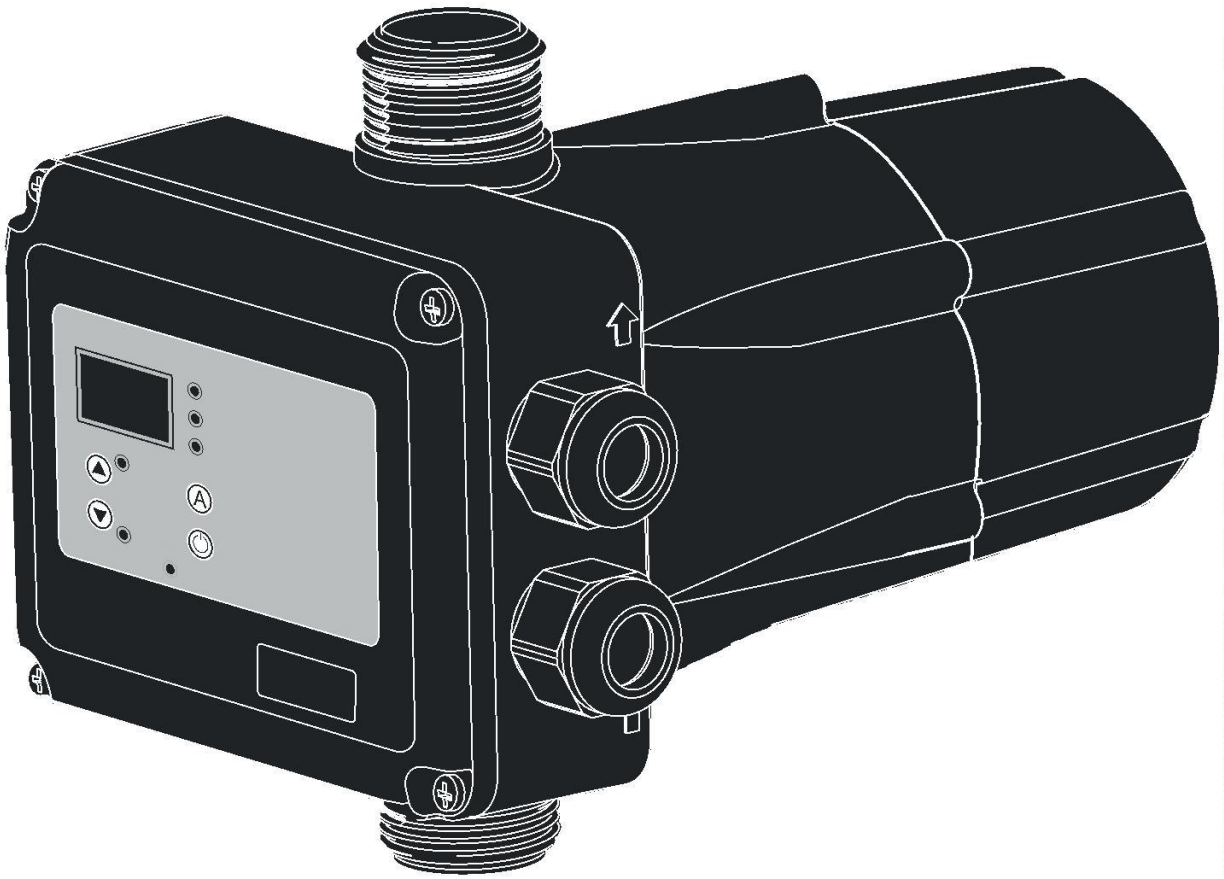
DIGIMATIC 2



INSTRUCTIONS MANUAL

CE



Risk of damaging the pressure assemblies and/or the plant.



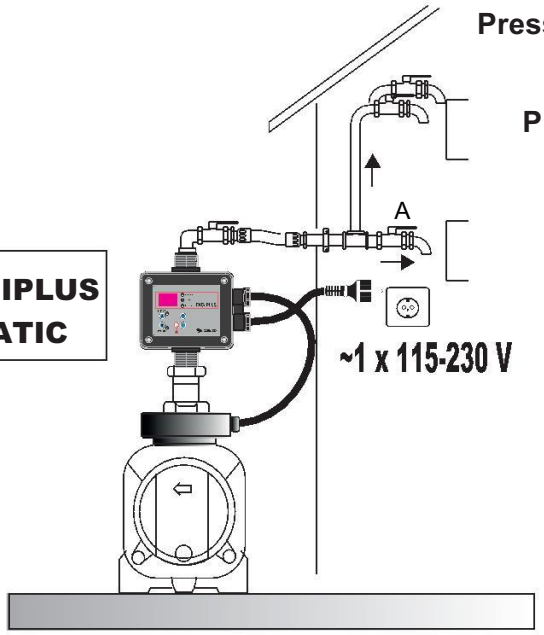
Risk by electric shock



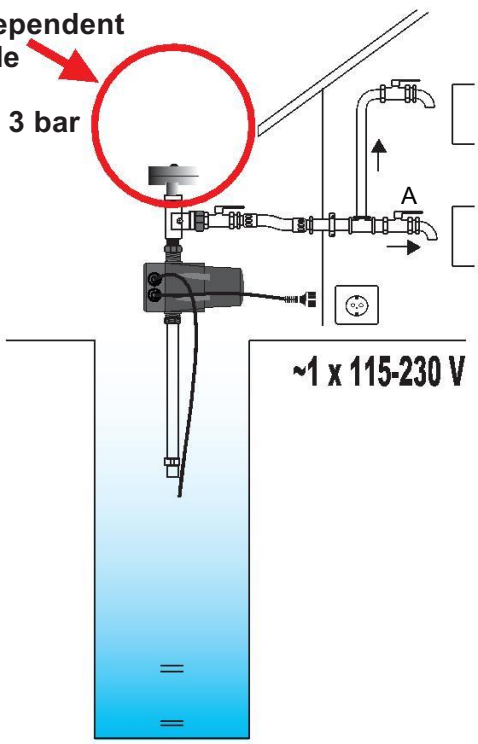
Risk for people and/or objects

A

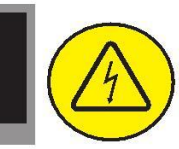
G1 1/4" M - DIGIPLUS
G1" M - DIGIMATIC



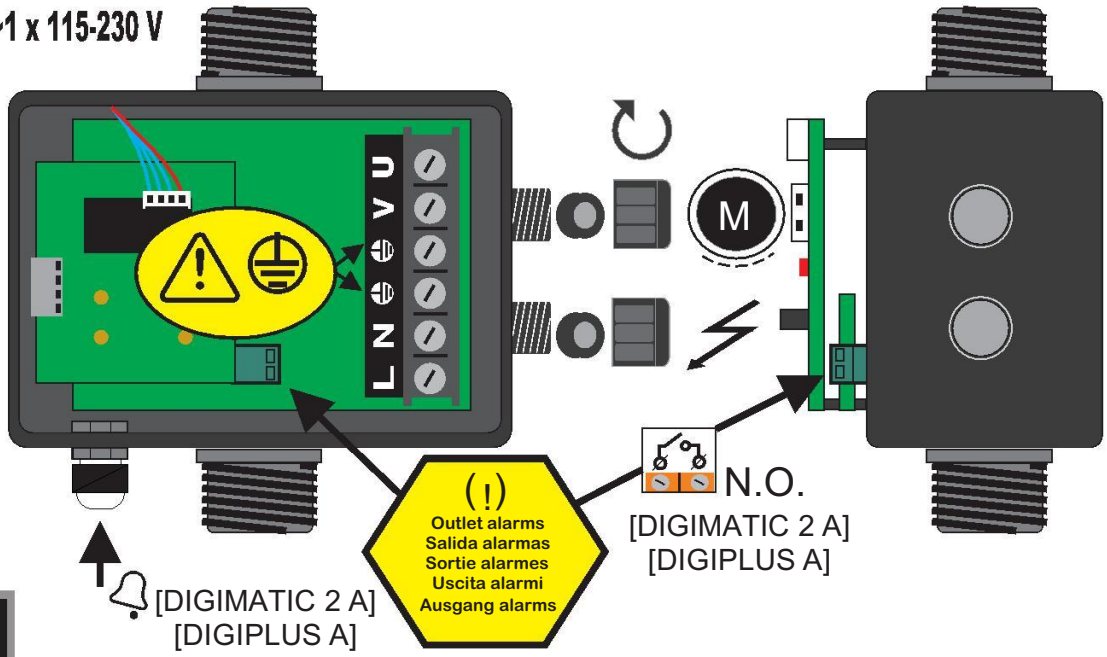
If:
Pressure dependent mode or P start > 3 bar



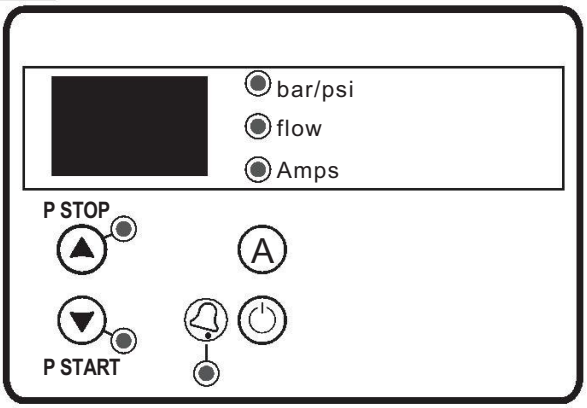
B



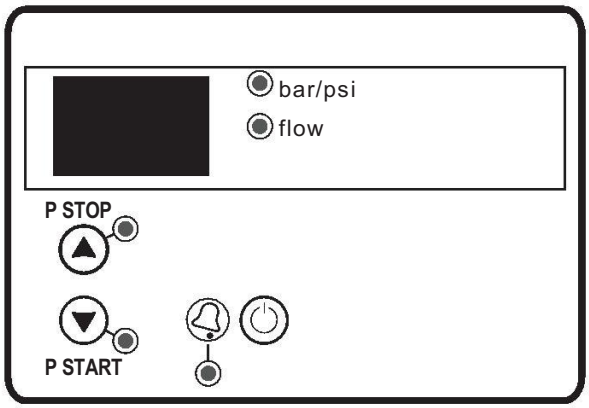




C



DIGIPLUS / DIGIMATIC 2



DIGIMATIC 1

ENGLISH

GENERAL
Read carefully the instructions before installing this unit. Verify the technical characteristics of the motor in order to assure the compatibility with the device.

DESCRIPTION (diagram A)
This device is an electronic pump controller with integrated digital manometer an instantaneous lecture of the motor load. It manages the start and stop of a single-phase pump up to 2.2 kW (3 HP). It can operate in pressure+flow dependent mode or in pressostatic mode. The start pressure -and the stop pressure in pressostatic mode- are easily adjustable through the users control panel.
This device protects the pump against overload *(only DGplus and DGM2)*, minimal pressure and dry-running operation.

CLASSIFICATION AND TYPE
According to IEC 60730-1 and EN 60730-1 this unit is a control sensor device, electronic, independent assembly, with action type 1B (microdisconnection). Operating value: I <20% I learned. Pollution degree 2 (clean environment) or flow>2,5 l/min. Rated impulse voltage: cat II / 2500V. Temperatures for ball test: enclousure (75) and PCB (125).

OPERATING CHARACTERISTICS (diagram C)
- 2 modes of operation: pressure dependent mode and pressure+flow dependent mode.
- Adjustable start and stop pressure.
- Integrated digital pressure gauge with bar and psi indication.
- Inner pressure transmitter.
- Integrated non-return valve.
- Dry-running protection with led-light for flow indication.
- Protection against minimum pressure.
- Overcurrent protection with automatic restore attempts *(only DGplus and DGM2)*.
- ART function (Automatic Reset Test). It can be enabled/disabled and set duration and number of attempts.
- APR function (Anti-blocking Periodic Routine).
- Anti-flooding configuration.
- Manual start push-button (ENTER).
- Control panel with 3-digit display, LED indicator lights and push-buttons
- Volt-free contact for monitoring the alarms displayed in the screen (only version A).
- Stand-by mode.

TECHNICAL CHARACTERISTICS

• Rated motor power	0,37-2,2KW
• Power supply	~1 x 110-230Vac
• Frequency	50/60Hz
• Max. current	16A, cos fi ≥ 0.6
• Protection degree	IP65*
• Max. water temperature	50ºC
• Max environment temperature	60ºC
• Starting pressure range	0,5÷7 bar 7÷102 psi
• Stop pressure (P dependent mode)	1÷8 bar 14÷116 psi
• Factory setting (START PRESSURE)	1,5 bar
• Max. operating pressure	8 bar
• Hydraulic connection DIGIPLUS	G 1 1/4" M
• Hydraulic connection DIGIMATIC	G 1" M
• Net weight (without cables)	1,3 kg

***Plugs and sockets built into the wiring of the device could modify the declared IP rating.**

HIDRAULIC INSTALLATION (diagram A)
Before proceeding with hydraulic connection it is essential to prime the pump correctly. This unit must be installed in a vertical position (arrows in upward position), thus connecting the inlet opening directly to the pump outlet; and the outlet to the network. The following accessories are recommended: flexible with a disassembling link for network protection, protecting the set from possible flexion charges and vibrations, ball valve which permits the isolation of the pump from the net, a tap (A) at the same level of the unit FIG 1).
In pressure dependent mode or in applications with cut-in pressures higher than 3 bar is compulsory the installation of a pneumatic tank.

ELECTRIC CONNECTION (diagram B)
The electric connection must be performed by qualified technicians in compliance with regulation of each country. Before doing manipulations inside the device, it must be disconnected from the electric supply.
Wrong connection could spoil the electronic circuit.
The manufacturer declines all responsability in damages caused by wrong connections.
Check if power supply is beetween 110-230V.
If you have purchased the unit without cables follow diagram B:
- Use cables type H07RN-F 3G1 or 3G1,5 with section enough to the power installed:
- Do the pump connection U, V and ⏚.
- Do the power supply connection L, N and ⏚.
- The earth conductor must be longer than the others. It will be the first one to be mounted during the assembly and the last one to be disconnected during the dismantling. **The earth conductors connections are compulsory!**
- Volt-free contact for monitoring the alarms displayed in the screen (only versions DGPLUS/DGM-A).
  - Maximum switching voltage: 250VAC / 220VDC.
  - Maximum switching power: 62,5VA / 30W

CONTROL PANEL (diagram C)
The meanings of the different control panel elements are summarized on the following tables, where:
- O means lit LED light.
- ((O)) means slow-flashing.

DISPLAY	ACTION
OPERATION MODE	Is showed on screen instantaneous pressure or instantaneous current consumption *(only DGplus and DGM2)*.
ADJUSTMENT MODE	Is displayed on screen the adjusted start/stop pressure. Is displayed the adjusted rated current.
ALARM MODE	Is displayed the alarm code.
STAND-BY MODE	Are displayed 3 flashing dots.
BASIC CONFIG.	Is displayed the sequence of basic configuration parameters.
ADVANCED CONFIG.	Is displayed the sequence of advanced configuration parameters.

LEDS	DISPLAY	ACTION
bar/psi	O	Is displayed on screen the instantaneous pressure in bar or psi
	((O))	Pump ON and is displayed on screen the instantaneous pressure in bar or psi
A *(only DGplus and DGM2)*	O	Is displayed on screen the instantaneous current consumption in Ampere units
	((O))	Pump ON and is displayed on screen the instantaneous current consumption in Ampere units
P START	O	Is displayed the start pressure
	((O))	Adjusting start pressure
P STOP	O	Is displayed the stop pressure (only in pressure dependent MODE)
	((O))	Adjusting stop pressure (only in pressure dependent MODE)
FLOW	O	It indicates positive flow
ALARM	O	Ratified dry-running or overload alarms
	((O))	Dry-running alarm performing ART or overload alarm preforming any of the 4 restore attempts

P-BUTTON	TOUCH	ACTION
⏻	click!	**From state ON**: any alarm is restored. **From state OFF**: system changes to STATE ON, the pump starts. **From any configuration MENU**: the parameter value is accepted.
	HOLD DOWN	**From state ON**: unit OFF, relay disconnection. **From state OFF**: the pump starts and keeps operating until the push-button is released.
▲	click!	Pstop is displayed on the screen for 3 seconds.
	click!	Inside CONFIG or ADJUSTMENT modes is used to increase the parameters values.
	3"	Pstop adjustment mode.
▼	click!	Pstart is displayed on the screen for 3 seconds.
	click!	Inside CONFIG or ADJUSTMENT modes is used to dicrease the parameters values.
	3"	Pstart adjustment mode.
Ⓐ *(only DGplus and DGM2)*	click!	Is displayed on the screen instantaneous current consumption. If it is already displayed then we switch to instantaneous pressure view.
	3"	Rated current adjustment.

STARTUP (diagram C)

⚠ Before starting the device please read the previous sections, especially "Hydraulic Installation" and "Electrical connection".

Follow next steps:

1. Start the device by pressing ⏻.
2. *(only DGplus and DGM2)*
   Set the pump rated current intensity value:
   - Press Ⓐ during 3 seconds.
   - The current intensity value is displayed on screen and LED A is flashing (factory setting 16A).
   - By mean of ▲ and ▼ is adjusted the rated current reflected in the characteristics plate of the motor. See Note 1.
   - Press ⏻ for validation.
3. Set the cut-in (start) pressure:
   - Press ▼ during 3 seconds.
   - The start pressure value is displayed on screen and LED START is flashing.
   - By mean of ▲ and ▼ is adjusted the start pressure from 0,5 to 7 bar. ***If it is higher than 3 bar, it is advisable to use a small expansion tank.**
   - Press ⏻ for validation.
4. Set the cut-out pressure (only if it has been set on ADVANCED MENU the pressure dependent operation mode):
   - Press ▲ during 3 seconds.
   - The stop pressure value is displayed on screen and LED STOP is flashing.
   - By mean of ▲ and ▼ is adjusted the stop pressure from 1 to 8 bar.
   - Press ⏻ for validation.

In pressure dependent mode is compulsory the installation of a pneumatic tank.

5. The unit is ready to operate but more optional adjustments can be set through basic and advanced MENUS. See the next chapter.

Note 1: it is important to introduce exactly the rated current specified on the nameplate of the pump. If a new pump is installed this process should be repeated.

BASIC MENU ▲+ ▼ (diagram C)

- Press simultaneously ▲ + ▼ during 5 seconds.
- By mean of ▲ or ▼ the values can be changed.
- Press ⏻ for validation.
- This is the parameters sequence:

TYPE		SYSTEM REACTION	FACTORY SETTING
bar	psi	We can select the pressure units displayed beetween bar and psi.	bar

ADVANCED MENU ▲ + ▼ + ⏻

- Press simultaneously ▲+ ▼ + ⏻ during 5 seconds.
- By mean of ▲ or ▼ the values can be changed.
- Press ⏻ for validation.
- The parameters sequence is:

TYPE		SYSTEM REACTION	FACTORY SETTING
Ar0	Ar1	Activation of the automatic restore system ART (Ar1) o disable (Ar0).	Ar1
n01	n48	In case of enabled ART, it can be set the number of restore attempts, between 1 and 48.	48
t10	t40	It can be set the span of the attempt between 10 and 40 seconds.	15"
Sb0	Sb1	Stand-by disabled (Sb0) or enabled (Sb1)	0
dt0	dt9	It can be set a delay after reaching the stop pressure from 1 to 9 seconds.	0
PF0	PF1	With PF=1 is activated the pressure dependent mode with start and stop pressures.	0
P0.0	P_ON	With P_ON is activated a minimum operating pressure. Under this pressure is activated an alarm (A11).	0.0
t05	t99	Time, in seconds, under minimal pressure necessary to activate A11.	20
rc0	rc2	(ONLY WITH PF1) Fast-cycling alarm: - rc0: alarm unabled. - rc1: activated, when hammering is detected it is delayed the start in order to protect the pump. - rc2: alarm is activated and the pump is stopped upon detection.	rc2
r01	r99	Only if fast-cycling alarm has been activated in the previous step (rc1&rc2). It can be choosed the maximum time period between 3 consecutive starts that will be considered fast cycling (between 1 sec. and 99 sec.)	r03
H00	H99	Anti-flooding configuration. If activated, it stops the pump after programmed time (in hours) of continuous operation. Disabled (H00), 1 hour (H01) ... 24 hours (H24).	H00
rs0	rs1	Restore factory settings (rs1)	rs0

ART FUNCTION (Automatic Reset Test)

When the device has stopped the pump by the intervention of the dry-running protection system (A01 ALARM) or minium pressure alarm (A11), the ART tries, after 5 minutes, to re-start the pump in order to restore the water supply.
After this first attempt are performed consecutive attempts every 30 minutes.
This function can be activated in the ADVANCED MENU. It can also be set the number of attempts (1-48) and the span of the attempt (10-40 seconds).

APR FUNCTION (Anti-blocking periodic routine)

After 72 hours without operation the pump is automatically started for 10 seconds in order to avoid rotor locking. Display will show the message "APr" while the pump is operating.

REGISTER OPERATION DATA AND ALARMS

▲ + ▼ + Ⓐ *(only DGplus and DGM2)*

- Press simultaneously ▲+ ▼ + Ⓐ during 5 seconds.
- Press ⏻ to advance in the REGISTER.
- The DATA sequence is:

MESSAGE	DESCRIPTION	SCOPE
rEC		
HF xxx	Controller operating hours	0-65535
HP xxx	Pump operating hours	0-65535
CF xxx	Operating cycles Number of start-stop cycles.	0-999999
Cr xxx	Number of connections to the power supply.	0-65535
A01 xxx	Number of A01 alarms.	0-999
A02 xxx	Number of A02 alarms.	0-999
A04 xxx	Number of A04 alarms.	0-999
A05 xxx	Number of A05 alarms.	0-999
A11 xxx	Number of A11 alarms.	0-999
APM xxx	Number of over-pressure alarms (---).	0-999
rPM x.x	Maximum registered pressure.	
rSt	ENTER -> EXIT. ▲+ ▼ -> All the alarms are restored except the operation data.	

PRESSURE SENSOR CALIBRATION

In case of wrong lecture of the pressure sensor it can be adjusted again.
For the pressure sensor calibration is necessary to have a pressure gauge in the installation. Proceed following next steps:

ZERO REGULATION

1. Open the taps living the hydraulic net without pressure.
2. Press simultaneously the buttons ⏻ and ▲ until the display show 0.0 flashing.
3. Press ⏻ to validate.

FULL SCALE

1. Start the pump until cut-out of the pressure switch.
2. Press simultaneously the buttons ⏻ and ▼ till the display flashes with a figure.
3. Adjust the pressure with the arrows push-buttons to get the pressure desired.
4. Press ⏻ to validate.

Remark: pressure sensor decalibration should not be a normal event. If it is frequently repeated contact the technical service.

WARNINGS AND ALARMS

COD.	ALARM	DESCRIPTION	SYSTEM REACTION
A01	O	DRY RUNNING	When is detected a dry-run operation the pump is automatically stopped. By mean of ENTER the normal operation can be manually restored.
	((O))		After the activation of the dry-running alarm if the Automatic system reset (ART) is enabled, a first attempt at 5 minutes and then an attempt every 30 minutes for 24 hours is performed in order to restore the normal operation. This alarm can also be reset manually with the ENTER push-button. If the alarm persists after 24 h we find a definitive alarm.
A11	((O))	MINIMUM PRESSURE	It detects pressure below a pre-set value and for a pre-set period in the ADVANCED PROGRAMMING MENU. The minimum pressure helps to detect a dry-run operation or pumps running far from its best efficiency point. This alarm is reset automatically as soon as the pressure exceeds the limit value.
A02	O	OVERLOAD *(only DGplus and DGM2)*	Overcurrent alarm is activated when the nominal pump current is exceeded. 4 automatic reset attempts prior to the final alarm are performed. Normal operation can also be restored manually by pressing ENTER.
	((O))		
A04	((O))	FAST CYCLING (Hammering)	This alarm can be unabled or activated in the ADVANCED MENU. The alarm is activated when 3 consecutive cycles occur in a range lower than the set time (between cycle and cycle). If it has been activated rc1, this alarm does not stop the normal operation but are added 5 seconds to the start delay in order to protect the electric pump. If it has been activated rc2, the pump is stopped. To RESET the normal operation press ENTER.
A05	O	DAMAGED PRESSURE TRANSMITTER	CONTACT WITH YOUR SUPPLIER
A30	O	ANTI-FLOODING	FLOOD protection has been activated because the pump has been running continuously for a period of time equal to the limit set in the ADVANCED MENU. It is manually reset by pressing ENTER.
Mbr	O	MEMBRANE REPLACEMENT	The membrane should be replaced after 200,000 operating cycles. When the register of operating cycles reaches 200K-400K-600K-800K cycles the device will be blocked showing on the screen “Mbr” to indicate that the number of cycles has been reached and a membrane change must be made. To RESET the normal operation press ENTER.
---	O	OVER-PRESSURE	If the maximum pressure is exceeded the pump is stopped and are displayed 3 hyphens. To RESET the normal operation press ENTER.