## About the Eprom-Switch

**The Eprom-Switch is a device that allows the driver to switch between the genuine eprom chip device and a device with modificated parameter tables (Tuning-Chip). The switching may happen seamless during engine operation or at stillstand, related to the used engine management. The switching functionality does not affect any security function of the engine management (as long as the used chips do not) and can be removed fast and without remaining modifications.**

## Features

- **Seemless switching, even during engine operation (*)**
- **Accurate signal synchronisation, no undefined ECU operation states (*)**
- **Expanded mode for 3 chips (with additional switch)**
- **Very small signal skew (< 5 ns)**
- **High quality components and materials, professionally assembled**
- **Highly reliable**
- **Solid and compact mechanical design**
- **External closing contact with 1- or 2-wire connection or local jumper**
- **Easilly mounting, no soldering, Plug&Play concept**

## Technical Specifications

| | |
|---|---|
| **Size** | 44 x 22 mm |
| **Temperature Range** | -25...85° |
| **Eprom Socket** | 2 x PLCC32 |
| **Eprom Adapter** | PLCC32 |
| **Signal Switching** | Active buffered and synchronised |
| **Signal Skew** | < 5 ns (typical) |
| **Supply Voltage** | 5V (from ECU) |
| **PCB Material** | Epoxy FR4 |
| **PCB Technology** | 4-layer, SMD |

## Possible Operation Restrictions

**Known restrictions at this state for the use with the Coupé Fiat 20VT: due to the existence of two or more firmware versions for the 20VT, it's not guaranteed that the switching during engine's operation works under all circumstances. If the installed chips in the Eprom-Switch do NOT have the same firmware base, then switching during engine operation will definitively NOT work. *Just nice to know: switching at stillstand does work under ALL circumstances*.**

**Known firmware versions and associated tuning chips:**

| Firmware Release | Used since/till | Associated Tuning Chips |
|---|---|---|
| DAMOS 14 (19.07.1996) | Middle 96/Apr 1997 | Hoermann, … |
| DAMOS 15 (11.04.1997) | Apr 1997/Today | Digitec, Dbilas, Salas, Wenning, Wetterauer, Novitec, ... |

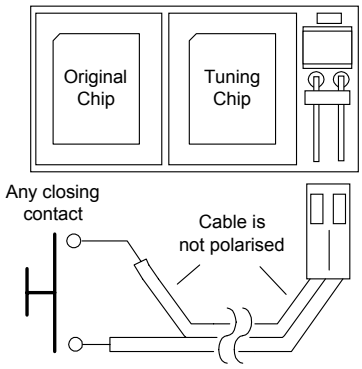
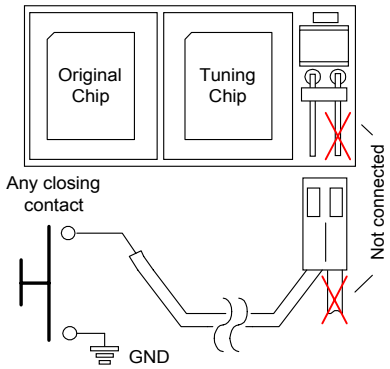
**NOTE: Other than shown firmware versions might also exist (eg. country-specific). Please make sure that you do not switch between Eproms with different firmware-programs during operation. This may damage the engine. Testing it would be on your own risk. If you are not sure about the characteristics of your chips, please request at the provider of your tuning solution.**

## Operation Modes

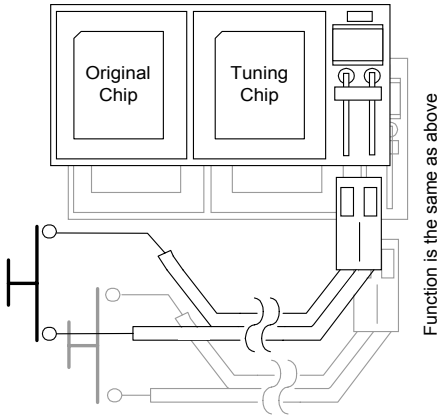
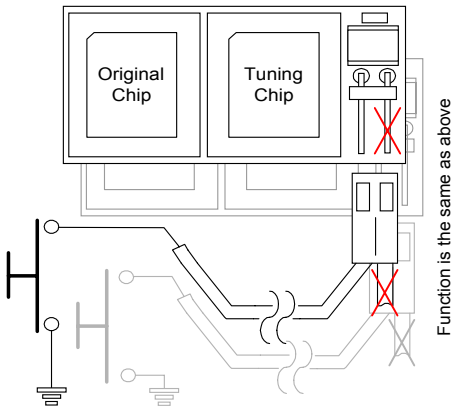
- **Single Mode: one Eprom-Switch is used together with two Eproms. Switching function between these two Eproms, initiated over one closing contact.**
- **Dual Mode : two cascaded Eprom-Switches are used together with three Eproms. Switching function between these three Eproms, initiated over two closing contacts.**

## Connection Diagrams

### Single Mode

| 2-wire-cabling (normally proposed) | 1-wire cabling |
|---|---|
|  Contact **closed** = Tuning Chip<br>Contact **open** = Original Chip |  Contact **closed** = Tuning Chip<br>Contact **open** = Original Chip |

### Dual Mode

| 4-wire-cabling (normally proposed) | 2-wire cabling |
|---|---|
|  |  |

**NOTE: the user is absolutely free in the selection of a suitable switch, also in its placement. In cars with no alarm systems, the unused switch therefor in the dash board could be used.**

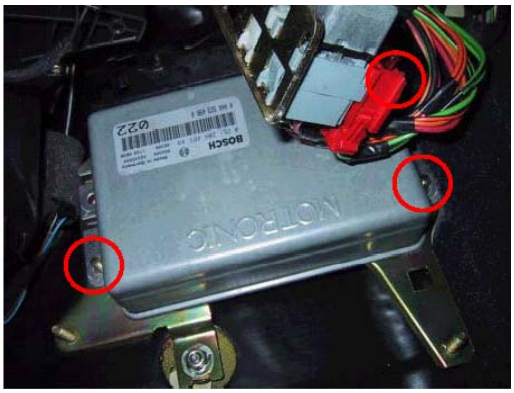
# Installation Guide

## 1. How to get the ECU out of the car

The ECU is located in the co-drivers footwell behind a plastic cover.

Remove the cover by dismantling the two M10 nuts.

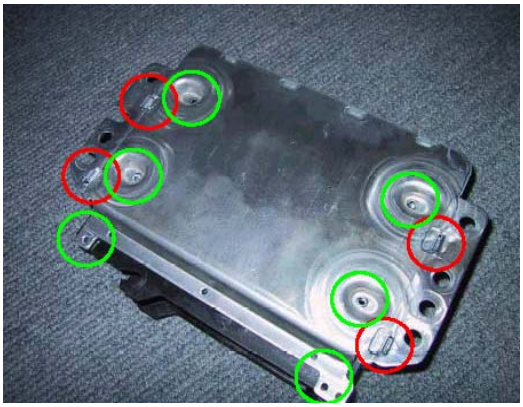
Dismantle the other 3 M10 nuts beside the ECU.




Unlock the connector and remove it from the ECU.

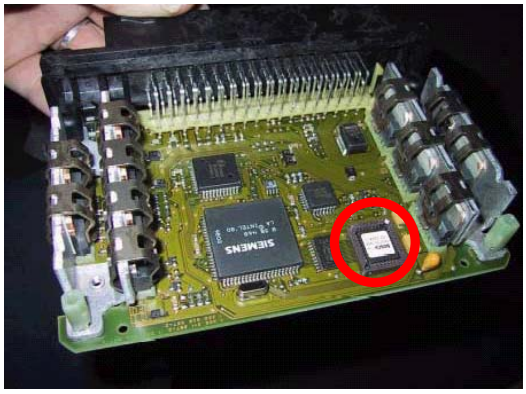
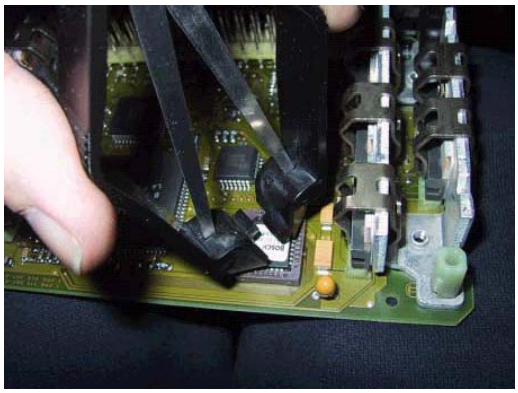

## 2. How to open the ECU

Bend the red marked bending latches. Remove the green marked screws with a T9 TORX screwdriver.

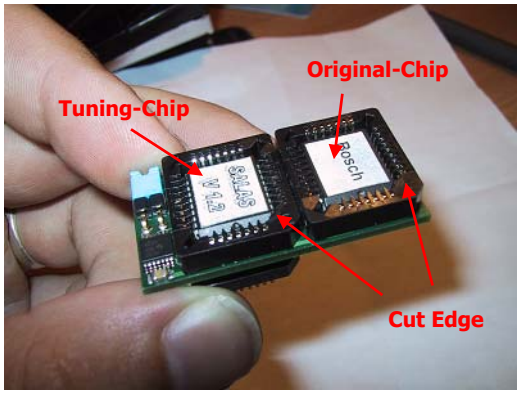
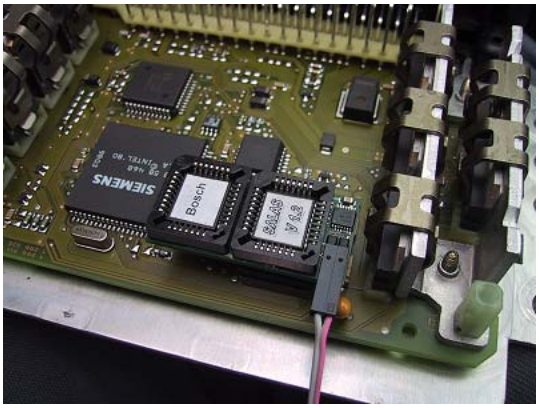
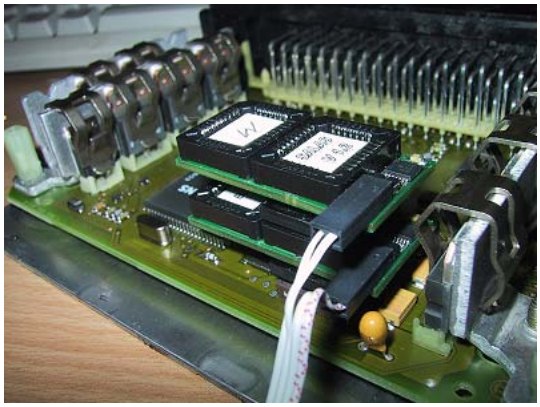


The upper more solid part of the housing (baseplate) can now first be raised then removed.

## 3. How to remove the original chip

| | |
|---|---|
| Locate the original Eprom. Don't touch the electronics to prevent discharge damages. | Carefully remove the chip from the socket with an IC-extractor (proposed) or the included tool. |
|  |  |

## 4. How to apply the Eprom-Switch

| | |
|---|---|
| Put the chips in the sockets of the Eprom-Switch as shown on the picture (keep forces small) . | Put the complete Eprom-Switch in the socket in the ECU. Take care about mounting direction. |
|  |  |
| Put the connector on the pin row. The orientation doesn't matter (only relevant in 2-wire mode). | In case of dual mode operation, put a second Eprom-Switch in first one's Tuning-Chip socket. |
|  |  |

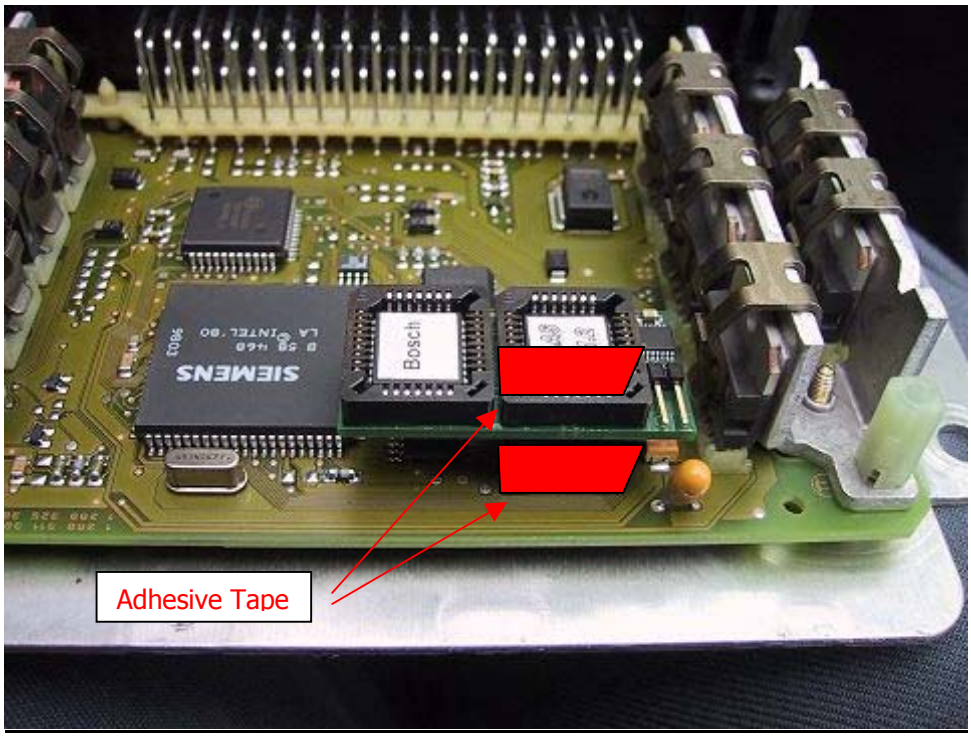
## 5. How to finish the work

Make sure that the Switch(es) are solid mounted. Then proceed backwards through the steps 2 and 1.

# Important Notes for the use of the Eprom-Switch

## At Installation

- **Prevent electrostatic discharge by complying to the following rules:**
  1. **Before you begin with the installation, make shure that you are not electrostatically charged (by touching something grounded as a banister, radiator, etc. or by wearing a grounding band). Recur the discharge process from time to time.**
  2. **Don't touch the contact pins of the electronic devices.**
  3. **Deposit the electronic parts only on grounded places.**
  4. **Store the unused electronic parts in a antistatic bag.**
- **NEVER use brute forces to mount the Switch in the ECU. The high precision parts do fit without that. Be careful!**
- **Keep the switching contacts free from other voltage potentials than the supplied 5V and the cars ground.**
- **The switch may be additionally fixed (optional). For this, use 2 small pieces of adhesive tape and chain the side faces of the ECU-socket and the WS-socket-adapter together (on 2 sides).**




## At Operation

- **Make sure that you know the firmware versions of your Eproms. Only so you can be sure that switching at engine operation will not cause problems or damages to the engine (this refers to the text concerning the firmware topic at the pages 1 & 2 of this document).**
- **Avoid switching at higher revs and under higher load. This stresses the engine and may cause strange effects at engine operation (due to abrupt changes of engine-parameters). It is proposed to switch only at idling.**
- **After switching, increase the power slightly the first time. This will allow the engine management to perform the new adaptation more accurately.**

## Guarantee

**A The supplier of the Eprom-Switch does ONLY guarant for the function of the Eprom-Switch but NEVER becomes liable for any damages resulting from the use of it. The use of the Eprom-Switch happens COMPLETELY on the own risk of the customer.**

**B The Eprom-Switch has an unlimited 2 year guarantee on material defects at the Eprom-Switch. If a defect occurs within this period, then the supplier will exchange the Eprom-Switch immediately and without further costs. In that case, please contact the supplier per E-mail to arrange the details.**

### Customer Details

Name: _____

Address: _____

City: _____

Country: _____

E-Mail: _____

### Purchasing Details

Dellivery Date: _____

Carrier: _____

Payment Methode: _____

Serial Number: _____

Guarantee valid till: _____

### Contact Details of the Supplier

Twains Automotive Products, Switzerland
info@twains.ch

This E-Mail address is valid for all kind of requests (Problems, guarantee, purchase inquiries, etc). More detailed contact informations on request.