

PANEL FOR CONTROL AND PROTECTION OF IRRIGATION MOTOR PUMPSET TYPE CEM-380

Complete with electronic transmitter (electronic pressure switch) and digital pressure gauge for pump water pressure.

INSTRUCTION AND USER MANUAL



It is equipped with display to the following functions:

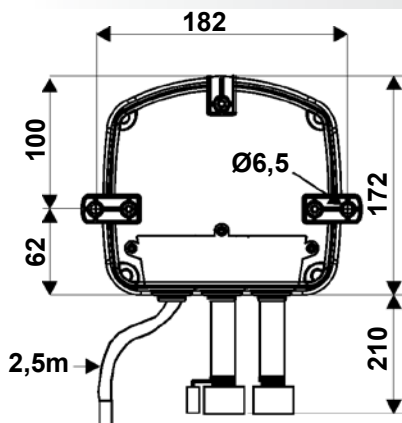
- pump protection exclusion
- battery and oil lights
- protections intervention
- hour-meter
- timer
- pump water pressure gauge
- fuel level indicator
- tachometer
- battery voltmeter

PROTECTS THE MOTOR PUMP GROUP SET BY THEM IN THE EVENT OF:

- low oil pressure
- over-temperature
- belt breakage
- minimum fuel level
- available A1
- A2 (low diesel pressure)
- low coolant level
- insufficient pump water pressure
- pump water overpressure

Assembly on the machine and in the open air.

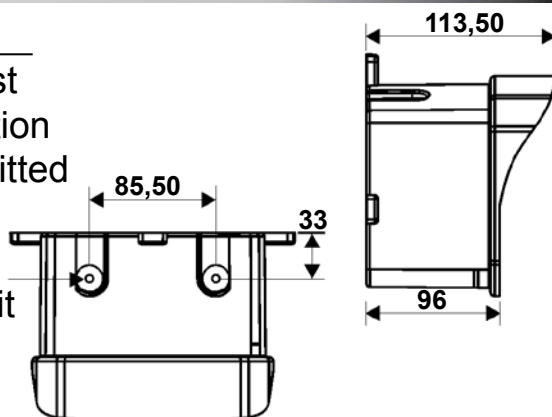
DIMENSIONS



Fixing system

With two or three clamps

On request with vibration dampers fitted on the top part of the control unit



PARMA

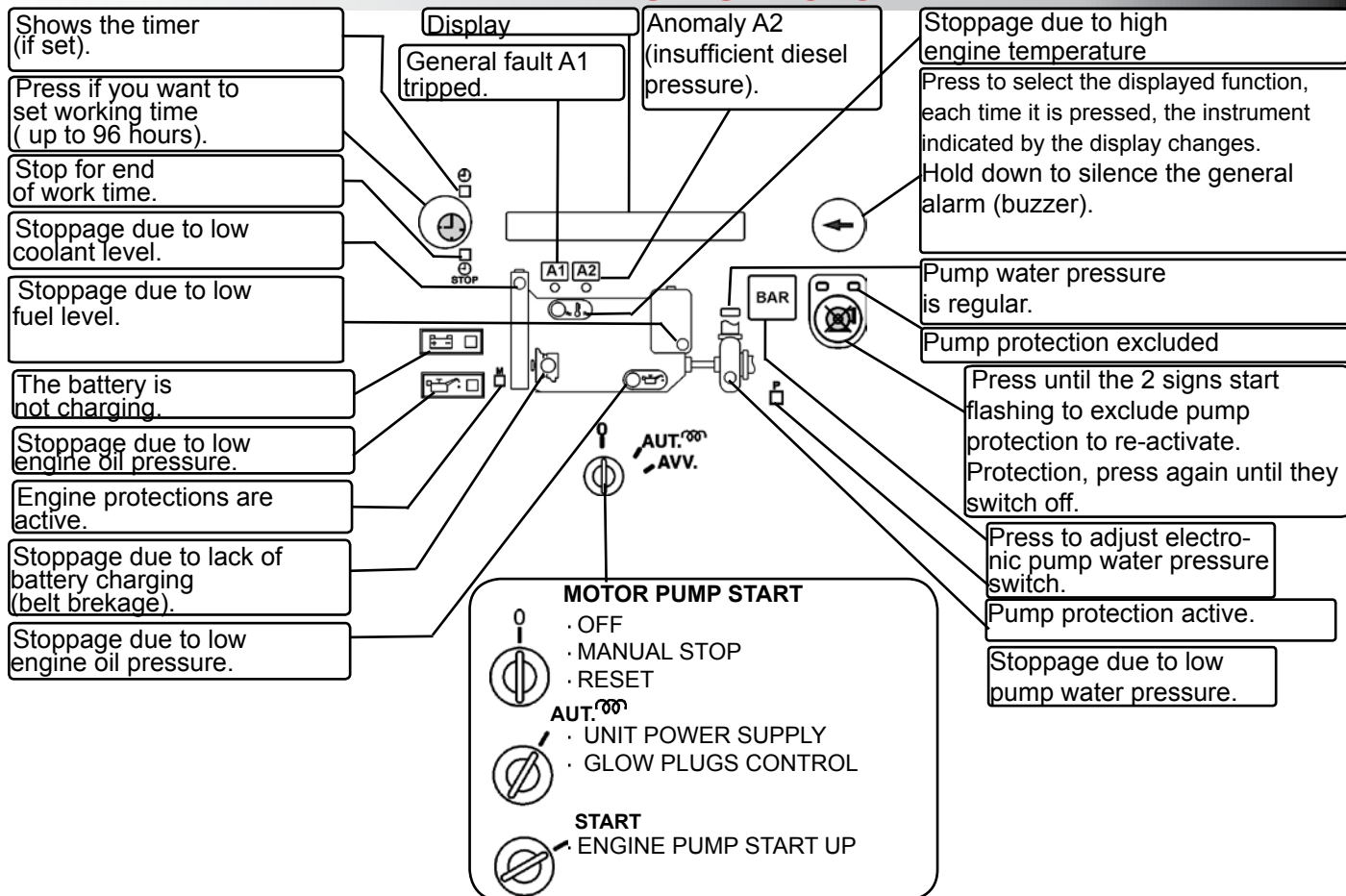


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BRIEF INSTRUCTIONS



TECHNICAL DATA

Battery voltage supply	12 Vdc 24 Vdc
Voltage supply	8 ÷ 32V
Circuit loading with key at zero	0 mA
Tachometer	Max 4000 RPM precision ± 10 RPM
Timer	1 ÷ 96h
Instruments precision: battery voltmeter, fuel level gauge	2%
Hour-meter	5 digit
Max load of the outputs: <ul style="list-style-type: none"> starting motor (black) stopping (yellow) preheating (blue/orange) lighthouse (brown) general alarm (red/green) 	40A 3A 3A 3A 3A
Pump water pressure gauge	0 ÷ 21 bar
Pump water pressure transmitter: <ul style="list-style-type: none"> Maximum permissible pressure With pressure 4 ÷ 14 bar With pressure 1 ÷ 4 bar 	21 bar differential 2 bar differential 1 bar
Degree of protection: <ul style="list-style-type: none"> Box front rear Connector 	IP54 IP23 IP20
Installation conditions	for external use
Temperature range	-20 ÷ +60°C
Weight	1000 g

OPERATION

OIL AND BATTERY INDICATOR LIGHTS



Lit up with key on "AUT", they switch off with the engine running



and regular oil pressure and battery charge system.


SETTING ELECTRONIC PRESSURE SWITCH ADJUSTMENT (TRANSMITTER) WATER PUMP

Check the system pressure by replacing the traditional pressure switch.

PUMP PROTECTION

NO ADJUSTING IS REQUIRED.

P

The pump protection is enabled when warning lights PUMP PROTECTION ACTIVE  come on after the water pressure has remained stable for 2 consecutive minutes, in any case 10 minutes after the engine started. Intervention of the protection (5 seconds after the pressure goes up or down by **two bars**) stops the engine and is shown on the display:

OVERPRESSURE
Pump water

or

INSUFFICIENT WATER
PRESSURE

Insufficient water
pump pressure
(subpressure)

However it is possible to change the two bars of pressure

BAR

lowering (subpressure), by pressing button

This change is deleted, when the engine is stopped.

OVERPRESSURE remains set to two bars, this value is added to the working pressure (for example, working pressure 9 bars overpressure 11 bars)

Press to set the
SUBPRESSURE
value


BAR

WORK. PRESS. 10
SUBPRESSURE 08




Press to select the
WORKING PRES-
SURE


TIMER

Enabled with key on "AUT", it makes it possible, if necessary, to have the motor pump work for an adjustable length of time (maximum 96 hours), at the end of which it stops and the WORK TIME OVER  sign lights up on the display.


The work time is set by pressing the push-button  ( lights up) until the desired value appears on the

DISPLAY . On releasing the push-button, the timer automatically starts working, continuously displaying the remaining work time.

CANCELLING THE SET TIME

To zeroing the set time there are two methods: -keep the push-button  pressed until it reaches zero or - by turning the starter key onto "ZERO" (the engine pump will stop).

PUMP PROTECTION EXCLUSION (ENABLED ONLY WITH ENGINE RUNNING)

The push-button  excludes pump protection:


exclusion is obtained by keeping it pressed for at least 3 consecutive seconds; the function is indicated by the two

intermittent lights,



This exclusion is cancelled by pressing the push-button again or by turning the start key onto "ZERO".

ENGINE PROTECTIONS


The engine protections are enabled when the ENGINE PROTECTIONS ACTIVE light  comes on, (20 seconds after the end of starting impulse and however 1 minute after positioning the key on "AUT"). Interventions of the protection probes (fitted on the engine), indicated by the relevant lights, stop the engine, they are memorised and can be split into two groups:

Immediate for:

- OIL PRESSURE SWITCH
- OVERTEMPERATURE SWITCH



Delayed by 5 seconds for:

- A1 ANOMALY PRESENT
- A2 (LOW FUEL PRESSURE)
- BATTERY CHARGING ALTERNATOR (BELT BREAKAGE) 
- FUEL LEVEL SWITCH
 - flashing signal: 20% fuel reserve (T) (WITHOUT ENGINE STOP)
 - Signal always on: stop for minimum fuel level (W)
- PROBE FOR COOLANT LEVEL



OPERATION

CONTROLLING THE CONNECTION OF THE PUMP WATER ELECTRONIC PRESSURE GAUGE (TRANSMITTER)

Turning the key to the AUT position stops the electronic pressure gauge.
Control is activated 1 minute after the completion of the starting pulse.

Intervention is highlighted by the relevant indicators

WATER TRANSMITTER STOPPED



flashing warning light


and stops the motor pump after 2 seconds.


To exclude intervention, press the push-button



PUMP PROTECTION EXCLUSION.

PUMP PROTECTION

The pump protection is enabled with the switching on of the ACTIVE PUMP PROTECTION (after 2 consecutive minutes of stable water pressure, indicated by the visual signal REGULAR PUMP PRESSURE ) and in any case, 10 minutes after the start of the motor pump).

The intervention of the protection (5 seconds after the increase or decrease of the pressure) stops the engine and is indicated by the visual signal for  LOW PUMP WATER-PRESSURE or WATERPUMPOVERPRESSURE.

RESET : is obtained by turning the start key onto "ZERO".

STOPPING THE ENGINE PUMP

The control unit shut down the engine in three conditions:

- turning the starter key onto "ZERO".
- protection intervention.
- timer intervention at the end of the work period.

The unit adapts to two different stop system:


- by working the ELECTROMAGNET for 20 seconds which pulls the STOP lever.
- by cutting off power to the SOLENOID VALVE shutting off the flow of fuel.

EMERGENCY STOP ON REQUEST FUNCTION

The emergency stop can be activated in all working conditions, by mounting one or more click-down push-button. On the display it's reported

EMERGENCY
STOP

GLOW PLUGS PREHEATING FACTORY-EXCLUDED

Is activated with key in AUT  the display shows the phrase

GLOW PLUGS
PREHEATING

The duration of the preheating action can be set.

Is indicated on the display when the action has ceased

ENGINE
STARTING

GENERAL ALARM

This can be obtained by fitting on the outside an optical and/or acoustic signaller to be connected to the RED/GREEN wire. It is activated on protection intervention.

INSTRUMENT

The control unit comprises five instruments selectable in sequence by pressing the button



HOUR-METER

- Total hours of operation (with the engine running the signal :
pulsates to indicate the correct functioning of the HOUR-METER.

PRESSURE GAUGE
TACHOMETER

- Pressure water pump
- Speed of motor pump

FUEL LEVEL INDICATOR

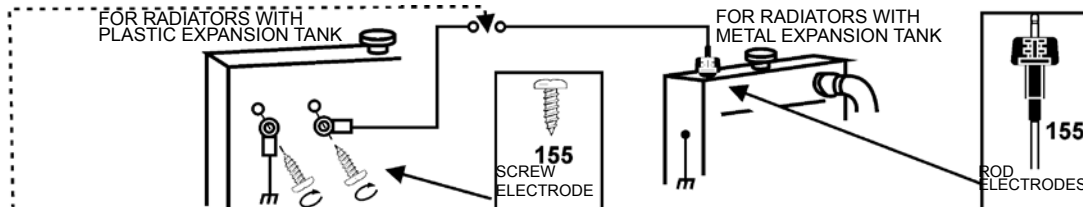
- Fuel level percentage

VOLTMETER

- Battery voltage

} ON REQUEST

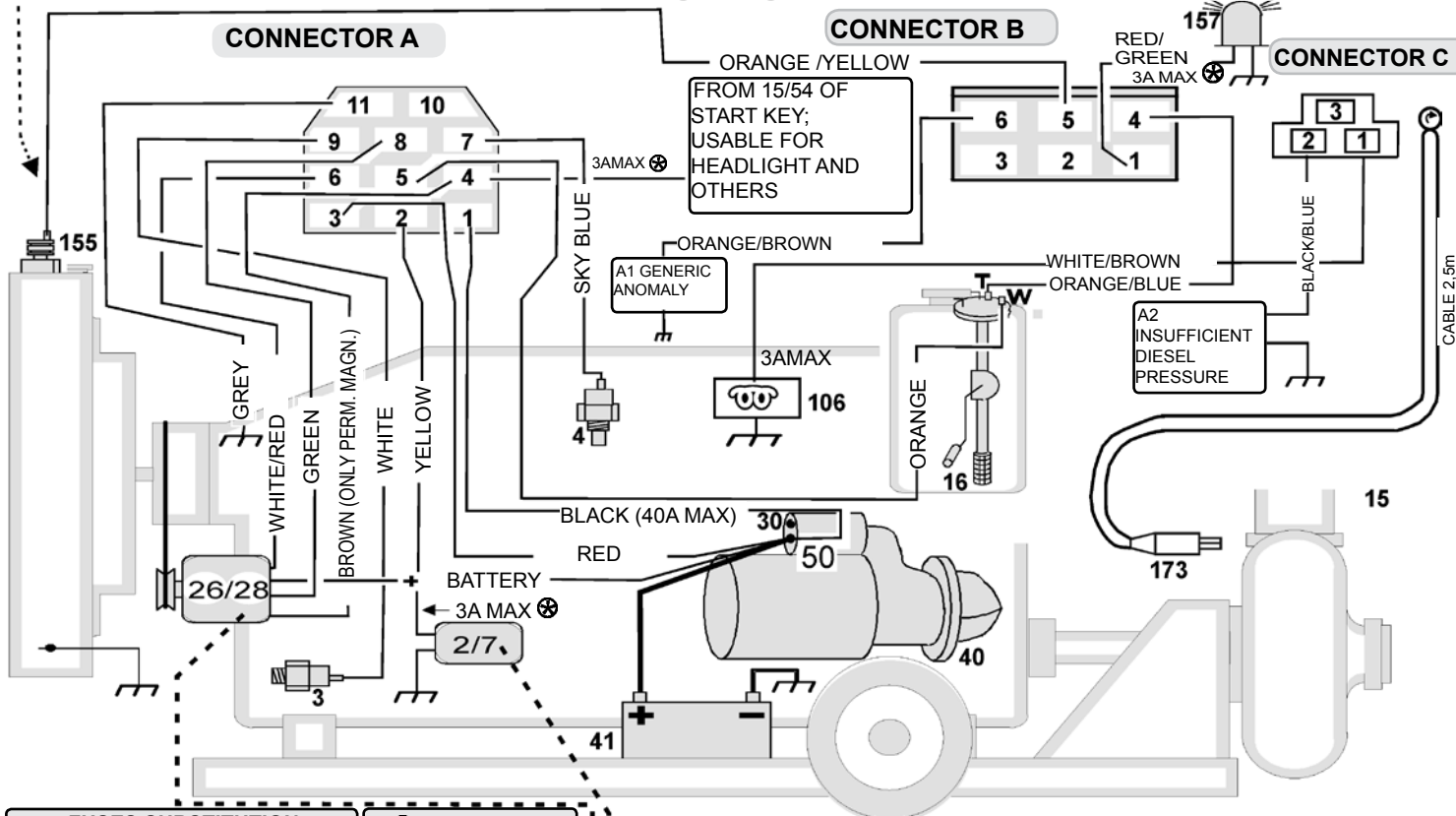
COOLANT LEVEL PROBE



! If the function - LOW COOLING LIQUID LEVEL is not used: connect YELLOW/ORANGE WIRE to earth.

YELLOW/ORANGE

WIRING DIAGRAM



FUSES SUBSTITUTION

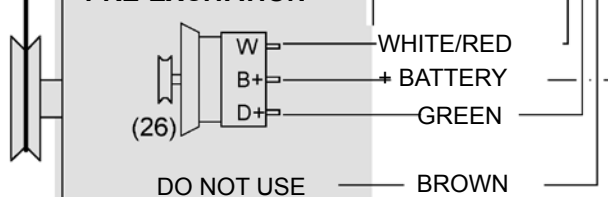
THE FUSES ARE INSIDE THE CONTROL UNIT. TO ACCESS THE INSIDE REMOVE THE FRONT PANEL BY UNSCREWING THE FOUR SCREWS. REPLACE WITH A FUSE OF THE SAME VALUE.

⊗ ATTENTION

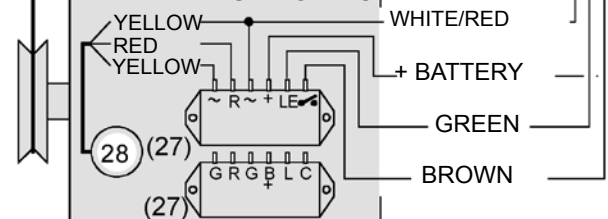
FOR LOADS WITH HIGHER ABSORPTION 3A IT IS ESSENTIAL TO PUT A RELAY

CHARGE BATTERY ALTERNATOR:

PRE-EXCITATION



PERMANENTS MAGNETS



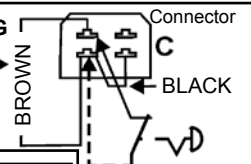
EXCITED IN STOP MODE

ELECTROMAGNET : activates the engine stop lever.

EXCITED IN DRIVE

SOLENOID : to close the fuel.

ELIMINATE THE BRIDGE WHEN CONNECTING THE EMERGENCY BUTTON



ACCESSORIES ON REQUEST

- (2/7) ELECTROMAGNET OR ELECTRO-VALVE ⊗
- (4) THERMOSTATIC SWITCH
- (15) WATER PUMP PRESSURE SWITCH
- (16) FUEL FLOAT
- (155) RADIATOR LIQUID LEVEL PROBE
- (173) PUMP WATER PRESSURE TRANSMITTER (SUPPLIED)

MOUNTED ON ENGINE

- (3) OIL PRESSURE SWITCH
- (26/28) PERMANENT MAGNETS CHARGE ALTERNATOR OR PRE-EXCITATION CHARGE ALTERNATOR
- (27) ALTERNATOR REGULATOR
- (40) STARTING MOTOR
- (41) BATTERY
- (106) GLOW PLUGS
- (157) VISUAL INDICATOR (GENERAL ALARM) ⊗

EMERGENCY STOP

This can be obtained with a latching button on releasing the emergency button, starting or motion of the engine is stopped. To reset, release the button, and place the start key onto ZERO.

INSULATE POSSIBLE CABLES NOT CONNECTED

STOP SYSTEM ARRANGEMENT

The control panel is arranged to command stop with ELECTROMAGNET



To stop with SOLENOID cut and insulate the BLUE/BROWN lead.

USER PROGRAMMING

ACCESS TO PROGRAMMING MODE.

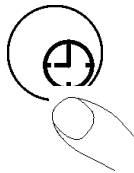
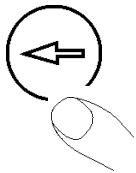
Turn the key to



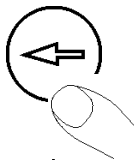
Press (5") at the same time to DISPLAY
USER
PROGRAMMING

EXIT FROM PROGRAMMING MODE.

Re-position the key to zero



USER
PROGRAMMING

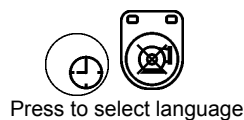


PRESS TO DISPLAY THE
REQUIRED PROGRAMMING

LANGUAGE
CHOICE

LANGUAGE CHOICE. The language set up in the factory is ITALIAN; the languages that can be selected are: ENGLISH - FRENCH - GERMAN - SPANISH and PORTUGUESE.

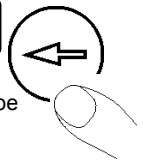
LANGUAGE CHOICE
ENGLISH



Press to select language

LANGUAGE CHOICE
ENGLISH

Press and wait for
PROGRAMMED to be
written.



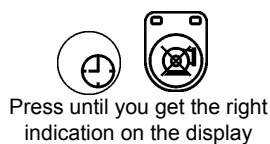
**Bring the engine to idle at constant known
speed for example via a portable tachometer.**

TACHOMETER
SETTING

example

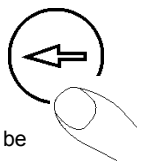
1500 RPM

1500 RPM



Press until you get the right
indication on the display

Press and wait for
PROGRAMMED to be
written.



NOTICES

Only for starting and surveillance of the diesel motor pump and stops it if there are anomalies in the parts controlled by probes.

It has been designed to be installed also on the machine.



Warning:
adhere closely to the following advice

- Install in such a way that there is always adequate heat disposal.
- Always follow the Wiring Diagram on page 5 when making connections.
- All technical interventions must be performed with the engine stationary and terminal 50 of the starter motor disconnected.
- Check that the line loading and the consumption of the connected equipment are compatible with the described technical characteristics described on page 2.
- Always install under other equipment which produces or spreads heat.
- Never use a battery charger for the emergency start-up, the control unit could be damaged.
- In order to safeguard people and equipment, before connecting an external battery charger, disconnect the electrical system terminals from the battery poles.
- Never disconnect the battery terminals with the motor pump running.

THIS CONTROL UNIT IS NOT SUITABLE FOR OPERATING IN THE FOLLOWING CONDITIONS:

- Where the environmental temperature is outside the limits indicated in the Technical Data on page 2.
- Where there are high levels or heat from radiation caused by the sun, ovens or the like.
- Where there is the risk of fire or explosions.
- Where the control unit can receive strong vibrations or knocks.

ELECTROMAGNETIC COMPATIBILITY

This control unit functions correctly only if inserted in plants which conform with the CE marking standards; it meets the exemption requirements of the standard EN61326-1 but it cannot be excluded that malfunctions could occur in extreme cases due to particular situations.

The installer has the task of checking that the disturbance levels are within the requirements of the standards.

CONDUCTION AND MAINTENANCE

The following maintenance operations should be performed every week:

- check that the indicators function;
- check the batteries;
- check that the conductors are tight, check the condition of the terminals.

UNLESS WE MAKE A WRITTEN DECLARATION STATING THE CONTRARY, THIS CONTROL UNIT IS NOT SUITABLE FOR USE AS A CRITICAL COMPONENT IN EQUIPMENT OR PLANTS RESPONSIBLE FOR KEEPING PERSONS OR OTHER LIVING BEINGS ALIVE.

YOUR ELECTRICAL TECHNICIAN CAN ASK US ANYTHING ABOUT THIS CONTROL UNIT BY TELEPHONING ONE OF OUR TECHNICIANS

ACCESSORIES ON REQUEST

RADIATOR COOLANT LEVEL PROBE

ROD ELECTRODE (complete with: rivet connection, bolt, nut, washer, seal and female connector)

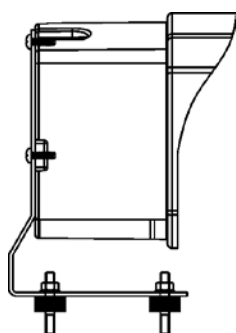
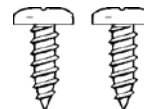
type AST-015/00 code 40241012



SCREW ELECTRODE

(complete with lugs)

type E-25 code 40190115



SUPPORT FOR INSTALLATION ON BASE

The support facilitates replacement of control units of type CEM-330 and CEM-350

type CRU cod. 40493382

ACCESSORIES KIT

Pre-wired female connector

type CEM-380 cod. 70804417

kit rods CEP-CEM cod. 40804362

ORDERING DATA

type CEM-380 cod. 00210731

CONFORMITY DECLARATION



The company Elcos s.r.l. assumes full responsibility for declaring that control unit:
type **CEM-380**

installed and used in the ways and for the purposes described in the user instruction manual complies with the essential requirements and other relevant provisions laid down by the following directives:

- 2004/108/CE related to the electromagnetic compatibility and that repeals the directive 89/336/CEE,
- 2011/65/UE on the restriction of the use of certain hazardous substances in electrical and electronic equipment, because it is built and functions in accordance with the harmonized Standards: EN61326-1, EN61326/A1, EN61000-4-2, EN61000-4-4, EN61000-4-6, EN60529.

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Parma, 25/06/2013

President

Margini Enzo