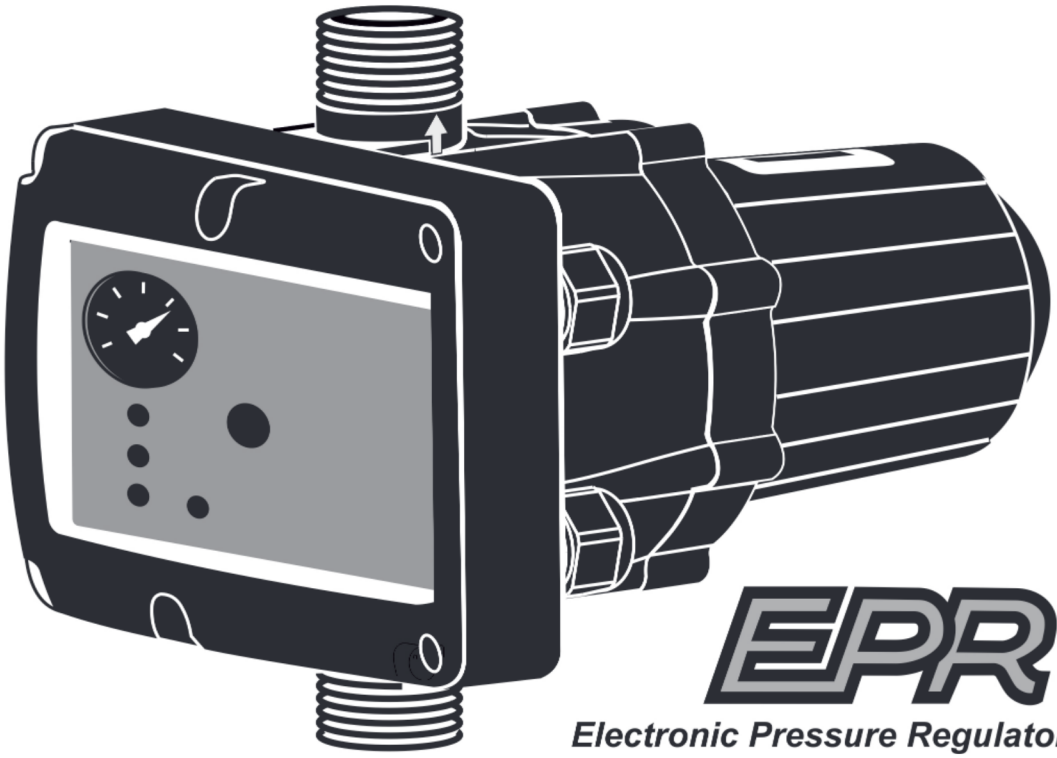
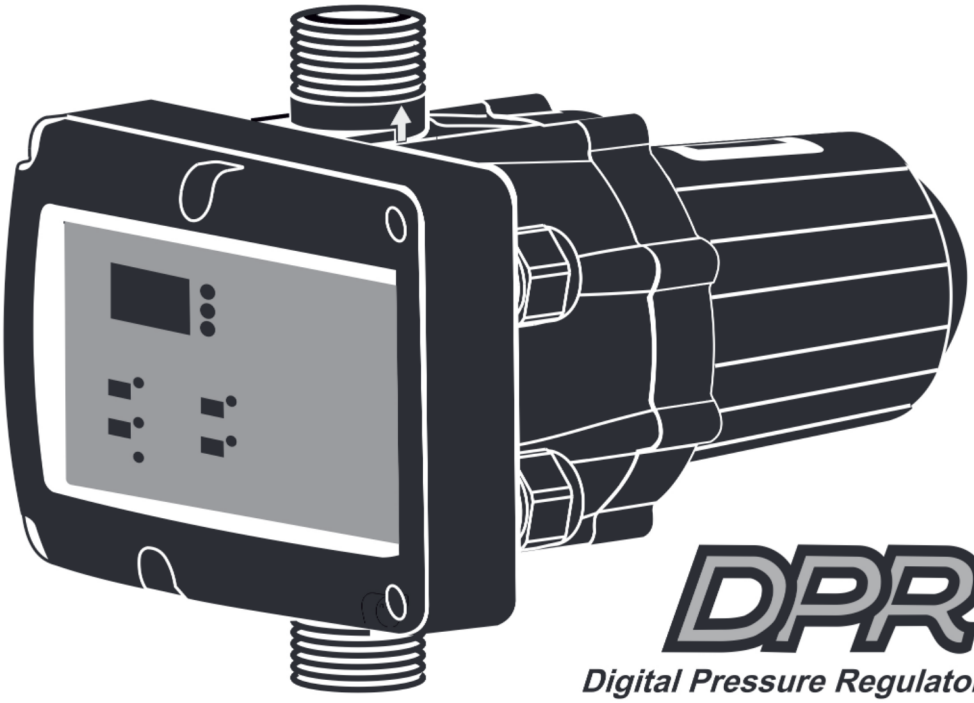


EPR

Electronic Pressure Regulator



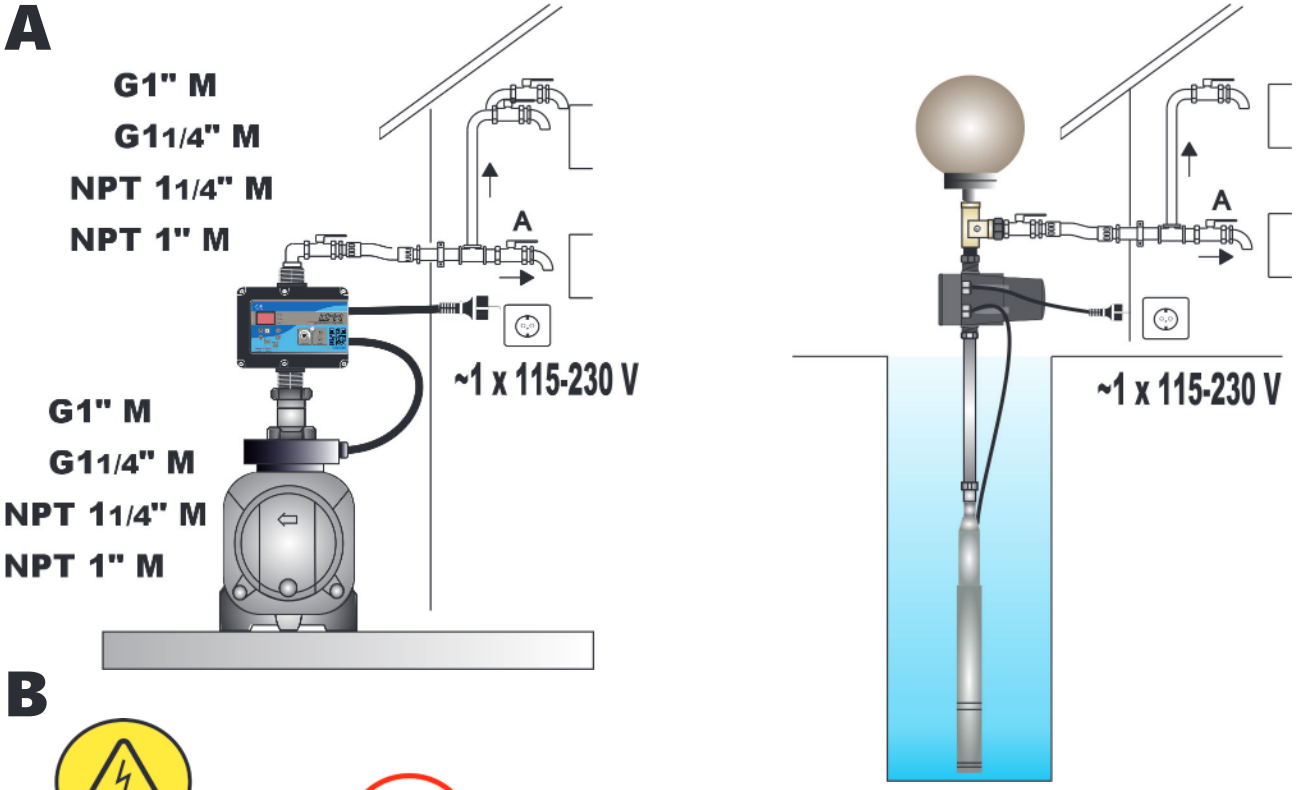
DPR

Digital Pressure Regulator

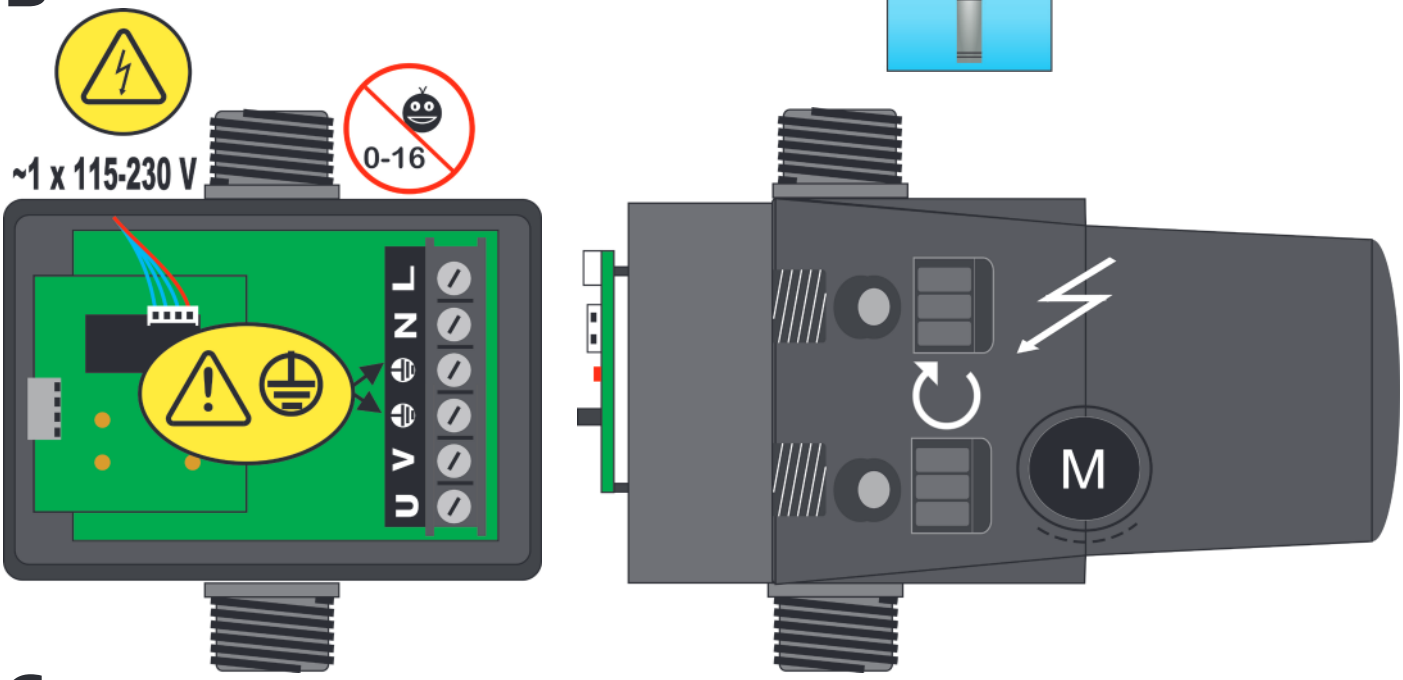
INSTRUCTION MANUAL
MANUAL DE INSTRUCCIONES
MANUEL D'UTILISATION
MANUALE DI ISTRUZIONI

CE

A


G1" M
G1 1/4" M
NPT 1 1/4" M
NPT 1" M
A
~1 x 115-230 V
G1" M
G1 1/4" M
NPT 1 1/4" M
NPT 1" M
A
~1 x 115-230 V

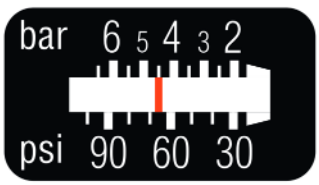
B


~1 x 115-230 V
0-16
U
V
N
L
M

C


CE
bar
psi
A
DPR
Digital Pressure Regulator
OUTLET
START
Made in Spain
COELBO
EPR
Electronic Pressure Regulator
OUTLET
Made in Spain
COELBO

D


bar 6 5 4 3 2
psi 90 60 30

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

- **EPR - *Electronic Pressure Regulator* -**

Is an electronic drive for single-phase pumps up to 2,2 kW (1~115-230V) with an innovative system of pressure reduction/regulation in order to mantain an steady outlet pressure. Therefore, in addition to the typical features of traditional electronic pump controllers: integrated non-return valve, flow sensor, accumulation membrane, pressure gauge, indicator led-lights, dry-run protection, automatic restore system (ART), ... it is adjusted and stabilized the output pressure, avoiding overloads and water hammer, ultimately, improving the comfort and durability of the installation.

- **DPR - *Digital Pressure Regulator* -**

Evolutes from EPR, adding to its features a digital display with instataneous indication of current consumption and outlet pressure since it houses current and pressure transducers inside. This device allows disassociating the regulation of the outlet pressure from the cut-in pressure to improve the elasticity of the system's hydraulic reserve, favoring the prolongation of inactive pauses and, consequently, reducing the number of starts of the electric pump. This independence from pressure regulation also allows operation with a minimum differential between the cut-in pressure (ON) and the outlet pressure (OUT). It also integrates alarm and function registers, as well as the possibility of adjusting multiple operating parameters such as automatic reset system, anti-flood function, start and stop delays, etc.

OPERATING CHARACTERISTICS

	EPR	DPR
Starting pressure	Depends on the adjusted outlet pressure. Table 1.	Adjustable from 0,5bar to 5,5bar. Table 2.
Outlet pressure	Adjustable from 2,5 bar to 6 bar by the rear allen screw. Figure 1 and 2.	Adjustable from 2,5 bar to 6 bar by the rear allen screw. Figure 1 and 2.
Outlet pressure reading	Manometer	Digital
Dry-running protection	Yes	Yes
Overcurrent protection	No	Yes
ART* Fuction	Yes	Yes
Manual start push-button	Yes	Yes
Control panel	LED indicator lights and ENTER push button	3-digit display, LED indicator lights and 4 push buttons (up and down arrows, amps and enter)
APR function**	Yes	Yes
Anti-flooding configuration.	No	Yes
Stand-by mode	No	Yes

***ART FUNCTION (Automatic Reset Test)**

When the device has stopped the pump by the intervention of the dry-running protection system 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.
In the DPR, 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. In the DPR the display will show the message "APr" while the pump is operating. In the EPR the pump LED will be on during this operation.

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*
- Maximum water temperature: 50ºC
- Maximum environment temperature: 60ºC
- Outlet pressure: (±0.5 bar) 2,5-6 bar
- Starting pressure range:
  - DPR: 0,5 - 5,5 bar (factory setting 1,5 bar)
  - EPR: 1,0 - 4,5 bar. Table 1.
- Maximum operating pressure: 12 bar
- Hydraulic connection (types): G 1" M
G 1" ¼ M
NPT 1" M
NPT 1" ¼ M
- Net weight (without cables): 2 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. DPR or EPR 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 at the same level of the unit. See diagram A.

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. EPR and DPR devices have the same electric wiring diagram.

- 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!

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 LED flashing.

DPR - *Digital Pressure Regulator* -

DISPLAY	ACTION
OPERATION MODE	Is showed on screen instantaneous pressure or instantaneous current consumption.
ADJUSTMENT MODE	Is displayed on screen the adjusted start 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
O bar	O	Is displayed on screen the instantaneous pressure in bar
	((O))	Pump ON and is displayed on screen the instantaneous pressure in bar
O psi	O	Is displayed on screen the instantaneous pressure in psi
	((O))	Pump ON and is displayed on screen the instantaneous pressure in psi
O A	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
START PRESSURE	O	Is displayed the start pressure
	((O))	Adjusting start pressure
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
ENTER	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.
UP ARROW	click!	Pstart is displayed on the screen for 3 seconds.
	click!	Increase the programming value.
	3"	Pstart adjustment mode.
DOWN ARROW	click!	Dicrease the programming value.
AMPERE	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.

EPR - *Electronic Pressure Regulator* -

LEDS	DISPLAY	ACTION
POWER SUPPLY	O	It indicates the device is connected to the power supply.
ALARM	O	Ratified dry-running or overload alarms
	((O))	Dry-running alarm performing ART or overload alarm preforming any of the 4 restore attempts
PUMP	O	It indicates the pump is working.
FLOW	O	It indicates positive flow.

P-BUTTON	TOUCH	ACTION
	click!	Any alarm is restored.
	HOLD DOWN	The pump starts and keeps operating until the push-button is released.

STARTUP

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

Follow next steps:

1. Start the device. Connect to the power supply and press ENTER (M) in the DPR model. Connect to the power supply in the EPR model.
2. *(Only DPR)*
   Set the pump rated current intensity value:
   - Press (A) 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 (M) for validation.
3. *(Only DPR)*
   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 5,5 bar.
   - Press (M) for validation.
4. Set the maximum pressure of the installation:
   - Open a tap.
   - Take the provided allen key.

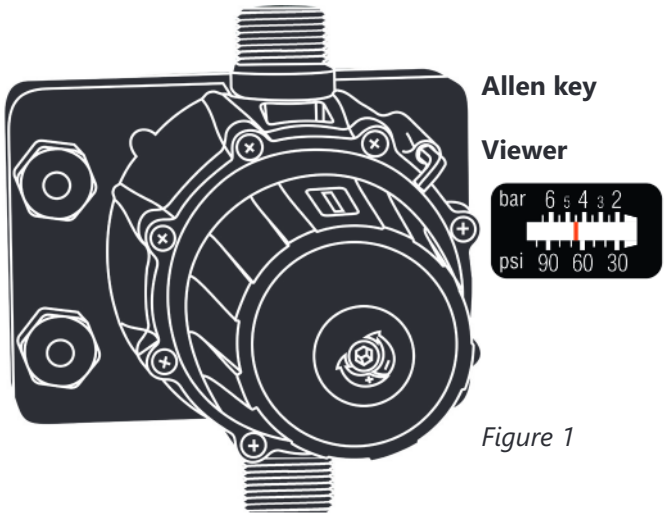


Figure 1

   - Turn the regulation screw clockwise to increase the outlet pressure and anticlockwise to decrease it (factory setting 3 bar). Look at the working pressure viewer (Fig. D) while turning the screw to have a fisrt aproximation of the outlet pressure setting.

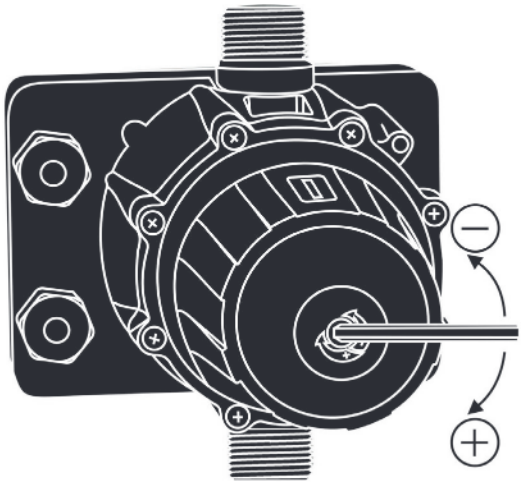


Figure 2

   - Close the tap and do the final adjustment looking at the manometer (EPR) or the display (DPR).
   - The regulated pressure should be at least 1bar less than the maximum pressure of the pump.

EPR pressure diagram:

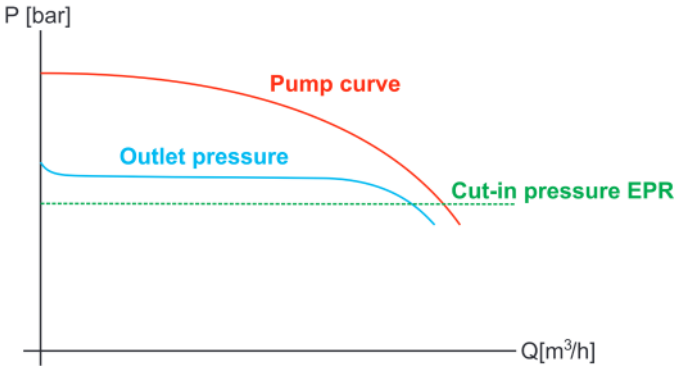


Table 1:

OUTLET PRESSURE	CUT IN PRESSURE	MINIMUM PUMP PRESSURE	MAXIMUM WATER COLUMN
2 bar	1±0,5 bar	3 bar	4 m
3 bar	1,8±0,5 bar	4 bar	12 m
4 bar	2,5±0,5 bar	5 bar	18 m
5 bar	3,5±0,5 bar	6 bar	25 m
6 bar	4,5±0,5 bar	7 bar	30 m

DPR pressure diagram

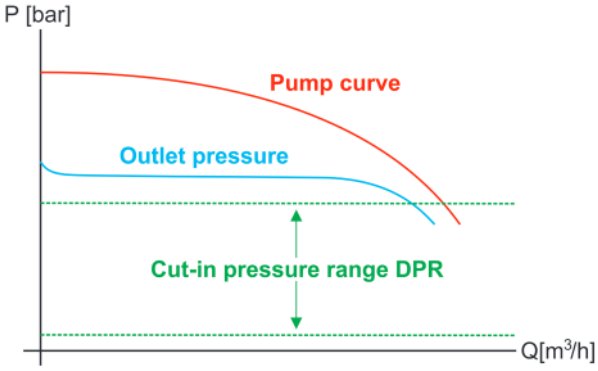


Table 2:

OUTLET PRESSURE	CUT IN PRESSURE	MINIMUM PUMP PRESSURE	MAXIMUM WATER COLUMN
2 bar	0,5-1,5 bar	3 bar	3-8 m
3 bar	0,5-2,5 bar	4 bar	3-15 m
4 bar	0,5-3,5 bar	5 bar	3-20 m
5 bar	0,5-4,5 bar	6 bar	3-30 m
6 bar	0,5-5,5 bar	7 bar	3-40 m

5. The unit EPR is ready to operate but the unit DPR has more optional adjustments that 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:

SCREEN		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
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
H00	H99	Anti-flooding configuration. If activated, it stops the pump after programmed time (in minutes) of continuous operation. Disabled (H00), 1 minute (H01) ... 99 minutes (H99).	H00
rs0	rs1	Restore factory settings (rs1)	rs0

REGISTER OPERATION DATA AND ALARMS (▲) + (▼) +(A)

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

MESSAGE	DESCRIPTION	SCOPE
rEc		
HF	Controller operating hours	0-65535
HP	Pump operating hours	0-65535
CF	Operating cycles Number of start-stop cycles.	0-999999
Cr	Number of connections to the power supply.	0-65535
A01	Number of A01 alarms.	0-999
A02	Number of A02 alarms.	0-999
A05	Number of A05 alarms.	0-999
A11	Number of A11 alarms.	0-999
APM	Number of times the device has registered higher pressure than 11bar / 160PSI	0-999
rPM	Maximum pressure registered by the device.	
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. Set the outlet pressure equal to the maximum pressure of the pump. In case of using a pump with higher pressure than 6 bar, set the outlet pressure to 6 bar. (Go to the point 4 of the STARTUP to remember how to set the outlet pressure)
2. Start the device and wait until it stops the pump.
3. Press simultaneously the buttons (●) and (▼) till the display flashes with a figure.
4. Adjust the pressure with the arrows push-buttons to get the pressure desired.
5. Press (●) to validate.

Examples:

MAXIMUM PUMP PRESSURE	OUTLET PRESSURE	ADJUSTED FULL SCALE
4 bar	4 bar	4 bar
8 bar	6 bar	6 bar

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

WARNINGS AND ALARMS

DPR

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	When is detected a pressure below a pre-set value and for a pre-set period of time in the ADVANCED PROGRAMMING MENU, the pump is automatically stopped. 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. By mean of ENTER the normal operation can be manually restored.
	((O))		After the activation of the minimum pressure 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.
A02	O	OVERLOAD	Overload 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))		
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.

EPR

ALARM	DESCRIPTION	SYSTEM REACTION
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.

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).

EPR YouTube video

DPR YouTube video