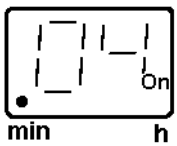
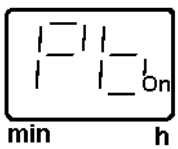
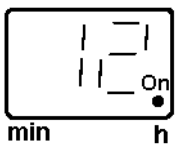
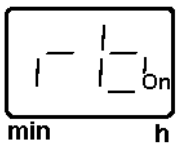
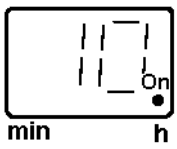
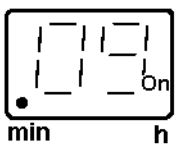
Display	
 4282a00	after 2 sec.  4300a00
after 2 sec.  4299a00	after 2 sec.  4216a99
after 2 sec.  4283a00	after 2 sec.  4284a00
	after 2 sec.  4285a00

Fig. 13-3 Display of parameters and states
(continuation next page)

Example:

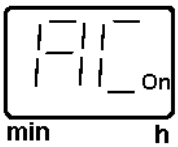
· **Pi** (preset lubricating time min) = 4 minutes
· **Pb** (preset stand-by time h) = 12 hours
· **rb** (residual stand-by time h & min) = 10 h 09 min

Pi	**. 04**	preset lubricating time	4 minutes
Pb	**12 .**	preset stand-by time	12 hours
rb	**10 .**	Example 10 h 09 min residual stand-by time	10 hours
	. 09		+ 9 minutes

Setting and Operation, continuation

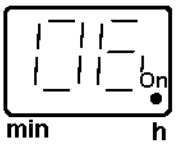
Display

after two sec.

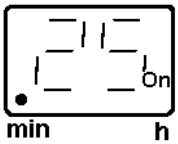


4277a00

after two sec. after two sec.



4281a00



4280a00

Fig. 13-6 Display of automatically triggered operating cycles

AC number of the automatically triggered operating cycles, countable up to 9999 cycles. Then counting starts from the beginning again.

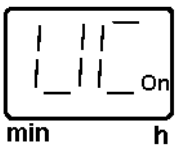
Example **0625** cycles:

06 . displayed with factor 100 06 as 600

. 25 displayed with factor 1

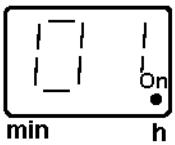
Display

after two sec.

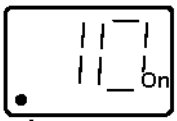


4278a00

after two sec. after two sec.



4297a00



4226a99

Fig. 13-7 Display of manually triggered additional lubrications

UC number of manually triggered additional lubrications countable up to 9999 cycles. Then counting starts from the beginning.

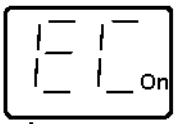
Example **0110** cycles:

01 . displayed with factor 100 01 as 100

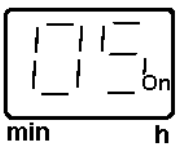
. 10 displayed with factor 1

Display

after two sec. after two sec.



B-Q400-040e09



B-Q400-040a09

Fig. 13-8 Display Error Counter “EC“

EC number of the current p.c.b. fault indications “EC“ (Error-Counter), countable up to 99 cycles. Then counting starts from the beginning again.

Example **05** fault indications “EC“:

05 displayed as factor 1

after two sec.

4279a00

Fig. 13 > Termination of the operating mode (… pause time)

– After double passage of the displayed parameters and states the right-hand segment appears at the of the operating mode.

Maintenance, Repair and Tests

Maintenance

- The maintenance is essentially limited to refilling the reservoir with clean lubricant in good time. However, check regularly whether the lubricant is really dispensed to all the lubrication points.
- Also check the main lines and lubricant feed lines for damage and replace them, if necessary.

6001a02

NOTE

Whenever work is done on the centralized lubrication system, particular attention should be paid to absolute cleanliness. Dirt in the system will cause problems.

- For cleaning the system use benzine or petroleum. Do not use tri-, perchloroethylene or similar solvents.
  Also do not use polar organic solvents such as alcohol, methylacohol, acetone or similar.

To fill reservoir

Fig. 14-1 Fill pump reservoir up to the “Max.“ mark

1 - Filling nipple of the reservoir
2 - Vent hole
3 - Stirring paddle

➲ Fill the reservoir up to the ”Max.” mark via the filling nipple 1 (Fig. 14-1).

6001a02

IMPORTANT

The grease must be free from impurities and must not be liable to change its consistency in the course of time.

6001a02

NOTE

If the reservoir has been completely emptied, the pump may require priming and a longer runtime to reach the full lubricant output. Therefore, if the occasion arises trigger additional lube cycles manually (Fig. 13-2).

1013A94

ATTENTION!

Risk of bursting if the reservoir is overfilled! *When filling the reservoir by means of* ***pumps with a large delivery volume do not exceed the max. filling mark.***

6001a02

IMPORTANT

When filling the reservoir the vent bore 2 must not be closed:

- so that the air can escape through the vent bore 2

- in order not to impede the proper suction behaviour of the pump during operation.

Repair

- For repair work on the QLS use only original **Lincoln** spare parts.
- Using non-**Lincoln** parts voids the pump warranty.

6445b05

CAUTION!

By operating the drive motor without the reservoir installed, there is a ***risk of injury*** *by the eccentric gear.*
Never use the lubrication system QLS without installing the reservoir!

Maintenance, Repair and Tests, continuation

Maintenance and Repair

Electrical Connection

4273a00

WARNING!
Before maintenance or repair of pumps switch off their power supply.

Consider the safety instructions (page 5 and 6)!

CAUTION!
Before starting, make sure that the general power supply is off. The device must never be connected or disconnected when the power is on. The protective conductor must always be connected. Take care that this line section is undamaged and conforms to standards and the contacts are safe.

6001a02

NOTE
The protection IP6K9K is guaranteed when the socket (X1:, X2: & X3:) is tightened on the housing cover with flat packing.

➲ Make sure of the connection and the type of construction of your QLS 401.
- type of connection (VDC / VAC)
- low-level indication
- type of connection plug
- monitoring of metering device via external or internal cycle switch

➲ Connect the electrical wires according to the following electrical connecting diagrams (see chapter „Technical Data“).

4273a00

ATTENTION!
Consider residual ripple of max. ±5 % to connect pumps with direct current version (in relation to the operating voltage acc. to DIN 41755).

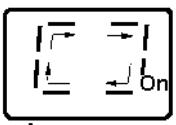
Operation with bayonet plug

Protective measures to be applied for appropriate operation with bayonet plugs:
"Functional extra-low voltage with safe isolation" /
"Protective Extra-Low Voltage" (PELV)
Standards:
DIN EN 60204 Teil1: 2007-07 / IEC 204-1 /
DIN VDE 0100 Teil 410: 2007-06 / IEC 364-4-41

Tests

Test Run / Triggering an Additional Lubrication

Display



4209a99

Fig. 14-3 Display with rotating segment : Lubricating time

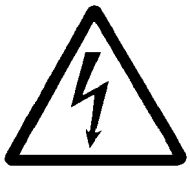
- To check the pump operation it is possible to perform an additional test (see Fig. 13-2).
- During the lubricating time
  - the stirring paddle is rotating
  - a rotating segment is displayed (see Fig. 14-3)
  - the control pin is moving to the left or to the right side (Fig. 9-3)
  - lubricant comes out of the lubrication points

Troubleshooting


6001a02

NOTE
For functional check: see paragraph „Tests“ / „Operational test / Triggering an Additional Lubrication“

Fault: Pump motor doesn't run

Cause:	**Remedy ...** **by service personnel**
	 4273a00 **WARNING!** *Disconnect the power supply before starting any maintenance or repair works.*
· Power supply interrupted. Green decimal point On/h on display is not lit.	➲ Check the voltage supply to the pump/fuses. If necessary, eliminate the fault or replace the fuses. ➲ Check the feedline from the fuses to the plug of the pump and then to the control p.c.b.
· Power supply from control p.c.b. to motor interrupted. Electric motor defective.	➲ Trigger an additional lubricating cycle (fig. 13-2). Check voltage supply from the control p.c.b. to the motor.
· Control p.c.b. defective	➲ Replace control p.c.b.
· Keypad or button is defective	➲ *** EP *** display at the keypad flashes. Replace housing with keypad.

Fault: Pump does not deliver lubricant

Cause:	**Remedy ...** **by operator personnel**
· Reservoir is almost empty. *** Er *** display at the keypad is flashing. · Pump does not deliver lubricant an control pin at SSV metering device does not move.	➲ Fill up the reservoir with clean lubricant. Let the pump run (initiate an additional operating cycle, see fig. 13-2) until lubricant shows at all lube points.  6001a02 **NOTE** *Dependent on the ambient temperature and/or sort of lubricant output. Therefore, trigger several additional operating cycles.*
Cause:	**Remedy ...** **by service personnel**
· Air pockets in lubrication system	➲ Trigger an additional lubrication several times (see paragraph „To trigger an additional lubrication“, see fig. 13-2). Lubricant must dispense at lubrication points without air bubbles.
· Unsuitable lubricant has been used	➲ Renew the lubricant (see User Manual „Lubricants“, 2.0-40001-).
· Suction hole of the pump element clogged	➲ Remove pump element. Check suction hole for foreign particles. If there are any, remove them.
· Pump piston worn	➲ Replace pump element.
· Check valve in the pump element defective or clogged	➲ Replace pump element.
· Other damages	➲ For repair return the pump to the factory.

Troubleshooting, continuation

Fault: Blockage in the downstream progressive system

Cause:

- Bearings, lines or metering device clogged
- Mounting position of metering device: back
  - In the case of metering devices SSV 6 and SSV 18, outlet 1 is closed and outlet 2 is connected to a lube point. The indicator pin at the metering device piston does not move.

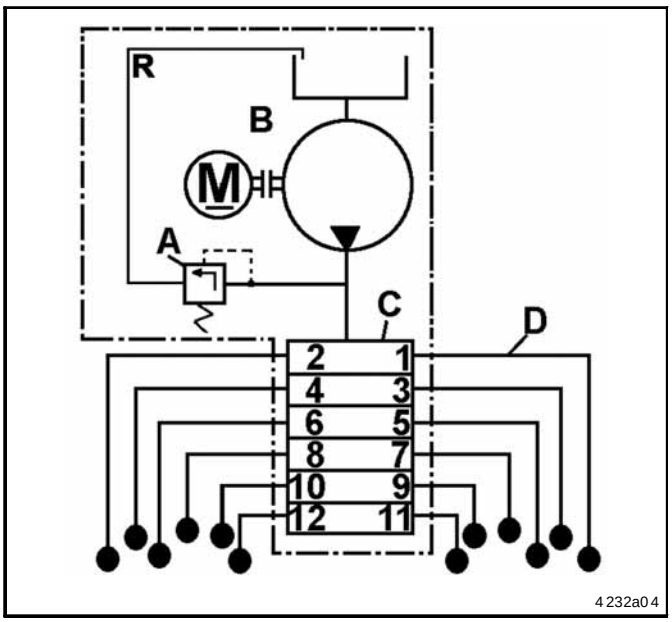


Fig. 15-1 QLS-Beispiel

Remedy ... **by service personnel**

- Determine the cause of the blockage as described in the following example and eliminate it.

➲ Let the pump run (refer to ”trigger additional operating cycles”, fig. 13-2).

➲ Disconnect all feed lines D (fig. 15-1) of the metering device one after the other. If oil shows under pressure the blockage is located in the line of outlet 3 or in the connected bearing point.

➲ Pump through the blocked line or bearing point using a hand pump.

6001a02

NOTE

To check the individual outlets, leave all outlets disconnected for a while, since only one piston stroke is executed with each motor revolution. Several strokes are required for a full cycle of all metering devices.

➲ Check pressure relief valve (see chapter „Operation“) Replace it, if necessary.

A pressure relief valve
B pump
C SSV 12 metering device
D feed lines
R return line

- Metering device is blocked

➲ Replace the metering device or clean it as follows:
- Remove all threaded tube fittings.
- Unscrew the piston closure plugs.
- Remove the piston, if possible, with a soft mandrel (smaller than Ø 6 mm, 0.24 in).

6001a02

IMPORTANT

The pistons are individually fit in the bores of the metering device. After removing the pistons, mark them in order to reinstall them in the right direction and position. They may not be interchanged.

- Thoroughly clean the metering device body in a grease-dissolving detergent and dry it with compressed air.
- Clean through the material passages (Ø 1.5 mm, 0.59 in) at the thread ends of the piston bores using a pin.
- Clean the metering device once more and dry it thoroughly.
- Reassemble the metering device.

Fault: Differing lubricant amounts at the lubrication point

Cause:

- Lubricant metering not correct
- Time setting incorrect

Remedy ... **by service personnel**

➲ Check the lubricant metering acc. to the lubrication chart.
➲ Adjust / optimize time setting.

➲ Check the lubricant metering acc. to the lubrication chart.
➲ Adjust / optimize time setting.

Technical Data

Rating [1)]

Adm. operating temperature [2)] ..... –25 °C ... +70 °C
Maximum operating pressure
(pump without metering device) ..... ~ 205 bar
Number of outlets 6, 18
Output per outlet and cycle ..... ~ 0,2 ccm
Reservoir capacity 1l
Lubricant [3)] ..... greases up to NLGI grade 2
Weight ..... 5,7 kg
Protection ..... DIN 40050 T9: IP6K 9K (NEMA 4)
Reverse polarity protection of the operating voltage inlets yes

Lines

Plastic tube ..... Ø 6x1,5 mm (1/4 in.)
- Min. bending radius ..... 50 mm
- Bursting pressure at 20 °C ..... ~ 210 bar

Tightening Torques

Electric motor on housing ..... 3 Nm
Pump element in housing ..... 25 Nm
Closure plug (piston) in metering device ..... 18 Nm
Closure plug (outlets) in metering device ..... 15 Nm
Outlet fitting in metering device
- screw-type ..... 17 Nm
- push-in type ..... 12 Nm

Compression nut onto outlet fitting, screw-type
- plastic tube ..... 10 Nm
- steel tube ..... 11 Nm

Indicator pin in metering device ..... 18 Nm
Mounting of the metering device (M6, 8.8) ..... 10 Nm

Accessory Kits

Inch-Size Kits: ..... Part no:
- SSV 6 / 8 550-36971-1
- SSV 12 550-36971-2
- SSV 18 550-36971-3

Metric Size Kits: ..... Part no:
- SSV 6 / 8 ..... 550-36970-1 ***
- SSV 12 ..... 550-36970-2 ***
- SSV 18 ..... 550-36970-3 ***

*** Lube fittings must be ordered separately

6001a02

[1)] **IMPORTANT**
The rating listed refers to grease of NLGI grade 2 measured at 20°C, backpressure 100 bar and nominal voltage 12/24 V (motor). Any differing pressures or temperatures result in different lubricant outputs. Any system design must be based on the above values compete.

6001a02

[2)] **NOTE**
The pump is designed for the above mentioned temperature range. However, most times the lubricants are pumpable up to –25°C only. For lower temperatures use low-temperature lubricants.

Motor [4)]

DC gear motor (interference-suppressed)
Operating voltage ..... 24 VDC
Max. current input at 24 VDC ..... 3 A
Speed, dependent on the backpressure ..... 21 ±3 rpm
Noise emission ..... < 70 dB(A)

Electric data DC (direct current)

Operating voltage ..... 12 V, - 20%/+ 30 %
Operating current, max. ..... 2,0 A
Operating voltage ..... 24 V, - 20%/+ 30 %
Operating current, max. ..... 1,0 A
Relay for malfunction DC [5)]
Malfunction / Low-level indication
- Switching voltage ..... max. 48 VAC/ VDC
- Switching current ..... max. (resistive) 2A
- Switching capacity ..... max. 100 VA/80 W

Residual ripple in relation to the operating voltage .....
..... DIN41755: ± 5%

EMC [6)]

EMC 2009/19/EC (vehicles)
- Emitted interference acc. to ..... DIN EN 61000-6-4
- Noise immunity acc. to ..... DIN EN 61000-6-2

Time Setting

Range of Stand-by time ..... 1 to 16 hours
- ..... Increment 1 hour
Range of lubricating time ..... 1 to 32 minutes
- ..... Increment 1 minute
Factory setting
- Stand-by time ..... 6 hours
- Lubricating time ..... 6 minutes

Timer memory .....
..... indefinite over EEPROM

6001a02

[3)] **IMPORTANT**
The pump reservoirs are factory-primed with lubrication grease Renocal FN745 and EP additives make Fuchs. This composition is compatible to most of the commercial greases and helps to prevent faults. If requested by the customer, the pumps can either be primed with another type of lubrication grease or be supplied without priming.

[4)] **IMPORTANT**
The pump motor is suitable for intermittent operation only.

[5)] **NOTE**
All data depends on operating voltage, ambient temperature and max. operating pressure.

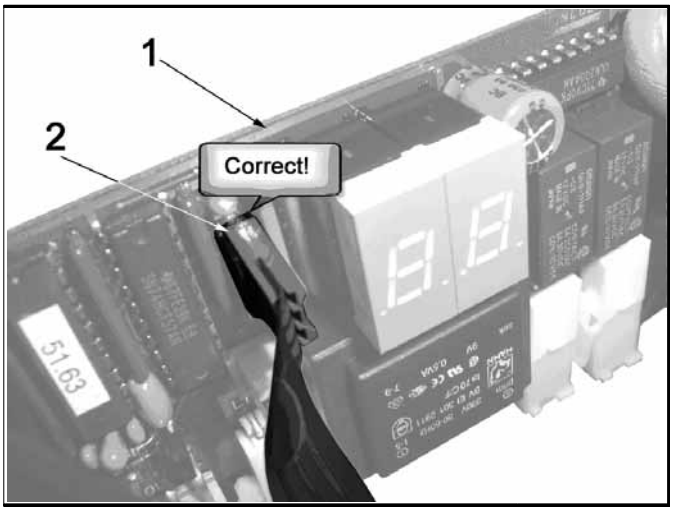
[6)] **NOTE**
The pumps correspond to the following EMC directives:
- for vehicles [A)] ..... EMC 2009/19/EC
[A)] marked with the EC approval symbol (e-icon) on the type identification plate.

Subject to modificaitons

Technical Data, continuation

Electrical Connection

Connection of the membrane keypad

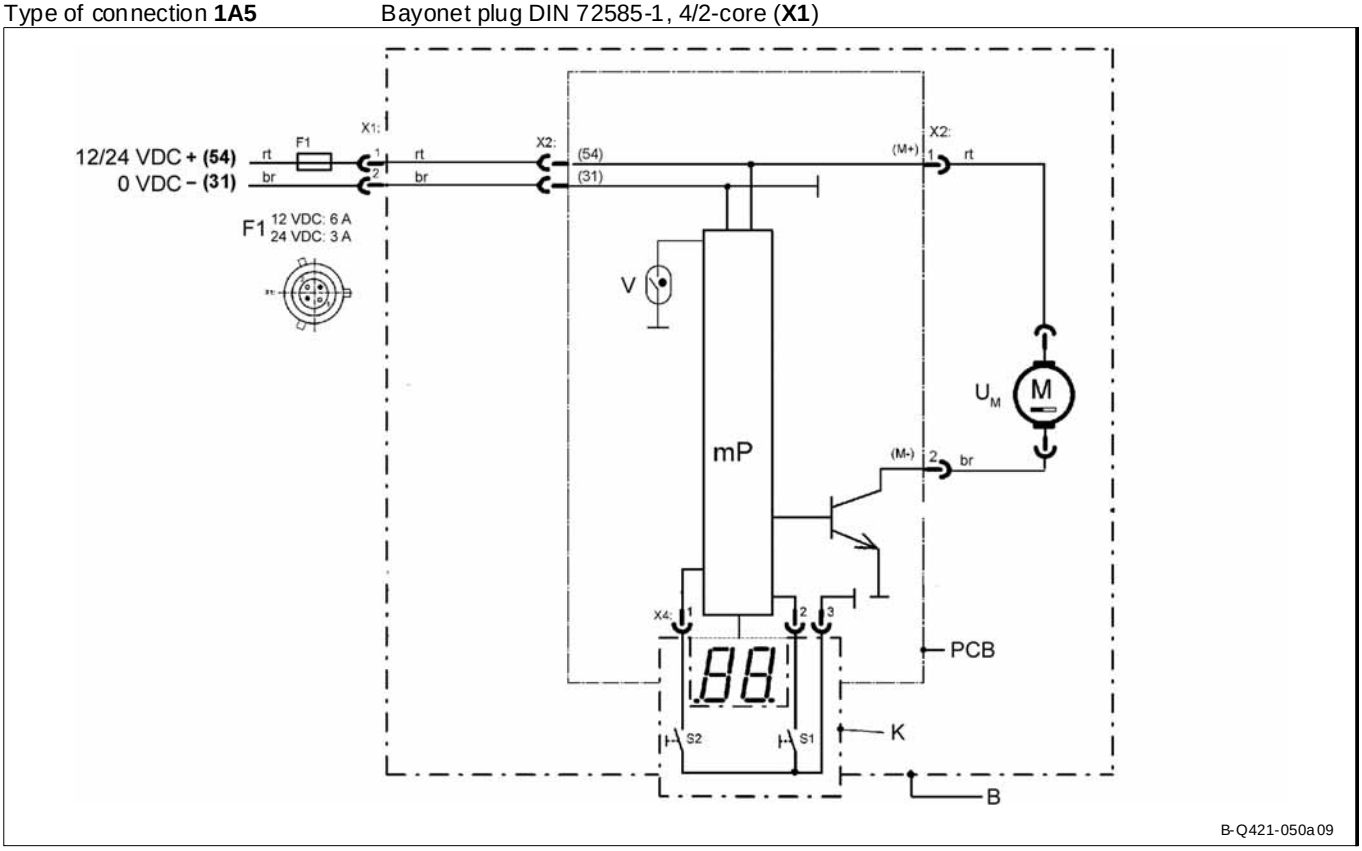


Correkt B-Q401-050h08

1 - Control p.c.b.
2 - Connection plug for membrane keypad

VDC connection diagram for mobile application
with integrated control unit

Type of connection **1A5** Bayonet plug DIN 72585-1, 4/2-core (**X1**)



Connection diagram Quicklub QLS421 (VDC) with integrated control unit

Connection **X1**: - Bayonet plug DIN 72585-1, left **1A5**
socket with 6 m cable, 4/2-core for power supply 12/24 VDC

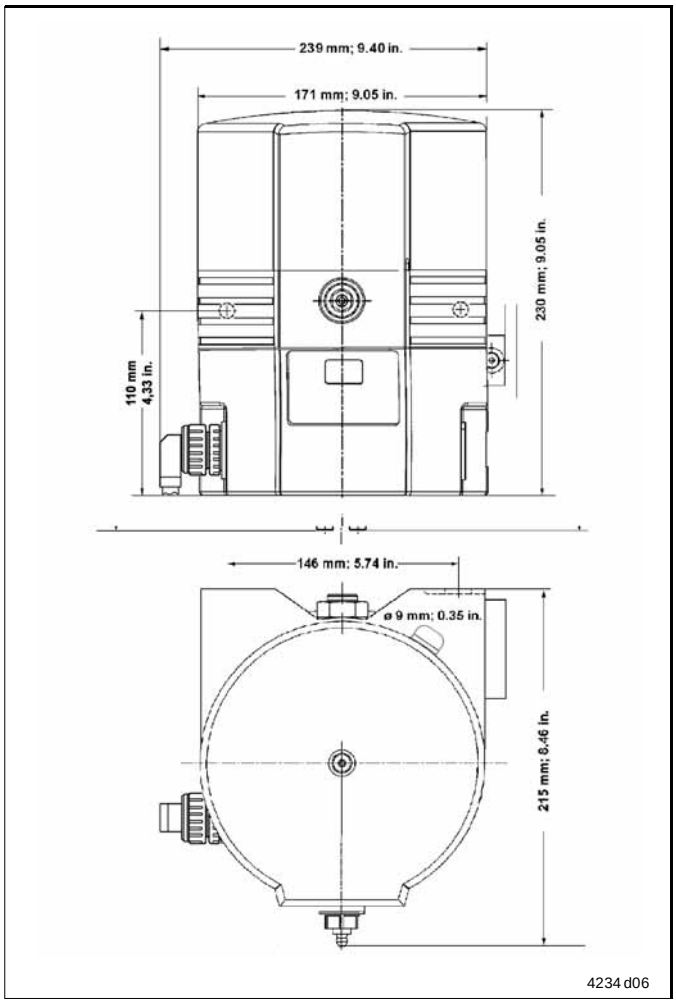
B	- Pump housing	**M**	- Electric motor	**rt**	- red
K	- Membrane keypad	**V**	- Vibration sensor	**br**	- brown

Subject to modificaitons

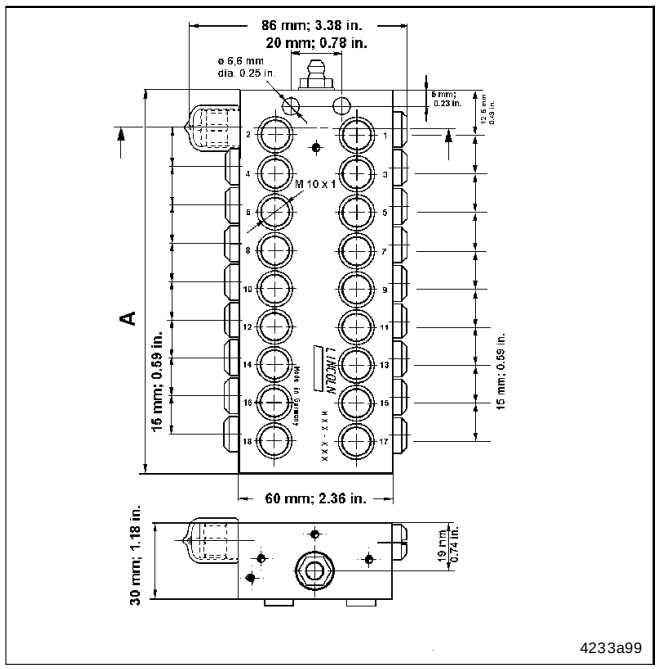
Technical Data, continuation

Dimensions

Pump



Rear-mounted SSV metering device



Number of outlets	Dimensions A in mm
6	60
12	105
18	150

Subject to modificaitons

EC Declaration of Conformity as defined by Machinery Directive 2006/42/EC, Annex II A

This is to declare that the design of the

QLS 421 lubrication system

in the version supplied by us, complies with the provisions of the directive 2006/42/EC – including all modifications of this directive valid at the time of the declaration.

Applied harmonized standards in particular:

DIN EN ISO 12100-1	Safety of machinery part 1 Basic terminology, methodology
DIN EN ISO 12100-2	Safety of machinery part 2 Technical principles and specifications
DIN EN 809	Pumps and pump units for liquids - Common safety requirements
DIN EN 60204-1	Safety of machinery Electrical equipment of machines Part 1: General requirements

Walldorf, 02/02/2004, Dr. Ing. Z. Paluncic

EC Declaration of Conformity according EMC Directive 2009/19/EG

We declare that the model of the

QLS 421 lubrication system

in the version supplied by us, complies with the provisions of above-mentioned directive.

Applied harmonized standards in particular:

DIN EN 61000-6-4	Generic emission standard: Emitted interference for industrial environment (vehicles)
DIN EN 61000-6-2	Generic emission standard: Noise immunity for industrial environment (vehicles)

Walldorf, 02/02/2004, Dr. Ing. Z. Paluncic

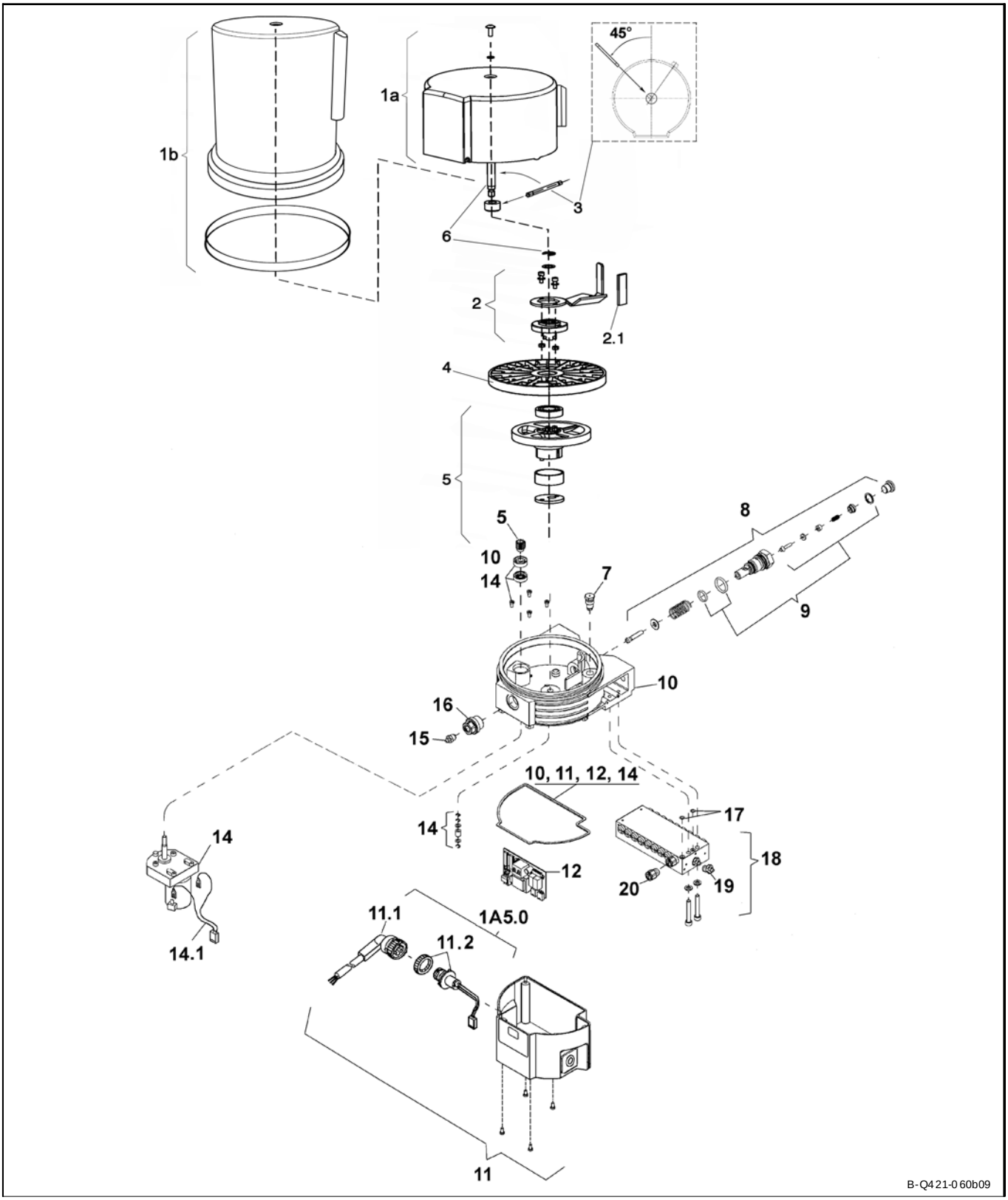
Patent-No. 199 31 730.5, German Registration Design No. 299 23 765.6

Subject to modificaitons

Service Parts

Explosion view

- Connection: Bayonet plug
- Type of connection: 1A5



Subject to modificaitons

Service Parts, continuation

Parts List

- Connection: Bayonet plug
- Type of connection: 1A5

Pos.	Designation	Kit	Single Part	Qty.	Part N°.
1a)	1 litre reservoir, assy.	x		1	550-34179-1
1b)	2 litre reservoir, assy.	x		1	550-34179-4
2	Stirring paddle with stripper				
a)	- for 1 litre reservoir	x		1	550-32945-1
b)	- for 2 litre reservoir	x		1	550-33229-1
2.1	Stripping rubber		x		450-70430-1
3	Pin (fix paddle)		x	1	450-70404-1
4	Intermediate bottom	x		1	450-24749-1
5	Eccentric gear	x		1	550-34178-8
6	Shaft				
a)	- for 1 litre reservoir	x		1	550-34178-7
b)	- for 2 litre reservoir	x		1	550-34179-5
7	Pressure relief valve, cartridge		x	1	235-14343-1
8	Pump element, assy dia. 6 mm		x	1	650-28856-1
9	Sealing parts for pump element	x		1	550-36979-5
10	Housing	x		1	550-36981-3
11	Housing cover for VDC, plug 1A1.0	x		1	550-34179-3
11.1	Socket with 6 m cable for Bayonet plug or	x		1	664-34045-1
	for Bayonet plug ADR	x		1	664-34045-3
11.2	Bayonet plug		x	1	664-34045-2

Pos.	Designation	Kit	Single Part	Qty.	Part N°.
12	Printed circuit board 12/24 VDC	x		1	236-10028-1
13	Low-level control	x		1	550-36979-9
14	Motor, 12 VDC	x		1	550-36982-1
	Motor, 24 VDC	x		1	550-36982-2
14.1	Motor connection VDC		x	1	664-36968-7
15	Hydraulic lube fitting, ST AR 1/8 Z		x	1	251-14040-1
16	Adapter M 22 x 1,5 (a) x G 1/8 in.(i)		x	1	304-19619-1
17	O-Ring ø 5x1,5 mm		x	3	219-12222-2
18	SSV divider block				
	- SSV 6 - K	x		1	619-37589-1
	- SSV 12 - K	x		1	619-37590-1
	- SSV 18 - K	x		1	619-37591-1
19	Hydraulic lube fitting, ST AR 1/8 Z		x	1	251-14040-1
20	Piston plug with sealing for control pin		x	1	519-32123-1
	Sealing kit for QLS 421			1	550-36979-8

Subject to modificaitons

Lincoln's Global Distribution and Service Network – The Best in Our Industry –

Whatever service is required – selecting a lubricating system, customised system installation or the supply of top quality products – you will always be best advised by the staff of the Lincoln offices, representatives and contract dealers.

Systems dealers

Our systems dealers have the most extensive specialised knowledge in our industry. They plan your installations to suit your specifications with exactly the combination of Lincoln components that you need. They then build the installations at your operation with experienced technicians or work closely with your personnel to ensure that everything goes smoothly.
All dealers have the complete range of pumps, distributers, monitoring devices and accessories in stock and meet our exacting demands with their specialised knowledge about products, installations and service. Whenever and wherever you need our experts, from St. Louis to Singapore, Walldorf and worldwide, Lincoln's first-class systems dealers are at your service.

Find out where the nearest Lincoln distribution and service office to you is located:

America:	**Lincoln Industrial**	One Lincoln Way St. Louis, MO 63120-1578 USA	Phone: Fax: Home:	(+1) 314 679 4200 (+1) 800 424 5359 www.lincolnindustrial.com
Europe/Africa/Asia:	**Lincoln GmbH**	Heinrich-Hertz Straße 2-8 69190 Walldorf Germany	Tel: Fax: E-Mail:	(+49) 6227 33-0 (+49) 6227 33-259 lincoln@lincolnindustrial.de
Asia/Australia/Pacific:	**Lincoln Industrial Corporation**	51 Changi Business Park Central 2 # 09-06 The Signature Singapore 486066	Phone: Fax: E-Mail:	(+65) 6588-0188 (+65) 6588-3438 sales@lincolnindustrial.com.sg

DIN EN ISO 9001
durch DQS
Reg.-Nr. 799

DIN EN ISO 14001
durch GUT