

INSTALLATION AND OPERATION

toscano

**FLOAT
SWITCHES**
control



**Pump controller and protection for
one (3ph/1ph) pump**

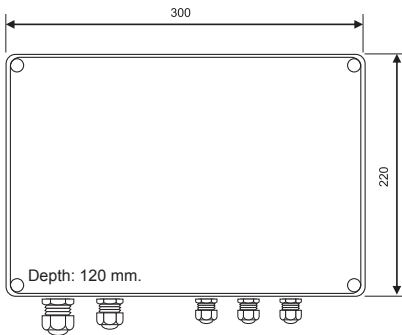
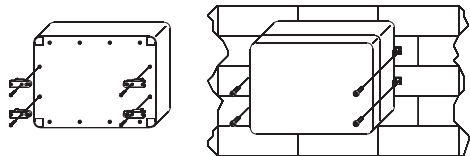
(Control by Float switches)

General Description

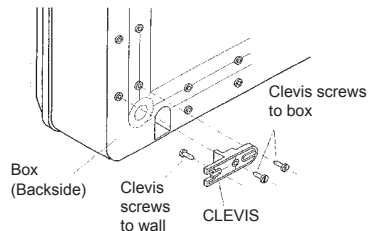
- Control and protection unit for one pump, operated by 3 floats.
- Three-phase and single-phase. Dual voltage supply: 230 / 400 Vac.
- Electronic overload relay, adjustable from 0 to 13 Amp.
- Phase failure protection.
- Jammed impeller protection.
- High level acoustic alarm.
- Main load switch.
- Main magnetic circuit breaker.
- Power contactor.
- MAN-0-AUTO selection by push button.
- Pilot lights for VOLTAGE and HIGH LEVEL.
- Pilot lights for ON/OFF and OVERLOAD.
- Safety system for any float failure.
- RESET push button for overload alarm.
- Control output for external siren.
- Contact output for pump alarm and high level.
- Input for Klixon motor temperature switch.
- All the control elements at 12 VDC for a higher safety.
- High protection cable glands.

Installation

Mounted on a wall.



Clevis mounting in detail



Front configuration

A ON/OFF push button:

AUTOMATIC mode (fixed green circle light):
Push this button to get the unit working automatically, according to the programmed controls and protections.

MANUAL mode (flickering green circle light):
Press this button for at least 4 seconds to force the pump running, remaining the pump temperature protection only. Release the button to get back to auto mode.

B STOP button. Stops the motor and does not allow starting under any circumstances. If there is a voltage failure, the selected position (STOP or AUTO) remains in memory, continuing the selected mode once voltage is restored.

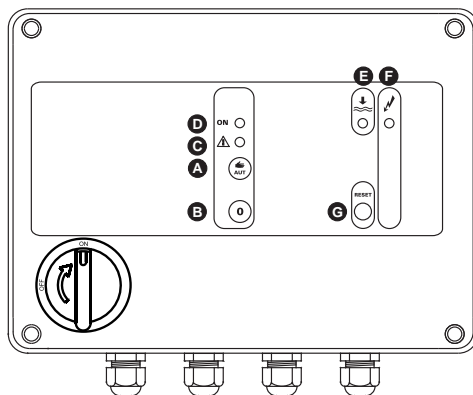
C MOTOR ALARM. Red pilot light.

D MOTOR RUNNING. Green pilot light.

E LEVEL HIGH. amber pilot light. Turned off when high level float is switched off.

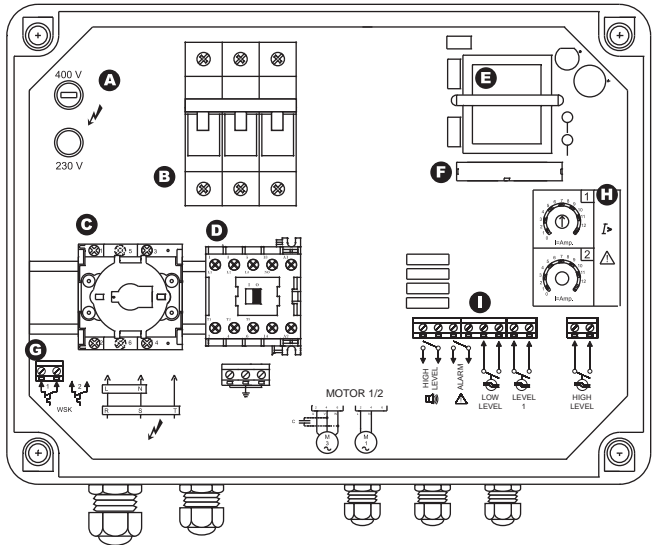
F VOLTAGE green pilot light. Gets illuminated when powered.

G RESET push button. Resets the unit after overload, and stops siren for 5 minutes.



Internal configuration

- A** Control fuse (0,1A).
- B** magnetic circuit breaker.
- C** Main switch.
- D** Contactor.
- E** Current transformer.
- F** Flat flexible cable connector.
- G** Motor Klixon input.
- H** Maximum current adjustment.
- I** Control terminal block.



Check that all the connections are correct and that the voltage fuse switch is correctly positioned.

Installation

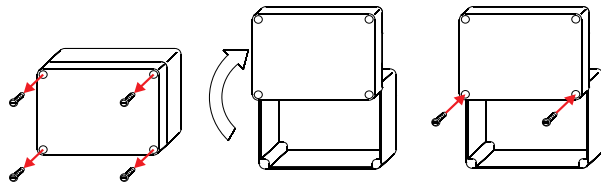
We recommend connection of tag wires to terminal blocks.

1) Open unit and move up the top, like in figure, to facility the connection and adjustment unit. General switch should be in OFF position

2) Connect MAIN SUPPLY directly to GENERAL SWITCH.

3) Connect MOTOR (pump) to the respective contactor.

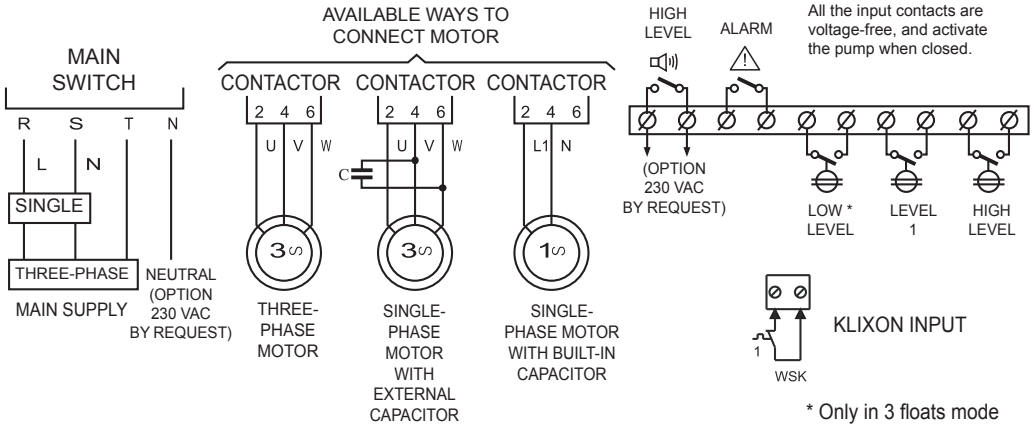
4) Connect floats (1, 2 or 3) to their respective terminal blocks. These con-



tacts should be voltage-free, and activate the pump when closed (see operation diagram).

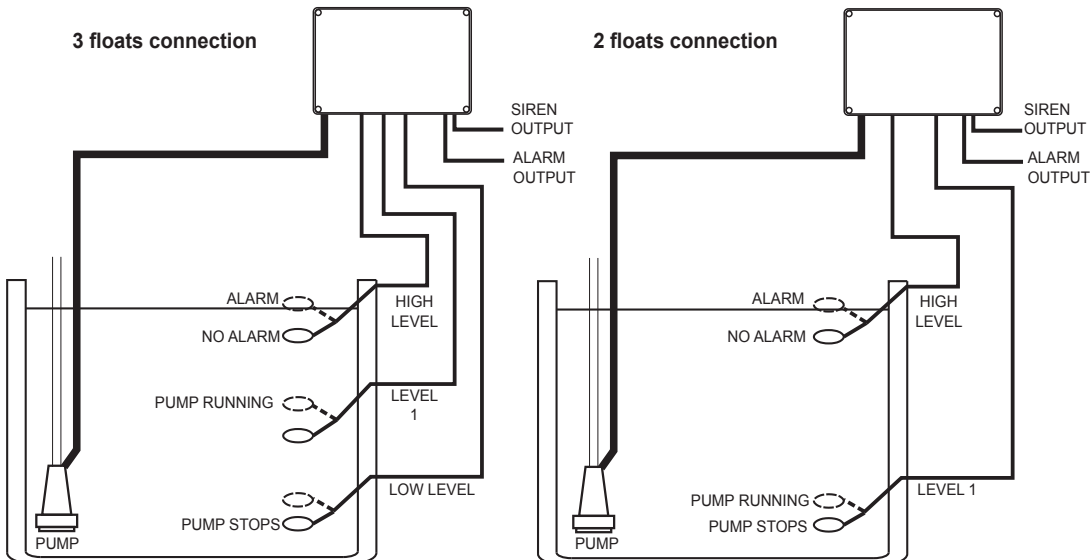
5) This unit has two voltage-free contacts for ALARM (thermal trip / high level and siren).

Wiring diagram



System Operation

The high level float activates the pump in case of failure of the other floats. Also, failure in any float enables the immediate higher float.



PUMP THERMAL PROTECTION.

In case of overload in the pump, or phase failure, there will be a thermal trip of the pump 7 seconds after the anomaly detection. During these 7 seconds, alarm pilot light is flickering.

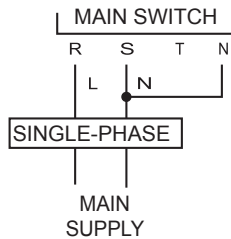
ALARM OUTPUT (ALARM).

Alarm output closes contact 6 seconds after the level loss failure, or thermal failure in the pump. Once level is restored or alarm reset, this output is disconnected after 2 seconds delay.

SIREN OUTPUT.

Normally open contact, voltage-free, activated at the same time that the siren.

Option by request: 230 Vac output; N.b.: in case of 230 Vac supply voltage, it is essential to jumper NEUTRAL between main switch S-N terminals for a correct operation of the alarm device (see diagram).



PUMP JAMMING PREVENTION.

To prevent pump jamming (during long resting periods), the unit activates the pump for 1 second every 23 hours of inactivity (only in AUTO mode).

KLIXON INPUT.

If motor have Klixon thermal switch, it may be connected to this terminal block. In case of excessive motor warming, the unit stops it by thermal failure.

WARNING: If Klixon input is not used, it should be jumpered. Otherwise, there will be a pump stop due to thermal failure.

System adjustment

Adjustment is only possible if motor is connected to the unit. Otherwise, the insufficient current alarm will be activated.



Light ON



Light FLASHES

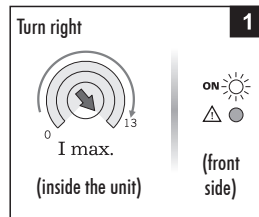


OFF

Maximum current adjustment

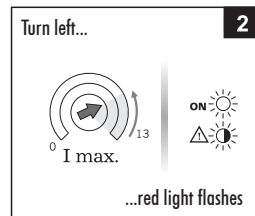
1.-

- Turn right to the limit
- Start motor.
- Green.



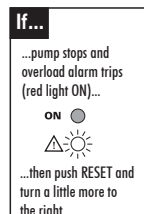
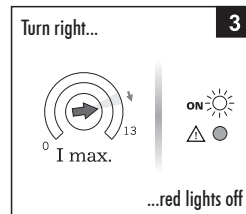
2.-

- Turn slowly to the left until red light flashes.



3.-

- Then, turn slightly to the right until red light stops flashing (OFF).



Warning: Adjustment to the maximum value (13A) cancels any protection.

Specifications

Voltage	230 / 400 VAC (selectable) - 50/60 Hz
Permissible voltage fluctuation	+10% - 15%
Maximum current	12 A AC3
Overload adjustment	0-13 A (adjustable)
Underload adjustment	<0,5 A
Current in floats	12/24 V
High level alarm output connection	Contact or 230 VAC (option on request)
Input connection (power)	Direct to main switch
Output connection (motors)	Direct to contactor
Mounting	Wall mounting
Weight	3,5 Kg
Protection	-10 + 55 °C
Operating temperature range	IP56

Troubleshooting

Problem	Cause	Solution
<ul style="list-style-type: none"> Unit does not work and VOLTAGE light is off, even when system is connected to a power source. 	<ul style="list-style-type: none"> Control fuse is burnt out. Incorrect input connection (single-phase). Phase failure. 	<ul style="list-style-type: none"> Check and replace fuse (crystal 5x20/0,1A). Connect correctly. Check phase state.
<ul style="list-style-type: none"> Unit works, but contactor does not activate or taps. 	<ul style="list-style-type: none"> Switch fuse incorrectly positioned at 400 Vac, when it is powered at 230 Vac. 	<ul style="list-style-type: none"> Place fuse in proper position (230 / 400 Vac).
<ul style="list-style-type: none"> Motor alarm trips (pilot light "3"). 	<ul style="list-style-type: none"> Over current adjustment too low or critical. Error in input phases. Abnormally excessive motor consumption. Poor motor consumption (<0,5 A). 	<ul style="list-style-type: none"> Check motor consumption and adjust the electronic current control again. Check the three phases. Check the motor. Pump is overloaded. Check the pump (no water in suction, blocked, etc).



EC DECLARATION OF COMPLIANCE WITH THE "LOW VOLTAGE" & "ELECTROMAGNETIC COMPATIBILITY" DIRECTIVES.

TOSCANO LINEA ELECTRONICA, S.L. declares that the equipment described in this manual complies with the provisions of the modified "LOW VOLTAGE" directive (Directive DC 2004/108/CE) and with the modified "ELECTROMAGNETIC COMPATIBILITY" directive (Directive DC 2006/95/CE) and with national legislation based upon them. It also complies with the provisions of the following European standards and draft standards:

NF EN 60.439-1 / EN 50.081-1 / EN 50.082-2 .

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