

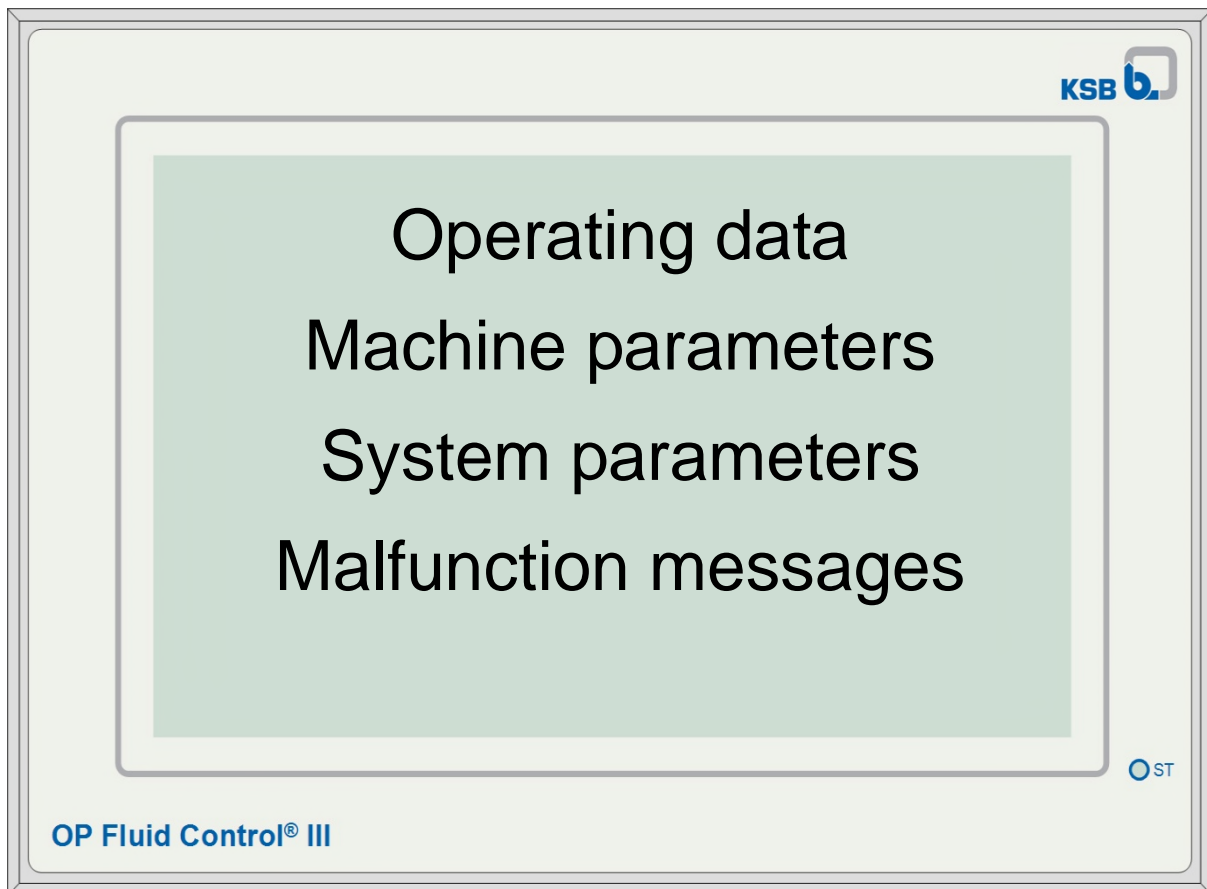
# OP Fluid Control® III

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KGS.747.08  
Operating Manual

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As at August 2012



## OP Fluid Control® III

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# OP Fluid Control® III

Warranty limitation:

No warranty is given for the complete correctness of this manual, since errors can never avoided completely despite utmost care. Comments are always welcome and will be gratefully accepted.

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## OP Fluid Control® III

### 1. Technical data

#### Basic module:

Aluminium casing for front installation  
Dimensions in mm W = 203 H = 143 D = 60  
Connections: Screw-type plug terminals  
Power supply 24 V DC  
Microprocessor with fixed program  
Memory 2 M Byte Data  
Memory 2 M Byte Code  
Memory 512 k Byte Retain  
Battery, 3V 170mAh, for data storage  
Service life min. 2 years  
Interface 1, RS232 and RS485  
1x Ethernet TCP/IP  
1x USB  
2x CAN  
10 Analog inputs 0-20 mA / 0-10V / Pt 1000  
Non-isolated burden at 20mA = 120 Ohm  
16 Digital inputs 24 V DC 10 mA  
4 Outputs analog 0-10 V DC 2 mA  
2 Outputs analog 0-20mA  
16 Outputs digital, transistor 24 V DC 0.5 A  
Master terminal with touch colour display 5.7' ¼ VGA  
320x240-dots hardware clock

## OP Fluid Control® III

### 2. Keypad

The unit is equipped with a touch panel as control system, i.e. the control system executes the relevant commands upon clicking on the respective buttons in the display.

#### Operating data

Jump to the described window.

#### ESC

Return to previously opened menu.

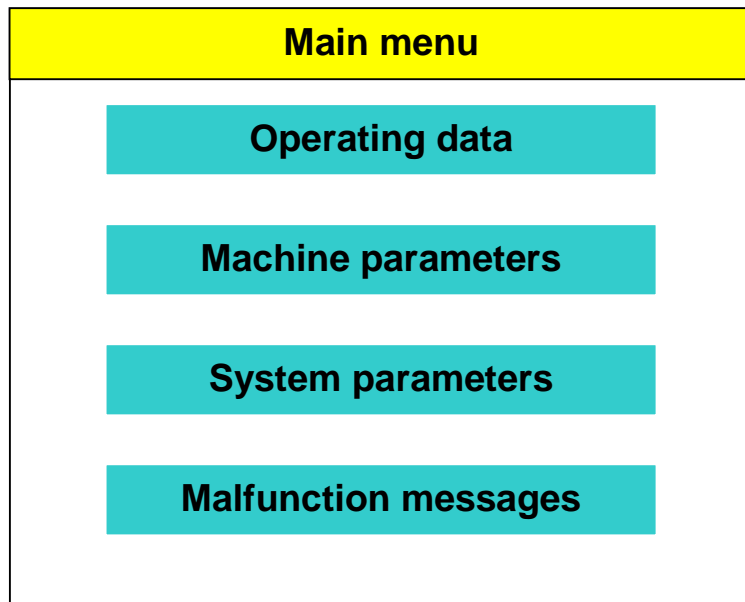
#### 2/7

Scroll function in individual windows

#### 400

Input window: A numpad (numeric keypad) opens after password confirmation and clicking the relevant button. Use the numeric keypad to make the desired inputs. Acknowledge your inputs by clicking 'OK' in the numeric keypad.

### 3. Start window



#### **Operating data:**

Display of current operating data, such as:

- Filling level
- Motor currents

#### **Machine parameters:**

Setting of individual parameters, such as:

- Amajet Pump
- Swivelling drive

#### **System parameters:**

Setting of system parameters, such as:

- Filling level measurement
- Tendency of properties
- Current transformer for motor currents
- Password
- Date / time
- IP address

#### **Malfunction messages:**

Display of malfunction messages with date and time

#### 4. Operating data

Operating data		
Filling level	212	cm
Motor current jet	14	A
Position rotary drive	0	°
Motor current rotary drive	0,4	A
<b>ESC</b>		

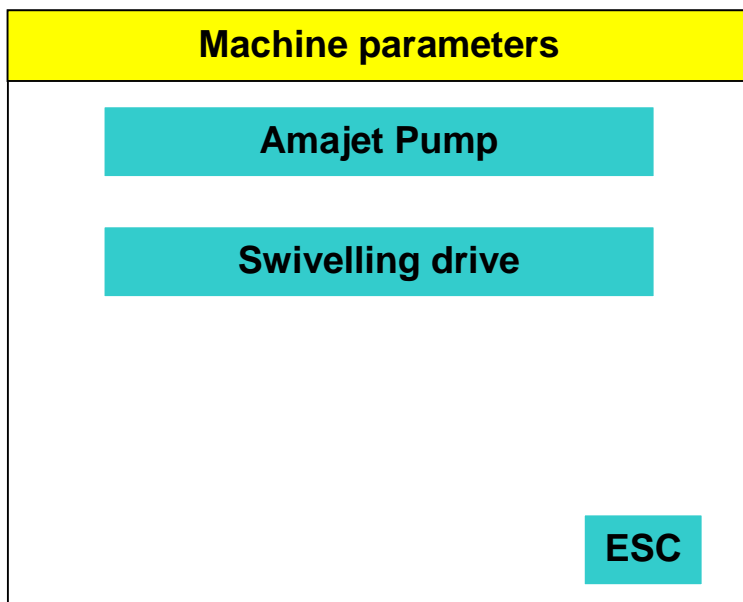
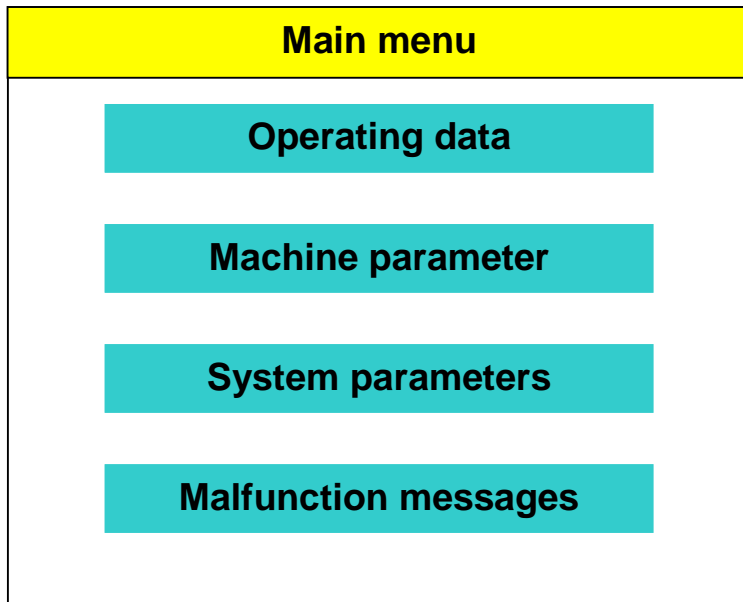
#### Operating data:

Display current operating data, such as:

- Filling level in structure in cm
- Motor current Amajet Pump in A
- Position of rotary drive in degrees
- Motor current of rotary drive in A

'The display may deviate for the specific unit from the example shown in this manual'.

## 5. Main menu – Submenu Machine parameter



## OP Fluid Control® III

### 5.1 Machine parameters – Submenu Amajet Pump

Jet Pump 1/7			
Jet No.	-	1	+
Dry-run current		14	A
Dry-run time		60	sec
	7/7	2/7	ESC

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Dry-run current      14      A

Switching point, the jet cleaner is switched off when this current limit value is under-run because a dry-run is detected.

Dry-run time      60      sec

Delay time until switch-off of jet cleaner after dry-run detection.

## OP Fluid Control® III

### Machine parameters – Submenu Amajet Pump

Jet Pump 2/7			
Jet No.	-	1	+
Interval value		10	cm
Interval time		60	min
Operating time		10	min
	1/7	3/7	ESC

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Interval value      10      cm

The current filling level is saved after completion of the operating cycle.  
If the filling level drops by the adjusted value, the interval time is aborted and the Amajet Pump reverts to the operating cycle.

Interval time      60      min

After completion of the operating cycle, the interval time for the interval mode is started, after completion of the interval time the Amajet Pump re-starts and reverts to the operating cycle.

Operating time      10      min

Operating time of the Amajet Pump in interval mode.

## OP Fluid Control® III

### Machine parameters – Submenu Amajet Pump

Jet Pump 3/7			
Jet No.	-	1	+
Amajet bottom Off		10	cm
Amajet top On		60	cm
2/7	4/7	ESC	

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Amajet bottom Off      10      cm

The jet pump switches off when the adjusted filling level is under-run.

Amajet bottom On      60      cm

The jet pump starts when the adjusted filling level is over-run, the starting operation depends on the relevant tendency setting.

## Machine parameters – Submenu Amajet Pump

Jet Pump 4/7			
Jet No.	-	1	+
Interval Off		150	cm
Interval On		160	cm
	3/7	5/7	ESC

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Interval Off      150      cm

The jet pump stops the interval mode when the adjusted filling level is under-run.

Interval On      160      cm

The jet pump switches over into interval mode when the adjusted filling level is over-run.

## Machine parameters – Submenu Amajet Pump

Jet Pump 5/7			
Jet No.	-	1	+
Amajet top On		250	cm
Amajet top Off		260	cm
4/7	6/7	ESC	

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Amajet top On      250      cm

The jet pump re-starts the interval mode when the adjusted filling level is under-run, the starting operation depends on the relevant tendency setting.

Amajet top Off      260      cm

The jet pump switches off when the adjusted filling level is over-run.

## OP Fluid Control® III

### Machine parameters – Submenu Amajet Pump

Jet Pump 6/7			
Jet No.	-	1	+
Max. starts / hrs	10		
Operating hours	32 : 15		
5/7	7/7	ESC	

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Max. starts / hrs      10

Maximum number of permissible starting operation of the jet pump per hour.

Operating hours      32 : 15

Display and parameterisation of the operating hours counter of the jet pump in Hours : Minutes.

## OP Fluid Control® III

### Machine parameters – Submenu Amajet Pump

Jet Pump 7/7			
Jet No.	-	1	+
Measured value at 20mA	50		A
Current value at 0 A	4,0		mA
6/7	1/7	ESC	

Jet No.      -      1      +

Selection of Amajet Pump for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one Amajet Pump is connected to Fluid-Control III.

Measured value at 20mA      50      A

End value of measurement range of current transformer for jet pump motor current  
20mA = ....A.

Current value at 0A      4,0      mA

Current value in mA at which the current transformer supplies a motor current of 0A,  
i.e. 0 or 4-20mA measuring transducer.

## OP Fluid Control® III

### 5.2 Machine parameters – Submenu Swivelling drive

Swivelling drive 1/4			
Drive No.	-	1	+
Speed	10		
Interval times	50		
Position	-	5	+
4/4		2/4	
ESC			

Drive No.      -      1      +

Selection of the swivelling drive for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one swivelling drive is connected to Fluid-Control III.

Speed                      10

Speed stage of the swivelling drive (1=min – 10=max.) at the indicated position.

Interval time                      50

Interval time of the swivelling drive in seconds at the indicated position.

Position                      -      5      +

Selection of the respective position of rotary drives for entering the above-mentioned parameters: by means of the scroll function +/-, between -140° and 140°, in 5°-steps

## OP Fluid Control® III

### Machine parameters – Submenu Swivelling drive

Swivelling drive 2/4			
Drive No.	-	1	+
	Left		Right
Swivelling range	100		100
	RPM		cm
Flushing mode	8		50
	1/4	3/4	ESC

Drive No.

-	1	+
---	---	---

Selection of the swivelling drive for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one swivelling drive is connected to Fluid-Control III.

Left Right

Swivelling range

100	100
-----	-----

Swivelling range that shall be covered by the swivelling drive, inputs in degrees.  
0°= centre position -140°= max. left +140°= max. right.

RPM cm

Flushing mode

8	50
---	----

The swivelling drive switches to flushing mode when the adjusted filling level is under-run and then ignores all previously adjusted speed stages and interval times.  
In this mode, the swivelling drive is operating at the speed (RPM) of the flushing mode.

## OP Fluid Control® III

### Machine parameters – Submenu Swivelling drive

Swivelling drive 3/4			
Drive No.	-	1	+
	Left	Right	
Preferred end position	40	40	
Number	0	5	
	2/4	1/4	ESC

Drive No.      -      1      +

Selection of the swivelling drive for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one swivelling drive is connected to Fluid-Control III.

	Left	Right
Preferred end position	40	40
Number	3	5

Entering of a preferred end position means that this position is approached for the adjusted number of times. When the set number is reached, the adjusted maximum swivelling range is approached once and subsequently the number of preferred end positions.

## OP Fluid Control® III

### Machine parameters – Submenu Swivelling drive

Swivelling drive 4/4			
Drive No.	-	1	+
	from		to
Flushing range	-80		-20
Flushing mode On	40		cm
Flushing speed	8		
3/4		1/4	ESC

Drive No.

-	1	+
---	---	---

Selection of the swivelling drive for settings to be made by means of the scroll function +/-  
This mask is not displayed when only one swivelling drive is connected to Fluid-Control III.

Flushing range

-80	-20
-----	-----

Setting of the range within which the swivelling device shall operate during flushing mode.

Flushing mode On

40	cm
----	----

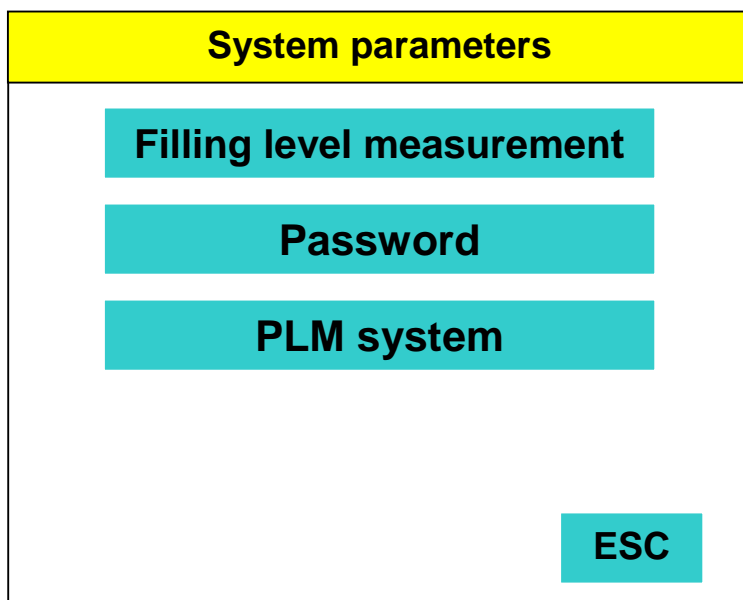
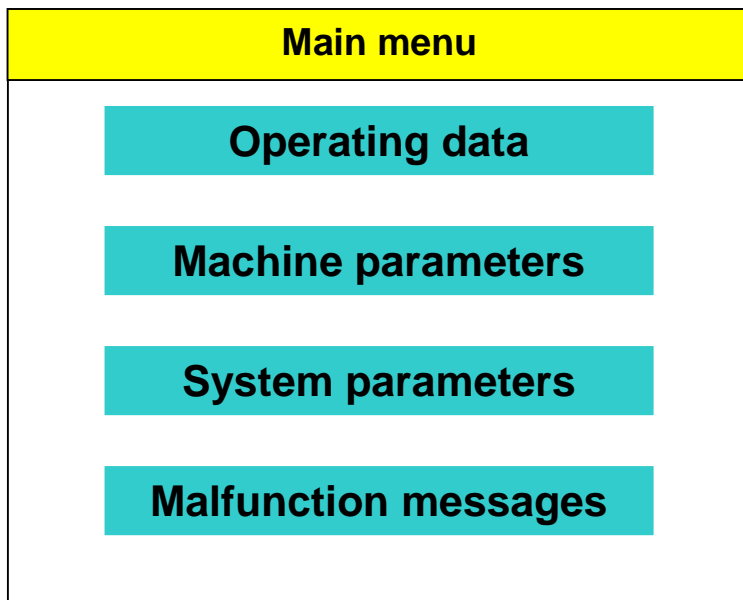
Setting of the filling level value in the storm water tank. The flushing mode is activated when this value is under-run.

Flushing speed

8
---

Speed stage in which the swivelling drive operates during the flushing mode.

**6. Main menu – Submenu System parameters**



## OP Fluid Control® III

### 6.1 System parameters – Submenu Filling level measurement

Filling level measurement			
Measured value at 20mA	400	cm	
Current value at 0 cm	4,0	mA	
Measured value - Damping	2		
Tendency detection	10	12	1
ESC			

**Measured value at 20mA** 400 cm

Setting of measuring range end value for filling level measurement, i.e. input in 'cm' at analog input value of 20mA

**Current value at 0 cm** 4.0 mA

Setting of current value at which measurement shall indicate a measured value of '0cm'

**Measured value Damping** 2

Setting of inertia of filling level measurement 1-10

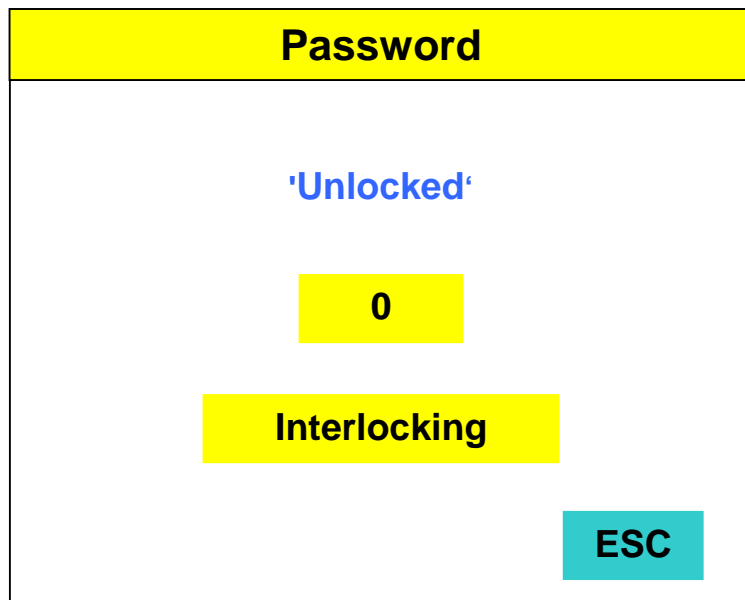
**Tendency detection** 10 12 1

Setting of tendency detection for filling level

- First value: Increasing value, i.e. the Amajet is blocked when the filling level has risen by the adjusted value.
- Second value: Decreasing value, i.e. the Amajet is released when the filling level has dropped by the adjusted value.
- Third value: Tendency detection function, i.e. 0 = Off / 1 = Decreasing 2 = External via an input / 3 = Decreasing and external.

## OP Fluid Control® III

### 6.2 System parameters – Submenu Password



Entering the password ( **33** ) 'Unlocks' the control system and all machine parameters and system parameters can be modified.

The control system interlocks automatically after one hour, or after clicking on the 'Interlocking' button.

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6.3 System parameters – Submenu PLM system data

**System parameters**

- Filling level measurement
- Password
- PLM system data

ESC

**PLM system data**

- Clock setting
- IP address
- Factory settings

## OP Fluid Control® III

6.3.1 **System data – Submenu Clock setting**

Clock setting		
08	.	05 . 08
14	:	30 : 15
Enter		Monday
		ESC

Activate the setting of time and date function by clicking on 'Enter', then the settings can be made. Confirm the completed settings by clicking on 'Set'.

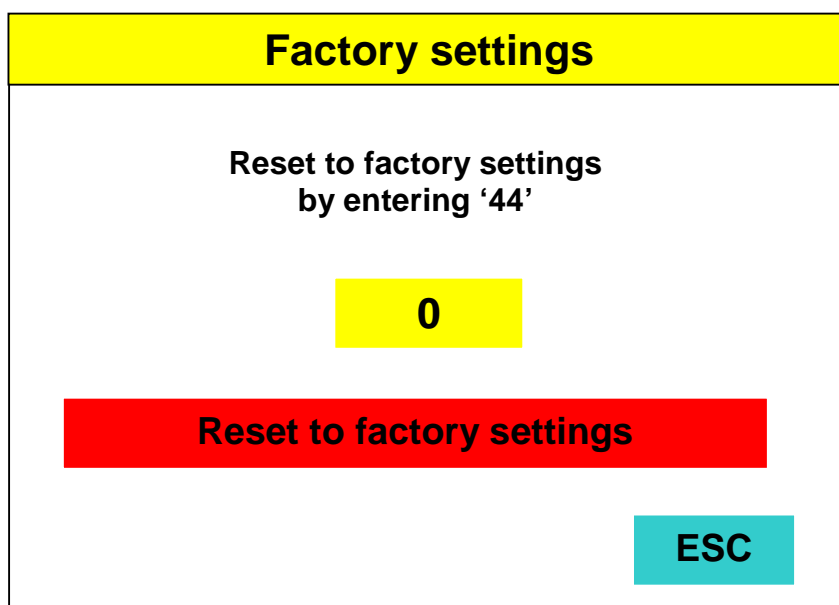
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6.3.2 **System data – Submenu Network settings**

LAN	
<b>IP address</b>	192 . 168 . 178 . 231
<b>Net mask</b>	255 . 255 . 255 . 0
<b>Gateway</b>	10 . 1 . 1 . 117
	<b>ESC</b>

Setting of parameter for network connection to enable communication with a laptop or a network link.  
Restart the control system after any changes made to parameters in order to apply the changes.

6.3.3 **System data – Submenu Factory settings**



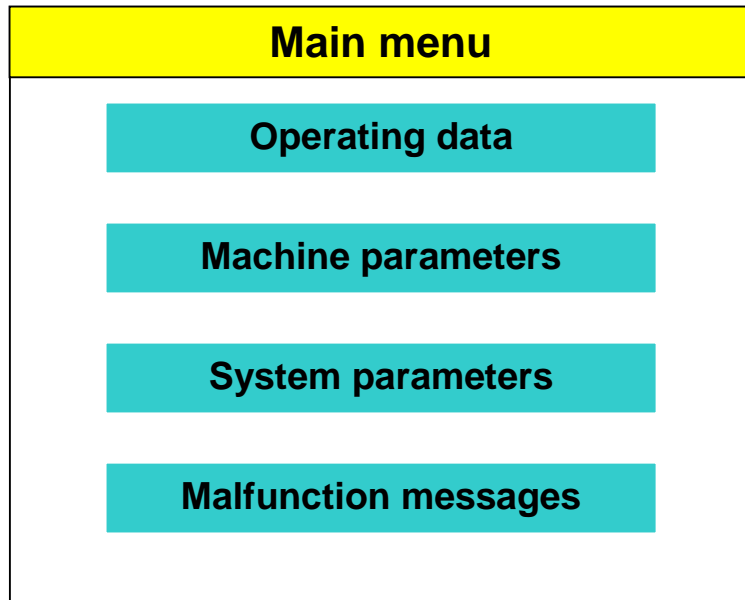
Entering of the reset code ( **44** ) resets all adjusted machine parameters and system parameters to the factory default settings back which are deposited in the control unit.

The values of factory default settings were specified during pump start-up by a KSB technician and saved in the control system.

All changes and modifications made after pump start-up can be reset to the settings upon pump start-up by clicking on the button 'Reset to factory settings' and, if required, can be changed again subsequently.

## OP Fluid Control® III

### 7. Main menu – Submenu Malfunction messages



## OP Fluid Control® III

### 7.1 Main menu – Submenu Malfunction messages

This Submenu displays the current malfunctions with time and date when the relevant malfunction occurred as well as indication of time and date when the malfunction was remedied. Acknowledgement by clicking on the 'Reset' button is only possible after the malfunction was removed.

Should there be more than three malfunction messages, use the '+'/ '-' buttons to scroll through the messages.

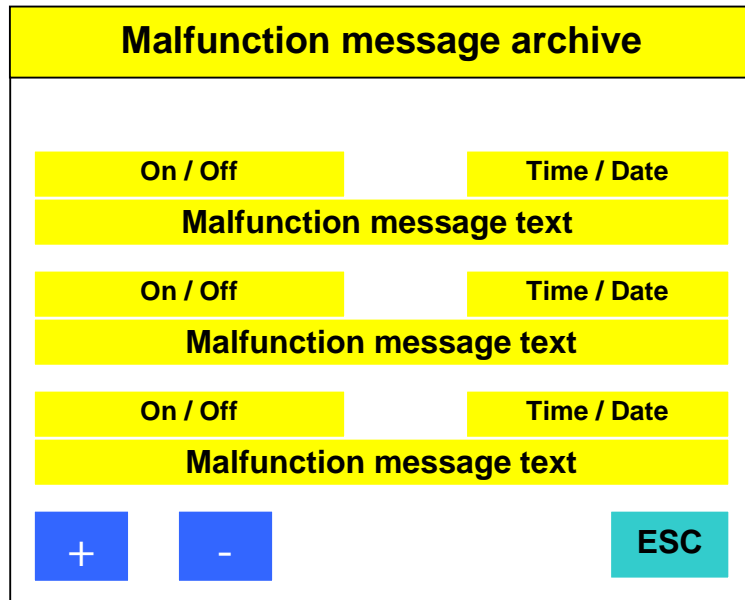
Malfunction messages					
Appears		Removed			
Time / Date		Time / Date			
Malfunction message text					
Time / Date		Time / Date			
Malfunction message text					
Time / Date		Time / Date			
Malfunction message text					
+	-	Description	Archive	Reset	ESC

Click on the 'Description' button to retrieve possible malfunction messages and their potential causes.

Click on the 'Archive' button to access the Archive submenu.

## OP Fluid Control® III

### 7.2 Main menu – Submenu Malfunction messages



The malfunction message archive displays the last 50 messages with time and date and with the information: On = Message appears or Off = Message is displayed.

Use the buttons '+' / '-' for the scroll function.

The malfunction message archive is equipped with a ring memory, i.e. older messages are overwritten by more recent messages.

The malfunction message archive cannot be deleted.

## 8 Description of possible malfunction messages

**Description of malfunction messages**

The following descriptions of individual malfunction messages shall provide support for the remediation of malfunctions.

Please, call in a service technician if this practical guidance does not help you to remediate malfunctions or faults.

**Next info** **ESC**

**Description of malfunction messages**

**Malfunction Measurement**

The message 'Malfunction Measurement' indicates that the measuring signal of the relevant measurement undershot the measured value of 4mA (at setting 4-20mA).

**Remedial action:**  
Check the 20mA / 10V measurement loop  
Check whether the external signal is set to 4-20mA / 2-10V

**Next info** **Back** **ESC**

## Description of possible malfunction messages

**Description of malfunction messages**

**Malfunction Underload**

The message 'Underload' indicates that the machine fails to achieve its rated load despite filled tank

**Remedial action:**  
Check pump for clogging  
Check starting parameters  
Check motor current signal for correctness

Next infoBackESC

**Description of malfunction messages**

**Malfunction Injector Flow**

The message 'Malfunction injector flow' indicates insufficient air flow at air intake pipes of jet cleaners is

**Remedial action:**  
Check pump for clogging  
Check starting parameters  
Check flow sensors

Next infoBackESC

## OP Fluid Control® III

### Description of possible malfunction messages

**Description of malfunction messages**

**Malfunction of drive**

The message 'Malfunction of drive' indicates the presence of an external signal that triggers this message.

Remedial action:  
Check motor protection device  
Check monitoring equipment,  
such as: Thermistor protection, moisture sensors and,  
when installed, bearing temperature sensors

Next infoBackESC

**Description of malfunction messages**

**Malfunction of external I/O modules**

The message 'Malfunction of external I/O modules' indicates a faulty connection to the external modules of the control system.

Remedial action:  
Check the Bus connection to external modules  
Check supply voltage

Next infoBackESC

## Description of possible malfunction messages

**Description of malfunction messages**

**Malfunction drive overload**

The message 'Malfunction drive overload' indicates that an internal overload of one drive was detected.

**Remedial action:**  
Check the relevant drive for sluggishness

**Next info**      **Back**      **ESC**

**Description of malfunction messages**

**Automatic reset to factory defaults**

This message indicates  
that the pump was reset to factory settings

**Rationale:**

One parameter has taken on a value  
that is not plausible.  
Check the internal battery because the parameters  
will get lost in case of defective battery and mains  
power failure.  
If need be, re-change parameters that were modified  
since pump start-up

**Back**      **ESC**