RAINBOW POOL PRODUCTS

Quality Pool & Spa Products

ONGA ENVIROMASTER VARIABLE SPEED PUMP

Code	Description
P470000K	Variable Speed Pump

TECHNICAL FEATURES

- For the motor pump refer to the information contained in the specific manuals

- Do not use the product in environments with acid, corrosive and/or inflammable gas
- Do not use the motor pump with dangerous liquids

Field limitations

- Environmental temperature : +0°C to 40°C
- Temperature of pumped liquid : refer to the specific motor pump manual
- Level of protection : IP55 (if installed on motors with an IP55)
- Maximum operational pressure : refer to the specific motor pump manual
- Voltage of inverter : 1x230 Vac ±10 %
- Voltage of outlet inverter : 3x230 Vac ±10 %
- Inbound frequency : 50/60 Hz +3%
- Maximum nominal power : 1.5 Kw
- Maximum nominal outbound current : 6.5 Amp
- Wave shape : sinusoidal
- Inbound filter : complies with EMC directive

Inbound signal features

Pressure of transducer:

- Pressure field : from 0 to 10 Bar
- Outbound signal : from 0 to 5 Volt
- Connection : ¼male
- Electrical connector : removable, provided with 2m of cable

INSTALLATION

Caution

- The installation operations must be performed by expert, qualified personnel
- Use specific guards and equipment as per safety standards
- Fully comply with safety and accident prevention standards in force

Hydraulic connection

The system can be used with a direct connection to the aqueduct or suction from a first tank.

Caution

- For connection to the aquaduct, pay full attention to local standards in force
- Check the sum of the intake pressure and the maximum pressure of the motor pump do not exceed the maximum values allowed by the system

TANK: follow the indications described in the use and maintenance manual for the motor pump used.

It is possible to use a float to deactivate the system (to avoid the system drying up).

Pressurised tank (expansion vessel)

Caution

- Check the maximum pressure of the tank can support the maximum pressure of the system

It is necessary to install an expansion vessel on the outlet side of at least 8 litres to avoid the motor pump functioning continuously. Check the preloading pressure of the first tank on the system: this value must be 0.8 Bar less than working pressure (lower SET-POINT).

Electrical connection

Danger

- Ensure power is cut to all the connections
- Always disconnect the electrical power cable before performing operations on the electrical or mechanical parts of the motor pump
- Having disconnected the power cable, wait for the LINE Led to switch off (about 1 minute) and until the condensers unload before performing intervention on the CPS

Danger

- Perform the electrical connections in compliance with local standards in force
- It is the responsibility of the installer to ensure that the electrical power supply system has an effective earthing system in compliance with standards in force

The CPS comes with a Shuko (EEC 7/7) type power plug. Connect the plug in an accessible position in case it is necessary to deactivate the system. In case of damage to the power cable, it must be replaced in an assistance centre or by qualified personnel.

The CPS comes with a 2 m shielded cable, for the pressure transducer, connected to the module. For positioning see chapter 5.

NOTE

- Before switching on or after a long period without power, the display may flash; this indicates the internal clock must be regulated.

FUNCTIONING

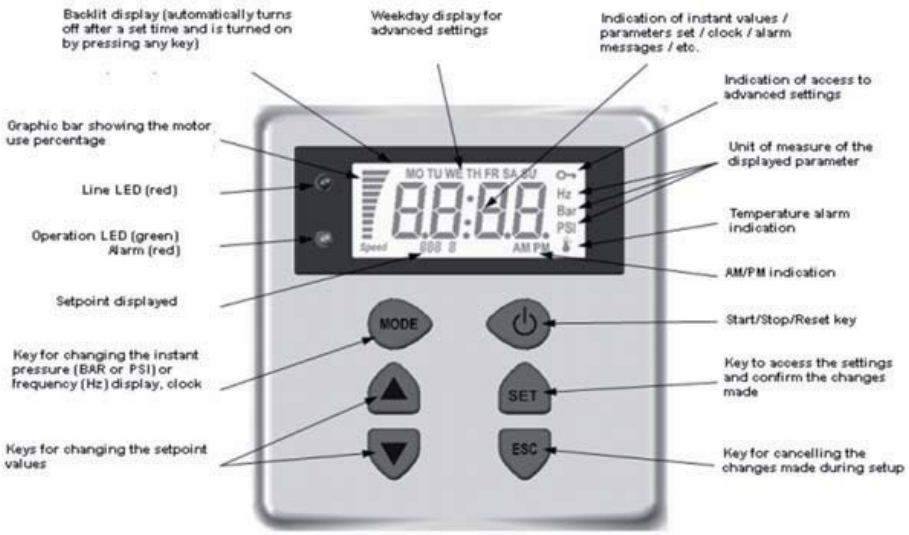
Product description

The system is composed of a motor pump and an electronic control system (inverter) that enables the pressure to be maintained constant in the system, reducing or increasing the rotation speed of the pump motor.

When the system pressure goes below the threshold set, the module starts the pump to reset the set point pressure; the rotation speed of the pump varies based on the water request, therefore, greater request requires greater speed, until the maximum set pressure is reached. When the request for water decreases, speed will also reduce until the pump reaches the minimum speed set and after which, if there are no further decreases in pressure (i.e. new water requests), the pump will go in stand by until a new cycle begins.

Control panel description

The control panel is shown in fig. 1 and is composed of:



Displays

Press the MODE button to alternate the various displays available

- BAR/PSI → System pressure
- Hz → Motor frequency
- A → Absorbed current
- hh:mm → Time

The parameter displayed by default is pressure (BAR or PSI); after 10 minutes of displaying one of the other parameters the system automatically returns to displaying pressure.

Programming

Functioning of the module is programmable using a series of parameters grouped into 3 sub-menus:

- The CPS module indicates with the symbol 🔑 the modification status of the parameter.

MENU	DESCR DISPLAY	PARAMETER NAME	DESCRIPTION	DEF	MIN	MAX
PROG.TIME	TIME	Time	Time on system	00:00	00:00	23:59
	GIO	Day of week	Day of week	MO	MO	SU
SET POINT	SET 1	Set Point 1	Main pressure value	3	1	8
	SET 2	Set Point 2	Secondary pressure value (set only if parameter SET N = 2)	2	1	8
ADVANCED PARAMETERS	COR	Nominal current*	Pump nominal current (read on plate: In)	6	1	8
	SET N	Number of SET POINTS	Number of set points used	1	1	2
	TPR E	Unit of measurement	Pressure unit of measurement	BAR	BAR	PSI
	ROT	Motor rotation direction *	Motor rotation direction	POS	POS	NEG

* Values set by the manufacturer

Programming clock/date

- During the first installation phase, the module display flashes to indicate the internal clock needs updating
- The clock is equipped with a battery to maintain the time and date for 24 hours if there is no power

To modify the time, repeatedly press the “MODE” button until you arrive to the time parameter.

- Press the “SET” button for 10 sec to change the time.
- During the modification of the SET POINT parameters, the symbol on the display lights up.
- With the buttons▲▼ it is possible to modify the time.
- Press SET to move onto changing the day.
- With the buttons▲▼ it is possible to modify the day.
- To memorise the values press the button “SET”. The symbol disappears.

Set point

To access this menu press and release the SET button:

- During the modification of the SET POINT parameters, the symbol lights up on the display;
- With the buttons▲▼ it is possible to modify the pressure values.
- To memorise the value press the SET button. The symbol disappears.
- SET POINT 1: Pressure desired by the system, the module varies the motor speed to maintain the system pressure as near as possible to that set. During the regulation of this parameter, the writing "SET1" appears.
- SET POINT 2: Present only if the module was set to function with two SET POINTS (see “ADVANCED PARAMETERS”). When setting this parameter the display shows "SET2" Set “SETn = 2” and proceed to program SET1 and then SET2.
- Press “SET” to confirm.

If two SET POINTS are present, it is possible to select the one desired using the “S.P.” external contact (see electrical connections diagram) or the internal clock.

- Pressing the ESC button you exit programming mode without saving the modified parameters

Advanced parameters

- The CPS module indicates with the symbol the modification status of the parameter.

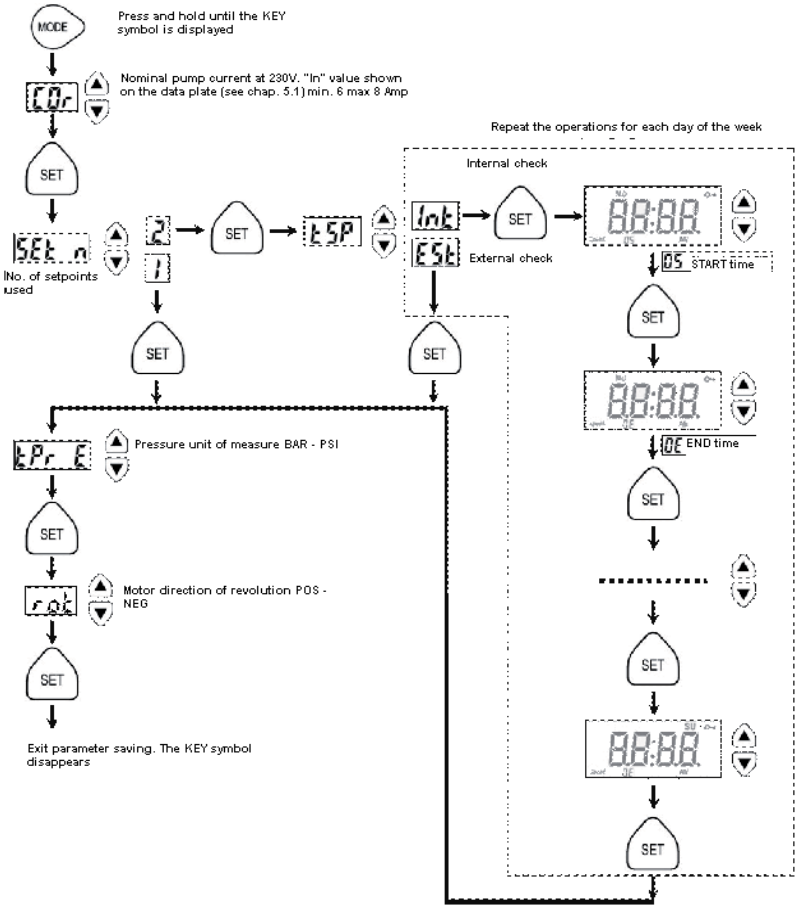
- During the programming phase, it is possible to return to the previous parameters by pressing the “MODE” button
- Pressing the “ESC” button you exit programming mode without saving the data

Manual start/stop

It is possible to manually stop the pump by pressing the START/STOP button: in this situation the display alternatively shows the writing STOP and the pressure value. To exit the STOP condition, press the START/STOP button again. During STOP status the module is not operational.

Sequence of buttons 

- Remember to enable the system for automatic functioning



Manual start of motor/priming

This procedure is applicable when you want to manually start the system or prime the pump.

It is possible to manually start the motor by pressing the following sequence of buttons:

Buttons sequence with pump off Last button pressed for 10 seconds The pump remains on until the last button is pressed	

Caution

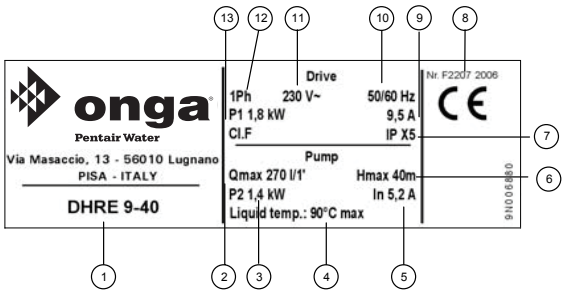
- During manual start-up, the motor rotates at maximum speed and the pressure control is not activated, therefore the pump reaches its maximum pressure
- Ensure there is water inside the pump unit, otherwise the pump seal will be destroyed

DESCRIPTION OF SIGNALS ON DISPLAY

MESS DISPLAY	DESCRIPTION		ACTION
INIBIT	Inhibit intervention signal	The condition is operative and generated by the external command that closes the inhibit input.	Check Inhibit external sensor(e.g. float).
ALAT	No water alarm - temporary	This condition is present when there is a lack of water. The module is waiting to restart to attempt an automatic reset. After: 1 – 5 – 60 – 720 minutes.	Check the water level in the first tank or the aqueduct pressure.Wait for the programmed attempted restart or press the  button for a manual restart.
ALAF	No water alarm - definitive	This condition occurs when there is no water and the automatic restart system has not activated or 4 restart attempts occurred already without managing to reset the system functioning. This alarm condition closes the J3 contact on the power board for possible external signals (alarm light, siren, etc.)	Check the water level in the first tank or the aqueduct pressure. Press the  button to manually restart the system. If the ALAF alarm condition occurs again, contact your nearest assistance centre.
ERCO	Communication error	This error condition occurs when the control board cannot communication with the power part.This alarm condition closes the J3 contact on the power board for possible external signals (alarm light, siren, etc.)	Cut the power off and wait until the LINE Led switches off and after which turn power back on. If the ERCO error condition occurs again, contact your nearest assistance centre.
EROT	Over voltage error	This error condition occurs when the voltage exceeds by 10% the nominal voltage (230V).This alarm condition closes the J3 contact on the power board for possible external signals (alarm light, siren, etc.)	Press the  button or cut the power off and wait until the LINE Led switches off and after which restart the system. If the error occurs again, contact your nearest assistance centre.
ERUT	Under voltage error	This error condition occurs when the voltage is 10% less than the nominal voltage (230V).This alarm condition closes the J3 contact on the power board for possible external signals (alarm light, siren, etc.)	Press the  button or cut the power off and wait until the LINE Led switches off and after which restart the system. If the error occurs again, contact your nearest assistance centre.

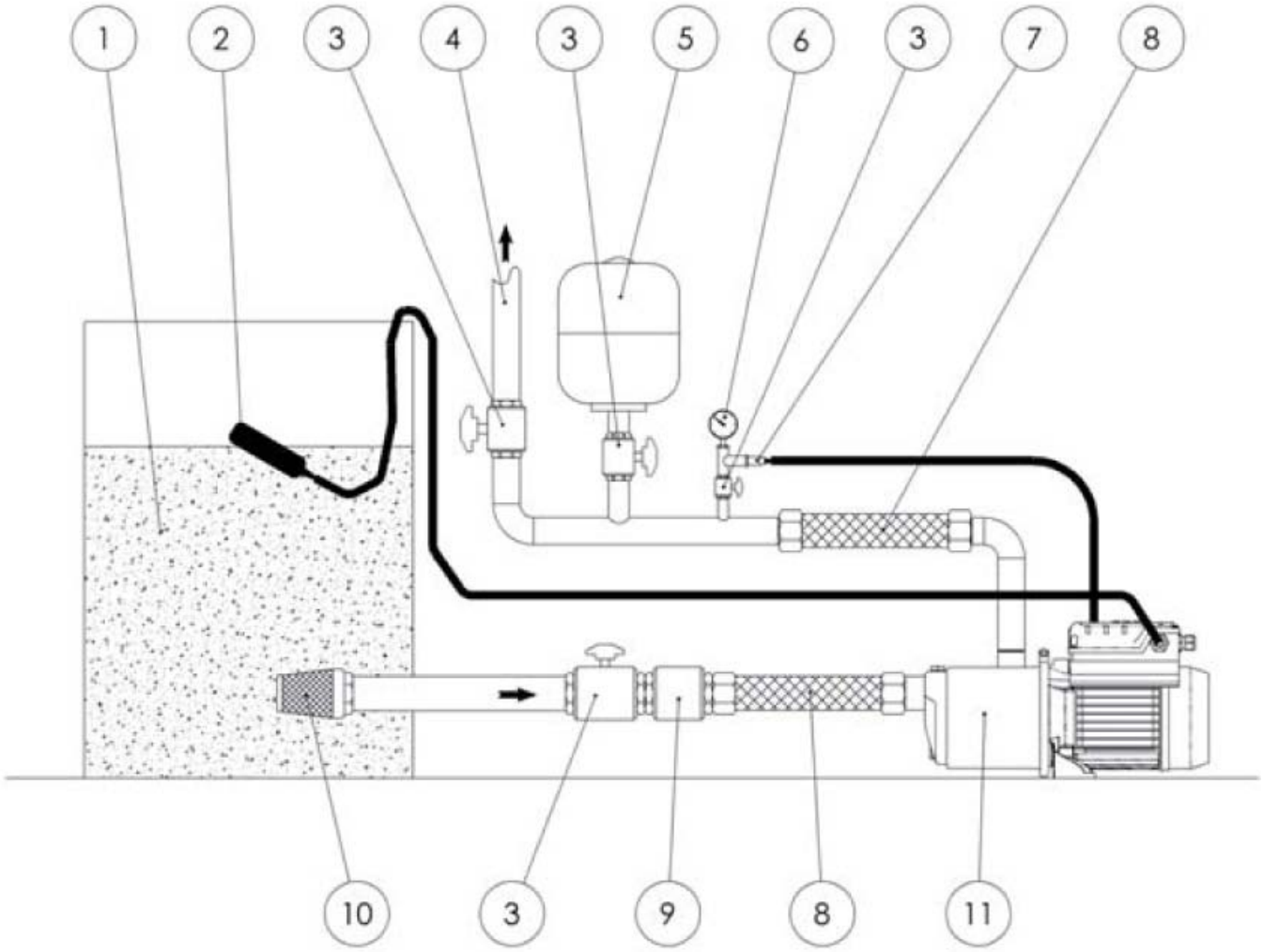
MESS DISPLAY	DESCRIPTION		ACTION
EROL	Power surge error	This error occurs when the current absorbed by the module is greater than triple the nominal current. This condition can be caused when the pump is blocked by foreign bodies. This alarm condition closes the J3 contact on the power board for possible external signals (alarm light, siren, etc.)	Cut off the power supply and wait for the LINE Led to switch off. Check the pump freely rotates and if necessary remove foreign bodies that block correct functioning. Turn power back on. If the error persists, contact your nearest assistance centre.
ERST	Configuration error	This error occurs when the control board cannot correctly communicate with the power part. This alarm condition closes the J3 contact on the power board for possible external signals (alarm light, siren, etc.)	Press the ⏻ button or cut the power off and wait until the LINE Led switches off and after which restart the system. If the error occurs again, contact your nearest assistance centre.
HOSE	Lack of transducer pressure signal	This signal occurs when the control board cannot identify the transducer pressure signal.	Check the pressure transducer is correctly connected. If the error occurs again, contact your nearest assistance centre.

Data plate



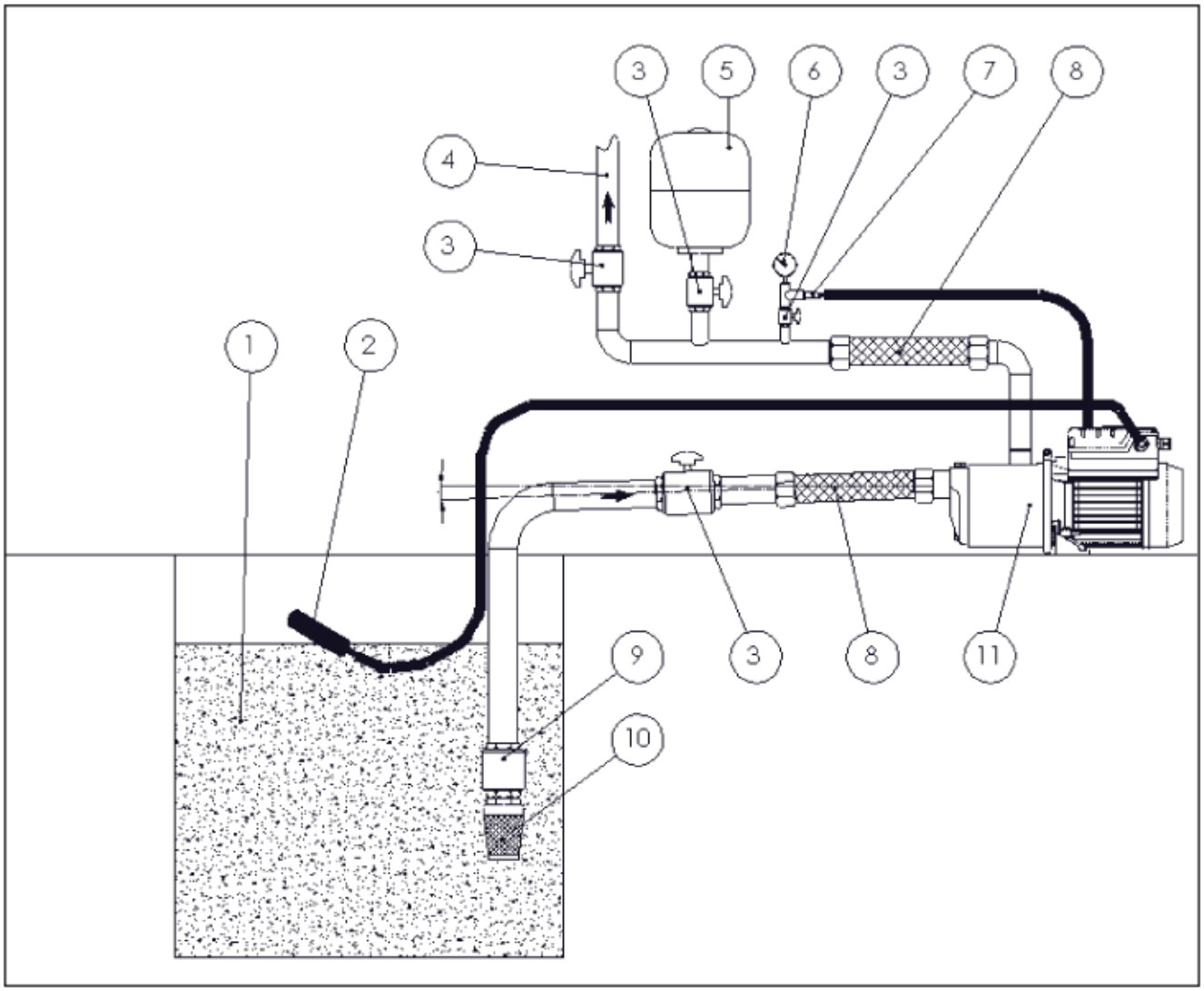
1. Type of motor pump
2. Maximum flow rate l/min
3. Nominal power
4. Maximum temperature of liquid
5. Nominal current
6. Maximum head in metres
7. Insulation class and level of protection
8. Date and year of production
9. Absorbed current
10. Frequency
11. Power voltage
12. Number of phases
13. Absorbed power

POSITIVE SUCTION HEAD INSTALLATION



1. Basin or tank
2. Float
3. Shut-off valve
4. Outlet tubing
5. Tank/autoclave membrane (8 l/min)
6. Gauge
7. Pressure transducer
8. Flexible tube
9. Non return valve
10. Filter
11. Motor pump complete with inverter

POSITIVE SUCTION HEAD INSTALLATION



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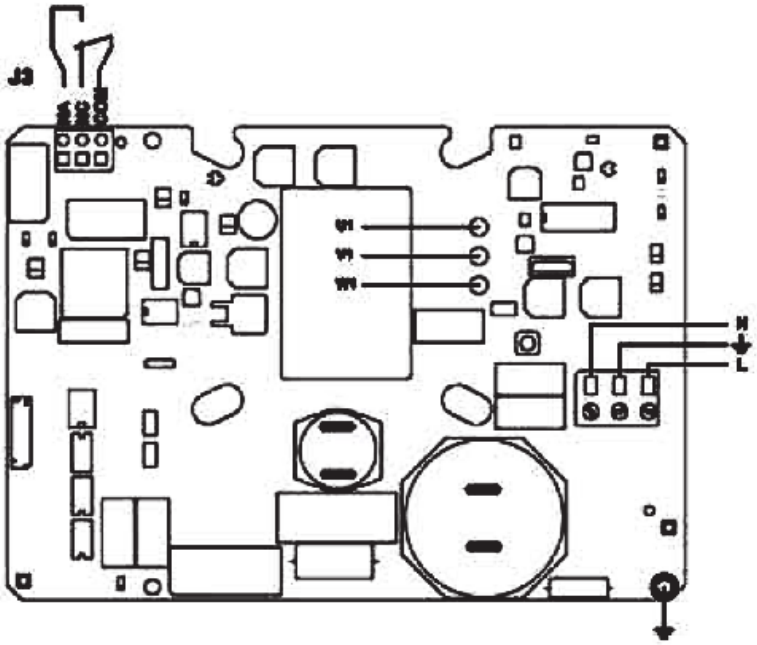
For the installation of the positive suction head, ensure the correct inclination of the suction piping until the a present in the tubing can exit the outlet tubing.

ELECTRICAL CONNECTION BOARD – POWER BOARD

- LINE Power entry
- J3 Alarm exit
- U1, V1, W1 Motor connections



CONNECTIONS BOARD – CONTROL BOARD

- RS-485 Communication port
- INI INIBIT input:NC external contact
- S.P. External Set Point (EST): NA contact
- NTC NTC sensor input to control temperature
- TRASD. Input 0÷Volts for pressure transducer
  - + Positive
  - - Negative
  - D Signal