

PANEL FOR CONTROL AND PROTECTION OF IRRIGATION MOTOR PUMPSET

TYPE CEM-256/10



COMPLETE OF GSM TELEPHONE ANNUNCIATOR AND COMMAND SYSTEM

- Notifies up to 3 users via SMS message when the motor pump is on the alarm
- Allows you to control the stopping and restarting of the pump
- Allows you to view the status of the main tools of the control unit
- Comes complete with high-gain antenna
- By simply starting, it automatically controls the motor pump
- Pump water electronic pressure switch
- Digital pump water pressure gauge
- Assembly also on the machine and in the open air.

MADE TO:

PROTECT

motor pump sets by stopping them in the event of:

- low oil pressure
- over-temperature
- belt breakage
- minimum fuel level
- low coolant level
- low pump water pressure
- pump water overpressure
- A1 available fault
- low fuel pressure

DISPLAY

on the panel the functions of:

- hour-meter
- oil pressure gauge
- water or oil thermometer
- tachometer
- pump water pressure gauge
- timer
- fuel level gauge
- pump protection exclusion
- battery and oil lights
- protections intervention
- emergency stop

PARMA

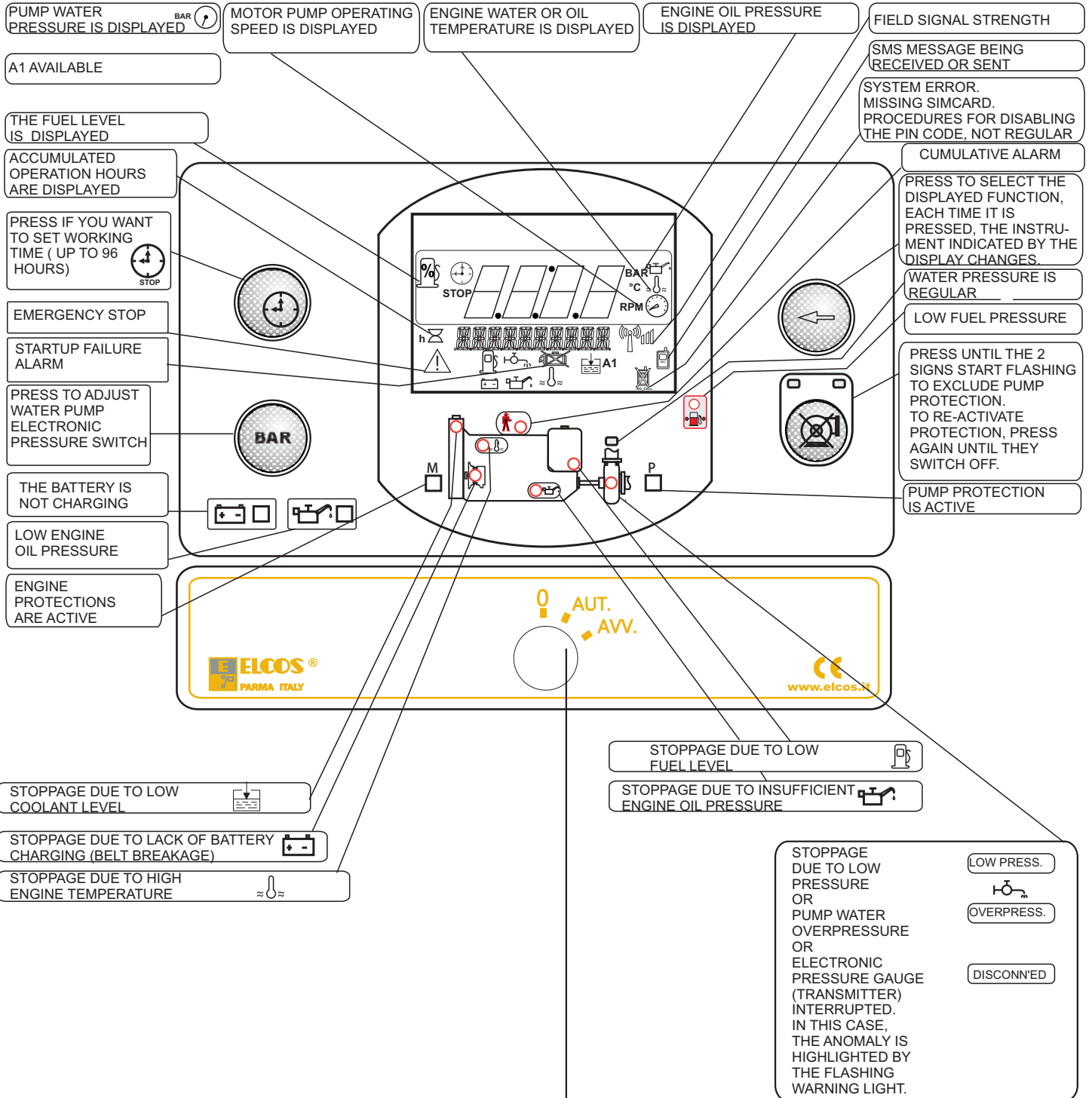


ELCOS[®]

ITALY

BRIEF INSTRUCTIONS

After starting, the motor pump protects itself automatically



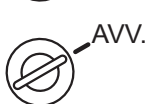
START KEY



- OFF
- STOPPAGE IN ALL OPERATING CONDITIONS
- RESTORE PROTECTIONS, CANCEL PUMP PROTECTION EXCLUSION AND TIMER, DEACTIVATE INSTRUMENTS.



- CONTROL PANEL SUPPLY
- TURNS ALL THE LIGHTS ON FOR 2 SECONDS (EFFICIENCY CHECK)



- PRESSURE SWITCH ADJUSTING (SEE PAGE 3)
- MOTOR PUMP START UP

ADJUSTING THE PUMP WATER ELECTRONIC PRESSURE SWITCH (TRANSMITTER)

It controls the pressure of the system, replacing the conventional pressure switch.

PUMP PROTECTION

No adjusting is required

The protection of the pump is enabled when the PUMP PROTECTION ACTIVE information comes on, after the water pressure has been steady for 2 consecutive minutes and in any case after 10 minutes from starting of the engine.

Intervention of the protection occurs 5 seconds after the pressure goes up or down by **two bars**, stops the engine and is shown on the display:



OVERPRESS.

Pump water overpressure

or

LOW PRESS.

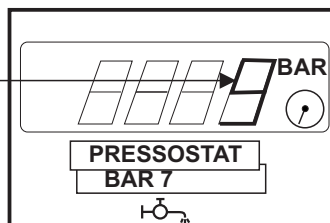
Low pressure (low pressure)

It is possible to change the **two bars** of the pressure lowering (low pressure) by using the key This change is cancelled when the engine stops.

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

WORKING PRESSURE

Press to adjust the value of low pressure (PRESSOSTAT)



Press to select the pump water pressure gauge

TIMER

Enabled with key on "AUT", it makes it possible, if necessary, to have the motor pump work for an adjustable length of time (96 hours maximum), 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.

- 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".

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.

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").

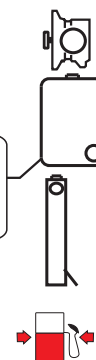
Interventions of the protection probes (fitted on the engine), indicated by the relevant lights, stop the engine, they are memorised and can be split into two groups.

Delayed by 2 seconds for:

- OIL PRESSURE SWITCH
- OVERTEMPERATURE SWITCH

Delayed by 5 seconds for:

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



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 and stops the motor pump after 2 seconds.

DISCONNECTED



flashing warning light

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 WATER PUMP OVERPRESSURE or LOW PUMP WATER PRESSURE



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

STOPPING THE MOTOR PUMP

The control unit shuts down the engine in five conditions:

- turning the starter key onto "ZERO"
- protection intervention
- timer intervention at the end of the work period
- giving the command from a cell phone
- through intervention of the external emergency.

The unit adapts to two different stop systems

- 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.

ANOMALY REPORT

Simultaneously press four buttons (for at least 5 seconds): the word **HISTORICAL** appears on the display. Release the buttons, and for 10 seconds the display will show the most recent anomaly that caused the pump to stop.

AUTOMATIC RESTART WITH CELL PHONE

It is not possible to restart the motor pump with the key in the 'zero' position.

Restarting is possible after the pump has been stopped by cell phone or timer.

Before the start, the internal annunciator sounds for 8 seconds, and, after a 3 second pause, startup begins. To facilitate startup, a special circuit emits a series of four, 5-second pulses, with a 5-second delay between each pulse.

START UP FAILURE

Blocks the startup cycle if the pump has not started up after the fourth pulse.

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.

EMERGENCY STOP

It can be obtained in all functioning conditions, mounting one or more release-type buttons. It is indicated by the visual signal and enables the general alarm.

INSTRUMENT SELECTION

The control unit comprises six instruments:

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

INSTRUMENTS WHICH CAN BE SELECTED IN SEQUENCE BY PRESSING THE BUTTON

Each time it is pressed, IT SHOWS the next instrument. WHEN THE TIMER IS set, the duration of the display of the instrument is limited to 30 seconds from the activating of the button; the TIMER then reappears.

- PRESSURE GAUGE - Engine oil pressure

- THERMOMETER - Engine oil and water temperature

- TACHOMETER - Speed of motor pump

- PRESSURE GAUGE - Pump water pressure

- INDICATOR - Fuel level percentage

} TRANSMITTERS FITTED ON ENGINE
ON REQUEST

GSM TELEPHONE ANNUNCIATOR AND COMMAND SYSTEM GSM

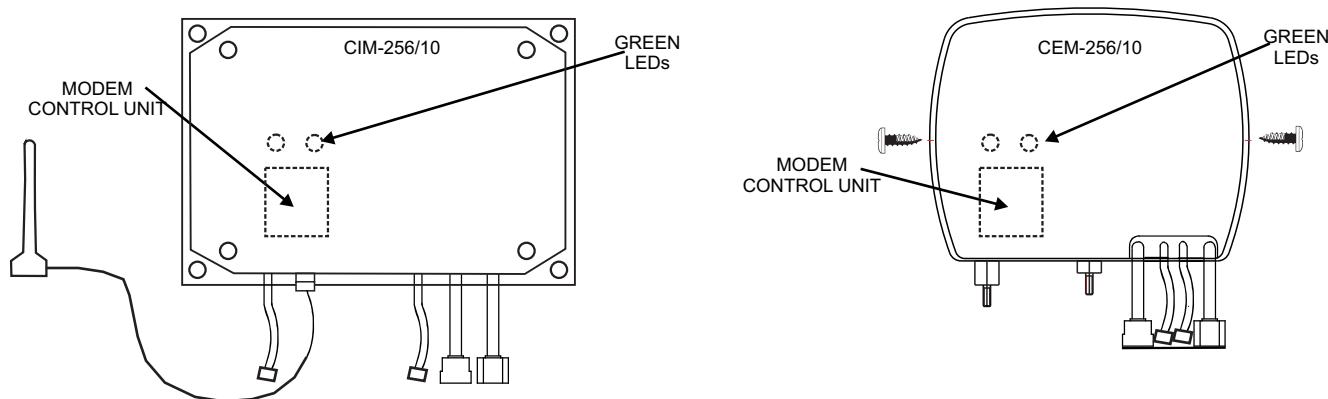
(Modem integrated into control unit)

FUNCTIONS AND PROGRAMMING

Warns with an SMS message that the motor pump is in alarm mode.

- **Programming of phone numbers to notify when the motor pump is in alarm mode.**
- **Possibility of displaying the status of the motor pump.**
- **Possibility of switching off the pump protection.**
- **Setting of minutes of running.**
- **Possibility of commanding stopping and restarting of the motor pump.**

To insert the SIM CARD and program the telephone warning device remove the cover of the control unit.



Telephone number


The telephone number is supplied by the provider once the contract has been signed. This is the number you should dial from your cell phone when you want to interact with the modem of the control unit.


Procedure for disabling the PIN code

Once the SIM card has been purchased from a telephone provider on any contract, the PIN needs to be disabled. To do this, it is necessary to insert the SIM in a normal private-use cell phone, then enter the PIN supplied by the provider. Browse through the cell phone menu to locate the procedure for disabling the PIN. Carry out the disabling procedure and check that, on turning the phone on again, the PIN is not requested.

Turn off the phone and take out the SIM card. **Ensure that the motor pump is not running (the display will be blank and the green leds off)**, then insert the SIM in the slot provided.

Activation

To ensure that the area around the unit is being reached by the field signal, check the graphical indicator on the display.  If necessary, position the unit's internal antenna outside the unit, at the point where the signal is strongest.

The programmings, the controls and the display of motor pump status are active with the starter key of the control unit in automatic position .

Precautions

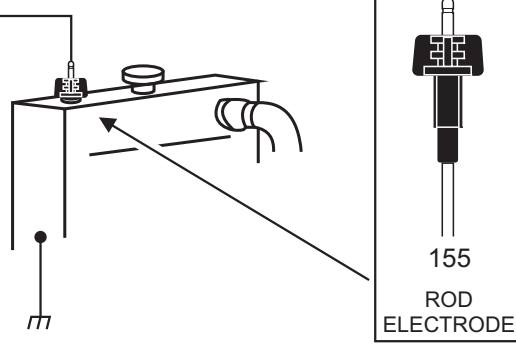
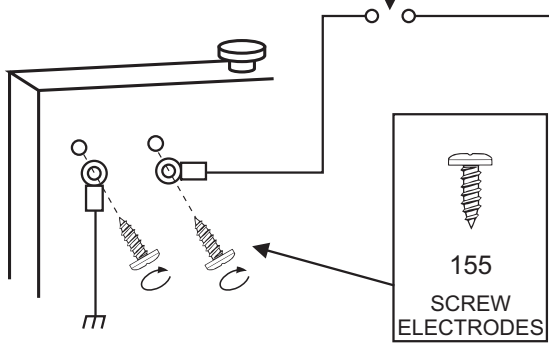
- Position the antenna vertically using its magnetic base.
- Do not connect an extension cable to the antenna cable.

INSTALLING THE CONTROL UNIT

COOLANT LEVEL PROBE

FOR RADIATORS WITH PLASTIC EXPANSION TANK

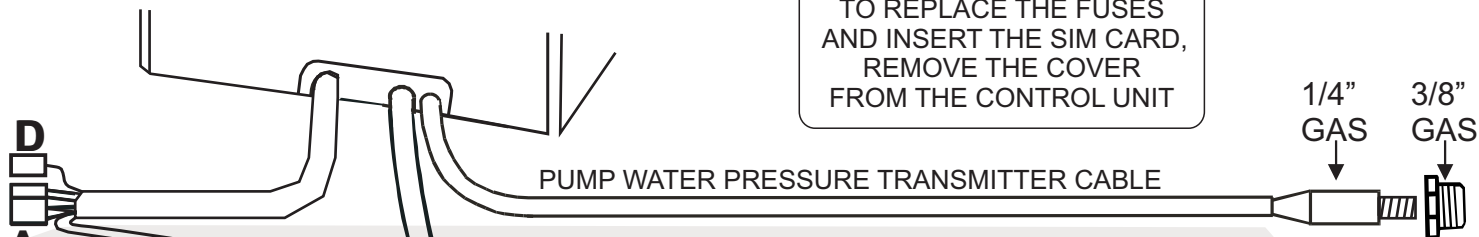
FOR RADIATORS WITH METAL EXPANSION TANK



WARNING

IF THE FUNCTION - LOW COOLING LIQUID LEVEL IS NOT USED: CONNECT YELLOW/ ORANGE WIRE TO EARTH

TO REPLACE THE FUSES AND INSERT THE SIM CARD, REMOVE THE COVER FROM THE CONTROL UNIT



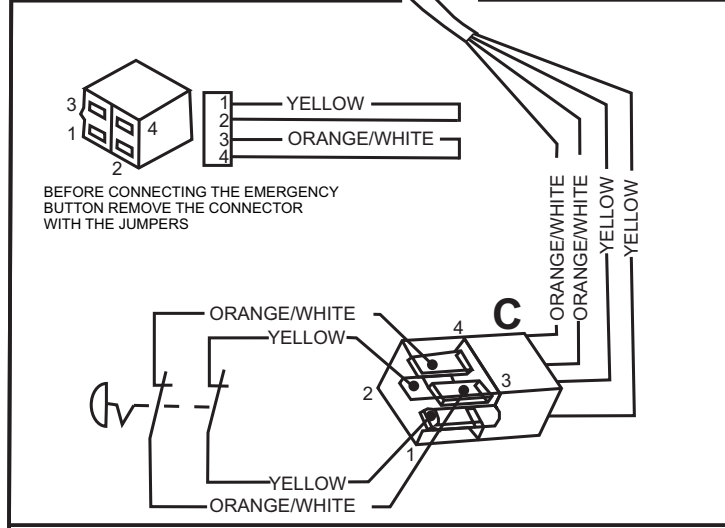
A The control unit has been designed to control stopping with an **ELECTROMAGNET**

STOP SYSTEM SET UP
To stop with the **SOLENOID VALVE** cut and isolate the **BLUE/BROWN** lead

- SET UP**
- WATER OR OIL THERMOMETER
 - OIL PRESSURE GAUGE

To view the water/oil THERMOMETER and the oil pressure GAUGE, connect the transmitters to the respective wires of the unit, then CUT and isolate the **BLACK/VIOLET** wire

CONNECTION OF EMERGENCY BUTTON



STOP SYSTEMS

EXCITED IN STOP MODE	EXCITED WHILE RUNNING
<p>WARNING! IT IS NOT POSSIBLE TO MOUNT THE EMERGENCY STOP BUTTON ON A STOP SYSTEM WITH ELECTROMAGNETS</p> <p>ELECTROMAGNET to activate the engine stop lever</p>	<p>SOLENOID to close the fuel</p>

TACHOMETER ADJUSTMENT

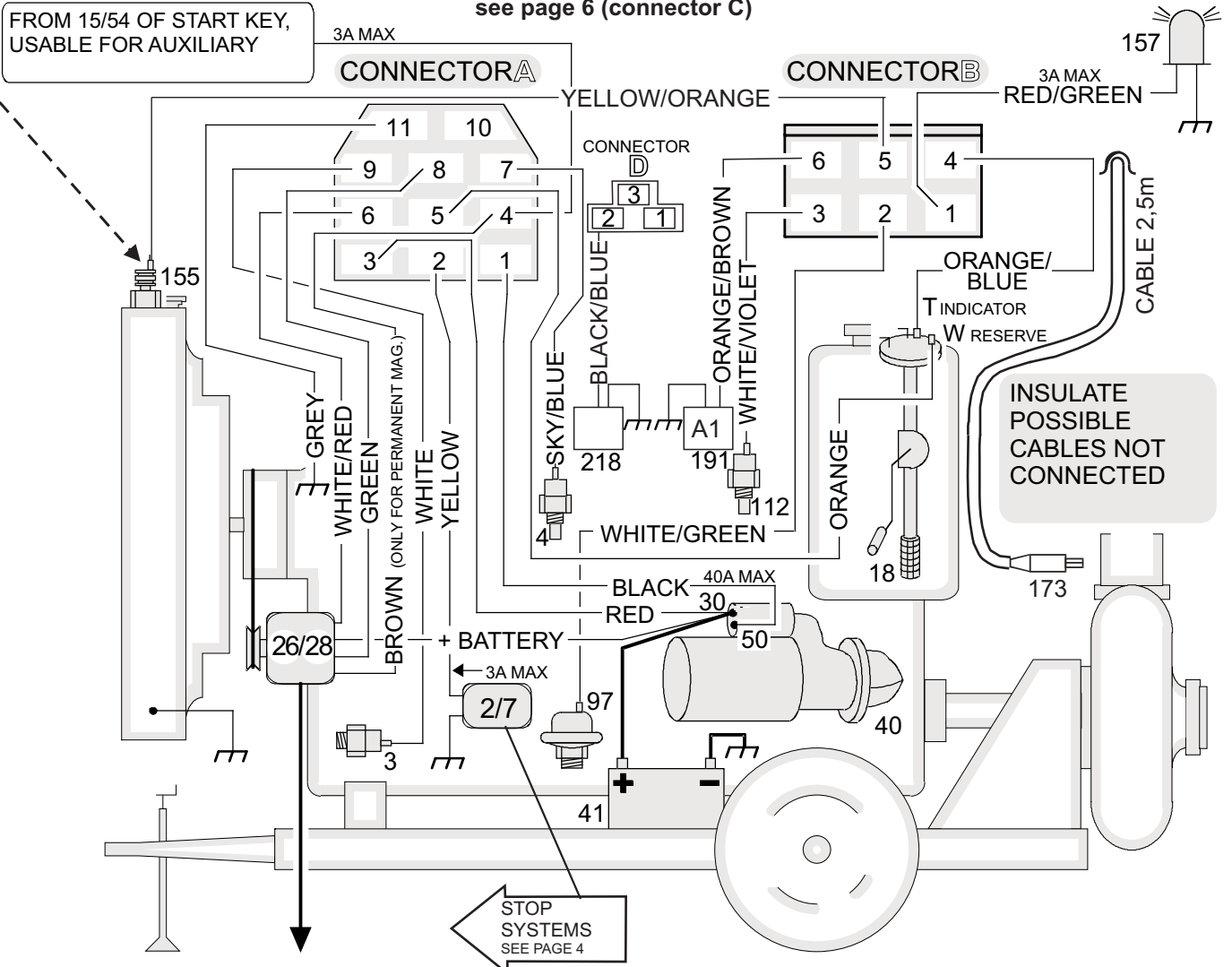
Run the engine at a constant and known rpm value (for example by means of a portable revolution counter)

Select the instrument TACHOMETER, keep the button pressed for at least 5 seconds and simultaneously press

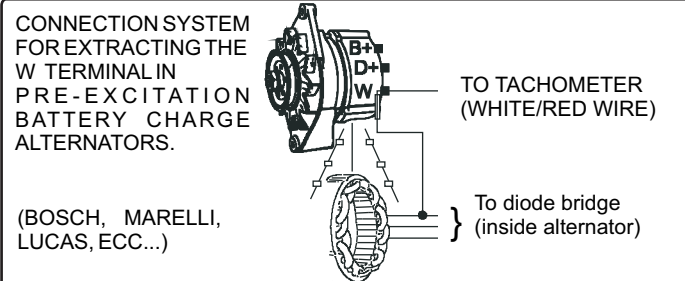
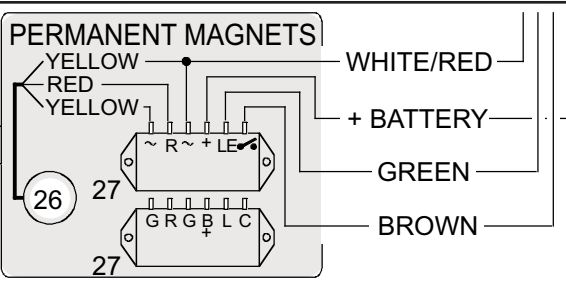
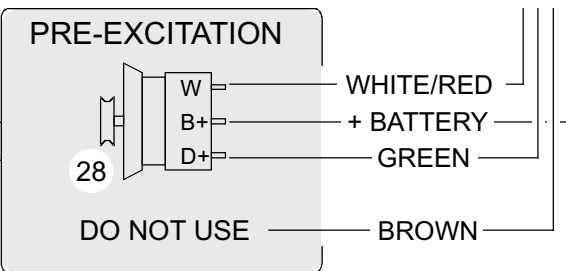
increase Or decrease until the correct reading appears on the display. Release the buttons and wait until OK appears on the display.

INSTALLING THE CONTROL UNIT

WIRING DIAGRAM TO CONNECT THE EMERGENCY BUTTON see page 6 (connector C)



CHARGE BATTERY ALTERNATOR:

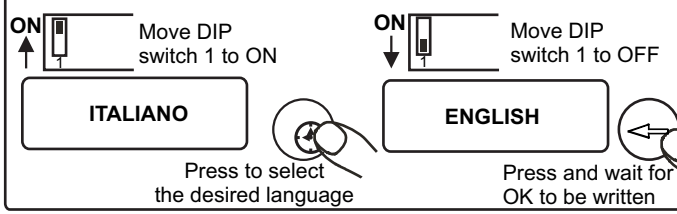


ACCESSORIES AVAILABLE ON REQUEST

- (2/7) ELECTROMAGNET OR SOLENOID VALVE
- (3) OIL PRESSURE SWITCH
- (4) THERMOSTAT
- (18) FUEL FLOAT FOR INDICATOR AND RESERVE
- (97) OIL PRESSURE TRANSMITTER
- (112) TEMPERATURE TRANSMITTER
- (155) COOLANT LEVEL PROBE
- (173) PUMP WATER PRESSURE TRANSMITTER (SUPPLIED)
- (26) PERMANENT MAGNETS CHARGE ALTERNATOR
- (27) BATTERY CHARGE ALTERNATOR REGULATOR
- (28) PRE-EXCITATION CHARGE ALTERNATOR
- (40) STARTING MOTOR
- (41) BATTERY
- (157) GENERAL ALARM LIGHT
- (191) A1 AVAILABLE FOR PROTECTION PROBE
- (218) FUEL PRESSURE SENSOR

SELECT LANGUAGE

The language set up is ITALIAN; the languages that can be selected are: ENGLISH, FRENCH, GERMAN, SPANISH and PORTUGUESE.



Notifies via SMS message when the motor pump annunciator has been activated

Should the unit indicate there is a problem with the motor pump, a message is sent to the first number. If there is no answer, 10 minutes later a message is sent to the second number, and so on. Three numbers can be set in total. The process continues for 4 times if none of the 3 users contacted sends an SMS reply to the unit using the phrase OK. Any subsequent problems with the pump result in the SMS notification process being started again.
 N.B.: It is possible that, once one of the users has sent an OK message to the unit, another error message may be sent to the second user. This is due to delays caused by traffic on the telephone network and is outwith the control of the unit.




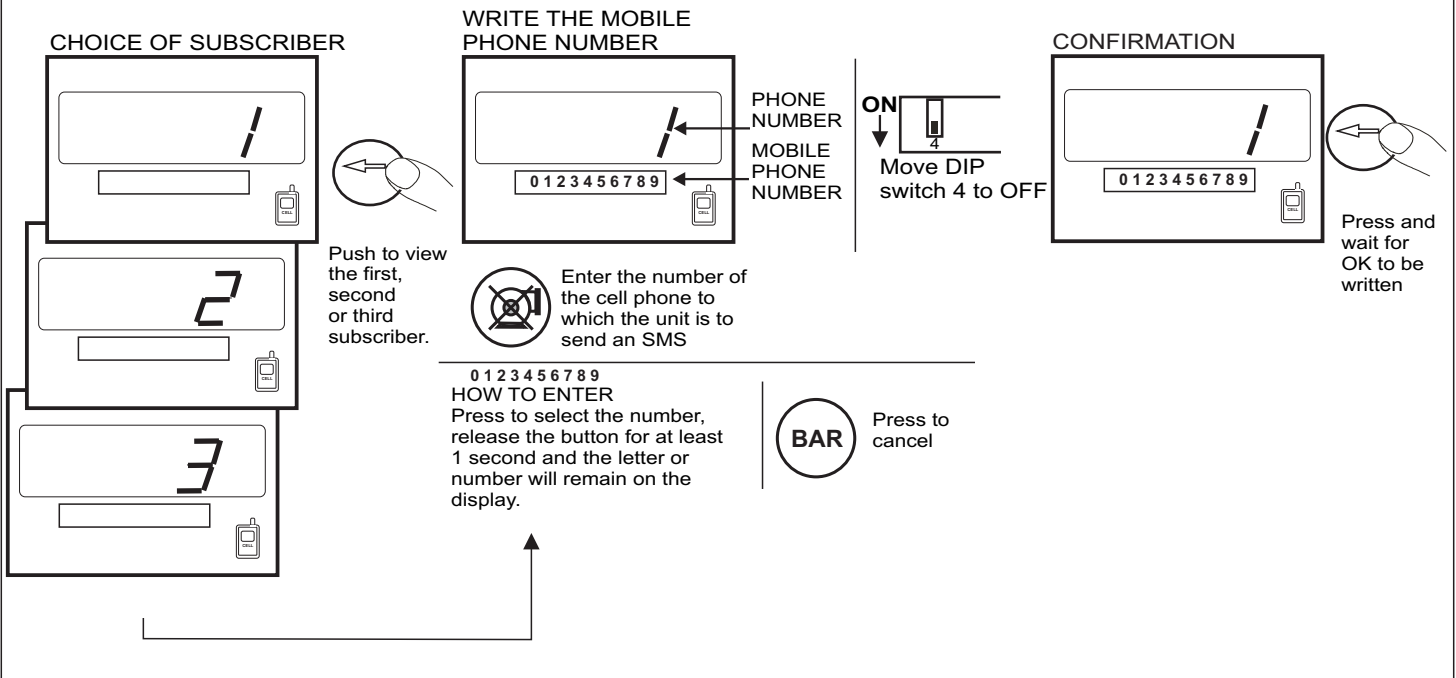
When the SMS TO ALL PHONES INCLUDED function is used (factory setting) the SMS fault messages are sent only to the telephones programmed in the list of telephone numbers of the control unit. For example: an operator who starts the motor pump from their mobile phone, and does not have their telephone number programmed in the list of telephone numbers, will NOT receive the SMS message in the event of a fault. But it will be received by the telephone with its number programmed in the control unit following the procedure described later.

Programming the cell phone numbers of the users who are to be notified when the motor pump alarm has been set off.

- DO NOT PROGRAM DURING STOPPING.
- PROGRAM WITH THE STARTER KEY OF THE CONTROL UNIT IN AUTOMATIC POSITION



ON ↑

 Move DIP switch 4 to ON (Inside the control unit)



TO CONFIRM RECEPTION OF THE **SMS WARNING MESSAGE AND STOP THE SENDING OF SUBSEQUENT MESSAGES**, SEND A MESSAGE FROM YOUR CELL PHONE USING THE PHRASE **OK** OR THE CODE **002**

After confirmation, the display will show



HOW TO VIEW THE STATUS OF THE MOTOR PUMP

To request an update on the status of the motor pump, enter the code **001** into your cell phone and send it by SMS to the unit.

On your cell phone, it is possible to view

- hour-timer
 - oil pressure gauge
 - water or oil thermometer
 - tachometer
 - pump water pressure gauge
 - fuel level
 - timer
- (displays the working time remaining before the motor pump is set to stop)
- pump protection exclusion

} On request



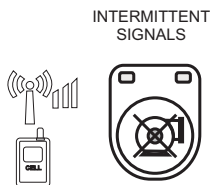
Warning:

We advise sending the **STOP-005** or **010** (pump protection switch off) command to the control unit only after making sure the control unit starter key is in the AUT position. To check this condition, send the control unit the **001** status command and wait for the reply. If no reply is received within a few minutes DO NOT send the stop or pump protection switch off commands.

POSSIBILITY OF SWITCHING OFF THE PUMP PROTECTION

To switch off the pump protection, key in **010** on the mobile phone

After the switch off command, the following is displayed:

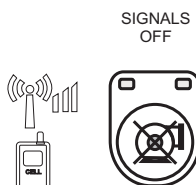


Reply message from control unit to mobile phone:

PUMP PROTECTION ON

To delete this switching off, key in **011** on the mobile phone

After the command to delete switching off, the following is displayed:



PUMP PROTECTION OFF

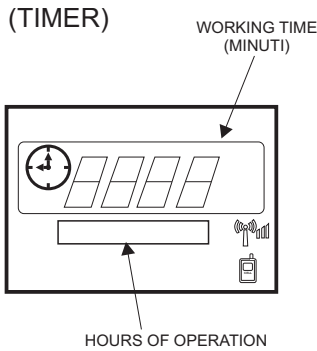
WATER PRES. 6,8 Bar

PRESSURE GAUGE 4,5 Bar

TIMER 10:15

} Example

SETTING THE MINUTES OF RUNNING



To set the the minutes (minimum 1' max 1440') of running of the motor pump after the command:

500#.....
Minutes
of running
example:

500#120
(2 hours of
running)

Wrong examples

500 space 120
500 = 120
spaces 500 # 120
500 or 120
500 # 1441

After the command, the screen displays:

Reply message from control unit to mobile phone:

OK if the setting is correct.

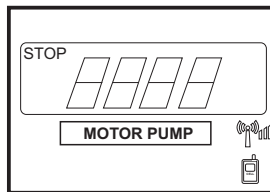
ERROR if the setting is not correct.

POSSIBILITY OF COMMANDING STOPPING AND RESTARTING OF THE MOTOR PUMP

It is only possible to stop and restart the motor pump using a single cell phone (the one that corresponds to the first number programmed into the unit). To do so, enter and send the stop code on your cell phone.

To stop or restart the unit via your cell phone, enter the code **STOP** or the code **005**

After the STOP command, the screen displays:

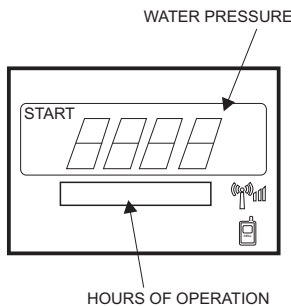


Reply message from control unit to mobile phone:

The motor pump **is not running**

the code **START** or the code **008**

After the START command, the screen displays:

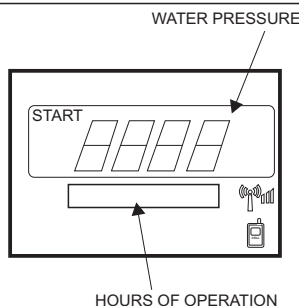


The motor pump **has started up**

Restart with pump protection switched off.

To activate this function, key in **009** on the mobile phone

After the switch off command, the following is displayed:



The motor pump **has started up.**
PUMP PROTECTION OFF

To delete the switching off, key in **011** on the mobile phone

After the command to delete switching off, the following is displayed:



PUMP PROTECTION ON

WATER PRES. 6,8 Bar
PRESSURE GAUGE 4,5 Bar
TIMER TIMER

Example

CONTROL AND PROTECTION UNIT FOR IRRIGATION ENGINE PUMP TYPE CEM-256/10

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.

NOTICES



Warning: adhere closely to the following advice

- Always install under other equipment which produces or spreads heat.
- Always follow the Wiring Diagram on pages 6-7 when making connections.
- Check that the line loading and the consumption of the connected equipment are compatible with the technical characteristics on page 12.
- All technical interventions must be performed with the engine stationary and terminal 50 of the starter motor disconnected.
- Never use a battery charger for the emergency start-up, this could damage the control unit.
- To protect the safety of persons and the equipment, before connecting an external battery charger, disconnect the electrical plant terminals from the battery poles.
- Never disconnect the battery terminals with the engine 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 12.
- 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 panel 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

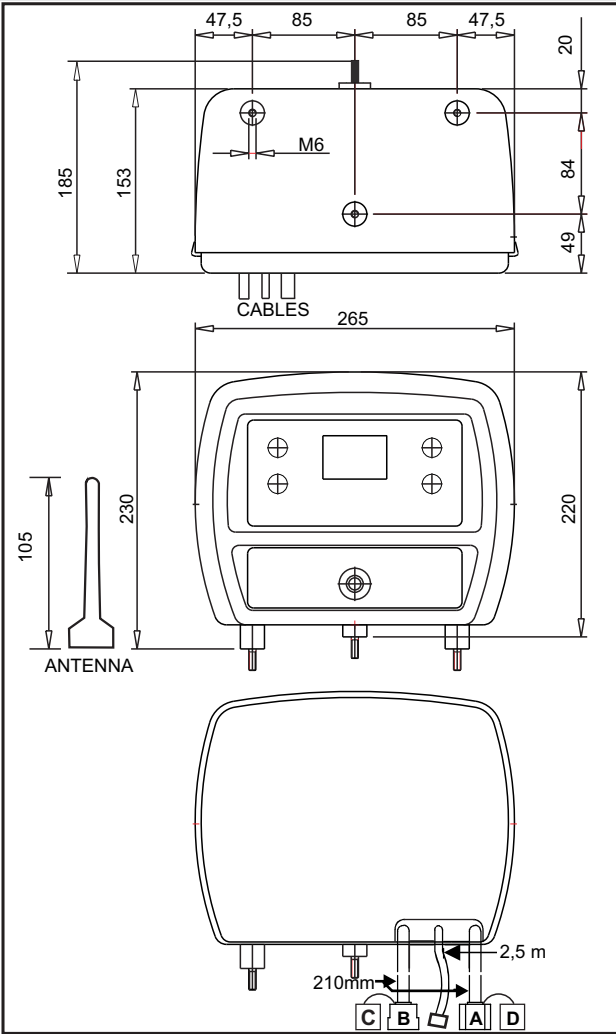
The following maintenance operations should be performed every week:

- 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

DIMENSIONS



ORDERING DATA

TYPE CEM-256/10 CODE 00 211126

TECHNICAL DATA

- BATTERY VOLTAGE SUPPLY: 12 Vdc 24 Vdc
- VOLTAGE SUPPLY: 8 ÷ 32V
- CIRCUIT LOADING WITH KEY AT ZERO 13 mAa 12 V
9 mAa 24 V
- MAX CURRENT OUTPUT
 - (STOPPING) YELLOW 3A
 - (STARTING MOTOR) BLACK 40A
 - (GENERAL ALARM) RED/GREEN 3A
 - (AUXILIARY) BROWN 3A
- TEMPERATURE RANGE -10 ÷ +60 °C
- GSM COMPATIBLE - GSM and DCS (GSM ETS1am)
- HOUR-METER 4 DIGITS
- OIL PRESSURE GAUGE 0 ÷ 7 bar
- PUMP WATER PRESSURE GAUGE 0 ÷ 21 bar
- WATER PUMP PRESSURE TRANSMITTER:**
 - **MAX. WATER PUMP PRESSURE 21 bar**
 - **WITH PRESSURE 4 ÷ 14 bar**
 - DIFFERENTIAL 2 bar**
 - **WITH PRESSURE 1 ÷ 4 bar DIFFERENTIAL 1 bar**
- ENGINE OIL/WATER THERMOMETER +20 ÷ +145°C
- TACHOMETER 4000 rpm
- TIMER 1' ÷ 96 h
- INSTALLATION CONDITIONS FOR EXTERNAL USE
- DEGREE OF PROTECTION BOX/CONNECTOR IP23/IP20
- PANEL WEIGHT 3,3 Kg
- TOTAL WEIGHT 3,7 Kg
(PANEL + ACCESSORIES + PACKAGE)

ACCESSORIES KIT

- PRE - WIRED FEMALE
- CONNECTOR CEM-250-256/10 CODE 70804420
- EMERGENCY BRIDGE CONNECTOR CODE 70804421
- PUMP WATER PRESSURE
- TRANSMITTER TYPE TPA-200 CODE 70500255
- NIPPLE F1/4" GAS -M3/8" GAS CODE 70190241