USE AND MAINTENANCE MANUAL
FOR THREE-PHASE ELECTRIC CONTROL PANEL BUILT FOR

caprari

Pumping power

THIS MANUAL MUST BE KEPT CAREFULLY AND BE AVAILABLE FOR CONSULTATION FOR THE ENTIRE LIFESPAN OF THE CONTROL PANEL. THIS MANUAL AND THE DECLARATION OF CONFORMITY ARE AN INTEGRAL PART OF THE PANEL. CONSULT THE USE AND MAINTENANCE MANUAL BEFORE ATTEMPTING TO USE THE ELECTRIC CONTROL PANEL.

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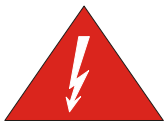
1. WARNINGS

The following symbols, accompanied by the words: “Danger”, “Warning”, indicate the potential hazard resulting from failure to observe the associated warning, as specified below:



DANGER
RISK OF ELECTRIC SHOCK

Failure to observe this warning may result in electric shock

DANGER

Failure to observe this warning may cause personal injury and/or damage to property

WARNING

Failure to observe this warning may cause damage to the pump, the unit or the system

- **CAUTION:**
  Make sure the pumps are fully primed before you start them.

- **CAUTION:**
  The control panel must be connected by a qualified electrician in compliance with the electrical regulations in force.

- **CAUTION:**
  The electric pump or the motor and the panel must be connected to an efficient grounding system in compliance with the electrical regulations locally in force.

- **CAUTION:**
  Ground the unit before carrying out any other operation.

- **CAUTION:**
  The electric pump or the motor can start up automatically.

- **CAUTION:**
  As a general rule, always disconnect the power supply before proceeding to carry out any operation on the electrical or mechanical components of the unit or system.

2. OVERVIEW

The purpose of this manual is to provide the necessary information for the proper installation, use and maintenance of the panel. The user should read this manual before operating the unit. Improper use may cause damage to the machine and lead to the forfeiture of the warranty coverage. Always specify the model identification code and the construction number when requesting technical information or spare parts from our Sales and Service department. The instruction and warnings given below concern the standard version; refer to the sale contract documentation for modifications and special version characteristics. For instructions, situations and events not considered in this manual or in the sale documents, please contact our customer service.

Our units must be installed in sheltered, well-ventilated, non-hazardous environments and must be used at a maximum temperature of +40°C and minimum of -5°C.

3. HANDLING

DANGER

WARNING

the panel must be handled with care, as falls and knocks can cause damage without any visible external signs.

If for any reason the unit is not installed and starter immediately after it has reached its destination it must be stored properly. The external packaging and the separately packed accessories must remain intact, and the whole must be protected from the weather, especially from freezing temperatures, and from any knocks or falls.

PRELIMINARY INSPECTION: after you have removed the external packaging, visually inspect the control panel to make sure it has suffered no damage during shipping.
If any damage is visible, inform a FOURGROUP dealer as soon as possible, no later then **five days** from the delivery date.

4. APPLICATION AND WORKING LIMITS

DANGER
RISK OF ELECTRIC SHOCK

WARNING

This electric control panel is particularly suited to controlling motor-driven pumps. For any other applications it is advisable to contact the service centre or CAPRARI Spa head office.

CAPRARI Spa is not liable for any damage caused by the control panel or on the control panel itself due to improper use.

TECHNICAL SPECIFICATIONS - STANDARD CONTROL PANEL:

- Electro-mechanical control panel;
- Power supply 3~50/60 Hz 400V +/- 10 % ;
- Control input via N.O. contact (float / pressure switch);
- 24V AC safety transformer for auxiliary circuits;
- Green warning light indicating “Motor Running”;
- Red warning light indicating “Motor Overload Protection”;
- Switch for “Automatic - Off - Manual” Motor operation;
- Line contactor sized for AC3;
- Thermal cutout overload protection with internal, adjustable reset range;
- Motor Protection Fuses;
- Auxiliary Circuits Protection Fuses;
- Safety Door Lock with Main Disconnecting Switch;
- Output with Cable Clamps;
- Metal Casing;
- IP44 Protection Rating: MOD. 44MP;
- IP55 Protection Rating: MOD. 55MP (on request);
- IP65 Protection Rating: MOD. 65VP (on request);

CAUTION:

Do not use this product in areas exposed to dust, acid, corrosive/flammable gas, etc.

5. OPERATION

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

When the control panel is switched on, the blue warning **"Power"** indicator L.E.D. lights up.
Use the **"Automatic-Off-Manual"** switch to select the motor operating mode: supervised **(Manual)** or with external controls **(Automatic)**;

The **G.MA** control, which can be any clean contact (e.g. float or pressure switch), runs the motor in **Automatic** mode only if the level of the liquid enables operation (**G.STOP** shutoff);
The system alternates the functioning of the pumps each time **G.MA**. shuts off.
If **G.S.** shuts off after **G.MA** has shut off, the inactive pump will restart to provide assistance to the pump which is already working.
A corresponding green L.E.D. will light up to indicate **"Motor Running";**

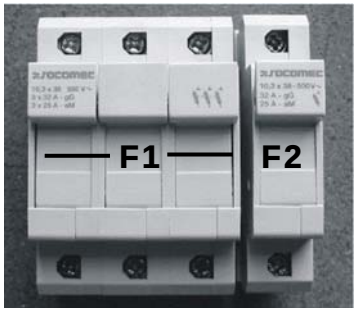
If the Overload protection has tripped, the motor will stop and the corresponding red **"Motor Overload Protection"** L.E.D. will light up.

Check the cause of the malfunction before resetting motor operation.

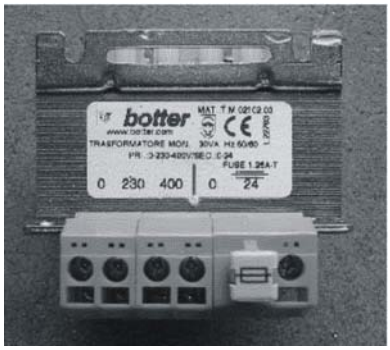
To reset correct operation, switch off the control panel using the main switch, open the cover and press the red reset button on the internal Thermal Cutout.
Close the cover and restart the control panel using the main switch.

CHECKING AND REPLACING FUSES

THREE-PHASE



ALL MODELS



Images are purely indicative

F1 : MOTOR PROTECTION FUSES (CERAMIC 10x38 SERIES " aM ")
F2 : PRIMARY PROTECTION FUSE (CERAMIC 10x38 SERIES " aM ")
F3 : AUXILIARY CIRCUITS PROTECTION FUSES (GLASS 5x20 SERIES " T ")

GENERAL NOTES:

Start the Motor at least two - three times when setting the Overload Protection to check that it runs correctly.
In all cases we recommend checking the operation of the control panel - as well as the functions which have been set - at regular intervals, in order to ensure maximum efficiency.

6. INSTALLATION

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

Electrical Connections

- Connect the FLOATS, MOTOR OUTPUT and POWER SUPPLY to the control panel, following the enclosed wiring diagrams.

- Connect the POWER SUPPLY cable for the MOTOR directly to the terminals on the THERMAL CUTOUT. Make sure that the rated limits for the motor lie within the usage limits on the control panel.

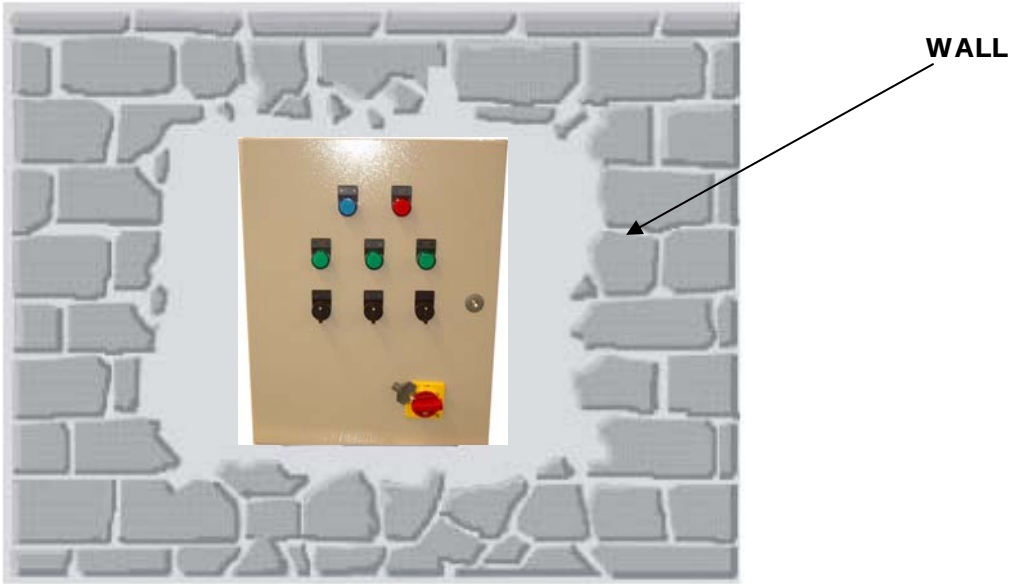
- Connect the POWER SUPPLY cable for the CONTROL PANEL directly to the terminals on the SAFETY DOOR LOCK WITH MAIN DISCONNECTING SWITCH. Make sure that the Power Supply Voltage is the same as for the electric control panel.

- USE A TOOL OF THE CORRECT SIZE WHEN TIGHTENING THE CABLES IN THEIR CORRESPONDING TERMINALS, TO AVOID DAMAGING THE CLAMPING SCREWS OR THEIR HOUSINGS (If an electric screwdriver is used, care is required to apply the correct tightening torque to avoid damaging the screws or threads).

- FIX THE CONTROL PANEL TO A WALL AS SHOWN IN FIG. 1 WITH SUITABLE SCREW ANCHORS AND USING THE HOLES PROVIDED IN THE CASING, OR THE MOUNTING BRACKETS IF PRESENT.

- AFTER FIXING, ELIMINATE ALL PLASTIC OR METAL DEBRIS (e.g. small particles of copper from the cables or plastic chips from the box) INSIDE THE CASING, BEFORE SUPPLYING POWER.

FIG. 1



N.B. : DO NOT INSTALL THE ELECTRIC CONTROL PANEL IN THE VICINITY OF OBJECTS WHICH ARE IN CONTACT WITH FLAMMABLE LIQUIDS, WATER OR GAS;

7. ELECTRICAL CONNECTION

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

*For electrical connections, refer to the enclosed diagram.

Power supply line

Earthing is the first operation that must be carried out.

Make sure that the supply voltage corresponds to the voltage on the rating plates on the control panel and pump.

Check that the power supply cable is able to support the nominal load current and connect it to the corresponding terminals on the control panel.

If overhead cables are used these require suitable protection.

The power supply line must be protected with a breaker which is sized according to regulations in force.

Connections inside the control panel

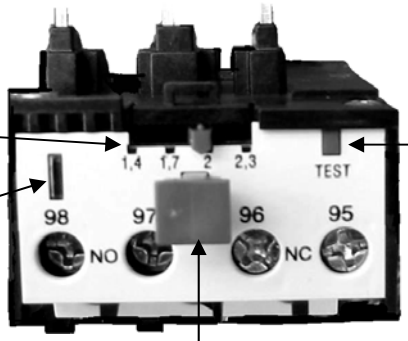
Earthing is the first operation that must be carried out. Insert the earthing cable into the (PE) terminal.

Connect the power supply cable to the Safety door lock with main disconnection switch.

Connect the motor-driven pump to the terminals on the thermal cutout inside the control panel according to the version.

8. REGULATION AND CALIBRATION

Before starting up the control panel it is advisable to check the thermal cutout setting on the basis of the nominal motor current (Fig. 2);
The reading on the thermal cutout is to be adjusted to at least 10 % more than the nominal absorption current for the motor, to compensate for starting current inrushes and unexpected but sudden surges;



CURRENT ADJUSTMENT RANGE

THERMAL CUTOUT DISPLAY

TEST BUTTON (PRESS USING A FINE POINT e.g. PENCIL)

Fig.2

RESET BUTTON

9. STOP OF THE PUMP

The MOTOR may be switched off as follows:

- In “manual” mode by setting the “ MAN – 0 – AUT ” switch to “ 0 ” ;

- In “automatic” mode when the G1 switch inhibits the consent signal;

- By setting the safety door lock power isolation switch to “ 0 ”.

With the exception of additional control equipment.

10. LIGHTS

MAIN LINE
BLUE WARNING LIGHT

INDICATES THAT THE CONTROL PANEL IS POWERED UP

MOTOR ON
GREEN WARNING LIGHT

INDICATES THAT THE MOTOR IS RUNNING

THERM. PROT.
RED WARNING LIGHT

INDICATES THAT THE MOTOR THERMAL CUTOUT HAS TRIPPED

11. MAINTENANCE

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

The panel does not require any routine maintenance provided that their working limits are observed. Any maintenance operations must be performed by qualified and experienced personnel, in compliance with the safety regulations in force.

DANGER!
Make sure that the panel is disconnected from the power supply before performing any maintenance operations.

12. WASTE DISPOSAL

After the control panel has been installed and started, the customer must provide for the appropriate elimination/disposal of the waste materials according to the legislation locally in force.
If the control panel or parts of it must be taken out of service and dismantled, follow local regulations regarding sorted waste disposal. Refer to the appropriate recycling centres.

CAUTION: Contamination of the environment with hazardous substances such as battery acid, fuel, oil, plastic, copper, etc., may cause serious damage to the environment and endanger people's health.

13. WARRANTY

Refer to the sales documents for any information.

14. SPARE PARTS

Always state the exact model identification number and construction number when requesting technical information or spare parts from our sales and service centre.

Use only original spare parts when replacing any faulty components.

The use of unsuitable spare parts can cause malfunctions, personal injury and damage to property.

15. CONFORMITY DECLARATION

FOURGROUP S.r.l. with head office in Polverara – Padua – Italy, states that the product described below

		X		-		X		-	
MODEL	LINE		VOLTAGE		N° MACHINE		POWER	I.P	BOX TYPE

complies with the provisions of the following European directives, in addition to the national implementation legislation:

- Machine Directive 2006/42/CE
- Low voltage directive 2014/35/UE and subsequent amendments;
- Electromagnetic Compatibility 2014/30/EU and subsequent amendments and complies with the following technical standards;
- EN 61439-1, EN 61439-2, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3.

Polverara – Italy,

TECHNICAL MANAGER

(Grigoletto Per. Ind. Walter)

16. OPTIONALS

Each CAPRARI Spa electric control panel can be customized by adding suitable components and achieve the most complex functions.

It is therefore possible to implement the standard control panel using optionals to provide increased reliability and control for the various functional processes.

The following range of optionals can be fitted:

- 3 probe level check;
- PT100 thermistor protection relay (only for submersible motor-driven pumps);
- Level check using a water detection probe in seal chamber with warning L.E.D.
- Thermostat-controlled condensation resistance;
- Voltmeter;
- Ammeter;
- Wattmeter;
- Daily cam timer;
- Pump alternating relay;
- Impulse counter for start frequencies;
- Voltmetric commutator;
- Hour meter;
- Phase sequence relay;
- Protection devices for over/under voltages;
- Manual reset level control;
- Clicson thermostat and warning alarm for excessive motor temperature

A description of the optionals together with their functions is provided in the following pages.