CONTROL UNITS FOR IRRIGATION MOTOR PUMPS AND PUMP WATER PRESSURE CONTROL

INSTRUCTION AND USER MANUAL

CONVENTIONAL ENGINES
Control unit type

- **CIM-136/4G** (EUROPEAN NETWORK COVERAGE)
- **CIM-136/4GW** (WORLDWIDE NETWORK COVERAGE)

ENGINES EQUIPPED WITH CONTROL UNIT FOR ELECTRONIC CONTROL OF THE INJECTION SYSTEM
Control unit type

- **CIM-136FPT/4G (FTP Motors)**
- **CIM-136JCB/4G (JCB Motors)**
- **CIM-136JCB/4G (John Deere Motors)**
- **CIM-136FPT/4GW (FTP Motors)**
- **CIM-136JCB/4GW (JCB Motors)**
- **CIM-136JCB/4GW (John Deere Motors)**

COMPLETE OF 2G/3G/4G TELEPHONE WARNING DEVICE AND COMMAND

- Notifies via SMS message when the motor pump is in alarm condition.
- Programming pages of telephone numbers to be dialled when the motor pump is in alarm condition.
- Possibility of displaying the status of the motor pump.
- Possibility of switching off the protection of the pump.
- Setting of the minutes of work.
- Setting of the working pressure.
- Possibility of starting or stopping with SMS commands.
- Possibility to restore all the intervened protection devices and the general alarm.

- Operates the engine accelerator to keep the pressure of the system constant. (accelerator with 6 wires connected to the control unit)
- Controls the flow of water in the pipe.
- Electronic pressure switch to control the pump water pressure.
- Digital pump water pressure gauge.
- Clock for programming the starting and stopping of the motor pump.

- Delayed acceleration after starting.
- Delayed deceleration before stopping.
- Assembly also on the machine and in the open air.
- CANBus SAE J1939 connection.
- Frost protection function.
- Pressure boost function.

MADE TO:

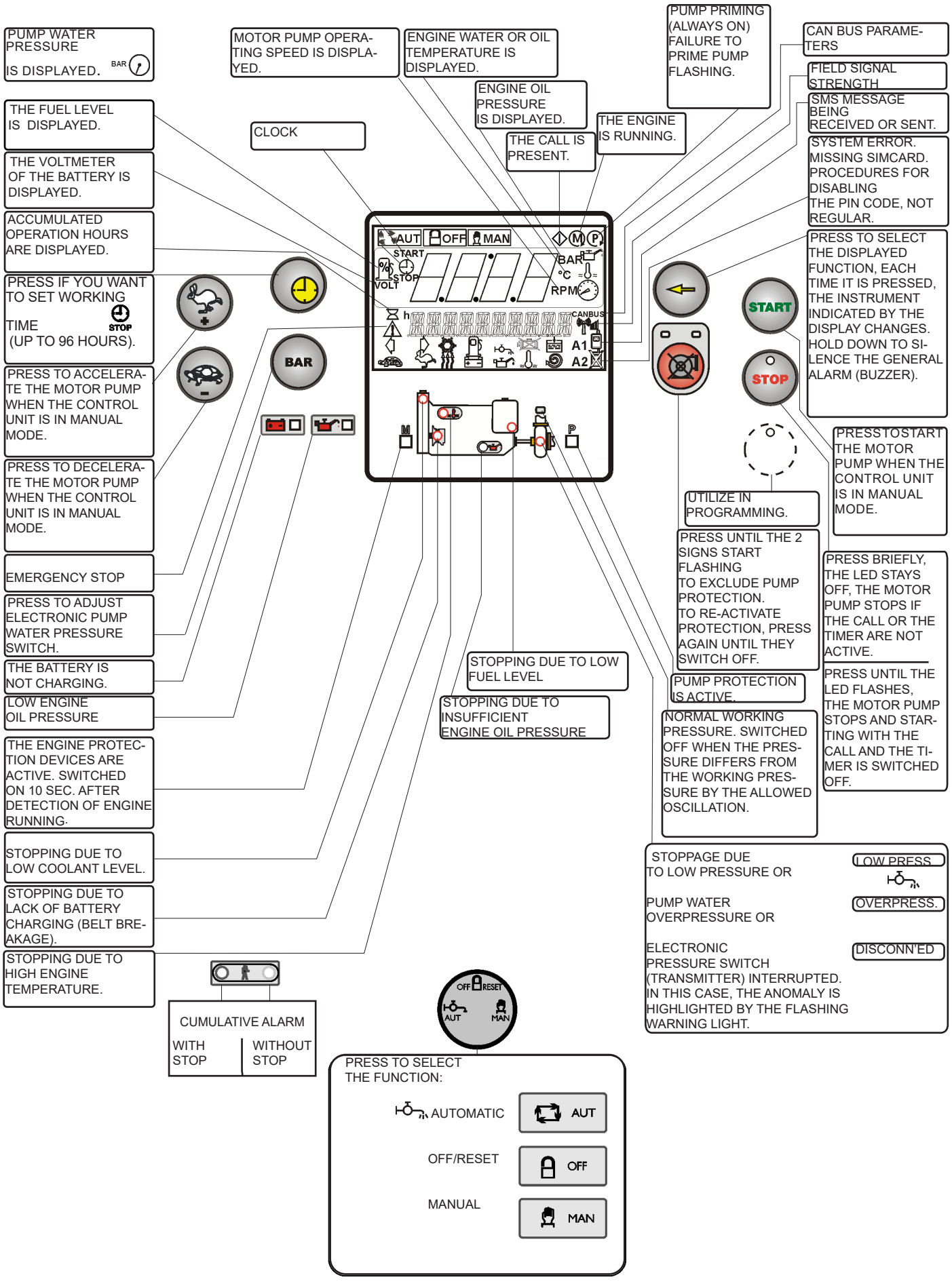
PROTECT
motor pump sets by stopping them in the event of:
- low oil pressure
- over-temperature
- belt breakage
- low coolant level
- low pump water pressure
- pump water overpressure
- overspeed
- A1 } available
- A2 }

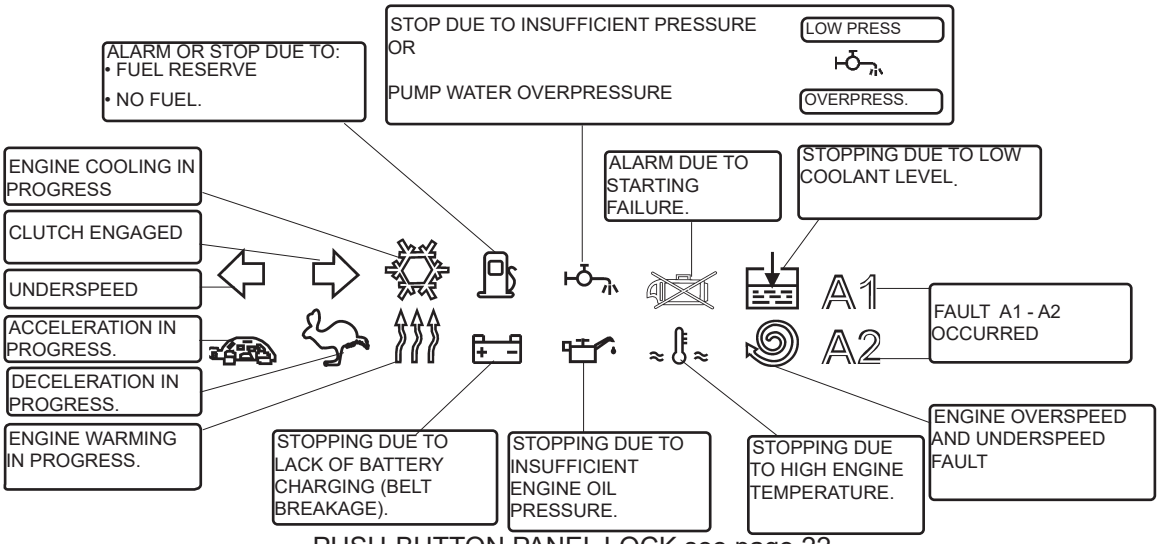
DISPLAY
on the panel the functions of:
- hour-meter
- oil pressure gauge
- water or oil thermometer
- tachometer
- pump water pressure gauge
- timer
- fuel level gauge
- battery voltmeter
- pump protection exclusion
- battery and oil lights
- protections intervention
- emergency stop

PARMA ELCOS® ITALY
Tel. +39 0521/772021 Fax +39 0521/270218
E-mail: info@elcos.it - HTTP://www.elcos.it

BRIEF INSTRUCTIONS

After starting, the motor pump protects itself automatically.





PUSH-BUTTON PANEL LOCK see page 22.

SWITCHING OFF OF PUMP PROTECTION DEVICES

Button  switches off the pump protection devices:

- failure to prime main pump
- failure to fill pipes
- insufficient pump water pressure
- pump water overpressure
- abnormal acceleration
- adjustment error

- switching off is obtained by holding it down for at least 3 consecutive seconds; the function is indicated by the two intermittent Indicators.
- this switching off is deleted by pressing the button again.

CONTENTS

WORKING PRESSURE CONTROL

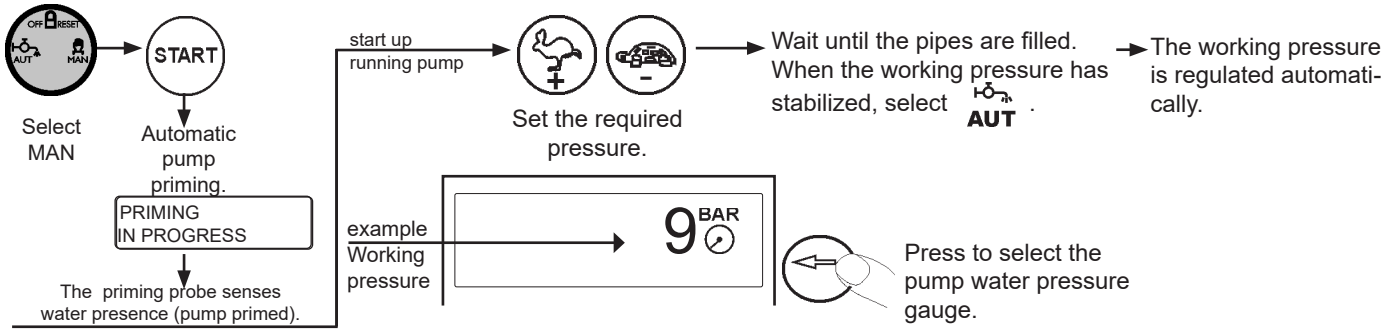
Select the MANUAL operating mode, start the motor pump with button START.

Factory Setting
The motor pump starts up if the motor pump is primed.

Set the required pressure with buttons + / −, after 10 seconds BAR STORED is displayed.
Wait until the pipes are filled and the pressure has stabilized at the chosen value. After finishing setting, SELECT OPERATING MODE **AUT**, the pressure of the system will remain set at the chosen pressure.

The chosen pressure value can be corrected with the system under pressure, by pressing buttons + / −.
The working pressure setting is deleted, when the engine is stopped by selecting operating mode OFF/RESET.

SEQUENCE OF OPERATIONS



P Always on: pump primed.
Flashing: failure to prime.

PUMP PROTECTION

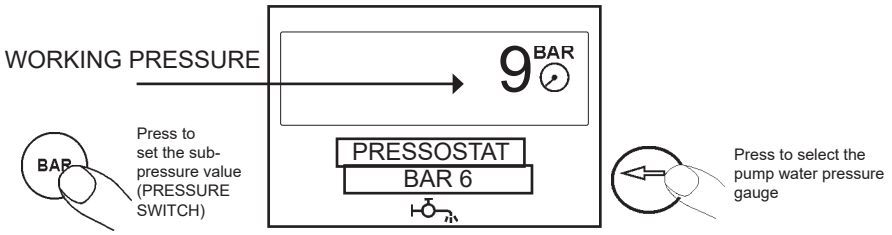
NO ADJUSTING IS REQUIRED.

The pump protection is enabled when warning lights PUMP PROTECTION ACTIVE P and water pressure normal 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 overpressure
or
INSUFFICIENT PRESSURE
Insufficient pressure **(subpressure)**

However it is possible to change the **two bars** of pressure lowering (subpressure), by pressing button BAR.
This change is deleted, when the engine is stopped, by selecting the OFF/RESET operating mode.

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



FAILURE TO FILL PIPES FAULT

The acceleration starts with the engine running, with pump primed.

The motor pump reaches the redefined WORKING PRESSURE (see BARS STORED) within the TIME OF FAILURE TO FILL PIPES, set to 120 seconds. If air is present in the pipes, the acceleration will be alternated with pauses (of 15 seconds), if the pressure remains steady for 5 seconds. This situation will be repeated several times until the WORKING PRESSURE is reached. If the pressure is not reached within the FAILURE TO FILL PIPES time (120 sec.), FAILURE TO FILL PIPES is displayed on the display and the engine stops.

ABNORMAL ACCELERATION

(Pipe leakage controlled within the limits of the system).
As a result of a leakage, the engine tends to increase the revolutions to bring it back to WORKING PRESSURE. If the revolutions increase by 10% for a time longer than 120 seconds, ABNORMAL ACCELERATION is displayed on the display and the engine stops

OPERATION

To activate the control unit press the button.

FUNCTIONS SELECTION

The function selected with the key is shown by the associated warning light.

- •AUT Automatic pressure control.
- •OFF The engine cannot be started and if running it is stopped.
- •MAN Operation without automatic pressure control.

GLOW PLUGS PREHEATING
ACTIVATED BEFORE STARTING
(GLOW PLUG IS SHOWN ON THE DISPLAY)

The duration of the preheating action can be set, the preheating action ceases before the beginning of the starting process. The preheating control is disabled at the factory since it has been programmed to zero seconds.

THE STARTING OF THE MOTOR PUMP CAN BE OBTAINED IN FOUR WAYS:

- CALL
- TIMER
- SMS

The starting procedures are similar to each other.

Factory Setting
The motor pump starts up if the motor pump is primed.

•KEY START

STARTING WITH CALL

When the call contact closes and the DELAY AFTER CALL CLOSED has elapsed, the control unit controls the glow plugs (if preset) and then the starting. If preset, the motor pump stays on idle for the whole ENGINE WARMING , time, when this time has elapsed the motor pump reaches and maintains the preset working pressure. When the call contact opens once the STOP DELAY after CALL OPENING has elapsed, if preset the motor pump slowly decelerates, when the motor pump is on idle the ENGINE COOLING time starts.
When this time has elapsed the motor pump stops. During its operation the motor pump is protected from the faults controlled by the probes connected to the control unit.

STARTING WITH START BUTTON

START To start, a pulse on the button is sufficient.

STARTING

This takes place on closing of the CALL contact, or with Timer or SMS.
Before beginning the starting process, a buzzer is activated for 8 seconds, and after a 3-second pause the starting process begins. To facilitate startup, a special circuit emits a series of four, 5-second pulses, with a 5-second delay between each pulse.

STARTING FAILURE

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

DETECTION OF ENGINE RUNNING (M)

It is obtained with measurement of the voltage and frequency of the battery charging alternator. Disables the starter motor.

AUTOMATIC PUMP PRIMING (P) (ALWAYS ON)

The priming pump starts; when the priming probe senses the presence of water, the pump stops and after 15 seconds the engine starting begins.

PUMP PRIMING FAILURE (P) (FLASHING)

The priming probe does not sense the presence of water and a time higher than 240 seconds has elapsed.

OPERATION

CLUTCH

This is engaged on reaching a certain engine speed. This clutch disengages when the engine speed drops below the set value.

ENGINE WARMING

(factory-excluded)

After closing of the call contact or TIMER or SMS pump priming takes place, the engine stays on idle for the time necessary to allow warming of the engine. After this time has elapsed the engine slowly reaches the working pressure. During heating the protection devices are active.

ENGINE COOLING

On opening of the call contact or TIMER or SMS the engine slowly decelerates. When the engine is on idle the COOLING TIME starts, and after this time has elapsed the engine stops.

STOP

Stopping is obtained:

- Through intervention of the protection devices.
- Through end of work of the clock and of the timer .
- By pressing the emergency button (to be fitted externally).
- On opening of the call contact.
- At end of work through intervention of the underspeed or the flow switch.
- Through the SMS command .
- On pressing buttons 

, the engine stops after slow deceleration.

Stopping can be obtained in two ways:

- With electromagnet de-energized with engine running and energized with it stopped, remaining in this condition for 15 sec. after detection of engine stopped.
  On pressing button OFF RESET the stopping electromagnet stays energized for 60 seconds.
- With electromagnet or electro-valve activated while the engine is running and deactivated when stopped. This condition is maintained even when the engine is stationary.

EMERGENCY STOP

This can be obtained in any operating condition, by installing one or more (latching) buttons. This is indicated by the optical indicator .

STOPPING WITH THE STOP AND OFF-RESET BUTTONS

• On pressing briefly, the led stays off, the motor pump stops if the call or the timer are not active.

• On pressing (3 seconds) until the LED flashes, the motor pump stops and starting by call and by timer are disabled, with the engine stopped the warning light remains flashing. The deletion of this switching off occurs on pressing the stop button (3 seconds) until the flashing warning light goes out.

Press until switching on of OFF.

The engine cannot be started in any way and if it is running it is stopped. Reactivates the protection devices and all the locked functions.

STOPPING FAILURE

This intervenes if the running engine signal is detected 60 seconds after the stop command.

STOPPING FAILURE will be read on the display.

BUZZER

The control unit has its own buzzer. Before starting automatically the motor pump activates the buzzer intermittently for 8 seconds, followed by a pause of 3 seconds (this function can be switched off). This buzzer also operates for the intervention of the protection devices listed on page 8-9. It is possible to place a buzzer externally to be connected to the relevant output.

OPERATION

TIMER

Always enabled, allows if necessary the motor pump to be operated for a settable time (maximum 96 hours), at the end of which it is stopped and on the display the end of work time indicator STOP comes on.

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, continously displaying the remaining work time .

CANCELLING THE SET TIME

To zeroing the set time, tkeep the push-button  pressed until it reaches zero.

OIL AND BATTERY WARNING LIGHTS

 Switched on with the automatic or manual function these switch off with the engine running with oil pressure and battery recharging system normal. Control unit in Stand by, warning light pulses  .

END OF WORK

(Flow stopped)

When the engine revolutions fall by 10% and the WORKING PRESSURE stays constant for 120 seconds END OF WORK is displayed on the display and the engine stops.
If there is not this condition, a flow switch must be installed (End of work with flow switch see on page 9).

INSTRUMENTS

The control unit incorporates seven instruments that can be selected in sequence by pressing button  .

h HOUR-METER - total hours of operation witht he engine running the signal h pulsates, to indicate the correct functioning of the HOUR-METER).

BAR PRESSURE GAUGE - Engine oil pressure
°C THERMOMETER - Engine oil and water temperature
} TRANSMITTERS MOUNTED ON THE ENGINE ON REQUEST
RPM TACHOMETER - Speed of motor pump
BAR PRESSURE GAUGE - Engine water pressure
% INDICATOR - Fuel level percentage
VOLTMETER - Battery voltage

MESSAGES AND CAN Bus INSTRUMENTS

Sent (SAE J1939 protocol Bus) from the engine equipped with control unit for electronic control of the injection system.

ANOMALY MESSAGES

The anomaly messages managed by the injection control unit are indicated on the display example [SPN 1234-12] CAN Bus.
Problems of connection [ANOMALY] CAN Bus to the CAN Bus.

CAN Bus INSTRUMENTS

TACHOMETER - OIL PRESSURE GAUGE - THERMOMETER

CUMULATIVE ALARMS

LED (red) STEADY LIGHT: anomaly managed by the injection control unit **will cause the engine to stop**.
LED (red) FLASHING LIGHT: anomaly managed by the control unit CIM-136 **will cause the engine to stop.**

LED (yellow) STEADY LIGHT: anomaly managed by the injection control unit **will NOT cause the engine to stop.**
LED (yellow) FLASHING LIGHT: anomaly managed by the control unit CIM-136 **will NOT cause the engine to stop,** or indicates a preventive maintenance operation.
LED OFF ALL OK.

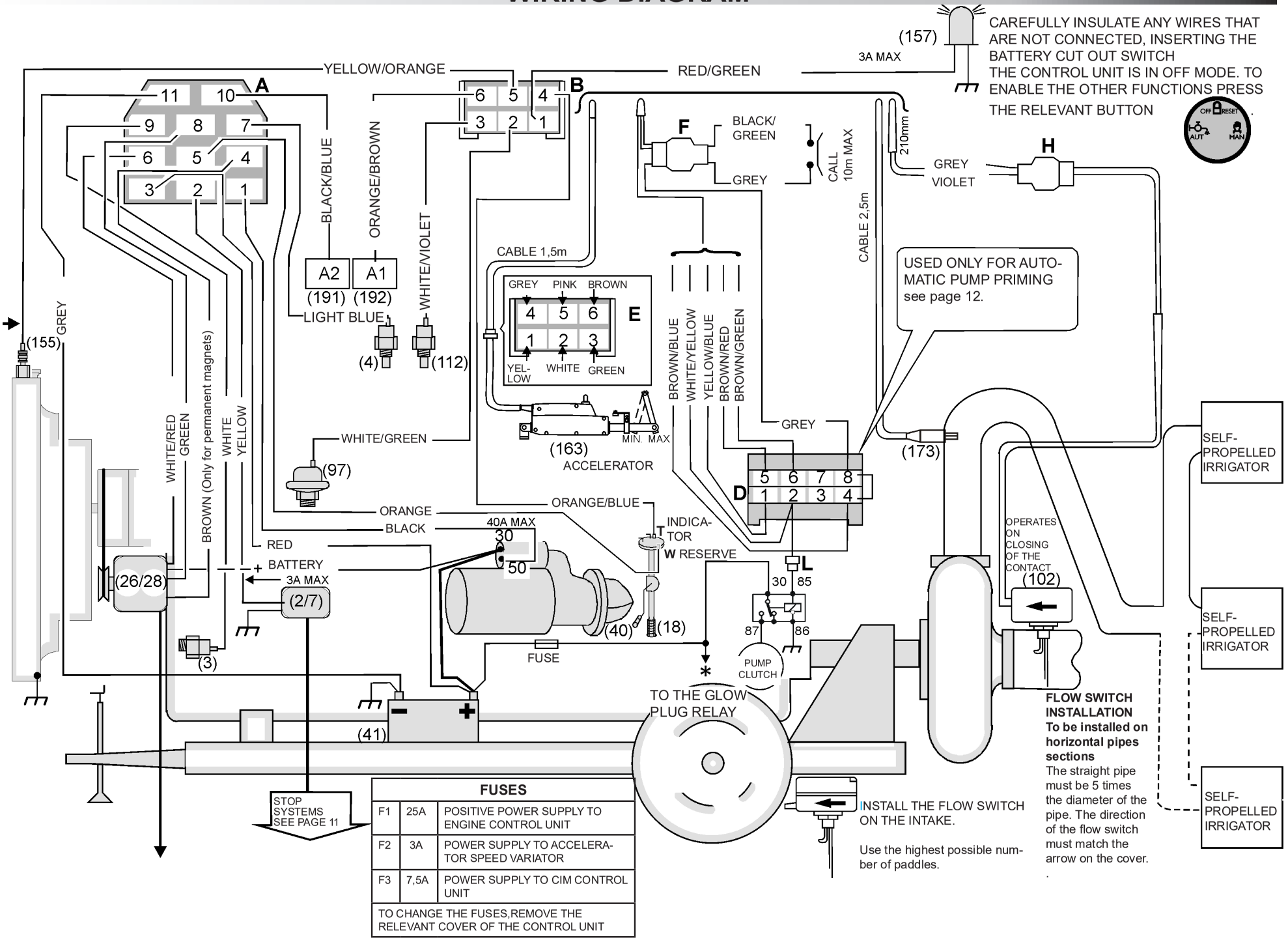
ENGINE AND PUMP PROTECTION DEVICES

The ENGINE PROTECTION DEVICES are enabled when indicator M comes on (10 seconds after detection of engine running). The PUMP PROTECTION is enabled when P comes on after 2 consecutive minutes of sufficient water pressure, indicated by NORMAL PRESSURE indicator and in any case 10 minutes after the pump started. Intervention due to a fault enables the GENERAL ALARM.

DESCRIPTION OF FAULTS OR FUNCTIONS	INDICATION ON THE FRONT PANEL	MOTOR PUMP PROBE	INSTANT OF ACTIVATION (seconds)	INTERVENTION DELAY (seconds)	PROGRAMMED THRESHOLD (FACTORY SETTING)	STORES THE FUNCTION	DECELERATION	ENGINE COOLING	STOP	INTERVENTION OCCURS WHEN:
BATTERY UNDER-VOLTAGE	BATTERY UNDER-VOLTAGE	BATTERY	Always active	2	11 (12V) 22 (24V)	NOT	=	NOT	DOES NOT STOP	Battery voltage remains lower than the programmed threshold for the whole of the intervention delay time.
BATTERY OVER-VOLTAGE	BATTERY OVER-VOLTAGE			5	16 (12V) 32 (24V)	YES	SLOW	NOT		Battery voltage exceeds the programmed threshold for the whole of the intervention time.
OVER-HEATING DETECTED BY THERMOSTATIC SWITCH	OVER-HEATING	THERMOSTATIC SWITCH	With running engine	2	=	YES	SLOW	YES	WITH STOP	The temperature detected by the transmitter exceeds the set threshold.
FUEL RESERVE	FUEL RESERVE Flashing	FUEL FLOAT TERMINAL **T**	Always active	5	10%	NOT	=	NOT	DOES NOT STOP	The fuel level remains lower than the threshold for the whole of the intervention delay time.
NO FUEL	NO FUEL Always on	FUEL FLOAT TERMINAL **W**		5	1%	YES	SLOW	YES	WITH STOP	
LOW OIL PRESSURE	LOW OIL PRESSURE	OIL PRESSURE SWITCH	10 after detection of running engine	2	=	YES	QUICK	NOT	WITH STOP	The pressure is lower than the threshold set by the pressure switch.
STOPPING FAILURE	STOPPING FAILURE	ELECTRO-VALVE OR ELECTRO-MAGNET	After the stop command	60	=	YES	=	NOT	DOES NOT STOP	The engine running signal is detected after the stop command and the intervention delay time has elapsed.
LOW RADIATOR FLUID LEVEL	LOW RADIATOR LEVEL	LEVEL PROBE	Always active	5	=	YES	SLOW	NOT	WITH STOP	The coolant falls below the electrode and the intervention delay has elapsed.
CHARGING ALTERNATOR FAULT (BELT BREAKAGE)	CHARGING ALTERNATOR FAULT	ALTERNATOR	10 after detection of running engine	5	=	YES	SLOW	NOT	WITH STOP	Alternator does not recharge the battery and the intervention delay time has elapsed.
STARTING FAILURE	STARTING FAILURE	BATTERY -Starting Motor	Always active	=	=	YES	QUICK	NOT	WITH STOP	The whole series of starting attempts is unable to start the engine.

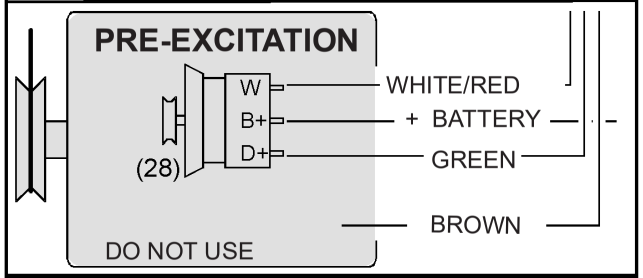
DESCRIPTION OF FAULTS OR FUNCTIONS	INDICATION ON THE FRONT PANEL	MOTOR PUMP PROBE	INSTANT OF ACTIVATION (seconds)	INTERVENTION DELAY (seconds)	PROGRAMMED THRESHOLD (FACTORY SETTING)	STORES THE FUNCTION	DECELERATION	ENGINE COOLING	STOP	INTERVENTION OCCURS WHEN:
THE END OF WORK FUNCTION DUE TO FLOW SWITCH INTERVENTION	END OF WORK FLOW SWITCH ⇦	FLOW SWITCH	When the pump protection active P warning light comes on	20	=	NOT	SLOW	YES	WITH STOP	There is no water flow and the intervention delay has elapsed.
AVAILABLE FAULT INPUT A1	A1	=	Always active	5	=	YES	SLOW	YES	WITH STOP	The input is negative (-) and the intervention delay has elapsed.
AVAILABLE FAULT INPUT A2	A2		With running engine							
FAILURE TO PRIME MAIN PUMP	FAILURE TO PRIME (P) (flashing)	PUMP PRIMING LEVEL PROBE	With running engine	240	=	YES	=	NOT	WITH STOP	The priming probe does not sense water presence and the intervention delay has elapsed.
FAILURE TO FILL PIPES	FAILURE TO FILL	ELECTRONIC PRESSURE SWITCH		120	=	YES	SLOW	NOT	WITH STOP	The working pressure is not reached and the intervention delay has elapsed.
OVERSPEED	OVERSPEED	ALTERNATOR TERMINAL W	Always active	2	4000 RPM	YES	=	NOT	WITH STOP	The speed remains higher than the programmed threshold for the entire duration of the intervention delay.
INSUFFICIENT PUMP WATER PRESSURE	INSUFFICIENT WATER PRESSURE	ELECTRONIC PRESSURE SWITCH	After detection of working pressure and in any case 600" after the pump started	5	=	YES	SLOW	YES	WITH STOP	The pump water pressure remains lower for the entire duration of the intervention delay.
PUMP WATER OVERPRESSURE	PUMP OVERPRESSURE									The pump water pressure remains higher for the entire duration of the intervention delay.
ABNORMAL ACCELERATION	ABNORMAL ACCELERATION		With running engine	60	Allowed acceleration percentage 20%	YES	SLOW	NOT	WITH STOP	The speed remains higher than the programmed threshold for the entire duration of the intervention delay.
END OF WORK DUE TO UNDERSPEED INTERVENTION	UNDERSPEED END OF WORK ⇦	ALTERNATOR TERMINAL W	When the pump protection active warning light P comes on.	120	Allowed deceleration percentage 10%	NOT	SLOW	YES	WITH STOP	The speed drops below the programmed threshold and the working pressure remains constant for the entire duration of the intervention delay.
EMERGENCY STOP	EMERGENCY STOP ⚠	EMERGENCY BUTTON	Always active	=	=	YES	=	NOT	WITH STOP	Emergency button is pressed.
ADJUSTMENT ERROR	ADJUSTMENT ERROR	ALTERNATOR TERMINAL W	With running engine	120	=	YES	=	NOT	WITH STOP	The rotation speed of the engine has not changed after 120 seconds.
PUMP WATER PRESSURE TRANSMITTER	TPA DISCONNECTED	ELECTRONIC PRESSURE SWITCH	ALWAYS ACTIVE	60	=	YES	SLOW	NOT	WITH STOP	The pressure transmitter circuit is disconnected.

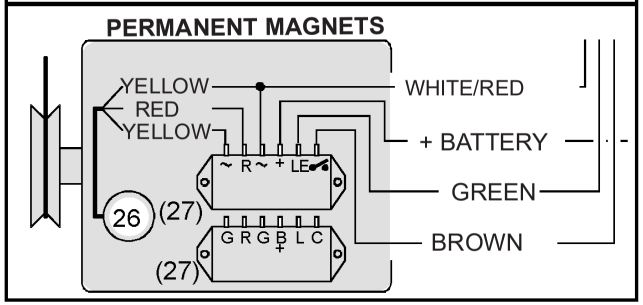
WIRING DIAGRAM

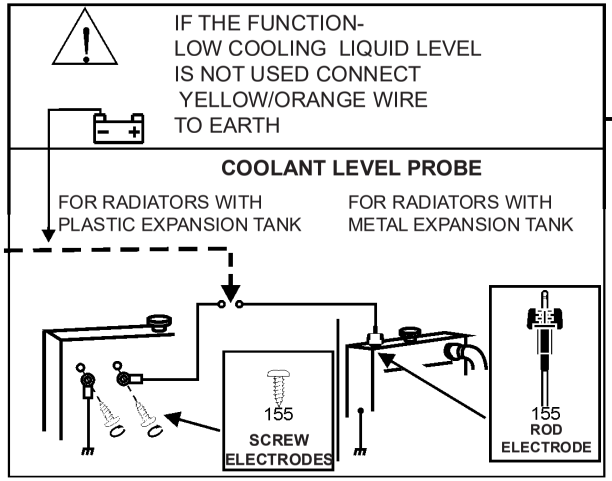


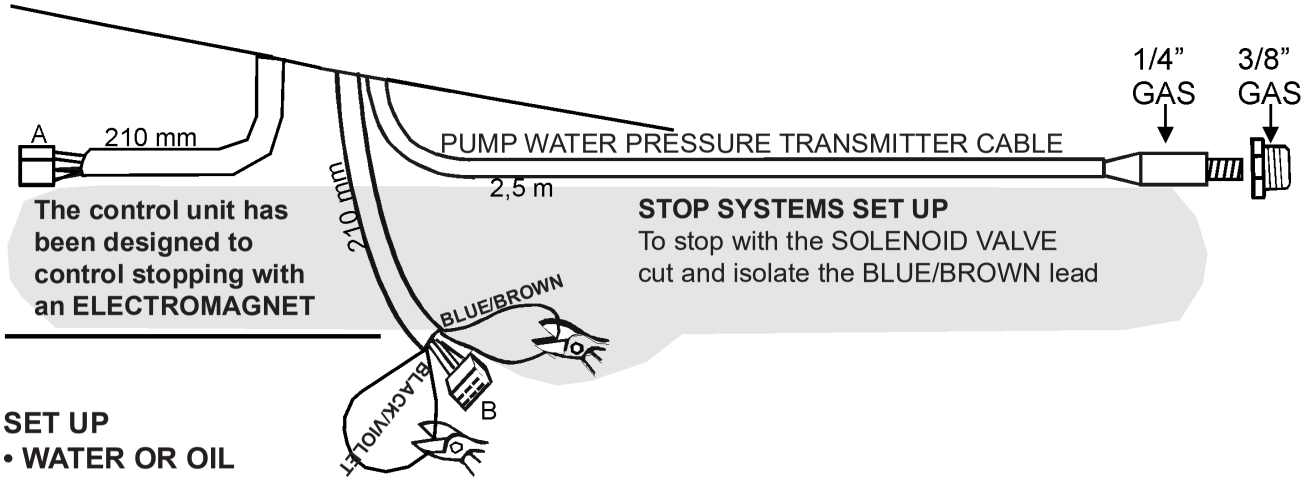
FUSES		
F1	25A	POSITIVE POWER SUPPLY TO ENGINE CONTROL UNIT
F2	3A	POWER SUPPLY TO ACCELERA-TOR SPEED VARIATOR
F3	7,5A	POWER SUPPLY TO CIM CONTROL UNIT
TO CHANGE THE FUSES,REMOVE THE RELEVANT COVER OF THE CONTROL UNIT		

CHARGE ALTERNATOR:









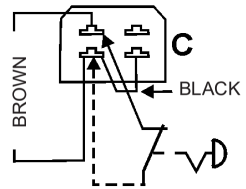
The control unit has been designed to control stopping with an ELECTROMAGNET

STOP SYSTEMS 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.

ELIMINATE THE BRIDGE WHEN CONNECTING THE EMERGENCY BUTTON



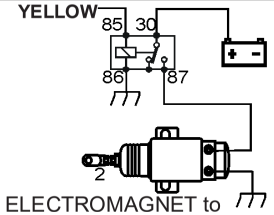
EMERGENCY STOP
THIS CAN BE OBTAINED WITH A LATCHING BUTTON. ON RELEASING THE EMERGENCY BUTTON, STARTING OR MOTION OF THE ENGINE IS STOPPED. TO RESET, RELEASE THE BUTTON, PRESS

AND SELECT OFF

STOP SYSTEMS

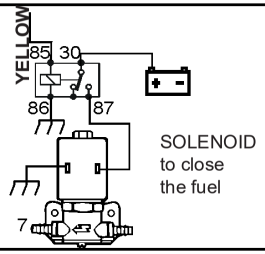
EXCITED IN STOP MODE

WARNING! : IT IS NOT POSSIBLE TO MOUNT THE EMERGENCY STOP BUTTON ON A STOP SYSTEM WITH ELECTROMAGNETS



ELECTROMAGNET to activate the engine STOP lever.

EXCITED WHILE RUNNING

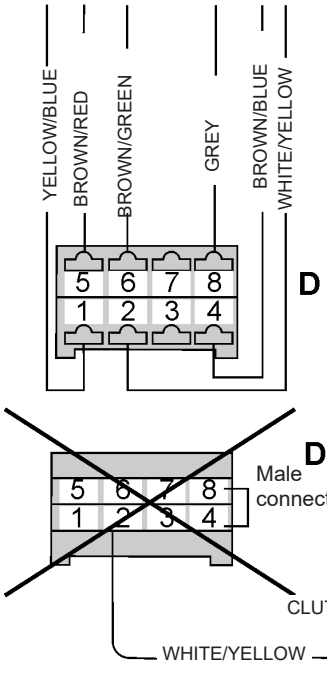


SOLENOID to close the fuel

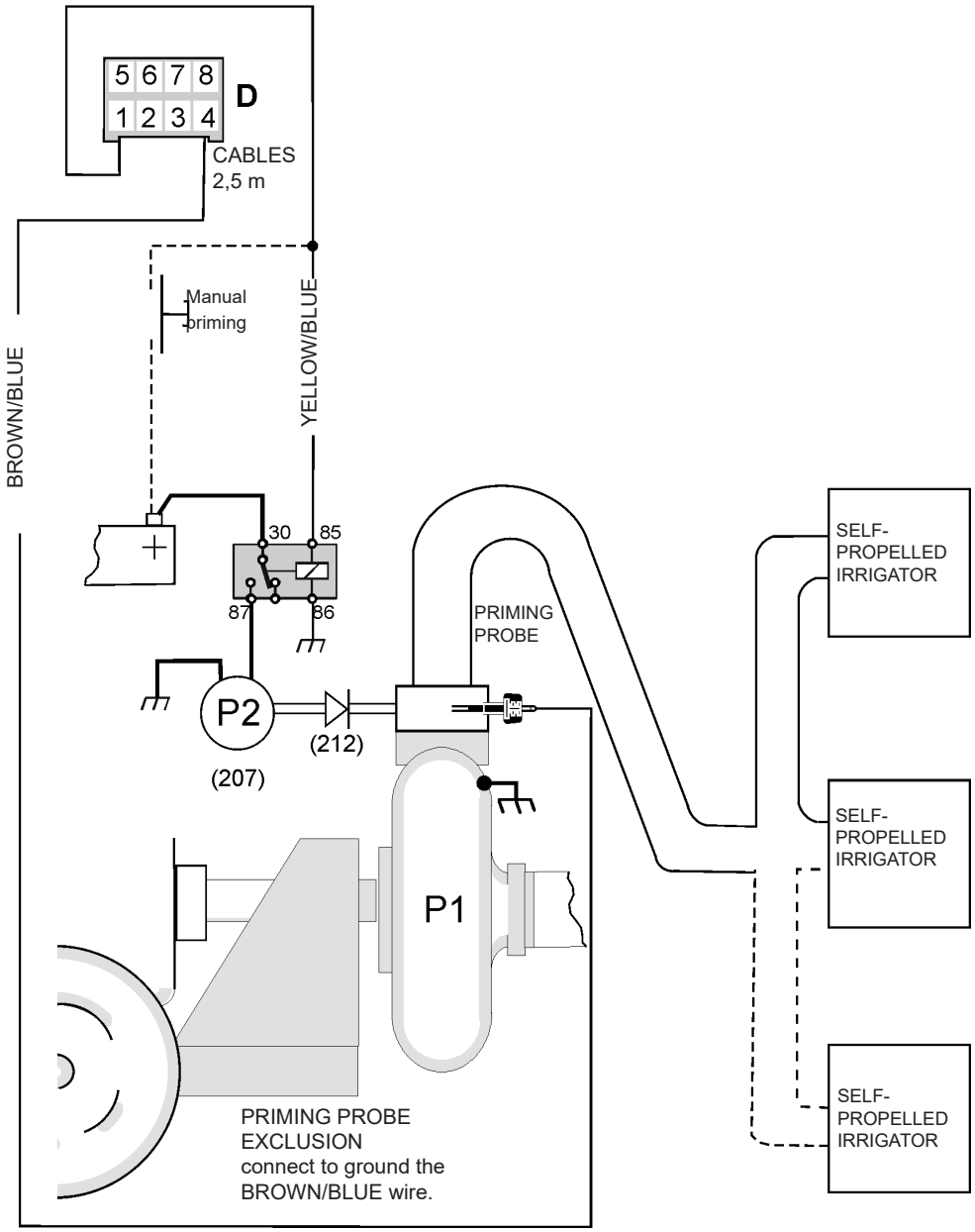
SETTING THE TACHOMETER see page 18

AUTOMATIC PUMP PRIMING CONNECTIONS

FEMALE
CONNECTOR



To connect
PUMP PRIMING, remove
the male connector,
insert the connector with
the wires brown/blue
yellow/blue.



OPERATION
AUTOMATIC PRIMING

The priming pump (P2) starts,
when the water reaches the priming
probe, the pump stops.

PRIMING FAILURE
The pump is stopped if the priming
probe does not sense the presence
of water within 240 sec..

ACCESSORIES

ON REQUEST

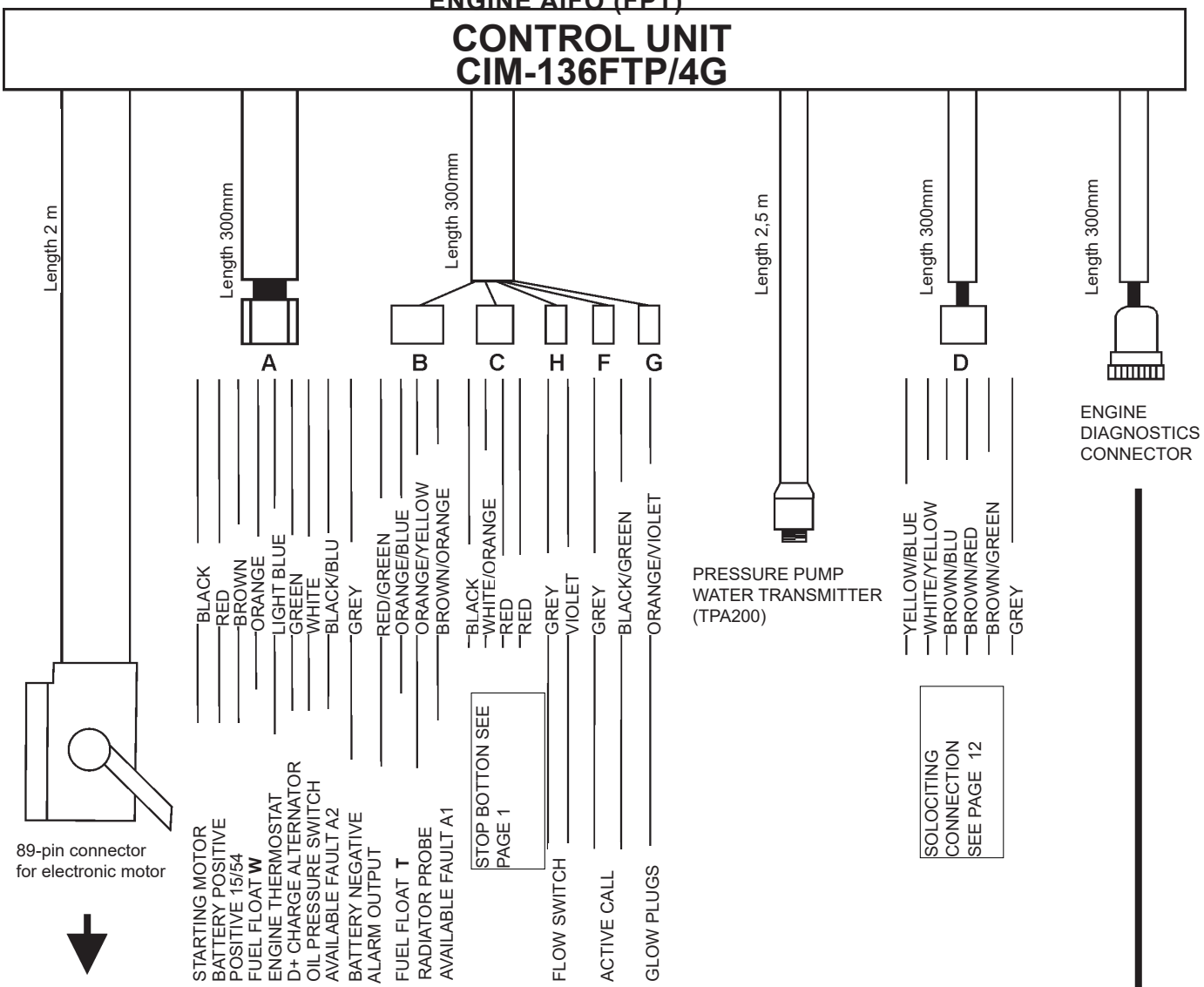
(2/7) ELECTROMAGNET OR ELECTRO-VALVE
(3) OIL PRESSURE SWITCH
(4) THERMOSTATIC SWITCH
(18) FUEL FLOAT FOR INDICATOR AND RESERVE
(97) OIL PRESSURE TRANSMITTER
(102) WATER FLOW SWITCH
(112) TEMPERATURE TRANSMITTER
(155) RADIATOR LIQUID LEVEL PROBE
(163) SPEED VARIATOR
(173) PUMP WATER PRESSURE TRANSMITTER (SUPPLIED)

(26) PERMANENT MAGNETS CHARGE ALTERNATOR
(27) ALTERNATOR REGULATOR
(28) PRE-EXCITATION CHARGE ALTERNATOR
(40) STARTING MOTOR
(41) BATTERY
(106) GLOW PLUGS
(157) VISUAL INDICATOR (GENERAL ALARM)
(191) A1 AVAILABLE FOR PROTECTION PROBE
(192) A2 AVAILABLE FOR PROTECTION PROBE
(207) PRIMING PUMP
(212) NON-RETURN PRIMING VALVE.

WIRING DIAGRAM

To the engine equipped with control unit for electronic control of the injection system.

ENGINE AIFO (FPT)



Pin arrangement of 89-pin connector.	
Pin	Description
2, 3, 8, 9	Battery positive, protected by fuse 25A(+).Power supply to engine control unit.
5, 6, 10, 11	Battery negative(-). Power supply to engine control unit.
12, 75	600ohm resistor.
13, 36	1200ohm resistor (with 24V battery) ; 10000ohm resistor (with 12V battery)
13, 56	500ohm resistor.
21, 46	Accelerator activation contact (PTO), normally open.
21, 74	Contact always closed.
21, 64	Deceleration contact, normally open.
21, 31	Acceleration contact, normally open.
21, 49	Contact always closed.
34, 35	CAN Bus line (34 = CAN L; 35 = CAN H).
40	Start up OK (+).
42, 29	Presence of water in the fuel filter.
62, 65	1900ohm resistor.
70, 71	3300ohm resistor.
77, 78	1300ohm resistor.
77, 79	2200ohm resistor.
78, 79	1100ohm resistor.
89	ISO line K.

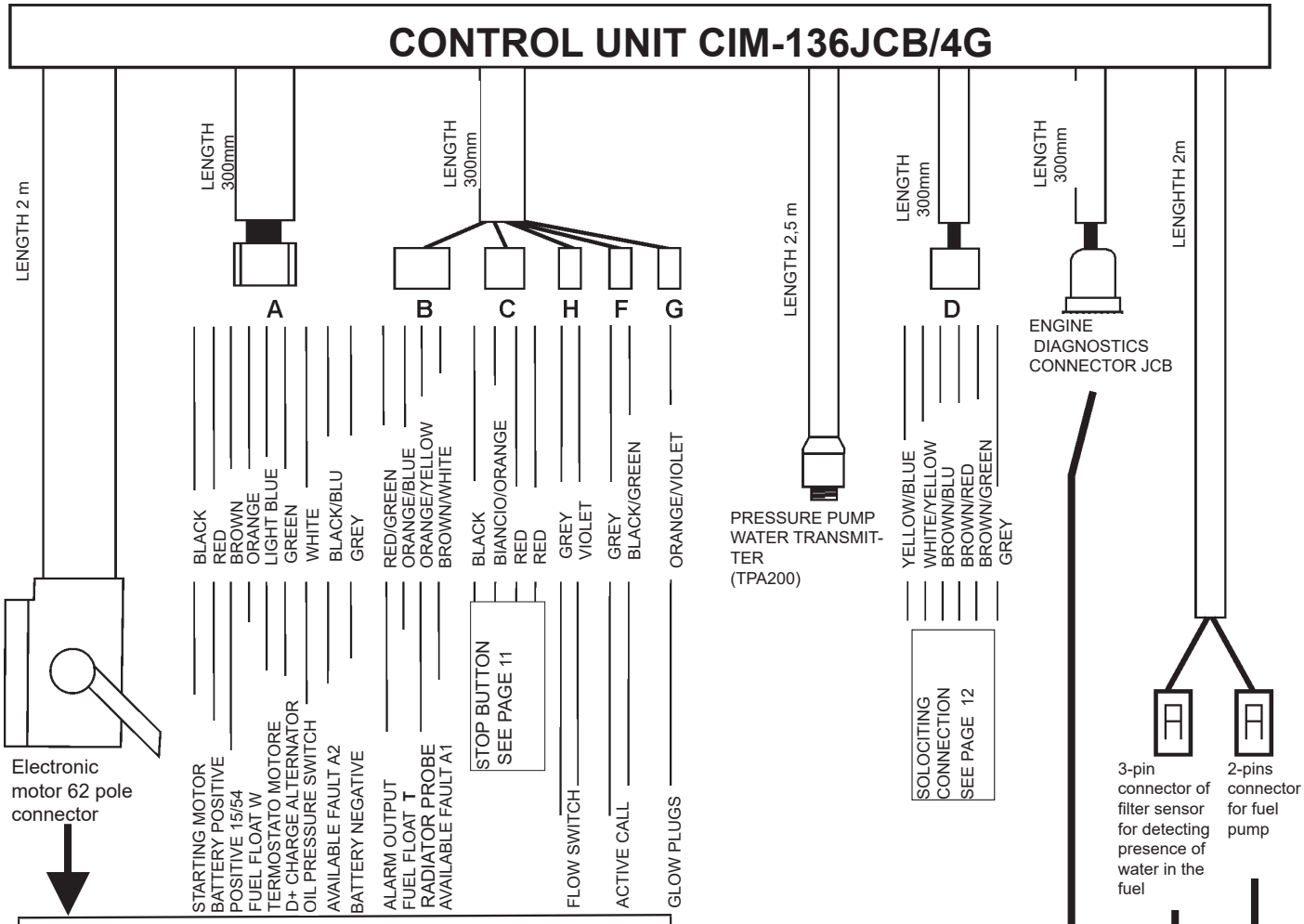
FPT ENGINES COMPATIBLE WITH THE CONTROL UNIT ARE:
NEF67 TIER3
NEF45 TIER3
CURSOR C87 TIER3
CURSOR C10 TIER3
CURSOR C13 TIER3

Pin arrangement of 19-pin diagnostics connector.	
Pin	Description
B	ISO line K.
C	CAN Bus CAN L.
D	CAN Bus CAN H.
T	Positive (see BROWN wire).
U	Battery positive (+).
V	Battery negative (-).

WIRING DIAGRAM

To the engine equipped with control unit for electronic control of the injection system.

MOTOR JCB



Pin arrangement of 62-pin connector.	
Pin	Description
49, 53, 57, 60	Battery positive, protected by fuse 25A (+). Power supply to engine control unit.
58, 59, 61, 62	Battery negative(-). Power supply to engine control unit.
2	Relay control for control unit power supply (-).
44	OK to start signal (+).
55	Presence of water in the fuel filter.
40	Relay control for fuel pump power supply (-).
39	Accelerator activation conctat (PTO); normally open (-)
43	Deceleration conctact ,normally open(-).
1	Acceleration conctat , normally open (-)
23, 27, 19	CAN Bus line (23 = CAN L; 27 = CAN H; 19 = Screen).

FOR JCB AND TCAE TYPE ELECTRONIC ENGINES

Pin arrangement of 9-pin diagnostics connector.	
Pin	Description
A	Battery Negative (-).
B	Battery positive (+).
C	CAN Bus CAN H.
D	CAN Bus CAN L.
E	CAN Bus Screen.

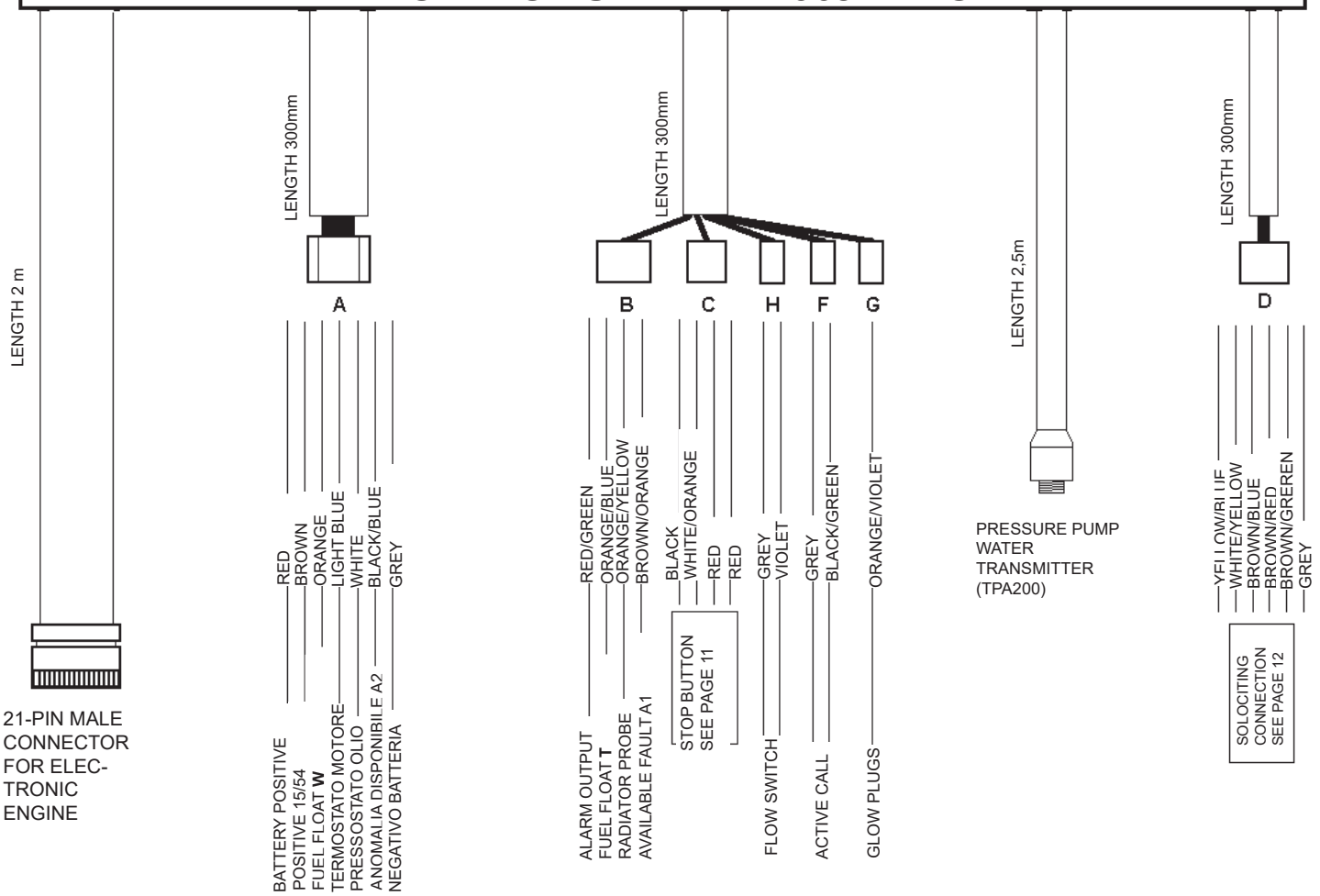
Pin arrangement of 3-pin connector of filter sensor for detecting presence of water in the fuel	
Pin	Description
A	Battery positive (+).
B	Presence of water in the fuel filter.
C	Battery Negative (-).

Pin arrangement of 2-pin fuel pump connector	
Pin	Description
1	Power supply to fuel pump (+).
2	Battery Negative (-).

WIRING DIAGRAM

For JOHN DEERE electronic engines type 6068 and 4045.

CONTROL UNIT CIM-136JDE/4G



Pin arrangement of 21pin connector.	
Pin	Description
A	Not connected.
B	Not connected.
C, L	4700 ohm resistor.
D	Starting the engine (+).
E	Not connected.
F	Not connected.
G	OK to start signal (+).
H	Not connected.
J	D + charge alternator.
K	Not connected.
M, L	4700 ohm resistor
N	Not connected.
P	Not connected.
R, S	Accelerator / decelerator
T	Not connected.
U, V	CAN Bus line (U = CAN L; V = CAN H
W	Not connected.
X	Not connected.

FOR JOHN DEERE ELECTRONIC ENGINES TYPE 6068 AND 4045.

NOTES

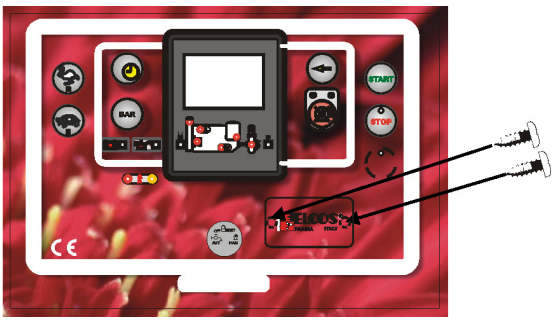
TELEPHONE WARNING DEVICE AND COMMAND SYSTEM

(MODEM INTEGRATED INTO CONTROL UNIT)

FUNCTIONS AND PROGRAMMING

- Notifies via SMS message when the motor pump is in alarm condition.
- Programming pages of telephone numbers to be dialled when the motor pump is in alarm condition.
- Possibility of displaying the status of the motor pump.
- Possibility of switching off the protection of the pump.
- Setting of the minutes of work.
- Possibility of starting or stopping with SMS commands.

To insert the SIM CARD and program the telephone warning device remove the cover



TO AVOID DAMAGING THE CONTROL UNIT PUT THE COVER BACK ON CAREFULLY

Insert the SIM Card only when the two green LEDs present in the SIM compartment are off.

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, 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 control unit in automatic or manual mode.

PRECAUTIONS

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

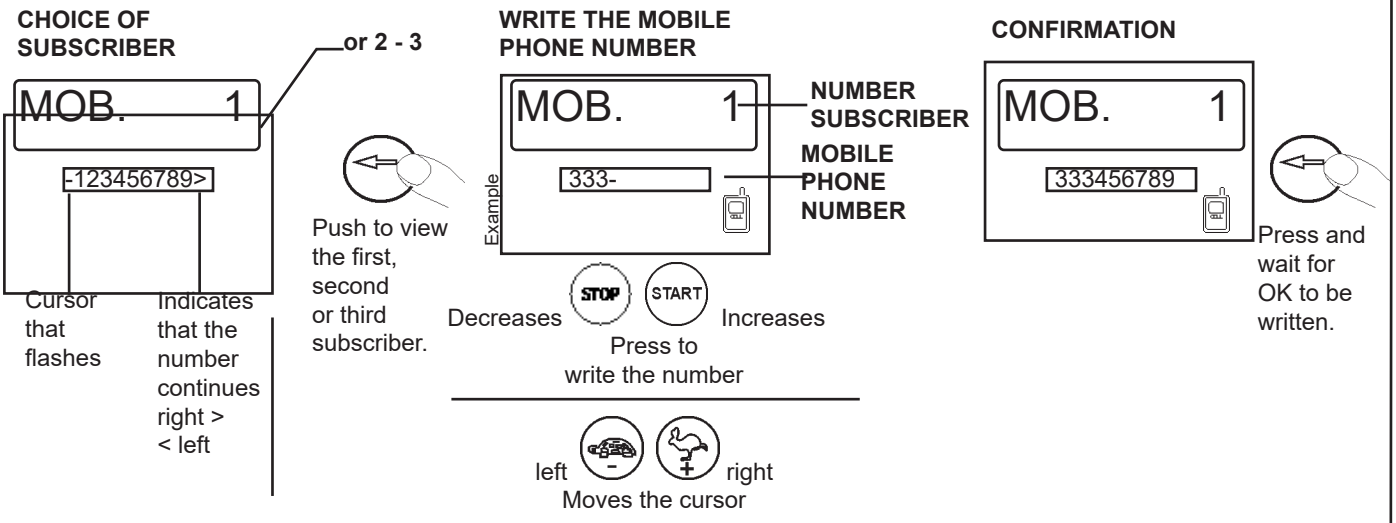
Notifies via SMS message when the motor pump is in alarm condition

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 3 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, see page 20 of the technical programming manual) 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 CIM control unit following the procedure described later.

Programming the cell phone numbers of the users who are to be notified when the motor pump is in alarm condition

- **PROGRAM** TELEPH.GSM see **USER PROGRAMMING** on page 20.



IMPORTANT NOTE

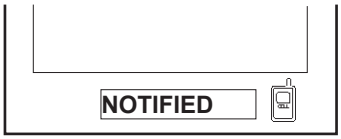
In order for a command sent via SMS to be interpreted correctly, it is important to programme the telephone number exactly as it is given by the mobile telephone network, and therefore inclusive of international dialling code and without the first zero of the dialling code (if there is one) of the telephone company.

Ex1: Italian number = 348123456
programme + 39348123456
Ex2: English number = 0797123456 (leave out the 1st zero)
programme + 44797123456

In any case, refer to the national numbering system.

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**.

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

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:

INTERMITTENT SIGNALS

Reply message from control unit to mobile phone:

PUMP
PROTECTION EXCLUDED

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

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

SIGNALS OFF

PUMP
PROTECTION EXCLUDED
ACTIVE PUMP
PROTECTION

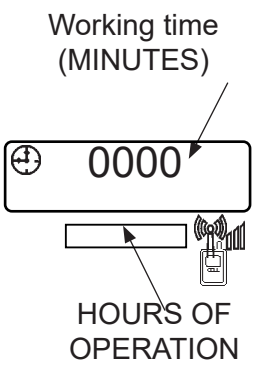
WATER PRESSURE 6,8 Bar
PRESSURE SWITCH 4,5 Bar } Example
TIMER 10:15

SETTING OF THE MINUTES OF WORK
(TIMER)

To set the minutes (minimum 1' max 1440') of work of the motor pump key in on the mobile phone:
500# .....
Minutes of work
example=

500#120
(2 hours of work)
Wrong examples
500 space = 120
spaces 500 # 120
500 or 120
500 # 1441

After the command the following is displayed.



Reply message from control unit to mobile phone:
OK, timer set to ...h...min

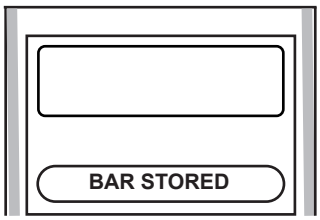
if the setting is correct.

ERROR, timer setting not correct.

SETTING OF THE WORKING PRESSURE

The working pressure can be set through an SMS command. The engine must be running. To set the working pressure write on the mobile, for example:
600#6.1
The control unit will automatically set the pressure of the motor pump to 6.1 Bar. The lowest settable value is 1 Bar while the highest value is 21 Bar. The control unit accepts these types of SMS:
600#6,1
600#6
600#6,11
Other types of SMS will not be accepted.

After the command the following is displayed.



Reply message from control unit to mobile phone:
"OK, pressure set to 6.1 Bar" if the setting is correct

"ERROR pressure setting not correct."
If the setting is not correct.

RESET

Possibility to restore all the intervened protection devices and the general alarm.

To restore all the protections of the engine of the pump, key in RESET on the mobile phone

Reply message from control unit to mobile phone → reset command carried out

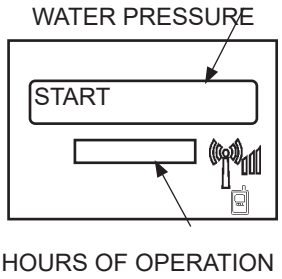
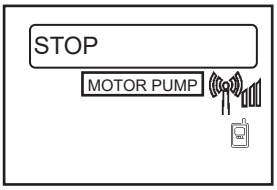
POSSIBILITY TO COMMAND

STARTING, ACCELERATION, DECELERATION AND STOPPING

It is possible to carry out the commands of all the mobile phones programmed in the control unit by keying in the code on the mobile.
Before beginning the starting process, a buzzer is activated for 8 seconds, and after a 3-second pause the starting process begins

STARTING STOPPING WITH SMS COMMANDS

The commands involve an indication on the display of the control unit and a reply on the mobile with an SMS message.

The code **START** or the code **008** or ON	After the START command, the screen displays:		Reply message from control unit to mobile phone The motor pump **has started.**
To stop or restart the unit via your cell phone, enter the code **STOP** or the code **005 or OFF**	After the STOP command, the screen displays:		The motor pump **has stopped.**

FUEL FAULT

The fuel fault depends on any change in the fuel level in the motor pump tank when the engine is stopped. The check-up is enabled after receiving the text message “PROT ON” (or “040”) and after the engine has been switched off for 5 minutes. A negative change in the fuel level generates the fault which is signalled by the activation of the alarm output and the sending of a “FUEL FAULT” text message. The fault is triggered if the percentage drops by 10% when the level is between 100% and 80%, whereas it must drop by 5% if the level is between 79% and 1%. The fault is delayed by 5 seconds and is stored. The fault threshold is updated by resetting the fault itself and after 5 minutes are up. When the tank is topped up, the threshold is automatically updated. A further text message (“OFF Status”) is sent when the operator switches the control unit OFF.

The check-up is disabled by sending the text message “PROT OFF” (or “041”) or by disconnecting the battery supply from the control unit.

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

- Connect always following the wiring diagram.
- Each technical operation must take place on the motor pump unit with the engine stopped and with 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.
- 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 control unit.
- Never disconnect the battery terminals with the engine running.
- 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.

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.
- Where the air pressure and temperature variations are so rapid as to produce exceptional condensation.
- 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 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

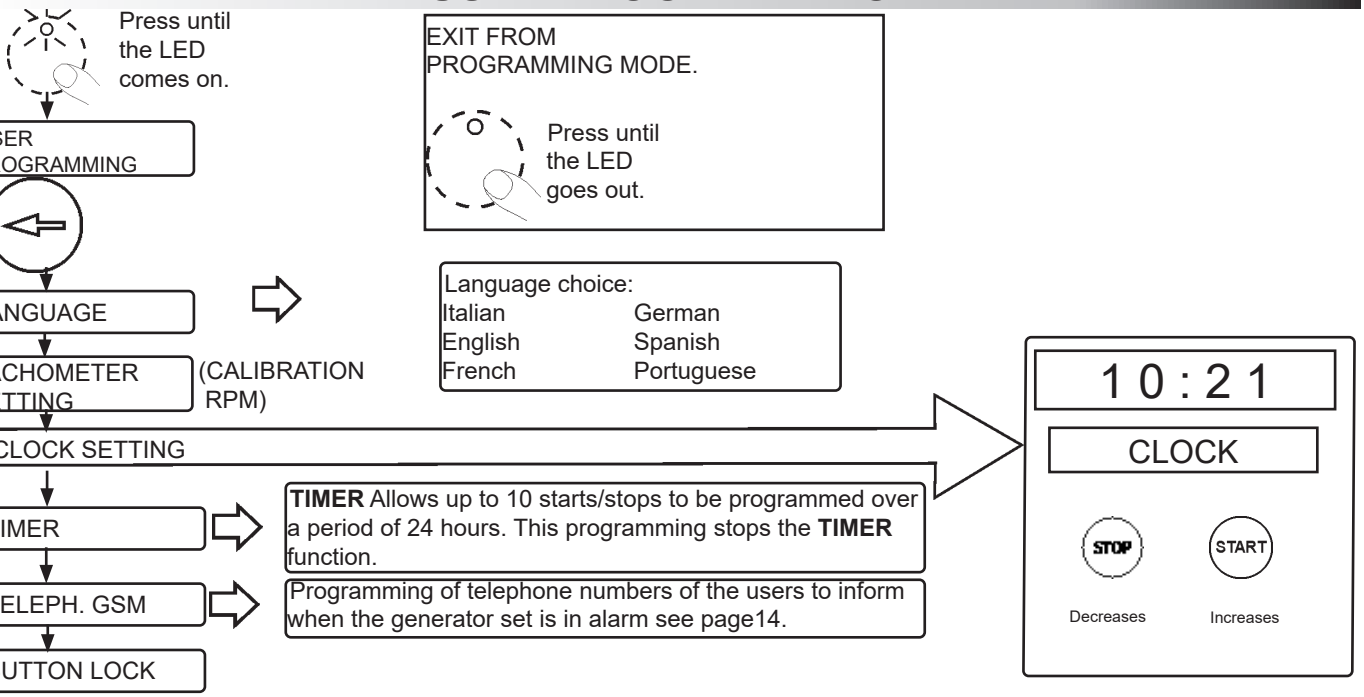
The following maintenance operations should be performed every week:

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

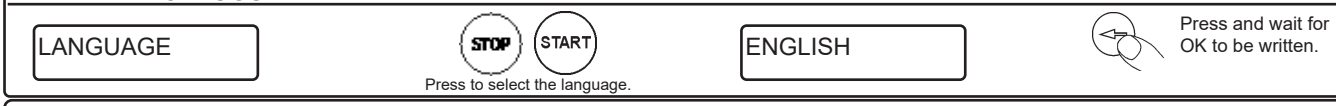
UNLESS WE MAKE A WRITTEN DECLARATION STATING THE CONTRARY, THIS CONTROL UNIT IS NOT SUITABLE FOR USE AS A CRITICAL COMPONENT IN EQUIPMENT OR PLANTS RESPONSIBLE FOR KEEPING PERSONS OR OTHER LIVING BEINGS ALIVE.

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

USER PROGRAMMING



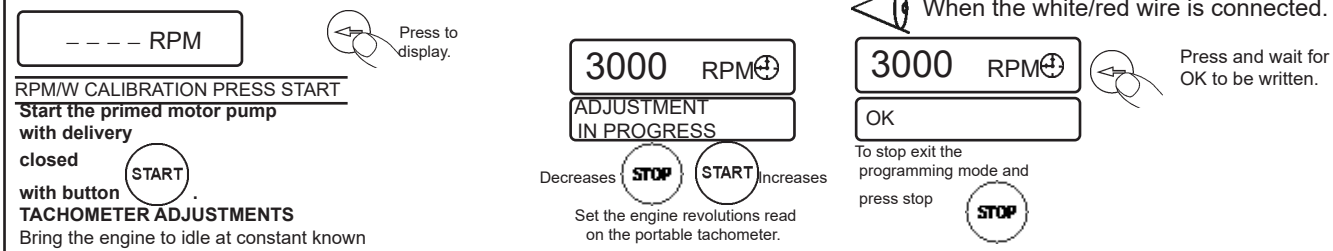
LANGUAGE CHOICE. The language set up is ITALIAN; the languages that can be selected are: ENGLISH - FRENCH - GERMAN - SPANISH - PORTUGUESE.



TACHOMETER ADJUSTMENT WITH CHARGING ALTERNATOR FREQUENCY W.

NECESSARY PROGRAMMING

When the white/red wire is connected.



CLOCK allows up to 10 STARTS/STOPS to be programmed over a period of 24 hours. Carry out setting operations with the engine stopped. The control unit accepts only complete programming settings: START 1 → STOP 1

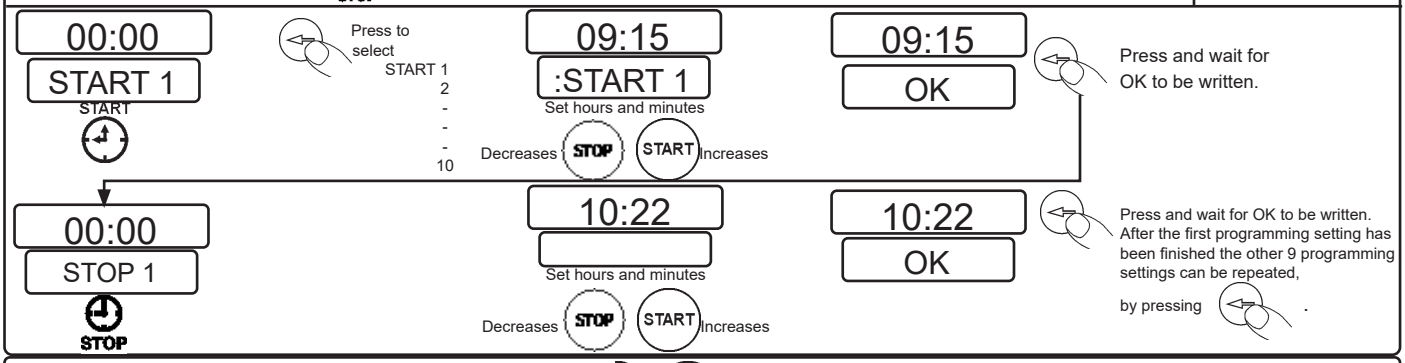
START 2 → STOP 2 and so on

If a start is programmed, but a stop is not programmed,

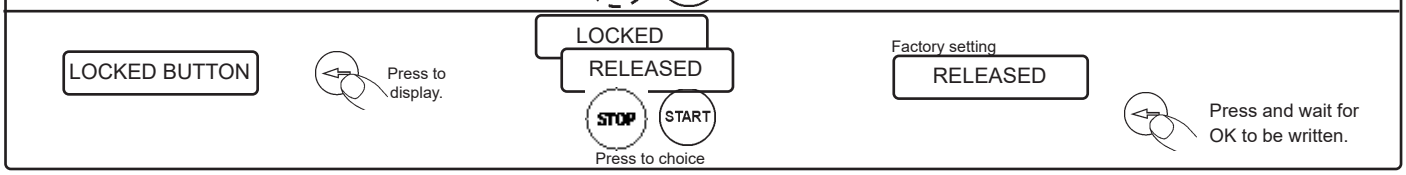
ERROR is written on the display. While running with the engine started by clock, indicator START stays on.

During stopping by clock, indicator STOP comes on and stays on until the next start.

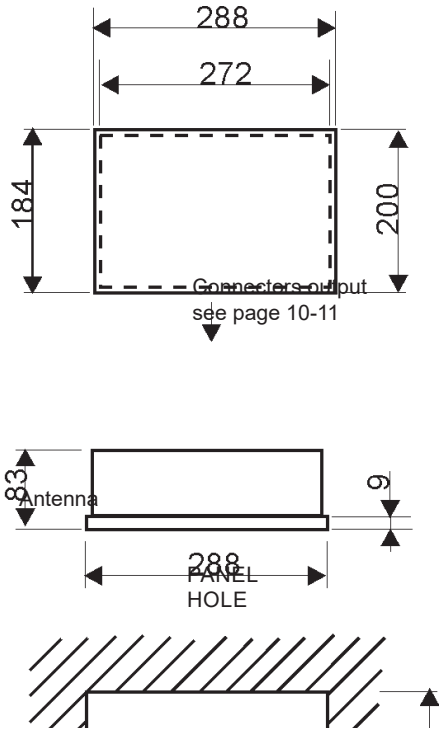
– – – –
Setting set to zero.



BUTTON LOCK. With the push-button panel locked, buttons remain active.



DIMENSIONS



TECHNICAL DATA

Battery power supply	12 Vdc 24 Vdc
Supply voltage	8÷ 32V
Consumption in standby	100mA at 12V
	60mA at 24V
Consumption with engine stationary	350mA at 12V
	200mA at 24V
Max. Consumption	900mA at 12V
	600mA at 24V
Max load of the output: • (stopping) yellow • (starting motor) black • (general alarm) red/green • (auxiliary) brown • priming pump yellow/blue • pump clutch white/yellow	 3A 40A 3A 3A 3A 3A
Temperature range	-10 ÷ +60 °C
Modem B1/B3/B5/B7/B8/B20@FDD LTE B1/B5/B8@WCDMA B3/B8@ GSM	
Hour-meter	4 digits
Engine oil pressure gauge	0 ÷ 9 bar
Pump water pressure transmitter: • allowed max. pressure	 21 bar
Engine water and oil thermometers	+20 ÷ +145°C
Tachometer	4000 rpm
Timer	1' ÷ 24 h
Serial communication parameters	9600 baud, 8 bit data,1 bit stop, even parity
Rechargeable batteries	2x1,2V type AAA
Installation conditions	for external use
Degree of protection box/rear/connector	IP54/IP23/IP20
Control unit weight	2,2 kg
Weight with control unit mounted on the support	4,6 kg

ORDERING DATA

Type	Code
CIM-136/4G	00211142
CIM-136FPT/4G 12V	00211145
CIM-136FPT/4G 24V	00211146
CIM-136JCB/4G 12V	00211148
CIM-136JDE/4G 12V	00211147
CIM-136/4GW	00211150
CIM-136FPT/4GW 12V	00211153
CIM-136FPT/4GW 24V	00211154
CIM-136JDE/4GW	00211155
CIM-136JCB/4GW	00211156

ACCESSORIES SUPPLIED

- PRE-WIRED CONNECTOR CIM-130/1/6/7	CODE 70804397
- " CIM-130/136 JCB/FPT/JDE	CODE 70804408
- PUMP WATER PRESSURE TRANSMITTER TYPE TPA-200	CODE 70500255
- NIPPLE F1/4" GAS -M3/8"GAS	CODE 70190241
- MAGNETIC ANTENNA WITH CABLE	CODE 70070163
- NUTS KIT	CODE 40179906

ACCESSORIES ON REQUEST

Type	Code
- Support KIT CRU-CIM	40493383
- Speed variator VAR-202 12V	00571549
- Flow switch FAP-200	00500312

BASE FITTING