



USER MANUAL

IdroMOP v2.1

Motor Operator Panel





WARNINGS



VERIFY THE RIGHT BATTERY POLARITY.



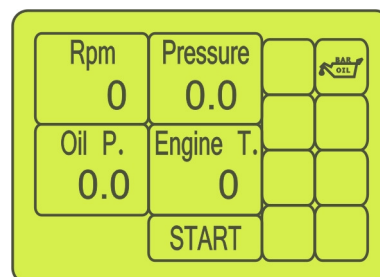
DO NOT PRESS THE BUTTONS AT THE SAME TIME



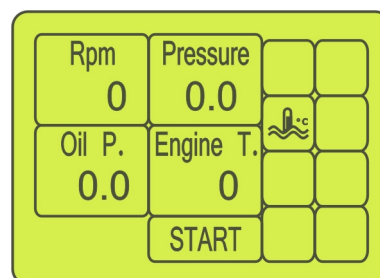
AND



BEFORE TO START THE ENGINE, VERIFY THE LIGHTING OF THE OIL WINDOW ON THE DISPLAY ABOVE TO THE RIGHT.



VERIFY THE FUNCTIONING OF THE HIGH TEMPERATURE WINDOW PERIODICALLY; YOU HAVE TO PUT TO MASS THE CABLE WHICH ARRIVES TO THE ENGINE TEMPERATURE BULB.



MAKE SURE THAT THE SYSTEM IS MADE INACCESSIBLE, TO AVOID THAT , AT A DISTANCE, THE ENGINE START CAUSES DAMAGES TO PERSONS OR THINGS.



TO THE SEASON END, PROVIDE TO PUT THE IDROMOP UNIT IN A DRY AND PROTECTED PLACE DISCONNECTING THE CONNECTORS TOO.

THE INOBSERVANCE OF THESE WARNINGS CAN DAMAGE THE WHOLE SYSTEM CAUSING THE DECLINE OF EVERY WARRANTY AND FURTHERMORE THE MANUFACTURER IS RAISED FROM EVERY KIND OF RESPONSIBILITY.

General index

| | |
|--|-----------|
| INTRODUCTION | 4 |
| CREATE STARTING PROCEDURE | 5 |
| MANUAL | 6 |
| MANUAL FUNCTIONING | 6 |
| SELF-LEARNING..... | 7 |
| AUTOMATIC | 8 |
| CONFIGURATION | 10 |
| OPERATOR | 10 |
| ID system:..... | 10 |
| Time filling pipes:..... | 10 |
| Minimum pressure system: | 10 |
| Positive tolerance and negative tolerance: | 11 |
| Delay alarm out tolerance: | 11 |
| Self priming pump duration: | 11 |
| Pressure end priming pump: | 12 |
| Acceleration ramp:..... | 12 |
| Deceleration ramp: | 12 |
| Gain system:..... | 12 |
| Time pulse control: | 12 |
| “Fluxometer check” and “Delayed alarm”:..... | 12 |
| Out of turns engine:..... | 12 |
| Maximum pressure system: | 13 |
| Dynamo alarm: | 13 |
| Starting delay:..... | 13 |
| Sparking plugs pre-heat time: | 13 |
| Heating time engine:..... | 13 |
| Kind stop engine:..... | 13 |
| Cooling time engine:..... | 13 |
| Pressure control: | 14 |
| Key code:..... | 14 |
| MANUFACTURER | 15 |
| TELECONTROL..... | 15 |
| DEFAULT | 15 |
| SETTINGS | 16 |
| Language: | 16 |
| Clock: | 16 |
| Stand-by:..... | 16 |
| MANUAL COMMANDS : | 17 |
| MOTOR INTERFACE CONNECTIONS | 18 |

INTRODUCTION

IdroMOP board described in the present manual has been designed for an immediate use and for the possibility to configure the plant functioning in an intuitive way, through an unique knob, that can be rotated and pushed, and a screen that shows the motor state or the parameter value that is being modified.

We describe below the menu structure to which you can get access, and a short explanation of the meaning of each parameter; It's good to take into account the following indications:

- The screen contains text items and numerical fields: some of these are selectable rotating the knob left or right; an item or an active field is highlighted by a frame.

- When an item is highlighted, the knob pressure has the meaning of performing the function described by the same voice (for example if START is highlighted, when the knob is pushed, the motor starts; if CONFIGURATION is highlighted (Figure 1) and pushed, you enter in the configuration sub menu).

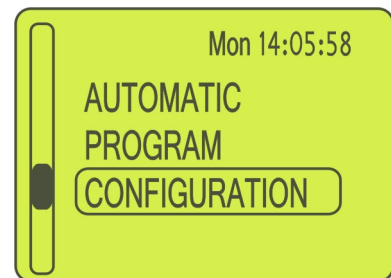


Figure 1

- When a numerical field is highlighted, the knob pressure has the meaning to enter the value modification function (for example the number 0000 is highlighted, in the page “Password” (Figure 2) when you push once it is possible to modify the figure rotating the knob, when you push twice you exit from modification modality and the knob returns to the sliding basic function).

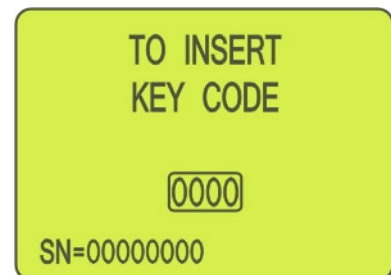



Figure 2

Pressing the knob for more than 1 second, you return always to the previous level menu. In this phase possible modifications of parameters are saved in the board internal memory.

IMPORTANT

CREATE STARTING PROCEDURE

To switch on IdroMOP you press the key  placed on the frontside, so the KEY CODE required will appear on the display, that on default is composed from 4 numbers: 0000 (Figure 3), which can be confirmed and so it will represent the KEY CODE in successive starting procedures or it can be modified too; In this case the new KEY CODE will be used as soon as inserted for successive accesses. You can choose the new code rotating the knob.

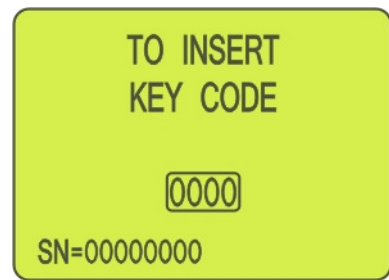


Figure 3

MANUAL

MANUAL FUNCTIONING

After entering the KEY CODE, the picture here on the right (Figure 4) will appear on the screen. To select functioning modality it's necessary to rotate the knob and successive options will be highlighted through a frame.

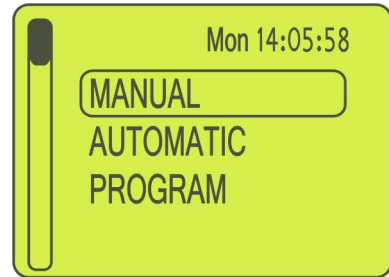


Figure 4

If we select MANUAL modality and we confirm the choice pushing the knob, the picture will appear which represents motor main functions and more also the inscription **START** well highlighted in capital and lighting (Figure 5). This inscription will result present in the successive screened too, where motor other functions will be highlighted. To start the motor it's sufficient to push the knob and wait for starting.

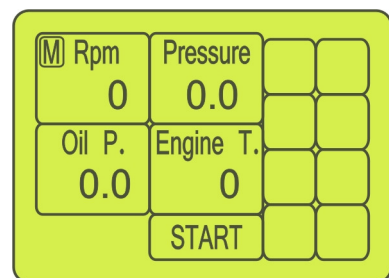


Figure 5

When you turn on the engine, the display will still include the main parameters, while **START** will be replaced by **STOP** (Figure 6). It is always possible to activate the engine switch-off function by pushing the knob for at least two seconds. On the left side of **STOP**, there is a horizontal little sliding bar inserted in a rectangular picture.

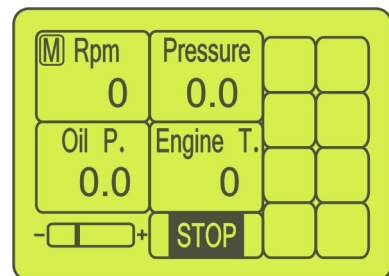




Figure 6

By rotating the knob to the left, this bar will shift towards the minus symbol (-) thereby obtaining a deceleration; by rotating the knob to the right, it will move towards the plus symbol (+) thereby obtaining an acceleration. Engine revolutions and also resulting pressure are highlighted at the top frames of the screen. Once the desired values are reached, these will be confirmed automatically after pressure remains stable for at least two seconds.

In case you want to disable water pressure control, you have to push the on/off  key for at least two seconds; when “Pressure” appears in negative (Figure 6B), all the checks regarding the water pressure will be disabled. To restore these controls, push the on/off  key again, for at least two seconds; the word “Pressure” will return positive like in figure 6 represented in the previous page.

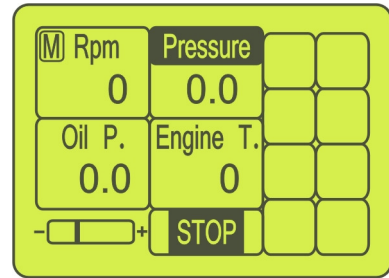




Figure 6B

SELF-LEARNING

During the manual running if the measure is stable for over 2 minutes, IdroMOP activates automatically the self-learning procedure about the value of the controlled greatness (pressure / motor revolutions). This event is showed on the display by a black frame around the controlled greatness (pressure or motor revolution). If the controlled greatness would go out of tolerance values, IdroMOP activates the alarm and stops the motorpump.

If you need to modify the work point you have to push the knob up to the black frame disappears; so the learning procedure is disabled. Now push the keys  or  or rotate the knob to bring the controlled greatness to the desired value (pressure / motor revolutions).

If the measure is stable for over two minutes IdroMOP activates the self-learning procedure again.

AUTOMATIC

When the KEY CODE is inserted, the automatic functioning must be set, selecting the function PROGRAM (Figure 7).

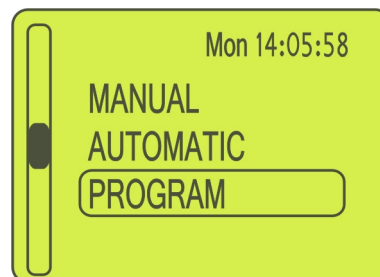


Figure 7

The screen, which appears on the display PROGRAM OPERATOR (Figure 8), shows program operator's parameters. The operator can set (as he likes) the value of water pressure or motor revolution to be reached during automatic function and also the working time in hours and minutes. The operator can set one of two main functions (water pressure or motor revolution) according to manufacturer factory's settings.

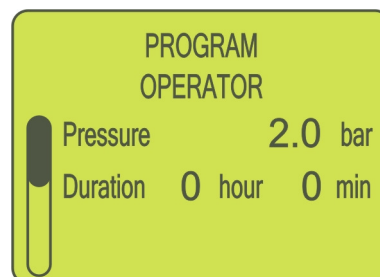


Figure 8

Equally irrigation cycles number can be set. The selection can be made always rotating the knob and then pushing it on the chosen parameter (Figure 9).

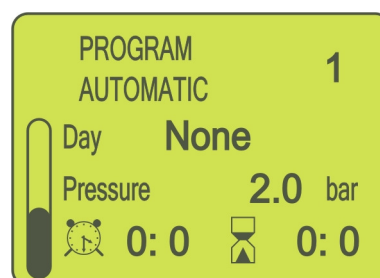


Figure 9

Select now the function AUTOMATIC (Figure 10).

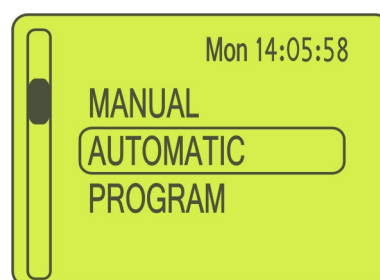


Figure 10

On the display the screened appears as in Figure 11, select START that will light continually and push the knob: the motor so starts and performs all the programmed work in set ways and times

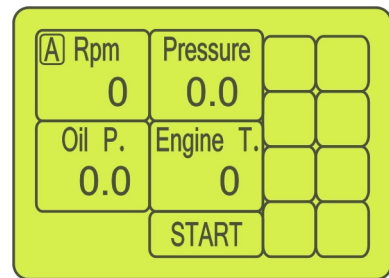


Figure 11

When the motor switches on, the inscription that appears on the display includes also the main parameters, while the inscriptions START is substituted by the inscription STOP (Figure 12). Anytime it's possible to stop the motor pushing the knob for at least 2 seconds. On the side of the inscription STOP, exactly on the left side, there is a sliding horizontal little bar inserted in a rectangular picture, where water pressure/revolutions set value appears. Rotating the knob it's possible to modify set parameters at any moment. If it should happen a deviation from set parameters, the motor will stop to work. It's always the operator who decides the possible and physiological flexibility margin from these parameters.

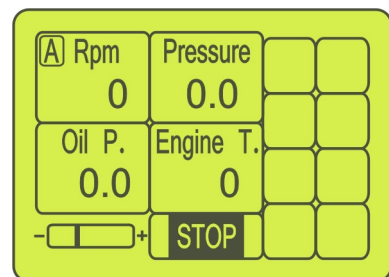


Figure 12

Once the motor is switched off, on the display the main menu appears (Figure 13) and any desired manoeuvre can be set. For consumption control, the device is set in stand-by after the time that we have previously selected.

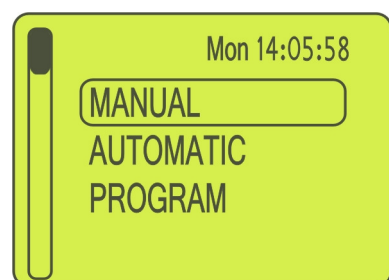


Figure 13

CONFIGURATION

This MENU includes parameters and sets to adapt the motor pump functioning to the specific requirements of every manufacture. The CONFIGURATION is subdivided in a sub menu to facilitate the research of parameters that you want to modify. To access push shortly the knob when the item CONFIGURATION is highlighted. To come back to the previous level menu take pushed the knob for over 1 second.

OPERATOR

To access push shortly the knob when the item OPERATOR is highlighted. To come back to the previous level menu take pushed the knob for more than 1 second. In this sub menu there are the settings, that are relevant for the motor pump operator, to personalize the functioning in accordance with your own needs. The parameters here included are:

ID system: Assigns a numerical code to motor pump; this setting is useful when the operator must manage more motor pumps. This number identifies the machine which should send a message of status or alert through SMS to the operator's cellular. To modify the ID system push shortly the knob, the value is highlighted through a frame, rotate the knob left or right to obtain the desired number, confirm pushing again the knob.

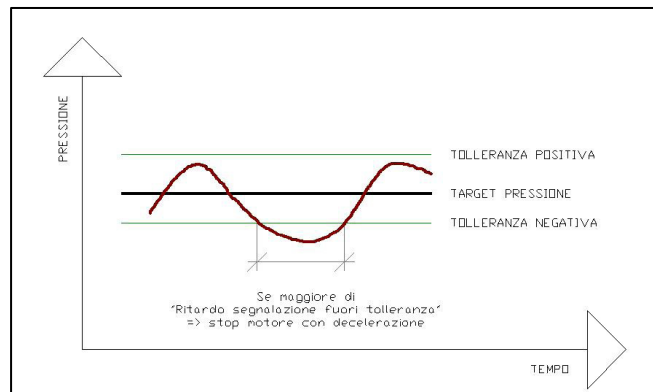
Time filling pipes: The parameter expressed in minutes/seconds gives the possibility to fill the water pipe in a low motor revolutions regime, avoiding to damage the water system.

Minimum pressure system: It's a control parameter (water pressure), expressed in bar tenths which allows to point out the condition of dry running avoiding to burn the pump; this value represents a threshold that has different functions in accordance with manual or automatic functioning: with MANUAL function it represents the pressure value that must be reached within 10 minutes from motor pump switching on; if,

spent this time, the pressure decreases below of this threshold, the motor stops immediately. With AUTOMATIC function it represents pressure value that must be reached to enable the motor pump to accelerate (in accordance of what specified in “Acceleration Ramp” parameter) and to bring the motor at work pressure. The gradual filling of the tubes facilitates the emptying of air pockets to avoid ram shots on the distribution system. The motor starts idling and at regular intervals increases speed of 20 revolutions per minute for trying to reach this pressure threshold. Once it is reached, the motor proceeds with the successive acceleration stage, that is the real acceleration to bring itself at the work pressure. If it isn't reached within 1350 revolutions per minute, and it's not maintained above of this value for at least 5 minutes, the motor stops and on the panel alarm PIPES NO FILLING is visualized (possible problems in suction or in recharge).

Positive tolerance and negative tolerance:

They are control parameters of water pressure, expressed in Bar tenths, and refer to the work pressure; when the pressure exits from the tolerance band, the motor stops with the set deceleration ramp.



Delay alarm out tolerance: It's a filter time, expressed in seconds and in minutes, which delays the intervention of two previous parameters. If the pressure exits from control band for a longer time than this value, then it triggers the procedure to shut down the motor with deceleration.

Self priming pump duration: Parameter expressed in minutes and seconds from the time of operation of the auxiliary pump to fill the water pump impellers. At the end of this time will turn on the pump. Within 3 minutes the pressure detected by the system must exceed the value set in the parameter below,

otherwise you will turn off the pump and repeats the procedure for a maximum of 3 times. If you fail all 3 attempts, the IdroMOP device will go alarm condition.

Pressure end priming pump: You set the water pressure in bar, beyond which the priming motor pump was successful.

Acceleration ramp: It's a percentage value (from 5 to 100 %) which allows to adjust the speed, with which the motor arrives to the number motor revolutions or the water pressure programmed after having performed the initial starting phases.

Deceleration ramp: It's a percentage value (from 5 to 100 %) which allows to adjust the speed, before turning off the motor, at the minimum revolutions number.

Gain system: This parameter allows to accelerate or to reduce the system reaction speed.

Time pulse control: It's a parameter expressed in milliseconds that is useful to calibrate the regulator sensitivity of the water pressure or motor revolutions.

“Fluxometer check” and “Delayed alarm”: There are two accesses which allow control of sensors to detect flow or pressure. It's possible to disable or modify the insertion time of control.

Out of turns engine: It's a value expressed in revolutions/minute number (rpm), which helps to limit the damages caused by little breaks or a loss along the plant. If there is a little break or a leak, which causes a not significant pressure fall, the motor gets to compensate, increasing the revolutions number and brings back the pressure inside the tolerance band. To avoid the prolongation of this condition which causes a flood near to the breaking point, it's possible to set this limit to the revolutions number of 10% major than the revolutions number detected at the moment in which the plant is on a diet. In this way when, after having compensated pressure

fall, the motor will reach this threshold the stop procedure will be primed. Example: if to obtain a plant pressure of 8 bar, the motor, on a diet, stabilizes about on 1650 rpm (revolutions/minute) set the "Out of turns motor threshold" at 1815 rpm (1650 + 10%).

Maximum pressure system: It's a value expressed in bar tenths that helps to protect the plant from possible over pressures. It's set to a value just below of the threshold of breaking pipes and it depends on the plant type connected to the motor pump.

Dynamo alarm: It's for a correct control of the battery charge alternator. In case of alternator's anomalies it's possible to exclude it and to continue the work.

Starting delay: It is a time value, expressed in seconds and in minutes, to delay the motor starting, when an automatic switching on is foreseen by a timer and by another signal of agreement. For example it is useful in plants with water valves or for anti hoarfrost plants.

Sparking plugs pre-heat time: It is a time value, expressed in seconds, useful for motors that must start with low temperatures. If the motor receives a starting request when is yet hot this time is ignored.

Heating time engine: It is a time value, expressed in seconds, whose calculation begins at every new starting: during this time the motor is kept at minimum before beginning acceleration procedures. If the motor is yet hot this time is ignored.

Kind stop engine: Select the mode with which the engine shut-off. You can choose between "Solenoid" or "Electro-magnet". In both cases, the Board will monitor the engine shut-off within the time specified by the manufacturer.

Cooling time engine: It is a time value, expressed in seconds, that can be excluded setting to zero. At every stop request the

motor is carried to the minimum speed, in accordance with what specified in “deceleration ramp” parameter. If this parameter is set to a value major than zero, the motor continues to turn at minimum to stop itself at the completion’s time.

Pressure control: With this parameter it is possible to enable or disable the control effected on the water pressure in manual mode.

Key code: With this parameter it is possible to create a personal access code . It’s important to remember the code, because without it, it is impossible to switch on the plant.

After having set all these parameters it is possible to exit from the menu pushing the knob for more than 1 second; data are saved in the board internal memory and on the screen appears again superior menu level.

MANUFACTURER

This is a sub-menu where IdroMOP board basic settings are contained. Sub-menu access is of responsibility of motor pump manufacturer or of the application on which IdroMOP board is installed; it is limited through password.

TELECONTROL

In this sub-menu additional settings are contained, relative to GSM module that can be installed in IdroMOP board (optional). Here you can specify cellular phone numbers to which IdroMOP sends SMS, what informations must be transmitted (alarms, motor state, etc...) and the transmission modalities (transmission interval,). A more complete description is supplied together with option "GSM module".

DEFAULT

It's a section accessible only by manufacturer's password. With the selection of this item, it's possible to recharge all the original parameters (set by the manufacturer). In case of doubts on the brought modifications correctness, you can always come back to default settings.

SETTINGS


This MENU contains IdroMOP board basic settings. To access push shortly the knob when inscription SETTINGS is highlighted. To come back at the previous level menu take pushed the knob for over 1 second.


Language: It allows to set languages “Italian”, “English”, “French”, “German” and “Spanish”.


Clock: There's a weekly clock inside IdroMOP board that must be set to allow automatic programs functioning. It's necessary to set weekday (Monday ... Sunday), hour (0 ... 23) and minutes (0 ... 59).


Stand-by: It's the waiting time (in minutes) to get IdroMOP board in stand-by mode for the power saving battery.



MANUAL COMMANDS :

To start the plant push the button 

To stop the plant keep pushed the button , till the writing “Release the button now” appears on the display.

The button  stops immediately the motor excluding any automatism sort (emergency stop). When the motor is stopped the button “STOP” assumes and retakes the function which is obtained by pushing the knob (useful in case of encoder malfunction).

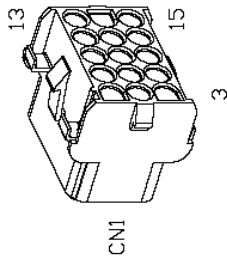
The button  is active with “Manual” modality only. On pushing it, you enable motor’s start procedures.

The buttons  and  are active with “Manual” modality as acceleration and deceleration of motor’s function.

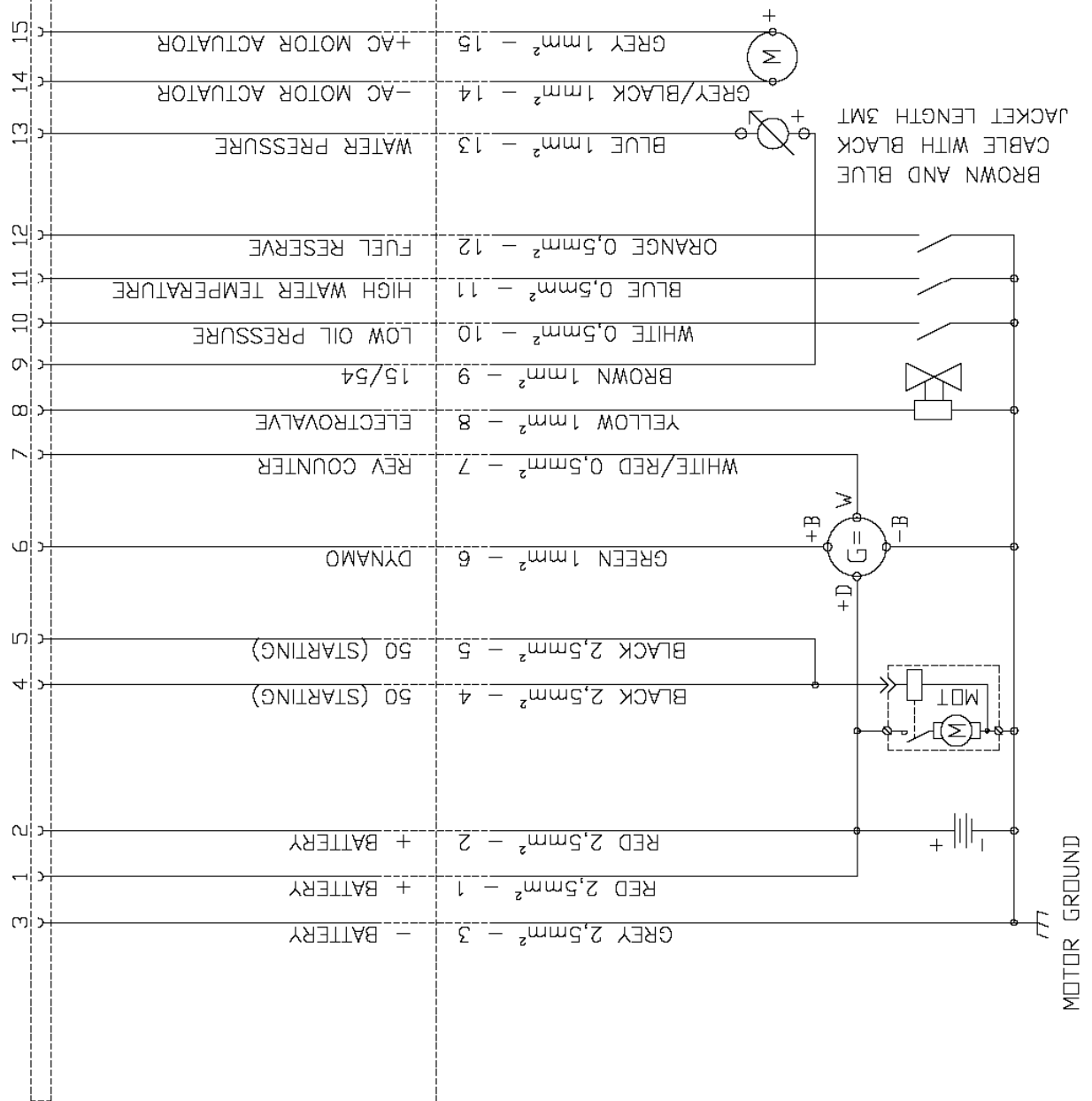
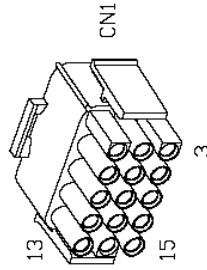
On the page “Menu”, buttons  and  assume the selection function (they simulate the knob rotation).

CN1 - 15 PIN

CONNECTOR MATE-N-LOK 15 PIN (CN1)

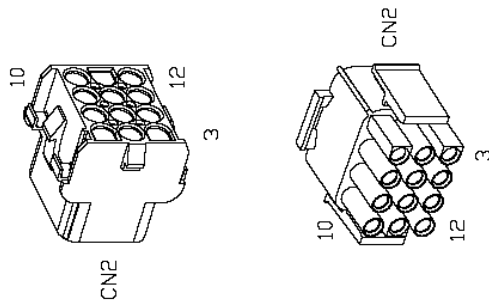


EXTERNAL WIRING LENGTH 2MT

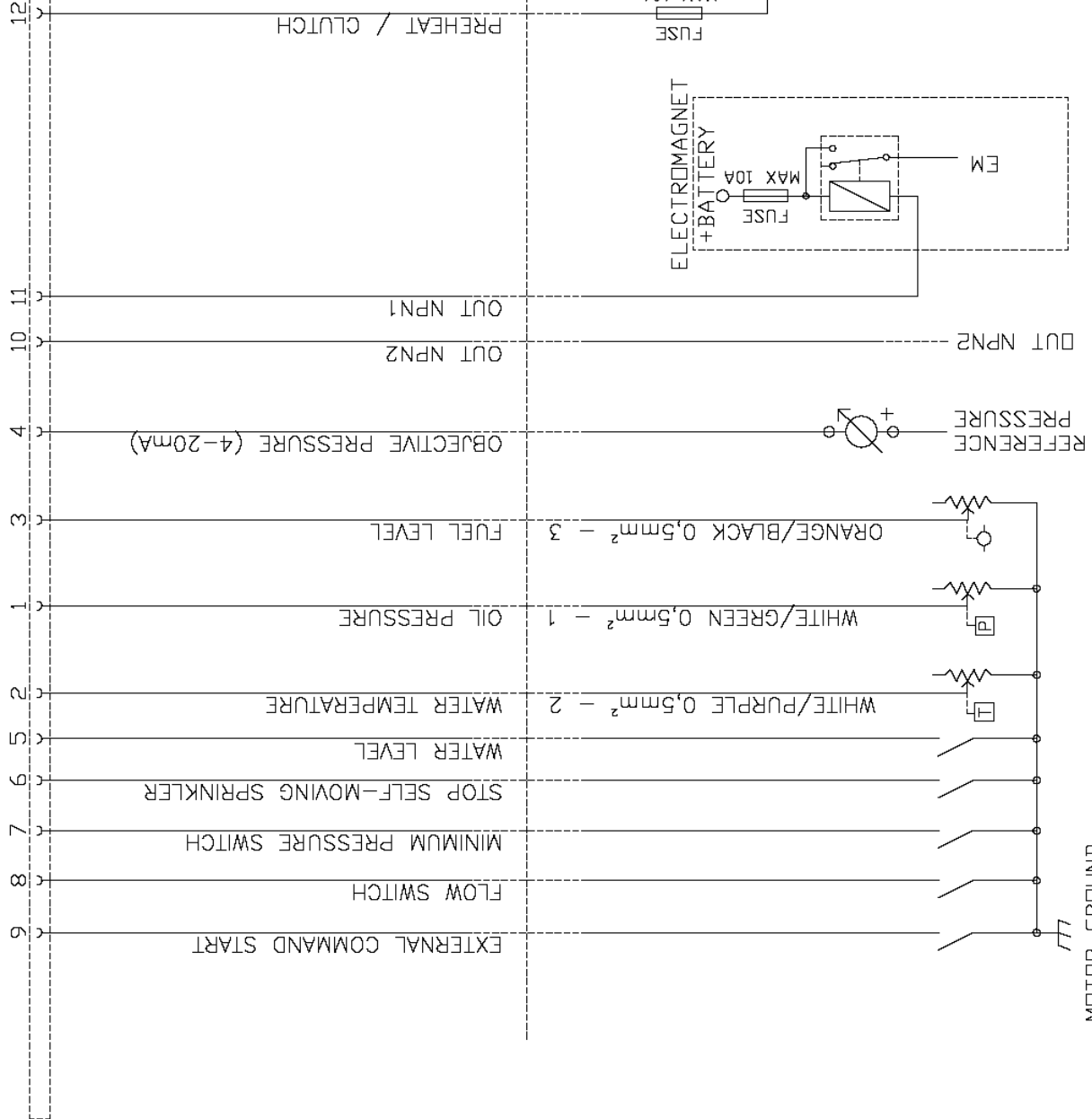


CN2 - 12 PIN

CONNECTOR MATE-N-LOK 12 PIN (CN2)



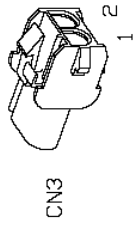
EXTERNAL WIRING LENGTH 2MT



CN3 - 2 PIN

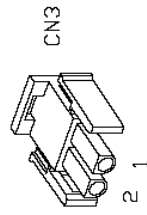
CONNECTOR MATE-N-LOK 2 PIN (CN3)

1 2



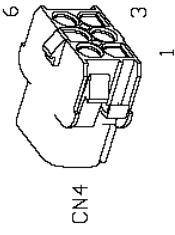
CANBUS - CANL
CANBUS - CANH

EXTERNAL WIRING



CN4 - 6 PIN

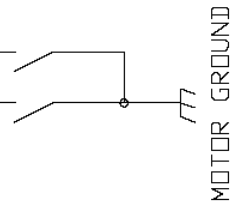
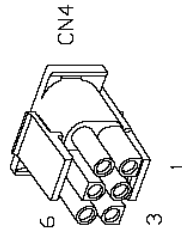
CONNECTOR MATE-N-LOK 6 PIN (CN4)



1 2

SELF PRIMING
EMERGENCY 2

EXTERNAL WIRING



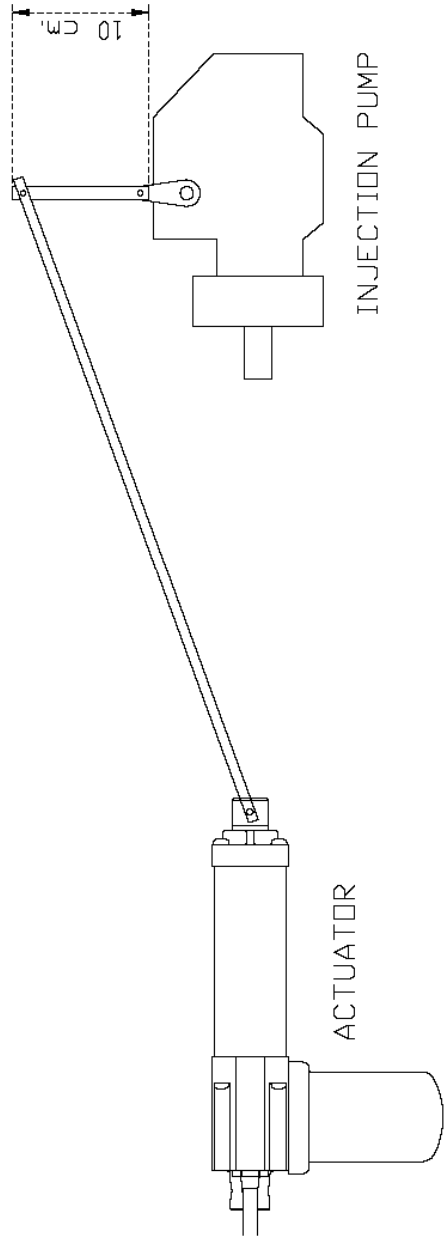
VERY IMPORTANT

- 1) Install an additional lever of length of about 10 cm (as from drawing)
- 2) Set the end strokes (minimum and maximum) with the help of an external feeding
- 3) Verify the conversion ratio that is on 0.300 on the manufacturer menu (with key 462)
- 4) Set a new value of conversion on the basis the under table after a first reading performed with a reference instrument (timing light)
- 5) After the starting, assure yourself that the motor revolutions minimum speed doesn't exceed the 900 rpm, otherwise the motor acceleration is not allowed.

CONVERSION RATIO

$$\frac{\text{REVOLUTIONS READ WITH THE REFERENCE TOOL}}{\text{MOTOR REVOLUTIONS READING ON THE IDROMOP}} \times \text{SET CONVERSION RATIO} = \text{CORRECT VALUE TO SET}$$

example: $800 \times 0,300 / 1000 = 0,240$



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