# Tuning Bike – RapidBike self-injection remapping system

*Developed in partnership with Lucio Cecchinello's LCR Honda MotoGP Team*

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## Genaral features of the Tuning Bike system

Tuning Bike is a portable device conceived to create up to two injection maps for the Rapid Bike modules. The maps are based on the A/F ratio which is acquired from the exhaust gas produced when the engine is working.

Tuning Bike is easy to install and uninstall on the bike thanks to a proper cable that connects it to the Rapid Bike module, to the battery and to one/two linear O2 sensors of the latest generation (one is included in the RB kit, the second one is optional).

When the motorbike is running on the track or on test bench, the device logging the carburation value on the rpm/tps table, it processes data according to the A/F ratio target (previously set) and sets up injection map and sends it to the Rapid Bike module.

The **DimSport Technology** group, 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 ISO 9001/UNI EN ISO 9001 Ed. 2000 certified.


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## Instrucions for use

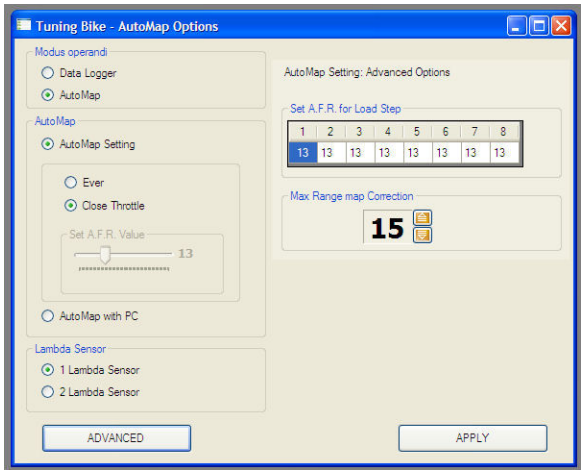
Tuning Bike is a professional and versatile system thanks to its user-friendly software.

### Continuous self-injection remapping

During the ride the system acquires the stoichiometric ratio from the exhaust gas, it modifies the injection and send it to the RapidBike injection map, according to the required A/F ratio and the maximum modification possible (set up previously by the software). PC will be therefore used at the beginning for the setting up and if you want, at the end to record the outcome.

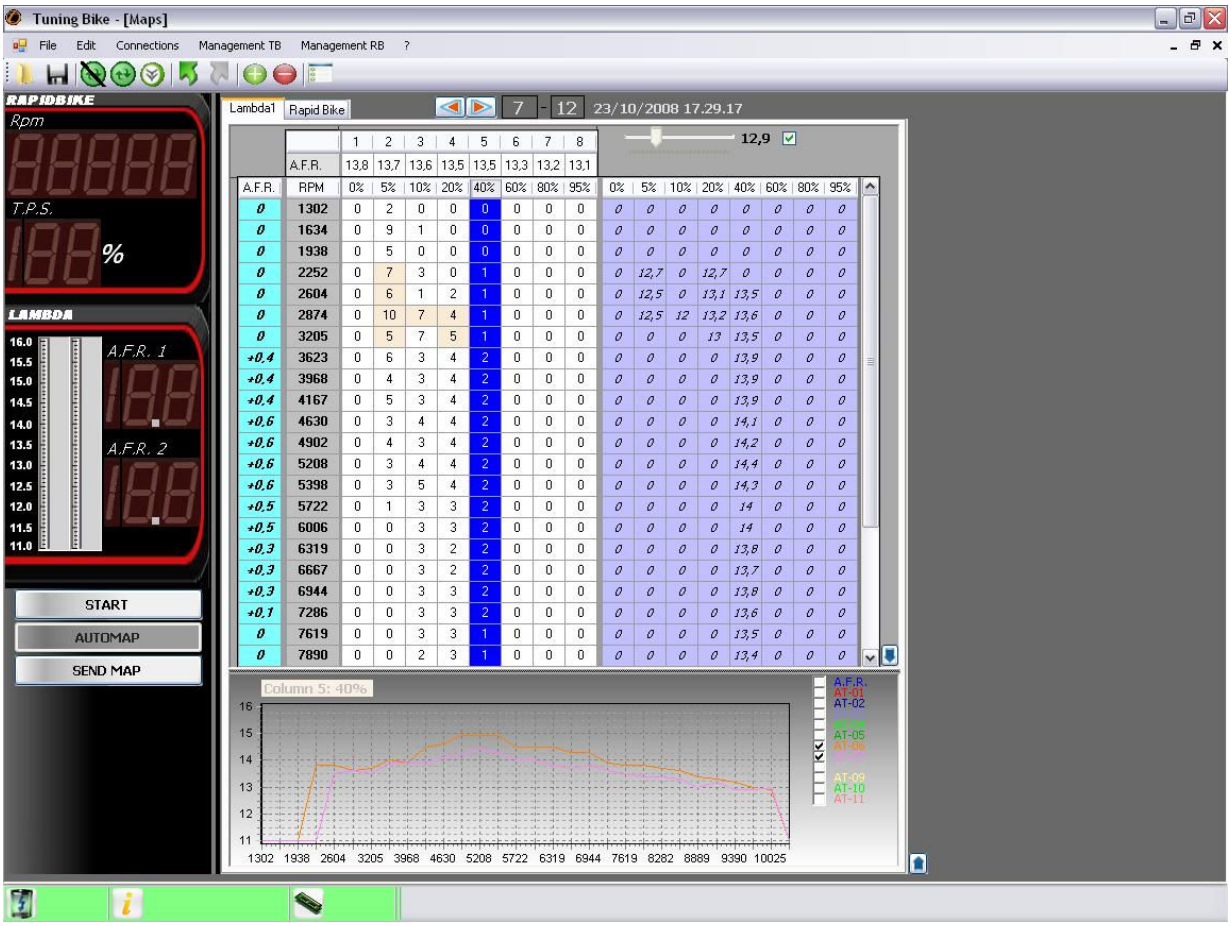
### Periodic cycle self-injection remapping

During the ride, the system acquires the stoichiometric ratio from the exhaust gas, it records the related figures in the rpm/tps table, it sets up and sends a map to the RapidBike module when stopping accelerating. All modifications are set according to the figures previously entered in accordance with the software, that is why the system can be used without the computer in this phase as well.




### Self-injection remapping through computer

Acquisition and recording of the figures is carried out as already mentioned in the foregoing section, while the setting up of the map is carried out as follows.



**Self-injection remapping through computer and power bench tester**
The system is connected to the computer through the proper USB cable or the bluetooth kit (optional). Thanks to the specific software you can see the following figures in real time: rpm, tps, a/f ratio and the trace of the reading point on the map so that you can notice the stoichiometric trend at any rev up of the gas. You can also create the map by setting up the A/F ratio for any tps step and a correction for any rpm range, so to gain the best strategy for remapping. The system allows you to control the whole procedure and to analyse the development step by step.

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 12,9 ☑ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.F.R. | 13,8 | 13,7 | 13,6 | 13,5 | 13,5 | 13,3 | 13,2 | 13,1 | | | | | | | | |
| A.F.R. | RPM | 0% | 5% | 10% | 20% | 40% | 60% | 80% | 95% | 0% | 5% | 10% | 20% | 40% | 60% | 80% | 95% |
| 0 | 1302 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1634 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 1938 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 2252 | 0 | 7 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 12,7 | 0 | 12,7 | 0 | 0 | 0 | 0 |
| 0 | 2604 | 0 | 6 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 12,5 | 0 | 13,1 | 13,5 | 0 | 0 | 0 |
| 0 | 2874 | 0 | 10 | 7 | 4 | 1 | 0 | 0 | 0 | 0 | 12,5 | 12 | 13,2 | 13,6 | 0 | 0 | 0 |
| 0 | 3205 | 0 | 5 | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 13,5 | 0 | 0 | 0 |
| +0,4 | 3623 | 0 | 6 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,9 | 0 | 0 | 0 |
| +0,4 | 3968 | 0 | 4 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,9 | 0 | 0 | 0 |
| +0,4 | 4167 | 0 | 5 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,9 | 0 | 0 | 0 |
| +0,6 | 4630 | 0 | 3 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14,1 | 0 | 0 | 0 |
| +0,6 | 4902 | 0 | 4 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14,2 | 0 | 0 | 0 |
| +0,6 | 5208 | 0 | 3 | 4 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14,4 | 0 | 0 | 0 |
| +0,6 | 5398 | 0 | 3 | 5 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14,3 | 0 | 0 | 0 |
| +0,5 | 5722 | 0 | 1 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| +0,5 | 6006 | 0 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 |
| +0,3 | 6319 | 0 | 0 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,8 | 0 | 0 | 0 |
| +0,3 | 6667 | 0 | 0 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,7 | 0 | 0 | 0 |
| +0,3 | 6944 | 0 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,8 | 0 | 0 | 0 |
| +0,1 | 7286 | 0 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,6 | 0 | 0 | 0 |
| 0 | 7619 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,5 | 0 | 0 | 0 |
| 0 | 7890 | 0 | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,4 | 0 | 0 | 0 |
| 0 | 8282 | 0 | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,4 | 0 | 0 | 0 |
| -0,3 | 8547 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,3 | 0 | 0 | 0 |
| -0,3 | 8889 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| -0,3 | 9259 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13,2 | 0 | 0 | 0 |
| -0,4 | 9390 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12,9 | 0 | 0 | 0 |

**Data logger**
It takes almost 60 minutes to acquire following data: rpm figure, rev up of the gas, stoichiometric ratio of the two lambda sensors, electronic gear, percentage of injector opening and sensor. It then shows them thanks to graphics to allow you to analyse the engine behaviour.