R-Tuner ECU

User Manual

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<u>Disclaimer</u>

This program is **not** intended to solve problems with the factory injection system. Usage of R-tuner is entirely for your own risk and only intended for professional use.

<u>What's in the package ?</u>

- Ecu interface board + cable

- R-tuner chip or ecu

- R-tuner and Tewblog software

- This manual

<u>Introduction R-tuner</u>

Web link: http://www.fastchip.nl/show.php?lang=en&action=R-tuner

FASTCHIP has put forth an unparalleled effort into Renault ECU modification, which allowed us to create R-tuner. Thinking about ripping out the factory ECU for adjustability and features? Ready to spent countless hours trying to create a mapping from zero with an aftermarket system? Willing to fit a new wiring loom and replace all sensors? **Think again!**
R-tuner makes use of the best ECU there is for your Renault, the factory one!
R-tuner makes the factory ecu programmable and easy to set up starting from the standard factory mapping or a preloaded map file. No need to start from zero as with many aftermarket ECU's.
R-tuner allows you to properly adjust the ECU setting to suit your engine modifications perfectly. Furthermore R-tuner doesn't mess with vital sensor signals like piggyback ecu's do.
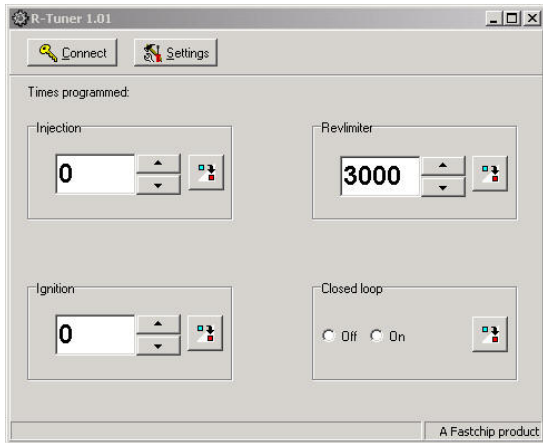R-tuner exists of 3 components:

1. R-tuner programming software.
2. R-tuner interface board for communication with PC.
3. Tewblog datalog and real time monitoring software.

1 R-tuner programming software

Allow you to reprogram the factory ECU as many times as you need.
With R-tuner you can

- adjust the rev limiter
- run the engine under open- or closed loop conditions
- shift the whole fuel table
- shift the whole ignition table
- adjust the fuel MAP
- adjust the ignition MAP

2 R-tuner interface board for communication with PC

The interface board allow you to use the car's standard diagnostic port for ecu programming and real time engine parameter monitoring.
The R-tuner programmable chip makes the factory ecu programmable.
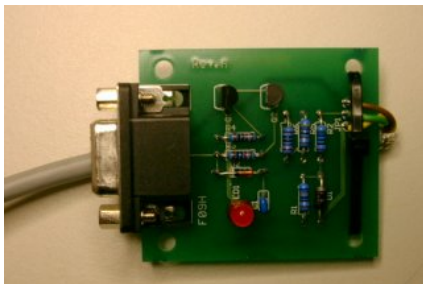
3 Tewblog datalog en real time monitoring software

R-tuner works together with the logging software TEWBLOG created by Justin Luton.
With TEWBLOG you can monitor all relevant engine parameters in real time, and log them for reviewing later.
It may also be used as failure diagnosis of the engine sensors.

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Usage R-tuner

In case there is an existing wire at pin 8 of the ecu connector, it must be cut and left unconnected at the loom side. When you ordered a DIY kit, pin 8 must be connected to pin 18 from the ecu connector.
You can make the connection 8-18 at the connector or inside the ecu .
Pin 18 is the transmit line and pin 8 is the receive line of the ecu. R_tuner.exe won't work if pin 8 isn't connected to pin 18. Tewblog only needs the transmit line.
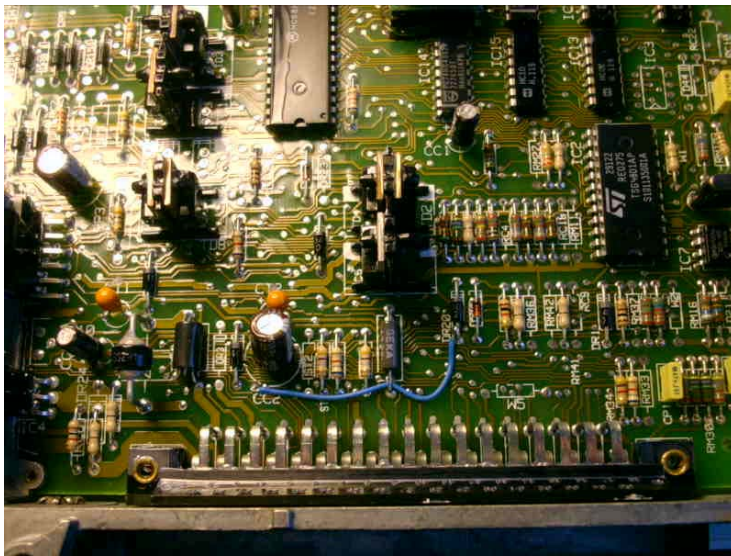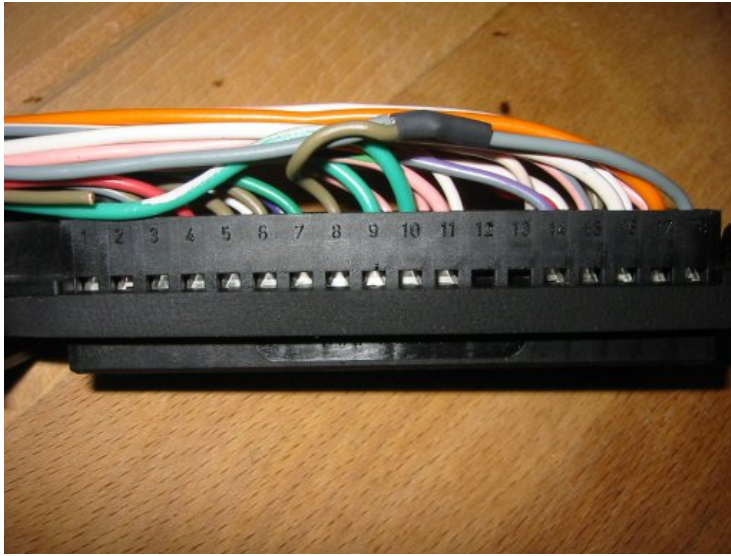
Connect solder pad CC2 to positive side diode DR20. (phase 1 ECU)

Connection to the car

Switch ignition off before making the necessary connections.

- Connect green wire (communication) to pin 9 of the car's diagnostic plug or else see vehicle documentation.
- Connect brown wire (Ground) to pin 2 of diagnostic plug.
- Connect white wire (12V +) to pin 6 of diagnostic plug.

NOTE: Watch the orientation of the diagnostic plug.

Diagnose socket

ALLOCATION OF DIAGNOSTIC SOCKET TERMINALS
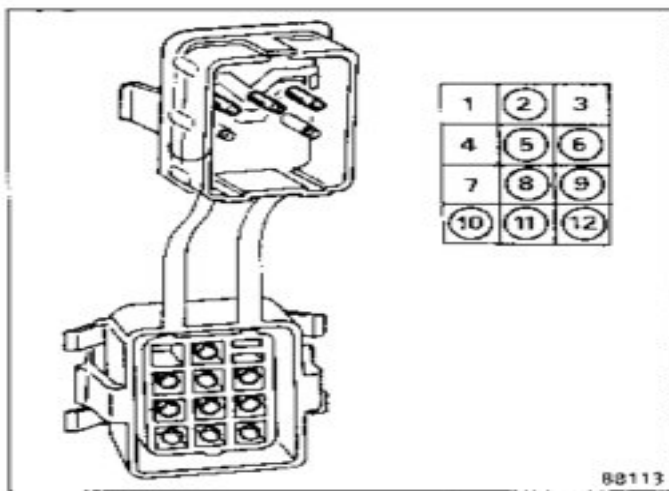
1 - Not used.
2 - Earth.
3 - Protection bar.
4 - Not connected.
5 - Variable assistance power steering data.
6 - + 12 volts before ignition.
7 - Not used.
8 - Injection warning light on dashboard.
9 - Injection information from computer.
10 - Diagnostic selection.
11 - Memory seat data at diagnostic socket.
12 - Memory seat diagnostic selection data.

Pin 9 : Diagnose signal / green
Pin 6 : +12V / yellow
Pin 2 : Ground / brown

ECU programming

Switch ignition off.

Make sure you connected the ecu interface board right; the red power led must be illuminated.
Verify the solder side of the board doesn't touch any electrical conductive surface in the vehicle.
Start R-tuner software. Choose the correct COM port under *settings*.
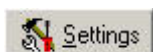
If the ecu wasn't activated by FASTCHIP, see *activation* section.
Press *connect* and turn on the ignition according to the dialog box. Pressing *OK* and turning on the ignition must be done within 0.5 seconds.

[If connection fails, turn of ignition and press *connect* again.]

R-tuner will now download the lastly programmed values from the ecu.
Note: All programmed values will be retained in the ecu even if it's disconnected from the battery.

Adjust the value(s) you want and upload to the ecu by pressing the according button.
When you want to increase/decrease map values press the + , or – key from your keyboard.

Please wait for the time indicator, programming time varies.
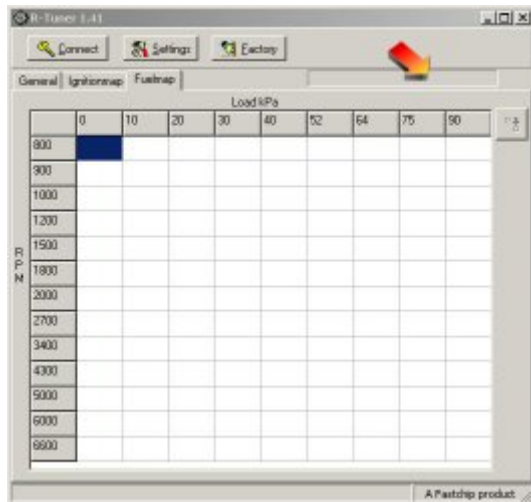
If programming succeeds the program counter in the *general* tab will be incremented.
After you're done with programming, turn off / on the ignition before starting the car. Now you can verify the newly programmed values with Tewblog.
Note: Do not close the R-tuner program as long as the time indicator is running. Wait for it to finish, otherwise the ecu won't be programmed right.

General tab

Injection value is shifting the whole fuel table. Higher number means more fuel at every engine load point. Use this as a coarse setting for matching injector size.

Ignition value is shifting the whole ignition table. Every increase means 1 degree of extra advance at every engine load point. Use with caution.
Rev limiter, please note that the engine makes more rpm then the value chosen here. This is due to the engine speeding up and the ecu responding a bit to late.
Closed loop, set to off if you start with tuning.

Factory settings

R-tuner has a one-button operation, which will restore the factory settings in the ecu. The factory settings are the original Renault values.
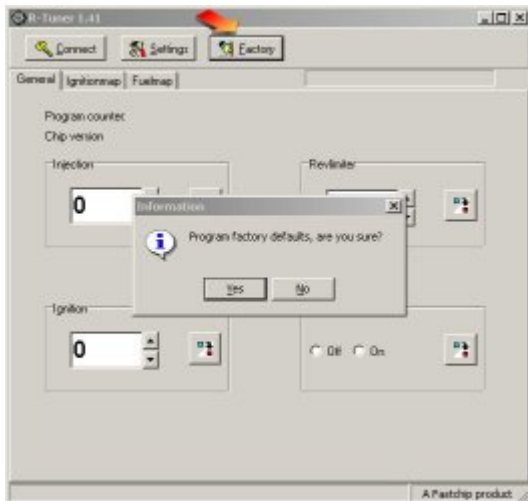

Activation & DIY installation

This section is only needed for unprepared ecu's in case of DIY R-tuner chip installation.

Switch ignition off.

1. After installation of the R-tuner chip…
2. Connect the ecu interface board to the car's diagnostic port and to your laptop.
3. Turn on the ignition and **wait 5 seconds** while the ecu prepares itself with factory defaults.
4. Make sure you connected the ecu interface board correct, the red led must be illuminated.
5. Turn off ignition and start R-tuner software. Choose correct COM port under *settings.*
6. Press the *connect* button. [If connection fails, press *connect* again]
7. After connection is established, you see a dialog box with a code. Contact FASTCHIP and provide the number as shown in the dialog. **Leave the ignition on until you receive the code !**
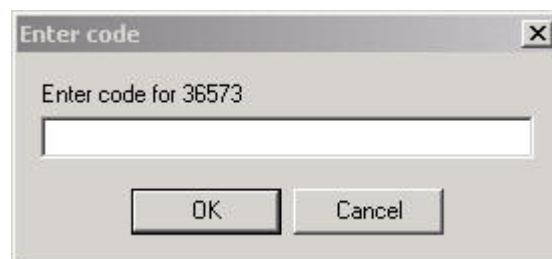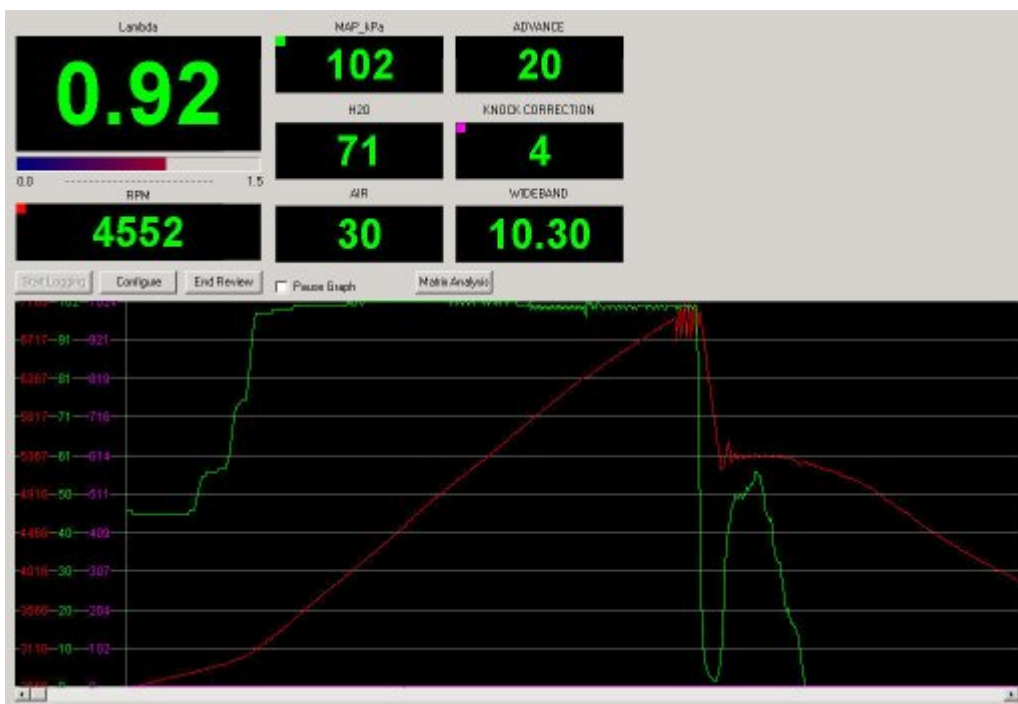

8. **Fill in the correct KEY provided by FASTCHIP and press OK. The ecu is now activated. Do not enter wrong KEY numbers. This will render your ecu unusable !**
9. In case of a wrong KEY, turn off the ignition and contact FASTCHIP.

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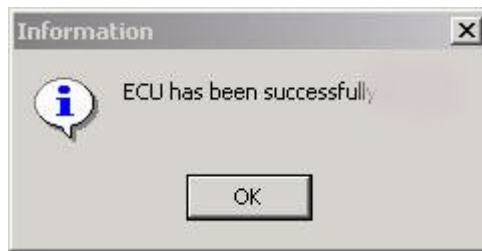
Usage Tewblog

Tewblog allows you to log and monitor vital engine parameters. You may also use Tewblog for logging a wideband oxygen sensor.

Tewblog helps you adjusting the map values you can access in R-tuner by reviewing the data and usage of Tewblog's matrix analysis. Refer to Tewblog's user manual for further explanation.
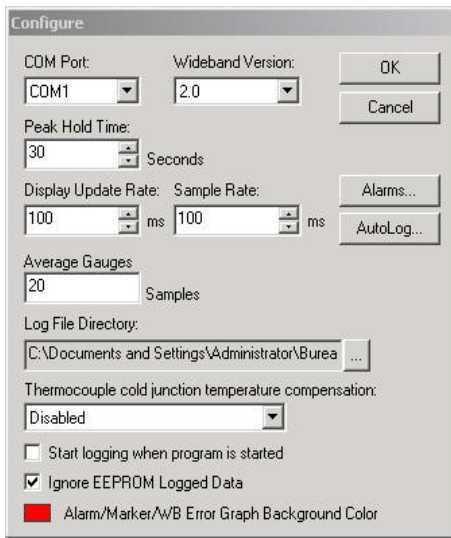

Setup Tewblog

Make sure you **add baudrate=9600 and henkmode=1** in the Tewblog.ini file under **[settings]** before using Tewblog.
You can find Tewblog.ini in your windows folder. Example: c:\winnt

Set the correct gauge settings by double clicking on the gauge. Graphic examples can be downloaded from www.fastchip.nl

Choose wideband **version 2.0** in the configure dialog.

Gauge settings

RPM – sparks per revolution > 2
MAP – voltage 0.00 > value 0 kPa , voltage 5.00 > value 104 kPa
H2O – voltage 0.00 > value 0 C, voltage 1.95 > value 100 C, voltage 2.34 > value 120 C
AIR – voltage 0.00 > value 0 C, voltage 1.95 > value 100 C, voltage 2.34 > value 120 C
ADVANCE – millivoltage 0.00 > value 0 , millivoltage 50.00 > value 1050
KNOCK CORRECTION – millivoltage 0.00 > value 0 , millivoltage 50.00 > value 1050
WIDEBAND – millivoltage 0.00 > value 0 , millivoltage 5000.00 > value 1024
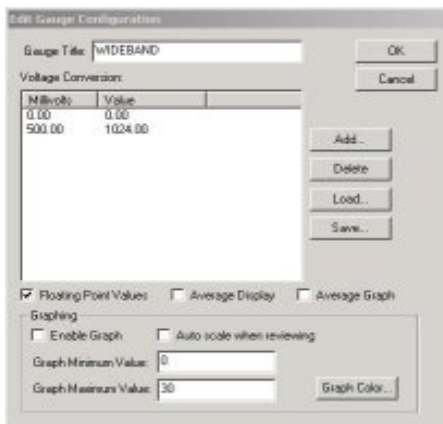
After the test drive and reviewing the logged data you can proceed to program the ecu accordingly to achieve the optimal set-up of your engine. Tewblog and R-tuner can't be used simultaneously because both programs use the COM port.

Tuning guidelines

To achieve optimal results and avoid unnecessary ecu programming, please follow the following guidelines.

Always set the engine in *open loop* before tuning. Otherwise you won't get the correct AFR.
Use a wideband oxygen sensor if you have done major modifications to your engine!
You can purchase a wideband sensor at: http://www.wbo2.com

The linear wideband output **Wblin**+ of this device can be directly connected to ingoing pin 35 of the ecu, instead of the standard oxygen sensor signal.

Please note, this is only a rough guideline for tuning purposes.

Standard engine, modified intake and or exhaust system.
- Set the engine in *open loop.* Program *factory default* mapping first if necessary.
- Adjust the *main injection setting* when necessary. It shouldn't need much alteration. Continue with the *main ignition setting* **after** you get the fuelling right.
- Adjust the *main ignition setting* to achieve better performance and fuel economy. Do this one step at the time and make test runs in between watching the Knock Correction parameter. This parameter has to stay 0. **WARNING do not touch this setting if you don't know what detonation can do to your engine.**

NOTE: Strictly follow the above order.

Modified engine, camshafts and / or headwork.

- Set the engine in *open loop.* Connect a wideband oxygen sensor.
- Fill the whole *Fuel map* with 60's. Always program the *fuel map* numbers in pairs.
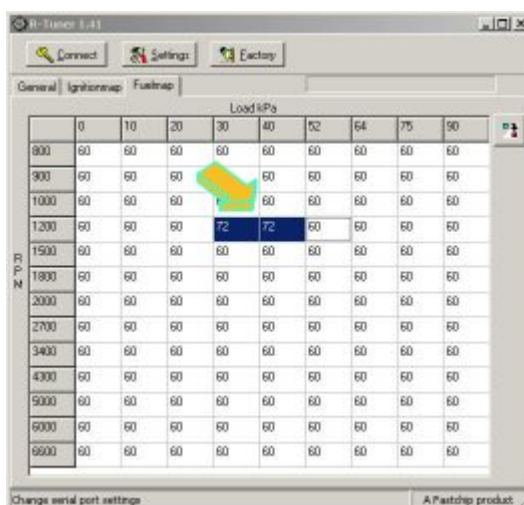
- Adjust the *main injection setting* until you achieve an AFR of 13 ~14 at idle/warm engine.
- Take 5 degrees off the *ignition* map between 2500-7000 rpm.
- Make a new *fuel map*. Do this step by step until the engine has an AFR of 13 at every load point. Always program the *map* numbers in pairs. Break off the test run every time the engine goes way lean. Correct the *fuel map* first at that point before continuing.
- Continue with the *ignition map* **after** you get the fuelling right.
- Make a new *ignition map*. Do this step by step and make testrun's in between watching the Knock Correction parameter. This parameter has to stay at 0.

NOTE:
Strictly follow the above order.

Forced induction engine, *supercharger / turbo.*

- Set the engine in *open loop*. Connect a wideband oxygen sensor.
- Adjust the *main injection setting* until you achieve an AFR of 14.5 at idle/warm engine.
- Fill the whole *Ignition map* with 20's. Always program the *map* numbers in pairs.
- Make a new *fuel map*. Do this step by step until the engine has an AFR of 13 at every load point and at least 12 at the top. Always program the *fuel map* numbers in pairs. Break off the test run every time the engine goes way lean. Correct the fuel map first at the lean spot.
- Make a new *ignition map*. Do this step by step and make testrun's in between watching the Knock Correction parameter. This parameter has to stay 0. Stay below 50 C intake charge temperature.

NOTE:
Strictly follow the above order.

Connecting a wideband oxygen sensor

The R-tuner chip allows you to use one of the techedge wideband solutions directly attached to pin 35 of your ECU. http://wbo2.com/
Connect the **Wblin**+ (linear wideband output) of the wideband unit to pin 35 of the ecu. Pin 35 is the signal input of the stock narrow band oxygen sensor. Connect the **Wblin –** as close to the ecu ground as possible.
Calibrate the sensor if necessary.

Troubleshooting:

R-Tuner connection failed.

- **Make sure you press OK the minute you turn on the ignition.**
- Check your interface board connections to the vehicle.
- Williams ecu needs cutting of the number 8 wire otherwise R-tuner won't work.

Contact mailto:info@fastchip.nl