

# **LMC 1**

## **Lincoln Multi Controller 1**



6603m07

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## 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
<b>ATTENTION</b>	<b>ATTENTION</b>	<b>NOTE</b>
<b>CAUTION</b>	<b>CAUTION</b>	<b>IMPORTANT</b>
<b>WARNING</b>	<b>WARNING</b>	

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

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

#### Example:



#### 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

### Intended use

- Use the LMC 1 multi controller solely for controlling or monitoring Lincoln centralized lubrication-systems in stationary industrial plants.

### Improper use

Any kind of use of the LMC 1 not explicitly denoted in this user information as intended use is considered improper use. If the LMC 1 is used or operated in deviation from the intended use, all claims for compensation and all liability cease to exist.



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#### NOTE

*Misappropriate use, e.g. through disregard of the safety instructions or through improper installation of the LMC 1 invalidates all legal claims against Lincoln GmbH for any personal injury or damage to materials.*

### Exclusion of liability

- The manufacturer of the LMC 1 is not liable for damage caused by
  - non-environmentally compatible disposal
  - unauthorized modifications to the system parts
  - use of spare parts not authorized by Lincoln
  - commissioning and start-up in defective condition
  - erroneous program selection by the user

### General safety instructions

- The multi controller LMC 1
  - is designed based on state of the art technology
  - can be assembled safe-to-operate
- Improper use can lead to damage due to under- or overlubrication of bearings and bearing points.
- Independent alterations or modifications to an installed system may only be carried out after prior consultation with the manufacturer or its contract partner.



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#### WARNING!

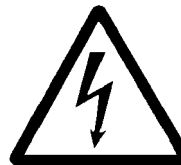
*Dangerous residual voltages!  
Even during a standstill the motor or valve may be applied with voltage.*

### Accident prevention rules

- Comply with the rules applicable in the country of use.
- Do not operate
  - using non-authorized spare parts
  - with power supplies (VAC/VDC) that do not comply with the electrical design of the LMC 1

### Operation, maintenance and repair

- LMC 1 safety devices:
  - do not modify them or make them inoperative
  - do not remove them from the lubrication system
  - reattach them before commissioning or start-up
- Mount the LMC 1 between 0.4 and 2.0 m above the access level with cable glands towards bottom (wall-mounting).
- Keep the LMC 1 multi controller away from heat sources. Comply with the operating temperature.
- Replace a defective LMC 1 in its entirety (see "Spare parts" chapter, page 9).

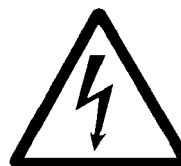


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#### CAUTION!

*The LMC 1 may only be installed by qualified personnel that are familiar with its operating instructions. The connection (N/L/PE) to the power supply must be carried out according to VDE 0100 and VDE 0160. Install a safety device and interrupt facility to disconnect the LMC 1. Disconnect the mains connection before starting installation and service work. Make sure to provide a safeguard to prevent unintentional reclosing of the disconnecting device.*

*After completion of wiring, individual cores must be secured against dislocation.*



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#### WARNING!

*Non-compliance with the safety instructions, such as contact with electrically conducting parts with an open LMC 1 or improper handling the same can endanger life. The device could overheat if the technical data specified in the technical data sheet are exceeded. This can destroy the LMC 1 and can impair the electrical safety.*

### Disposal

- Dispose of the LMC 1 in an environmentally friendly way, according to the relevant and legal regulations.

## Description

### Application

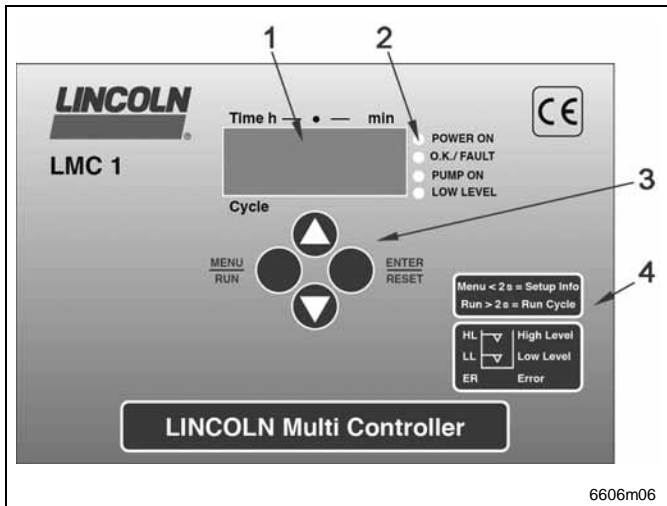


Fig. 1 LMC 1 membrane keypad

- 1 - 4-digit 7-segment display
- 2 - LED status display
  - Power on (white)
  - Readiness for operation (green) / Malfunction (red)
  - Pump is running (green)
  - Low-level signal (yellow)
- 3 - Operating panel
  - left MENU / RUN
  - right ENTER / RESET
  - up (UP) short + 1 count value  
long + high speed
  - down (DOWN) short - 1 count value  
long - high speed
- 4 - Information on handling

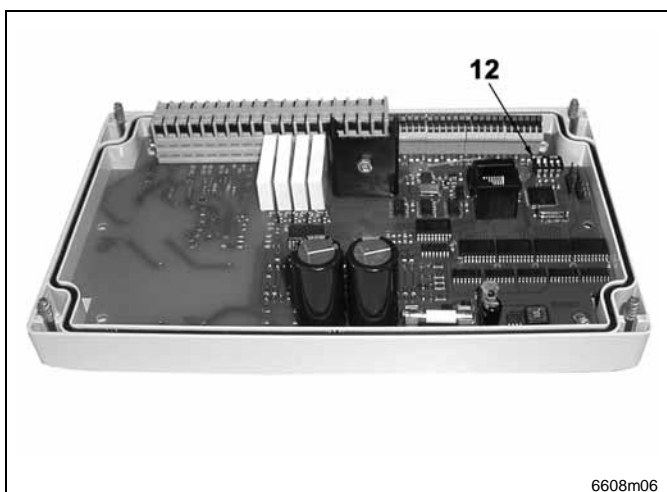


Fig. 2 The LMC 1 control p.c.b. (VDC)

- The LMC 1 multi controller is used to control and monitor the following stationary Lincoln lubrication systems.
  - Progressive systems
  - Spray systems
  - Two-line systems
  - Centro-Matic® systems
  - PMA systems
  - COBRA chain-lubrication systems
- It combines the flexibility of freely programmable controllers with the cost effectiveness of pre-programmed control p.c.b.'s.
- Functionality and menu display in the LMC 1 are set to specifically matching parameters depending on the lubrication system selected.  
Parameter name (t = time, c = counter):
  - t - MO ..... (Monitoring) Monitoring time
  - t - PS ..... (P)ause time
  - t - rn ..... (run) Lubrication time
  - t - od ..... (off delay) Switch-off delay
  - t - cl ..... (clean) Nipple cleaning time
  - c - rn ..... (run) Lubrication / revolution / stroke count
  - c - PS ..... Number of pause revolutions
  - c - bl ..... (Bolts) Number of chain links
- The lubrication system and defaults for its parameters can be set (UP & DOWN keys, pos. 3, Fig. 1) using the DIP-switches (SW1, SW2, SW3 & SW4, pos. 12, Fig. 2)
- You can make additional parameter modifications with the operating panel on the LMC 1 membrane keypad in the "Setup mode" (see the "Operating" section in the respective lubrication system).
- All settings and count values are saved every 30 minutes in the LMC 1 EEPROM, which means they are not lost even if the mains supply fails.

12 - DIP-switch (from left: SW1, SW2, SW3, SW4)

## Description, continued

### MENU Reference list

Navigation	LMC 1	Centralized lubrication system	Display menu item	Parameter	Section	Count value
<b>Through key(s)</b>		<b>Factory setting</b>			<b>Through UP or DOWN key</b>	
ENTER + MENU		<b>PMA systems</b>				
ENTER		1	c – rn	Number of lubrication cycles	1 to 9999 lubrication cycles	±1 stroke
ENTER		1	c – PS	Number of pause cycles	1 to 9999 pause cycles	±1 pause cycle
ENTER		10	c – bl	Number of chain links	1 to 9999 chain links	±1 chain link
ENTER		Jumps back to the first parameter				
RUN		Acknowledgment of the modifications carried out & return to the operating mode				
ENTER + MENU		<b>Progressive systems</b>				
ENTER		10 min.	t – PS	Pause time	1 min. to 99 h. and 59 min.	±1 minute
ENTER		1	c – rn <sup>1)</sup>	Number of metering device cycles	1 to 99 metering device cycles	±1 cycle
ENTER		2 min.	t – m <sup>1)</sup>	Lubrication time	1 min. to 99 min. and 59 sec.	±1 second
ENTER		2 Min.	t – MO <sup>1)</sup>	Monitoring time	1 min. to 99 min. and 59 sec.	±1 second
ENTER		Jumps back to the first parameter				
RUN		Acknowledgement of the modifications carried out & return to the operating mode				
ENTER + MENU		<b>Two-line systems</b>				
ENTER		12 min.	t – MO	Monitoring time	1 min. to 99 min. and 59 sec.	±1 second
ENTER		10 min.	t – PS	Pause time	1 min. to 99 h. and 59 min.	±1 minute
ENTER		Jumps back to the first parameter				
RUN		Acknowledgement of the modifications carried out & return to the operating mode				
ENTER + MENU		<b>Centro-Matic® systems</b>				
ENTER		2 min.	t – MO	Monitoring time	1 min. to 99 min. and 59 sec.	±1 second
ENTER		10 min.	t – PS	Pause time	1 min. to 99 h. and 59 min.	±1 minute
ENTER		10 sec.	t – od	Switch-off delay time	1 sec. to 99 sec.	±1 second
ENTER		Jumps back to the first parameter				
RUN		Acknowledgement of the modifications carried out & return to the operating mode				
ENTER + MENU		<b>COBRA chain lubrication systems</b>				
ENTER		10 sec.	t – cl	Cleaning time per nipple	1 sec. to 99 sec.	±1 second
ENTER		1	c – rn	Number of lubrication cycles	1 to 9999 lubrication cycles	±1 lubrication cycle
ENTER		1	c – PS	Number of pause cycles	1 to 9999 pause cycles	±1 pause cycle
ENTER		10	c – bl	Number of chain links	1 to 9999 chain links	±1 chain link
ENTER		Jumps back to the first parameter				
RUN		Acknowledgement of the modifications carried out & return to the operating mode				
ENTER + MENU		<b>Spray systems</b>				
ENTER		10 Min.	t – PS	Pause time	1 min. to 99 h. and 59 min.	±1 minute
ENTER		1	c – rn <sup>1)</sup>	Number of metering device cycles	1 to 99 metering device cycles	±1 cycle
ENTER		2 min.	t – m <sup>1)</sup>	Lubrication time	1 min. to 99 min. and 59 sec.	±1 second
ENTER		2 Min.	t – MO <sup>1)</sup>	Monitoring time	1 min. to 99 min. and 59 sec.	±1 second
ENTER		10 sec.	t – od	Re-spraying-time	1 sec. to 99 sec.	±1 second
ENTER		Jumps back to the first parameter				
RUN		Acknowledgement of the modifications carried out & return to the operating mode				

<sup>1)</sup> Are displayed or hidden depending on the parameter default (see "DIP-switch combinations", page 11) in the set-up mode (see "Quicktour", pages 16 and 32).

## Installation

### Connection

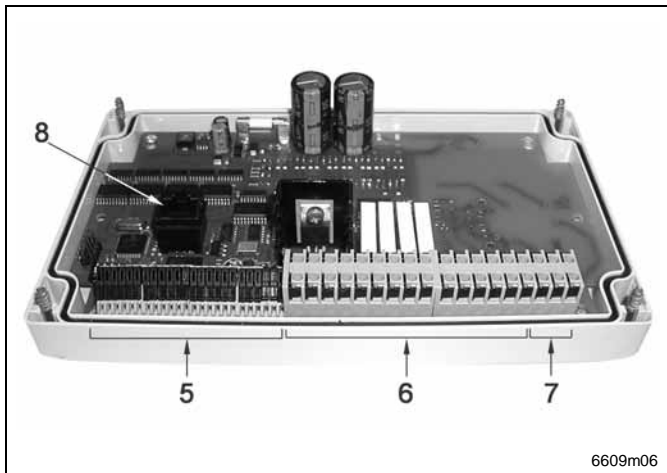


Fig. 3 LMC 1 electrical connections

- The terminals for signal inputs (pos. 5), for the ACTUATOR lines (pos. 6) and for the mains supply (pos. 7) are located on the control p.c.b. (Fig. 3).

- 5 - Signal input
  - for 3-wire initiators up to 24 V (PNP)
  - for 2-wire initiators, residual voltage < 5 V
- 6 - Control output (ACTUATOR)
  - 4 relay outputs
  - 1 electronic output
- 7 - Voltage supply (24 VDC / 10 A or 230 VAC / 3 A)
- 8 - Program interface (RJ 45)

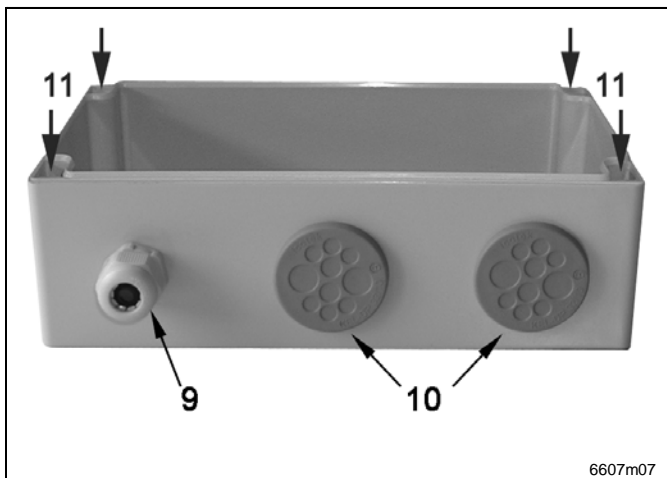


Fig. 4 Housing

- Route the LMC 1 connection cables through the cable glands (item 9 and 10) on the bottom of the housing.
- Possible tensile forces on the cables have to be relieved from outside of the housing.
- Fasten on the rear of the housing using the mounting channels (pos. 11) with the cable glands towards bottom (wall-mounting).

#### Cable glands:

- 9 - Voltage supply (M16 screwed connection)
- 10 - Control inputs and outputs (for 0.5 mm<sup>2</sup> cable)
- 11 - Mounting channels for fastening (dimensions see page 36)

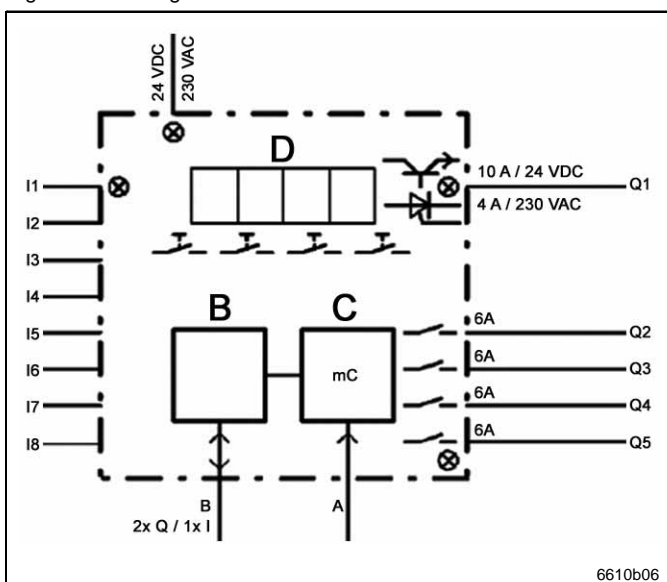


Fig. 5 Connection diagram

- A - Programming
- B - BUS interface, option (field bus plug)
- C - Controller
- D - Display
- I1 - I8 Signal input connection
- Q1-Q5 Control output (ACTUATOR) connection



## Technical data

### LMC 1 multi controller

Dimensions (L x W x H) ..... 200 x 120 x 90 mm  
Display ..... 4-fold 7-segment display  
Operating temperature ..... - 10 to + 70 °C  
Storage temperature ..... - 40 to + 85 °C

#### Inputs:

Number ..... 8, short-circuit proof, non-floating  
Cutoff frequency ..... 100 Hz

#### Outputs:

Number ..... 5, overload protected  
..... 4 relay outputs NO contacts 6A, 0-240 VAC/ VDC  
..... 1 electronic output 24 VDC/10A or 230 VAC/3A

#### Reverse polarity protection:

Operating voltage inputs are protected against reverse polarity  
Residual ripple at operating voltage:  
..... ±5% according to DIN 41755



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#### NOTE

*If the internal fuses need to be replaced, use only the original type.*

### AC input

Input voltage ..... 230 VAC ±10% ; 50/60 Hz ±5%  
Fast fuse ..... 4 A/250 V internal

### DC input

Input voltage ..... 24 VDC ±20%  
Slow fuse ..... 10 A

### Safety DIN EN 60204

Protection class ..... Class I

### EMC

Interference suppression VDE 0875 T 11, EN 55011 Class A  
Noise output ..... according to EN 61000-6-4  
Immunity to electrical noise ..... according to EN 61000-6-2



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#### NOTE

*The noise output complies with the requirements for the industrial sector. If used in residential areas, this can lead to interaction under certain circumstances.*

### Protection and monitoring:

Current limitation ..... Sustained short-circuit proof  
Overload protected ..... yes  
Idle protected ..... yes  
Power failure backup time ..... > 15 ms at 230 VAC  
Protection class ..... IP 54

## Replacement parts

LMC 1 multi controller

Type 24 VDC ..... 236-10567-1      Type 230 VAC ..... 236-10567-2

## Declaration of Conformity according to EMC-directive 2004/104/EC

We hereby declare that the multi controller

### Lincoln Multi Controller LMC 1

in the design we have delivered complies with the regulations in the above-referenced directive.

The following harmonized standards were applied:

DIN EN 60204  
DIN EN 61000-6-4  
DIN EN 61000-6-2

**Safety Test**  
**Emitted Interference**  
**Interference Immunity**


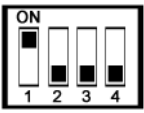
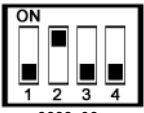
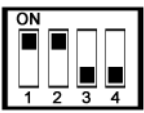
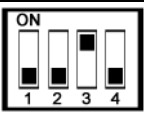
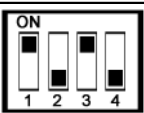


Walldorf, 05-May-06, Dr. Ing. Z. Paluncic

## Troubleshooting

ERROR CODE	CAUSE	REMEDY
<b>E-OL</b>	• Signal error from actuator	➡ Check the output connection and correct if applicable.
		➡ Repair the short-circuit if applicable.
		➡ Check the functioning of the actuator and replace if applicable.
<b>E-IN</b>	• Signal error from sensor	➡ Check the sensor connection and correct if applicable.
		➡ Repair the short-circuit if applicable.
<b>E-MS</b>	• OFF through motor protecting switch	➡ If applicable, prevent overload on motor.
		➡ Repair the short-circuit if applicable.
		➡ Replace incorrect / defective motor if applicable.
<b>TYPE</b>	• Incorrect lubricating program set	➡ Carry out the correct DIP-switch setting to select the version (see table, page 11).
<b>E-PD</b>	• Pressure switch to monitor the pressure relief did not drop, counter pressure could still be applied	➡ Check the pressure line system for counter pressure and manually bleed it if necessary.
		➡ Check the pressure switch for correct operation and replace if applicable.
		➡ Check the final-pressure monitor frame size and replace if applicable.
		➡ Check the pressure relief valve and replace if applicable.
	• Set pause time is shorter than the lubricating time	➡ Increase the pause time. • As the pause time is also restarted at the start of the lubricating time, the following setting value applies: Pause time > Lubricating time
<b>E-D</b>	• Signal error from metering device	➡ Check the pressure line system for blockage and repair it if necessary.
		➡ Replace the piston detector or proximity switch on the metering device and replace if applicable.
<b>E-OP</b>	• Pressure at the pressure switch of the pump is too high	➡ Check the pressure line system for blockage and repair it.
<b>E-CD</b>	• Wrong moving direction of conveyor chain	➡ Swivel COBRA back into the operating position.
		➡ Correct moving direction of the conveyor chain.
<b>E-FC</b>	• Stroke monitor reports: Valve stroke not carried out	➡ Check the pressure line system and valve.
		➡ Remove blockage or replace the valve.
<b>T-OUT</b>	• Monitoring time exceeded	➡ Check for cause in the pressure line system (e.g. pipe fracture) and repair as necessary.
		➡ Check signal line for interruption and replace the connection if necessary.
		➡ If applicable, adapt the monitoring time if the pressure line system is free from defects.
<b>E-FL</b>	• Filling time monitoring exceeded	➡ Check filler pump and filling system.
<b>E-C</b>	• COBRA misaligned mechanically from operating position	➡ Realign COBRA.
<b>E-AP</b>	• Supply air pressure too low	➡ Check compressed air supply.
		➡ Readjust pressure regulator if necessary.

## Parameters, Survey

### DIP-switch combinations

Scheme	DIP switch SW 1 SW 2 SW 3 SW 4				Lubrication System / function	Versions	Parameter default
 6661c06	0	0	0	0	PMA	0 1	no stroke monitoring with stroke monitoring
 6665c06	1	0	0	0	Progressive	0 1 2 3 4	no metering device and without cycle counter with one metering device and without cycle counter with one metering device and with cycle counter with two metering devices and without cycle counter with two metering devices and with cycle counter
 6663c06	0	1	0	0	Two-line	0 1 2 3 4 5	EMU without monitored metering device 1) EMU with monitored metering device 1) SU without monitored metering device 2) SU with monitored metering device 2) 3ZWV without monitored metering device 3) 3ZWV with monitored distributor 3)
 6667c06	1	1	0	0	Centro-Matic®	0 1	with one pressure switch with two pressure switches
 6662c06	0	0	1	0	COBRA	0	standard setting
 6666c06	1	0	1	0	Spray lubricating system	0 1 2 3 4 5	no metering device and no cycle counter, clock-pulsed with metering device and no cycle counter, clock-pulsed with metering device and cycle counter, clock-pulsed no metering device, no cycle counter, not clock-pulsed with metering device and cycle counter, not clock-pulsed with metering device and cycle counter, not clock-pulsed
 6664c06	0	1	1	0	Test mode		
 6668b06	1	1	1	0	<b>Configuration mode</b>		

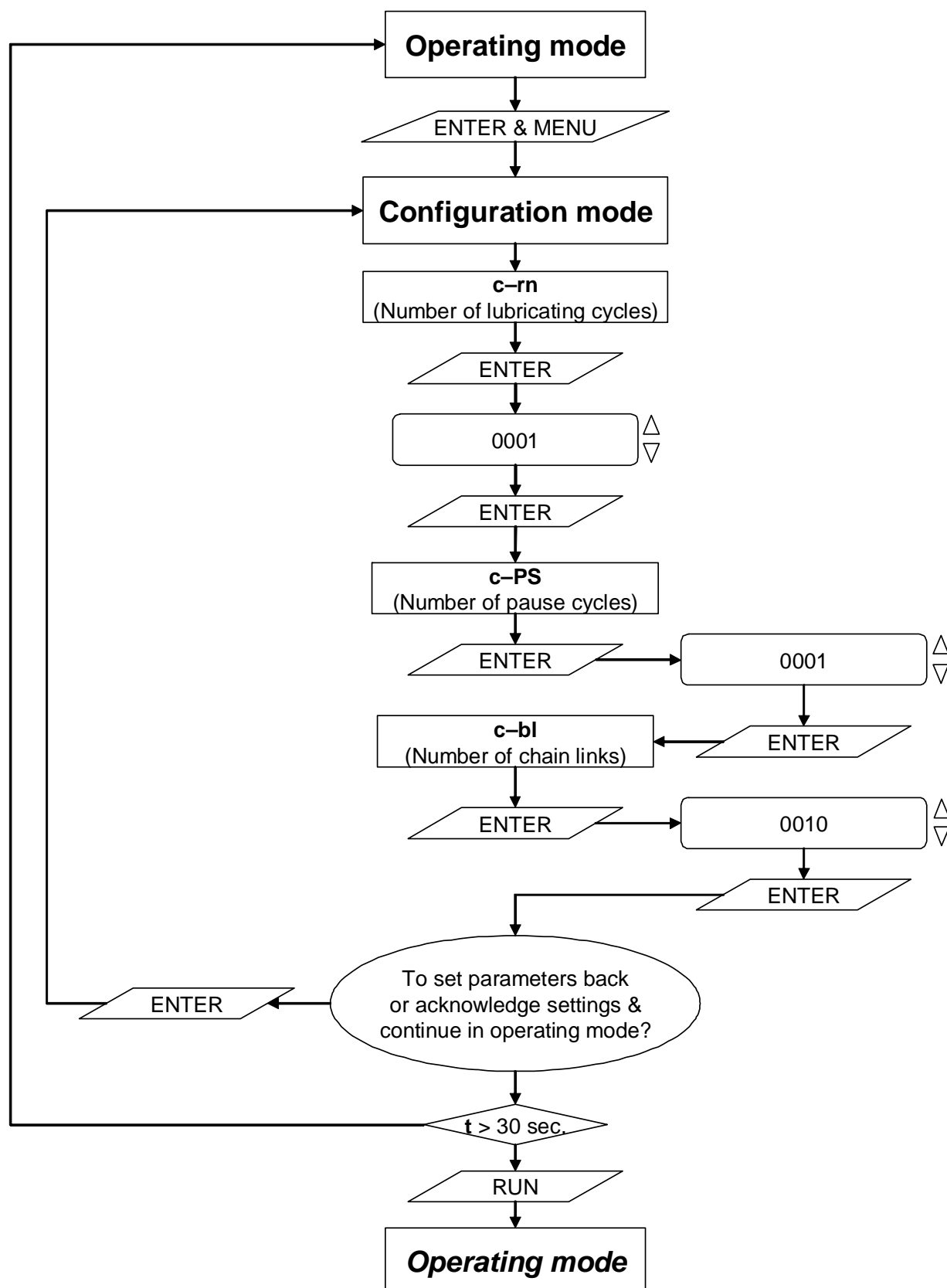
<sup>1)</sup> EMU – electronic change-over control

<sup>2)</sup> SU – pressure-controlled change-over control

<sup>3)</sup> 3ZWV - 3/2-way valve

## PMA lubrication systems

### Quicktour



## PMA lubrication systems, continued

### Operating mode

- The following parameters are controlled or monitored for PMA lubricating systems via the standard LMC 1 programming:
  - Variable:
    - Cycle-dependent lubrication
    - Number of chain pause-cycles
    - Number of chain links

### Connection

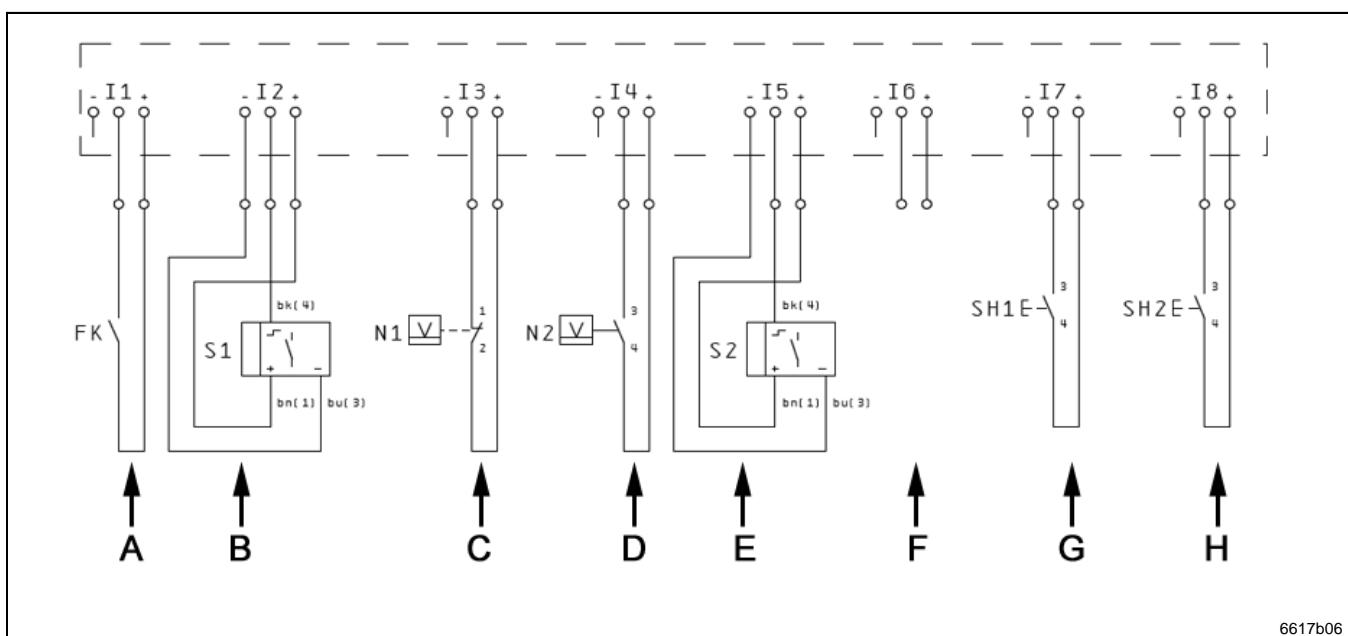


Fig. 6 Signal input connection

A - External contact<sup>1)</sup>  
E - Stroke monitoring

B - Chain sensor  
F - Reserve

C - Low-level signal  
G - Additional lubrication

D - High-level signal  
H - Remote reset

<sup>1)</sup> Time stop respectively lubrication stop

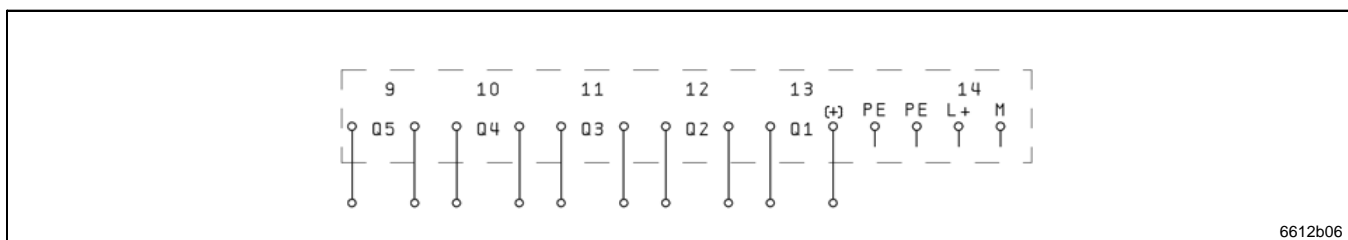


Fig. 7 Control output (ACTUATOR) connection

Q1 - Pump  
Q5 - Reserve

Q2 - System (ready for operation)  
PE - Protective earth conductor

Q3 - Lubrication active  
L+ - Power supply +

Q4 - Reserve  
M - Power supply -

## PMA lubrication systems, continued

### Operation

#### Commissioning

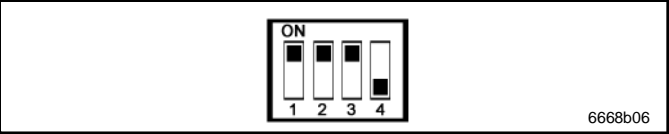


Fig. 8 DIP switch – configuration mode

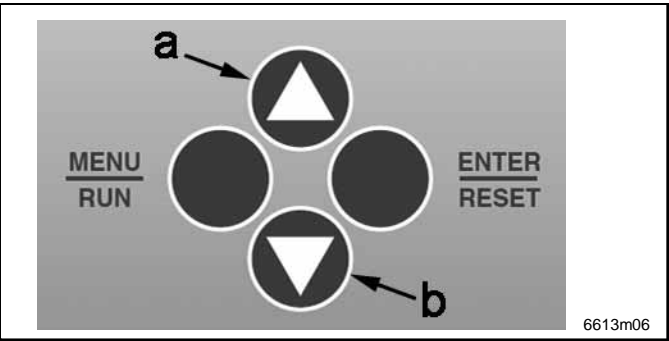


Fig. 9 Operating panel

- a - "UP" key  
b - "DOWN" key



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#### NOTE

*"RESET" as halt function:*

*You can interrupt the running lubrication time by pressing the "RESET" key (> 2 sec.). The next pause cycle starts from the beginning.*



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#### NOTE

*„RUN" to trigger additional lubrications:*

*You can interrupt the running pause cycle by pressing the "RUN" key (> 2 sec.). The lubricating time starts from the beginning.*



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#### NOTE

*As soon as you press the "UP" key (pos. a, Fig. 9) outside of the configuration mode, the actual rest of the expired pause cycle is shown in the display.*

#### Parameter default

- Set the DIP switches (see view Fig. 2, page 6) as shown in Fig. 8:  
"1-1-1-0" (SW1 ON - SW2 ON - SW3 ON - SW4 OFF)
- Select from the following versions to set the parameter defaults in your PMA lubrication system:
  - no stroke monitoring ..... 0
  - with stroke monitoring ..... 1



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#### NOTE

*The version number setting (0 - 1) is shown in the LMC 1 display and is made using the UP & DOWN keys on the operating panel (see pos. a & b, Fig. 9).*

- Complete your selection (0 - 1) with the ENTER key (Fig. 9).  
If you do not acknowledge your selection with ENTER, the standard value of "0" is automatically set.

#### Selecting the lubrication system

- First switch SW1 to SW3 to "0-0-0" (OFF-OFF-OFF).  
Then set the right-hand DIP switch (SW4) to ON (Fig. 10).

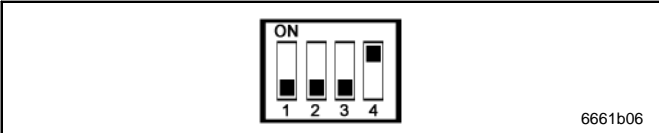


Fig. 10 DIP switch: PMA lubrication systems - settings

- After that, switch SW4 back to OFF (Fig. 11).

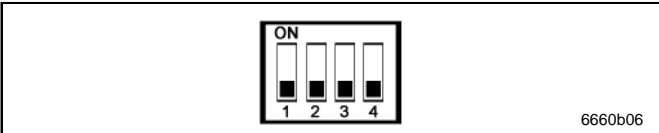


Fig. 11 DIP switch: PMA lubrication systems – operating mode

The standard settings to control your PMA lubrication system are now complete and the system is ready for operation. Please refer to page 15 for possible parameter adaptations.

## PMA lubrication systems, continued

### Operation, continued

#### Adapting the parameters

- Press and hold the "ENTER" key and then press "MENU" to open the configuration mode.
- You can modify the count value of every parameter using the "UP" and "DOWN" keys as below:
  - Press briefly .....  $\pm 1$  count value
  - Keep pressed .....  $\pm$  High speed

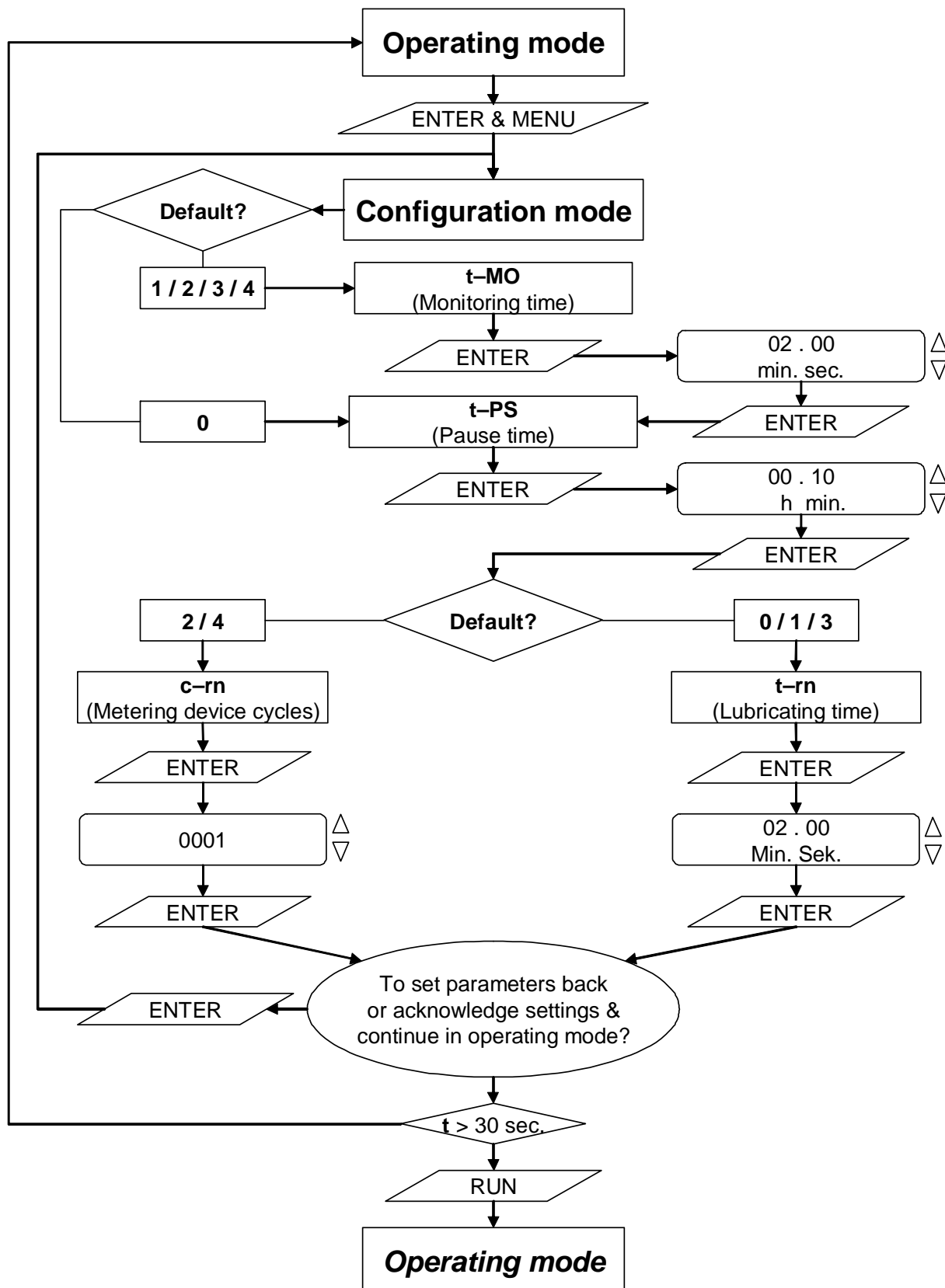
#### Defaults 0 and 1:

(see table on page 11)

- **Stroke monitoring**  
The stroke monitor checks the functioning of the solenoid valve.
- **Menu item \* c-rn \*, Number of lubricating cycles**  
(Cycle-dependent lubrication)  
The number of lubricating cycles determines how often the chain must run through until it is completely lubricated.
  - Press the "UP" or "DOWN" key to configure the number of lubricating cycles.
    - Section 1 to 9999 lubricating cycles
    - Count value 1 lubricating cycle
  - Conclude the selection with the "ENTER" key.
- Continue with the \* c-PS \* menu item.
- **Menu item \* c-PS \*, Number of pause cycles**
  - The number of pause cycles sets the number of non-lubricated chain cycles that must transpire between two lubrication processes.
  - Press the "UP" or "DOWN" key to configure the number of pause cycles.
    - Section 1 to 9999 pause cycles
    - Count value 1 pause cycle
  - Conclude the selection with the "ENTER" key.
- Continue with the \* c-bl \* menu item.
- **Menu item \* c-bl \*, Number of chain links**
  - The number of chain links determines the number of lubrication strokes for one lubricating cycle.
  - Press the "UP" or "DOWN" key to configure the number of chain links.
    - Section 1 to 9999 chain links
    - Count value 1 chain link
  - Conclude the selection with the "ENTER" key.
- Press the "RUN" key (> 2 sec.) to incorporate the changes made to all menu items. Otherwise, after 30 seconds the program reverts back to the operating mode.
- If you want to change a menu item again, press the "ENTER" key. You will once more automatically arrive at the start of the configuration mode.

## Progressive systems

### Quicktour





## Progressive systems, continued

### Operating mode

- The following parameters are controlled or monitored for progressive systems via the standard LMC 1 programming:
  - Variable:
    - Pause time
    - Time or cycle-dependent lubrication
    - Monitoring time
  - Fixed:
    - Filling time monitoring 15 min.

### Connection

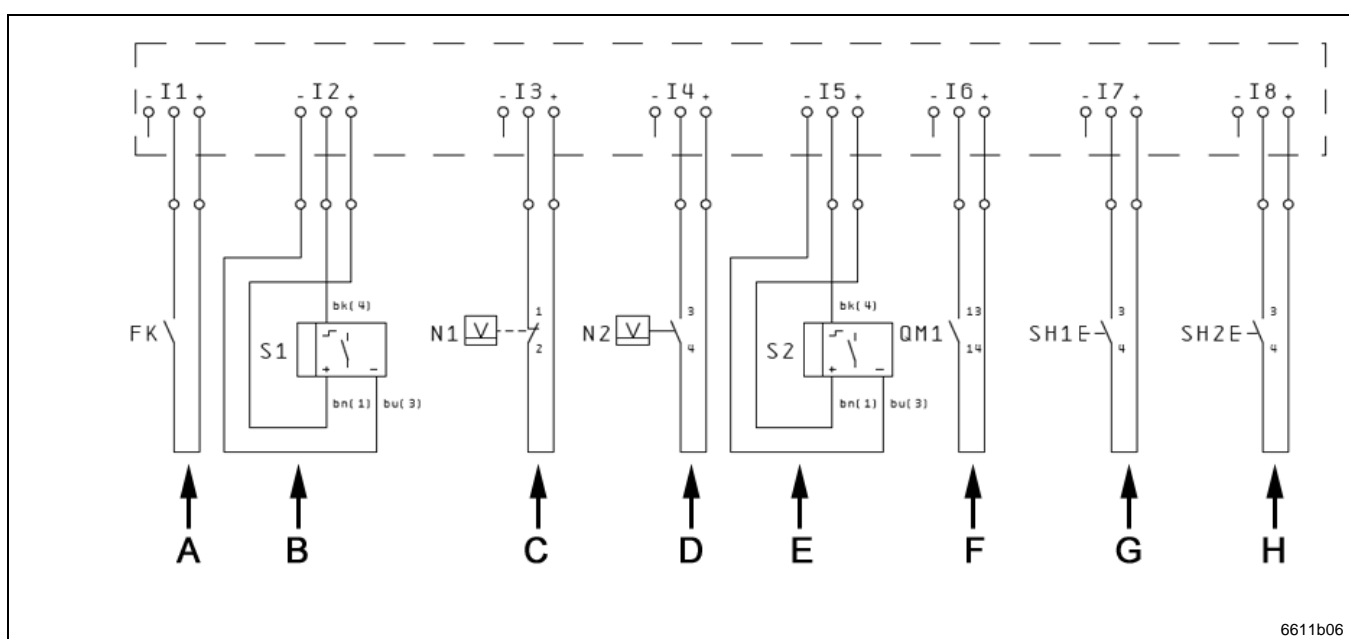


Fig. 12 Signal input connection

A - External contact <sup>1)</sup>      B - Metering device sensor      C - Low-level signal      D - High-level signal  
E - Metering device sensor      F - Motor protection      G - Additional lubrication      H - Remote reset

<sup>1)</sup> Time stop respectively lubrication stop

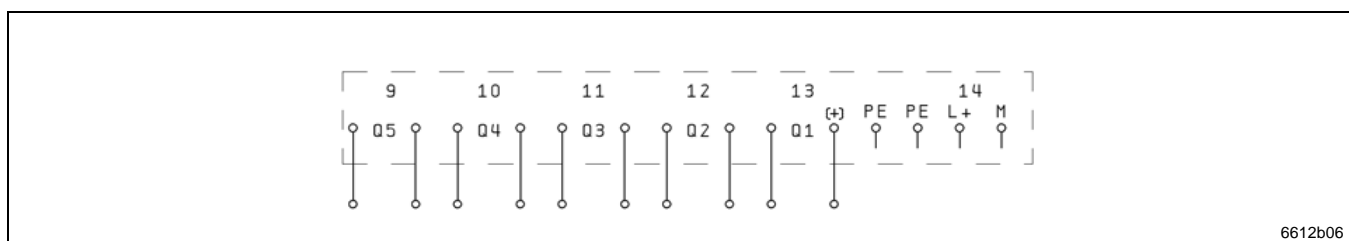


Fig. 13 Control output (ACTUATOR) connection

Q1 - Pump      Q2 - System (ready for operation)      Q3 - Filling      Q4 - Reserved  
Q5 - Reserve      PE - Protective earth conductor      L+ - Power supply +      M - Power supply -

## Progressive systems, continued

### Operation

#### Commissioning

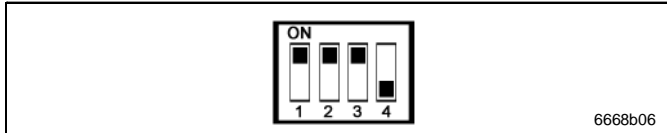


Fig. 14 DIP switch – configuration mode

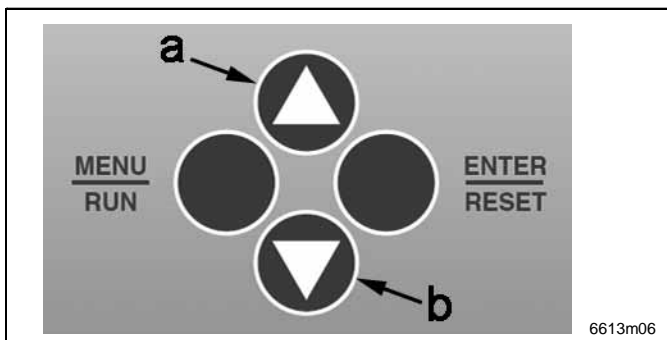


Fig. 15 Operating panel

- a - "UP" key  
b - "DOWN" key



6001a02

#### NOTE

*"RESET" as hold function:*

You can interrupt the running lubrication time by pressing the „RESET“ key (> 2 sec.). The pause time starts from the beginning.



6001a02

#### NOTE

*„RUN“ to trigger additional lubrications:*

You can interrupt the running pause time by pressing the "RUN" key (> 2 sec.). The lubricating time starts from the beginning.



6001a02

#### NOTE

As soon as you press the "UP" key (pos. a, Fig. 15) outside of the configuration mode, the actual rest of the expired pause time is shown in the display.

#### Parameter default

- Set the DIP switches (see view Fig. 2, page 6) as shown in Fig. 14:  
"1-1-1-0" (SW1 ON - SW2 ON - SW3 ON - SW4 OFF)
- Select from the following versions to set the parameter defaults in your progressive system:
  - no metering device and no cycle counter ..... 0
  - with one metering device and no cycle counter 1
  - with one metering device and cycle counter.... 2
  - with two metering devices, no cycle counter 3
  - with two metering devices and cycle counter... 4



6001a02

#### NOTE

The version number setting (0 - 4) is shown in the LMC 1 display and is made using the UP & DOWN keys on the operating panel (see pos. a & b, Fig. 15).

- Complete your selection (0 - 4) with the ENTER key (Fig. 15).  
If you do not acknowledge your selection with ENTER, the standard value of "0" is automatically set.

#### Selecting the lubrication system

- First switch SW1 to SW3 to "1-0-0"  
(ON-OFF-OFF).  
Then set the right-hand DIP switch (SW4) to ON (Fig. 16).

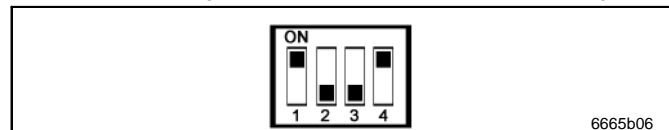


Fig. 16 DIP switch: progressive systems - settings

- After that, switch SW4 back to OFF (Fig. 17).

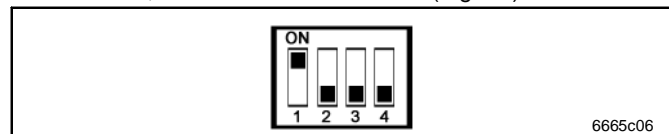


Fig. 17 DIP switch: progressive systems – ready for operation

The standard settings to control your progressive system are now complete and the system is ready for operation. Please refer to page 19 for possible parameter adaptations.

## Progressive systems, continued

### Operation, continued

#### Adapting the parameters

- Press and hold the "ENTER" key and then press "MENU" to open the configuration mode.
- You can modify the count value of every parameter using the "UP" and "DOWN" keys as below:
  - Press briefly .....  $\pm 1$  count value
  - Keep pressed .....  $\pm$  High speed

#### Default 1, 2, 3 or 4:

(see table on page 11)

- **Menu item \* t-MO \*, monitoring time**  
(Lubrication with monitored metering device)  
Setting the monitoring time determines the time interval in which at least one metering device cycle has to have ended before a fault indication.
- Press the "UP" or "DOWN" key to configure the monitoring time.
  - Section 1 sec. to 99 min. and 59 sec.
  - Count value 1 sec
- Conclude the selection with the "ENTER" key.
- Continue with the \* t-PS \* menu item.

#### Default 0, 1 or 3:

(see table on page 11)

- **Menu item \* t-PS \*, pause time**
- The pause time determines the time interval that must expire between two lubrication sequences.
- Press the "UP" or "DOWN" key to configure the pause time.
  - Section 1 min. to 99 h and 59 min.
  - Count value 1 min.
- Conclude the selection with the "ENTER" key.
- Continue with the \* t-rn \* or \* c-rn \* menu items.



6001a02

#### NOTE

*As the pause time is also restarted at the start of the lubricating time, the following setting value applies:*

*Pause time > Lubricating time*

*If the ratio is reversed, the fault indication \* E-PD \* appears in the LMC 1 display (see page 10).*

#### Default 0, 1, or 3:

(see table on page 11)

- **Menu item \* t-rn \*, Lubricating time**  
(time-dependent lubrication)
- The lubricating time determines how long a lubrication sequence takes to provide all the lubrication points in the progressive system with sufficient lubricant.
- Press the "UP" or "DOWN" key to configure the lubrication time.
  - Section 1 sec. to 99 min. and 59 sec.
  - Count value 1 sec
- Conclude the selection with the "ENTER" key.

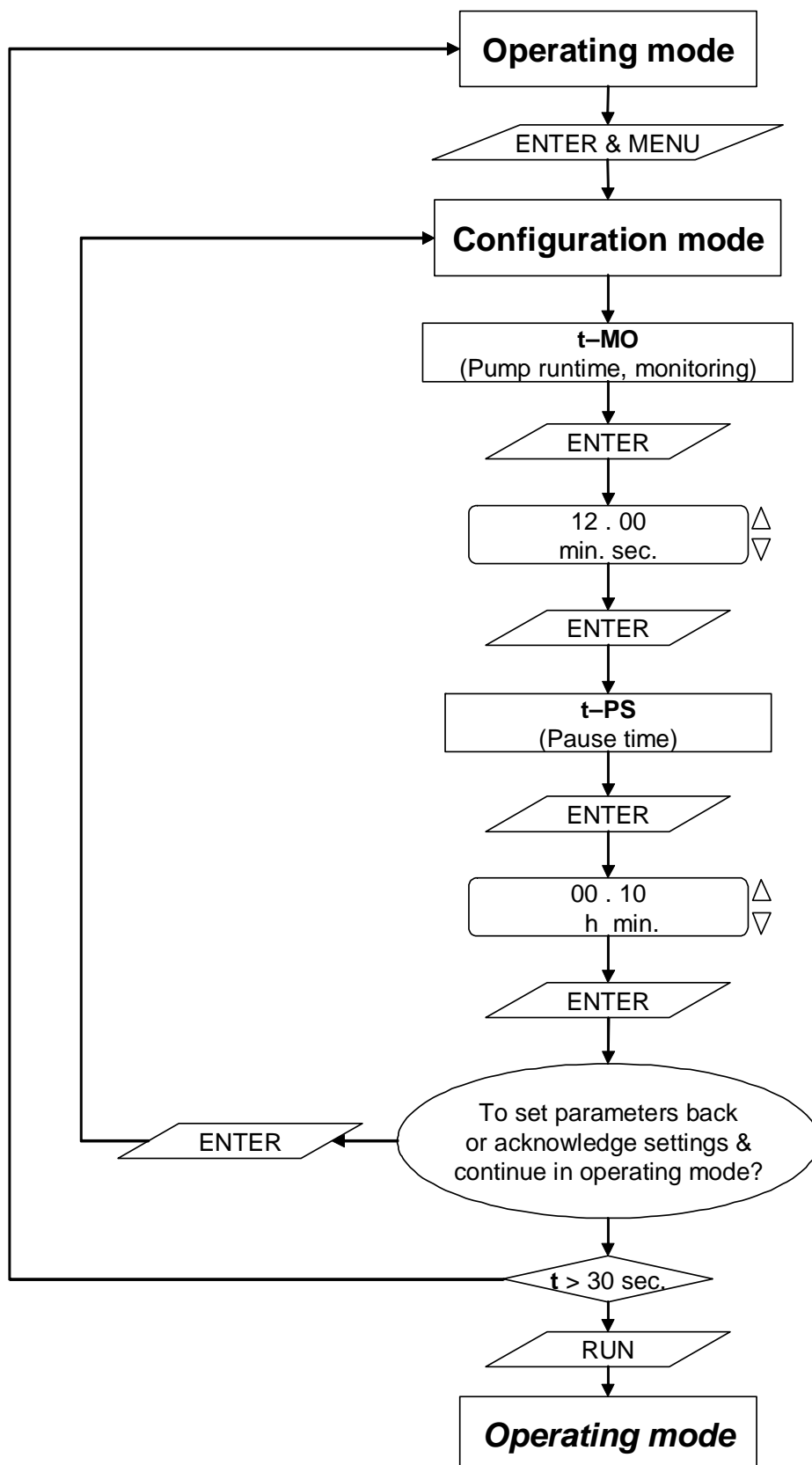
#### Default 2 or 4:

(see table on page 11)

- **Menu item \* c-rn \*, number of metering device cycles**  
(cycle-dependent lubrication)  
The number of metering device cycles determines how often all metering pistons in the monitored metering device must convey their amounts of lubricant to provide all lubrication points in the progressive system with sufficient lubricant.
- Press the "UP" or "DOWN" key to configure the number of distributor cycles.
  - Section 0 to 99 distributor cycles
  - Count value 1 Distributor cycle
- Conclude the selection with the "ENTER" key.
- Press the "RUN" key (> 2 sec.), to incorporate the changes made to all menu items. Otherwise, after 30 seconds the program reverts back to the operating mode (run).
- If you want to change a menu item again, press the "ENTER" key. You will once more automatically arrive at the start of the configuration mode.

## Two-line systems

### Quicktour



## Two-line systems, continued

### Operating mode

- The following parameters are controlled or monitored via the standard LMC 1 programming for two-line systems:
  - Variable:
    - Pause time
    - Monitoring time
  - Fixed:
    - Filling time monitoring 15 min.

### Connection

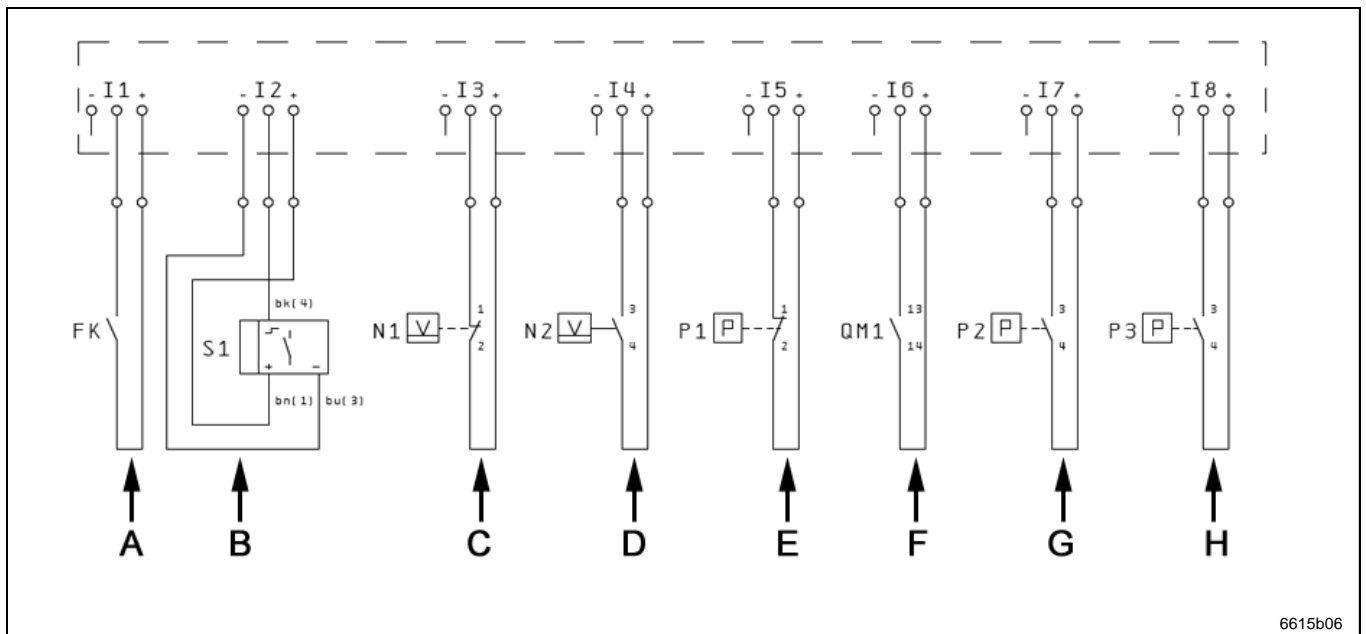


Fig. 18 Signal input connection

A - External contact <sup>1)</sup>      B - Metering device sensor      C - Low-level signal      D - High-level signal  
E - Pressure switch, pump      F - Motor protection      G - End-of-line pressure switch 1 (DU1)      H - End-of line pressure switch 2

<sup>1)</sup> Time stop respectively lubrication stop

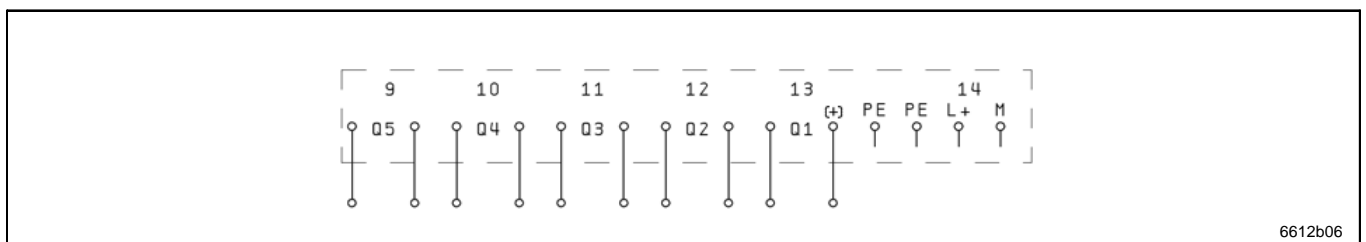


Fig. 19 Control output (ACTUATOR) connection

Q1 - Pump      Q2 - System (ready for operation)      Q3 - Filling      Q4 - Change-over device 1  
Q5 - Change-over device 2      PE - Protective earth conductor      L+ - Power supply +      M - Power supply -

## Two-line systems, continued

### Operation

#### Commissioning

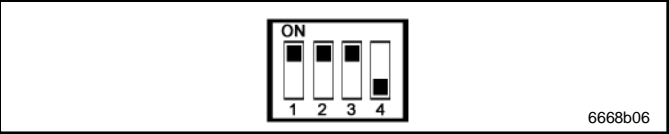


Fig. 20 DIP switch – configuration mode

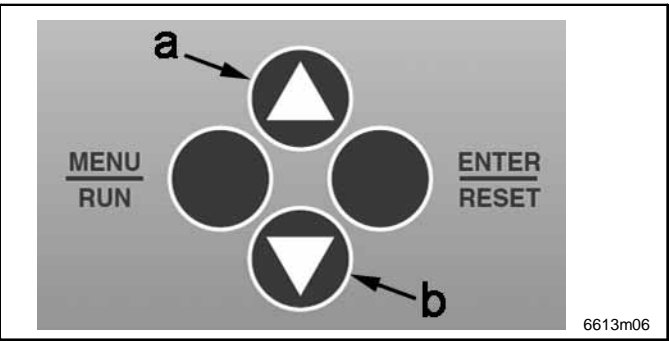


Fig. 21 Operating panel

- a - "UP" key  
b - "DOWN" key



6001a02

#### NOTE

**"RESET" as hold function:**

You can interrupt the running lubrication time by pressing the "RESET" key (> 2 sec.). The pause time starts from the beginning.



6001a02

#### NOTE

**„RUN" to trigger additional lubrications:**

You can interrupt the running pause time by pressing the "RUN" key (> 2 sec.). The lubricating time starts from the beginning.



6001a02

#### NOTE

As soon as you press the "UP" key (pos. a, Fig. 21) outside of the configuration mode, the actual rest of the expired pause time is shown in the display.

#### Parameter default

- Set the DIP switches (see view Fig. 2, page 6) as shown in Fig. 20:  
"1-1-1-0" (SW1 ON - SW2 ON - SW3 ON - SW4 OFF)
- Select from the following versions to set the parameter defaults in your two-line plant:
  - electronic change-over without metering device monitoring ..... 0
  - electronic change-over with metering device monitoring ..... 1
  - pressure controlled change-over without metering device monitoring ..... 2
  - pressure controlled change-over with metering device monitoring ..... 3
  - 3/2-way valve without metering device monitoring ..... 4
  - 3/2-way valve with metering device monitoring ..... 5



6001a02

#### NOTE

The version number setting (0 - 5) is shown in the LMC 1 display and is made using the UP & DOWN keys on the operating panel (see pos. a & b, Fig. 21).

- Complete your selection (0 - 5) with the ENTER key (Fig. 21).  
If you do not acknowledge your selection with ENTER, the standard value of "0" is automatically set.

#### Selecting the lubrication system

- First switch SW1 to SW3 to "0-1-0" (OFF-ON-OFF).  
Then set the right-hand DIP switch (SW4) to ON (Fig. 22).

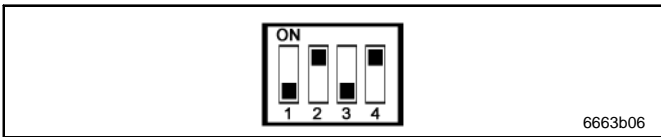


Fig. 22 DIP switch: Two-line systems - settings

- After that, switch SW4 back to OFF (Fig. 23).

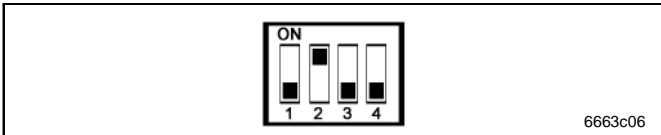


Fig. 23 DIP switch: Two-line systems – ready for operation)

The standard settings to control your two-line system are now complete and the system is ready for operation.  
Please refer to page 23 for possible parameter adaptations.

## Two-line systems, continued

### Operation, continued

#### Adapting the parameters

- Press and hold the "ENTER" key and then press "MENU" to open the configuration mode.
- You can modify the count value of every parameter using the "UP" and "DOWN" keys as below:
  - Press briefly .....  $\pm 1$  count value
  - Keep pressed .....  $\pm$  High speed

#### Default 0, 1, 2, 3, 4 or 5: (see table on page 11)

- **Menu item \* t-MO \*, monitoring time**  
(Lubrication with monitored metering device)  
Setting the monitoring time determines the time interval in which the corresponding final pressure monitor has to be acknowledged before a fault indication.  
If a monitored metering device is present, a signal change has to be completed before the end of a lubrication cycle (full pulse).
- Press the "UP" or "DOWN" key to configure the monitoring time.
  - Section 1 sec. to 99 min. and 59 sec.
  - Count value 1 sec
- Conclude the selection with the "ENTER" key.
- Continue with the \* t-PS \* menu item.



6001a02

#### NOTE

*As the pause time is also restarted at the start of the lubrication time, the following setting value applies:*

*Pause time > Lubrication time*

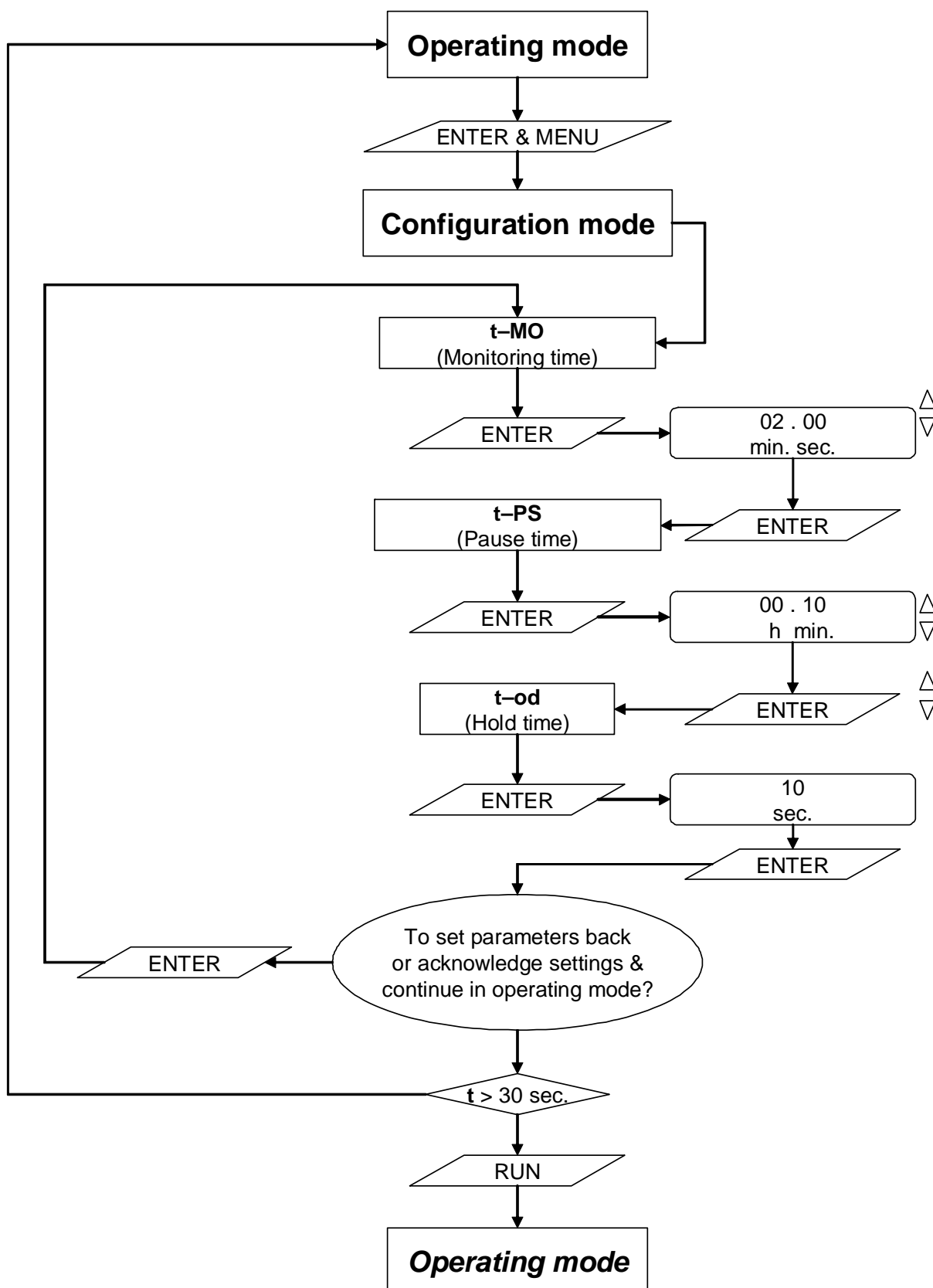
*If the ratio is reversed, the fault indication \* E-PD \* appears in the LMC 1 display (see page 10).*

#### Default 0, 1, 2, 3, 4 or 5: (see table on page 11)

- **Menu item \* t-PS \*, pause time**
  - The pause time determines the time interval that must expire between two lubrication sequences.
- Press the "UP" or "DOWN" key to configure the pause time.
  - Section 1 min. to 99 h and 59 min.
  - Count value 1 min.
- Conclude the selection with the "ENTER" key.
- Press the "RUN" key (> 2 sec.), to incorporate the changes made to all menu items. Otherwise, after 30 seconds the program reverts back to the operating mode.
- If you want to change a menu item again, press the "ENTER" key. You will once more automatically arrive at the start of the configuration mode.

## Centro-Matic® systems

### Quicktour





## Centro-Matic® systems, continued

### Operating mode

- The following parameters are controlled or monitored via the standard LMC 1 programming for Centro-Matic® systems:
- Variable:
  - Pause time
  - Monitoring time
  - Switch-off delay time

### Connection

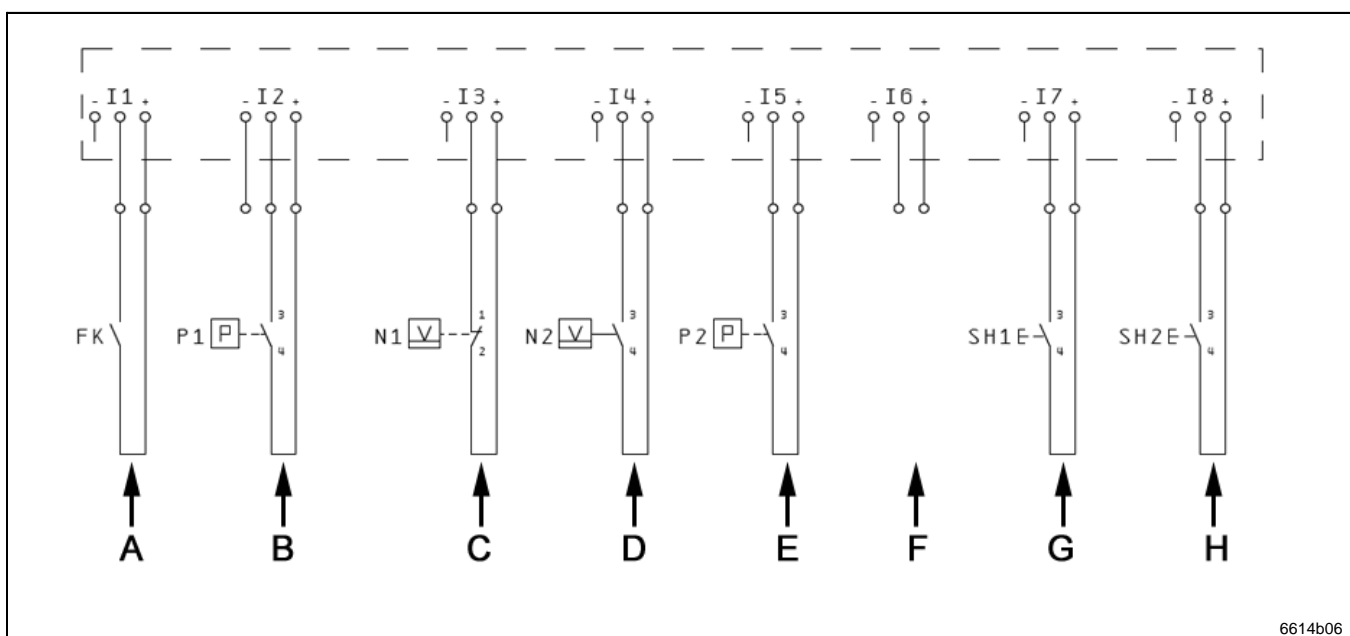


Fig. 24 Signal input connection

A - External contact <sup>1)</sup>  
E - Pressure switch 2

B - Pressure switch 1  
F - Reserve

C - Low-level signal  
G - Additional lubrication

D - High-level signal  
H - Remote reset

<sup>1)</sup> Time stop respectively lubrication stop

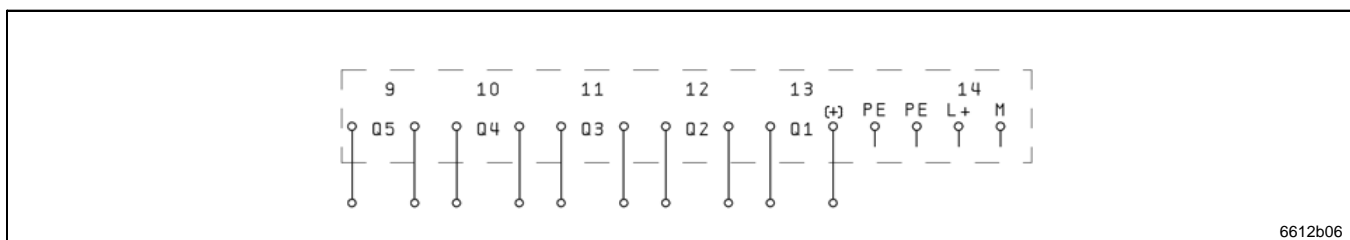


Fig. 25 Control output (ACTUATOR) connection

Q1 - Pump  
Q5 - Reserve

Q2 - System (ready for operation)  
PE - Protective earth conductor

Q3 - Lubrication active  
L+ - Power supply +

Q4 - Relief  
M - Power supply -

## Centro-Matic® systems, continued

### Operation

#### Commissioning

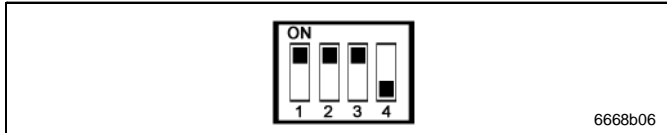


Fig. 26 DIP switch – configuration mode

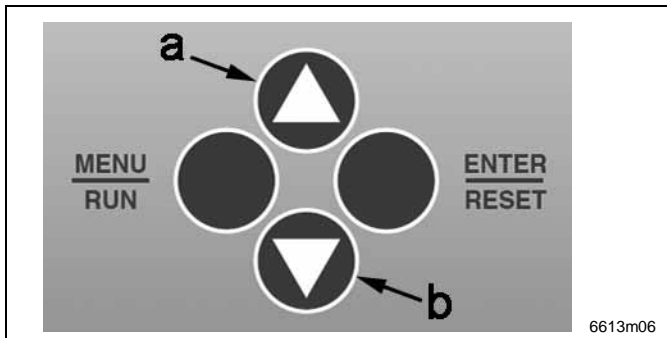


Fig. 27 Operating panel

- a - "UP" key  
b - "DOWN" key



6001a02

#### NOTE

*"RESET" as hold function:*

*You can interrupt the running lubrication time by pressing the "RESET" key (> 2 sec.). The pause time starts from the beginning.*



6001a02

#### NOTE

*„RUN" to trigger additional lubrications:*

*You can interrupt the running pause time by pressing the "RUN" key (> 2 sec.). The lubricating time starts from the beginning.*



6001a02

#### NOTE

*As soon as you press the "UP" key (pos. a, Fig. 27) outside of the configuration mode, the actual rest of the expired pause time is shown in the display.*

#### Parameter default

- ➔ Set the DIP switches (see view Fig. 2, page 6) as shown in Fig. 26:  
"1-1-1-0" (SW1 ON - SW2 ON - SW3 ON - SW4 OFF)

- ➔ Select from the following versions to set the parameter defaults in your Centro-Matic® system:

- with one pressure switch ..... 0
- with two pressure switches ..... 1



6001a02

#### NOTE

*The version number setting (0 - 1) is shown in the LMC 1 display and is made using the UP & DOWN keys on the operating panel (see pos. a & b, Fig. 27).*

- ➔ Complete your selection (0 - 1) with the ENTER key (Fig. 27).

If you do not acknowledge your selection with ENTER, the standard value of "0" is automatically set.

#### Selecting the lubrication system

- ➔ First switch SW1 to SW1 to SW3 to "1-1-0" (ON-ON-OFF).  
Then set the right-hand DIP switch (SW4) to ON (Fig. 28).

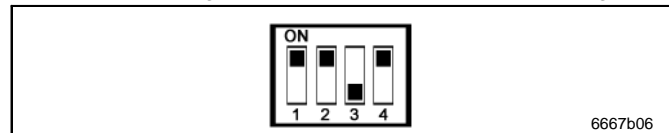


Fig. 28 DIP switch: Centro-Matic® systems - settings

- ➔ After that, switch SW4 back to OFF (Fig. 29).

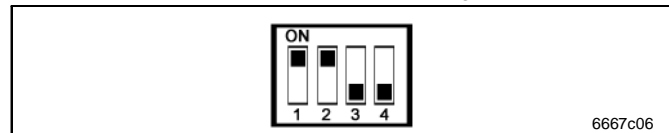


Fig. 29 DIP switch: Centro-Matic® systems – operating mode

The standard settings to control your Centro-Matic® system are now complete and the system is ready for operation. Please refer to page 27 for possible parameter adaptations.

## Centro-Matic® systems, continued

### Operation, continued

#### Adapting the parameters

- Press and hold the „ENTER“ key and then press „MENU“ to open the configuration mode.
- You can modify the count value of every parameter using the „UP“ and „DOWN“ keys as below:
  - Press briefly .....  $\pm 1$  count value
  - Keep pressed .....  $\pm$  High speed

#### Default 0 or 1:

(see table on page 11)

- **Menu item \* t-MO \*, monitoring time**  
(Cycle-dependent lubrication)  
Setting the monitoring time determines the time interval in which an acknowledgement needs to be made before a fault indication appears for the pressure switch(es).
  - Press the „UP“ or „DOWN“ key to configure the monitoring time.
    - Section 1 sec. to 99 min. and 59 sec.
    - Count value 1 sec
  - Conclude the selection with the „ENTER“ key.
  - Continue with the \* t-PS \* menu item.
- **Menu item \* t-PS \*, pause time**
  - The pause time determines the time interval that must expire between two lubrication sequences.
  - Press the „UP“ or „DOWN“ key to configure the pause time.
    - Section 1 min. to 99 h and 59 min.
    - Count value 1 min.
  - Conclude the selection with the „ENTER“ key.
  - Continue with the \* t-od \* menu item.
- **Menu item \* t-od \*, hold time**
  - The hold time determines the time interval, how long the relief valve will remain closed through the switch-off delay after lubrication has finished.
  - Press the „UP“ or „DOWN“ key to configure the re-spraying time.
    - Section 1 sec. to 99 sec.
    - Count value 1 sec
  - Conclude the selection with the „ENTER“ key.
  - Press the „RUN“ key (> 2 sec.), to incorporate the changes made to all menu items. Otherwise, after 30 seconds the program reverts back to the operating mode.
  - If you want to change a menu item again, press the „ENTER“ key. You will once more automatically arrive at the start of the configuration mode.



6001a02

#### NOTE

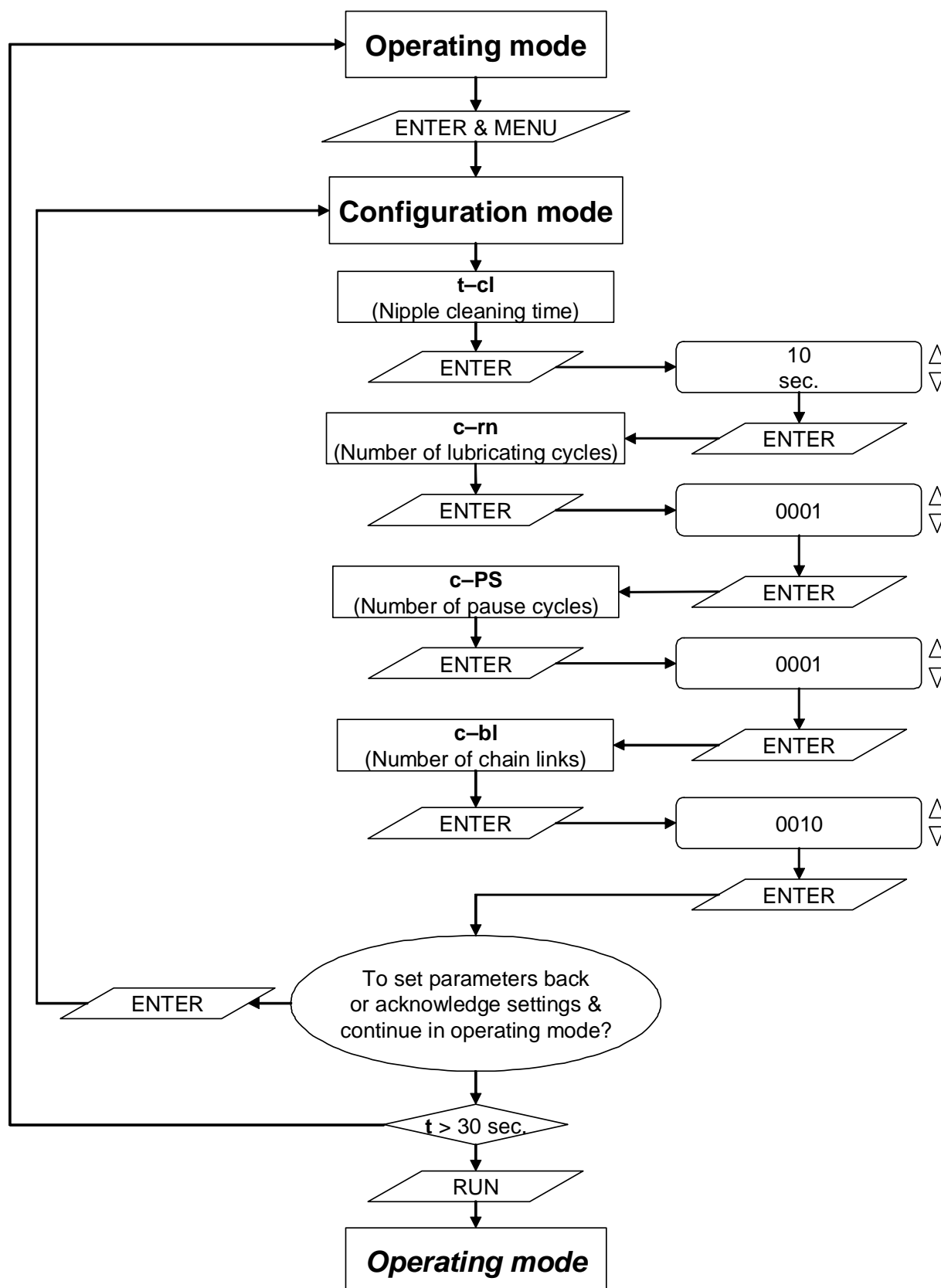
*As the pause time is also restarted at the start of the lubrication time, the following setting value applies:*

*Pause time > Lubrication time*

*If the ratio is reversed, the fault indication \* E-PD \* appears in the LMC 1 display (see page 10).*

## COBRA chain-lubrication systems

### Quicktour



## COBRA chain-lubrication systems, continued

### Operating mode

- The following parameters are controlled or monitored for COBRA chain-lubrication systems via the standard LMC 1 programming:
  - Variable:
    - Nipple cleaning time
    - Cycle-dependent lubrication
    - Number of pause cycles
    - Number of chain links
  - Fixed:
    - Filling time monitoring 1 min.

### Connection

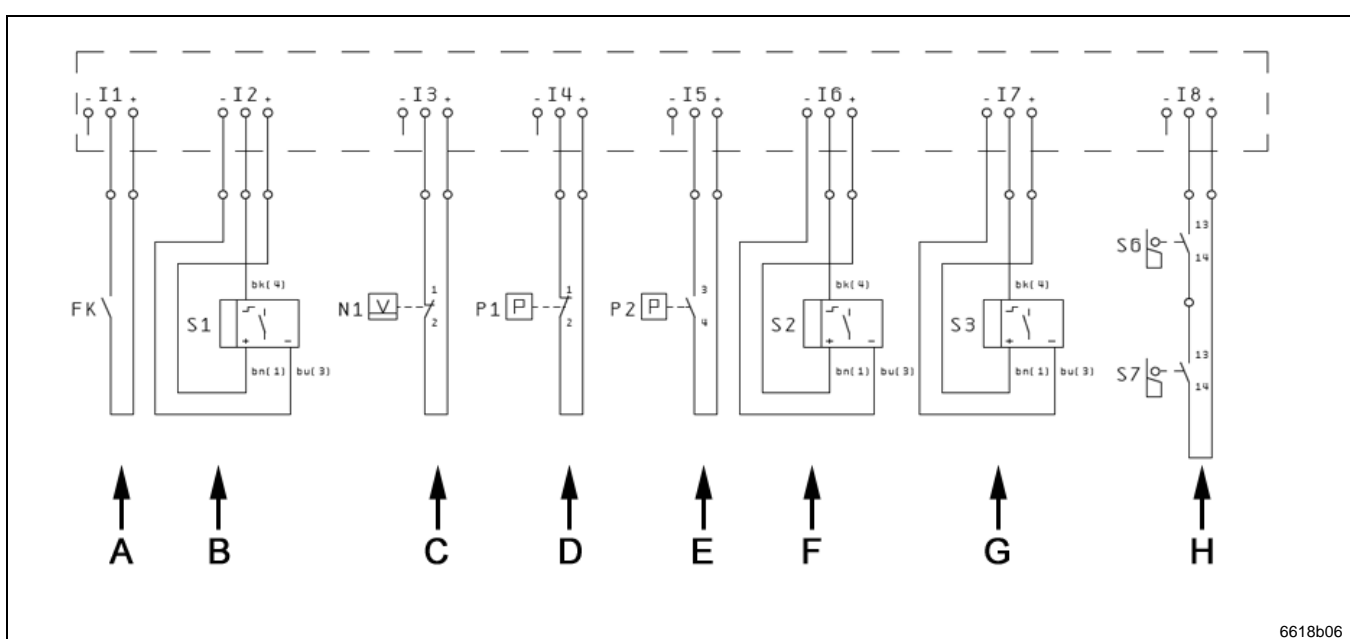


Fig. 30 Signal input connection

A - External contact, chain forwards  
E - Air pressure switch

B - Chain sensor  
F - Malfunction, right side

C - Low-level signal  
G - Malfunction, left side

D - Lubricant pressure  
H - Locking

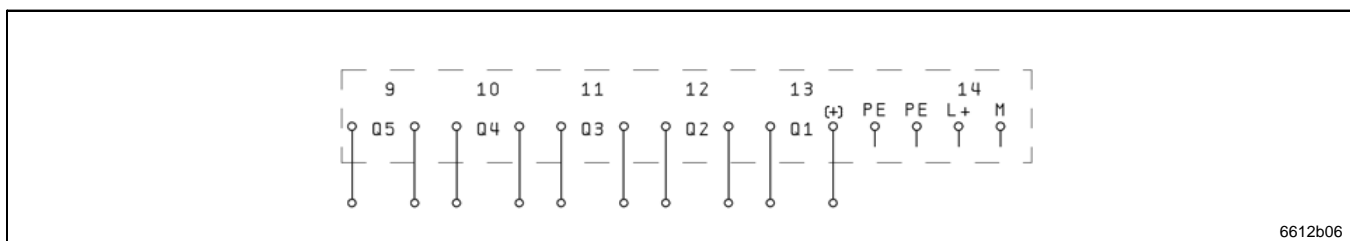


Fig. 31 Control output (ACTUATOR) connection

Q1 - Pump  
Q5 - COBRA 1X-2

Q2 - System (ready for operation)  
PE - Protective earth conductor

Q3 - Clean  
L+ - Power supply +

Q4 - COBRA 1X-1  
M - Power supply -

## COBRA chain-lubrication systems, continued

### Operation

#### Commissioning

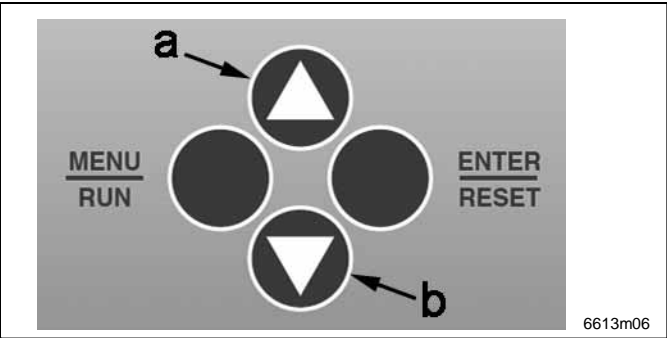


Fig. 32 Operating panel

- a - "UP" key  
b - "DOWN" key



6001a02

#### NOTE

**"RESET" as halt function:**

You can interrupt the running lubrication time by pressing the "RESET" key (> 2 sec.). The next pause cycle starts from the beginning.



6001a02

#### NOTE

**"RUN" to trigger additional lubrications:**

You can interrupt the running pause cycle by pressing the "RUN" key (> 2 sec.). The lubricating time starts from the beginning.



6001a02

#### NOTE

As soon as you press the "UP" key (pos. a, Fig. 32) outside of the configuration mode, the actual rest of the expired pause cycle is shown in the display.

#### Parameter default



6001a02

#### NOTE

No parameter defaults can be set for COBRA chain-lubrication systems.  
The standard setting "0" applies.

#### Selecting the lubrication system

- ➔ First switch SW1 to SW3 to "0-0-1" (OFF-OFF-ON).  
Then set the right-hand DIP switch (SW4) to ON (Fig. 33).

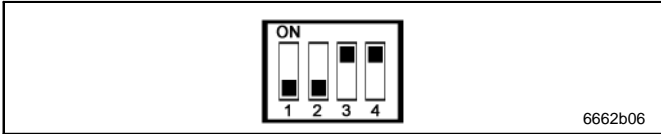


Fig. 33 DIP switch: COBRA chain-lubrication systems - settings

- ➔ After that, switch SW4 back to OFF (Fig. 34).

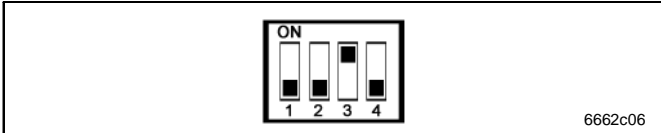


Fig. 34 DIP switch:  
COBRA chain-lubrication systems – operating mode

The standard settings to control your COBRA chain-lubrication system are now complete and the system is ready for operation.  
Please refer to page 31 for possible parameter adaptations.

## COBRA chain-lubrication systems, continued

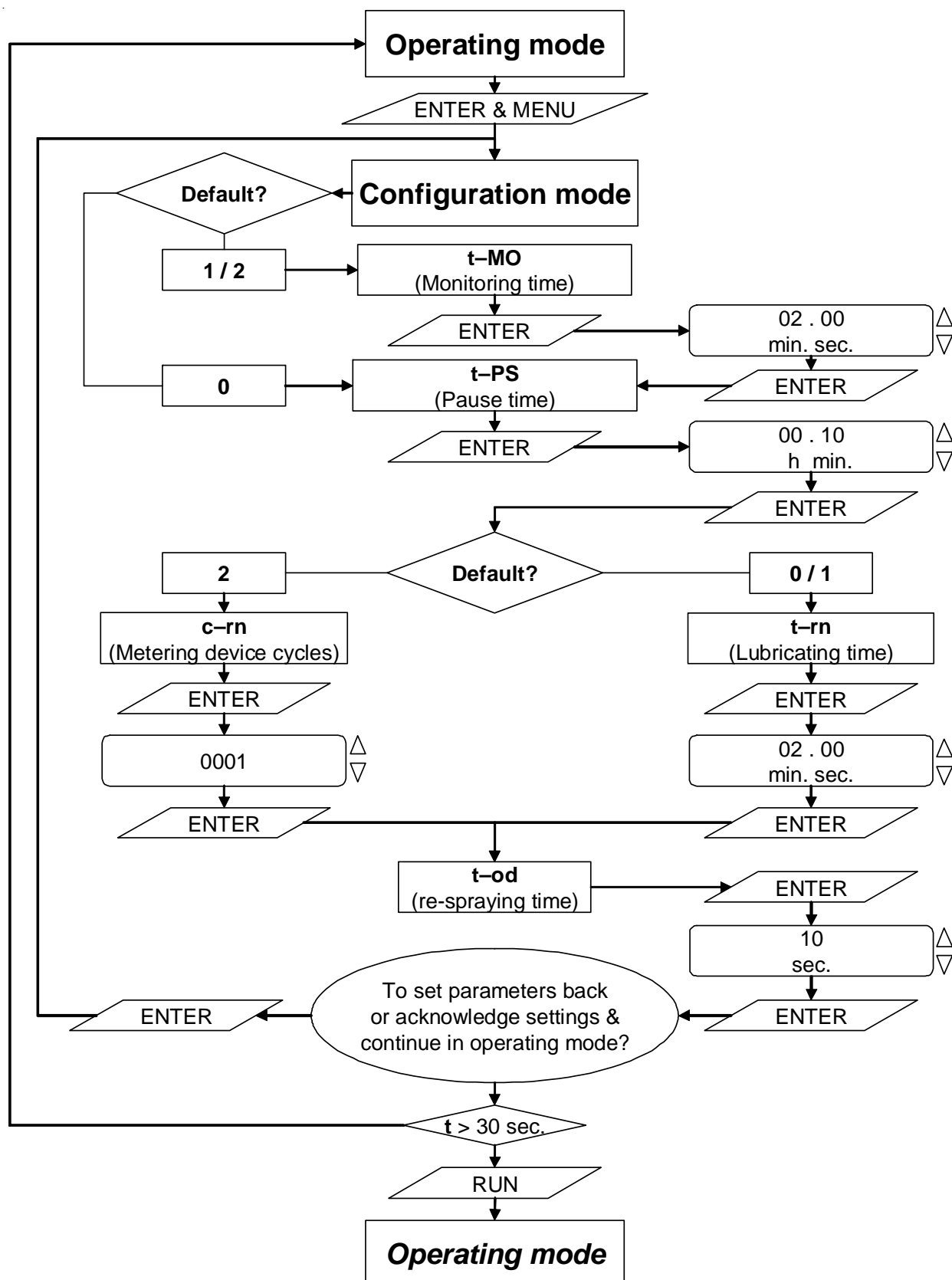
### Operation, continued

#### Adapting the parameters

- Press and hold the "ENTER" key and then press "MENU" to open the configuration mode.
- You can modify the count value of every parameter using the "UP" and "DOWN" keys as below:
  - Press briefly ..... ± 1 count value
  - Keep pressed ..... ± High speed
- **Menu item \* t-cl \*, Nipple cleaning time**
  - The nipple cleaning time determines the time interval of the duration of the cleaning of a lubrication nipple.
  - Press the "UP" or "DOWN" key to configure the nipple cleaning time.
    - Section 1 sec. to 99 sec.
    - Count value 1 sec
  - Conclude the selection with the "ENTER" key.
  - Continue with menu item \* c-rn \*.
- **Menu item \* c-rn \*, Lubricating cycles**  
(Cycle-dependent lubrication)  
The number of lubricating cycles determines how often the chain must run through until it is completely lubricated.
  - Press the "UP" or "DOWN" key to configure the number of lubricating cycles.
    - Section 1 to 9999 lubricating cycles
    - Count value 1 lubricating cycle
  - Conclude the selection with the "ENTER" key.
  - Continue with the \* c-PS \* menu item.
- **Menu item \* c-PS \*, Number of pause cycles**
  - The number of pause cycles sets the number of non-lubricated chain cycles that must transpire between two lubrication processes.
  - Press the "UP" or "DOWN" key to configure the number of pause cycles.
    - Section 1 to 9999 pause cycles
    - Count value 1 pause cycle
  - Conclude the selection with the "ENTER" key.
  - Continue with the \* c-bl \* menu item.
- **Menu item \* c-bl \*, Number of chain links**
  - The number of chain links determines the number of lubrication strokes for one chain cycle.
  - Press the "UP" or "DOWN" key to configure the number of chain links.
    - Section 1 to 9999 chain links
    - Count value 1 chain link
  - Conclude the selection with the "ENTER" key.
- Press the "RUN" key (> 2 sec.) to incorporate the changes made to all menu items. Otherwise, after 30 seconds the program reverts back to the operating mode.
- If you want to change a menu item again, press the "ENTER" key. You will once more automatically arrive at the start of the configuration mode.

## Spray lubrication system

### Quicktour





## Spray lubrication system, continued

### Operating mode

- The following parameters are controlled or monitored via the standard LMC 1 programming for spray lubrication systems:
  - Variable:
    - Pause time
    - Time or cycle-dependent lubrication
    - Monitoring time
    - Re-spraying time
  - Fixed:
    - Filling time monitoring 15 min.

### Connection

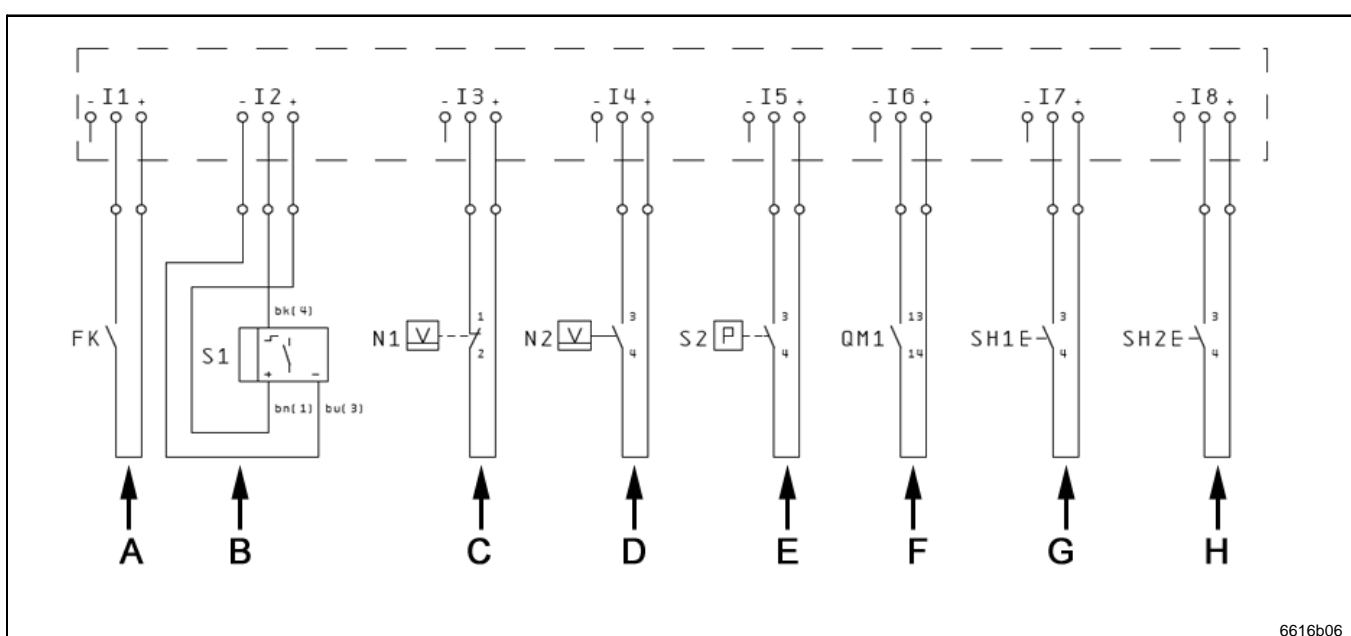


Fig. 35 Signal input connection

A - External contact <sup>1)</sup>      B - Metering device sensor      C - Low-level signal      D - High-level signal  
E - Compressed air switch      F - Motor protection      G - Additional lubrication      H - Remote reset

<sup>1)</sup> Time stop respectively lubrication stop

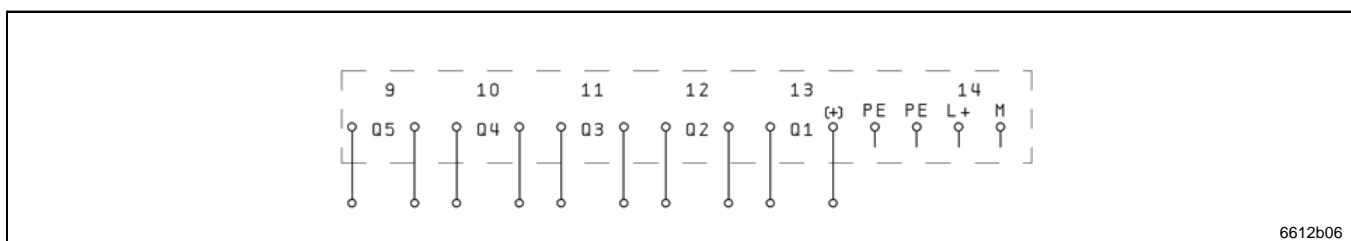


Fig. 36 Control output (ACTUATOR) connection

Q1 - Pump      Q2 - System (ready for operation)      Q3 - Filling      Q4 - Air valve  
Q5 - Reserve      PE - Protective earth conductor      L+ - Power supply +      M - Power supply -

## Spray lubrication systems, continued

### Operation

#### Commissioning

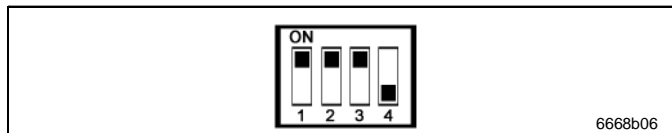


Fig. 37 DIP switch – configuration mode

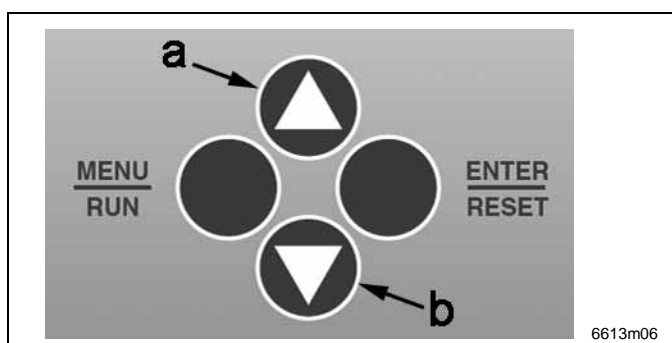


Fig. 38 Operating panel

- a - "UP" key  
b - "DOWN" key



6001a02

#### NOTE

*"RESET" as hold function:*

*You can interrupt the running lubrication time by pressing the "RESET" key (> 2 sec.). The pause time starts from the beginning.*



6001a02

#### NOTE

*„RUN" to trigger additional lubrications:*

*You can interrupt the running pause time by pressing the "RUN" key (> 2 sec.). The lubricating time starts from the beginning.*



6001a02

#### NOTE

*As soon as you press the "UP" key (pos. a, Fig. 38) outside of the configuration mode, the actual rest of the expired pause time is shown in the display.*

#### Parameter default

- Set the DIP switches (see view Fig. 2, page 6) as shown in Fig. 37:  
"1-1-1-0" (SW1 ON - SW2 ON - SW3 ON - SW4 OFF)
- Select from the following versions to set the parameter defaults in your spray lubrication system:
  - no metering device, no cycle counter, clock-pulsed .... 0
  - with metering device, no cycle counter, clock-pulsed .. 1
  - with metering device and cycle counter, clock-pulsed .2
  - no metering dev., no cycle counter, not clock-pulsed .. 3
  - with metering dev., no cycle counter, not clock-pulsed 4
  - with metering dev. and cycle counter, not clock-pulsed 5



6001a02

#### NOTE

*The version number setting (0 - 5) is shown in the LMC 1 display and is made using the UP & DOWN keys on the operating panel (see pos. a & b, Fig. 38).*

- Complete your selection (0 - 2) with the ENTER key (Fig. 38).  
If you do not acknowledge your selection with ENTER, the standard value of "0" is automatically set.

#### Selecting the lubrication system

- First switch SW1 to SW3 to "1-0-1" (ON-OFF-ON).  
Then set the right-hand DIP switch (SW4) to ON (Fig. 39).

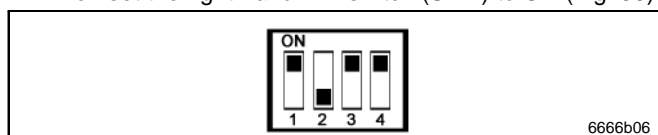


Fig. 39 DIP switch: Spray lubrication systems - settings

- After that, switch SW4 back to OFF (Fig. 40).

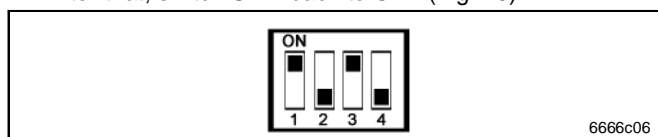


Fig. 40 DIP switch: Spray lubrication systems – ready for operation

The standard settings to control your spray lubrication system are now complete and the system is ready for operation. Please refer to page 35 for possible parameter adaptations.

## Spray lubrication systems, continued

### Operation, continued

#### Adapting the parameters

- Press and hold the "ENTER" key and then press "MENU" to open the configuration mode.
- You can modify the count value of every parameter using the "UP" and "DOWN" keys as below:
  - Press briefly .....  $\pm 1$  count value
  - Keep pressed .....  $\pm$  High speed

#### Default 1 or 2:

(see table on page 11)

- **Menu item \* t-MO \*, monitoring time**  
(Lubrication with monitored metering device)  
Setting the monitoring time determines the time interval in which at least one metering device cycle has to have ended before a fault indication.
- Press the "UP" or "DOWN" key to configure the monitoring time.
  - Section 1 sec. to 99 min. and 59 sec.
  - Count value 1 sec
- Conclude the selection with the "ENTER" key.
- Continue with the \* t-PS \* menu item.

#### Default 0:

(see table on page 11)

- **Menu item \* t-PS \*, pause time**
- The pause time determines the time interval that must expire between two lubrication sequences.
- Press the "UP" or "DOWN" key to configure the pause time.
  - Section 1 min. to 99 h and 59 min.
  - Count value 1 min.
- Conclude the selection with the "ENTER" key.
- Continue with the \* t-rn \* or \* c-rn \* menu items.

#### Default 0 or 1:

(see table on page 11)

- **Menu item \* t-rn \*, Lubrication time**  
(time-dependent lubrication)
- The lubrication time determines how long a lubrication sequence takes to provide all the lubrication points in the spray lubrication system with sufficient lubricant.
- Press the "UP" or "DOWN" key to configure the lubrication time.
  - Section 1 sec. to 99 min. and 59 sec.
  - Count value 1 sec
- Continue with the \* t-od \* menu item.

#### Default 2:

(see table on page 11)

- **Menu item \* c-rn \*, number of metering device cycles**  
(cycle-dependent lubrication)  
The number of metering device cycles determines how often all metering pistons in the monitored metering device must convey their amounts of lubricant to provide all lubrication points in the spray lubrication system with sufficient lubricant.
- Press the "UP" or "DOWN" key to configure the number of metering device cycles.
  - Section 0 to 99 metering device cycles
  - Count value 1 metering device cycle
- Conclude the selection with the "ENTER" key.
- Continue with the \* t-od \* menu item.

#### Default 0, 1, or 2:

(see table on page 11)

- **Menu item \* t-od \*, re-spraying time**
- The re-spraying time determines the time interval of how long the spraying procedure is to last after lubrication has finished in order to clean the nozzles by delaying switch-off.
- Press the "UP" or "DOWN" key to configure the re-spraying time.
  - Section 1 sec. to 99 sec.
  - Count value 1 sec
- Conclude the selection with the "ENTER" key.
- Press the "RUN" key (> 2 sec.), to incorporate the changes made to all menu items. Otherwise, after 30 seconds the program reverts back to the operating mode (run).
- If you want to change a menu item again, press the "ENTER" key. You will once more automatically arrive at the start of the configuration mode.

## Installation, continuation

### Mounting channels for fastening

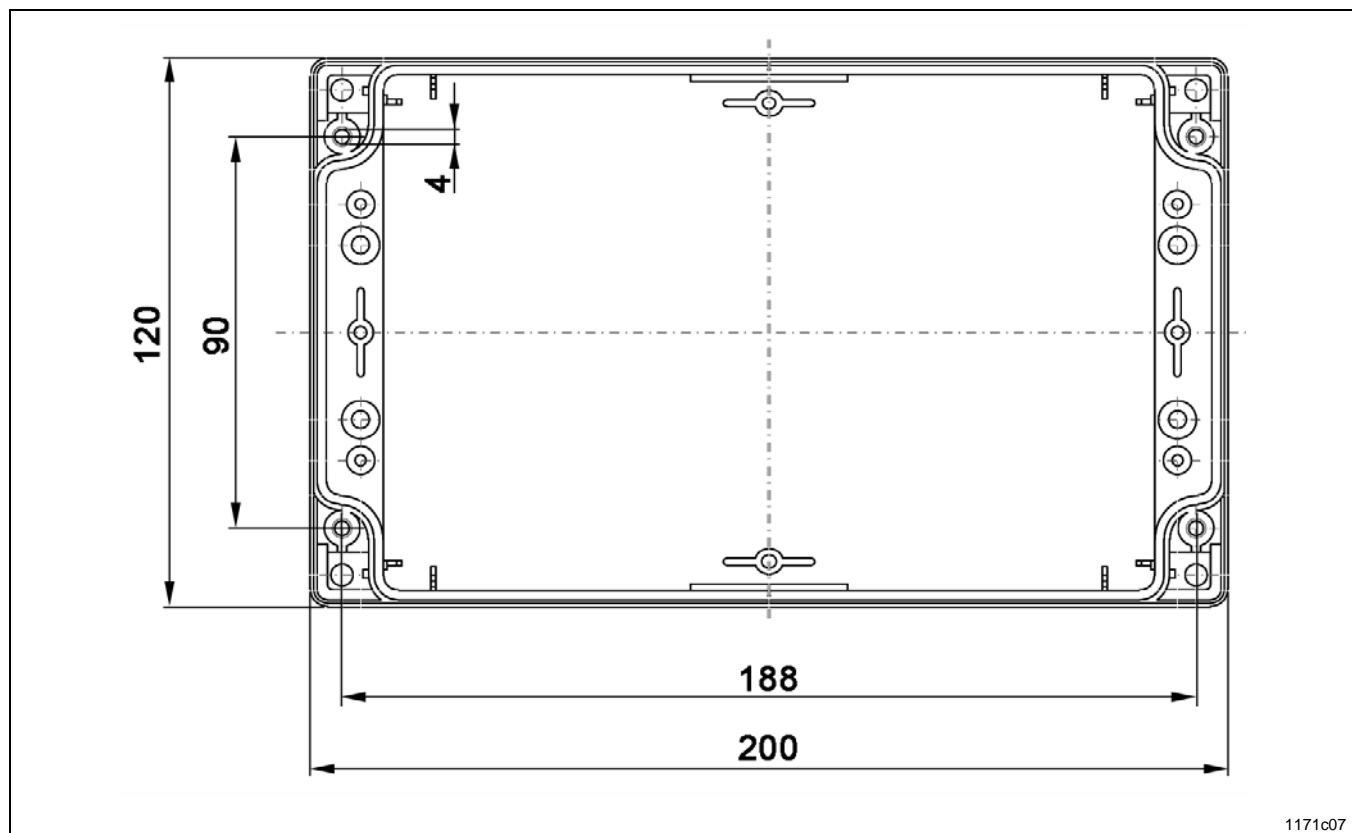


Fig. 41 Mounting channels for fastening

Dimensions (L x W x H) ..... 200 x 120 x 90 mm

Subject to modifications

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