elentek®
One Step Forward

DIESEL-EN - User Manual

MOTOR-DRIVEN PUMP START-UP PANEL

- STANDARD EN 12845 -

Exclusive Italian Production

CONTENTS

1. INTRODUCTION

This manual must always accompany the relevant equipment and be conserved in an accessible location for consultation by qualified technicians assigned for operation and maintenance of the system.

The installer/user is strongly recommended to carefully read all instructions and information in this manual before using the product, in order to avoid damage or improper use of the unit, which would also render the warranty null and void.

Before operating the equipment, carefully read the manual and follow all instructions provided.

The information and instructions in this manual refer to the standard use of this product; in the event of special circumstances, functions or applications not described in this document, contact our service center for assistance.

If technical assistance or spare parts are required, when contacting the manufacturer always specify the identification code of the model and construction number as stated on the data plate.

Our service center is available for any requirement or clarification.

On receipt of the goods, inspect immediately to ensure that the equipment has not been damaged during transport. If defects are found, the client should promptly notify our retailer within 5 days of receiving the goods, or in the event of direct purchases, the producer service center.

N.B. the information provided in this manual is subject to modifications without notice. The manufacturer shall not be held liable for any damage caused in relation to the use of these instructions, as they are to be considered guideline only. Note that failure to observe the instructions provided in this manual may cause physical injury or damage to objects.

In any event all local and/or current legislation must be observed at all times.

2. WARNINGS

The electrical panel must be used exclusively for the purpose and function as specified in design. Any other application or use is to be considered improper and therefore hazardous.

In the event of a fire in the place of installation or the surrounding area, avoid the use of water jets and use the appropriate extinguishing equipment and means (powder, foam, carbon dioxide).

Install the equipment far from heat sources and in a dry and sheltered location in observance of the stated protection rating (IP).

The installation of a safety device is recommended to protect the panel power line in compliance with current electrical standards.

The electrical panel must be connected by a qualified electrician in observance of the relevant electrical standards.

No parts of the panel must be disassembled without the official authorization of the producer: any tampering with or modifications to the unit will render all terms of the warranty null and void.

All installation and/or maintenance operations must be performed by a specialized technician who is fully aware of the relevant current safety standards.

Ensure the installation is connected to an efficient earthing system.

After making the electrical connection, check that all electrical panel settings are correct to avoid automatic start-up of the electric pump.

The producer declines all liability in the event of the following:

- Incorrect installation;
- Use by personnel not adequately trained in the correct use of the panel;
- Serious failure to perform scheduled maintenance;
- Use of non-original spare parts or parts not specific to the model;
- Unauthorized modifications or interventions;
- Partial or total failure to observe instructions.

3. GENERAL DESCRIPTION

- Power supply 1 ~ 50/60Hz 230V±10%;
- Low voltage control circuits and inputs;
- 2 normally closed inputs for control of the start-up pressure switches;
- 2 inputs from external batteries for starter motor and aux. circuit power supply;
- Input for command from priming tank;
- Input for signal from pressure switch to indicate system under pressure / motor-driven pump off;
- AUT-MAN key selector;
- Motor-driven pump manual start and stop buttons;
- Fault reset button;
- Manual start-up test button (enabled in the event of automatic start failure);
- Control unit led test button;
- Buttons for start-up in Manual Emergency mode protected by “Safe crash”;
- Back-lit LCD display, for viewing: 2 battery volt meters, 2 battery ammeters, rev counter, total and partial hour counter, fuel level gauge, water thermometer, oil thermometer, oil pressure gauge, battery start counter, event log;
- Indicator leds;
- Option of operation compliant with UNI10779;
- Display with 5 languages: Italian, English, French, Spanish, German;
- Settable delay and alarm functions;
- Alarm outputs for: automatic mode disabled, control panel fault, motor-driven pump running, start-up failure;
- 2 battery chargers 12Vdc 3A (24Vdc 3A for version at 24V);
- Protection of aux. circuits and motor with fuses;
- Door lock general disconnect switch;
- Metal enclosure (IP55);
- Ambient temperature: -5/+40 °C;
- Relative humidity 50% at 40 °C (condensate free).

4. INSTALLATION

Ensure that the mains power supply specifications correspond to the voltage specified on the data plate of the electrical panel and motor connected, then make the earthing connection before all other connections.

DIESEL-EN ► 1~230V ± 10% 50/60Hz

The power line must be protected by a residual current circuit breaker.

Tighten the electrical cables on the relative terminals using a suitable tool correctly sized to avoid the risk of damage to the fixing screws. Take care if using an electric screwdriver.

The electrical panel is designed for wall-mounting using screws and plugs in the pre-drilled holes at the corners of the enclosure, or by means of brackets when present.

Install the equipment in areas compliant with the protection rating and ensure that the box is kept intact when drilling the holes for fitting the cable clamps.

Avoid the use of multicore cables where there are wires connected to inductive loads and power cables and signal cables such as sensors and digital inputs.

Keep connection cables as short as possible, preventing any twisting of cables which may be harmful due to inductive effects on the electronic equipment.

All wires used in the cabling must be suitably sized to withstand the load to be powered.

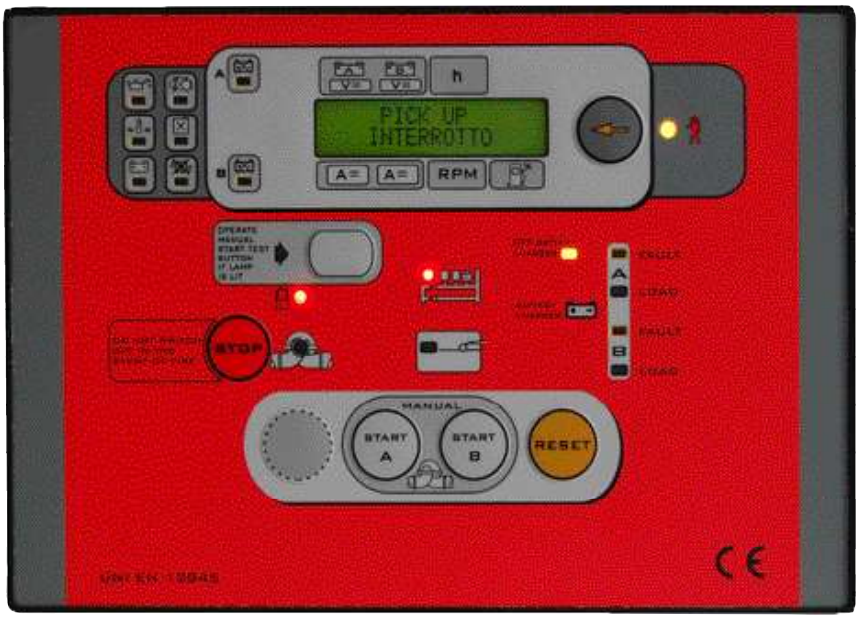
Make the earthing connection before all other connections.

Ensure that the power cable is able to withstand 150% of the maximum motor current (according to EN 12845 Para. 10.8.4) and connect it to the terminals of the main disconnect switch of the electrical panel.

5. CONTROL UNIT USER MANUAL

MONITORING AND CONTROL UNIT
FIRE-FIGHTING MOTOR PUMP
IN CONFORMITY TO UNI EN 12845 STANDARD
TYPE C-12845-485

INSTRUCTION AND USER MANUAL

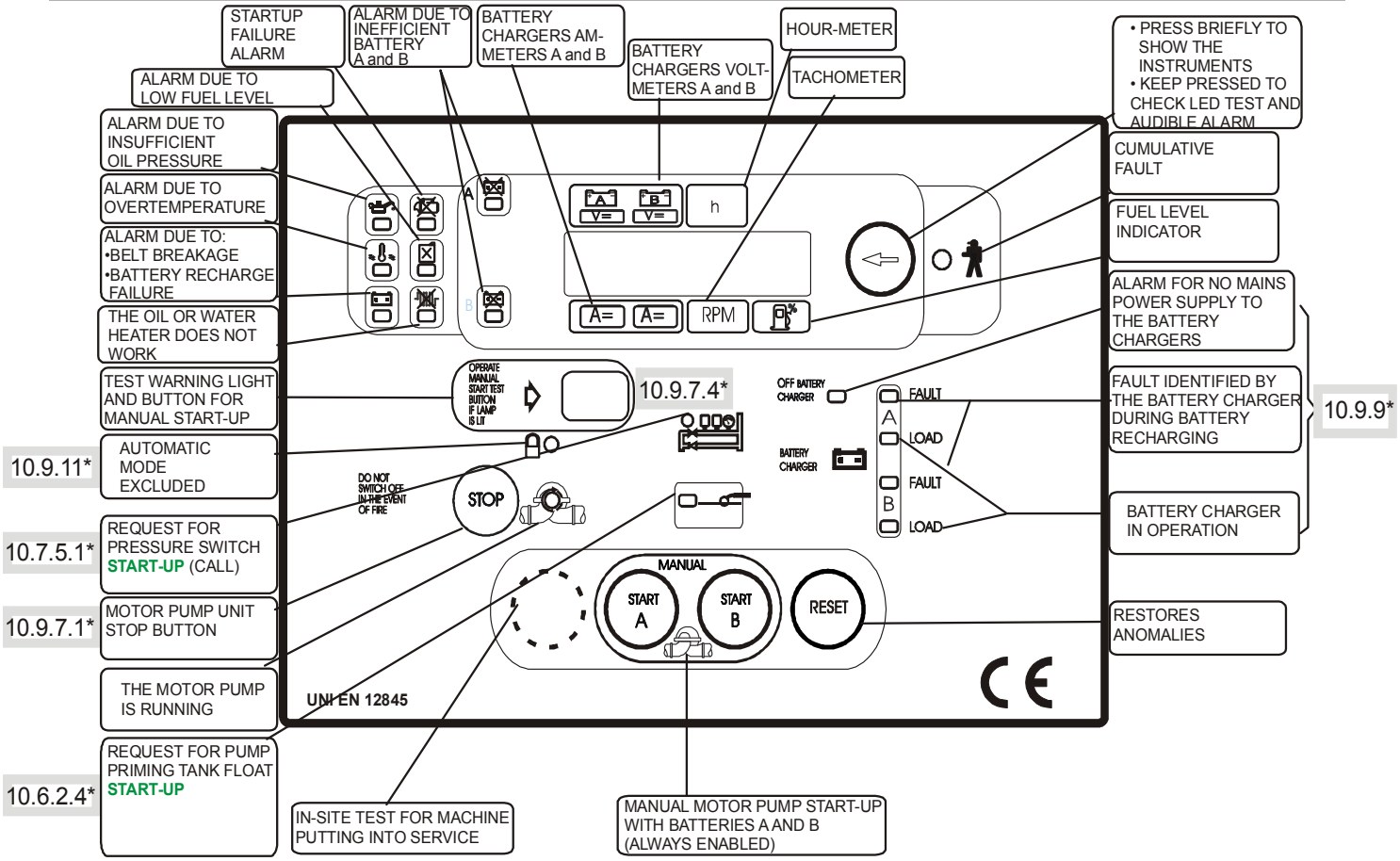


COMPLETE OF:

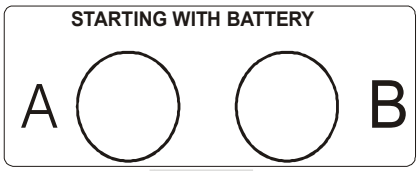
- two battery ammeters
- two battery voltmeters
- total hour meter
- partial hour meter
- tachometer
- water thermometer
- oil thermometer
- oil pressure gauge
- fuel level indicator

- Automatic start with 6 impulses alternated on the two batteries.
- Manual start-up buttons.
- Test button.
- Button for in-site test for machine putting into service.
- Manual stop with button.
- Check of efficiency of the batteries.
- Engine automatic faults surveillance.
- History events.

BRIEF INSTRUCTIONS



COMPONENTS TO BE FITTED EXTERNALLY



10.9.7.3*

PUSH-BUTTONS LOCATED UNDER A BREAKABLE LID FOR EMERGENCY START

AUTOMATIC START-UP SWITCH **ENGAGED**

EXCLUDED

AUTOMATIC MODE DISABLED

LINE SWITCH (DOOR LOCK)

*PARAGRAPH NUMBER (OF REGULATION EN12845) TO CONSULT

HISTORY AND REVISIONS

Date	Level of the REVISION	Description	Page
December 2007		See manual without revision	
January 2008	2.12	Terminal 50 pump pressure switch connection	6
		Possibility of having the pump pressure switch off or on	enclosure A
		ENGINE AND PUMP IN OPERATION (Detection of pump running with pressure switch). Alarms: PUMP FAULT, PRESSURE WITH ENGINE STOPPED	enclosure E
		Weekly test: We have removed the connections with terminals 22 23 24	enclosure D
		Zeroing historical report (visible with remote management)	enclosure F
		Stopping at the reopening of the float of the priming tank	enclosure G
		Inclusion - exclusion of the stopping from priming float	enclosure A
		Stopping operation UNI10779 with switch AUTOMATIC START UP ENGAGED	3
July 2008	2.13	Delay in closing or opening the contact of the priming tank float	8
October 2008	2.14	Contact associable with the running engine or the general alarm	enclosure H
		If both the batteries are in the fault “INEFFICIENT BATTERY”, the startings continue all the same until the starting failure	4
		Correction: with WATER RESERVE or FUEL RESERVE or NO FUEL or STARTING FAILURE, the relay “PANEL FAULT” was not restored.	
December 2008	2.15	Fuel float interruption control	
May 2010	2.16	Portuguese added	10
April 2011	2.17	A programmable de-energization time of contacts 22 23 24 is entered when the stopped engine is detected.	8
September 2012	2.18	Weekly automatic test – stop during the test. Procedure run to show and reset the events history.	enclosure D - 9 enclosure B/C-F -10

(Reserved to the manufacturer)

Valid for firmware revisions higher than or equal to 2.18

INSTRUMENTS

- **A and B BATTERIES AMMETERS** — Full scale current 99A
- **A and B BATTERIES VOLTMETERS** — For voltages between 9 and 38 Volt.

} connected with the battery chargers Type CBS .....

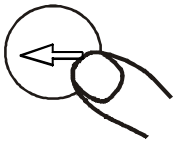
- **TOTAL HOUR METER** — With four figures and a maximum reading (hours and minutes) of 9999.
- **PARTIAL HOUR METER** — With four figures and a maximum reading (hours and minutes) of 9999.
- **TACHOMETER** — Full scale 9990 revolutions
- **FUEL LEVEL INDICATOR** — Displays the percentage of fuel present in the tank (full scale 100%)
- **WATER OR OIL THERMOMETER**
- **OIL THERMOMETER**

} Displays engine oil or water temperatures 30 ÷ 140°C.

- **OIL PRESSURE GAUGE** — Displays engine oil pressure up to 9 bars
- **A and B BATTERIES STARTUPS COUNTER** — Displays the number of startups that have occurred up to 9999

SIMULTANEOUS READING OF THE INSTRUMENTS

- BATTERY AMMETERS
- BATTERY VOLTMETERS
- FUEL LEVEL INDICATOR
- HOUR METER



Press to show the instruments

WITH ENGINE RUNNING

- TACHOMETER

FUNCTION **AUTOMATIC STOP** ALLOWED BY THE STANDARD **UNI 10779 July 2007** When necessary, for any activities that are not constantly manned, automatic stopping is permitted, providing the pumping system is used exclusively by the hydrant system.	**JUMPER** 🎧 B	**JUMPER NOT CUT** (Factory setting) AUTOMATIC STOP NOT ACTIVATED	**JUMPER CUT** (During the led test **UNI 10779** appears on the display) AUTOMATIC STOP ACTIVATED
OPERATION (With automatic start up engaged) The motor pump stops 20 mins. after the contacts of the call pressure switches have been permanently closed. The display continuously shows how much time is left before the motor pump stops. The stop electromagnet remains energized for 15 seconds after detecting that the engine has stopped. The motor pump is not stopped when the switch is positioned on AUTOMATIC MODE EXCLUDED. When the switch is positioned back to AUTOMATIC START UP ENGAGED, the motor pump continues to run.			

OPERATION

PREPARATION FOR AUTOMATIC

Active with the switch AUTOMATIC STARTUP ENGAGED (from this position it is possible to remove the key), setting the switch to excluded, the automatic start is blocked. This exclusion is signalled by the flashing warning light  and by the following message displayed on the screen: AUTOM. STARTING EXCLUDED.

AUTOMATIC

When the equipment detects the opening of the starting call contact (pressure switches), the pump set begins to start up. The control unit checks (without commanding the stopping of the motor pump unit) for possible engine faults, during its operation

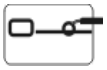
MANUAL STARTING

This can be done in three ways:

- through the emergency start push-buttons.
- through the push-buttons START A or START B
- through the test push-button with consent of the associated warning light  .

The test push-button receives the consent after the engine automatic startup (activated by the call pressure switches), followed by the turning off or after start failure. In both conditions the relative warning light  turns on. The circuit used to this end automatically becomes non-operative and the warning light turns off, when the test button is pressed and the motor is found running.

AUTOMATIC STARTING

This takes place when the CALL pressure switch contacts are opened, which is shown by a fixed light coming on  . After the pressure switches have closed, the indicator starts to flash.
Automatic starting also happens when the pump priming float contact is closed, which is shown by a fixed light  coming on. When the contact opens, the indicator starts to flash. Flashing lights stay on for the whole time the motor is running.
In order to facilitate the startup, a specific circuit makes a sequence of 6 impulses automatically alternating on batteries A and B with 15 seconds cycles (5 secs. Startup, 10 secs. pause, both adjustable).
Engine starting is interrupted if the starter motor pinion does not succeed in engaging with the crown gear of the handwheel. After the first failure to engage, the starter motor makes a further five engagement attempts. At the sixth failure to engage the starter motor continues running for 5 seconds.
If a battery is found to fail during start-up, it is automatically suspended and the starting cycle proceeds on the other battery. If both the batteries are in the fault “INEFFICIENT BATTERY”, the starting continue all the same until the starting failure

DETECTION OF MOTOR PUMP RUNNING

The motor pump ON mode is monitored through a magnetic sender (pick-up TM30.....) and it disconnects the starter motor.

STOP

THE ENGINE CAN ONLY BE TURNED OFF MANUALLY.
It is not possible to stop it when the call from the pressure switches is present and automatic start up engaged.
With call from the pressure switches present
Pressing the STOP pushbutton, the following message is displayed on the screen: DON’T SWITCH OFF IN EVENT OF FIRE ----STOP EXCLUDED.
• With call from the pressure switches absent.

Pressing the STOP pushbutton, the following message is displayed on the screen: DON’T SWITCH OFF IN EVENT OF FIRE.

PARTIAL HOUR METER

Press  to select (PARTIAL HOUR METER) the operating hours and minutes of the last run of the motor pump. The hours indicated are zero-set the next time the motor pump is started up.

OPERATION

BATTERY CHARGING

Automatic charging: fast charging is controlled in current, intermediate and maintenance charging in voltage.
The anomalies:

- battery A and/or FU1 blown
- battery B and/or FU2 blown

} detachment of battery cables and fuses blown

- short circuit of A and B battery cables
- mains failure battery chargers A and B,

are signalled by the warning lights: anomaly , FAULT and they are displayed.

BATTERIES CHECK

A special circuit checks the efficiency of the batteries, in particular DURING THE STARTING PHASE.

ALARMS

The alarms are indicated on the display by the relative led and by a flashing cumulative led.
They are divided into four groups

- STORED: inefficiency of batteries A and B
- NOT STORED AND ALWAYS ENABLED: minimum fuel level , mains power failure to the battery chargers A and B OFF BATTERY CHARGER , PICK-UP interrupted, oil or water heater failure and battery chargers A and B fault.
- CHECKED 10 SECONDS AFTER DETECTING ENGINE RUNNING AND STORED: insufficient oil pressure , charging alternator failure and PICK-UP fault.
- CHECKED WITH ENGINE RUNNING AND STORED IMMEDIATELY: engine overtemperature .

STARTUP FAILURE

It locks the starting cycle, if the engine has not started after the sixth attempt .
The starting cycles are released using the reset button, or the next time the motor is found to be running.

RESET

The memorized protections are reactivated, by pressing the RESET button.

REMOTE AUXILIARY FUNCTIONS

With switching without voltage contacts

- **Automatic start-up disabled** (automatic start-up switch disabled EXCLUDED AUTOMATIC MODE DISABLED)
- **Start up failure**
- **Pump operatine**
- **Switchboard fault**: occurred engine alarms (excluded minimum fuel level), not powered control unit, battery charger fault: mains failure, FLAT CABLE not connected and blown fuses (the battery charger fuses are signalled as: CHARGER BATTERY FAULT and INEFFICIENT BATTERY).
- **Minimum fuel level**.

TEST

IN-SITE COMMISSIONING TEST

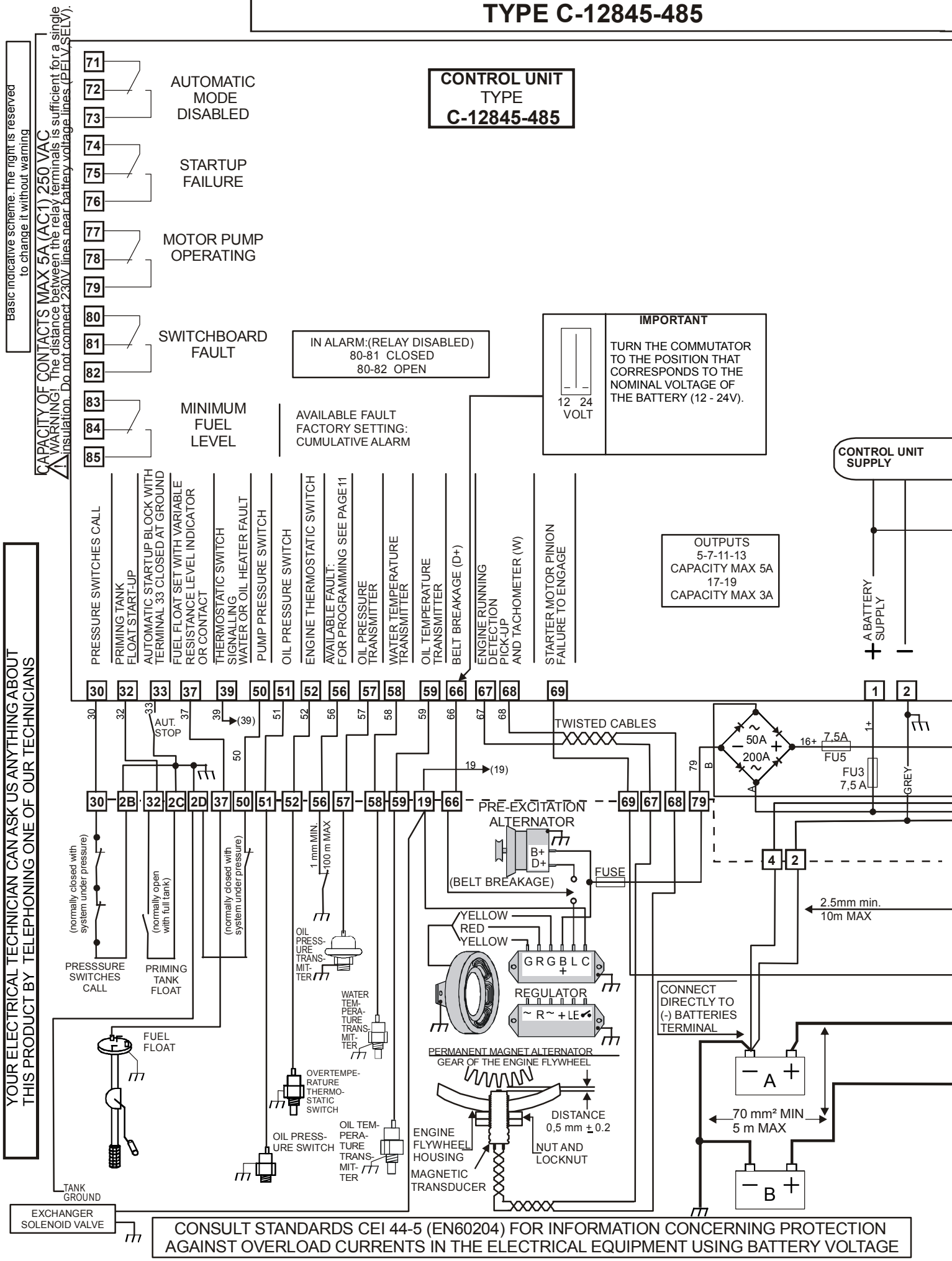
Programming move the DIP Switch 9 to ON.

Press the button (the screen displays COMMISSIONING TEST) isolating the fuel supply (move the relative lever towards motor stop by hand, or hold down the stop button),

keep pressed (about 3 secs) the button until the starter motor starts, a circuit produces 6 alternate impulses on the batteries A and B with 30-second cycles (15 secs. startup and 15 secs. pause).
WARNING DO NOT use the stop button with electro-stop running intermittently, usually these electromagnets cannot be excited for more than 40-50 seconds at a time.
After completion of 6 cycles, startup failure is activated and the relative warning light turns on.
Restore the fuel supply (release the lever or the motor stop button) and press the manual startup test pushbutton . Move the DIP switch 9 back to OFF.

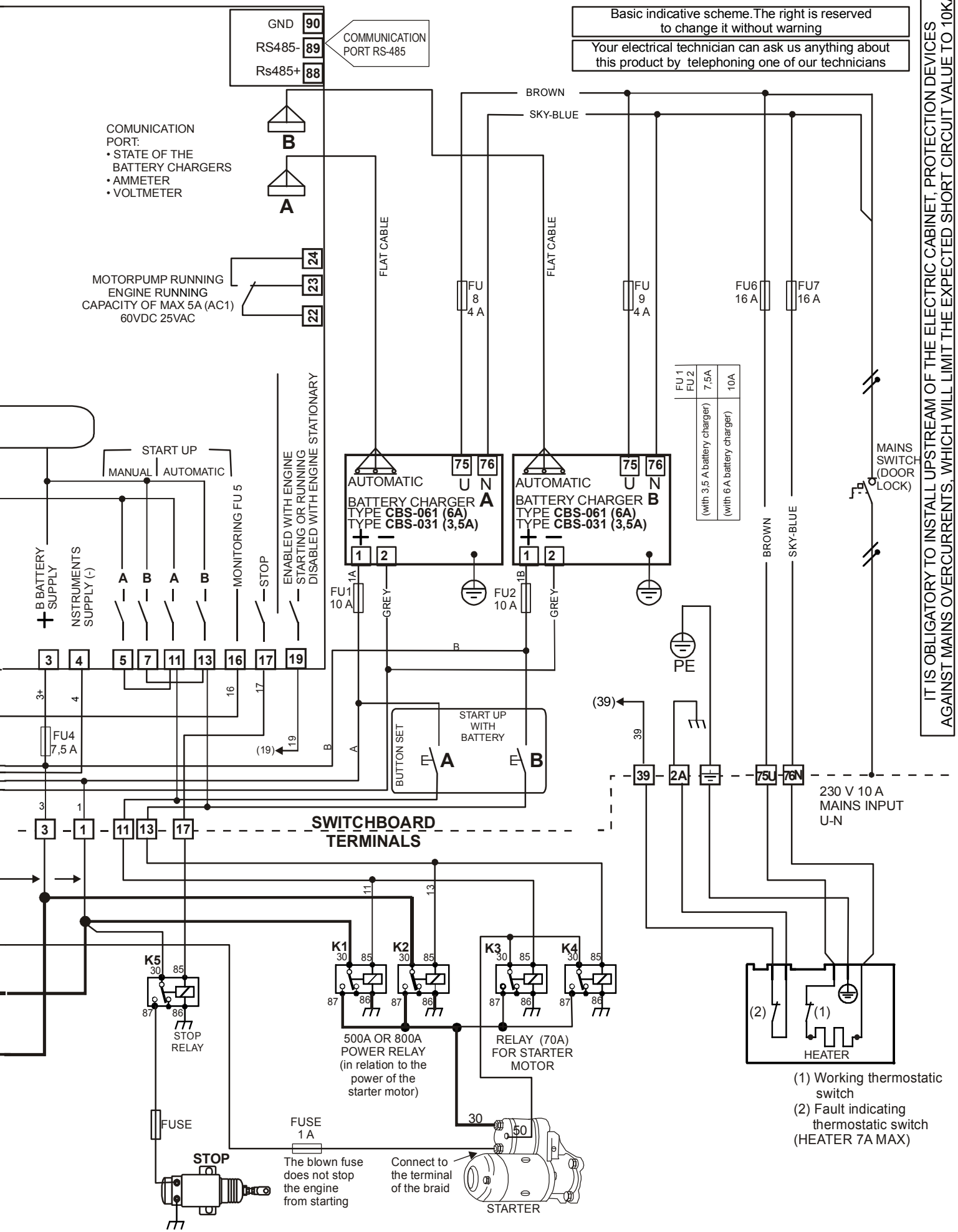
Keep pressed the button to check led test.

DIAGRAM OF CONNECTION TO THE CONTROL
TYPE C-12845-485



Valid for firmware revisions higher than or equal to 2.18

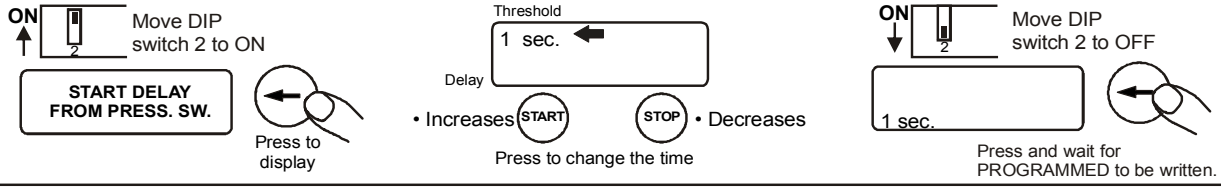
AND MONITORING CONTROL UNIT OF THE MOTOR PUMP UNIT IN CONFORMITY TO EN 12845 STANDARD



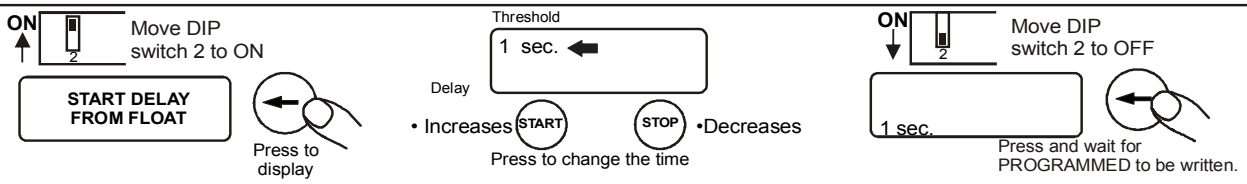
PROGRAMMABLE TIMES

DESCRIPTION	SECONDS	
	SETTING FIELD	FACTORY SETTING
DELAYED START AFTER OPENING OF THE CONTACTS OF THE CALL PRESSURE SWITCHES	1÷120	1
DELAY IN CLOSING OR OPENING THE CONTACT OF THE PRIMING TANK FLOAT	1÷10	1
STARTING TIME Start up attempt operation time	5÷10 sec.	5 sec.
PAUSE TIME Pause between start up attempts	5÷10 sec.	10 sec.
STOP STAND-BY TIME (UNI 10779)	1÷30 min.	20 min.
CONTACT. 22-23-24 TIME De-energization delay (stopped engine)	0÷600 sec.	0 sec.

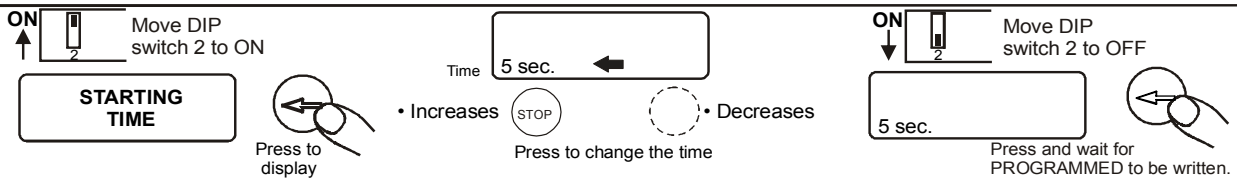
DELAYED START AFTER OPENING OF THE CONTACTS OF THE CALL PRESSURE SWITCHES.



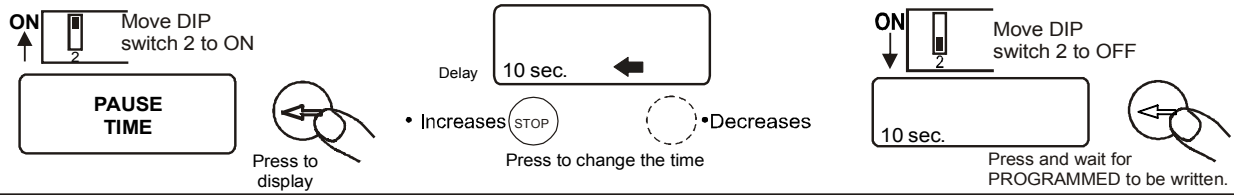
DELAY IN OPENING OR CLOSING OF THE PRIMING TANK FLOAT CONTACT.



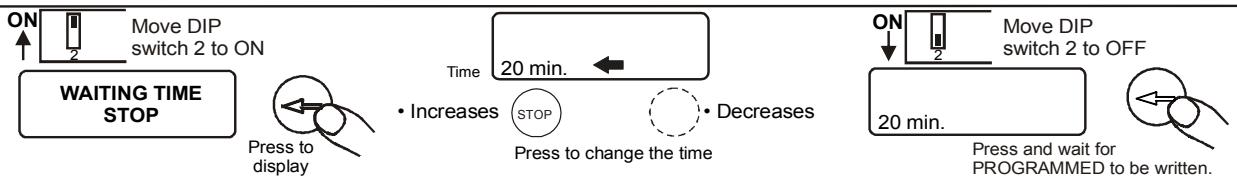
STARTING TIME. START UP ATTEMPT OPERATION TIME.



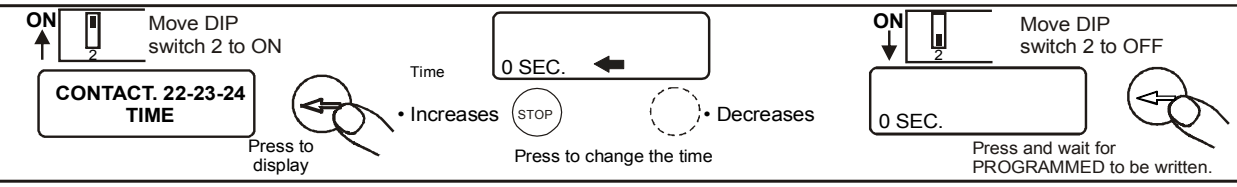
PAUSE TIME. PAUSE BETWEEN START UP ATTEMPTS.



STOP STAND-BY TIME (UNI 10779).



CONTACT 22-23-24 TIME. OPENING TIME OF CONTACT 22-24 AFTER DETECTION OF THE STOPPED ENGINE.



IN-SITE ACTIVATION TEST

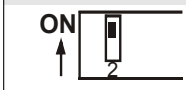
Start up and pause 15 NOT ADJUSTABLE seconds.

Valid for firmware revisions higher than or equal to 2.18

PROGRAMMING

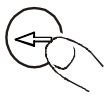
CONTROL UNIT TYPE **C-12845-485**

FUEL LEVEL. Variable-resistance float programming (T).



Move DIP switch 2 to ON

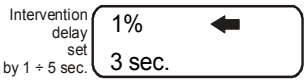
EXAMPLE



Press to display

Threshold

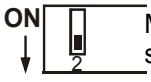
Intervention delay set by 1 ÷ 5 sec.



Increases 

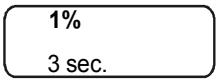
Decreases

Press when the arrow is next to the parameter to be modified



Move DIP switch 2 to OFF

EXAMPLE



Press and wait for PROGRAMMED to be written.

FUNCTION	Factory setting	Warning light ☒
• Max. fuel level	95%	OFF
• Min. fuel level	25%	FLASH-ING ON
• Fuel reserve	10%	STEADY ON
• No fuel	1%	STEADY ON

When the fuel level is lower 25% than the nominal filling level, the MIN. FUEL LEVEL alarm is enabled

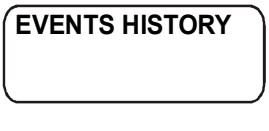
PROGRAMME ONE LEVEL AT A TIME

WITH TERMINAL W	WARNING LIGHT	DISPLAY
WHEN THE CONTACT CLOSES TO GROUND	☒ FLASHING ON	MINIMUM FUEL LEVEL

EVENT HISTORY

Data relating to the latest 100 events is collected.

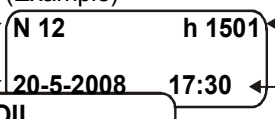
Move DIP switches 2-5 to ON



Press to display

Progressive number of faults that have occurred

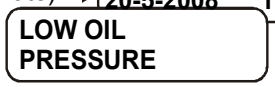
(Example)



Engine hour-meter

(Date)

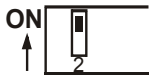
(Hour)



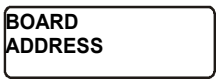
Press this button to consult the events history. To be carried out with engine off.

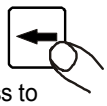
Move all the DIP switches back to OFF.

BOARD ADDRESS. Factory preogramming 1.



Move DIP switch 2 to ON



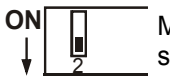


Press to to display.

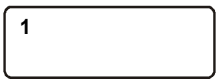
Increases 

Decreases

Press when the arrow is next to the parameter to be modified



Move DIP switch 2 to OFF



Press and wait for PROGRAMMED to be written.

DIP - SWITCH

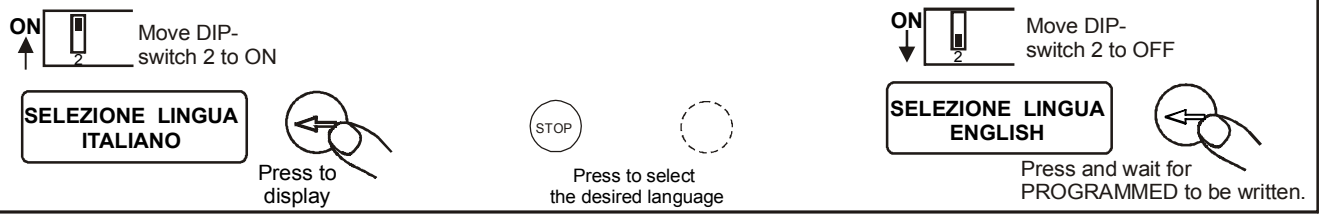
WAIT AT LEAST TWO SECONDS AFTER EACH MOVEMENT.

	TACHO-METER CALIBRA-TION	CHOICE •LAN-GUAGE •TIMES •THRESH-OLD	TRANSMIT-TERS TABLE	FUEL FLOAT T or W / Float values table	INSTRU-MENTS EXCLU-SION	AVAILABLE PROTEC-TION	BATTERY VOLTAGE	STOP SYSTEMS ⚠ EXCITED IN DRIVE. WARNING STOP NOT CON-FORM TO THE EN 12845 STANDARD	IN-SITE ACTI-VATION TEST	NOT USED IN REGULATION EN12845
ON							24 V		EN-GAGED	
	1	2	3	4	5	6	7	8	9	10
OFF							12 V	EXCITED IN STOP MODE	EX-CLUDED	

DIP 2 - 5 VIEW THE EVENTS HISTORY

PROGRAMMING

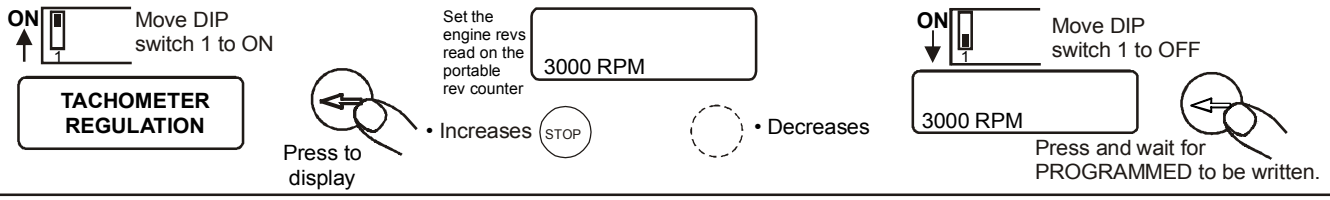
LANGUAGE SELECTION. The factory set language is ITALIAN; the languages that can be selected are: ENGLISH - SPANISH - GERMAN - FRENCH - PORTUGUESE.



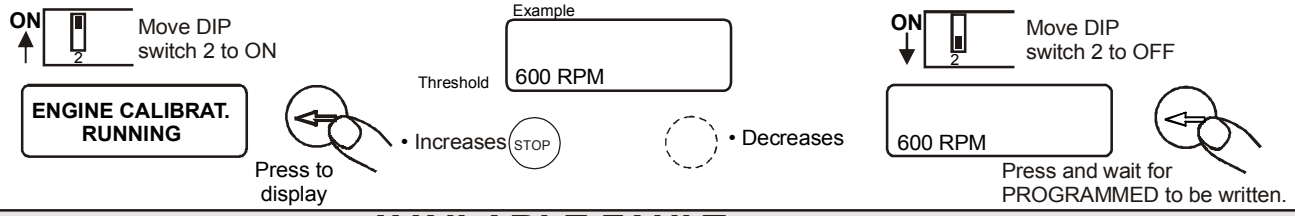
CALIBRATION:
TACHOMETER AND MOTORPUMP RUNNING THRESHOLD
Exclude the automatic startup using the relative switch. 

Manually start the motorpump, then calibrate first the tachometers while the motorpump is in operation.
Stop the engine and calibrate the threshold of the motor pump in operation.

TACHOMETER REGULATION. Bring the engine to constant known revs (for example using a portable revs counter).

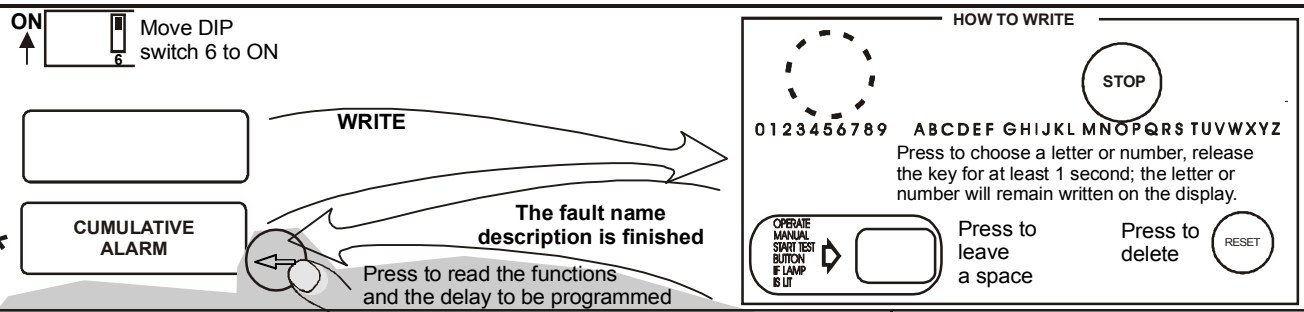


MOTORPUMP RUNNING THRESHOLD CALIBRATION. Disconnects the starter motor.



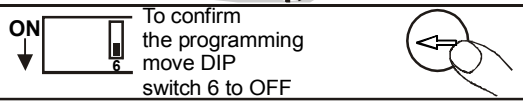
AVAILABLE FAULT

THE NEW DESCRIPTION OF THE NAME OF THE FAULT IS NOT TRANSLATED.



FUNCTIONS TO BE PROGRAMMED DESCRIBED ON THE DISPLAY		DESCRIPTION
NOT STORED *	STORED	Choice of whether to store the cause of the alarm
POLARITY ACTIVE TO GROUND *	**POLARITY** ACTIVE OPEN	The probe intervenes when it closes or opens his own contact
ACTIVATION ALWAYS ACTIVE *	**ACTIVATION** ACTIVE RUNNING	Instant of probe activation
RELAY SWITCHING NOT ACTIVE (CONTACT 83-84-85)	RELAY SWITCHING' ACTIVE (CONTACT 83-84-85) *	Intervention lights up the cumulative flashing led and switches over the contacts on the terminals 83 84 85
INTERVENTION RELAY (ADJUSTABLE) 0 ÷ 60 SEC. * FACTORY SETTING 10 seconds for the water reserve		The intervention occurs when the intervention delay has elapsed

Press to modify the functions and the intervention delay — STOP



CONTROL AND MONITORING UNIT
MOTORPUMP UNIT
IN CONFORMITY TO EN12845 STANDARD

TYPE C-12845-485

Carries out the automatic control and monitoring functions of a fire-fighting motorpump unit. It has been designed to be installed only inside on an electrical panel and to be connected to other components (contactors, battery chargers, etc.) which the installer will have available to complete the plant.

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NOTICES

Warning:
Components carrying dangerous voltage levels

Only assigned and suitably trained personnel are allowed access to the control unit. No maintenance operations are permitted unless the plant is disconnected from the mains and the battery. As an additional safety measure, the plant phases should be short-circuited and earthed. Not withstanding the above, only assigned and trained personnel can perform the following operations with the plant on:

- make a visual inspection of the control unit, the connections and their markings.
- measure the voltage and/or current values.

These interventions, however, must be performed using equipment which ensures appropriate levels of electrical protection.

Warning:
adhere closely to the following advice

- At the point of mains installation, the presumed short circuit current must not exceed 10kA.
- All technical interventions on the motorpump must be performed with the engine stationary and terminal 50 of the start motor disconnected.
- Check that the user equipment power consumption is compatible with the technical features described.
- Install in such a way that there is always adequate heat disposal.
- Always install under other equipment which produces or spreads heat.
- Make sure that no copper conductor cuttings or other waste material fall inside the equipment.
- If necessary, the fuses must only be replaced with the same type as the original.
- Never disconnect the terminals of the battery with engine running.

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

- Where the environmental temperature is outside the limits specified lin the present technical manual.
- Where the air pressure and temperature variations are so rapid as to produce exceptional condensations.
- Where there are high levels of pollution caused by dust, smoke, vapour, salts and corrosive or radioactive particles.
- Where there are high levels or heat from radiation caused by the sun, ovens or the like.
- Where attacks from mould or small animals are possible.
- Where there is the risk of fire or explosions.
- Where the switch-board can receive strong vibrations or knocks.

CONDUCTION AND MAINTENANCE

The following maintenance operations should be performed every week:

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

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 EN50082-2 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.

NOTE CONCERNING CONNECTION OF COMMAND AND SAFETY DEVICES TO THE PANEL

With the direct connection of engine protection probes and remote control and command contacts to the control switch-board, particular anomalous situations (earth anomalies or interruption of electrical connections) could block the start-up or provoke its early activation.

To reduce these risks, if he believes it to be necessary, the installer can take on the responsibility of applying that which is described in paragraphs 9.4.2.1 and 9.4.2.2 of standard CEI EN60204-1 (CEI 44-5) to the said connections.

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

Any use which differs from that which is indicated in this instruction and user manual must be authorized by us to the manufacturer.

YOUR ELECTRICAL TECHNICIAN CAN ASK ANY QUESTIONS ABOUT THIS CONTROL UNIT BY TELEPHONING OUR TECHNICIAN

TECHNICAL DATA

- TWO BATTERIES SUPPLY VOLTAGE AT	12 VDC and 24 VDC
- SUPPLY VOLTAGE	8 ÷ 32 VDC
- CIRCUIT LOADING WITH ENGINE STATIONARY	70 mA at 12V 40 mA at 24V
- MAXIMUM LOADING	130 mA at 12V 70 mA at 24V
- CAPACITY OF CONTACTS 5-7-11-13	MAX 5A 25 VAC 60 VDC
- CAPACITY OF CONTACTS 17-19	MAX 3A 25 VAC 60 VDC
- CAPACITY OF CONTACTS from 71 to 85	MAX 5A (AC1) 250 VAC
- DEGREE OF REAR PROTECTION	IP 20
- DEGREE OF FRONT PROTECTION	IP 64
- TEMPERATURE RANGE	-10 ÷ +60 °C
- HOUR METER	4 DIGITS
- TACHOMETER	4000 rpm ± 15 rpm
- BATTERY CHARGERS VOLTMETERS	MAX 38 V Precision 5%
- BATTERY CHARGERS AMMETERS	MAX 99 A Precision 5%
- OIL PRESSURE GAUGE, WATER AND OIL THERMOMETERS, AND FUEL LEVEL INSTRUMENTS PRECISION	2%
- SERIAL COMMUNICATION PARAMETERS	9600 baud, 8 bit data, 1 bit stop; EVEN parity
- INSTALLATION CONDITIONS	INSIDE FOR INTERNAL USE
- WEIGHT	850 gr
- DIMENSIONS	L243 x H170 x P62
- HOLE	227X155

ORDERING DATA

TYPE C-12845-485 Code 00242291

ACCESSORIES KIT

KIT MU-C-12845-485 Code 40804523

CONFORMITY DECLARATION

CE

ELCOS s.r.l. assumes full responsability for declaring that the equipment:

type **C-12845/485**

installed and used in the ways and for the purposes described in the instruction and user manual, is in conformity with the following directives:

2014/35/UE	on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
2014/30/UE	on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
2011/65/UE	on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

because it is built and functions in accordance with the harmonized Standards:

EN 12845:2015	Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance
EN 61010-1:2010	Amendment 1 - Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements.
EN 60529:1997	Degrees of protection provided by enclosures (IP Code)
EN 61326-1:2012	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
EN 61000-6-2:2016	Generic standards - Immunity standard for industrial environments

tests of:

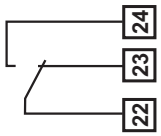
EN 61000-4-2:2008	Electrostatic discharge immunity test
EN 61000-4-3:2006	Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4:2012	Electrical fast transient/burst immunity test
EN 61000-4-5:2014	Surge immunity test
EN 61000-4-6:2013	Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-8:2009	Power frequency magnetic field immunity test
EN 61000-4-11:2004	Voltage dips, short interruptions and voltage variations immunity tests
EN 61000-6-3:2006	Generic standards - Emission standard for residential, commercial and light-industrial environments
EN 55022:2012	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

Valid for firmware revisions higher than or equal to 2.18

6. APPENDED 1 –ASSOCIABLE CONTACT

RESERVED TO THE MANUFACTURER

ASSOCIABLE CONTACT



Possibility of associating to the contact the function:

MOTORPUMP IN OPERATION

The intervention:

- switches on the led, 
- is indicated on the display

CONTACT 22-23-24
RUNNING ENGINE

- switches the contact with the pump in operation

22 24 **CLOSED**

22 23 **OPEN**

SETTING FACTORY
C-12845-485

or

GENERAL ALARM

The intervention:

- switches on the led, 
- is indicated on the display

CONTAT. 22-23-24
GENERAL ALARM

- switches the contact with the general alarm occured

22 23 **CLOSED**

22 24 **OPEN**

SETTING FACTORY
C-12845-485

or

FAN CONTROL

The intervention:

- is indicated on the display

CONTAT. 22-23-24
FAN CONTROL

- Switches the contact when the engine is running (detected by the Pik up)

22 24 **CHIUSO**

22 23 **APERTO**

The relay returns to its normal state after the set time.

CHOICE OF THE FUNCTION TO ASSOCIATE TO THE CONTACT

ON 2 Move DIP switch 2 to ON

CONTACT 22-23-24
RUNNING ENGINE

Press to display

CONTACT 22-23-24
GENERAL ALARM

STOP

Press to choose

ON 2 Move DIP switch 2 to OFF

CONTACT 22-23-24
GENERAL ALARM

Press and wait for PROGRAMMED to be written

RUNNING ENGINE

GENERAL ALARM

FAN CONTROL

.Associated with "Contact 22-23-24 time"
See page 8 of the manual.

7. APPENDED 2 – EVENTS HISTORY

ZEROING HISTORICAL REPORT
(visible with remote management)
CONTROL UNIT C-12845-485 C-12845/1200 C-10845

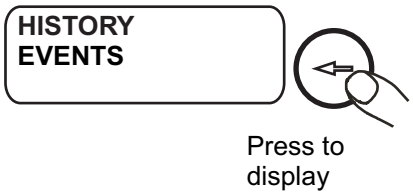
ZEROING HISTORICAL REPORT

Data relating to the latest 100 events is collected.

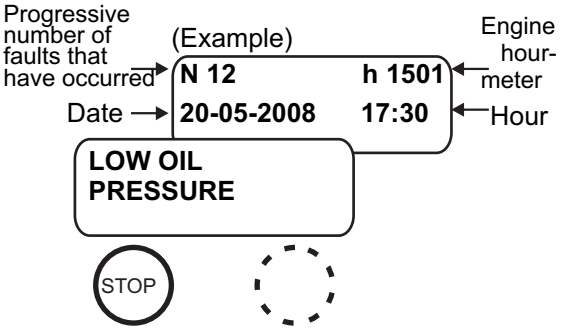
List of events:
- START-UP BYPRESS. SWITCHES
- START-UP DAPRIMING
- START-UP BUTTON
- START-UP WEEKLY TEST
- STOP MANUAL
- STOP AUTOMATIC
- SENSED ALARMS

TO BE CARRIED OUT WITH ENGINE OFF

Move DIP switches 2 - 5 to ON



Press to display



Press this button to consult the events history.

ACCESS TO THE ZEROING OF THE HISTORICAL REPORT

Move DIP switches 2 - 4 to ON

Press for at least 15 sec., until the hour-meter flashes.

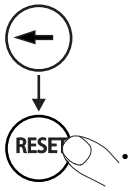
Release the key, the display still shows the hour-meter, which no longer flashes.

Press again, the historical report will reset.

Move all the DIP switches back to OFF.

CALENDAR CLOCK ADJUSTMENT

Adjustment is recommended . The time and date are used when the historical report is displayed.



• Press to show the calendar clock

• Press (after 2 sec. flashes the cursor), **keep pressed**

Calendar clock adjustment

Increases | Decreases | Shifts the cursor

If the power is cut off, adjustment of the calendar clock must be repeated

8. APPENDED 3 – WEEKLY AUTOMATIC TEST

WEEKLY AUTOMATIC TEST

PREPARATION FOR AUTOMATIC WEEKLY TEST

CUT THE JUMPER A

IF THE JUMPER IS CUT, THE BOARD NO LONGER COMPLIES WITH THE EN12845 STANDARDS

DIP - SWITCH (Control Unit C-12845-485 - C-12845/1200 - C-10845)

WAIT AT LEAST TWO SECONDS AFTER EACH MOVEMENT.

	TACHO-METER CALIBRA-TIONI	CHOICE •LAN-GUAGE •TIMES •THRESH-OLD	TRANSMIT-TERS TABLE	FUEL FLOAT T or W / Float values table	INSTRU-MENTS EXCLU-SION	AVAILABLE PROTEC-TION	BATTERY VOLTAGE	STOP SYSTEMS / ⚠ EXCITED IN DRIVE. WARNING STOP NOT CON-FORM TO THE EN 12845 STANDARD5	IN-SITE ACTI-VATION TEST	WEEKLY AUTOMATIC TEST
ON							24 V		EN-GAGED	EN-GAGED
	1	2	3	4	5	6	7	8	9	10
OFF							12 V	EXCITED IN STOP MODE	EX-CLUDED	EX-CLUDED

OPERATION

Setting the relevant lever on TEST ENGAGED, the engine starts up after 1 second and stays on during the WEEKLY TEST DURATION (programmed at 5 minutes).
This test will be repeated automatically every week on the exact day and at the hour to which the TEST ENGAGED lever has been positioned. During the automatic test cycle, **WEEKLY SELFTEST** is shown on the display.

WARNING: whenever the battery voltage is cut off from the control unit, the time elapsed from the moment when lever 10 was set to ON **is reset to zero**. The count of the weekly time starts again from the moment when the control unit is supplied with power.

OPERATION: the motorpump starts up, if during the test a fire call occurs, the motorpump stays on up to the manual stop. The Stop button is enabled at all times. When it is pressed, the test is cancelled and it will be repeated the following week.

WITH THE CUMULATIVE WARNING LIGHT ON:

- the weekly test is cancelled, and will be repeated the following week after the fault has been reset.
- the engine is stopped, when an anomaly intervenes during the test.
- the engine is not stopped when the switch is positioned on AUTOMATIC MODE EXCLUDED. When the switch is positioned back to AUTOMATIC START UP ENGAGED, the engine continues to run.
- the automatic starting of the engine is not prevented.

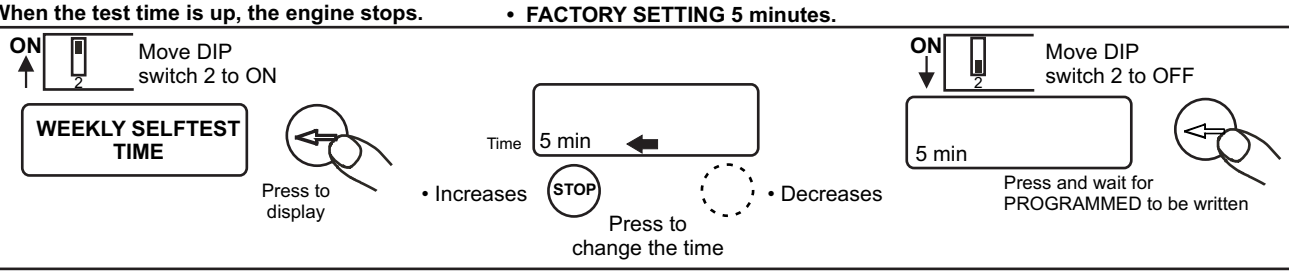
SWITCHING ON OF THE WARNING LIGHT CAUSED BY MODEM ANOMALIES, WHICH DO NOT CANCEL THE WEEKLY TEST AND DO NOT STOP THE ENGINE.

Failure to start during the test is the only fault with the automatic reset. The reset occurs after the call from the pressure switches or from the priming tank float.

- The test is cancelled if it starts when the pump is already running; it will be carried out the following week.

WEEKLY TEST DURATION.
When the test time is up, the engine stops.

- **REGULATION RANGE 2 ÷ 60 minutes.**
- **FACTORY SETTING 5 minutes.**



RESERVED TO THE MANUFACTURER

9. APPENDED 4 – SPECIAL FUNCTIONS AND RESTORATION

EXCLUSION OF INSTRUMENTS AND FUNCTIONS CONTROL UNIT

TYPE **C - 12845-485 C-12845/1200 - C-10845**

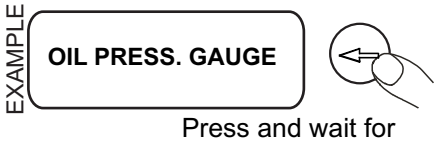
It is possible to exclude instruments by following the procedures below.

EXCLUSION PROCEDURE

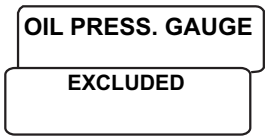
Move DIP switch 5 to ON

Press to display the instrument to be excluded

Move DIP switch 5 back to OFF



Press and wait for EXCLUDED to be displayed



PROCEDURE FOR CANCELLING THE EXCLUSION

Move DIP switch 5 to ON

Press to display the EXCLUDED instrument

Move DIP switch 5 back to OFF

Press and wait for ENGAGED to be displayed

EXCLUDABLE INSTRUMENTS AND FUNCTIONS

FACTORY SETTING	
EXCLUDED	• OIL PRESSURE GAUGE
"	• ENGINE WATER THERMOMETER
"	• ENGINE OIL THERMOMETER
"	• PUMP PRESSURE SWITCH
ENGAGED	• TACHOMETER
"	• STARTUPS COUNTER
"	• FUEL LEVEL INDICATOR
"	• BATTERY A VOLTMETER
"	(1) • BATTERY B VOLTMETER
"	• BATTERY A AMMETER
"	(1)• B ATTERY B AMMETER
"	- CHARGER BATTERY A NOT TRANSMITTING
"	(1) - CHARGER BATTERY B NOT TRANSMITTING
"	- PICK UP INTERRUPTED
"	- PINION CIRCUIT BROKEN (disable if not connected to terminal 69)
EXCLUDED	- STOPPING FROM FLOAT (stopping at the reopening of the priming float) **WARNING THE EN12845 STANDARD DOES NOT PROVIDE FOR THIS STOPPING** (before to engage this function, read the enclosure **G**)

(1) - Functions not present in version C-10845

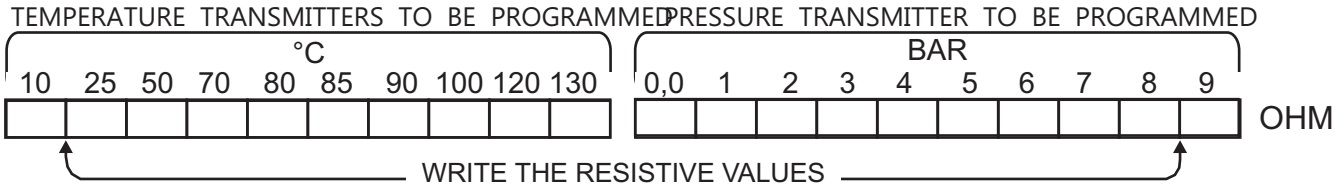
RESERVED TO THE MANUFACTURER

PROGRAMMING OF PRESSURE AND TEMPERATURE TRANSMITTERS CONTROL UNIT

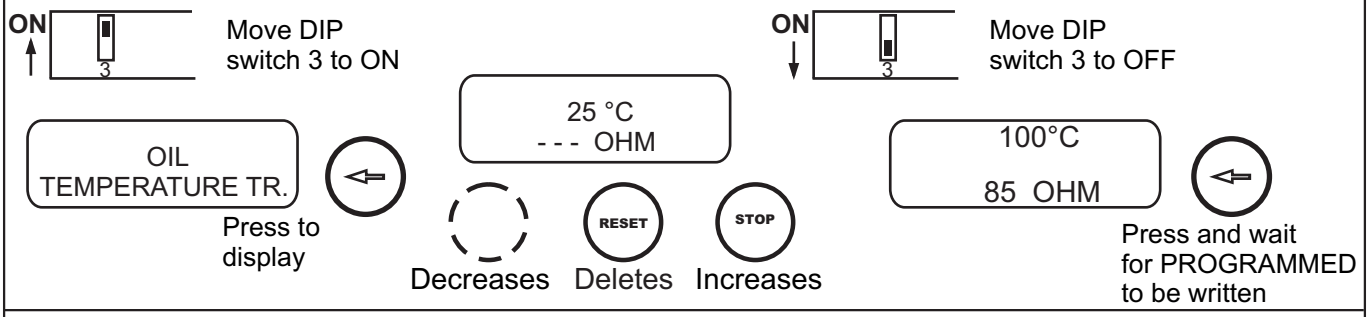
TYPE **C - 12845-485 C-12845/1200C-10845**

The control unit is factory set for pressure and temperature transmitters such as TYPE TPO/403 (Pressure), TTAO/402 (Temperature).
It is possible to programme 10 resistance values, corresponding to the characteristic curves of other pressure and temperature transmitters.

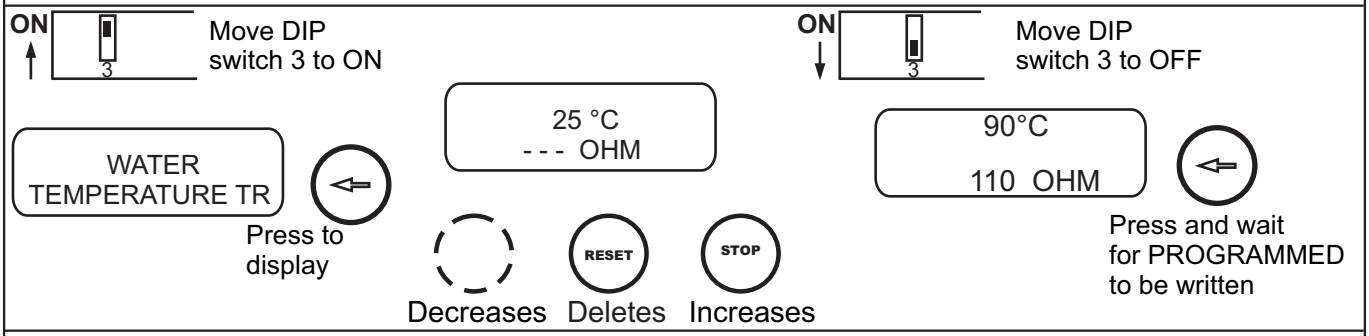
PROGRAMMING OF CORRESPONDENCE



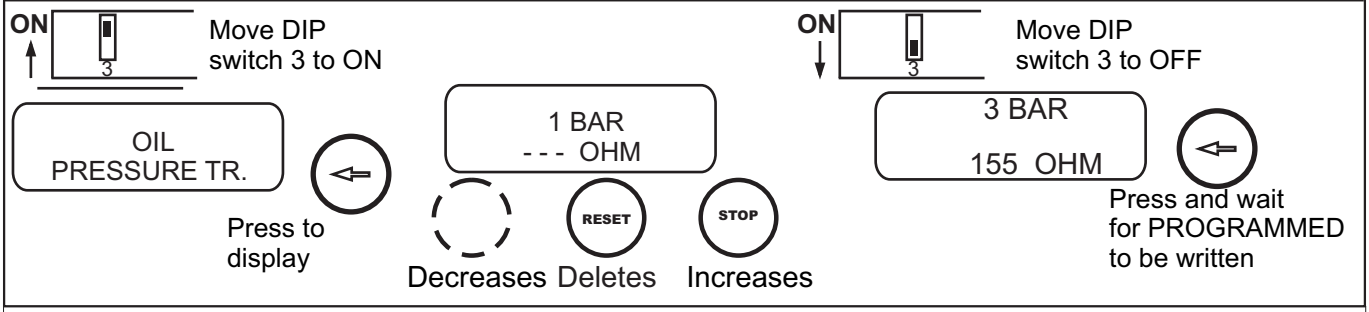
OIL TEMPERATURE TRANSMITTER



WATER TEMPERATURE TRANSMITTER



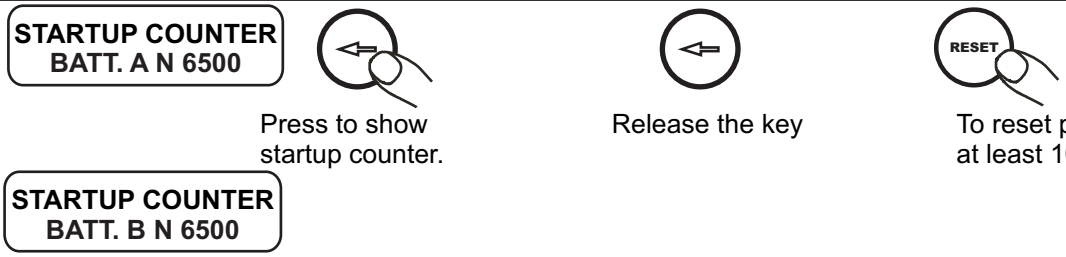
OIL PRESSURE TRANSMITTER



TO RESTORE THE TABLES TO THE FACTORY VALUES, DELETE ALL THE 10 PROGRAMMINGS

CAUTION: It is necessary to programme at least 2 values (To obtain a good precision in temperature and pressure control we recommend programming at least 4 values). With less than 2 values programmed, “ERROR” will be displayed and the factory-set programming will be maintained.

STARTUP COUNTER RESETTING



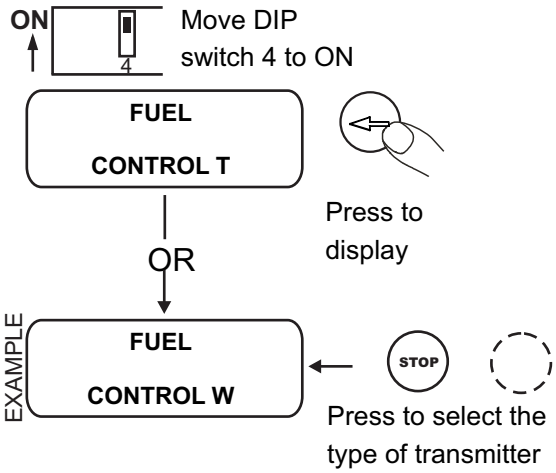
2 Valid for firmware revisions higher than or equal to 2.18

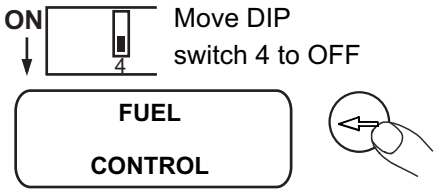
PROGRAMMING

CONTROL UNIT TYPE **C - 12845-485 -C-12845/1200 C-10845**

SELECTION OF FUEL FLOAT

The control unit is programmed for a float/rheostat assembly (suitable for the fuel level indicator).
During programming FUEL CONTROL **T** will be shown on the display.
It is possible to programme the use of a float with a contact that closes to ground when there is no fuel.
During programming FUEL CONTROL **W** will be displayed.

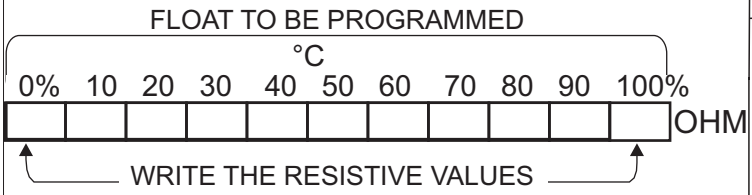




FUEL FLOAT PROGRAMMING

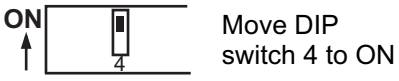
The factory control unit is adjusted for floats type GR … made by Elcos (300 Ohm empty tank - 100 Ohm for half-full tank - zero Ohm full tank).
It is possible to programme 11 resistance values, corresponding to the characteristic curves of other floats.

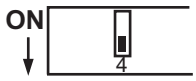
PROGRAMMING OF CORRESPONDENCE

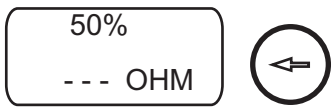


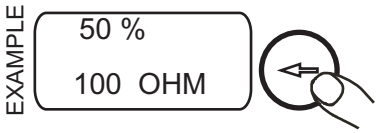
TO RESTORE THE TABLES TO THE FACTORY VALUES, DELETE ALL THE 11 PROGRAMMINGS

CAUTION: It is necessary to programme at least 2 values (to obtain a good precision in temperature and pressure control we recommend programming at least 4 values) With less than 2 values programmed, “ERROR” will be displayed and the factory-set programming will be maintained.









RESTORE FACTORY-SET PROGRAMMING

TO RESTORE ALL THE FACTORY-SET PROGRAMMING

Move DIP switches 1-3-5-7-9 to ON

Press for at least 1 second, until the writing STANDARD appears

MOVE ALL THE DIP SWITCHES BACK TO OFF

PROGRAMMING OF THE FOLLOWING IS NOT RESTORED:

- LANGUAGE
- OPERATING HOURS
- STARTUPS COUNTER

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