5519529

MALOSSI

FORCE MASTER 2.1

Assembly instructions

Control unit set-up

The control unit is equipped with 3 female connectors.

- Plug the cables into the relevant connectors, which can be easily identified thanks to the colours.

CDI assembly

- Position the Force Master 2.1 CDI under the seat **(Fig. 1)** and run the wires to the engine, taking care that they will not be damaged.

Injector

- Follow the wire coming out of the injector and cut it at about 3 cm from the connector, as shown in **Fig. 2**.
- Connect the female faston **1** supplied into the kit to the original connector **2** by using the joint **3**, and carefully respecting the colours of the wires **(Fig. 3)**.

NB: pay attention to use the FEMALE faston **(1 - Fig. 3)**!

- Close the joint using a pliers, such as shown in **Fig. 4**.
- At this point connect the male faston **4** to the wiring of the vehicle, using the joint as shown in **Fig. 5**.

Cables must be connected strictly in accordance with the colours shown in **Fig. 3**.

- Connect the control unit to the two previously prepared connectors **(Fig. 6)**.

Ground

- Connect the black cable **5** (negative pole) coming out of the Malossi control unit to the screw as shown **(Fig. 7)**.

TPS

- Identify the 5 cables TPS connector located on the throttle body **(Fig. 8)**.
- On the yellow and black/grey cables, apply the cable clamps provided in the kit **(Fig. 9)**.
- Make the following connections using the cable clamp:
  - » Yellow Malossi control module cable with yellow TPS cable
  - » Brown Malossi control module cable with black/grey TPS cable

WARNING:

once the faston is connected to the electrical tap connector we suggest to tape the wire bunch, to avoid electrical tap vibrations damaging the wires.

Coil

- Locate the SMALL faston (orange wire) connected to the original coil and disconnect it.
- Insert the faston which comes from the Malossi ECU (orange wire) to the original coil.
- Connect the original wire to the ECU's bypass to complete the

circuit **(Fig. 10)**.

WARNING:

If you want to bring the vehicle back to its original condition, you must simply disconnect the cdi connectors and reconnect the Malossi connectors **(Fig. 11)**.

Working

Control module status display

The control unit display shows the status it is in, showing both the functionality of the engine when switched on and any possible errors or supporting the user if the buttons are pressed.

Buttons

The control unit is equipped with 3 buttons:

- **“M” button**: pallows to select the different functions sequentially
- **“-” e “+” buttons**: only active in certain operating modes, they allow

to increase or decrease the value selected in the different functions

First power-up

Attention: when the key is turned to start the vehicle, but the engine is not started yet, the electronics activates the power supply to all actuators for a defined time of approx. 3 seconds (“prime” phase).

The map and TPS calibration is carried out starting with the vehicle switched off.

TPS calibration

MIN adjustment

- Set the throttle knob to idle
- Press and hold the button (-) for the entire calibration sequence
- Turn the key to ON
- The display shows flashing min calibration logo
- If calibration successful, “OK” appears
- If calibration was unsuccessful, the message “OUT OF RANGE” appears and it is necessary to repeat the operation, checking that the throttle is at idle

MAX adjustment

NB: You will need the help of a friend to adjust the MAX.

- Set the gas knob to maximum
- Press and hold the button (+) throughout the calibration sequence
- Turn the key to ON
- The display shows the maximum calibration logo flashing
- If calibration successful, “OK” appears
- If calibration was unsuccessful, the message “OUT OF RANGE” appears and it is necessary to repeat the operation, checking that the throttle is at idle

MAP selection

- Press and hold button M throughout the calibration sequence
- Turn the key ON : the display will show the selected map
- To change the map, turn the key OFF-ON (keeping the M button pressed), until the desired map is selected

NB: the control unit will only display the pre-set maps

The vehicle can now be switched on and used.

Working (Fig. 12)

These adjustments can be carried out with the engine running, in ventilated places.

Each time the 'M' button is pressed, the display shows an indication of the function being activated, together with the switching on of a dedicated LED on the edge of the display.

In selection sequence, the modes are:

1. **"Low"**: : shows the active correction at low RPM (< 3000 RPM). If the engine is on, after a few seconds of inactivity it returns to the engine screen display.
   The "-" and "+" buttons reduce or increase the injection correction in 2% steps in the relevant RPM ranges. When these buttons are pressed, the selected correction flashes. To confirm the selected correction, it is necessary to wait for the end of the flashing.
2. **"Mid"**: shows the active correction at medium RPM (between 3000 and 6000 RPM). If the engine is on, after a few seconds of inactivity it returns to the engine screen display.

The "-" and "+" buttons reduce or increase the injection correction in 2% steps in the relevant RPM ranges. When these buttons are pressed, the selected correction flashes. To confirm the selected correction, it is necessary to wait for the end of the flashing.

3. **"High"**: shows the active correction at high RPM (> 6000 RPM). If the engine is switched on, after a few seconds of inactivity it returns to the engine screen display.
   The "-" and "+" buttons reduce or increase the injection correction in 2% steps in the relevant speed range. When these buttons are pressed, the selected correction flashes. To confirm the selected correction, it is necessary to wait for the end of the flashing.
4. **"Maps"**: the active map is displayed with the word "M" followed by the map number and a different map can be selected using the "-" and "+" buttons. If the engine is switched off, the active map is always displayed. If the engine is switched on, after a few seconds of inactivity the engine screen display returns. Pressing the "-" and "+" buttons shows the active map number on

the right-hand side of the display, while showing the map about to be activated in flashing mode on the left. To activate the map, wait for the end of the flashing and the letter "M" on the left followed by the map number that has been activated on the right.

5. **"Thr"**: shows "T %" for a few seconds, then the TPS opening percentage is displayed. By moving the throttle all the way, the percentage displayed should range from 0% to 100%. If the stroke does not go from 0 to 100, TPS calibration must be performed. The TPS value always remains displayed regardless of the engine state.
6. **"Diag"**: shows the letter "D" for a few seconds, then the active errors if present, otherwise it shows "NO ERROR". If the engine is switched on, after displaying the complete sequence of all information, it returns the engine screen display returns, otherwise this information continues to run on the display.
7. **"Info"**: displays the letter "I" for a few seconds, then the ECU mapping name and software version are shown. If the engine is running, after displaying both

information, the engine screen display returns, otherwise this information continues to scroll across the display.

Diag

The Force Master 2.1 control unit is equipped with a display that shows possible diagnostic messages:

- **“KO MAP” Calibration Error**
  There is an invalid calibration.
  The control unit does not allow the vehicle to start.
  The calibration must be reprogrammed, an operation only possible at Malossi.

- **“TUNING TPS” - TIncorrect throttle calibration (for vehicles where TPS calibration is required)**
  The throttle calibration procedure was not carried out correctly by the user and must be repeated.
  The ECU may be behaving sub-optimally, with the injection too lean or too rich.

- **“INJ1 S.C.” - Short-circuited injector to battery positive**
  The connection to the wiring harness has not been made correctly and the injection output is shorted to the battery.
  The control unit goes into protection mode and injection is not implemented.
  The control unit must be switched off and on again to allow the vehicle to start. If the error persists, it is essential for the operator to check the injection connections.

- **“INJ1 O.C.” - Injector not connected**
  MThe connection to the injector is missing.
  The engine cannot be started.
  If the error persists, the operator must check the injection connections.

- **“IGN LOST” - No coil connected**
  The connection to the coil is missing.
  The control unit may be restricted in injection and is not injecting after the original system’s limiter.
  If the error persists, it is imperative for the operator to check the connection to the coil.

- **“TPS N.C.” - Throttle connector not connected (for vehicles where TPS calibration is required)**
  The connection to the throttle cable is missing.
  The control unit may be behaving sub-optimally, with the injection too lean or too rich.
  If the error persists, it is imperative for the operator to check the connection to the throttle cable.

- **“TPS KWP2000” - OBD connector for throttle check not connected (for vehicles with diagnostic connector)**
  The throttle reading via the OBD connector is not correct.
  The ECU may be behaving sub-optimally, with the injection too lean or too rich.
  The operator must check the connection to the OBD connector.

- **“VBATT LOW” - Battery voltage too low**
  The battery voltage has been below 11V for at least 10 seconds.
  The control unit is behaving normally but problems may arise in the general operation.
  The operator must make appropriate checks on the system because this problem cannot be caused by the control unit.

- **“VBATT HIGH” - Battery voltage too high**
  The battery voltage has been above 15.5V for at least 5 seconds.
  The control unit is behaving normally but problems may arise in the general operation.
  The operator must make appropriate checks on the system because this problem cannot be caused by the control unit.

Normal operation

When switched on, the control unit display shows the status of
- Selected map
- Low/mid/high setting

After this, the RPM and THR status bars remain active.

If errors are present, the Diag LED will flash. It will then be necessary to interrogate the control unit by going to the specific function to find out the error.

Technical details

- Carburation adjusting
- ± 14% al LOW / HIGH / MID
- RPM limiter : +1,800 RPM
- 4 different maps
- Temperature range = -30°C +80°C
- Minimum operating voltage = +7V
- Maximum operating voltage = +16V
- Average current consumption <-200mA
- Environmental protection = IP65

Maps

The Force Master 2.1 CDI is programmed with 4 base fuel curves:

- **curve 0**: original exhaust system, Malossi cylinder kit, original camshaft and original filter;
- **curve 1**: Malossi with DB killer exhaust system, Malossi cylinder kit, original camshaft and Malossi filter.
- **curve 2**: Malossi with DB killer exhaust system, Malossi cylinder kit, Malossi camshaft and original filter.
- **curve 3**: Malossi with DB killer exhaust system, Malossi cylinder kit,

Malossi camshaft and Malossi filter.

We hope you found the above instructions sufficiently clear. However, if any points are not particularly clear, please contact us completing the special form inserted in the “contact” section on our Internet site **(malossistore.com)**. We thank you in advance for any comments and suggestions you may wish to send us. So goodbye from us all at Malossi, and please accept our compliments. Have Fun. GOOD LUCK and ... see you next time.

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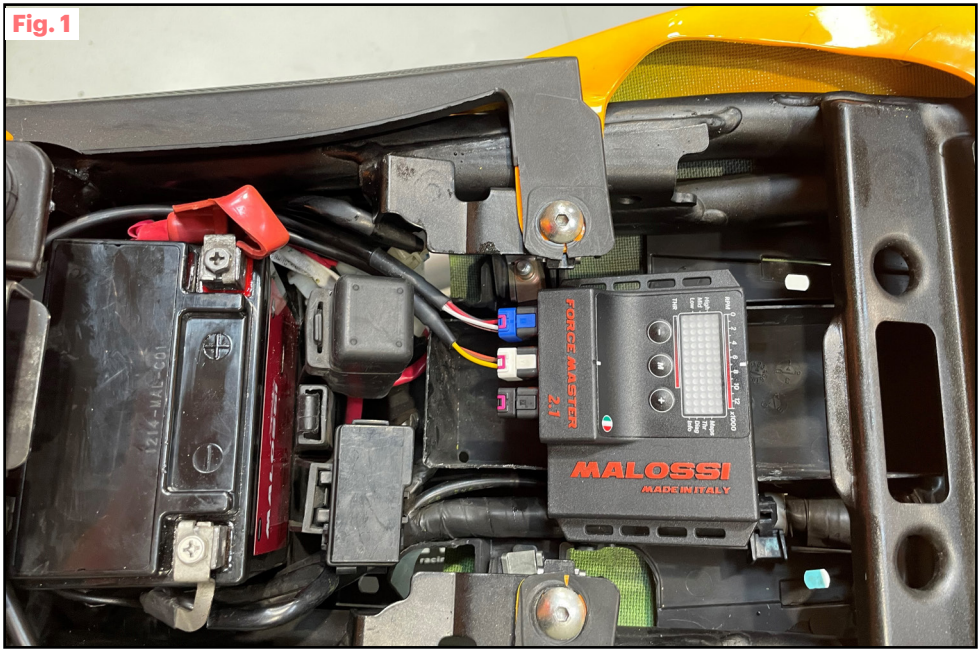


Fig. 1

Fig. 2

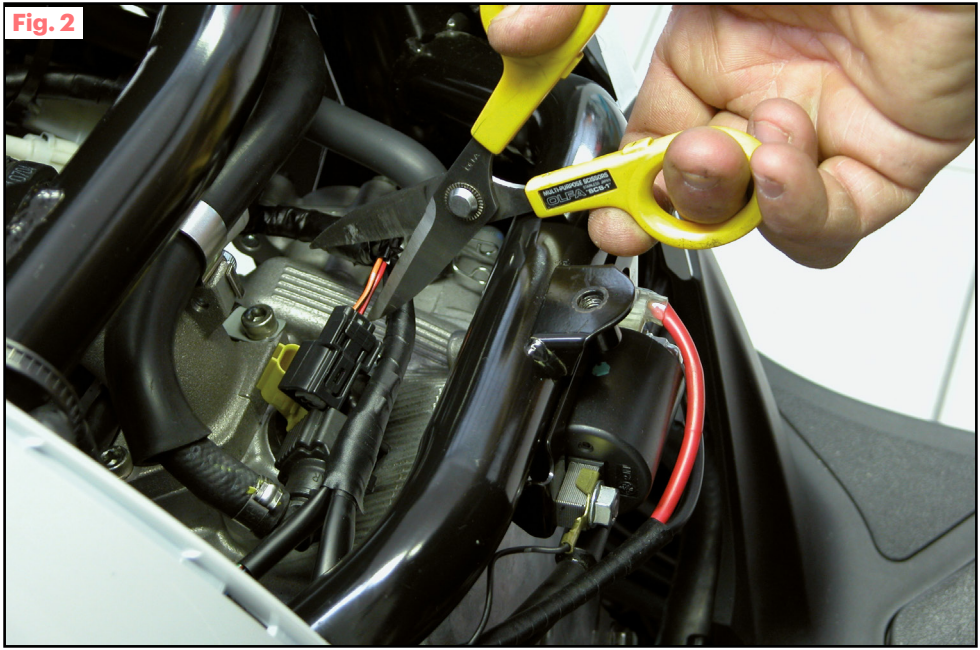


Fig. 3

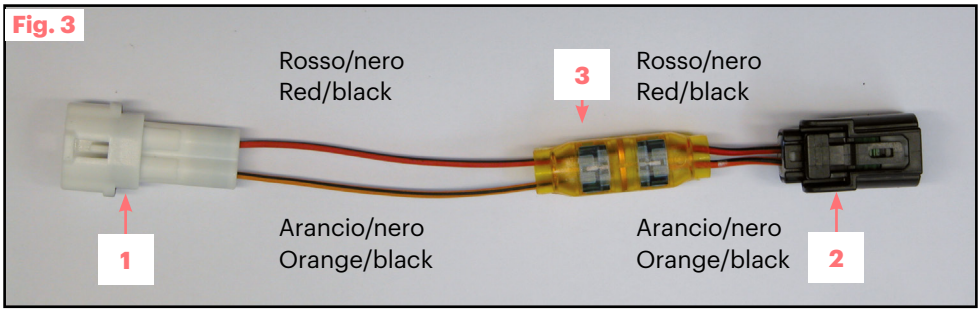
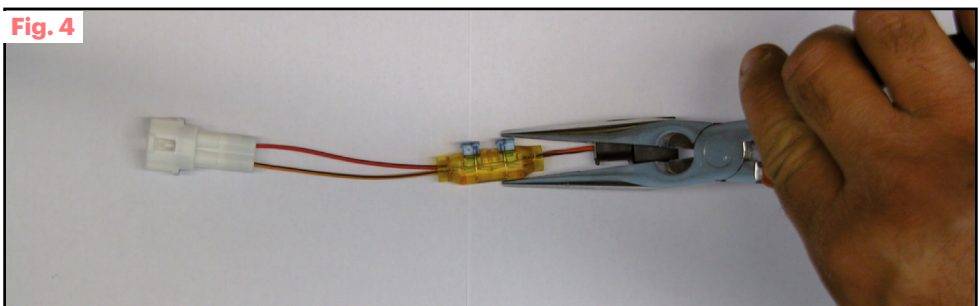

Rosso/nero
Red/black
3
Rosso/nero
Red/black
1
Arancio/nero
Orange/black
Arancio/nero
Orange/black
2

Fig. 4



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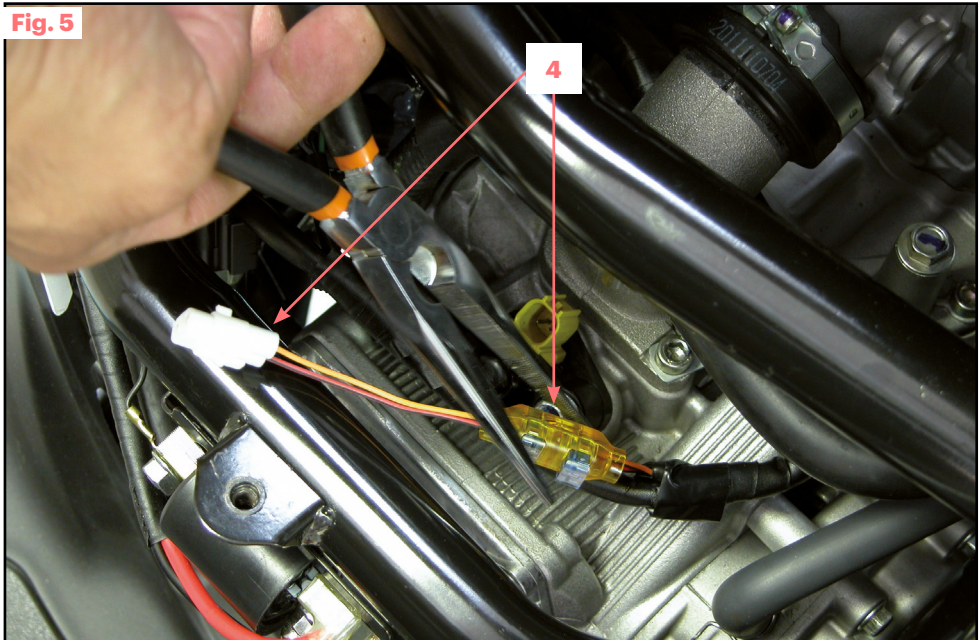


Fig. 6

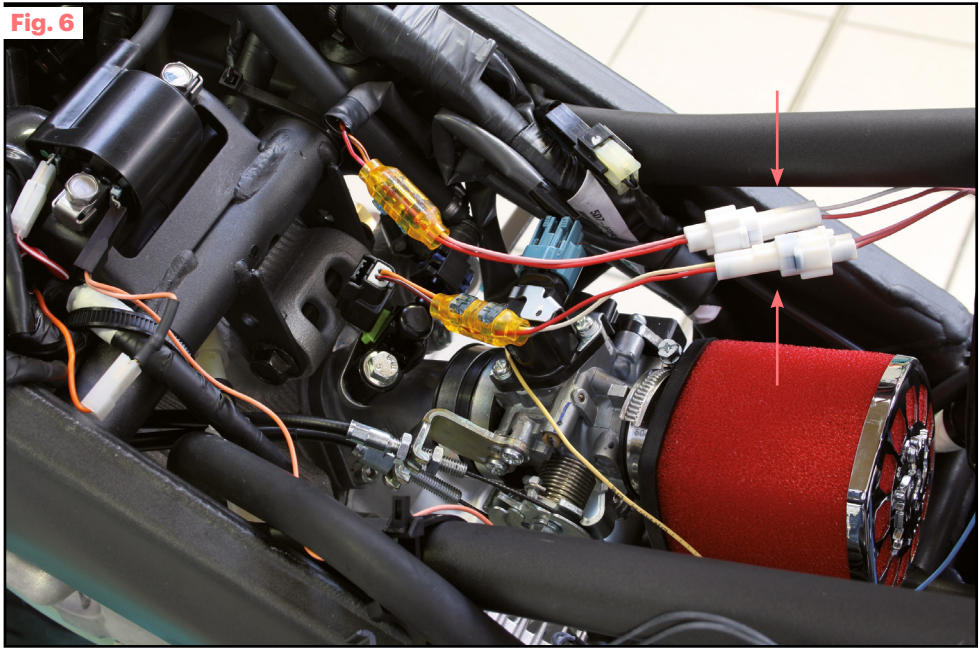
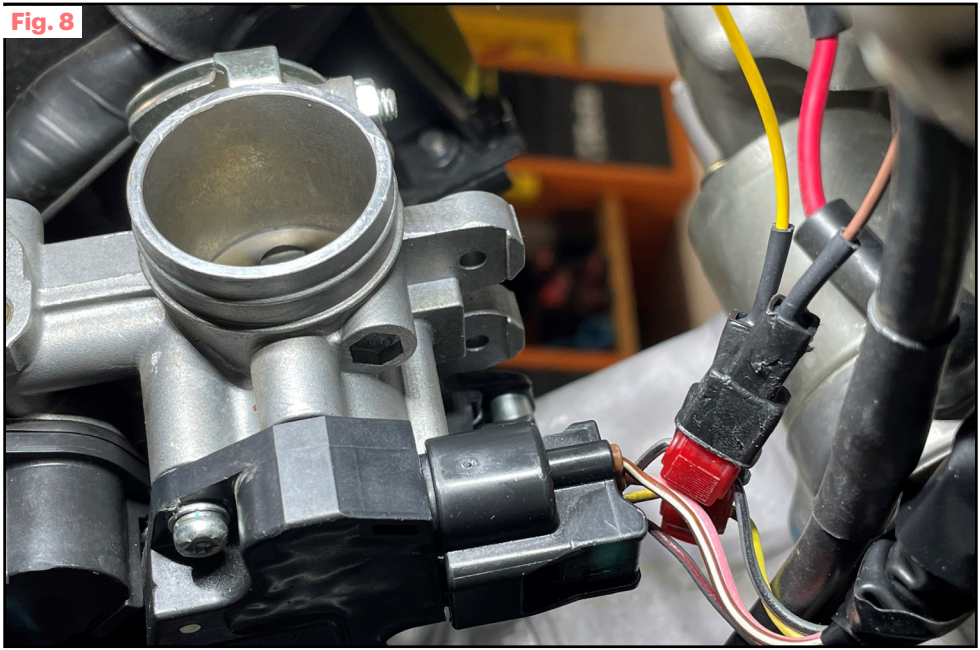



Fig. 7
5

Fig. 8



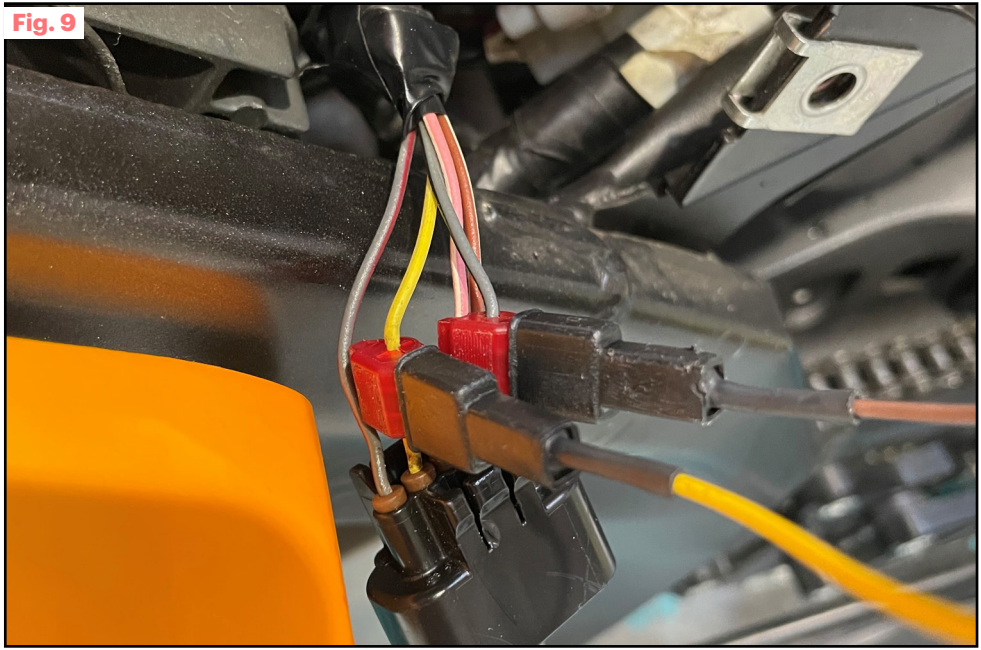
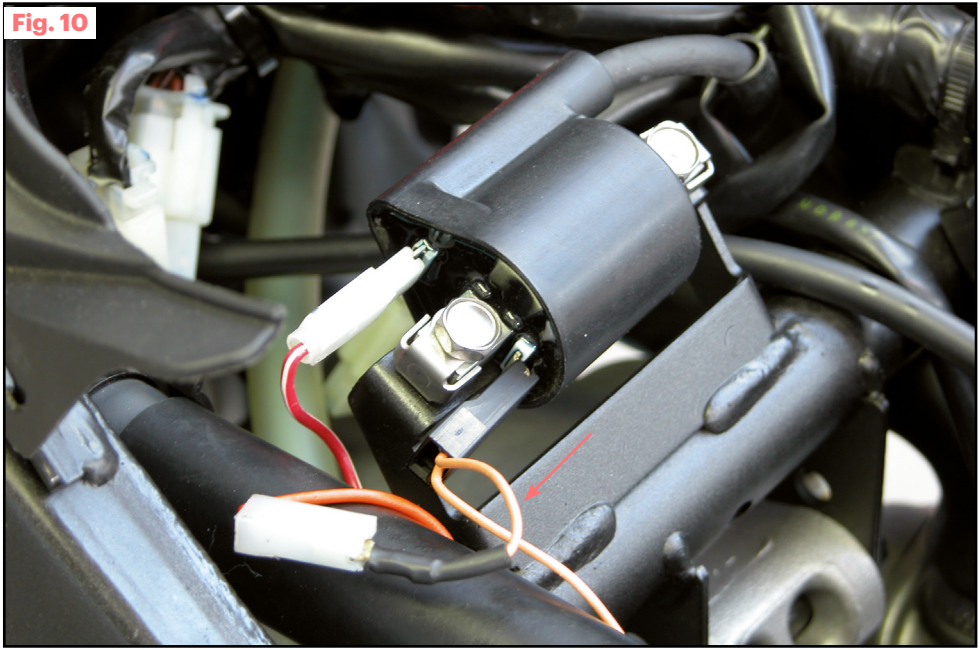


Fig. 9

Fig. 10



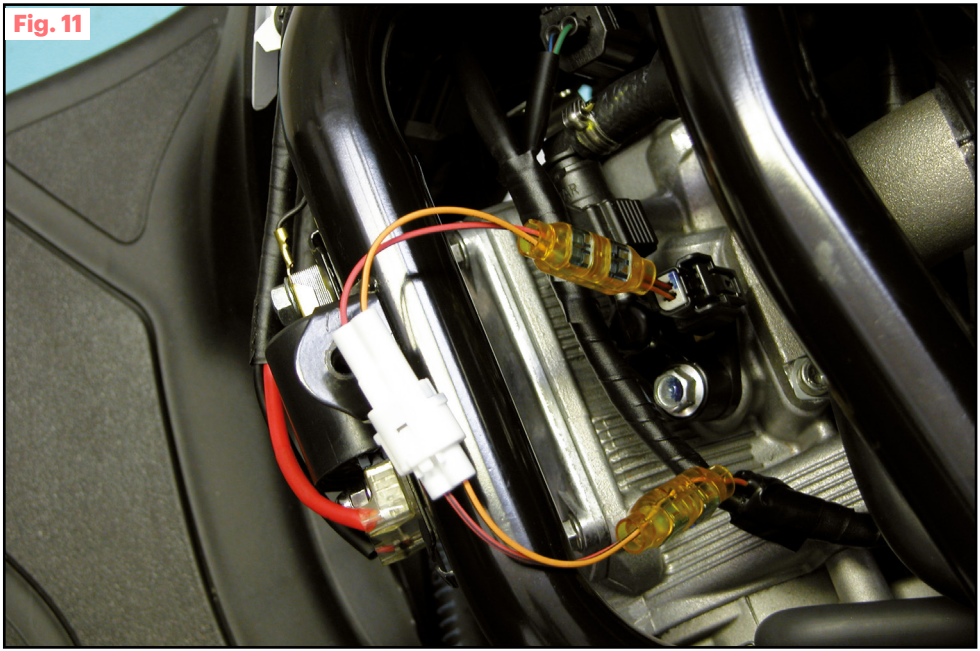


Fig. 11

Fig. 12

Contagiri
Rev counter

Regolazione iniezione
Injection adjustment

Display
Display

Funzionalità
Functions

Apertura 0/100 valvola a farfalla
0/100 throttle opening

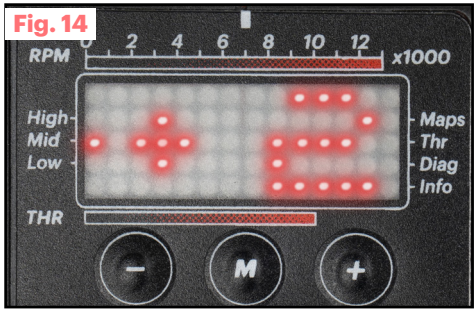
Tasti funzione
Function buttons

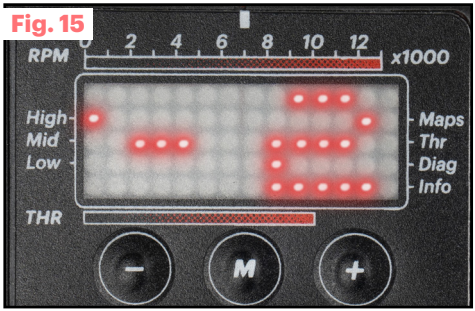
Fig. 13

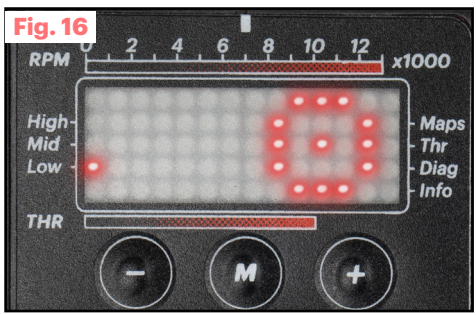

Centralina
CDI
Coppia connettori iniettori
Injector connectors pair
Connettore bobina
Coil connector
Connettore TPS
TPS connector
Occhiello di massa
Ground ring terminal

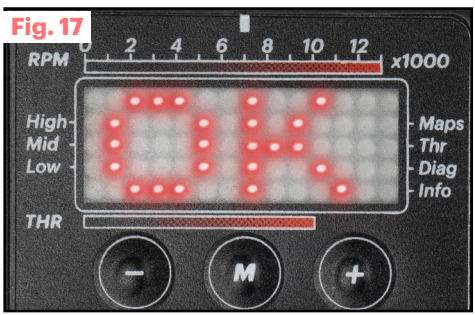
Esempi display stato centralina

CDI status display examples









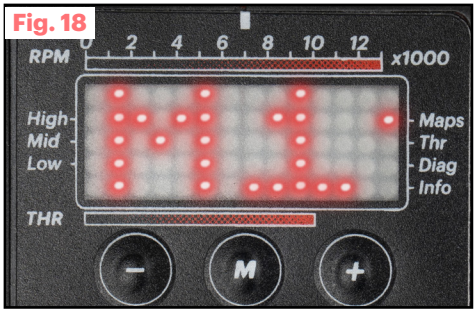


Fig. 18
RPM
0 2 4 6 8 10 12
x1000
High
Mid
Low
Maps
Thr
Diag
Info
THR
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M
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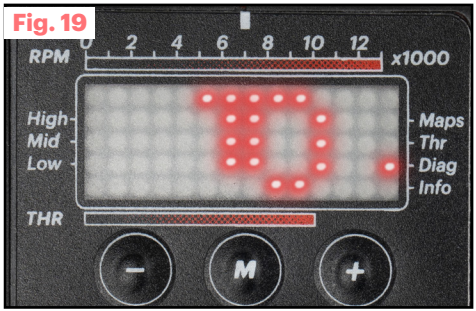
Fig. 19
RPM
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Maps
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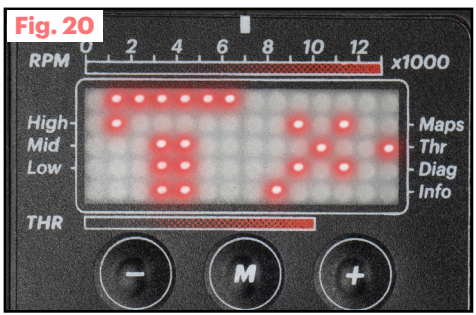
Fig. 20
RPM
0 2 4 6 8 10 12
x1000
High
Mid
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Maps
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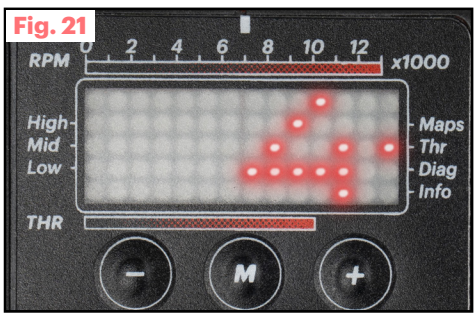
Fig. 21
RPM
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x1000
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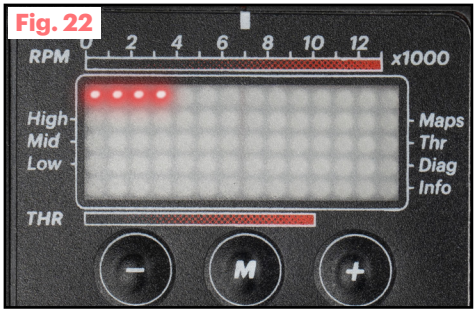
Fig. 22
RPM
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x1000
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Maps
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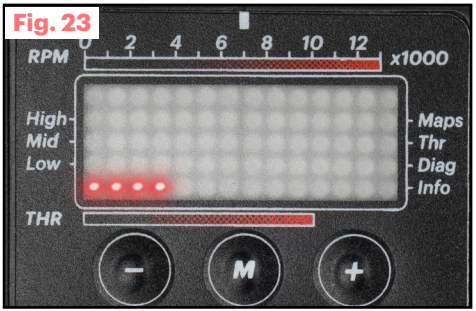
Fig. 23
RPM
0 2 4 6 8 10 12
x1000
High
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THR
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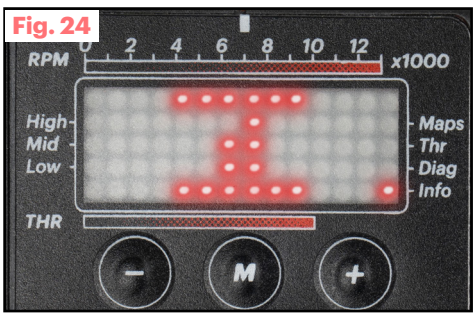
Fig. 24
RPM
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x1000
High
Mid
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Maps
Thr
Diag
Info
THR
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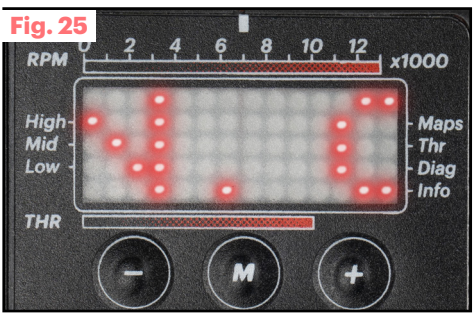
Fig. 25
RPM
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x1000
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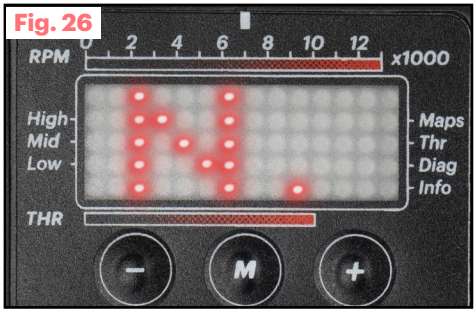
Fig. 26
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x1000
High
Mid
Low
Maps
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Diag
Info
THR
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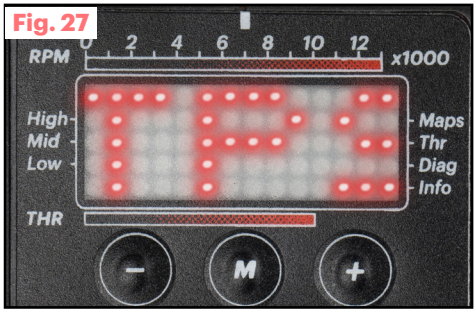
Fig. 27
RPM
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x1000
High
Mid
Low
Maps
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Diag
Info
THR
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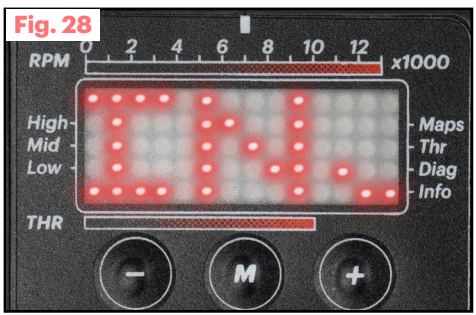
Fig. 28
RPM
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x1000
High
Mid
Low
Maps
Thr
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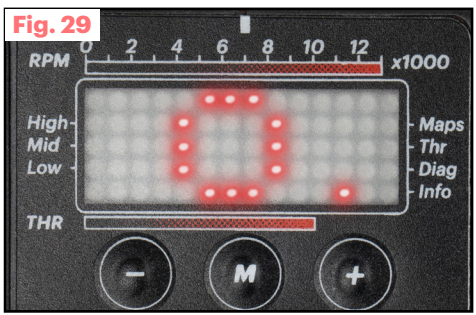
Fig. 29
RPM
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x1000
High
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THR
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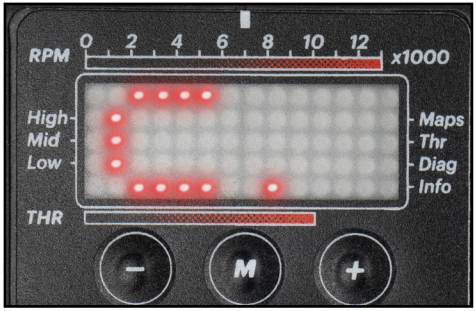
RPM
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05/2023 - 7319529

FORCE MASTER 2.1

Accensioni - Centraline
Ignitions - Controllers

MADE IN ITALY

Our Ignition - Controllers Univers

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