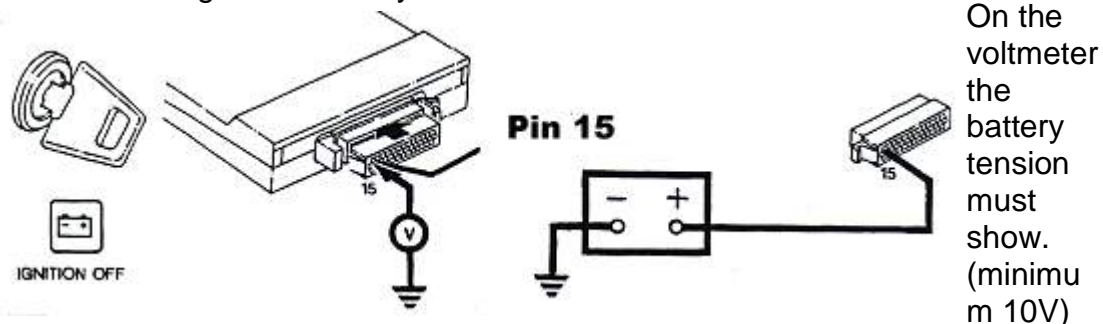


# Check procedures for the 3.9 engine

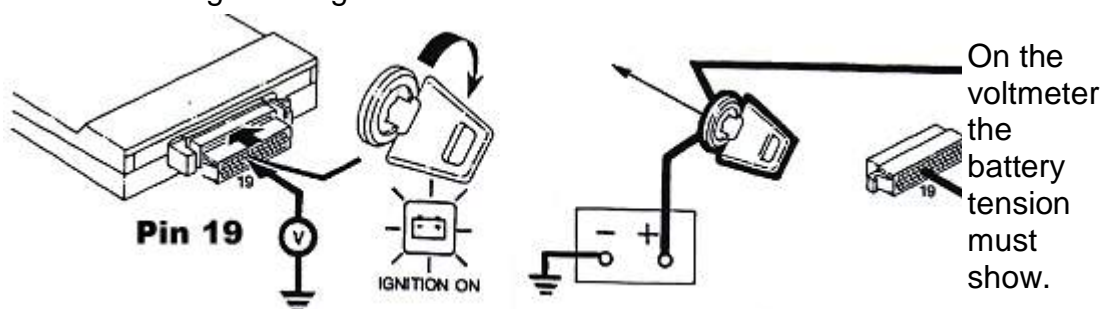
In case of differing measurements first inspect the wiring drawn in bold lines

## 1. Check voltage from battery to the ECU



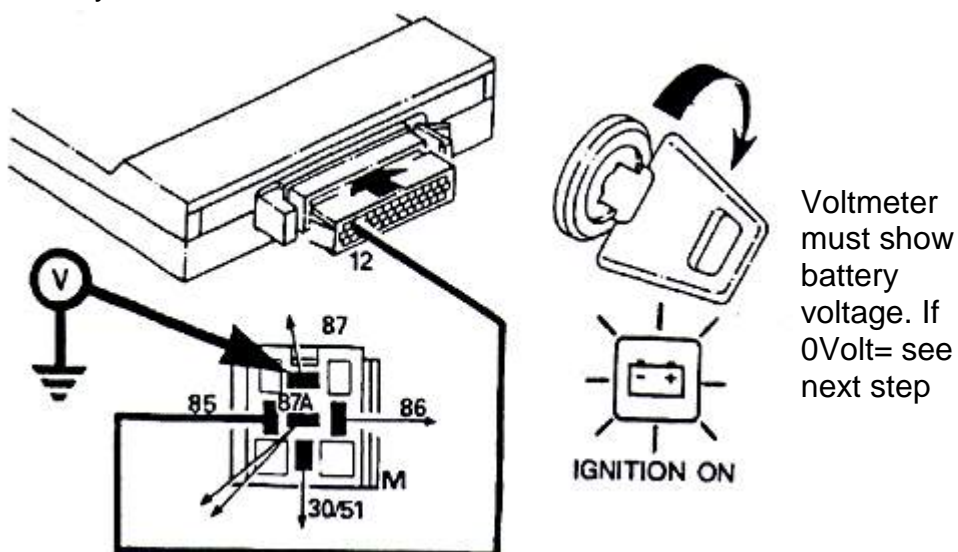
Possible fault: Check earth

## 2. Check voltage from ignition to the CPU

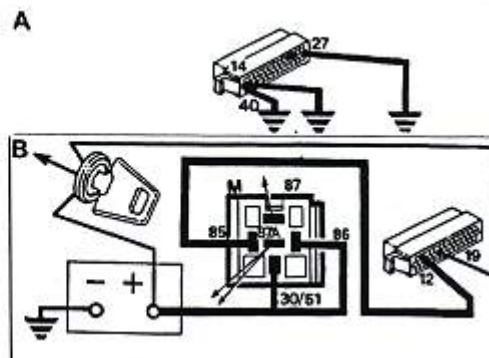
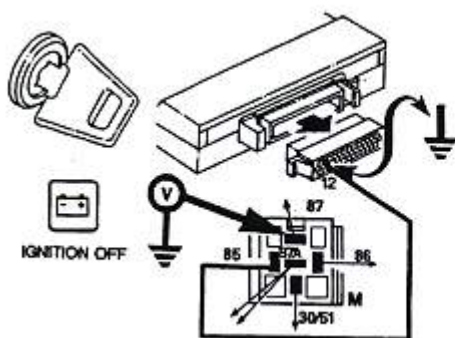


Possible fault: Check earth

## 3. Verify if main relays works

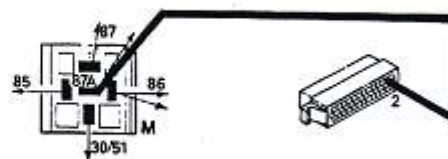
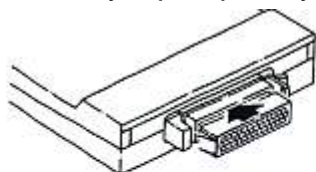


#### 4. Verify if main relays works - second step



A = must be battery tension, if OK ECU possibly faulty, B = must be 0 Volts when ignition off

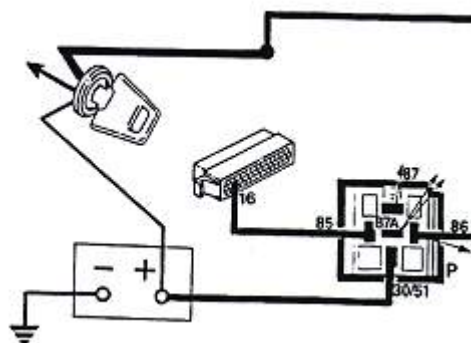
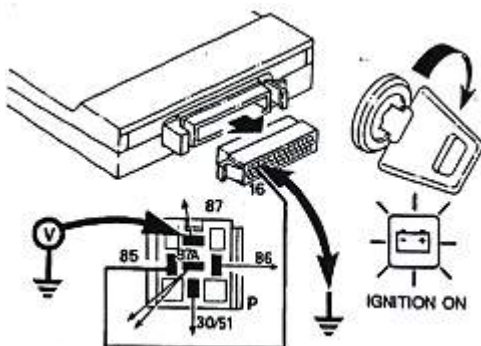
#### 5. Verify if pump relay works



Listen to a "click" from the pump relay

If the relay is OK go to 6

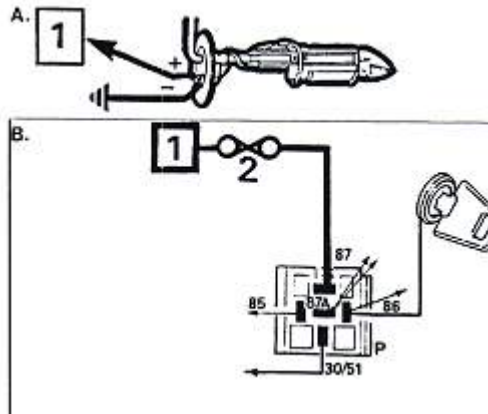
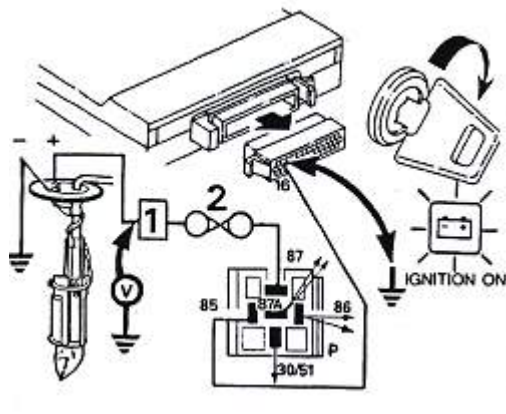
#### 6. Verify pump relay circuits



Pin 87 must show battery voltage if other conditions fulfilled.

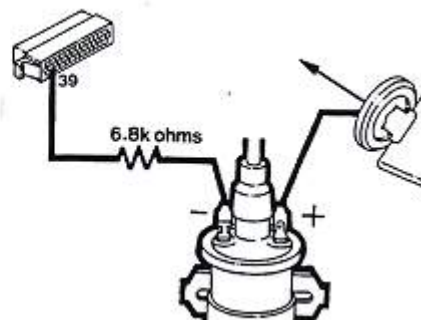
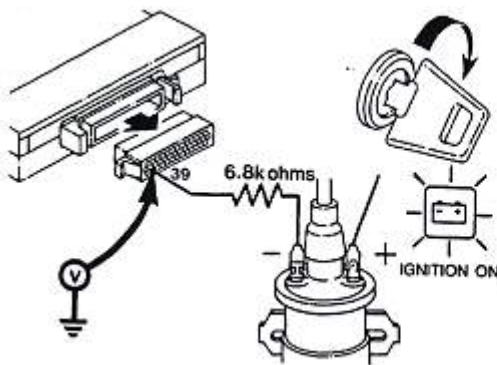
If so, the ECU is suspect.

## 7. Check if fuel pump gets current



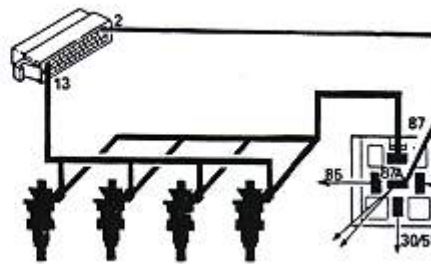
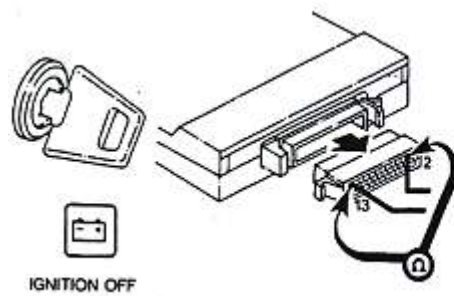
The pump is the in-tank model with connectors on the upper side of the tank- and inaccessible. However there is a connector not far away up the wiring harness where you can check voltage.

## 8. Check engine rpm signal and resistance



Check if Pin 39 has battery voltage on the voltmeter. Check resistance between coil and Pin 39 (6,8 KOhms)

9. Check injectors (Pin 13 is for injectors 1,3,5,7)



Connect ohmmeter between Pin 2 and 13. Reading of 4-5 ohms is OK.

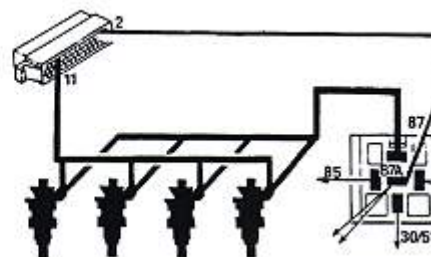
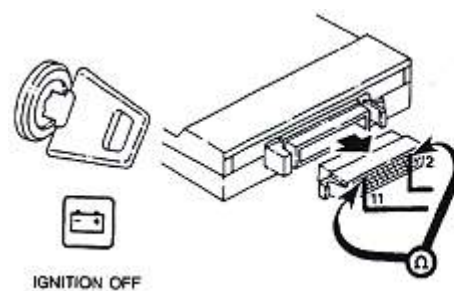
Reading of 5-6 ohms=1 injector suspect

Reading of 8-9 ohms=2 injectors suspect

Reading of 16-17 ohms=3 injectors suspect

Reading of more=get your gun and shot it!

10. Check injectors (Pin 11 is for injectors 1,3,5,7)



Connect ohmmeter between Pin 2 and 11. Reading of 4-5 ohms is OK.

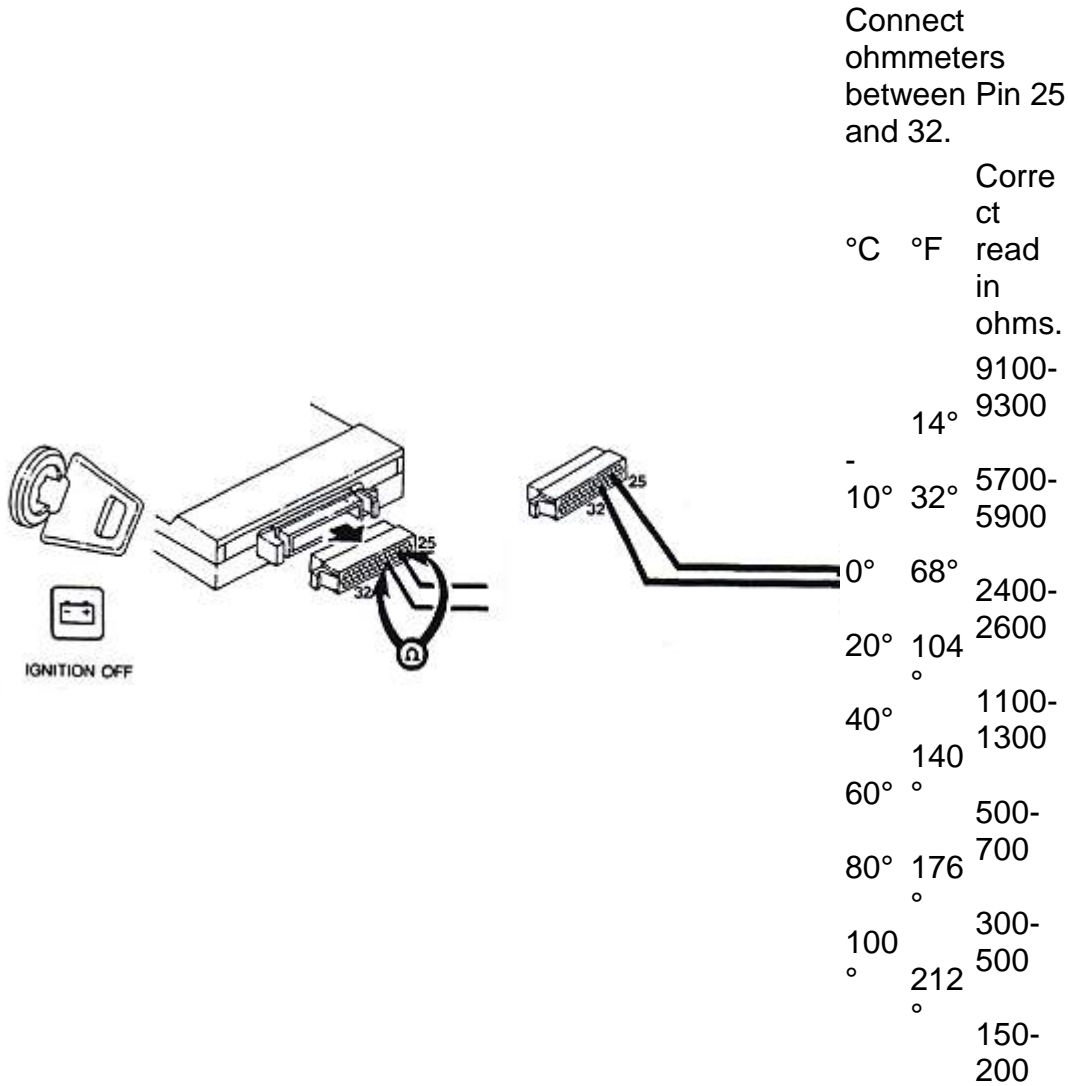
Reading of 5-6 ohms=1 injector suspect

Reading of 8-9 ohms=2 injectors suspect

Reading of 16-17 ohms=3 injectors suspect

Reading of more=get your hammer and give it a good tap!

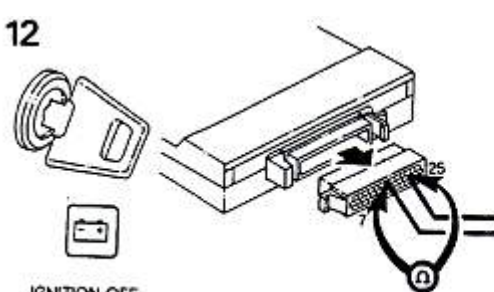
11. Fuel temperature sensor



NB: If your fuel temperature is over 80°C or 176°F - let all go and run! That thing will blow any moment

12. Coolant sensor check

12

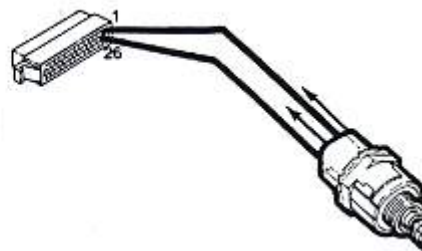
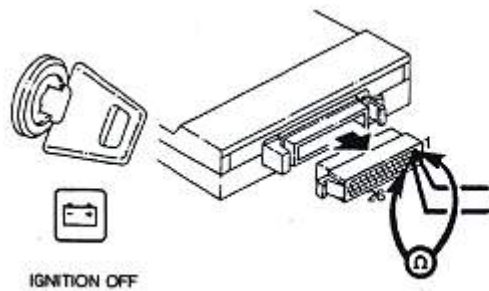


IGNITION OFF

Connect ohmmeter between Pin 25 and 7.

°C	°F	Correct read in ohms.
14°	-	9100-9300
10°	32°	5700-5900
0°	68°	2400-2600
20°	104°	1100-1300
40°	140°	500-700
60°	176°	300-500
80°	212°	150-200

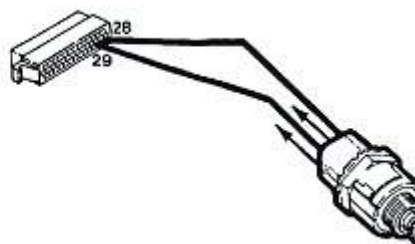
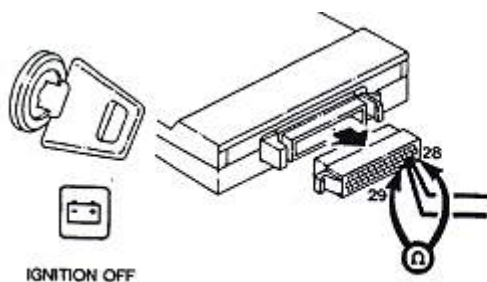
### 13. Verify air bypass valve



Connect ohmmeter between Pin 26 and 1.

Correct reading: 48-58 ohms. If not verify wiring

### 14. Verify air bypass valve - second part

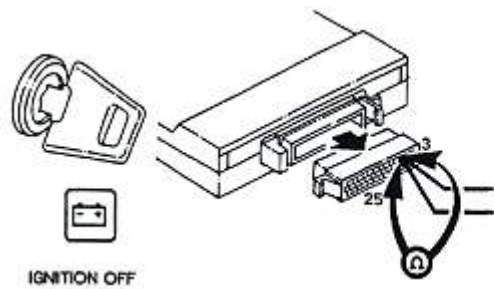


Connect ohmmeter between Pin 28 and 29.

Correct reading: 48-58 ohms. If not verify wiring



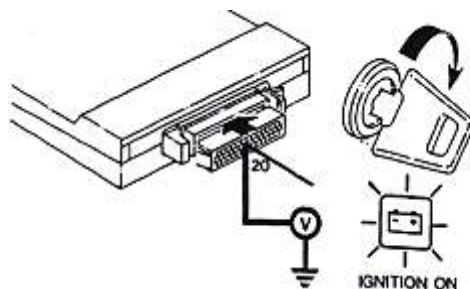
## 15. Check throttle potentiometer



Connect ohmmeter between Pin 25 and 3.

Correct: 5000 ohms, if different go to next step

## 16. Check throttle potentiometer - second part



Connect voltmeter between Pin 20 and ground

Throttle closed: 0,29V-0,36V

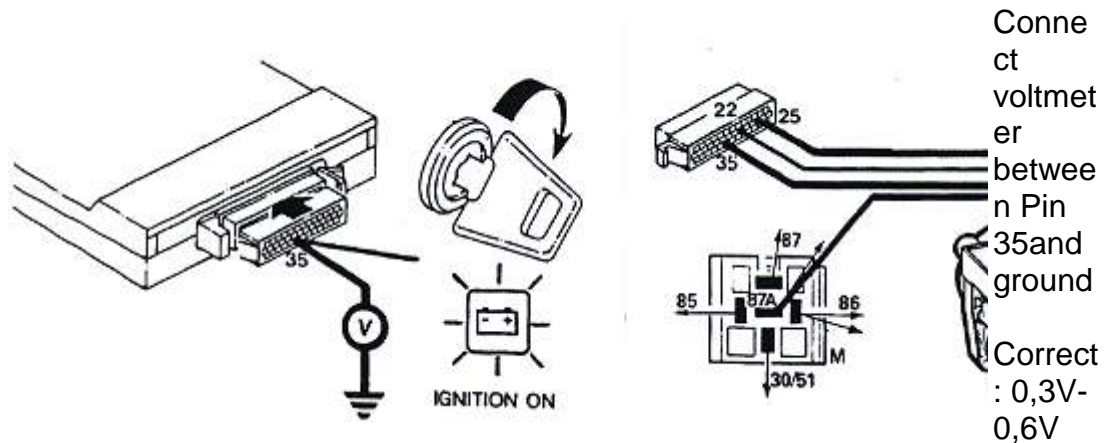
Throttle open 4,6V-5,0V

Important : Voltage must grow linear when moving



flap and  
must not  
jump

#### 17. Check Hot Wire airflow sensor

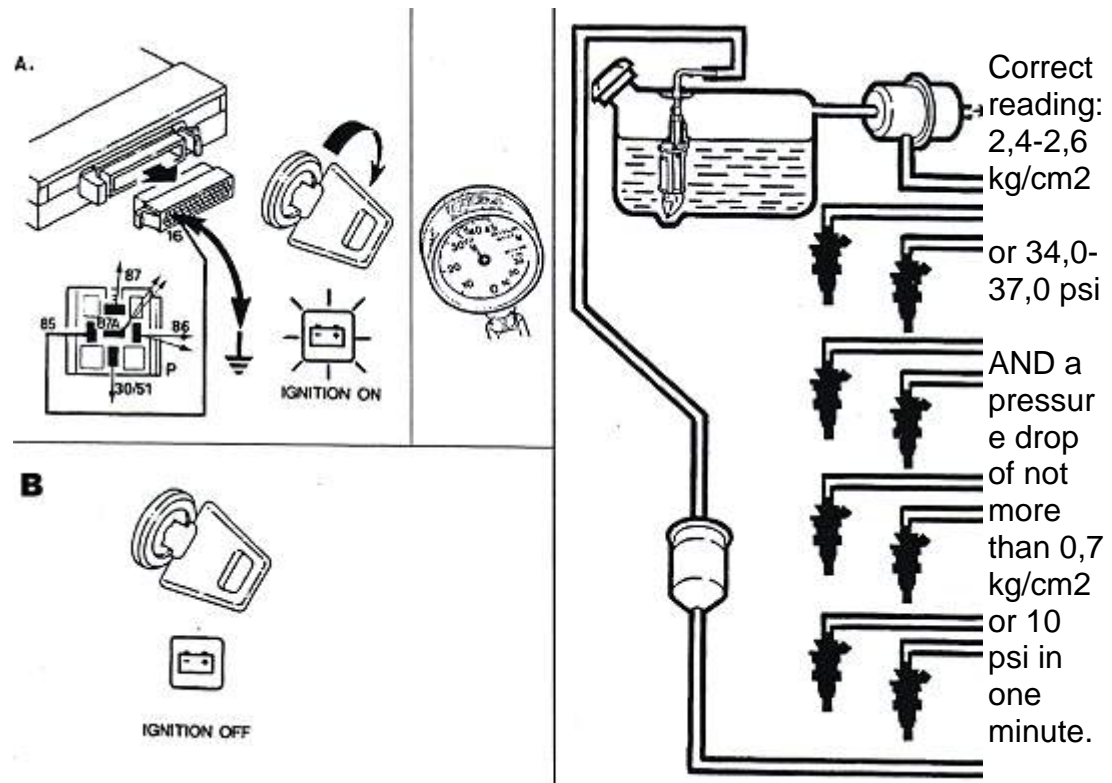


The following steps must be taken with some precautions. The fuel system must be depressurised as pressure stays inside the lines and a dangerous spray will occur when you open them. Also the slightest dirt particle in the system upstream of the filter (nearer to the engine) will definitely deteriorate the system. Some spilling can't be avoided, so take care.

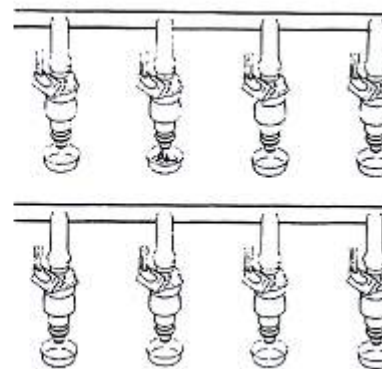
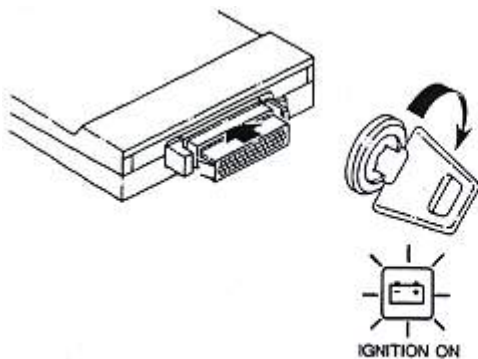
#### How to depressurise the system:

1. Switch ignition off! Take fuel pump relay out of his holder.
2. Start the engine. It probably will start but soon will cut off when the remaining pressure drops.
3. Ignition off.
4. Insert fuel pressure manometer into the fuel line between the fuel rail and the filter, near the filter at the back of the car.
5. Put the fuel relay back in place

## 18. Pressure check



## 19. Injector leak test



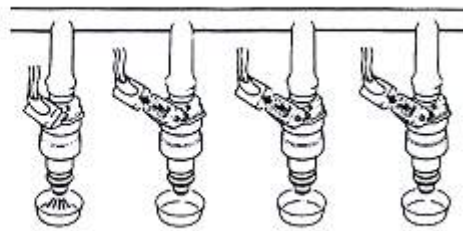
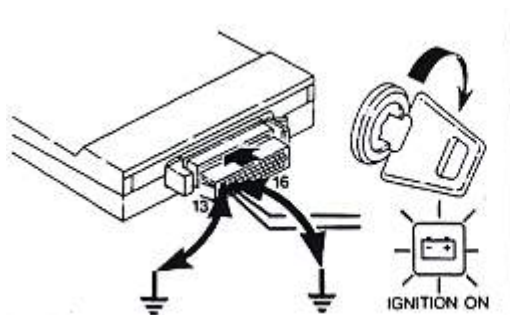
Injectors may leak. Take all the injectors out but don't disconnect them from the fuel rail. Put some sort of receptacle under them and switch on ignition. Any injector that gives off more than 2 drops a minute must be replaced.

If you have to replace a leaky injector you must inspect the spark

plugs for  
fouling!

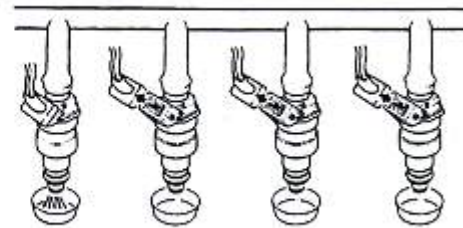
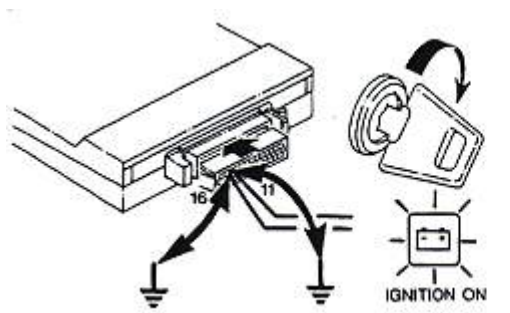
**Take care: The following steps are more dangerous as the spray can  
ignite quite easily**

20. Injector flow test (left bank, 1,3,5,7)



Ground  
Pin 13 and  
16. This  
will cause  
the  
injectors to  
open. Place a  
large  
receptacle  
under the  
injector,  
maybe a  
bottle or  
so. A  
correct  
injector will  
flow **167  
cm<sup>3</sup> per  
minute!**

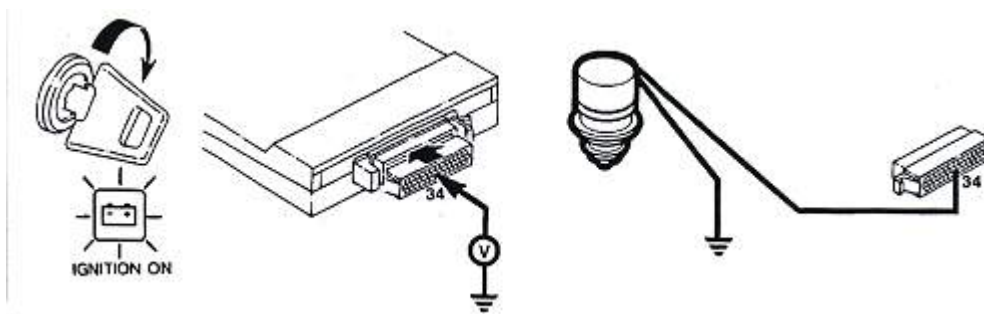
21. Injector flow test (right bank, 2,4,6,8)



Ground  
Pin 11 and  
16. This  
will cause  
the  
injectors to  
open. Place a  
large  
receptacle  
under the  
injector,

maybe a bottle or so. A correct injector will flow **167 cm<sup>3</sup> per minute!**

## 22. Gear input switch (Inhibitor switch) (automatic trans only)

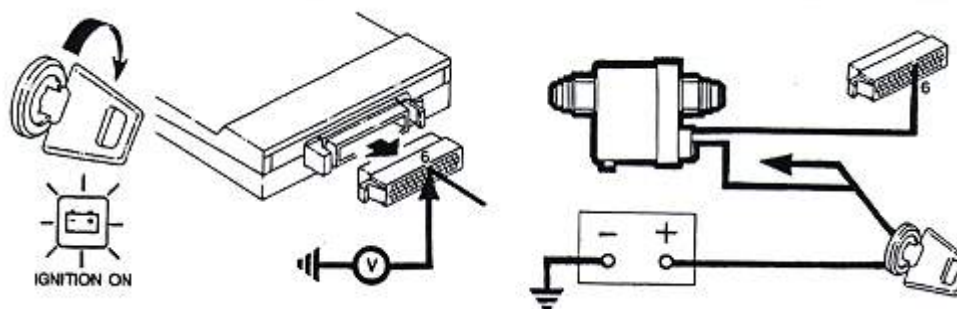


Connect voltmeter between Pin 34 and ground

Correct reading: 0V in Park and Neutral

4,5V-5,0V in R, D, 3, 2, 1

## 23. Road speed input (Speed Transducer)



Jack up and slowly turn left rear wheel.

Connect voltmeter between Pin 6 and ground.

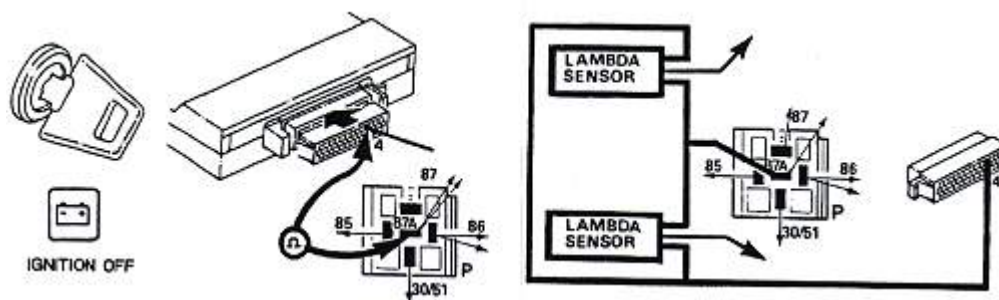
Correct reading: 0-12V, changing

6 times  
per  
revolution  
of the  
wheel

## 24. Check Lambda sensors

Take out  
the fuel  
pump  
relay

Connect  
ohmmeter  
between  
Pin 4 and  
87A of the  
fuel pump  
relay  
socket. Correct  
reading  
2,65-3,35  
ohms



A reading  
between  
5,3 and  
6,7 ohms  
indicates  
one of the  
2 Lambda  
sensors is  
shot