

Quicklub®
Printed-Circuit Board 236-13857-1
for Trailers and Semi-trailers



10061327a

This User Manual was compiled on behalf of

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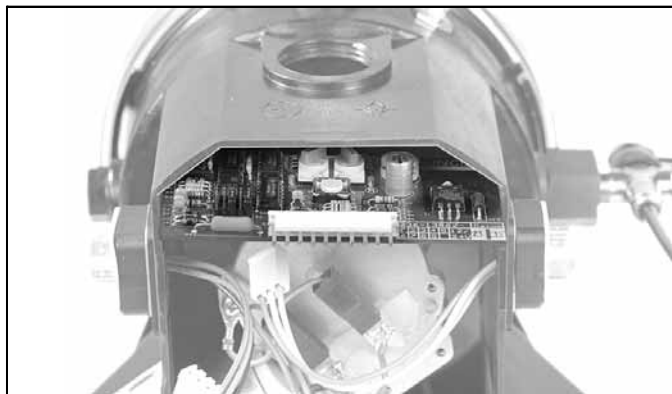
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For further information refer to:

- Technical Description Progressive Metering Devices for Grease and Oil, model SSV, SSVM and SSVD
- Planning and Layout of Quicklub Progressive Systems with SSV and SSVD Metering Devices
- Technical Description for "Electronic Control Units" of pump 203:
 - Control p.c.b. 236-13891-1 - Model V 10- V 13
 - Control p.c.b. 236-13870-3 - Model M 00-M 15
 - Control p.c.b. 236-13870-3 - Model M 16-M 23
 - External Control Unit 236-13894-1
- Installation Instructions
- Parts Catalogue
- Parts Catalogue Pump 203
- Technical Description P203 DC
- Technical Description P203 AC
- Technical Description P203 with 15 L reservoir
- Technical Description P203 with Follower Plate
- Lubricants

Printed Circuit Board H ¹⁾

- ¹⁾ This designation shows the version of the PCB installed in the pump. It forms part of the pump designation on the nameplate on each pump.



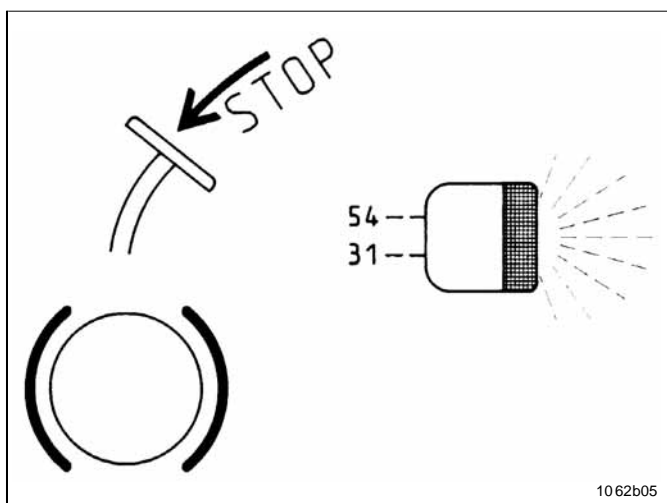
PCB 1 Control p.c.b. inside the housing

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Installation position of the control p.c.b.

- The **printed circuit board** is integrated in the pump housing.

Power supply



PCB 2 Stop light voltage

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- The pump with integrated control p.c.b. H is actuated by travelling motions of the trailer / semi-trailer with a shock sensor (Fig. PCB 5) of the control unit.
- In distinction against tractor units trailers / semi-trailers do not have a permanent voltage supply.
- To drive the feed pump only the stop light voltage (terminal 54) of the trailer / semi-trailer can be used depending on the braking operations.

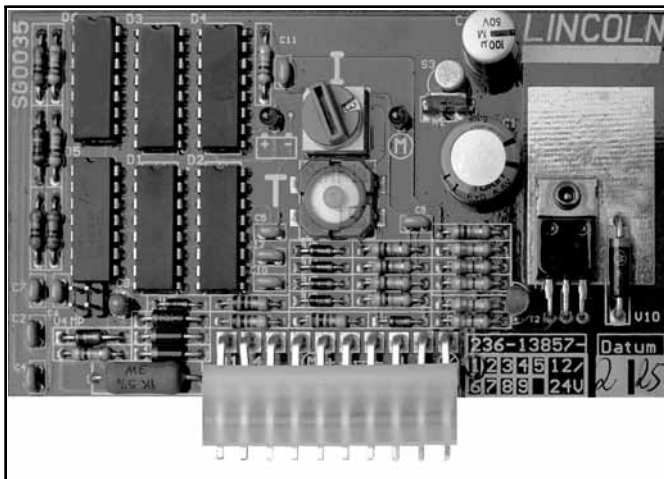


PCB 3 Capacitor

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- Normally, the brake-light voltage applies only for a short term. Therefore, a capacitor is required for the time storage (Abb. PCB 3).
- When the brake is actuated for the first time
 - the capacitor is charged to ensure the power supply for the operation-dependent signals permanently
 - the stand-by time is activated
 - the lubricating time starts

Commissioning

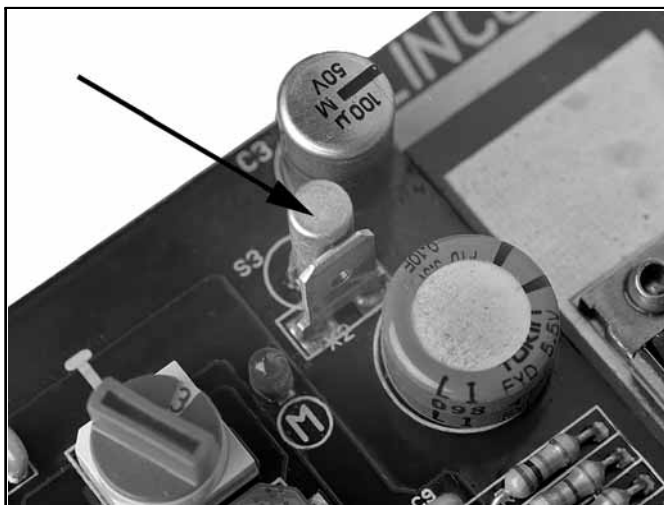


PCB 4 Control p.c.b. H, part no. 236-13857-1

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- Compared to the commissioning of tractor units (stand-by time via external contact, e. g. driving witch) the collection of operating times of pumps with control p.c.b.s H (Fig. PCB 4) is attended via the shock sensor (Fig. PCB 5).

Mode of Operation



PCB 5 Shock sensor

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- Pumps with integrated control p.c.b.s H are working according to operating cycles (Pause time + lubricating time, see Fig. PCB 6).
The control p.c.b. takes over during the travelling motions the sequence of pause and lubricating times of the centralized lubrication pump.
- The pump supplies lubricant only during braking operations to the connected lubrications points.



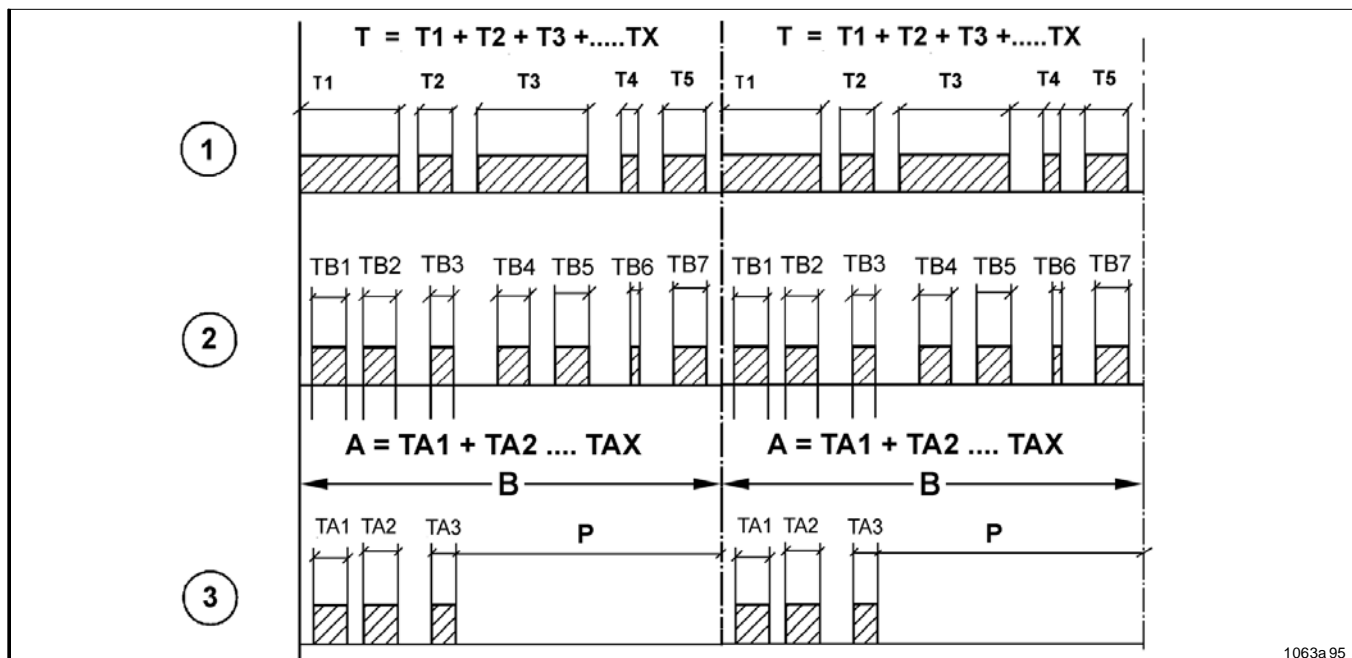
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NOTE

*Shock sensors of prior control p.c.b.s contain mercury (Fig. PCB 5).
New control p.c.b.s are equipped with shock sensor with another design (metal housing incl. a mobile pellet inside).*

- The electronic unit converts the incoming impulses into running times which correspond to the switching on and off of the driving switch.

Stand-by Time (lubricating & pause time)



PCB 6 Time lapse diagram

- 1 - Stand-by time - cycles (2 shown)
- 2 - Course of brake and lubricating times
- 3 - Course of stand-by time (lubricating and pause time)
- T - Stand-by time (6 hours, fixed)
- B - Stand-by time

- T1...TX - Individual driving times
- TB1...TBX - Individual brake or lubricating times
- A - Adjusted lubricating time
- TA1...TAX - Individual lubricating time
- P - Pause time

Stand-by time

- When the vehicle moves, the motion sensor starts the stand-by time B.
- The stand-by time includes
 - Pause time, during which the controller responds to the driving time pulses until the end of the pause time.
 - Lubricating time, during which the controller responds to the brake pulses (by actuation of the brake light) until the end of the lubricating.
- When the stand-by time starts, the voltage of the brake light (terminal 54) provides the pump with voltage via the control p.c.b.
- The stand-by time is fixed that in 6 hours the lubricating time runs once.
- The printed circuit board is designed in such a way that, within a real travelling time of 6 hours, the operating time runs once

Pause time

- The stand-by time B starts with the pause time (T1 ... TX).
- The pause time is the time range in which the controller records driving movements by means of the motion sensor 1 (see Fig. PCB. 5).
- 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.
- Whenever the stand-by time B has lapsed, a new lubricating cycle starts.

Lubricating time

- During the lubricating time the pump supplies lubricant to the connected lubrication points.
- The lubricating time
 - depends on the lubricant requirement
 - is variable
- Longer lubricating time means more lubricant; shorter lubricating time means less lubricant.
- The lubricating time TA (Fig. PCB 5) runs within the stand-by time B. It starts with the first actuation of the brake TB1. The lubricating time can be adjusted from 2 to 30 minutes (increment 2 minutes) on the control p.c.b.
- 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.
- After each further brake operation TB4 (Fig. PCB 7) no further lubricating time will result until the pause time T (as well as the stand-by time B) has lapsed and starts with a new cycle.

Time storage

- When the vehicle is immobilized, the capacitor maintains the stored time of availability as well as the stored operating times for about 4 - 5 days.
- If the vehicle is immobilized for a longer time, the stored times are cancelled (the capacitor loses its charge).
- When the vehicle is moved again, a new cycle of stand-by time begins.
- When the vehicle is started up again, the cycle begins with an operating time of the pump the first time the brake is actuated

Time Setting



PCB 7 Cover lid to the control PCB 00002617a

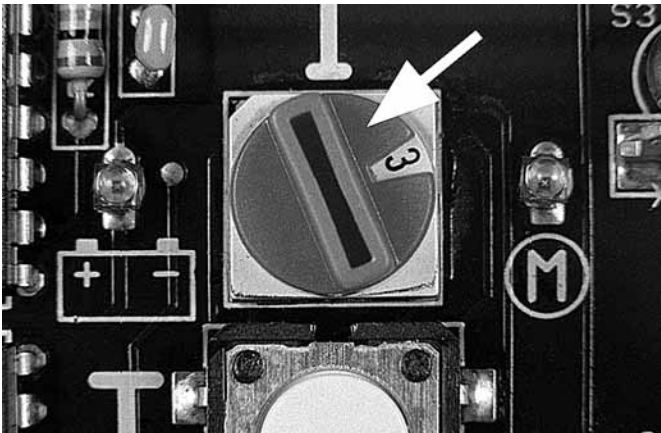
- To set the pause or lubricating time, remove the cover on the pump housing.



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IMPORTANT

Upon completion of the time setting, make sure to firmly close the cover lid again.



PCB 8 Rotary switch – lubricating time 20002431

Factory setting

- Lubricating time 6 minutes
- Stand-by time 6 hours (fixed)

To set the lubricating time

- The lubricating time can be set to 15 different settings by means of the red rotary switch.



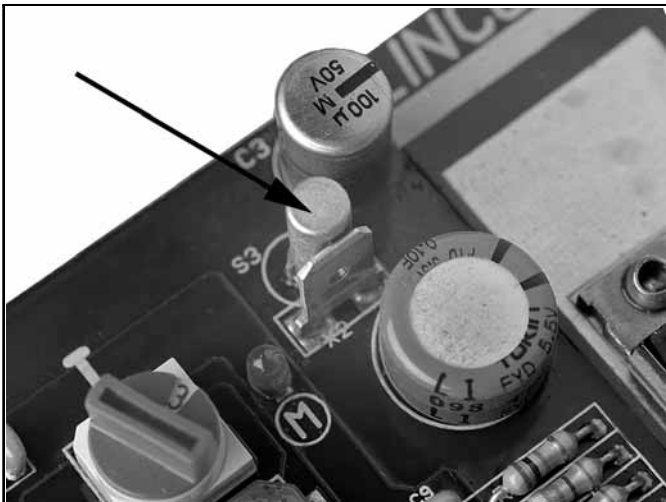
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IMPORTANT

The 0 setting has no function.

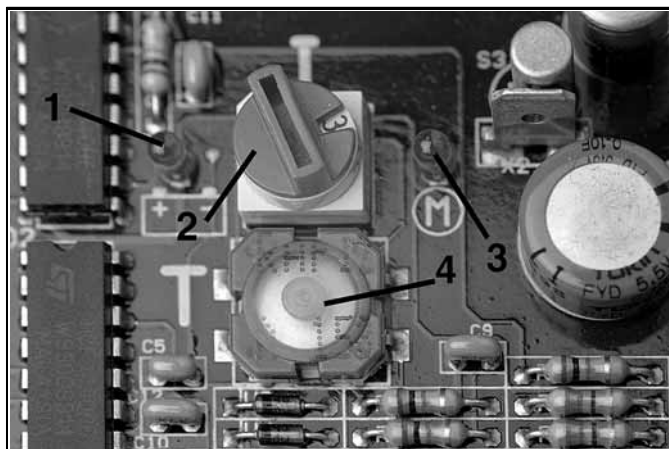
Switch position	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Minutes	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30

Test / To trigger an additional lubrication



PCB 9 Shock sensor 20002450a

- Connect the trailer to the tractor unit.
- Switch on the driving switch.
- Keep the brake **actuated!**
- Slightly push the pump causing the shock sensor (Fig. PCB 9) actuates the stand-by time.



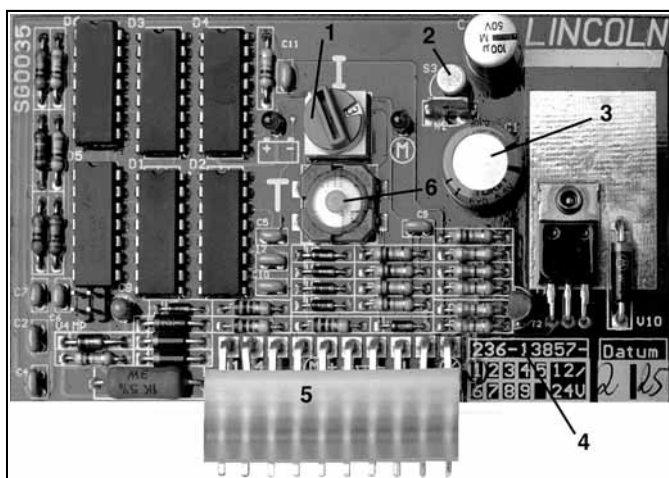
PCB 10 Components of the control p.c.b. H

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- To check whether voltage is applied to the printed circuit board, observe whether the left-hand LED 1 (Fig. PCB 10) is lit.
- ➔ Press illuminated pushbutton 4 > 2 seconds until the right-hand LED 3 lights up.
- A shorter pause time elapses, followed by a lubricating time with the set duration.
- Additional lubrications can be triggered at any time.
Precondition: Power supply is switched on.

- 1 - LED, left-hand
- 2 - Rotary switch, red
- 3 - LED, right-hand
- 4 - Illuminated pushbutton

Repair



PCB 11 Control unit

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- 1 - Rotary switch, red
- 2 - Shock sensor in metal design
- 3 - Capacitor
- 4 - Part number
- 5 - Terminal
- 6 - Illuminated pushbutton



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CAUTION!

Shock sensors of prior control p.c.b.s contain mercury (Fig. PCB 11).

In the case of a repair take care that the sensor is not damaged as there would be the risk of harmful vapours.

- ➔ Remove the defective control p.c.b.
- ➔ Pack the defective control p.c.b. properly so that it will reach the factory without any further damages.
- ➔ (...)
- ➔ Connect the new control p.c.b. and install it properly.



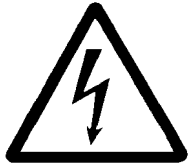
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IMPORTANT

Whenever the pump housing has been opened (e. g. for replacing of the p.c.b.), the housing cover (including the foamed seal) must be replaced.

Maintenance and Repair

Electrical Connection



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WARNING!

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

Consider the safety instructions (page 5 and 6)!

CAUTION!

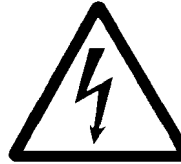
Before starting, make sure that the general power supply is off. The device must never be connected or disconnected when the power is on. The protective conductor must always be connected. Take care that this line section is undamaged and conforms to standards and the contacts are safe.



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NOTE

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



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ATTENTION!

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

- 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“).

Troubleshooting



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NOTE

The pump operation can be stated from the outside by:

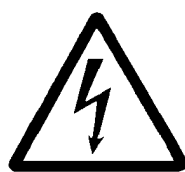
- the rotating stirring paddle (e.g. by triggering an additional lubrication cycle)
- the LEDs of the control p.c.b.

Fault: The pump motor does not run

Cause:

- Power supply to the pump interrupted
- Power supply to the control p.c.b. interrupted
- Power supply from the control p.c.b. to the motor interrupted
- Control p.c.b. defective

Remedy ...



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- ➔ Check the function of the control p.c.b. (see paragraph „Test / To trigger an additional lubrication“). If necessary replace the p.c.b.

by service personnel

- ➔ Check the power supply to the pump.
- ➔ If necessary rectify the fault.
- ➔ Check the line leading from the pump to the control p.c.b. If the power supply is connected, the left-hand LED is lit (see Fig. PCB 10).
- If the lubricating time runs the right-hand LED is lit (see Fig. PCB 10).

Technical Data

Electrical Data

Rated voltage 12/24 VDC
Operating voltage at 12/24 VDC 9 ... 30 V
Residual ripple in relation to the operating voltage ¹⁾
..... DIN 41755: $\pm 5\%$
Output motor Transistor 7 A / short-circuit proof
Reverse polarity protection of the operating voltage inlets yes
Adm. operating temperature $-25\text{ }^{\circ}\text{C}$... $+70\text{ }^{\circ}\text{C}$
Protection IP6K 9K (p.c.b. installed in housing) ²⁾

EMC ³⁾

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

Time Setting

Factory setting
- Lubricating time 6 minutes
- Stand-by time 6 hours (fix)

Range of lubricating time 2, 4, 6, ..., 30 minutes



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¹⁾ ATTENTION!

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



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²⁾ NOTE

In order to protect the printed circuit board against condensation, it has been covered with a protective varnish.



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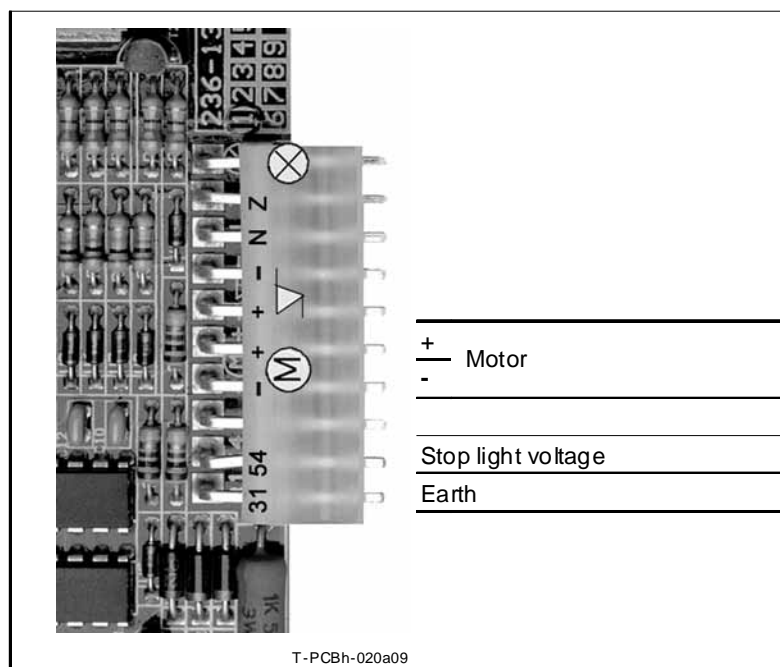
³⁾ NOTE

The pumps correspond to the following EMC directives:

- for vehicles ^{A)} EMC 2009/19/EC

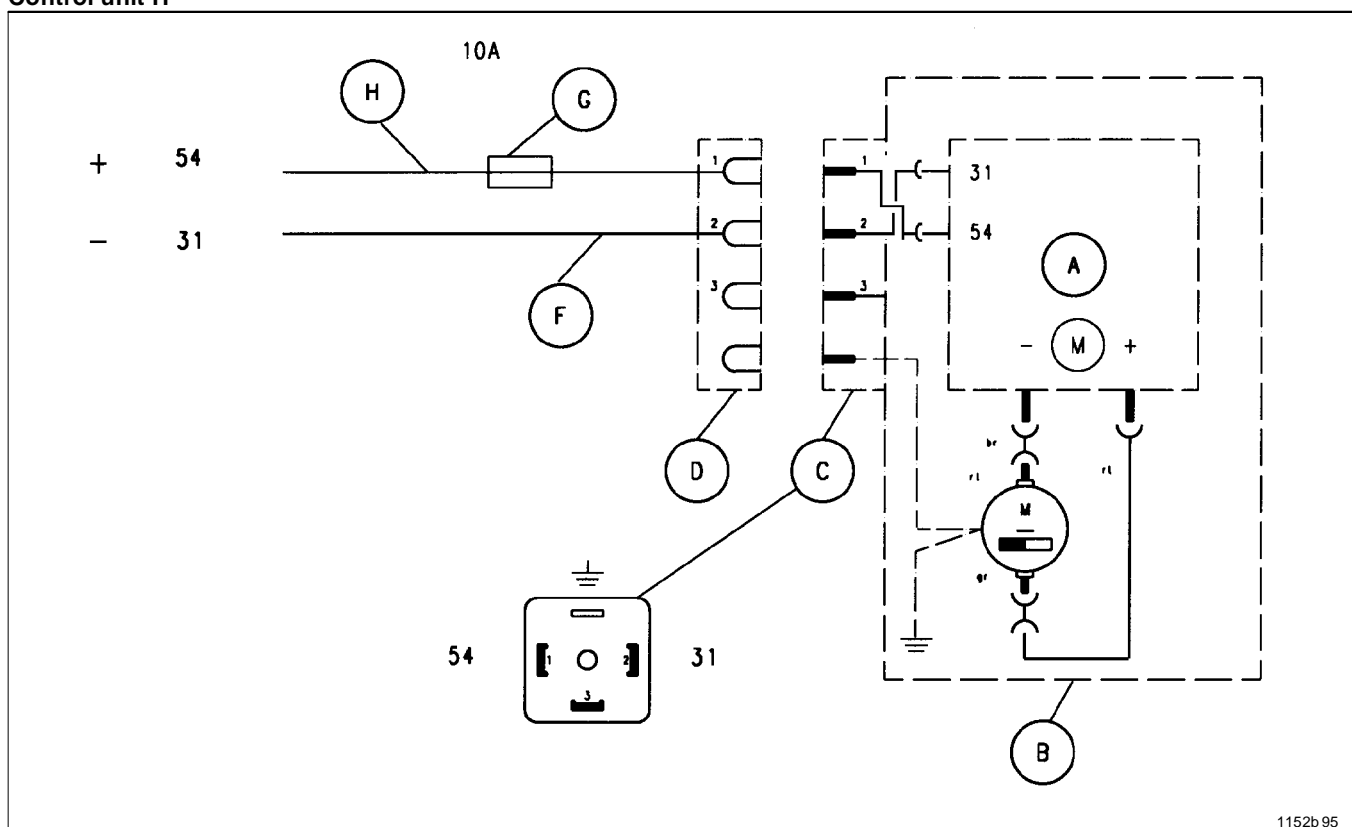
^{A)} marked with the EC approval symbol (e-icon) on the type identification plate.

Terminals of the p.c.b.



Connection Diagram VDC for mobile application

Type of connection 1A1.10: Square-type plugDIN 43650-A with connecting cable
Control unit H



Connection diagram Quicklub for trailer / semi-trailer (mobile), connection: square-type plug

- | | |
|---|-------------------------|
| A - Control p.c.b. | F - cable, brown |
| B - Pump housing | G - Fuse, 10 A |
| C - Square-type plug 1 | H - Cable, red |
| D - Square-type socket with connecting cable, 3-core | |

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