

**INSTALLATION AND OPERATION**

# toscano

**FLOAT  
SWITCHES  
control**



**Pump controller and protection for  
2 (3ph/1ph) pumps**

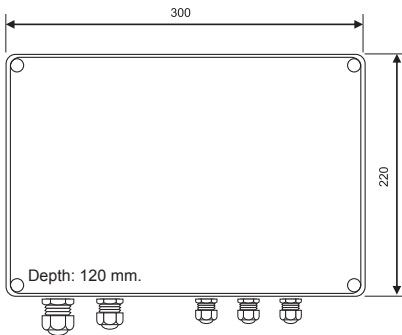
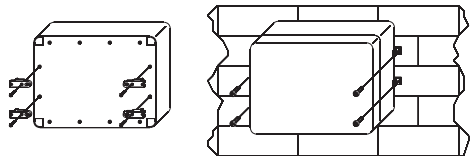
**(Control by Float switches)**

## General Description

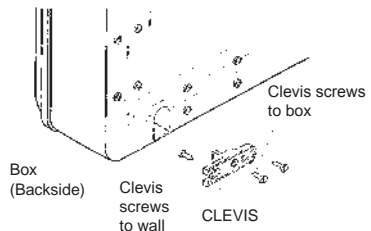
- Control and protection unit made for two pumps with automatic alternation, operated by 4 floats.
- Three-phase and single-phase. Dual voltage supply: 230/400VAC.
- Automatic pump commutation in case of failure or deactivation of one of them.
- Electronic overload protection relay, adjustable from 0 to 13 A (per pump).
- Air-break detection in pressure tanks.
- Phase failure protection.
- Pump jamming protection.
- High level alarm acoustic alarm.
- Main load switch.
- Main magnetic circuit breaker).
- Safety system for any float failure.
- Power contactor.
- MAN-0-AUTO selection by push button (per pump).
- Pilot lights for VOLTAGE and HIGH LEVEL.
- Pilot lights for ON/OFF and OVERLOAD per pump.
- Alarm reset button.
- Control output for external siren.
- Contact output for alarm and high level.
- Input for Klixon motor temperature switch.
- All the control elements at 12 VDC for a higher safety.
- High protection cable gland.

## 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 established 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 automatic mode.

**B** **STOP** button. Stops the motor and doesn't allow starting it 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.

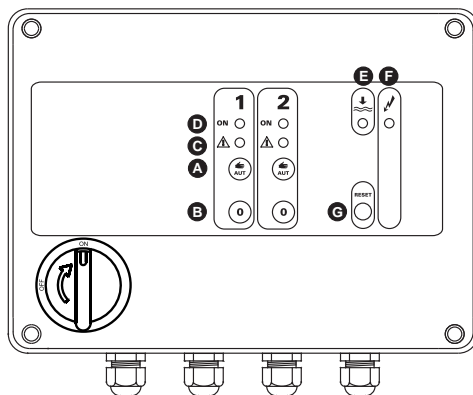
**C** **MOTOR ALARM**. Red pilot light.

**D** **MOTOR RUNNING**. Green pilot light.

**E** **LEVEL HIGH**. Amber pilot light. Switched off when high level float is deactivated.

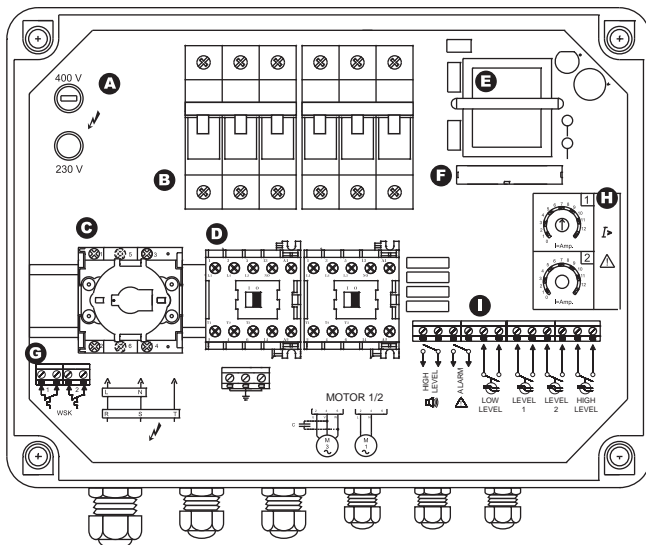
**F** **RESET** push button. Resets the unit after overload, and stops siren for 5 minutes.

**G** **VOLTAGE** green pilot light. Illuminated if powered.



## Internal configuration

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

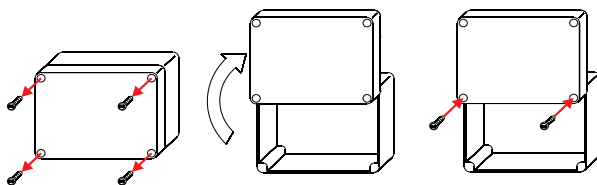


**Check** that all the connections are correct and that the voltage fuse switch is correctly positioned.

## Installation

We recommend connection of tag wires to terminal blocks.

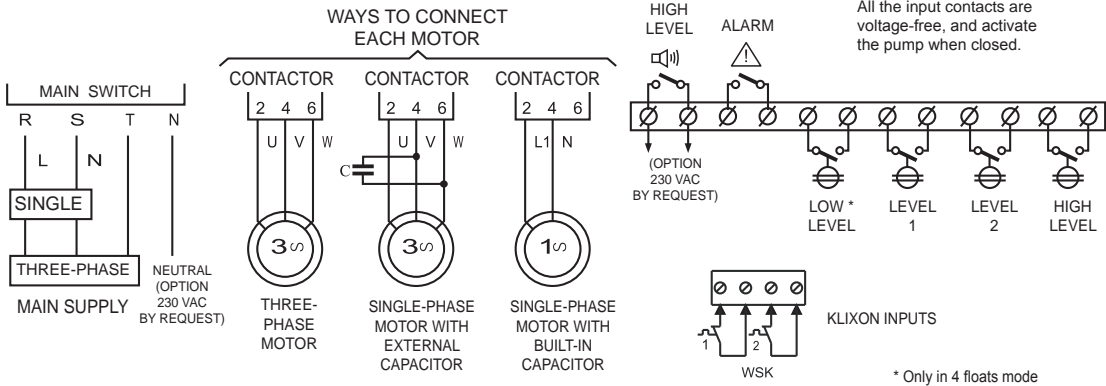
- 1) Open unit and move up the top, like in figure, to facilitate the connection and adjustment unit. General switch should be in OFF position
- 2) Connect MAIN SUPPLY directly to GENERAL SWITCH.
- 3) Connect MOTOR (pumps) to the respective contactors.
- 4) Connect floats (2, 3 or 4) to their respective terminal blocks. These con-



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

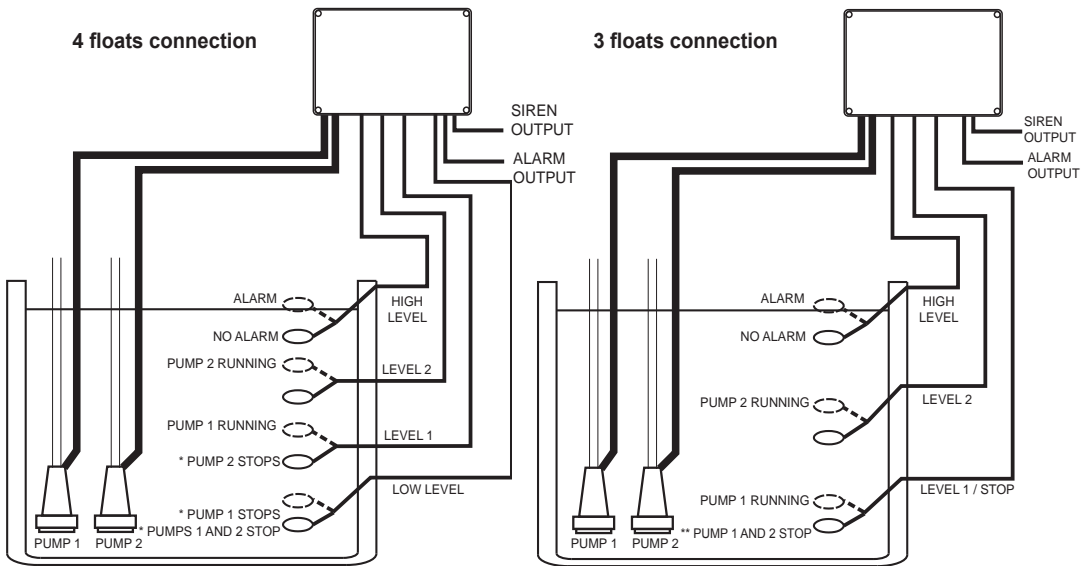
- 5) This unit has two voltage-free contacts for ALARM (thermal trip / high level and siren).

# Wiring diagram



# System Operation

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



\* Function switch (stop mode) in deferred position (B).

\*\* Function switch (stop mode) in simultaneous position (A).

### PUMP THERMAL PROTECTION.

In case of overload in any of the pumps, 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.

### FUNCTION.

Located on the back side of the unit cover, it has two positions:

A position: simultaneous stop.

B position: deferred stop.

### PUMP ALTERNATION DUE TO ALARM.

In case of maintenance pump thermal failure, the second pump substitutes it. If the reset button is pushed once the change is made, the pump mode will not be switched.

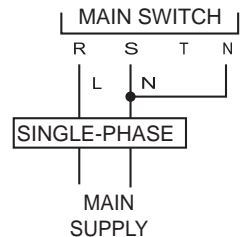
### ALARM OUTPUT (ALARM).

Alarm output closes contact 6 seconds after the level loss failure, or thermal failure in any of the pumps. Once level is restored or alarms 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 (long resting periods), the unit activates it for 1 second every 23 hours of inactivity (only in AUTO mode).

### KLIXON INPUTS.

If motors have Klixon thermal switches, they may be connected to these terminal blocks. In case of excessive motor warming, the unit stops it due to thermal failure.

**Warning:** If Klixon inputs are not used, they should be bridge circuit switched. Otherwise, there will be a pump stop due to thermal failure.

## System adjustment

The adjustment is possible only if the motor is connected to the unit, otherwise, the insufficient current alarm will be activated. Also, pump adjustment should be made in "0" position, otherwise the second pump is started due to overload in the first pump.



Light ON



Light FLASHING

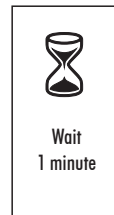
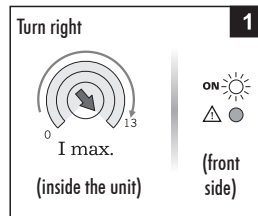


OFF

### Maximum current adjustment

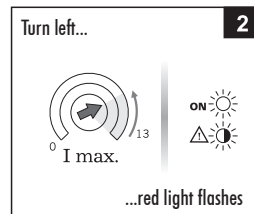
1.-

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



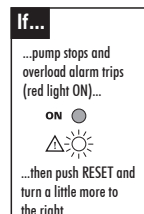
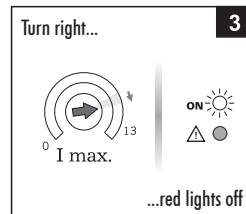
2.-

- Turn slowly to the left until red light flashes.



3.-

- Then, turn slightly to the right until red light stops flashig (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 (per pump) 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 4 mm <sup>2</sup>
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"> <li>Unit does not work and VOLTAGE light is off, even when system is connected to a power source.</li> </ul>	<ul style="list-style-type: none"> <li>Control fuse is burnt out.</li> <li>Incorrect input connection (single-phase).</li> <li>Phase failure.</li> </ul>	<ul style="list-style-type: none"> <li>Check and replace fuse (crystal 5x20/0,1A).</li> <li>Connect correctly.</li> <li>Check phase state.</li> </ul>
<ul style="list-style-type: none"> <li>Unit works, but contactor does not activate or taps.</li> </ul>	<ul style="list-style-type: none"> <li>Switch fuse incorrectly positioned at 400 Vac, when it is powered at 230 Vac.</li> </ul>	<ul style="list-style-type: none"> <li>Place fuse in proper position (230 / 400 Vac).</li> </ul>
<ul style="list-style-type: none"> <li>Motor alarm trips (pilot light "3").</li> </ul>	<ul style="list-style-type: none"> <li>Over current adjustment too low or critical.</li> <li>Error in input phases.</li> <li>Abnormally excessive motor consumption.</li> <li>Poor motor consumption (&lt;0,5 A).</li> </ul>	<ul style="list-style-type: none"> <li>Check motor consumption and adjust the electronic current control again.</li> <li>Check the three phases.</li> <li>Check the motor. Pump is overloaded.</li> <li>Check the pump (no water in suction, blocked, etc).</li> </ul>



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**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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