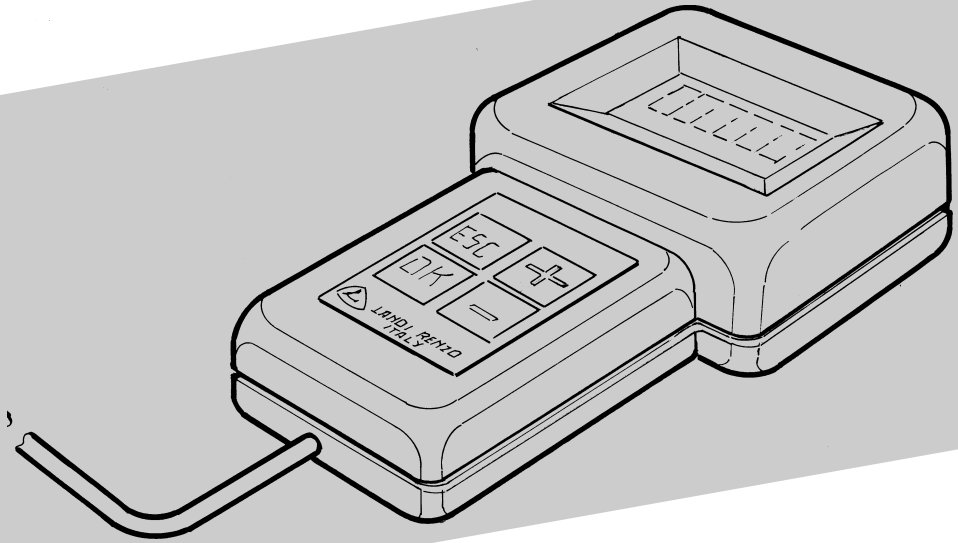
INSTRUCTIONS MANUAL

PROGRAMMER TESTER
Mod. V05



LANDI RENZO
LPG & NVG SYSTEMS

190164440

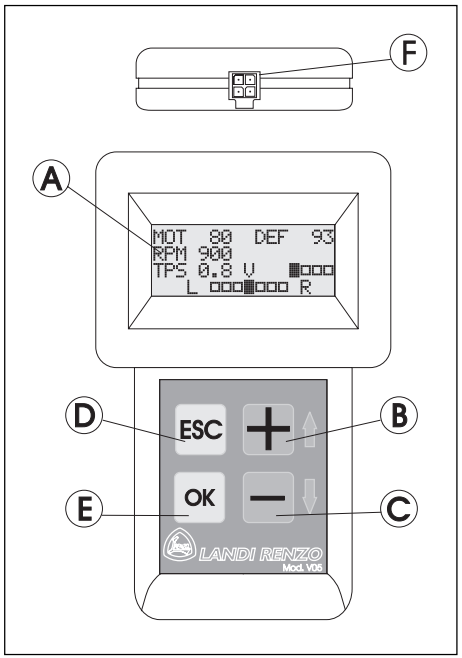
CONTENENTS

FEATURES

The Programmer Tester Mod. V05 is used to program and diagnose the LCS-A/1 V05 system.
It display parameters that characterize the operation of the entire system such as the lambda value (whether on gas or petrol), the position of the linear actuator with the stepper motor and its default, the engine speed, and TPS signal.
The Programmer Tester Mod. V05 is supplied directly by the cable linking it with the LCS-A/1 V05 central unit.

OFFERS

(fig.1)
The keypad offers different controls depending on the “page” the tester is on.



Description of main elements, fig. 1

A) Alphanumerical display.

B) Button that shifts the cursor upwards, increases the value and passes on to the previous “page”.

C) Button that shifts the cursor downwards, decreases the value and passes on to the next “page”.

D) Button to quit the “page”.

E) Button that confirms the figure and goes into value modify mode.

F) Connector for connection with the interface cable.

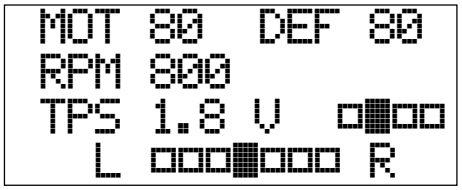
The first page displayed on activating the tester is the MAIN MENU, (fig. 2).

Main menu, fig. 2

TESTER PARAMETERS AND VALUES THAT CAN BE SELECTED

Display menu (fig. 3)

Makes it possible to know the following values in real time:
- Value of default position of linear actuator with stepper motor.
- Engine speed.
- TPS value.
- Lambda sensor signal indicator.



Display menu, fig. 3

Setting menu options

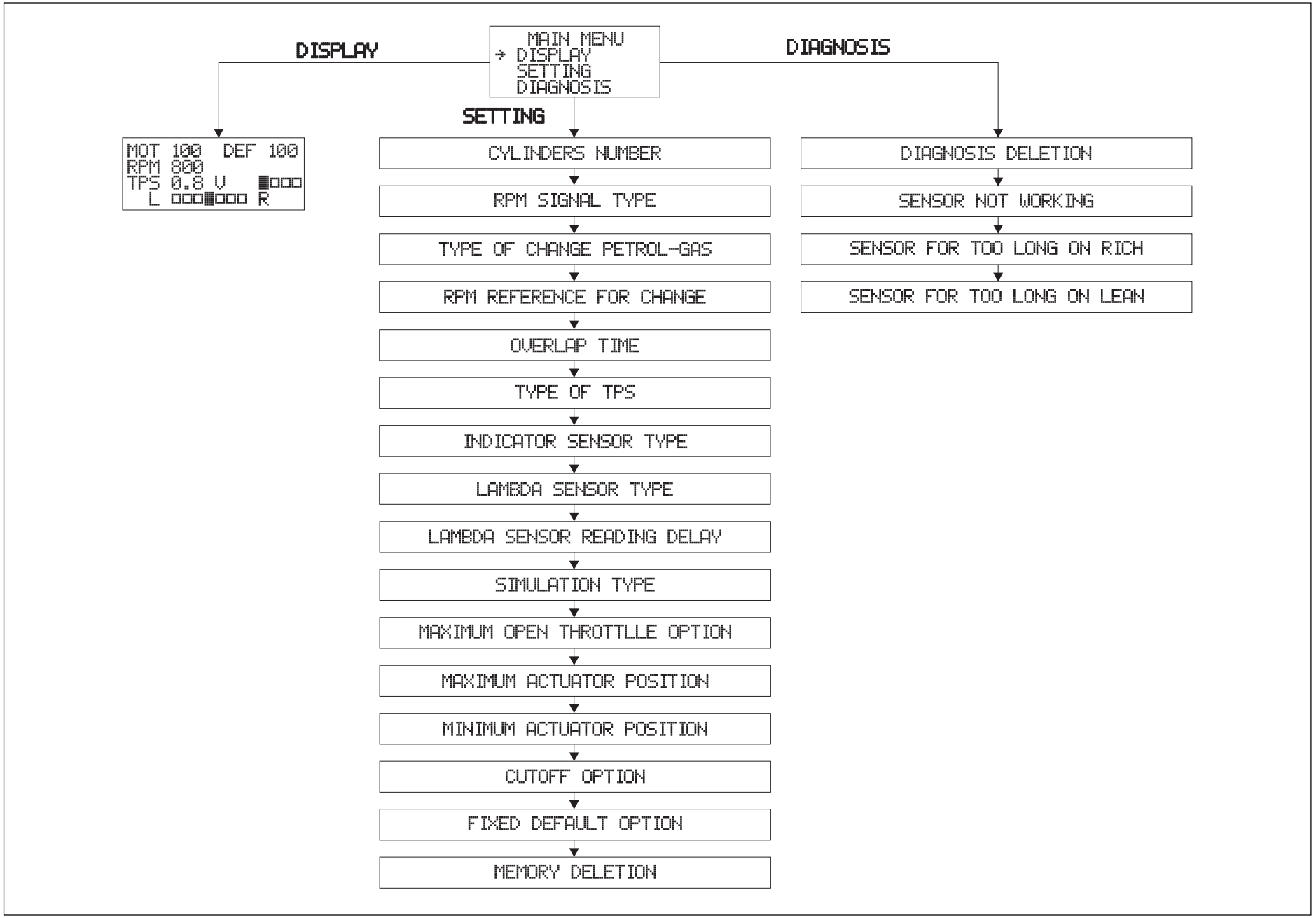
Number of cylinder (ignition)	4,5,6,8 cylinders, coilpack, single-coil
RPM signal type	weak signal, standard
Type of change petrol-gas	deceleration, acceleration, option2
RPM reference for change	400-9000 rpm
Overlap time	0-1 sec.
Type of TPS (throttle position sensor)	5-0V, 0-5V linear, 0-12V switch,12-0V switch, Mono Bosch, TPS adapter
Indicator sensor type	Landi Renzo, AEB, 0-90 Ω
Lambda sensor type	0-1V, 0-5V, 5-0V, 0.8-1.6V
Lambda sensor reading delay	0-1250 sec.
Simulation type	Square wave, disconnected, ground
- High time[1]	0-5 sec.
- Low time[1]	0-5 sec.
- Disconnected sensor time[1]	0-654 sec.
- N waves after disconnection[2]	0-255 sec.
Maximum open throttle option	enabled, not enabled
- Open throttle position[3]	40-240 steps
- TPS for maximum open throttle[3]	1.5-5V
Maximum actuator position	20-240 steps
- TPS to release limitation[4]	0-5V
Minimum actuator position	20-240 steps
Cutoff option	enabled, not enabled
- Minimum rpm for cutoff [5]	1000-4000 rpm
- Position on cutoff[5]	20-240 steps
Fixed default option	enabled, not enabled
- Fixed default position value[6]	20-240 steps

Diagnosis menu

Diagnosis deletion
Lambda sensor not working
Lambda sensor too long on rich
Lambda sensor too long on lean

[1]The parameter is displayed if the type of emulation is set on SQUARE WAVE.
[2]The parameter is displayed if the disconnected sensor time is greater than 0.
[3]The parameter is displayed if the open throttle option is ENABLED.
[4]The parameter is displayed if the maximum actuator opening option is less than 240.
[5]The parameter is displayed if the cut-off option is ENABLED.
[6]The parameter is displayed if the fixed default option is ENABLED.

ARRANGEMENT OF PAGES OF PROGRAMMER TESTER mod. V05



DATA DISPLAY PAGE

Main menu, fig. 4

To enter the data display page, select DISPLAY and press OK.

On this page it is possible to display the following information (fig. 5):

MOT: indicates the position in real time of the linear actuator with the stepper motor (value in steps).

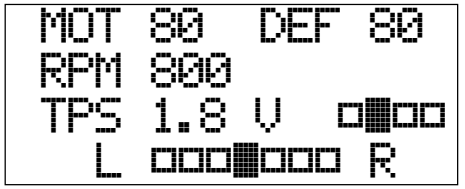
DEF: is the position acquired by default of the linear actuator with the stepper motor.

RPM: speed of the engine in real time.

TPS: indicates the position of the TPS expressed in volts.

■□□□: TPS learning settings.

- ■□□□: the first quadrant indicates the range of engine idling speed.
- □■□□, □□■□: the second and third indicate the position of the TPS during cruising speed.
- □□□■: the fourth indicates when the TPS detects the position.



Display menu, fig. 5

M □□□■□□□ R: indicates the type of signal detected by the lambda sensor.
When the cursor is in position L ■□□□□□□ R it indicates that the mixture measured by the lambda sensor is LEAN.
When the cursor is in position L □□□□□□■ R the mixture measured by the lambda sensor is RICH.

Pressing the ESC button takes you back to the MAIN MENU page.

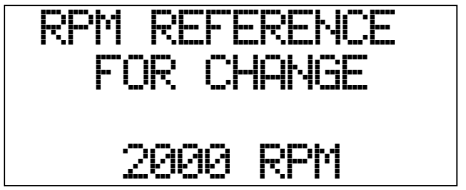
EXAMPLE OF PROGRAMMING

Speed at change over from petrol to gas

On the MAIN MENU page select the SETTING item (fig. 6) and press the OK button.

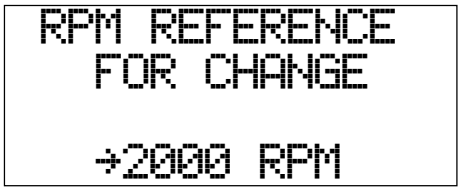
Main menu, fig. 6

Select the desired page, e.g. RPM REFERENCE FOR CHANGE (fig. 7) and press the OK button.



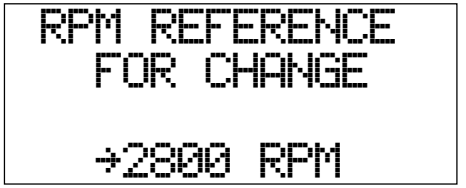
Speed for changeover menu, fig. 7

The → symbol indicates that you have entered the modify value mode and the parameter can be modified (fig. 8).



Modify value mode, fig. 8

Modify the parameter with the + and − buttons, press the OK button to confirm the figure (fig. 9).



Modified value, fig. 9

The parameter is now modified (fig. 10).

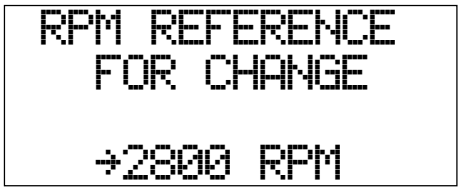
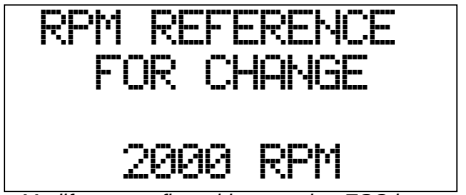


Figure confirmed with OK, fig.10

If in modify value mode you do not want to confirm the figure just varied, pressing the ESC button restores the previous value (fig. 11).



Modify not confirmed by pressing ESC button, fig.11

NUMBER OF CYLINDERS (IGNITION)

(fig. 12)
4, 5, 6, 8 CYLINDERS: Set the number of cylinders only when the ignition system is composed of one coil per cylinder, or if you connect up with the rev counter.
COILPACK: for 4-cylinder engines with 2 coils or if you connect to the coil negative of a twin-coil.
SINGLE-COIL: when you connect to the negative of a single coil that supplies all the cylinders through the distributor.

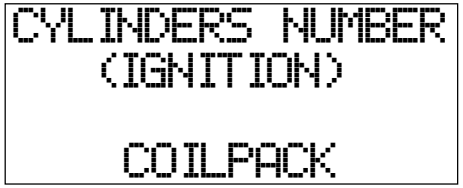


fig.12

RPM SIGNAL TYPE

The intensity of the signal indicates the engine speed (fig. 13).
STANDARD: This is used for most engines when there is an engine speed signal greater than 5V.
WEAK SIGNAL: This is used when the engine speed signal is less than 5V (eg. if the changeover from petrol to gas does not occur).

fig.13

TYPE OF CHANGE PETROL-GAS

(fig. 14)
DECELERATION: The fuel changeover is made, after acceleration, on releasing the throttle.
ACCELERATION: The changeover is made during acceleration.
OPTION2: The engine directly starts on gas (enabled oany in certain ECUs).

fig.14

RPM SELECTION FOR CHANGE OVER

Indicates what speed the fuel changeover from petrol to gas must be made at (fig. 15).

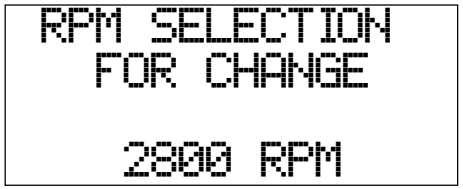


fig.15

OVERLAP TIME

This is the delay time, during the phase of passing from petrol to gas, which passes from the time when the gas solenoid valve is opened to the time when the injectors are closed; this permits the gas to fill the intake pipes (fig. 16).

TYPE OF TPS

(fig. 17)
This is the “page” that makes it possible to set the type of throttle sensor installed on the vehicle.
Linear TPS 0-5V: the voltage of 0V indicates throttle closed, 5V the throttle is fully open.
Linear TPS 5-0V: the voltage of 5V indicates throttle closed, 0V the throttle is fully open.
SWITCH 0-12V: the voltage of 0V indicates throttle closed, 12V the throttle is fully open.
SWITCH 12-0V: the voltage of 12V indicates throttle closed, 0V the throttle is fully open.

fig.16

MONO BOSCH: composed of 2 sensors that work in parallel; it is to be found on MONO BOSCH injection systems.
TPS ADAPTER: If the engine has no TPS the control unit will emulate the position of the TPS on the basis of the engine speed.

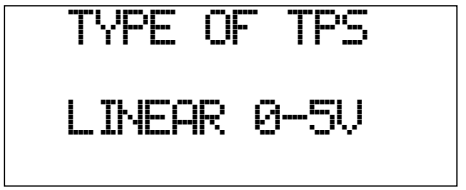


fig.17

INDICATOR SENSOR TYPE

(fig. 18)
LANDI RENZO: select this parameter for all *LANDI RENZO* sensors, both LPG and CNG.
AEB: if an AEB-type LPG sensor is used.
O-90W: for LPG indicator sensors that have an internal resistor of 0-90Ω.

LAMBDA SENSOR TYPE

fig.18

(0-1V, 0-5V A, 0-5V B, 5-0V A, 5-0V B, 0.8-1.6V)

Tells the central unit what type of lambda sensor is mounted on the vehicle (fig. 19).

To know what type of sensor is on the vehicle it is necessary to measure the voltage on the wire of the lambda sensor transmitting the signal to the computer; with the engine running, check in which range the voltage on this wire varies.

If the voltage varies between 0-1V or 0.8-1.6V, set the respective values.

If the voltage varies in a range between 0V and 5V it is necessary to make another measurement in order to identify whether it is type A or B.

To measure the voltage on the lambda sensor wire, you need to cut the sensor wire and measure the voltage on the wire reaching the vehicle's original control unit with the panel switched on.

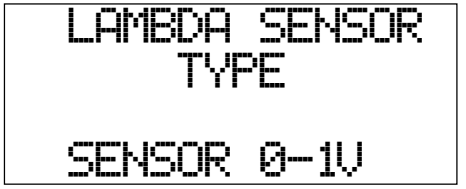


fig.19

The sensor is type A if there is a voltage of 5V on this wire.

The sensor is type B if there is a voltage of 0V on this wire.

0-5V A, 5-0VA: The type A sensor indicates a lambda sensor that keeps the wire at a voltage of 5V when this receives no signal.

0-5V B, 5-0V B: The type B sensor indicates a lambda sensor that keeps the wire at a voltage of 0V when this receives no signal.

LAMBDA SENSOR READING DELAY

fig.20

This is the time that passes from when the system comes into operation and starts reading the lambda sensor signal (fig. 20).
This time allows the lambda sensor to warm up and to prevent the central unit from wrongly interpreting the signal transmitted by the sensor.
The recommended method of identifying this time consists of starting the engine on petrol and measuring the time the lambda sensor takes to transmit a signal with voltage within the working range.
Add 2 to 3 seconds to the measured time.

SIMULATION TYPE

(fig. 21)

SQUARE WAVE: supplies the vehicle's computer, when running on gas, with a similar signal to the one received from the lambda sensor when running on petrol.

The square wave, set in the factory, is suitable for most vehicles on the market.

Not all computers interpret the signal in the same way. Therefore, it is possible for the same signal to work well on one car and not so well on another.

If the simulated signal is not compatible, there could be irregular operation on petrol, and the check-engine indicator light might come on.

To solve this trouble the possibility has been provided of setting an appropriate signal indicated from time to time by the *LANDI RENZO* technical service.

DISCONNECTED: supplies the car computer with a disconnected lambda sensor signal.

Some computers on receiving the disconnected lambda sensor will ignore it, leaving the carburation on petrol unaltered and engine check light switched off. This type of emulation generally works on cars of old design.

GROUND: supplies the car computer with information of a constantly lean mixture, it is used on MONO-BOSCH systems.

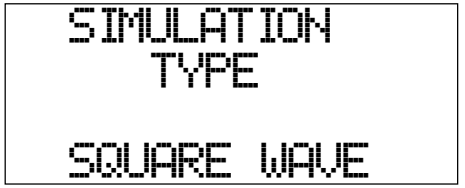


fig.21

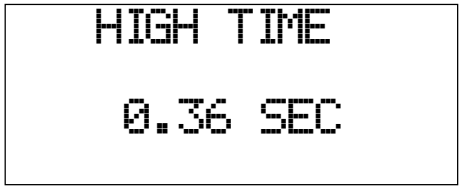


fig.22

SQUARE WAVE SIMULATION

By selecting the square wave type of emulation it is possible to set the parameters indicated below (fig. 23); **change these parameters only by following the instructions of the *LANDI RENZO* technical service.**

HIGH TIME: the time of the signal emulating a rich mixture (fig. 22).

LOW TIME: the time of the signal emulating a lean mixture (fig. 24).

DISCONNECTED SENSOR TIME: the time passing between one set of pulses and the next (fig. 25).

NUMBER OF WAVES AFTER DISCONNECTION: the number of waves that will be sent to the petrol computer after the disconnected sensor time (fig. 26).

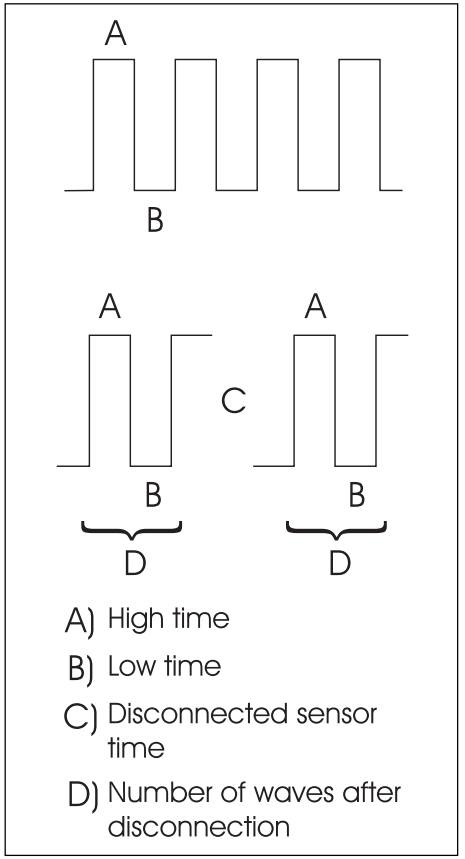


fig.23

MAXIMUM OPEN TRHOTTLE OPTION

(fig. 27)
NOT ENABLED, ENABLED
By enabling this function you can obtain a faster engine response in the acceleration phase.
At the desired TPS value you can, for a pre-set length of time, take the linear actuator with stepper motor to the desired position.

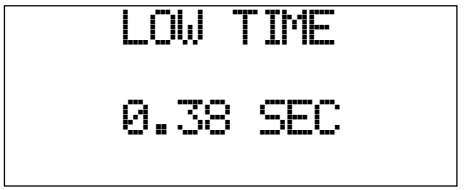


fig.24

fig.25

fig.26

OPEN THROTTLE POSITION

This is the position the linear actuator with stepper motor will take during sinking (fig. 28).
To establish the position the actuator must take on, proceed as follows:

- Switch on the engine and position the programmer tester on the DISPLAY "page".
- Accelerate decisively and check the two possible conditions: carburation too lean or carburation too rich.
- Afterwards check at what number of steps of the linear actuator with stepper motor the lambda sensor oscillates regularly and enter this value as OPEN THROTTLE POSITION.

TPS FOR MAXIMUM OPEN THROTTLE

This is the TPS value at which the central unit positions the linear actuator with stepper motor (fig. 29).

- Switch on the engine and position the programmer tester on the DISPLAY "page".
- Check on the road at what TPS value there is irregular carburation and set this value for TPS FOR MAXIMUM OPEN THROTTLE.

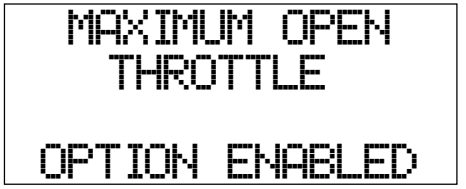


fig. 27

fig. 28

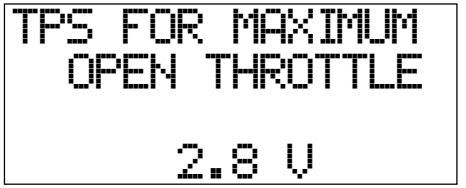


fig. 29

MAXIMUM ACTUATOR POSITION

This parameter fixes the maximum opening position of the linear actuator with stepper motor, beyond which it cannot work (fig. 30).
It is recommended to set this value if the lambda sensor responds in an inadequate manner (responds slowly to the changes in carburation) then fix a value 10÷20 steps higher than default.

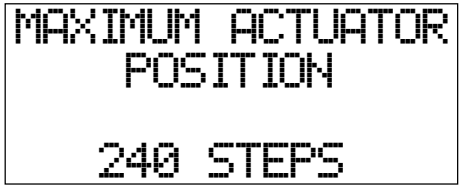


fig. 30

TPS TO RELEASE LIMITATION

TPS value at which the maximum opening limitation of the linear actuator with stepper motor is disabled, in this way the control unit is allowed to work up to 240 steps (fig. 31).
If a limit has been set and the engine response is not immediate, by changing this parameter you can resolve the above-mentioned drawback.

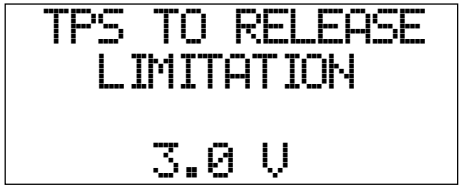


fig. 31

MINIMUM ACTUATOR POSITION

This option fixes the minimum opening position of the linear actuator with stepper motor, under which it cannot work (fig. 32).
It is recommended to set this value if the lambda sensor responds in an inadequate manner (responds slowly to the changes in carburation) then fix a value 10÷20 steps lower than default

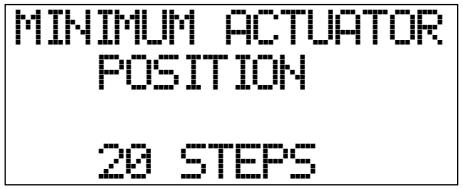


fig. 32

CUTOFF OPTION

By enabling this function (fig. 33) on completely releasing the throttle, the linear actuator with stepper motor positions itself at the step set on the POSITION ON CUTOFF "page".
The cut-off comes into operation in the deceleration phase to facilitate reaching idling speed, improve the braking effect of the motor, reduce consumption and emission of pollutants.
The cut-off option must be used only after the central unit has acquired the default position of the linear actuator with stepper motor.

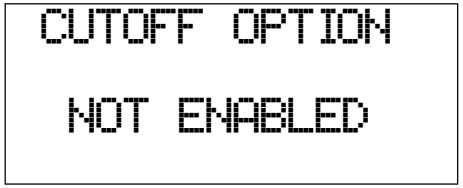


fig. 33

MINIMUM RPM FOR CUTOFF

Engine speed at which the cut-off function ends and the central unit repositions the linear actuator with stepper motor at the default position (fig. 34).
By enabling this function the value of 1500 rpm is suitable for most vehicles.

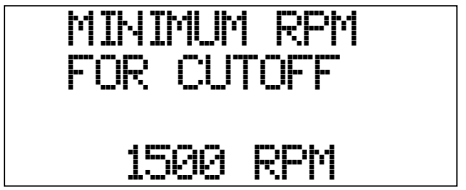


fig. 34

POSITION ON CUTOFF

This is the position at which the linear actuator with stepper motor positions itself during the cut-off phase. This value is generally 30 steps less than the default position (fig. 35).

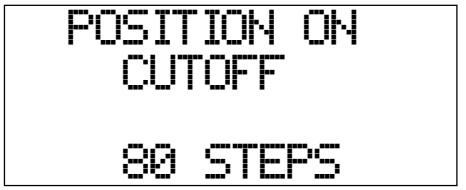


fig. 35

FIXED DEFAULT OPTION

This option keeps the carburation control strategies of a normal default. However, it can be used in emergencies such as if the lambda sensor has broken or is functioning badly (fig. 36).
In some cases it can be used to force a default more open or more closed consequently making the mixture richer or leaner.
Caution: This option does not have the function of a fixed register.

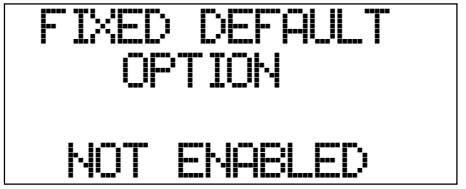


fig. 36

FIXED DEFAULT POSITION VALUE

This is the default value set on the basis of the requirements established in the FIXED DEFAULT OPTION (fig. 37). Anyhow, it is the position the linear actuator with stepper motor will take in the conditions of the lambda sensor being cold or out of order.

MEMORY DELETION

On this “page” the control unit reset procedure is actuated, thereby restoring the factory settings and taking the default position of the linear actuator with stepper motor back onto 100 steps (fig. 38).
Therefore, in the case of resetting, re-enter the parameters that may have been changed and which correspond to the vehicle.

fig. 37

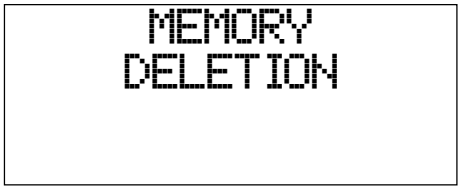


fig. 38

DIAGNOSIS MODE

To enter the diagnosis page, in the MAIN MENU, select DIAGNOSIS and press OK (fig. 39).

This section permits displaying the error and deleting it.

During gas operation, the system signals detection of one of the following irregularities with a slow flash of the green led **A** (fig. 40):

THE LAMBDA SENSOR DOES NOT WORK.

THE LAMBDA SENSOR DETECTS A RICH MIXTURE FOR TOO LOONG.

THE LAMBDA SENSOR DETECTS A LEAN MIXTURE FOR TOO LONG.

The error is signalled as in fig. 41.

The error condition is recorded in the memory of the central unit permanently, also when there is no supply voltage.

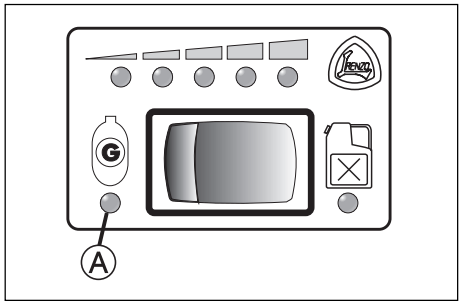
After effecting action to resolve the problem, it is necessary to zero the memory of the diagnosis function.

To zero the memory you need to position the tester onto the DIAGNOSIS DELETION "page" (fig. 42).

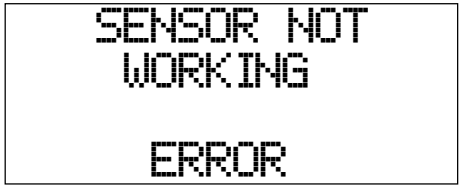
Press the OK button to delete the error.
Deletion of the error condition will be displayed as in fig. 43.

If you do not want to complete zeroing the memory of the diagnosis function, press ESC or change "page" with one of the direction buttons.

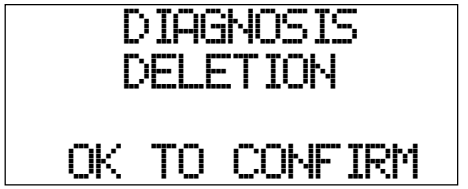
Main menu fig. 39



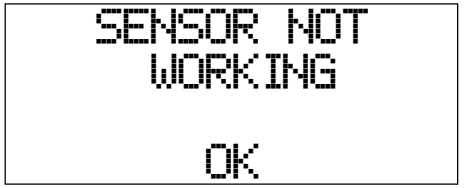
Indicator Switch fig. 40



Disconnected sensor diagnosis page fig. 41



Diagnosis memory reset page fig. 42



Disconnected sensor diagnosis page fig. 43

CARBURATION LEARNING PROCEDURE

• Insert the fuses in the wirings, removed in the assembly phase.
• Connect the programmer tester to the diagnosis and programming socket on the wiring of the central unit.
Check that the settings contained in the control unit memory, set in the factory, correspond to the vehicle's features. If they do not correspond, reset the central unit.

Cylinders number (ignition)	coilpack
RPM signal type	standard
Type of change petrol-gas	deceleration
RPM reference for change (from petrol to gas)	2000 rpm
Overlap time (during changeover from petrol to gas)	0.400 sec.
Type of TPS (throttle position sensor)	linear 0-5V
Indicator sensor type (gas level)	Landi Renzo
Lambda sensor type	0-1V
Lambda sensor reading delay	5 sec.
Simulation type	Square wave
High time	0.36 sec.
Low time	0.36 sec.
Disconnected sensor time	0.00 sec.
Maximum open throttle option	not enabled
Maximum actuator position	240 steps
Minimum actuator position	20 steps
Cutoff option	not enabled
Fixed default option	not enabled

• Start the vehicle on petrol and wait for a few minutes for the lambda sensor to warm up.
• Enter the DISPLAY "page".
• With the car stationary, pass on to gas and accelerate and decelerate a few times with gaps of a few seconds in between; in this way the central unit will learn the TPS idling position.
• To learn the carburation take the engine up to a speed of approximately 3000÷3500 rpm. The number indicating the position of the linear actuator with stepper motor will change on the Programmer Tester display.
• After a few seconds you will note a shifting back and forth of the lambda signal, followed a few seconds later by the display of the new default, which indicates that the carburation has been learnt.
• Release the throttle, adjust the reduction unit idling so that the position of the actuator is similar to the value of the actuator default position.

The programmable functions can only be modified with the Programmer Tester or a Personal Computer with the serial interface and the special software.

If the central unit is not powered the functions entered stay in memory.

The TPS idling position is acquired each time the system is switched on.

With a new central unit or one that has just been reset, the default position the actuator with stepper motor will start from is 100 steps.

The default position of the linear actuator with stepper motor is acquired each time you switch on the system; the last default position acquired is used as the starting point.

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