

Quick Setup/Installation Guide

Lubrication Monitor Controller of series LMC 301

for control of up to three pumps, each with an SKF Single Line / Progressive and Dual Line centralized lubrication system containing one to three main lines.



This description is intended as an overview of installation for the LMC 301 Lubrication Monitor Controller. It does not replace the assembly instructions for the LMC 301 controller. These are contained on the enclosed USB stick. The assembly instructions can be ordered in paper format from SKF Lubrication Systems Germany GmbH or Lincoln Industrial, One Lincoln Way, St. Louis, MO 63120-1578 USA.

In case of discrepancies between the assembly instructions and the Quick Guide, the information in the assembly instructions takes precedence.

ATTENTION!

The comprehensive assembly instructions (see page 2) are included on the enclosed USB stick and can be downloaded from our homepage <http://www.skf.com/LMC301/>.

Version 03

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Information symbols within the text	
Symbol	Meaning
●	Prompts an action
o	Used for itemizing
☞	Refers to other facts, causes, or consequences
→	Provides additional information within procedures
Abbreviation	Designation
DI	Digital Input
AI	Analog Input
DO	Digital Output
AO	Analog Output
BA	Operating instructions LMC 301 for: Single Line lubrication system Document No. 951-180-067-EN Progressive system Document No. 951-180-068-EN Dual Line system Document No. 951-180-069-EN
M	Software manual for LMC 301 PC Software Single Line lubrication system Document No. 404679A

LMC 301 Versions

Master

24 VDC
100 to 240 VAC

Order Number

086500
086501



Slave

24 VDC I/O
100 to 240 VAC I/O

Order Number

086502
086503



1. Safety instructions

1.1 General safety instructions

The operator must ensure that the instructions are read and fully understood by all persons tasked with working on the product or who supervise or instruct such persons. The operator must also ensure that the staff fully understands the content of the instructions. The instructions must be kept readily available together with the product.

The manual forms part of the product and must accompany the product if sold to a new owner.

The product described here was manufactured according to the state of the art.

Risks may, however, arise from its usage and may result in personal injury or damage to material assets.

Any malfunctions affecting safety must be remedied immediately.

In addition to the assembly instructions/operating instructions, all statutory regulations and other regulations for accident prevention and environmental protection must be observed.

1.2 General behavior when handling the product

- o The product may only be used in awareness of the potential dangers, in proper technical condition, and according to the information in this manual.
- o Personnel must familiarize themselves with the functions and operation of the product. The specified assembly and operating steps and their sequences must be observed.
- o Any unclear points regarding proper condition or correct assembly/operation must be clarified.
Operation is prohibited until issues have been clarified.
- o Unauthorized persons must be kept away.
- o All safety instructions and in-house instructions relevant to the particular activity must be observed.

- o Responsibilities for different activities must be clearly defined and observed. Uncertainty seriously endangers safety.
- o Protective and safety mechanisms cannot be removed, modified, nor disabled during operation and must be checked for proper function and completeness at regular intervals.
If protective and safety mechanisms must be removed, they must be installed immediately following conclusion of work and checked for proper function.
- o Any malfunctions that occur must be resolved according to responsibility. The supervisor must be notified immediately in case of malfunctions outside one's individual scope of responsibility.
- o Wear personal protective equipment.
- o Observe the relevant safety data sheets when handling lubricants/equipment.

1.3 Qualified technical personnel

Only qualified technical personnel may install, operate, maintain, and repair the products described here.

Such persons are familiar with the relevant standards, rules, accident prevention regulations, and assembly conditions as a result of their training, experience, and instruction. They are qualified to carry out the required activities and in doing so recognize and avoid any potential hazards. The definition of qualified personnel and the prohibition against employing non-qualified personnel are laid down in DIN VDE 0105 and IEC 364. Relevant country-specific definitions of qualified technical personnel apply for countries outside the scope of DIN VDE 0105 or IEC 364.



The core principles of these country-specific qualification requirements for technical personnel cannot be below those of the two standards mentioned above.

The operator is responsible for assigning tasks and the area of responsibility.

The personnel must be trained and instructed prior to beginning work if they do not possess the requisite knowledge.

Product training can also be performed by SKF in exchange for costs incurred.

1.4 Electric shock hazard

	 WARNING
	<p>Electric shock</p> <p>Work on the Lubrication Monitor Controller may be performed only by qualified and trained personnel authorized to do so by the operator. De-energize the product prior to beginning work. Local conditions for connections and local regulations (e.g., DIN, VDE) must be observed. Serious injury or death and property damage may result from improperly connected products.</p>

1.5 Operation

The following must be observed while working on the product.

- o All information within this manual and the information within the referenced documents.
- o All laws and regulations that the operator must observe.

1.6 Assembly/maintenance/malfunction/decommissioning/disposal

All relevant persons (operating personnel, supervisors) must be informed of the activity prior to beginning work.

Precautionary operational measures / work instructions must be observed.

- o Take appropriate measures to ensure that moving/detached parts are immobilized during the work and that no body parts can be pinched by unintended movements.
- o Assemble the product only outside the operating range of moving parts, at an adequate distance from sources of heat or cold.
- o Prior to performing work, the product and the machine/system in which the product will be integrated must be depressurized and secured against unauthorized activation.
- o All work on electrical components may be performed only with voltage-insulated tools.
- o Fuses must not be bridged. Always replace fuses with fuses of the same type.
- o Ensure proper grounding of the product.
- o Drill holes required for assembly only on non-critical, non-load-bearing parts.
- o Other units of the machine/the vehicle must not be damaged or impaired in their function by the installation.
- o No parts of the centralized lubrication system may be subjected to torsion, shear, or bending.
- o Use suitable lifting gear when working with heavy parts.
- o Avoid mixing up/incorrectly assembling disassembled parts. Label parts.
- o The installation of the cable glands and the customer provided cord sets to be done by the customer. The customer is responsible for proper installation.
- o Cable glands and conduits -see Operating instruction, chapter 10-Accessories.
- o When mounting the customer connecting cable no rigid connection pipe must be used - see page 8, Fig. 1, sign (1) on the controller ground

1.7 Intended use

The Lubrication Monitor Controller is used to control up to three pumps, each with a one-to-three-zone (one to three main lines) SKF Centralized lubrication system.

LMC 301 designs 86501 and 86503 (IO module) are powered via 100 to 240 VAC mains provided by the customer. They must be connected in accordance with DIN, VDE regulations.

LMC 301 designs 86500 and 86502 (IO module) are powered via 24 V DC. The technical information contained in these instructions must be followed.

Any other usage is deemed non-compliant with the intended use.

1.8 Foreseeable misuse

Any usage of the product differing from the aforementioned conditions and stated purpose is strictly prohibited.

Particularly prohibited are:

Use for other control tasks

- o Use in an explosion protection zone
- o Use to feed, forward, or store hazardous substances and mixtures as defined in Annex I Part 2-5 of the CLP Regulation (EC 1272/2008)
- o Use to feed / forward / store gases, liquefied gases, dissolved gases, vapors, or fluids whose vapor pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible operating temperature

1.9 Disclaimer of liability

The manufacturer shall not be held liable for damage resulting from:

- o Failure to comply with these instructions
- o The use of lubricants/media not approved for the unit type
- o Contaminated or unsuitable lubricants
- o Installation of non-original SKF components
- o Non-compliant usage
- o Improper assembly, configuration or filling
- o Improper reaction to malfunctions
- o Non-observance of maintenance intervals
- o Independent modification of system components

1.10 Referenced documents

In addition to this manual, the following documents must be observed by the respective target group:






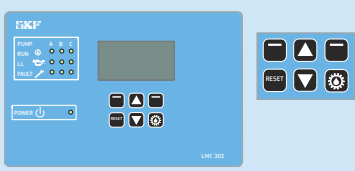





- o Operational instructions / approval rules
- o Instructions from suppliers of purchased parts
- o Manual for the insulation resistance tester
- o Project planning documents and other relevant documents

The operator must supplement these documents with applicable regulations for the country of use.














The documentation must be included if the product is transferred to a new operator.

2. Overview

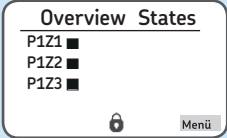

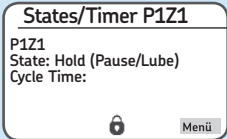

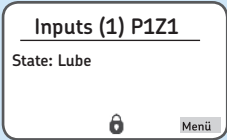

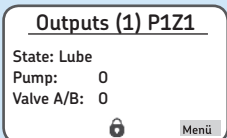

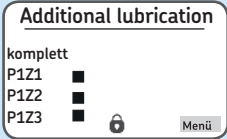

Display and control elements of control screen

Symbol	Designation	Function
	Display	<ul style="list-style-type: none"> Menu display / Display of values and parameters / Fault notification The right bar (▮) indicates that the menu extends beyond the current display
PUMP 	PUMP <i>Pumps A B C</i>	Pump / Main line A / B / C per pump max. 3 main lines supported
RUN 	RUNning <i>Active control</i>	LED lights up = Indication of currently active pump/control line (A/B/C)
LL 	Low Level <i>minimum fill level reached</i>	LED lights up = minimum fill level (pump A / B / C) reached
FAULT	FAULT <i>Error notification</i>	<ul style="list-style-type: none"> LED flashes = error detected LED lights up = fault
POWER 	POWER <i>Control unit on/off</i>	LED lights up = Control unit on
Function keys 		<ul style="list-style-type: none">  Control key in combination with the display above the key  "Up" arrow key menu control <Back menu level> / increase input value  "Down" arrow key menu control <Forward menu level> / reduce input value Pressing triggers an interim lubrication.  By briefly pressing follows the choice of an additional lubrication. Actuations while in configuration mode are ignored.  Long pressing (> 3 seconds) stops all systems or resets an error message. Long pressing acknowledges and clears error messages.

Display elements of control screen

Symbol	Status	Function
	Stopped/OFF	<ul style="list-style-type: none"> The system was stopped by pressing the Reset key and can be restarted by briefly pressing the Running key.
	Pause	<ul style="list-style-type: none"> The respective lubrication area is currently in the interval time.
	Wait Temperature	<ul style="list-style-type: none"> Temperature waiting time
	Wait	<ul style="list-style-type: none"> Lubrication zone waiting because another zone currently being lubricated
	Lubricate	<ul style="list-style-type: none"> The system lubricates
	Hold	<ul style="list-style-type: none"> Holding time
	Pressure relief	<ul style="list-style-type: none"> System relieved
	Runtime	<ul style="list-style-type: none"> Pump runs
	Secured/ Access denied	<ul style="list-style-type: none"> No access as local admin or supervisor
	Access	<ul style="list-style-type: none"> Access as local admin or supervisor
	Fault	<ul style="list-style-type: none"> There is a fault.
	Digital inputs/out- puts on	<ul style="list-style-type: none"> Digital output switched on
	Digital inputs/out- puts off	<ul style="list-style-type: none"> Digital output switched off



Status Overview and triggering an additional lubrication

Symbol	Status	Function
		Press the arrow key to receive a status overview of the pumps resp. zones (P1Z1 = Pump 1/Zone1 to max. P3Z3 Pump 3/Zone 3).
		Press the arrow key again to display the residual pause time resp. residual runtime of the currently selected pump/zone (e. g. P1Z1).
		Press the arrow key again to display the activated inlets of the currently selected pump/zone.
		Press the arrow key again to display the activated outlets of the currently selected pump/zone.
		Press the "additional lubrication" key shortly to carry out an additional lubrication of the entire system respectively of the activated zones (P1Z1 = pump 1/zone1 to max. max. P3Z3 pump 3/zone 3).

3. Technical data

3.1 General technical data

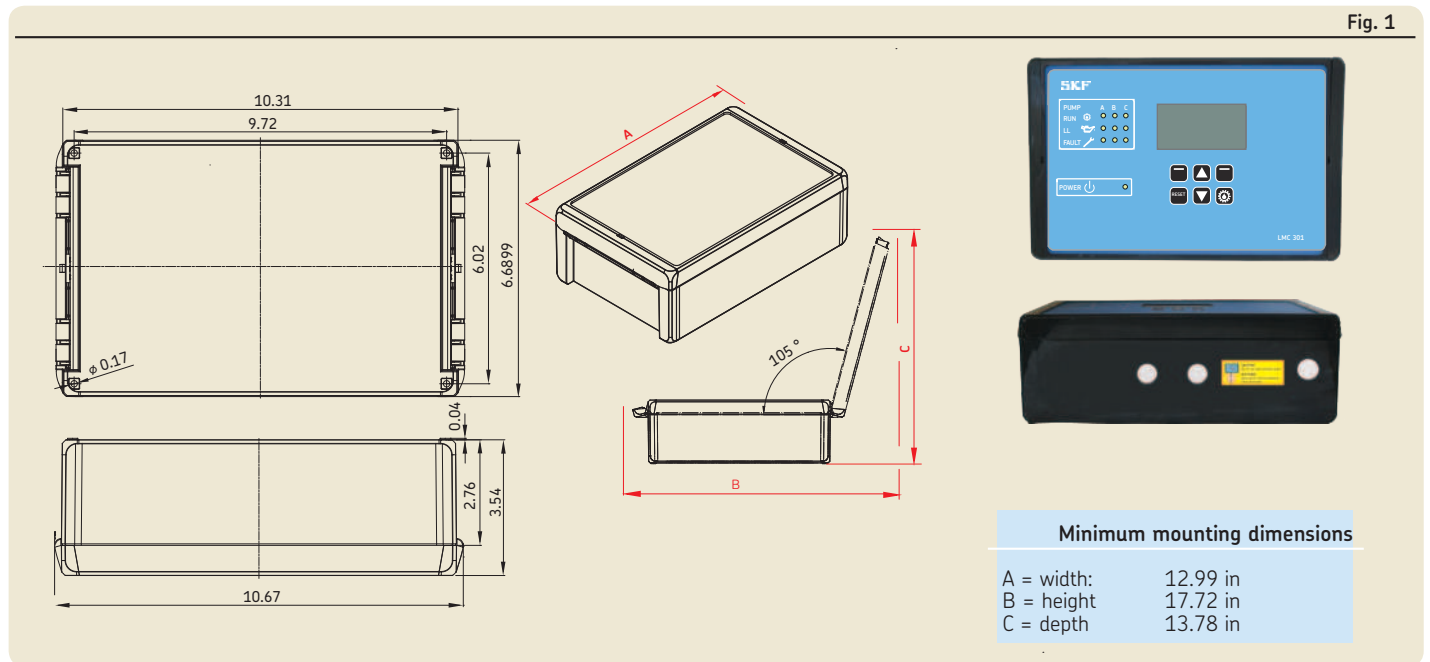
Characteristics, design	
General	
Mounting position	Vertical, refer to graphic, see page 14
Dimensions	(L x W x H) 10.6299 x 6.6929 x 3.5433 in
Display	2.3622x1.1811 in 128x64 pixels
Environmental conditions	
Altitude,	up to AC 2000m / DC 5000m
Ambient/Operating temperature	AC 14 to + 122 °F
Ambient/Operating temperature	DC- - 40 to + 158 °F
Maximum relative humidity	80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C
The LCD display only operates down to	-4°F
Storage temperature	- 40 to + 158 °F
Application	
	≤ 150 VAC, indoor/outdoor applications ³⁾ , UL overvoltage category III, pollution degree 2 > 150 ≤ 240 VAC only for indoor applications, UL overvoltage category II, pollution degree 2
Connectivity via terminal block	
Inputs:	10 count, short-circuit-proof, 2 are analog capable
Outputs:	8 count, relay outputs NO-contact 8A of 2 to max. 15A
Residual ripple relative operating voltage	±5% acc. to DIN 417 55
Protection and monitoring	
Current limit	Sustained short-circuit-proof
Overload-proof/ Open-circuit-proof	Yes
Protection class ^{1) 4)}	IP 65, protection class only with appropriate cable glands PG-M20, without UL certification

Characteristics, design	
Electronic consuming	
Internal fuse (LMC-Controller)	3 A
Input AC	
Input voltage	100-240 VAC (50/60Hz)
customer Fusing (slow).	4 A (100-240 VAC)
Input DC ^{2) 3)}	
Input voltage	24 V DC ±10%
customer Fusing (slow)	10 A
Output rating relays	
Connection directly to the relay 01/02	100-240 VAC/ max. 15A
Connection directly to the relay 01/02	24 VDC/ max. 15A
Output terminal block 01 bis 08	24 VDC; 100-240 VAC/max. 8A
 Note:	Do not mix 2 different voltages together (AC and DC) on one terminal block!
Safety per	DIN EN 60204-1
Safety class	Class I
Customer connection cables	
Temperature resistance of	>158 °F
EMC	
Interference suppression	VDE 0875 T 11, EN 55011 Class A
Emitted interference	acc. to EN 61000-6-3
Immunity	acc. to EN 61000-6-2
 Note:	The emitted interference meets the requirements for industrial use; use in a residential area may cause interference under some circumstances.
LMC 301 Version	Order No.
24 VDC	086500
100 to 240 VAC	086501
24 VDC I/O	086502
100 to 240 VAC I/O	086503
1) strain relief kid/cable glands -see Operating instructions. 2) Applicable precautions for proper operation: " Protective Extra Low Voltage" (PELV) and "Safe Extra Low Voltage" (SELV). 3) The application as Outdoor (outdoor installation) has not been tested in connection / certification with the UL standard 4) The degree of protection class for the controller LMC301 has not been tested in connection with the UL certification	

- 1) strain relief kid/cable glands -see Operating instructions.
 2) Applicable precautions for proper operation: " Protective Extra Low Voltage" (PELV) and "Safe Extra Low Voltage" (SELV).
 3) The application as Outdoor (outdoor installation) has not been tested in connection / certification with the UL standard
 4) The degree of protection class for the controller LMC301 has not been tested in connection with the UL certification

4. Assembly

4.1 Port dimensions, assembly holes, and minimum mounting dimensions

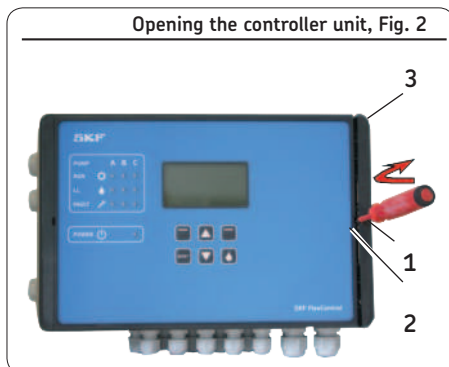


4.2 Open the control unit

☞ see Figures 1 and 2

- Insert a flat tip screwdriver (1) with a maximum blade width of 5.5 mm into the opening slot (2).
- Tilt the screwdriver (1) slightly to the right to open the cover (3).

☞ Open the cover by briefly clicking and then opening the cover by hand.



4.3 Assembly of the control unit

☞ See Figure 1

The controller unit is installed using 4 cheese-head screws of thread size M4. If M4 tapped bores are used to fasten the unit, the screws must have a minimum length of 15 mm. Fastening material to be provided by the customer:

- o Cheese-head screws with hexagon socket 4x acc. to DIN6912-M4x. -8.8
- o Washers (4x) acc. to. DIN EN ISO 7090-4-200HV
- o Self-locking nuts M4 (4x) acc. to DIN EN ISO 10511; drill assembly holes (Ø 4.3 mm) acc. to assembly drawing (Fig. 4) and the conditions on the surface.



- Clean surface to remove drilling chips.
- Open the control unit, place it on the surface and roughly align it.

- Pass cheese-head screws (4x) through the fixing holes on the controller unit and mounting surface.
- Apply washers to cheese-head screws, gently tighten cheese-head screws.
- Align the controller unit, tighten cheese-head screws.

Torque 4 Nm

4.4 Electrical connection


4.4.1 General

	 WARNING
	<p>Electric shock</p> <p>De-energize the control unit prior to beginning work.</p> <p>Only qualified personnel authorized by the operator may perform work on controller unit.</p> <p>The electrical operating conditions and local regulations (e.g., DIN, VDE) must be observed.</p>

The controller unit is supplied with 110 to 240 V AC voltage or optionally with 24 V DC voltage.

In both designs, the cables are introduced through a cable fitting with a clamping range of Ø 4.5 mm to Ø 10 mm and terminal blocks with tension springs (maximum conductor cross-section 2.5 mm, conductor stripping length 15 mm).

ATTENTION!
<p>An appropriate switch or circuit-breaker (min. 10A) who protect all pole must be included in the building installation and shall be in close proximity to the equipment within easy reach of the OPERATOR.</p> <p>The disconnecting device shall be marked as the device for the equipment.</p>

ATTENTION!
<div style="display: flex; align-items: center;">  <div> <p>The Lubrication Monitor Controller contains electronic components that can be destroyed by accidental electrostatic charge or discharge (ESD). To prevent possible damage due to ESD, hands and any tools must be discharged on a bare grounded position on the installation site prior to performing any work on the opened control unit. Conductors or components within the device must not be touched under any circumstances.</p> </div> </div>

ATTENTION!

The mains voltage (supply voltage) must match the specifications on the rating plate of the Lubrication Monitor Controller. Check the fuse protection of the electrical circuit. Use only fuses with the prescribed amperage,

Consult Chapter 3, Technical Data, for the electrical characteristics of the controller unit. The connections on the controller unit are established according to the customer-specific design of the lubrication system/main lines. The system manufacturer is thus responsible for correct connection to the controller unit.

4.5 Line routing

☞ See Figures 4 and 5

The lines are laid through cable glands attached on both sides and on the bottom. The attached cable glands are provided for the following lines:

optional Left-side cable glands:

Power supply

Master/Slave connection

optional Right-side cable glands

Relay outputs (load-dependent)

Pump motor

Cable glands on bottom:

Inputs and outputs of monitoring units (sensors)

- Loosen the cable fitting.
- Draw the connection cable provided by customer into the cable fitting.
- Connect the connection cable (provided by customer) according to the wiring diagram (see Figs. 6 to 12).
- Tighten the cable fitting.

4.6 Connecting wires

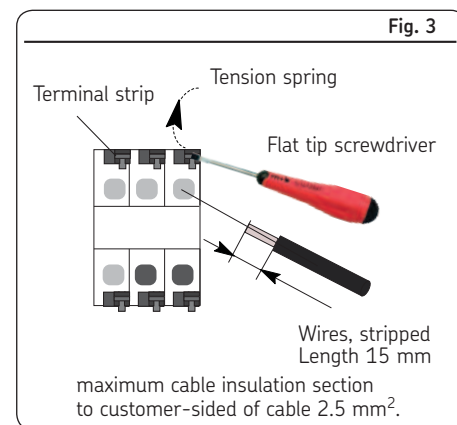
☞ see Figures 4 and 5, item 1, and Figure 3

The wires on the terminal strips for:

- o power connection (item 1)
- o digital outputs (item 2)
- o analog outputs (item 3)
- o relay (item 4)

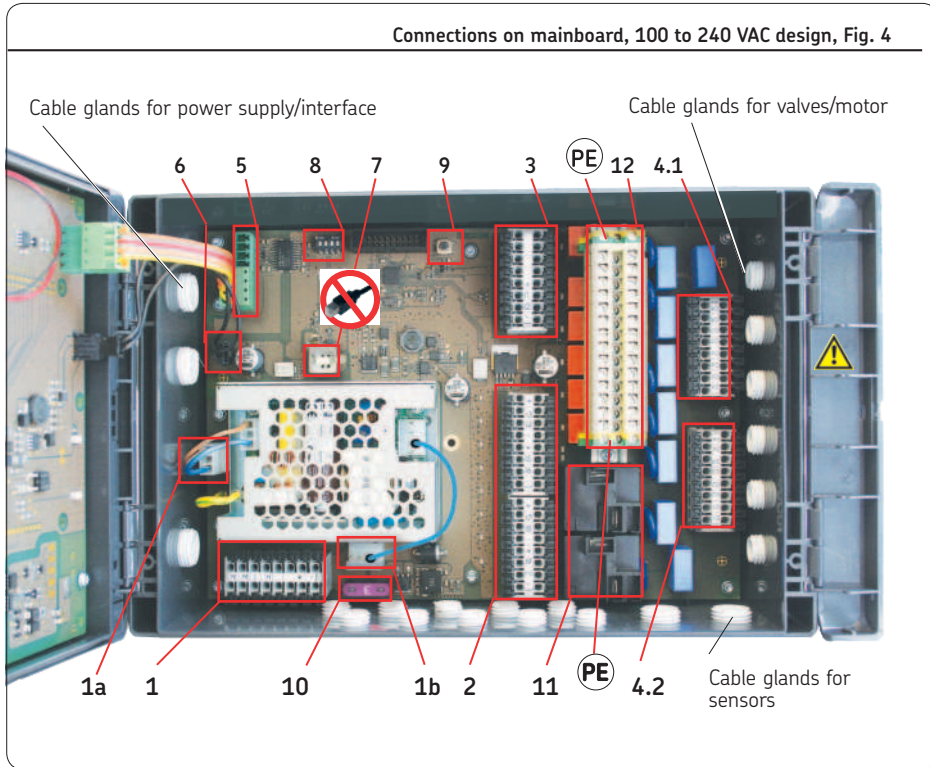
are connected via a tension spring mechanism. The following procedure should be used for this

- Press the tension spring back using the flat tip screwdriver.
- Insert flexible cable leads into the terminals.
- Release pressure on the tension spring.
- Check the wiring for tight fit.



ATTENTION!
<p>You can run each terminal block (4.1 or 4.2) only with one operating voltage (24VDC or 100 to 240 VAC). Do not mix 2 different voltages together on 1 terminal block.</p>

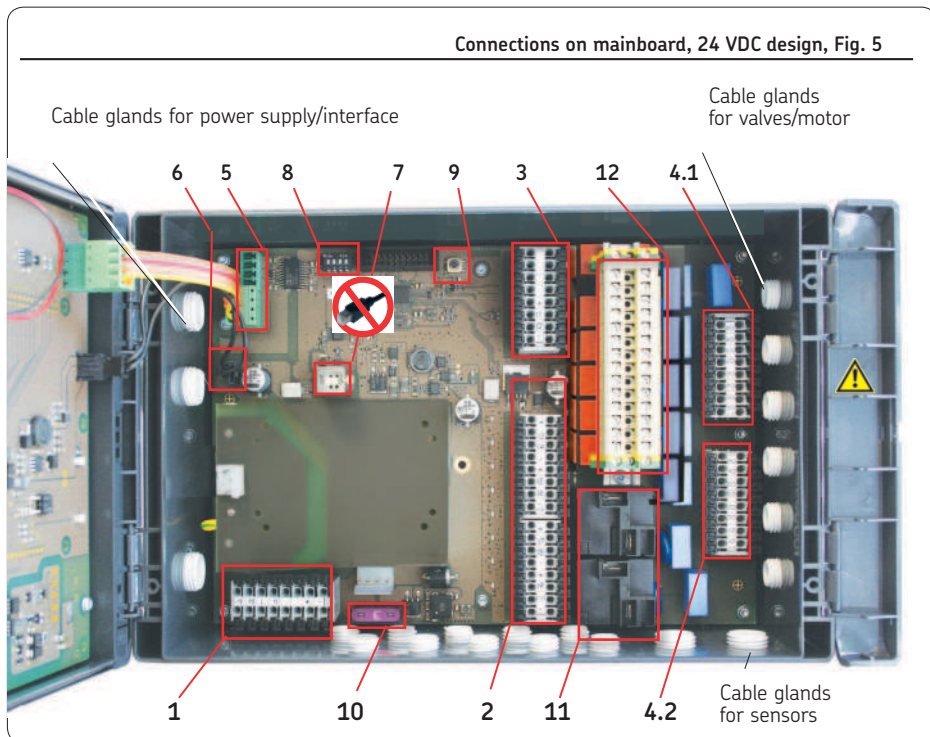
4.7 Terminal board 100 to 240 VAC



Legend to Figure 4

Item	Description	BA-Chapter
1	Power supply	X1 4.7.2
1a	Internal 100 to 240 VAC connection for the AC/DC power supply unit	
1b	Internal 24 VDC connection from AC/DC power supply unit to the board	
2	Digital inputs	X2 4.7.6
3	Digital/Analog inputs	X3 4.7.7
4	4.1 Relay outputs	X4 4.7.3
	4.2 Relay outputs	X4
5	RS485-Interface	
6	24 VDC output for mainboard	
7	USB port (external) Not for User	
8	DIP switch addresses	4.8
9	RESET switch Hardware Reset	
10	Fuse (FK1) 3A	
11	Load switching relay (2x)	X5 4.7.5
12	PE/Ground terminals for relay outputs	X6 4.7.4

4.7.1 Terminal board 24 VDC

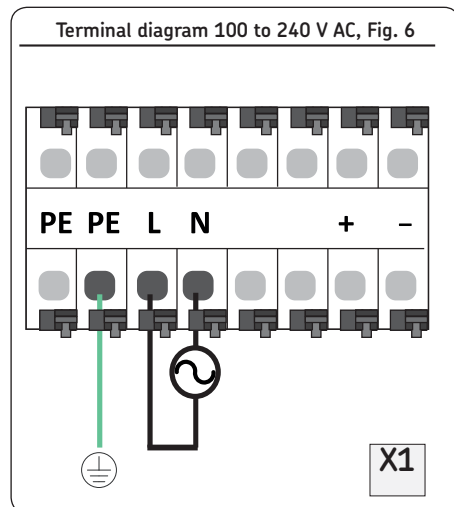


Legend to Figure 5

Item	Description	BA-Chapter
1	Power supply	X1 4.7.2
2	Digital inputs	X2 4.7.6
3	Digital/Analog inputs	X3 4.7.7
4	4.1 Relay outputs	X4 4.7.4
	4.2 Relay outputs	X4
5	RS485 Interface	
6	24 VDC output for main board	
7	USB port (external) Not for User	
8	DIP switch addresses	4.8
9	RESET switch Hardware Reset	
10	Fuse (FK1) 3A	
11	Load switching relay (2x)	X5 4.7.5
12	PE Ground terminals for relay outputs	X6 4.7.4

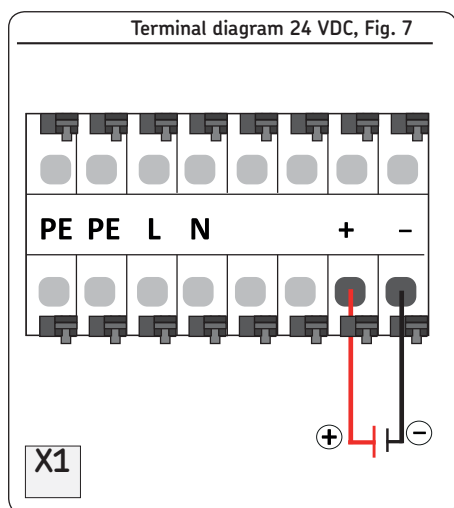
4.7.2 Power supply 100 to 240 V AC and 24 VDC

☞ see Figure 4, item 1, and Fig. 6



- Connect customer-provided cable for power supply acc. to terminal diagram 100 to 240 V AC, Fig. 6.
- ☞ The 24 VDC is generated internally. Do not connect externally generated 24 VDC to terminal + or terminal -.

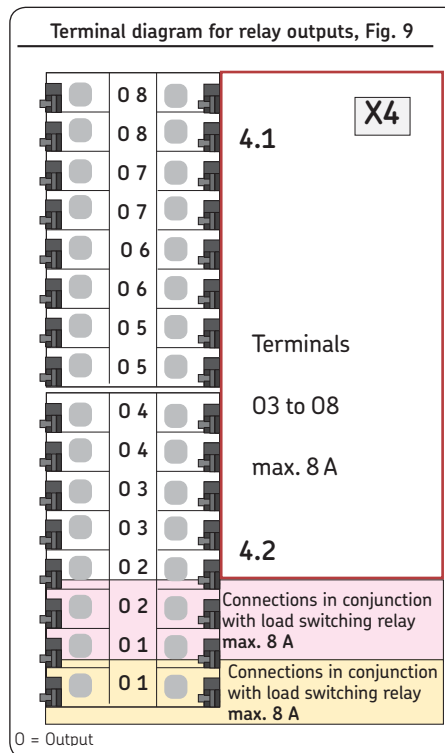
☞ see Figure 5, item 1, and Fig. 7



- Connect customer-provided cable for power supply acc. to terminal diagram 24 VDC, Fig. 7.

4.7.3 Terminal strip for relay outputs

☞ see Figures 4/5, item 4, and Figures 9 to 10

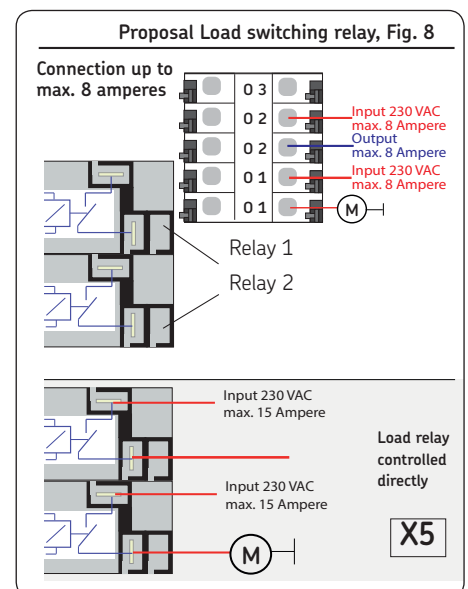


ATTENTION!

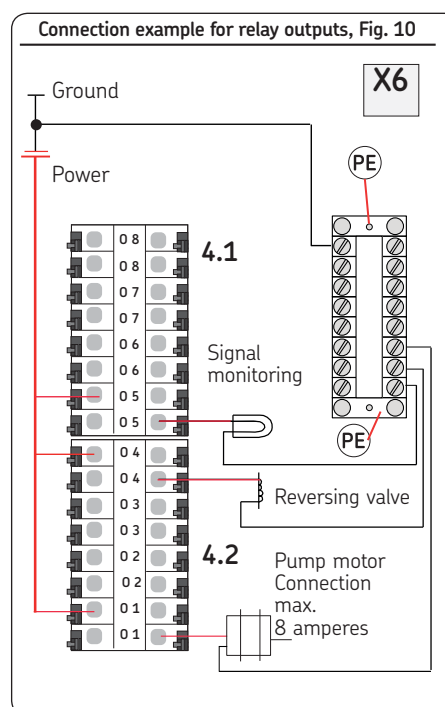
You can run each terminal block (4.1 or 4.2) only with one operating voltage (24VDC or 100 to 240 VAC). Do not mix 2 different voltages together on 1 terminal block.

4.7.4 Load switching relay

☞ see Figures 4/5, item 11, and Fig. 8

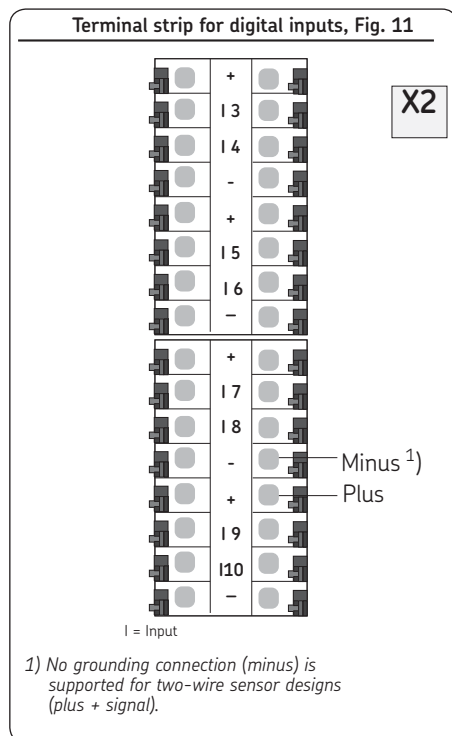


- Connect (loop) customer-provided load voltage cable to both terminals of the load relay.



4.7.5 Terminal strip for digital inputs

☞ see Figures 4/5, item 2, and Figure 11



The digital inputs are provided for:

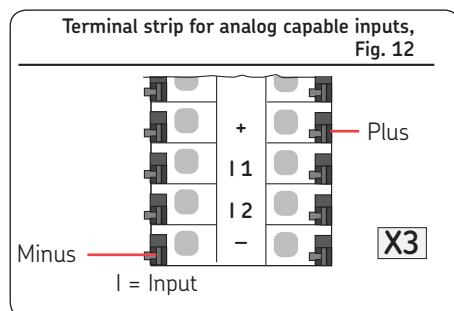
- o Pressure switch
- o Proximity switch
- o Flow sensor
- o Fill level switch
- o Interim lubrication switch

- Connect power supply for digital switch (+) to plus terminal (+).
- Connect ground connection for digital switch (-) to minus terminal (-).
- Connect signal line for digital switch to corresponding input terminal (I3 to I10).

1) No grounding connection (minus) is supported for two-wire sensor designs (plus + signal).

4.7.6 Terminal strip for analog capable inputs

☞ see Figures 4/5, item 3, and Fig. 12



The analog inputs are provided for:

- o Pressure transducer
- o Temperature switch
- o Switch polled in mA or volt, e.g., 4-20 mA, 1-6 volt, etc.

- Connect power supply for analog switch (+) to plus terminal (+).
- Connect ground connection for analog switch (-) to minus terminal (-).
- Connect signal line for analog switch to corresponding input terminal (I1 /I2).

4.8 Adding an additional IO connection to RS485 interface

☞ see Figures 4/5, item 8

☞ see Figures 13/14

Another IPCB communication connection can be established using the two RS485 connectors (5).

Up to 7 IOPCBs can be connected to a mainboard. Each IOPCB must be supplied separately.

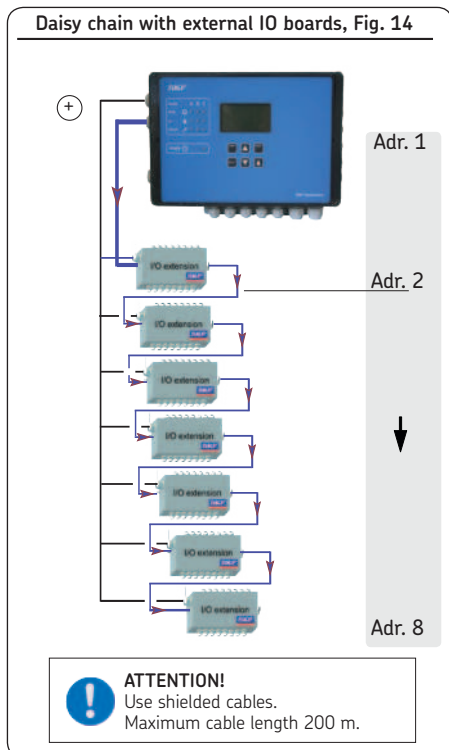
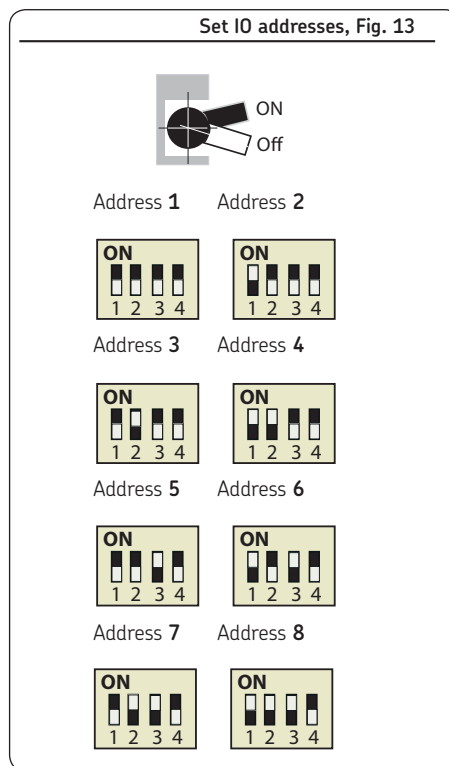
ATTENTION!

A separate address must be assigned to each IO board!

To differentiate between multiple IOPCBs in an RS485 daisy chain, each IOPCB needs its own address.

This can be set in the binary code using the DIP switch (address switch).

If all four DIP switches are set to **top**, the address is "1". See Figure 13 for further addresses.



5. Configuration by operator/local admin

General

There are two options for configuring the controller:

- o Configuration with PC software and USB connection –see Chapter 6.1.
- o The PC software application is designed for Windows XP, Windows 7, and Windows 8 operating systems and is included as data media with the controller. The software can also be downloaded as freeware from the SKF website. After installing the program, data transfer occurs via the USB interface in the controller.
- o SKF recommends this procedure for initial installations.
 - o Configuration of the system using the display attached to the controller and the menu keys – see Chapter 5.1.
 - o The complete configuration can be done via the controller display and the associated menu keys.

5.1 Configuration of the controller unit with PC software

☞ see Figure 15

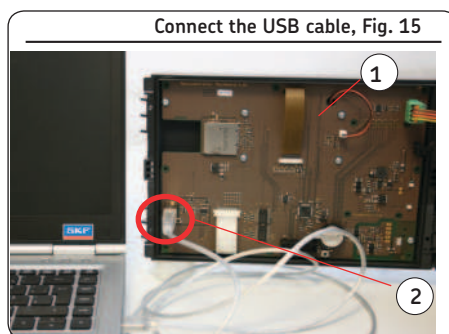
- From the SKF homepage
<http://www.skf.com/LMC301/>
- Download software **LMC 301 PC Software**
- Close all applications on the laptop.
- Open the file."
- ☞ After you enter the password, the LMC 301 software installs automatically. SKF recommends not starting any other applications during this period.

ATTENTION!

The USB cable may only be connected to the USB port installed inside the controller lid on the LMC 301.
– see Fig. 15.

- Install the controller unit (Chapter 4.3).
- Open the controller unit (Chapter 4.2).
- Connect the USB cable (2) from the laptop on the inside of the controller lid (1) and turn on the power supply.
- Start the LMC 301 software.

- ☞ The description of the PC configuration is included with the software.
- Configure according to the included description for configuration on the PC.





5.2 Configuration of the controller unit via the display on the controller unit


5.2.1 Status/overview

After switching on the supply voltage, the **Overview States** menu appears on the display.

The current parameter settings and values are displayed. This is done continuously and automatically.

The parameters and settings can optionally be accessed using the two arrow keys .

No entries can be made and the symbol shows a closed lock .

To change the configuration, select the **Menu** menu item using the control key .

This will take you to the **Main menu**.

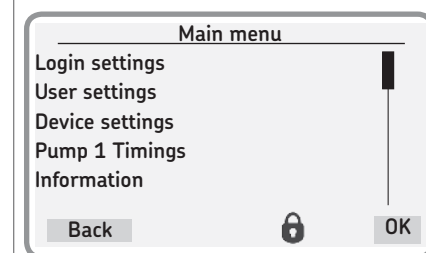
Changes can be made within the main menu only after entering the password. This is done in the **Login settings** menu level.

When entering the password, there is a differentiation between **Local Admin** (customer access) and **Supervisor** (only service staff, no customer access).

The open lock icon  indicates that the system has been unlocked.

5.2.2 Main menu

Main menu, Fig. 16



ATTENTION!

The description of the main menu is based on settings that the end customer can adjust. (password level Set PW local admin)

5.2.3 General setting options

The main menu shows the following options:

Login settings

The <Login settings> menu is used to manage access to the menus with a password. The password can also be changed here.

User settings

(Setting options for operators without password access)

In this menu, the measurement units (metric or inch) and the language for the user menu can be selected.

Device settings

In this menu, the display properties of the screen, such as backlight and contrast, can be modified. The date and time are also set here.

Pump 1 Timings

In this menu, the timing of the pump and the settings for the associated main line are set.

Information

The hardware and firmware versions are stored in this menu. The hours of controller operation, the error history, and the serial number of the controller unit can also be viewed here.

User type	Password
Operator	without password access
Local admin	1000
Supervisor	2020

User settings		
Key	Display	Description
User settings - Set units and menu language		
1 Menu		<ul style="list-style-type: none"> Press <control key Menu> <p>☞ You will be taken to the main menu.</p>
2 OK		<ul style="list-style-type: none"> Use <down arrow key> to select the User settings menu item. Confirm with <control key OK>. <p>☞ You will enter the User settings menu.</p>
3 Select		<ul style="list-style-type: none"> Use <down arrow key> to select the menu item Language [English /Deutsch]. Press <control key Select>. Use <down/up arrow key> to select the language [English /Deutsch]. Press <control key Save>.
4 Select Back		<ul style="list-style-type: none"> Use <up arrow key> to select the Unit Settings menu item [Imperial/Metric]. Press <control key Select>. Use <down/up arrow key> to select Unit Settings [Imperial/Metric]. Press <control key Save>. Press <control key Back>. <p>☞ You will return to the User settings menu.</p>
Login settings- Enter Set PassWord local admin.		
OK		<ul style="list-style-type: none"> Press <control key OK>. Use <down/up arrow key> to select Set PassWord local admin. Press <control key OK>. <p>☞ You will enter the Enter Password menu. The password contains four characters that can be either numerals or letters.</p>
Up/Down		<ul style="list-style-type: none"> Use <down/up arrow key> to set the first character of the password. Confirm the entry with <control key OK>. Repeat the entry for the following 3 password characters. Press <control key Back>. <p>☞ You will return to the Login Settings menu.</p>

5.2.4 Menu structure for system configuration

ATTENTION!

SKF Service menu
This level is password-protected and cannot be accessed from the operator level or the Local Admin level. Settings can be made only in the **Supervisor** password level.

All essential controller and system settings for are made in the System configuration menu level.
These settings can and may only be made by SKF Service.

System configuration		
Key	Display	Description
System configuration - Amount of pumps, Pump settings, Set Params to Default - only in Supervisor password level		
1	<div><div><div><div>Main menu</div><div>Login settings</div><div>User settings</div><div>Device settings</div><div>Pump 1 Timings</div><div>System configuration</div><div>Information</div><div>Back</div><div>Ok</div></div><div><div>System configuration</div><div>Lubrication will be stopped</div><div>Continue?</div><div>Yes</div><div>No</div></div><div><div>System configuration</div><div>Amount of pumps</div><div>Setting the pump</div><div>Set Params to Default</div><div>Back</div><div>Select</div></div></div></div>	<div><p>☞ Requirements: Supervisor password level is enabled.</p><ul style="list-style-type: none">• Use <down/up arrow key> to select System configuration.• Press <control key OK>.<p>☞ You will enter the System configuration menu.</p><p>☞ You will be asked "Lubrication will be stopped- Continue?"</p><ul style="list-style-type: none">• Press <control key Yes>.<p>☞ You will enter the System configuration menu.</p><p>The following settings can be made:</p><ul style="list-style-type: none">o Amount of pumpso Setting the pumpso Set Params to Default</div>

5.3 Configuration of several IO boards to master slaves

Chapter 4.8 describes the IOPCB communication connection between an IO master and an IO slave.

To connect two boards with each other, the customer must prepare an adapter cable. The cable must be shielded.

The plugs required for the adapter cable are available on the respective board.

In the following please find further notes regarding the connection of the adapter cable.

SKF takes a separate voltage supply for each board as given.

- o SKF takes a separate voltage supply for each board as given.
- o The PE connection (ground) must be separate for each board. Connection is made on the respective board, see page 11, Fig. 9.
- o The maximum admissible connected load of each board is 3 A.
- o In case of different potential-free outputs make sure to use an adequate connection line and a corresponding connection diameter, see chapter 4.7.3.
- o For each connection line the customer must provide a correspondingly designed back-up fuse.

LMC 301 Versions

Master	Order No.
24 VDC	086500
100 to 240 VAC	086501



Slave	Order Number
-------	--------------

24 VDC I/O	086502
100 to 240 VAC I/O	086503



Wiring and Setting Master/Slave, Fig. 17

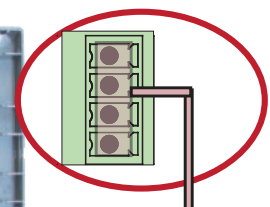
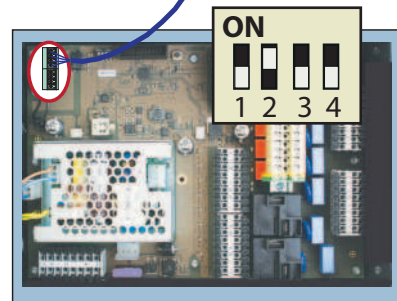
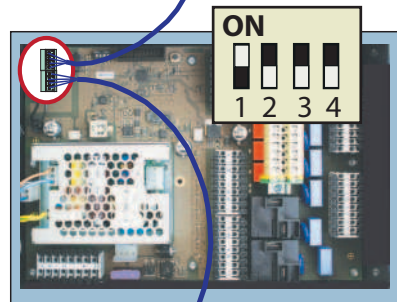
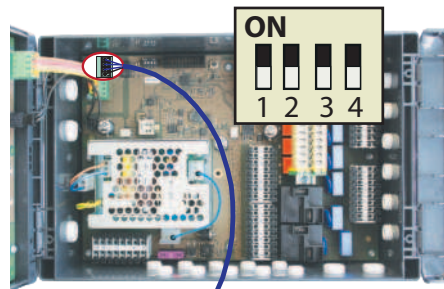
Master Board
LMC 301
Master



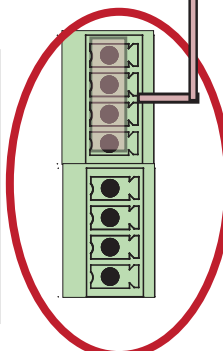
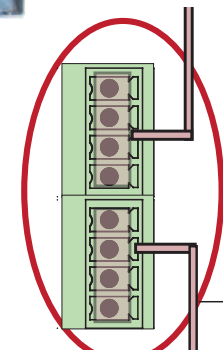
Slave Board
LMC 301
Slave 1



Slave Board
LMC 301
Slave 2



Adapterkabel



Connection Adapter Cable

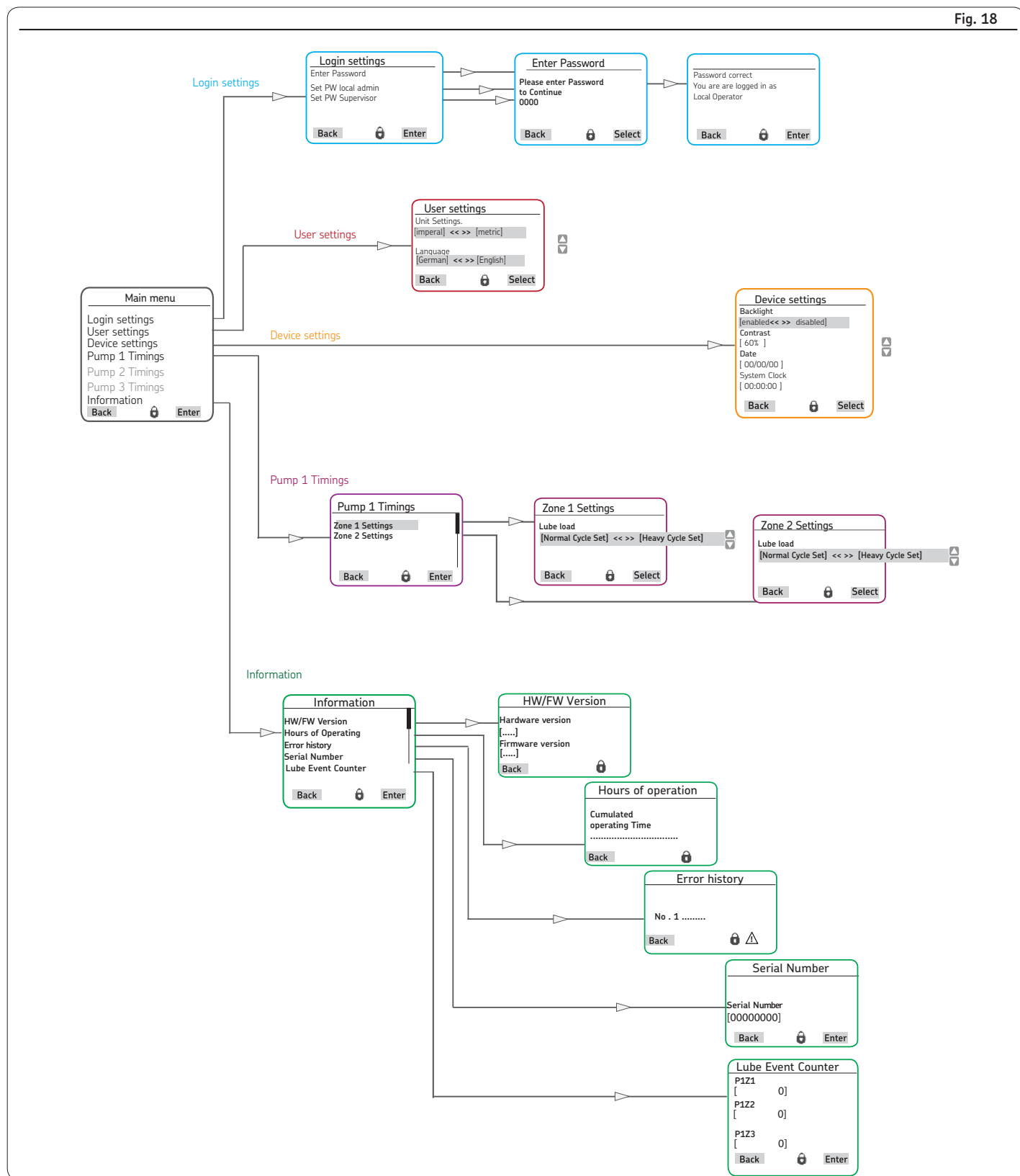
Socket 1 to Socket 1
Socket 2 to Socket 2
Socket 3 to Socket 3
Socket 4 to Socket 4



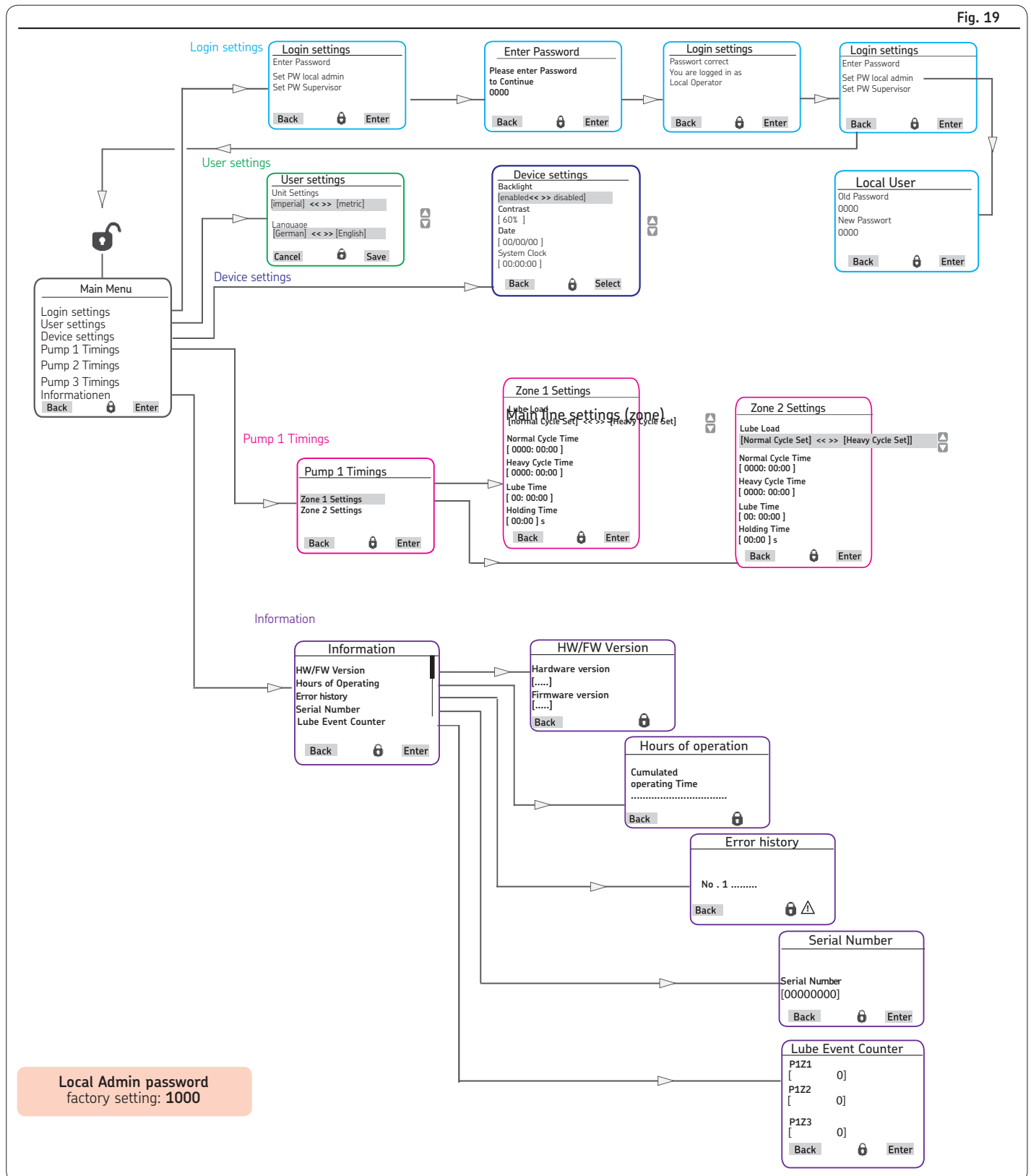
Caution!

When preparing the adapter cable use a shielded cable.

5.3 Menu navigation for operators without password access

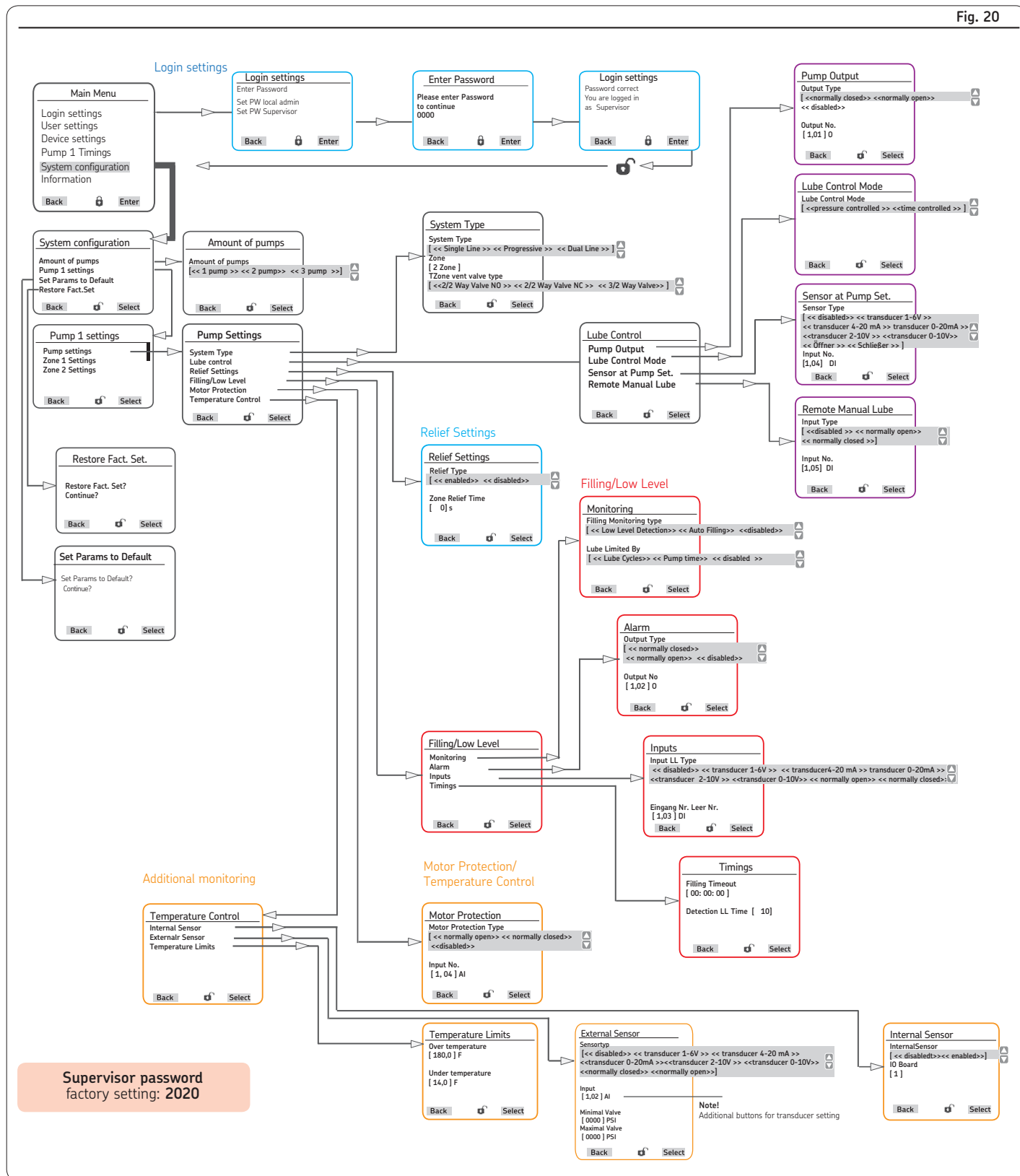


5.4 Menu navigation for local admins with password access



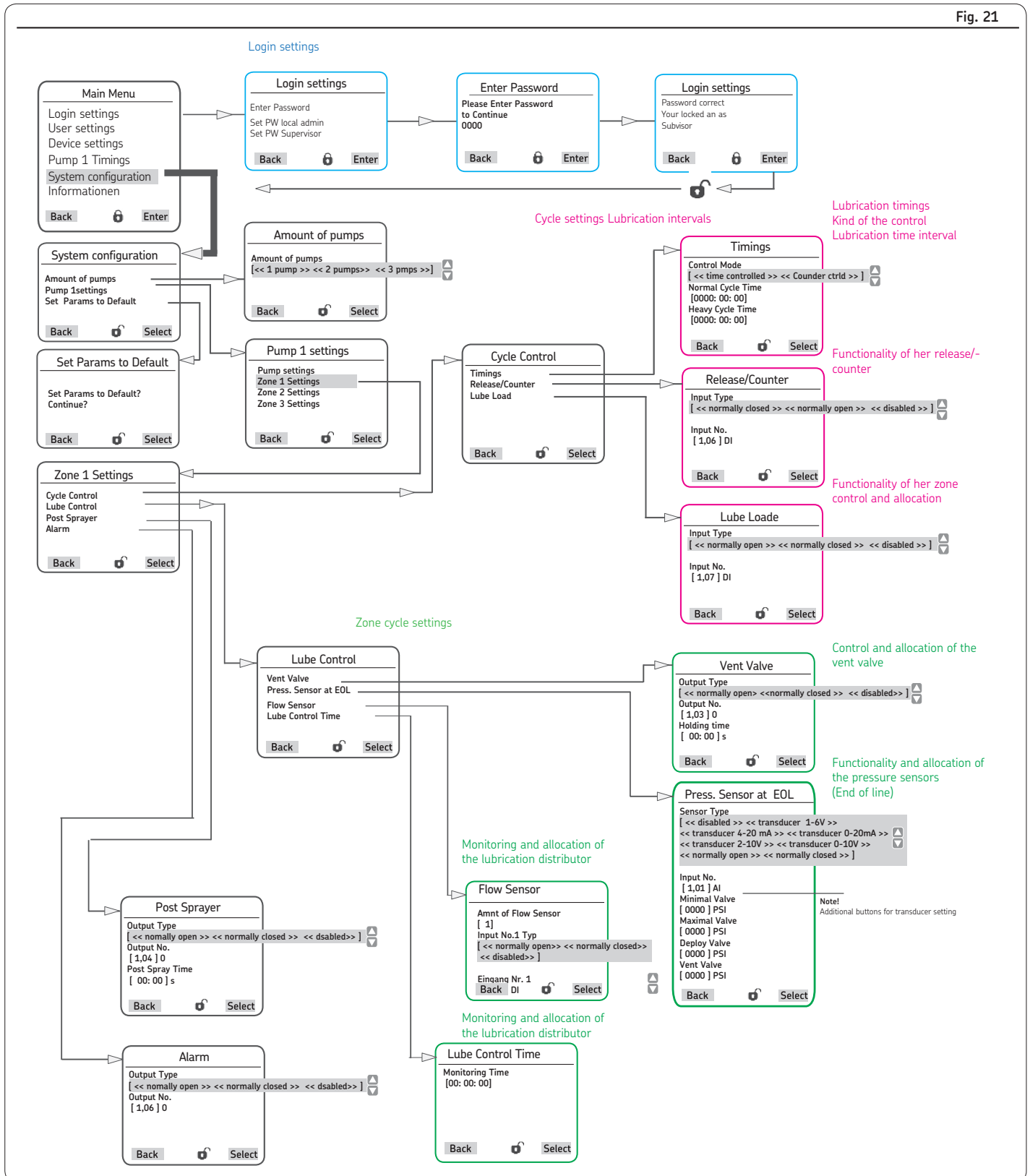
6. System configuration

6.1 Menu navigation for system configuration - Single Line pump settings with Supervisor password

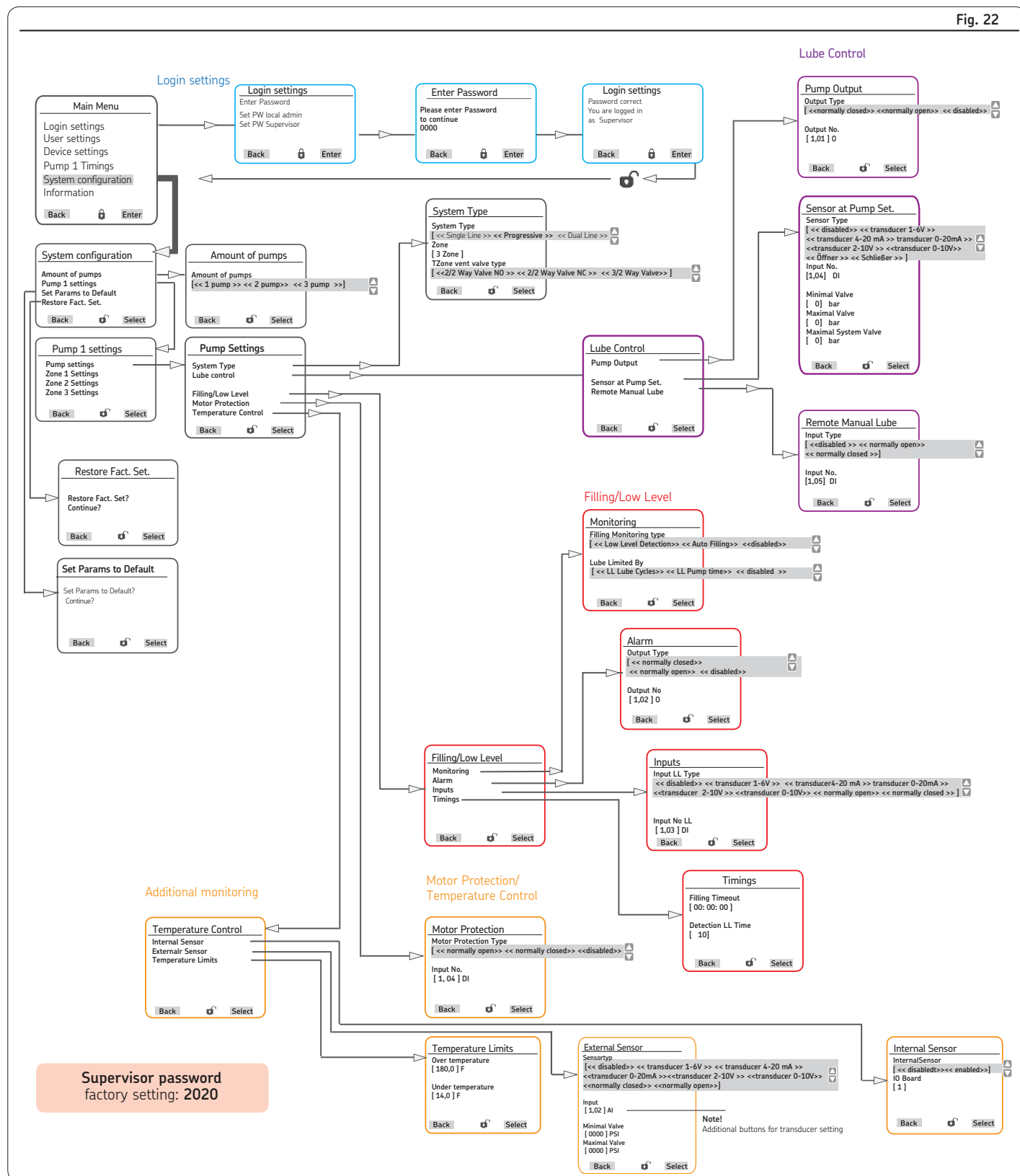


6.2 Menu navigation for system configuration - Single Line zone settings

Fig. 21

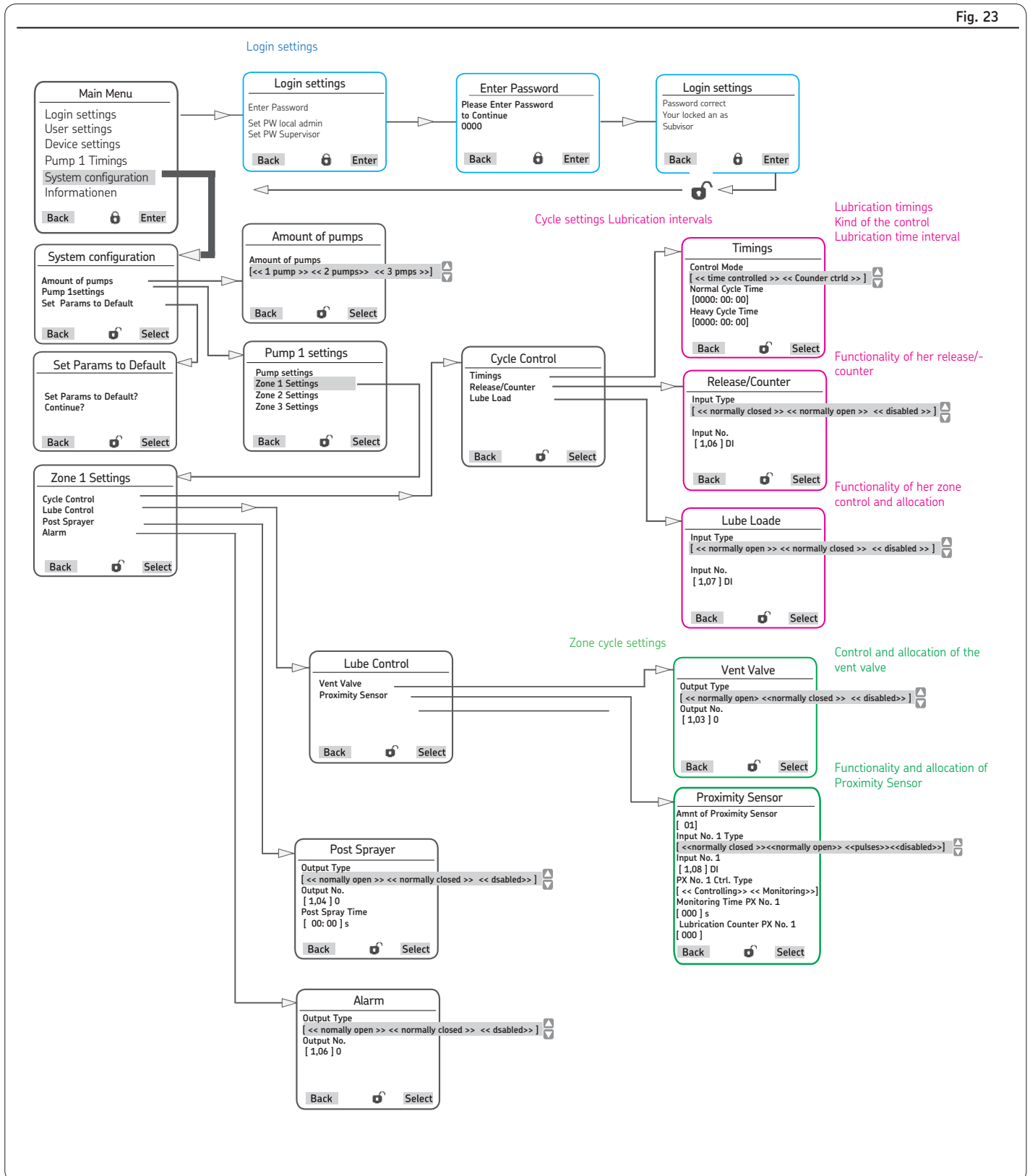


6.3 Menu navigation for system configuration - Progressive pump settings with Supervisor password

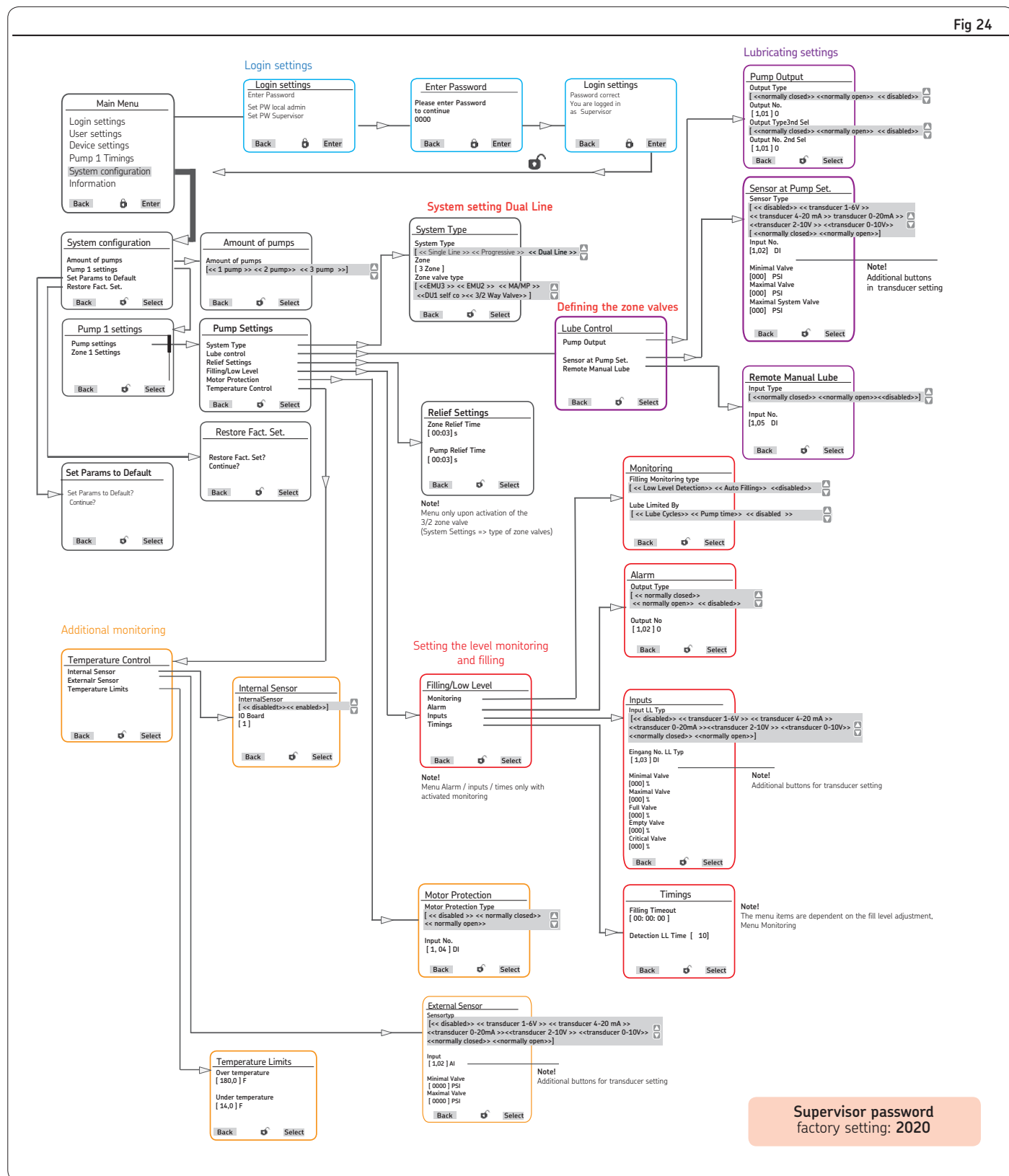


6.4 Menu navigation for system configuration – Progressive zone settings

Fig. 23



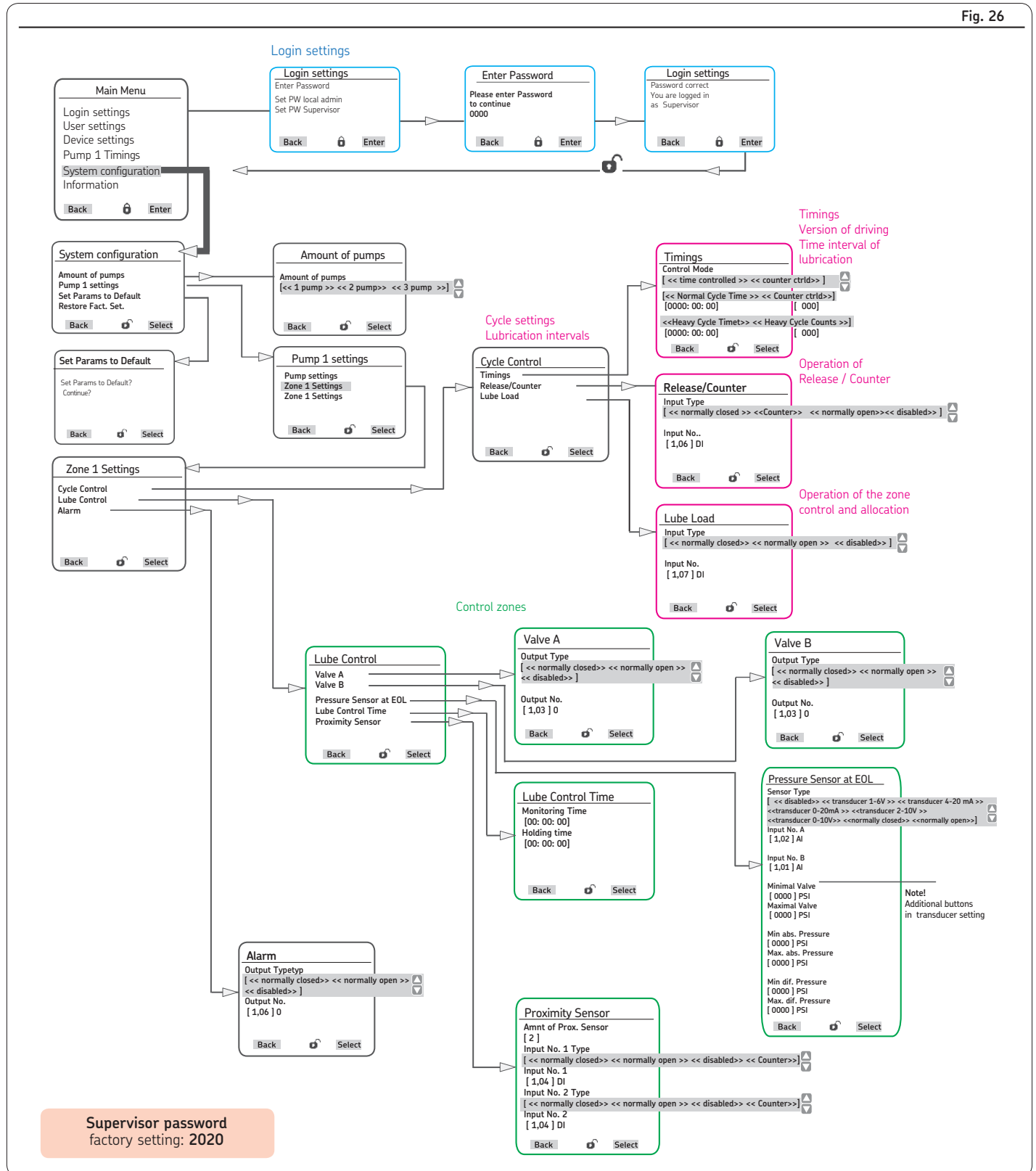
6.5 Menu navigation for system configuration - Dual Line settings with Supervisor password



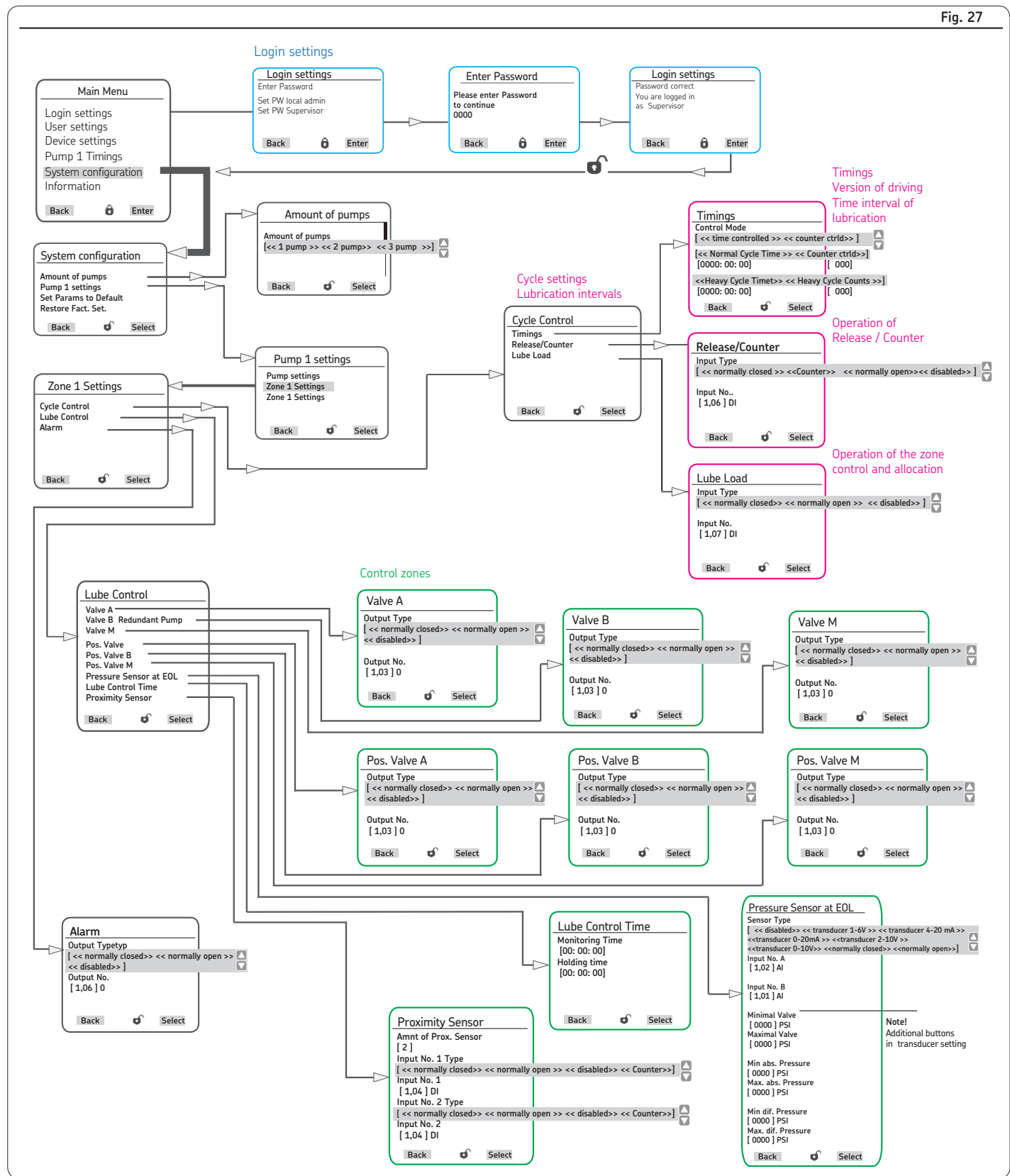
6.6 Menu navigation for Dual Line Zone control

6.6.1 Zone Control with two 3/2 solenoid valves or with EMU 2

Fig. 26

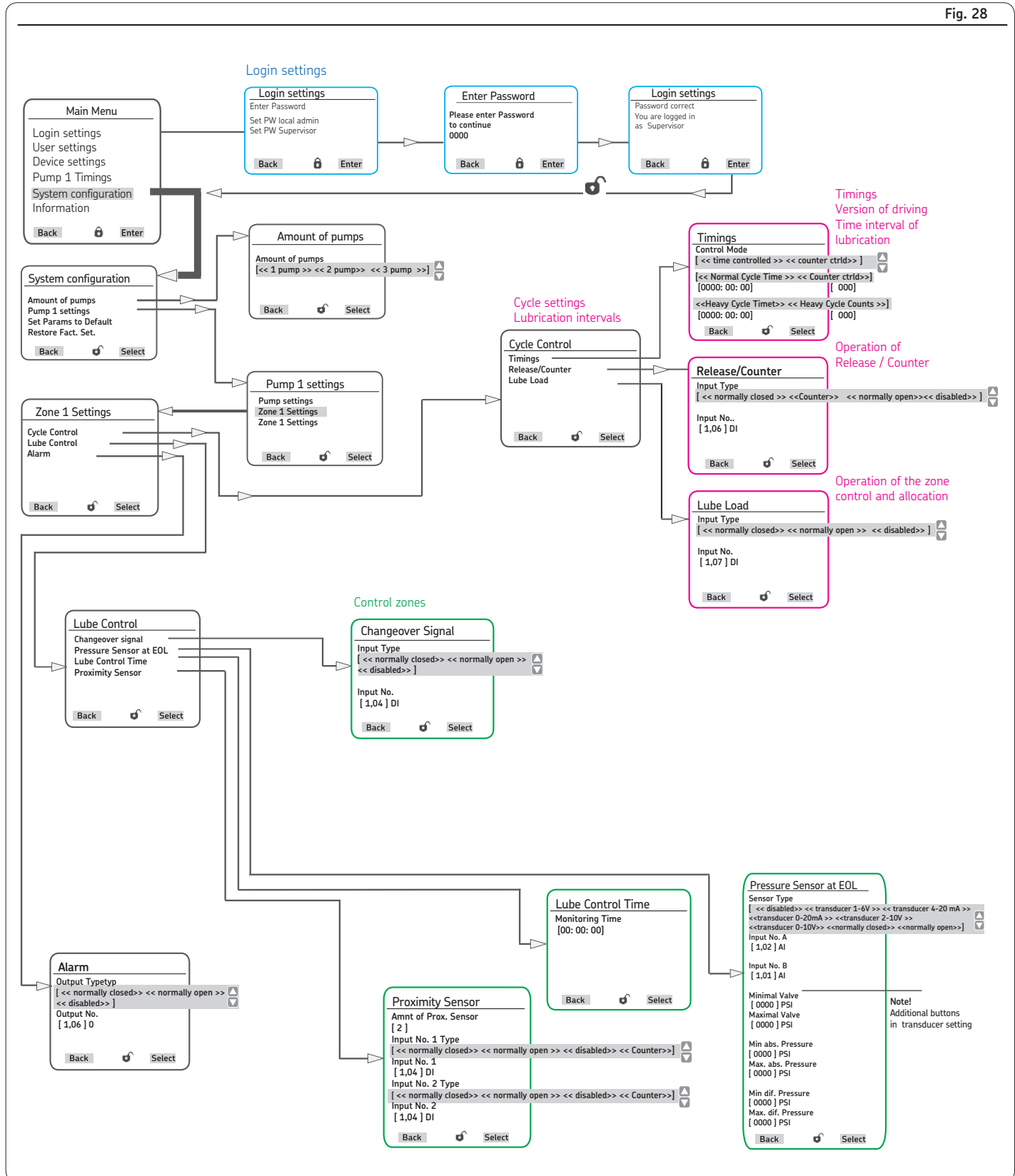


6.6.2 Zone Control with EMU 3

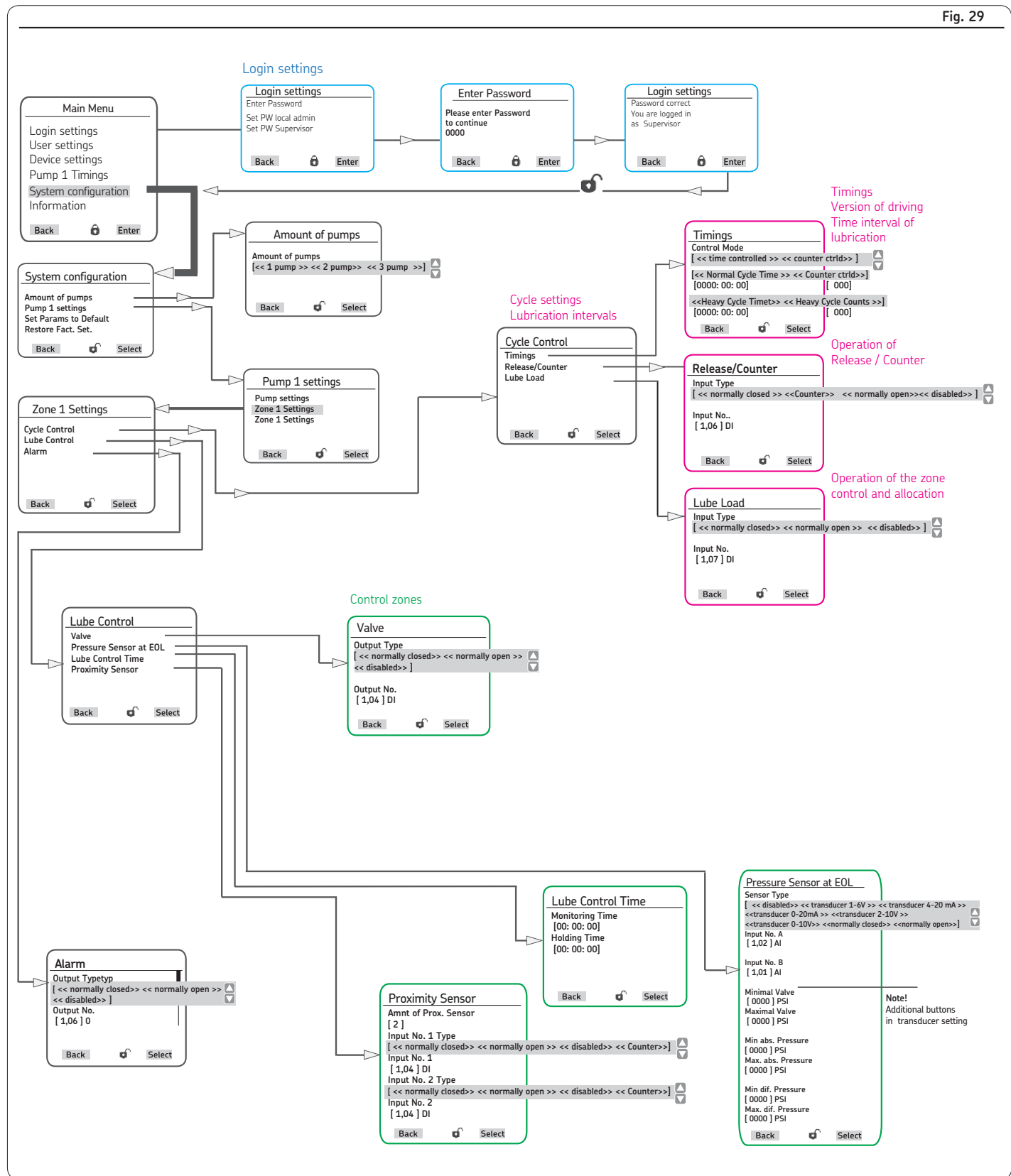


6.6.3 Zone Control with DU1

Fig. 28



6.6.4 Zone Control with MA/MP



Subject to change without notice! (2016, August)

Important product usage information

All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.

Not all lubricants are suitable for use in centralized lubrication systems. SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible temperature.

Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Manufacturer and service address

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