



Rapid Bike – professional system to change operating parameters of motorbike four stroke engines with electronic injection

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The group **DimSport Technology** which includes four trading and technical companies (**Dimensione Sport - DimTech - DimSport Center Firenze - Motor DimSport Barcellona**) was founded in 1991, thanks to passion for competition and it has become a world leader in design, production and marketing of software and hardware to manage engine operating parameters. In addition to **Rapid Bike**, the following product ranges have contributed to the expansion of the group: **Race** – systems to change the parameters of ECUs, **Rapid** – add-on modules for turbodiesel engines, Ecu **Race** – replacement ECUs for competition cars and **Dynorace** - power bench tester for cars (two or four-wheel driven). The Quality management system of Dimensione Sport is TÜV certified. **DimTech** production plant is certified ISO 9001/ UNI EN ISO 9001 Ed. 2000.

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Common features of Rapid Bike add-on modules

Rapid Bike is an add-on module - which allows to modify the injection time of engines from 1 to 4 cylinders, to manage the crank signal, in some cases to change the speed limiter, to stop power drive in order to manage the gear shift, also on bikes with dual injection and managing of the lambda probe signal. The range of action goes from effective 500rpm to 17.000rpm .

The connection to the standard electrical equipment is carried out through original connectors, so simplifying the installation and making it easy, fast and reversible.

Furthermore, the wiring is equipped with a special in order to connect the add-on to the PC through a standard USB cable connection.

In a few seconds, by connecting the add-on module to the PC, one can reprogram the module for each motorcycle, download maps and modify them with professional software, in order to obtain a better and customised performance.

Unique Features:

The exact modified point of the map can be highlighted thanks to the "trace" function, which allows real-time showing of the reading of the map during the test.

The add-on module can be bypassed thanks to an adaptor, which allows running in the original mode, in order to get the immediate benefit of a bench test as well as on the track.

In addition to these technical features, that make it a up device, Rapid Bike can be re-programmed and used for other bikes, in most cases, as shown in the application list.

"Simple and efficient": one add-on module, some wiring ... SEVERAL APPLICATIONS!

Modularity is not only for the programmer/dealer, but also for the final customer, who can contact the sales points to re-install Rapid Bike on other bikes, thus reducing the expenses to around half the cost of a Rapid Bike kit. The Rapid Bike system allows therefore loyalty between the customer and the programmer/dealer.



Specific characteristics of every controller Rapid Bike



RapidBike 1 – injection additional controller

- It controls the injection directly, acting between the original controller and the injectors; it can vary the amount of fuel injected into each cylinder depending on the number of engine revolutions and the accelerator position. By acting directly on the injection signal, it can control the same signal with values, in percentage, from -100% to +100% on a 8-column table for the fuel delivery and 30 lines for the number of revolutions. The retard on the original injection signal is only 15µS.
- Secondary functions such as accelerating pump, electronic gearbox, a map per cylinder for longitudinal two-cylinder versions, map switch for quad or scooter, are part of the comprehensive and remarkable

features of Rapid Bike 1.

RapidBike 2 - injection additional controller – limiter advance or control

- The injection function is the same of RB1.
- As far as the advance function is concerned, it acts between the driving shaft position sensor (pik-up) and the original controller, it reproduces the modified signal advanced or retarded, depending on the number of engine revolutions and the accelerator position with values in percentage -10 ° (retard) to +10 ° (advance) by reading the data of a 8-column table for the fuel delivery and 30 lines for the number of revolutions. The action range varies depending on the engine, but, in general, it goes from 2300rpm to the limiter.
- For the limiter control, it reproduces the signal modified according to the parameters contained in the map and extending the delivery up to +1000rpm, where the electronic gearbox can be controlled.
- Secondary functions are the same of RB1.



RapidBike 3 - injection additional controller, multi-set advance



- The injection function is the same of RB1, with the only difference that the retard on the injection original signal is just 12µS.
- The advance function is the same of RB2, with the opportunity to control different sensibility levels of the pik-up signal.
- The function of the electronic gearbox is possible even on dual-injection engines, thanks to the calculation speed, that allows micro cut-off of the pik-up signal.
- For the limiter control, it reproduces the injection signal modified according to the parameters contained in the map and extending the delivery up to + 1.200 rpm, where the electronic gearbox can be controlled.
- It controls up to 4 injection maps and 1 ignition map in multiple configurations:
 - One injection map per cylinder plus one advance map
 - One injection map for cylinders 1-4 and one for cylinders 2-3 plus one advance map
 - One injection map for cylinders 1-3 and one for cylinders 2-4 plus one advance map
 - Double set of injection ignition maps (set1: injection1 advance1; set2: injection2 advance2) selectable during the run through a selector on the handlebar (optional). Each set may have a different setting of the limiter control.
- In addition to the secondary functions of RB1, the additional limiter function can be selected from the handlebar to adjust the speed within the pit-lane or fixed, for special set-up that require a maximum revolution speed lower than the nominal one.
- It can dialogue with the RB-O2 through a digital dedicated channel to act precisely even in presence of looping between the original controller and the lambda sensor.

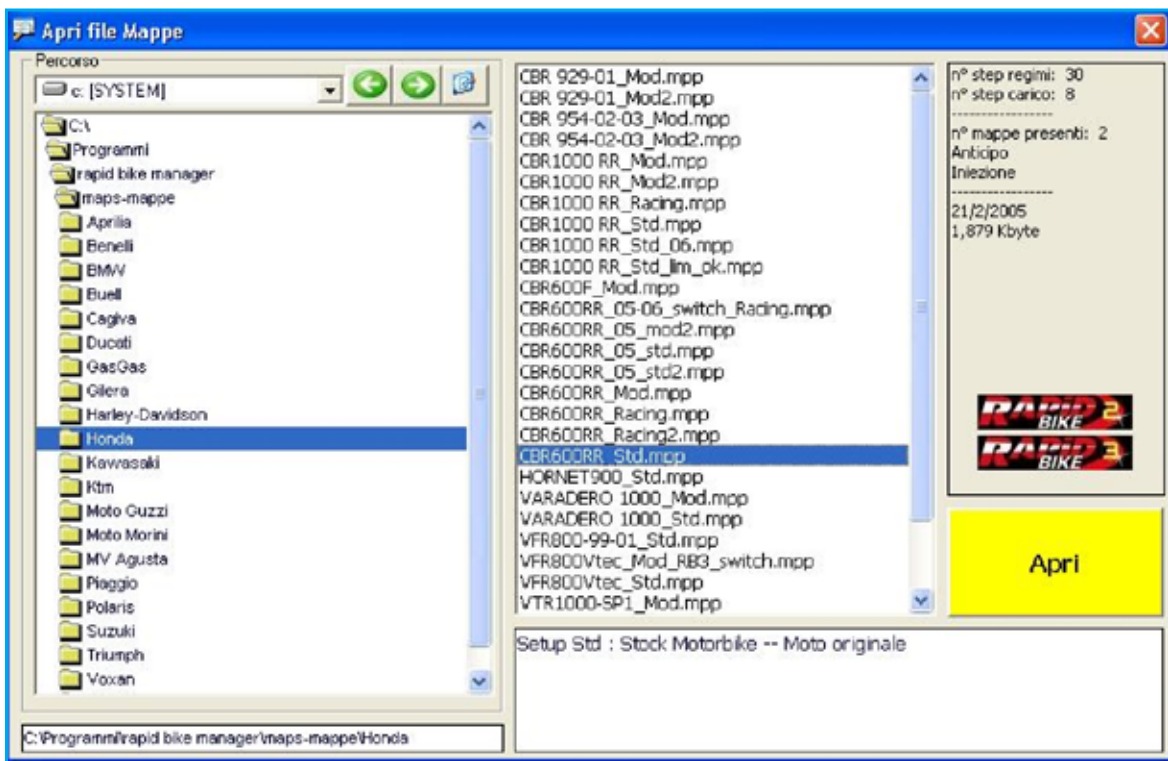


RB-O2 - (Rapid Bike O2 modulator) additional controller for modulation of the lambda sensor signal

It controls the signal from the lambda sensor (up to 2 sensors) by acting between the sensor and the original controller, it reads, processes and generates the signal to the original controller. The result is a stoichiometric ratio more favourable for the engine, which enables a more fluid delivery, appreciated by the motorcyclist especially at low revs where, sometimes, the delivery problems can cause a consequent loss of stability.

1) The operating methods are:

1. manual operation with TPS connection: the signal modulation is a function of the throttle opening and calibration of an easily accessible and intuitive trimmer;
- 2) manual operation with fixed action: the signal modulation is a function of the trimmer calibration;
- 3) automatic operation combined with Rapid Bike 3: it reads the signal from the lambda sensor and changes it according on the injection maps loaded. Thanks to this setup, it is possible to act accurately on the stoichiometric curve, to achieve the best at every revs.



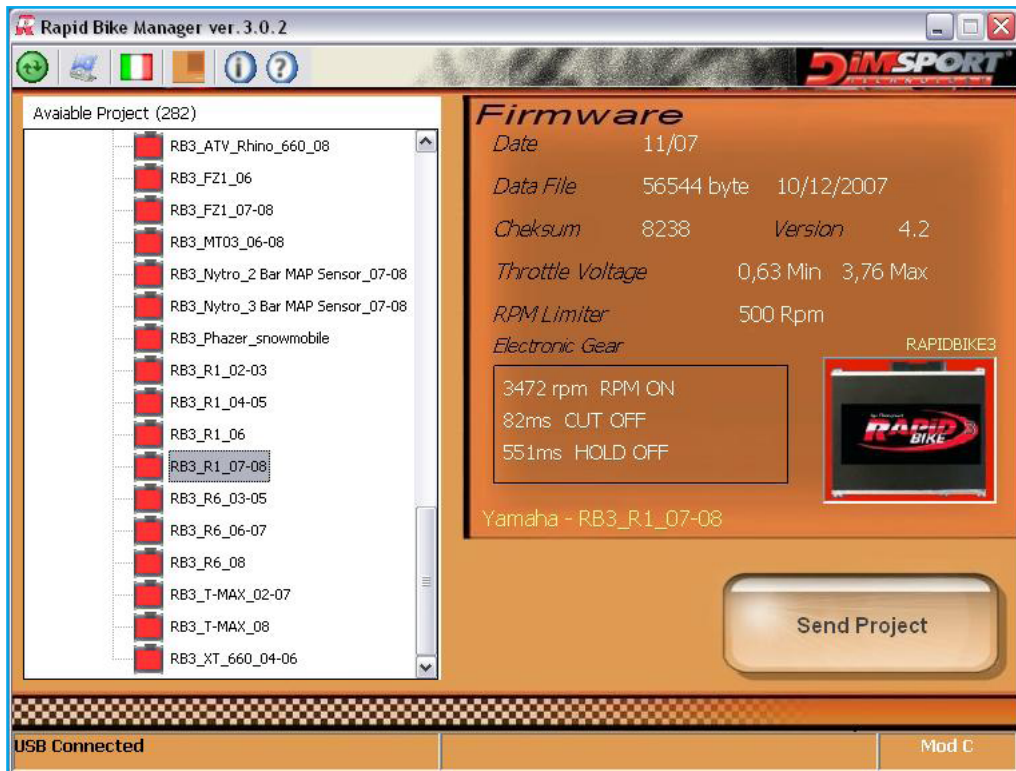
Software programs

Rapid Bike PROfessional.

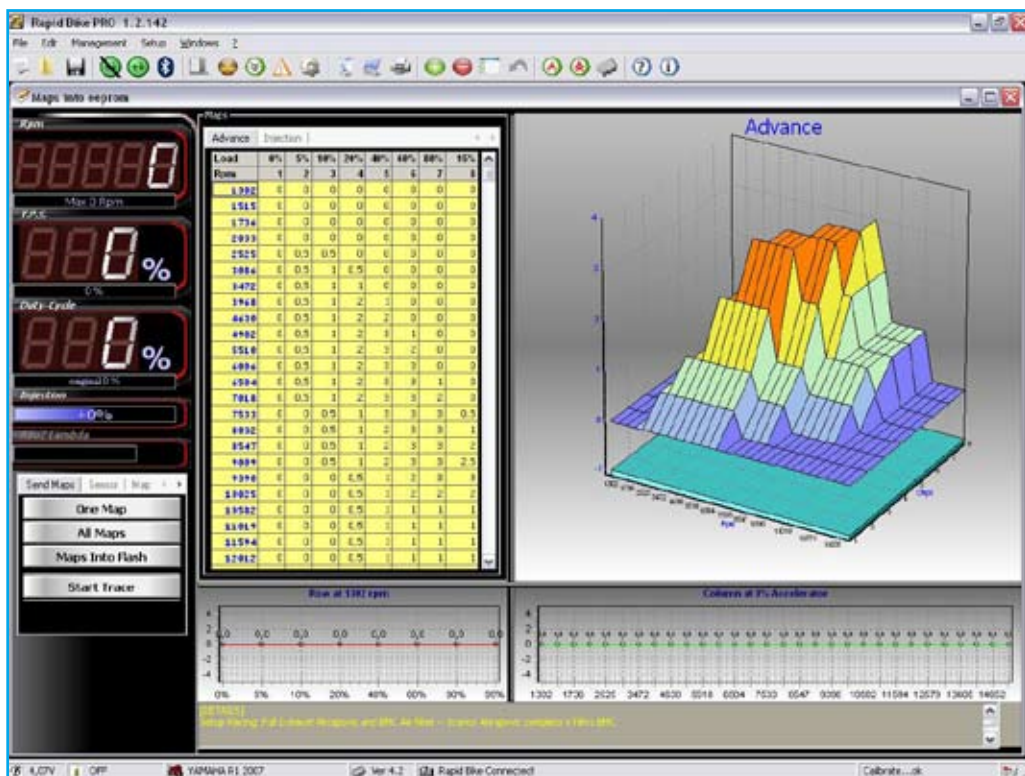
The kit consists of various software and hardware components designed to allow the programmer working in the best conditions and obtain the desired result.

The software components are:

Rapid Bike Manager: firmware program in the controllers to make them suitable for the requested use.



Rapid Bike Pro: thanks to its intuitive graphics and precision, all the operating parameters can be monitored; it is possible to correct and develop maps, thus enhancing the Rapid Bike features and optimizing the engine performance, thanks to the changes applied to the exhaust system and filters.



The screen shows the various functions including maps, 3D graphics and cursors for changing map values, both per line and per column.

The maps are represented according to a 8-column pattern with percentage values of accelerator opening (loading) and 30 lines of engine revolution values.

The values of both lines (rpm) and the accelerator opening (%) are customized, as necessary.

The changes to the maps can be made in individual boxes or by selecting the area where you want to act.

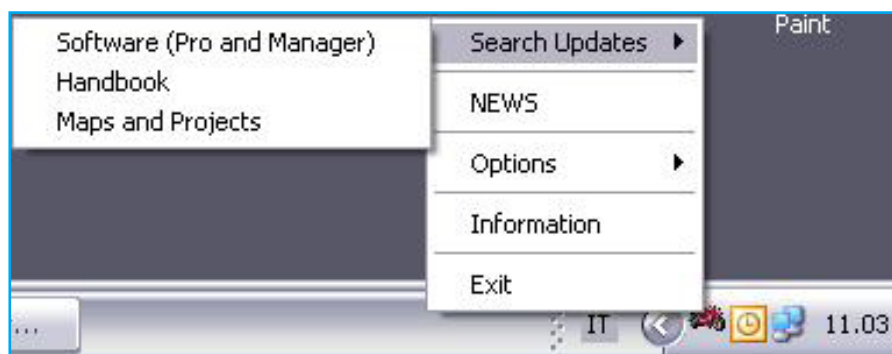
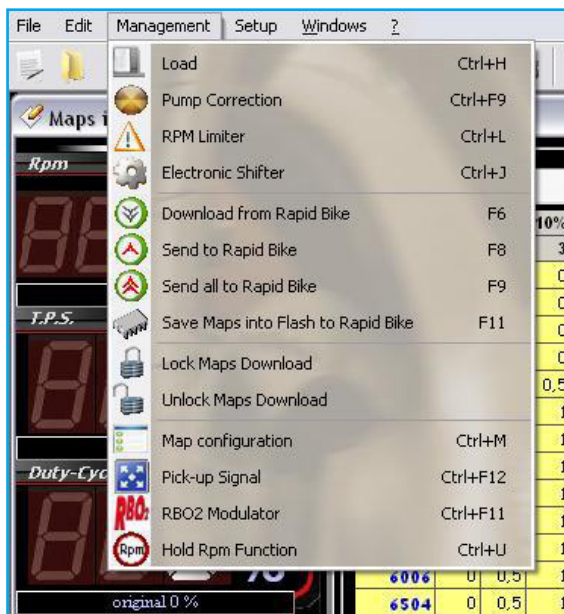
The advance map is expressed in angle degrees and can be amended of 0.5 ° more (increased advance) and less (decrease).

The injection map is expressed with percentage values of the injection original time and they indicate the amount of fuel more or less compared to the same 1%.

The software window “Management” allows the operator to access all the main functions:

- Load: TPS calibration
- Accelerator pump: adjustment of the amount as a percentage of fuel more, duration of the correction, adjustment of the triggering sensibility.
- Revolution limiter: adjustment of rpm more
- Electronic gearbox: cut-off adjustment (cut-off time in ms) – rpm-on (the revolution number starting from which it begins controlling the cut-off) – hold-off (stand-by time).
- Locking the map reading: it saves the programmer’s work, that becomes inaccessible to others.
- RB3 map configuration.
- Pick-up signal: adjustment of pik-up input signal sensibility for RB3
- RB-O2 modulator: communication settings between RB3 and RB-O2
- Locking the rpm: additional revolution limiter enabled to control the pit-lane speed for RB3.

Rapid Bike Manager Update: It updates the system automatically or manually, connecting to the site dedicated for this function.



Blue Bike Kit

The Blue Bike software kit allows communication between pc, palmtop or mobile phone and the Rapid Bike controller within 50mt radius , as the crow flies in open space, using the Bluetooth technology. The revolutionary system consists of a Bluetooth sensor, which uses the special connector to the Rapid Bike controller and a software that can be installed on a PC (Windows XP o Vista), Pocket PC Phone and Pocket PC (Windows Mobile 6, 5, 2003 SE) and Smartphone (Windows Mobile 6, 5).



FUNZIONI	PRO	LITE
MAPPE E GRAFICI	✓	✓
STATUS E GIRI	✓	✓
SENSORI	✓	✓
CERCA MAPPE	✓	✓
POMPE DI RIPRESA	✓	✓
CALIBRAZIONE	✓	✓
WIZARD EDITOR	✓	✗
CONFRONTA MAPPE	✓	✓
BLOCCA/SBLOCCA	✓	✗
GRAFICO	✓	✓
MODIFICA STEP GIRI	✓	✗
GESTIONE STEP	✓	✗
IMPOSTAZIONE USB	✓	✓
HELP	✓	✓
CAMBIO	✓	✓
LIMITATORE GIRI	✓	✗
LIMITI MAPPA	+10/-10	+3/-3
LIMITI MAPPA "ALTRE"	+100/-00	+30/-10
CONFIG MAPPA	✓	✓
Scarico mappa da centralina automatico	✗	✓

Rapid Bike Lite

This is the software release specifically designed for the end user who wants to interact with his controller. Compared to the PRO version, the screen and the operating principle are the same, except for certain restrictions that make it a safer tool in the hands of non expert users. These limitations are defined in the table on the side.

Accessories

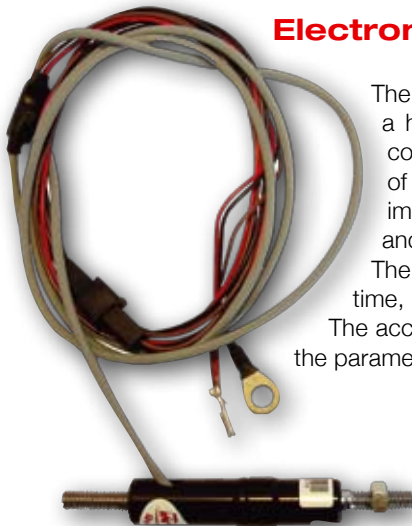
By-pass Adapter

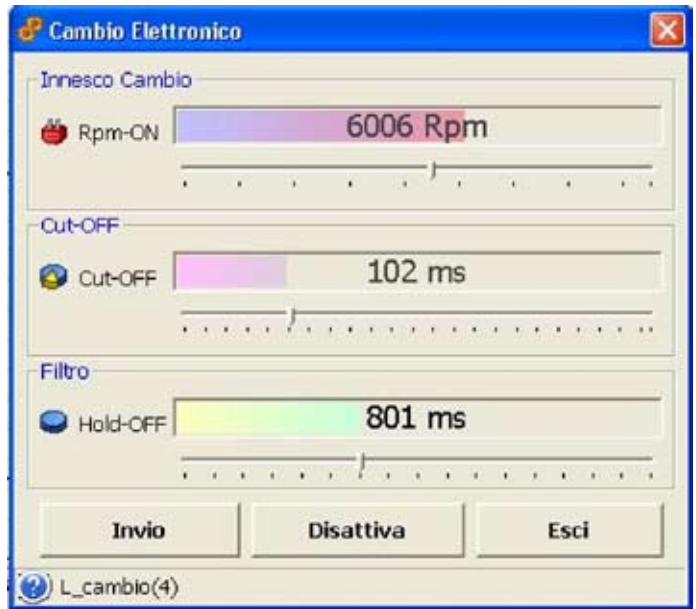
The by-pass called ADORI allows to restore the original motorbike conditions, by simply removing the controller but not the wiring. Thanks to the adapter, the connections between inputs and outputs of the Rapid Bike wiring sections dedicated to injection and pick-up signal are restored. In case of failure, the bypass is a valuable tool for testing the wiring operation without having to remove the system.



Electronic gearbox sensor

The sensor, mounted on the driving rod of the gear shift lever, when a higher gear is prompted, sends a signal to the Rapid Bike 1-2 or 3 controller; this cuts the first usable injection sequence, or in the case of double injection, the stage signal sequence, in order to have an immediate cut of power delivery, thus allowing the shift to be geared and the immediate delivery of full power, always keeping the fuel open. The sensor allows the increase in performance, eliminating the gear idle time, even during the engine revolution extension beyond the original limiter. The accessory can be applied to all RB wiring, and thanks to the software, all the parameters can be adjusted to achieve the best performance.





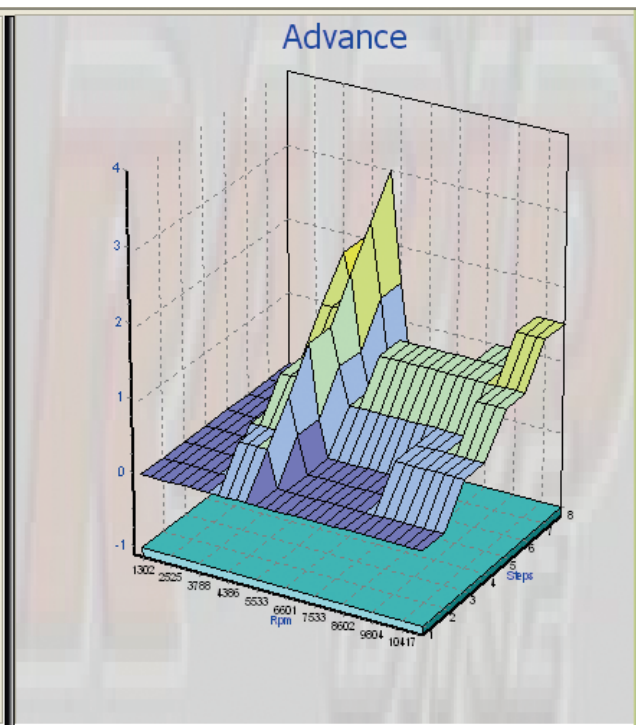
Map handlebar selector

The map handlebar selector is a useful accessory that combined with the Rapid Bike 3 or Rapid Bike 1 (for Atv / scooter) allows changing the mapping of the additional controller. With the Rapid Bike 1, two injection maps can be changed, with the Rapid Bike 3, the switch allows changing both the injection set and the advance set in two different modes: racing - rain, with db killer - without db killer; more lean - more rich, etc.. Moving the selector position from 1 to 2 or vice versa, the setting changes to achieve the best performance.

Maps

1 Advance 1 Injection 2 Advance 2 Injection

Load	0%	5%	10%	20%	40%	60%	80%	95%
Rpm	1	2	3	4	5	6	7	8
1302	0	0	0	0	0	0	0	0
1701	0	0	0	0	0	0	0	0
2033	0	0	0	0	0	0	0	0
2525	0	0	0	0	0	0	0	0
3086	0	0	0	0	0	0	0	0
3472	0	0	0	0	0	0	0	0
3788	0	0	0	0	0	0	0	0
3968	0	0	0,5	0,5	0,5	0,5	1	1
4167	0	0,5	0,5	1	1	1,5	2	2
4386	0	0,5	0,5	1	1	1,5	1,5	2
4630	0	0,5	0,5	1	1	1,5	1,5	2
5208	0	0,5	1	1,5	1,5	2	2,5	3
5533	0	0	0,5	0,5	1	1	1,5	1,5
5822	0	0	0	0	0,5	0,5	0,5	0,5
6202	0	0	0	0	0,5	1	1	0
6601	0	0	0	0	0,5	1	1	0
6873	0	0	0	0	0,5	1	1	0
7092	0	0	0	0	0,5	1	1	0
7533	0	0	0	0	0,5	1	1	0
8032	0	0	0	0	0,5	1	1	0
8439	0	0	0	0	0,5	1	1	0



Lambda sensor disabling devices



The disabling devices close the electrical circuit dedicated to the lambda sensor; they are applied together with Racing-type exhaust, without lambda sensor pre-setting, which is disabled from the racing-type system, thus avoiding, in some cases, the anomaly registered by ECU with the lighting of a dashboard lamp and greater power delivery at very low revs (from 1,800 to 3,500 rpm from 0 to 20% tps).

WARNING

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