



Installation manual

PART 2/2

MANUFACTURER
TYPE
ENGINE DISPLACEMENT
NUMBER OF VALVES
ENGINE CODE / NUMBER - OUTPUT
FIRING ORDER
VEHICLE CATEGORIES
TRANSMISSION
VERSION
TYPE VSI INJECTOR
TYPE INJECTION MODULE
PETROL ECU MANUFACTURER / CODE
MODEL YEAR:
SYSTEM APPROVAL NUMBER (R115)
LOCATION R115 SYSTEM STICKER
ENGINE SET NUMBER
MANUAL NUMBER
DATE

VAG
Based on Skoda SuperB & VW Touareg
3597cc
24
CDVA – 191kW / CGRA – 206kW
1-5-3-6-2-4
M
AT
AFC-2.1 DI LPG
KN9 - 82cc
TYPE 2 Gen2
BOSCH MED 17.1.6
6-2010 →
E4-115R-000020 / VSI-LPG 31
right side, centre door post
366/121040/A
076/2620000
2019-03-07

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FOR EXPLANATION AND CIRCUIT DIAGRAMS SEE : INSTALLATION MANUAL GENERAL PART 1 / 2



General instructions

- The installation of the system shall be done in accordance with the installation manual provided by Prins Autogassystemen.
- This manual is based on Dutch regulations, always install the system in accordance to the local regulations.
- Always download the “general manual 1/2 “ from our [website](#) for basic instructions and diagrams.
- Always disconnect the battery when installing the LPG system. Make sure the ignition key is outside the car. Be aware of central door locking, radio / telephone memory code, alarm system.
- Do not place the main fuse into the fuse holder before having completed the installation of the VSI system.
- The VSI computer has to be activated by means of the diagnosis software.
- In the unlikely event the VSI computer fails, it will automatically switch over to petrol. Never disconnect the VSI computer connector, unless you have removed the main fuse.
- When installing the VSI wiring harness, ensure that it does not run near any of the ignition components.
- Solder and insulate all electrical connections.
The wires in the loom are provided with numbers and text.
The text on the wire explains the function of the wire.
The wire harness is not model specific, therefore it may be necessary to adjust the length of the wires.
Ensure maximum care is taken when connecting the wiring.
Make professional joints using solder and shrink sleeve. Do not stretch the wiring harness.
- No component of the LPG-system shall be located within 100 mm of the exhaust or similar heat source, unless such components are adequately shielded against heat.
- Remove any internal burrs after having shortened the LPG pipe.
(This guarantees the maximum flow through the pipe without pollution.)
- If holes have to be drilled (wear safety glasses) for installing brackets, etc., the drilled holes must always be treated with an anti-corrosion agent, after the chips have been removed (especially when mounting an exterior filler into body work).
- After having completed the installation, check the whole system for gas leakage; use a gas leak detection device. Also check for any leak of engine coolant, petrol and air.
- Fitting and maintenance is only allowed by Prins Autogassystemen selected LPG engineers.
- Failure to follow the instructions in this manual can result in a poor or non-working LPG-installation or a dangerous situation.
- For maintenance instructions and filter registration see owner's manual.
- Prins Autogassystemen is not responsible for any damages to people or objects as a result of changes to Prins products.
- [Check our website regularly for diagrams, certificates, updates, info-bulletins and product information.](#)

Please fill in the [warranty portal](#) completely within 14 days after installation.



Required equipment / tools / materials for installing a complete system

- Complete workshop toolbox (wrenches, screwdrivers, cutters, pliers, ratchet, sockets)
- Car lift
- Portable computer
- Vehicle fuel system scan tool or OBD scan tool Prins (part nr. 099/99928)
- Exhaust gas analyser
- Multimeter
- Oscilloscope
- Prins diagnostic software
- Prins diagnostic tool
- Torque wrench (5-50Nm)
- Torque wrench (200-250Nm)
- Portable light
- Assortment drill bits 4 to 12 mm
- Assortment cutters (Ø20, 30, 50, 70 mm)
- Portable drill or pneumatic drill
- Thread cutting device (male M6x1, M8x1, M10x1)
- Air gun
- Vacuum cleaner
- Safety goggles
- Hot air gun
- Soldering iron, soldering tin
- Wire-stripping pliers
- Adhesive tape
- Adhesive sealant
- Thread locking compound
- Anti-corrosion agent / black body coating
- Gas leak detection device or foam leak spray
- Shrink sleeves

Vehicle check

- Check the vehicle drivability on petrol
- Check the fuel system for error codes (scan tool)
- Check if the catalytic converter is in good condition (exhaust gas analyser)
- Check the condition of the ignition system (spark plugs, cables, coil)



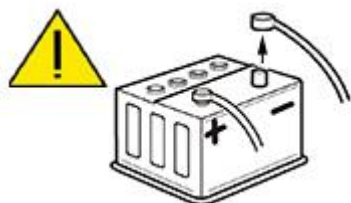
Tightening moments

	Nm	Spanner mm
M 4 x 0,7	3.3	7
M 5 x 0,8	6.5	8
M 6 x 1,0	11.3	10
M 7 x 1,0	14.5	11
M 8 x 1	24.5	13
M 8 x 1,25	27.3	13
M 10 x 1	52	15-16-17
M 10 x 1,5	54	15-16-17

EXPLANATION OF SYMBOLS :

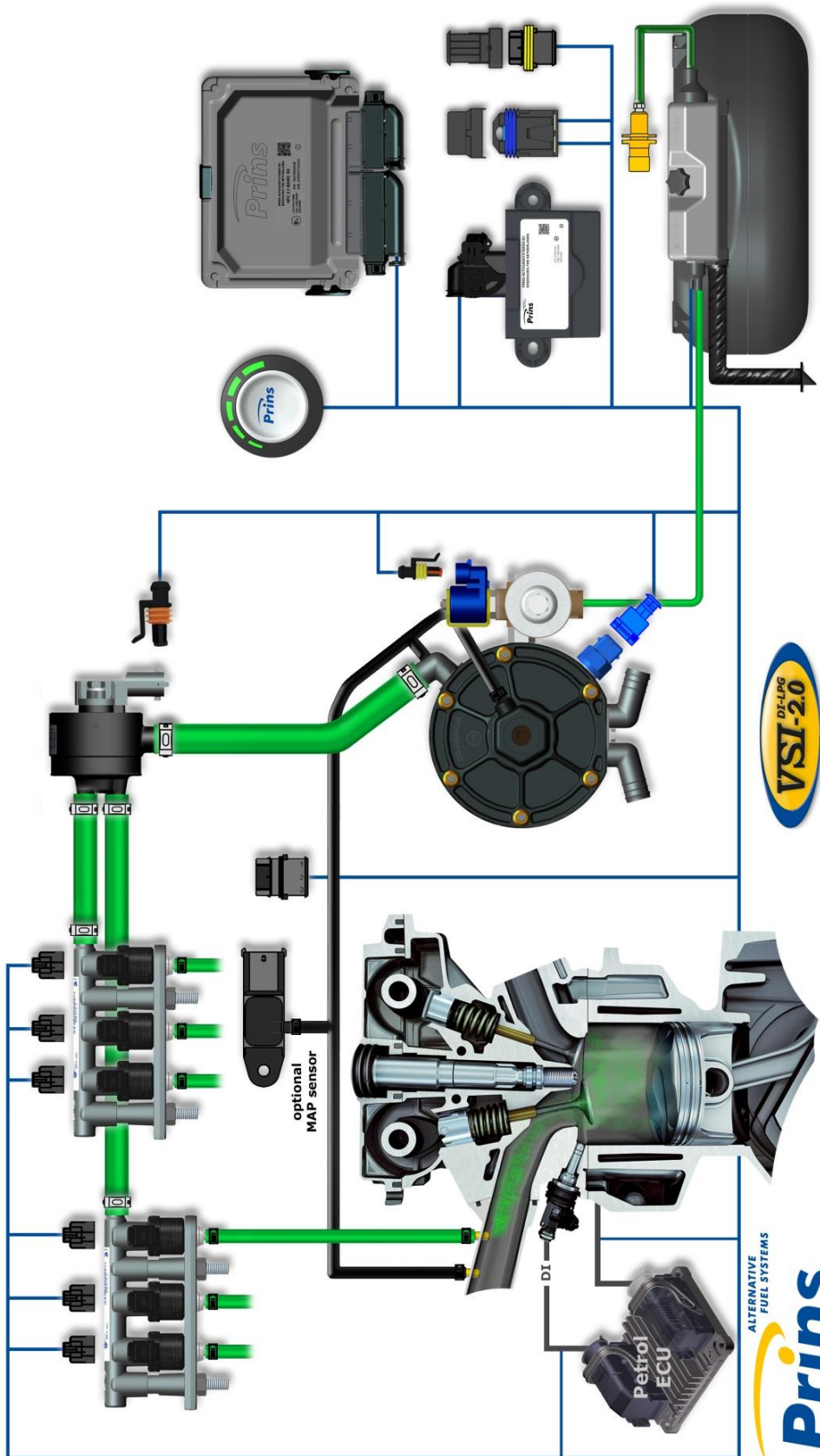


= IMPORTANT, CAUTION



= WEAR SAFETY GOGGLES

Base diagram

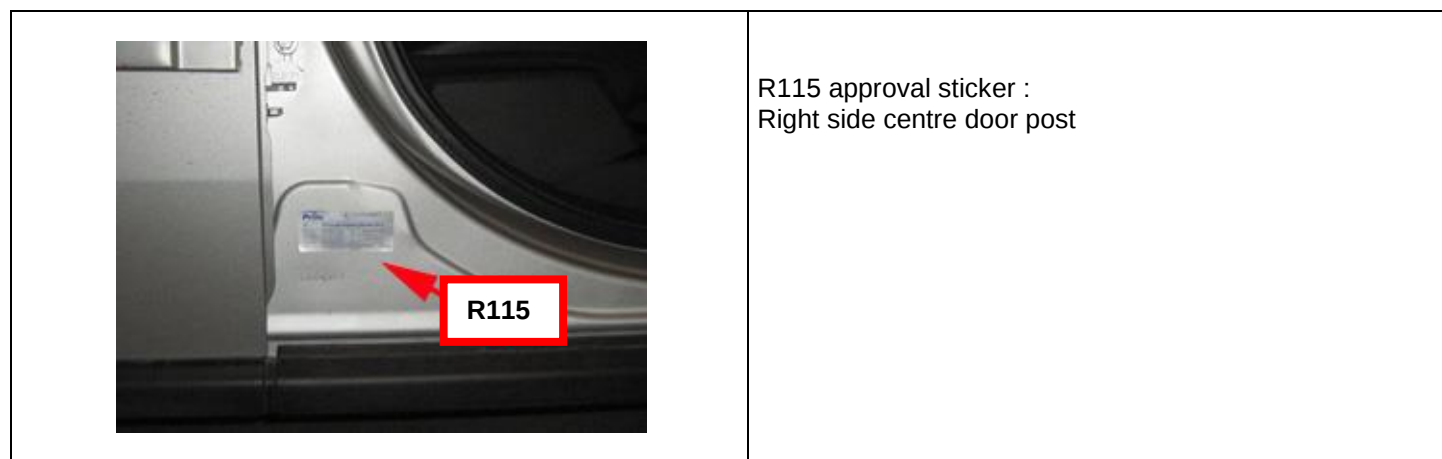
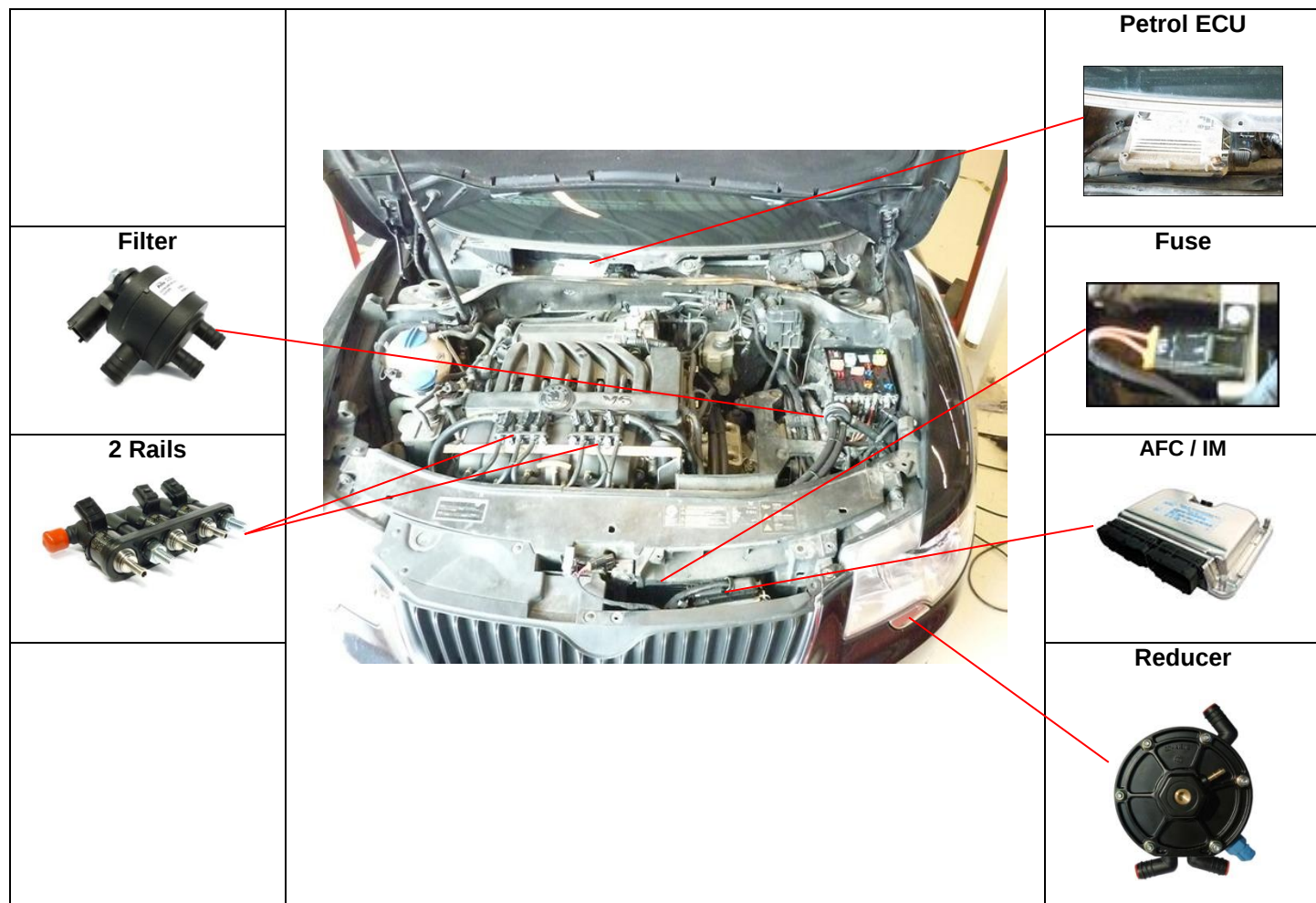


VSI approval numbers

	
Reducer VSI LPG Prins : E4-67R-010054 Lock-off valve OMB : E8-67R-014327 Lock-off valve Valtek : E4-67R-010041	Injector rail Prins : LPG E4-67R-010093 CNG E4-110R-000021
	
Filter unit T1 / T2 Prins : LPG E4-67R-010096 CNG E4-110R-000028	Injector Keihin KN9 : LPG E4-67R-010310 CNG E4-110R-000295
	
Prins AFC : E4-67R-010098 E4-10R-030507	Tubithor : LPG E13-67R-010145 CNG E13-110R-000017 Rubia : LPG E4-67R-010068 CNG E4-110R-000003 WinLas : LPG E37-67R-010140 CNG E37-110R-000012

VSI component location overview

(example Skoda Superb)



Mounting the inlet manifold couplings

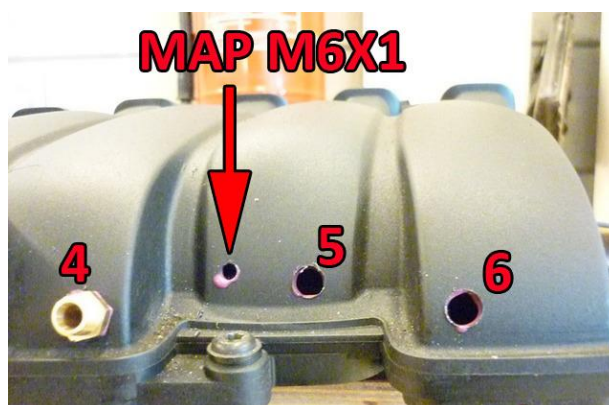
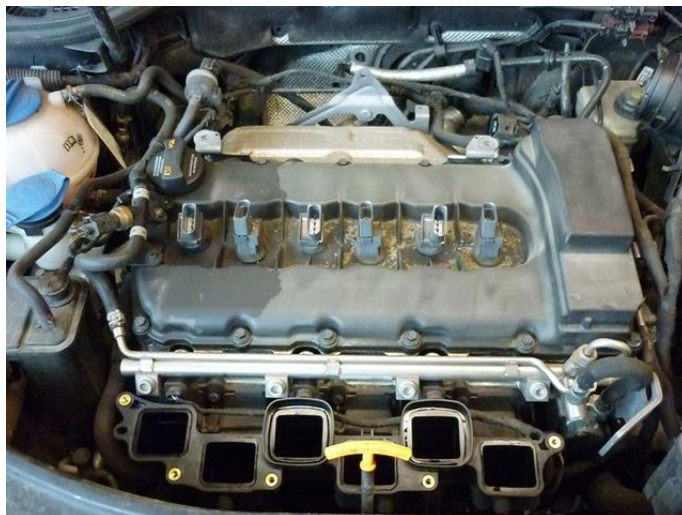
Remove the inlet manifold (see workshop manual).

Drill **6** holes of **8.5mm** in the inlet manifold. (pre-drill 5mm->7mm -> 8.5mm), cut **M10x1** thread in these holes.

Drill **1** hole of **5mm** in the inlet manifold. Cut **M6x1** thread.

Place the VSI couplings with a lock compound into the inlet manifold (1Nm).

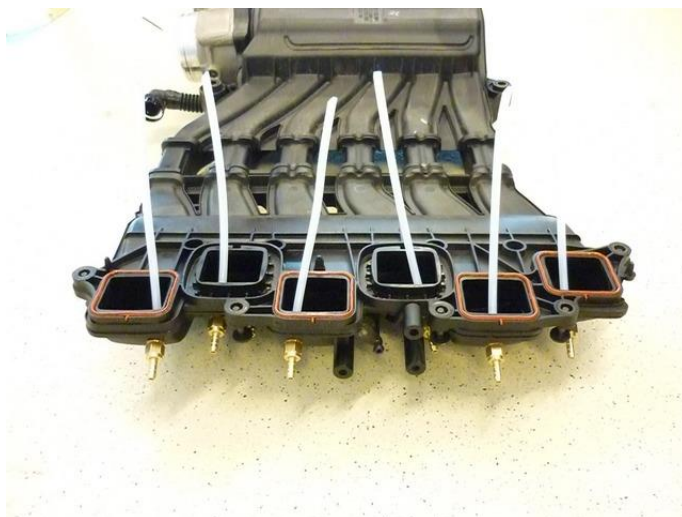
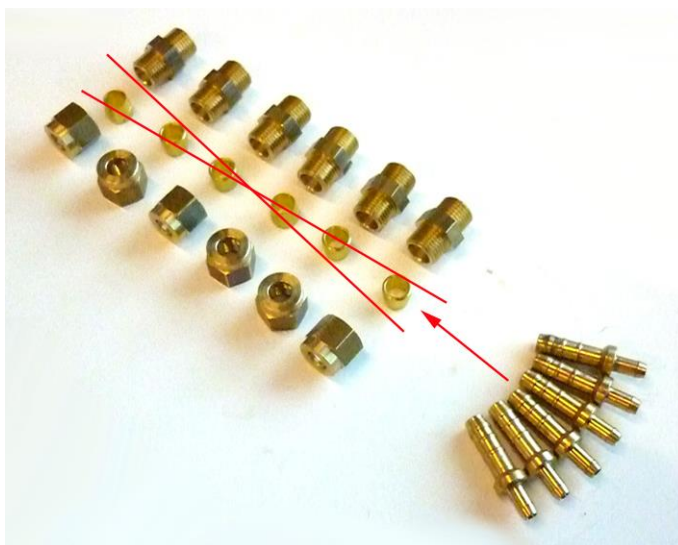
Watch out that the lock compound doesn't come inside the VSI couplings.



Mounting the inlet manifold couplings



PTFE hose: cut **6x18cm** with 45 degree cut (for easy insert)



(Example)

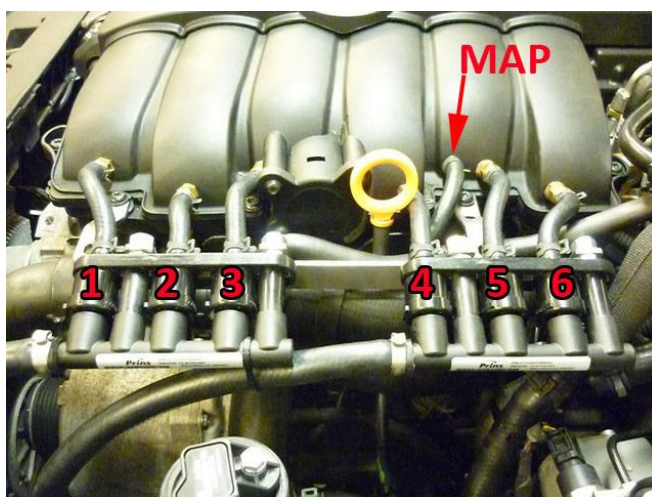
The barrels are not used. Push in hose and lock with the nut to the M10x1 manifold couplings.

Mounting the VSI injector rail

(example VW Phaeton, this bracket is the standard most used bracket, delivered in the kit!)



Rotate the injectors of one rail.



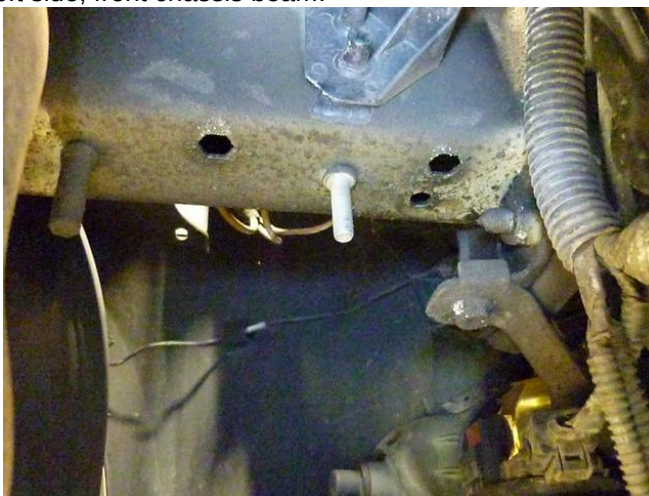
Mounting the VSI injector rail (example Skoda Superb, different rail bracket, not standard)



Mounting the reducer

(example Skoda Superb)

Left side, front chassis beam.

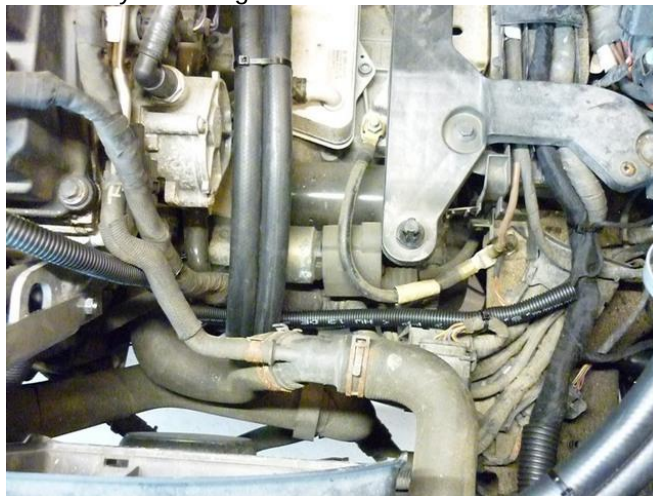
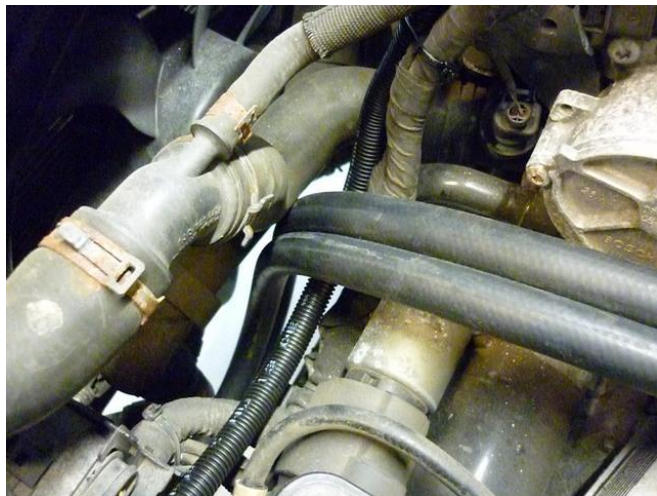


Mounting the reducer (example Skoda Superb)



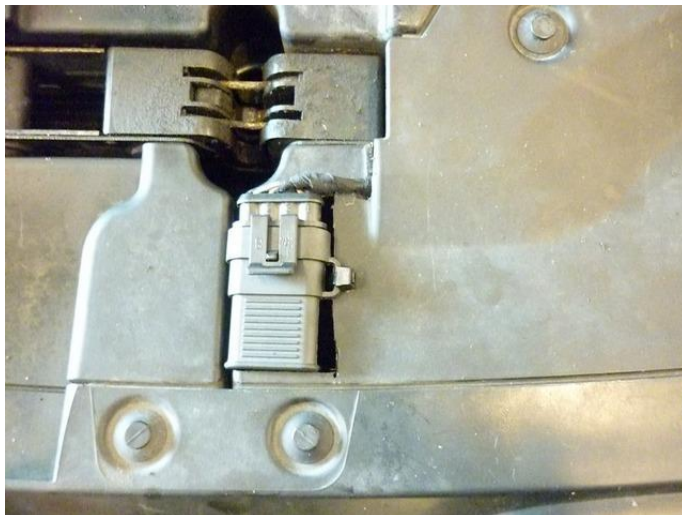
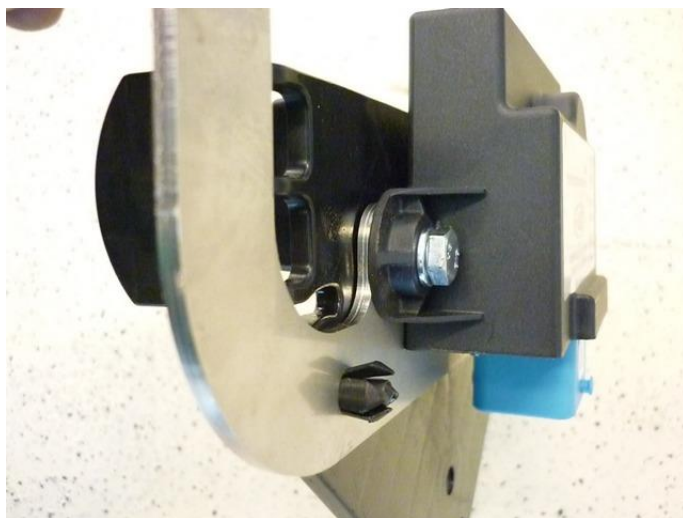
Water connections (example Skoda Superb)

Remove the air filter box for easy mounting.



Mounting the AFC / Injection Module

(example Skoda Superb)



Wiring

(example Skoda Superb)



Grommet.



Petrol ECU, remove wipers and panel.



Wiring

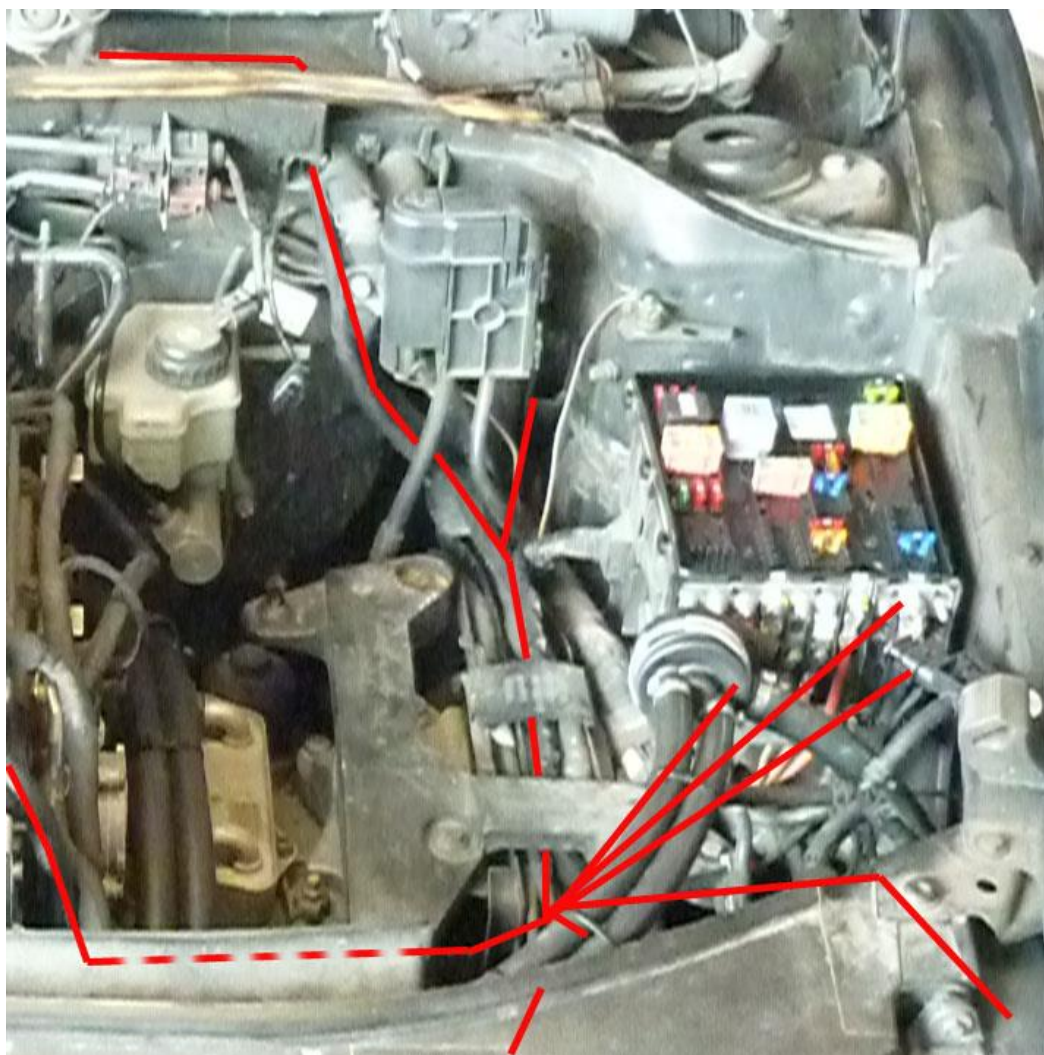
(example Skoda Superb)



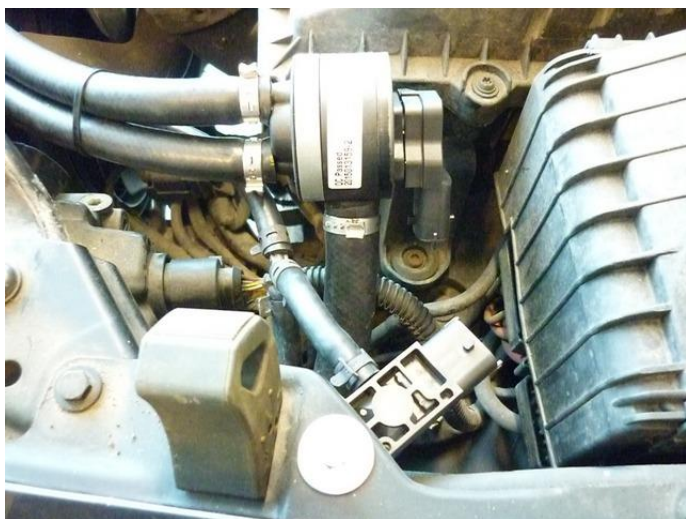
Battery +12V.



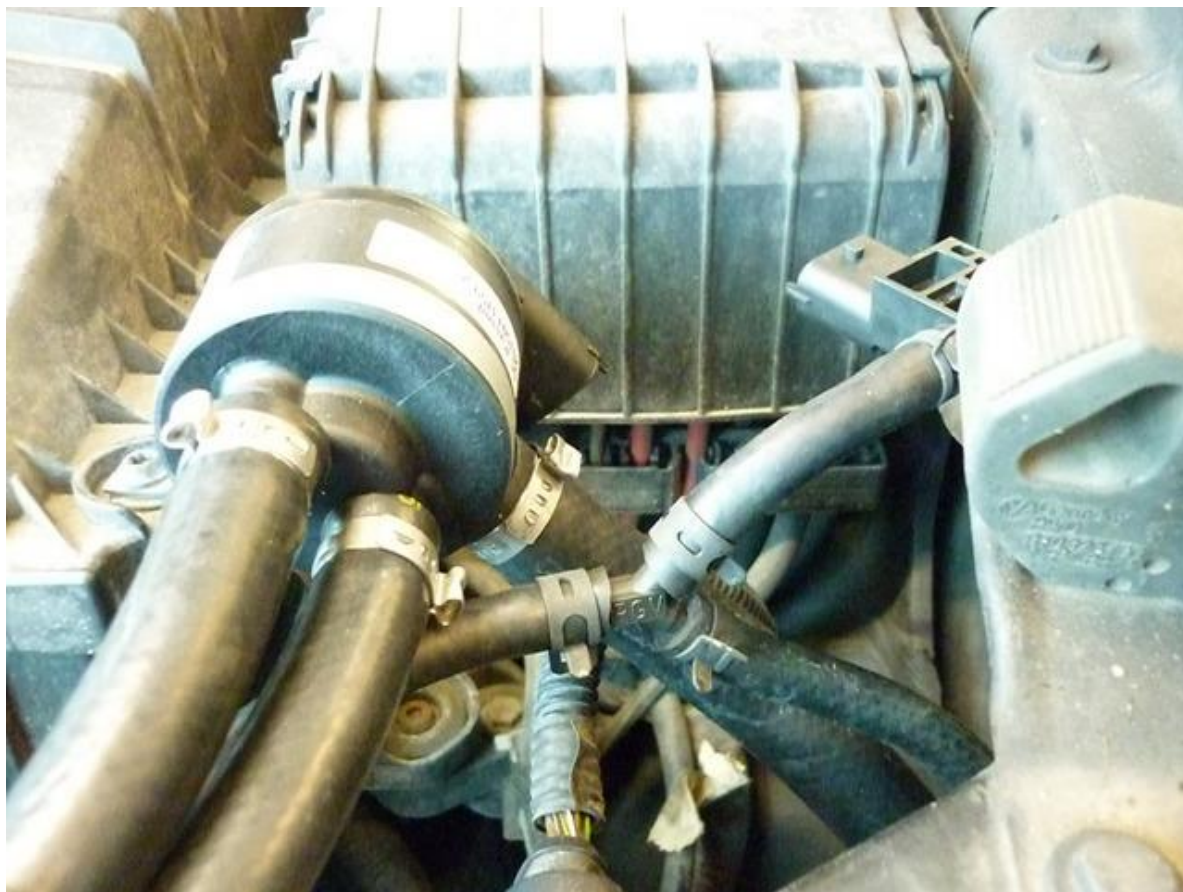
Ground.



Mounting the Prins filter unit (example Skoda Superb)



Turbo / MAP sensor (example Skoda Superb)



LPG hoses

(example lengths from VW Phaeton)

<i>Hose (Ø..mm)</i>	<i>From component</i>	<i>To component</i>	<i>Hose length (cm)</i>
16	Reducer	Prins filter unit	6
11	Prins filter unit	VSI injector rail	50
11	Prins filter unit	VSI injector rail	50
5	VSI injector 1	Inlet manifold coupling cyl.1	10
5	VSI injector 2	Inlet manifold coupling cyl.2	7
5	VSI injector 3	Inlet manifold coupling cyl.3	10
5	VSI injector 4	Inlet manifold coupling cyl.4	7
5	VSI injector 5	Inlet manifold coupling cyl.5	10
5	VSI injector 6	Inlet manifold coupling cyl.6	8
6	VSI injector 1	Nylon hose cyl.1	18
6	VSI injector 2	Nylon hose cyl.2	18
6	VSI injector 3	Nylon hose cyl.3	18
6	VSI injector 4	Nylon hose cyl.4	18
6	VSI injector 5	Nylon hose cyl.5	18
6	VSI injector 6	Nylon hose cyl.6	18

General info.

Cut the LPG hoses on length.
Cut the nylon hoses on length.

Please observe that there is no damage or fouling to the hoses.



Mounting the fuel selection switch



When mounting the switch, only push on its sides.
Pushing the switch hard in the centre may result in damage to the switch.

Example Skoda Superb



Electrical connections, not used wires

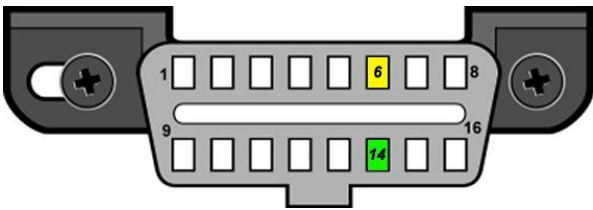
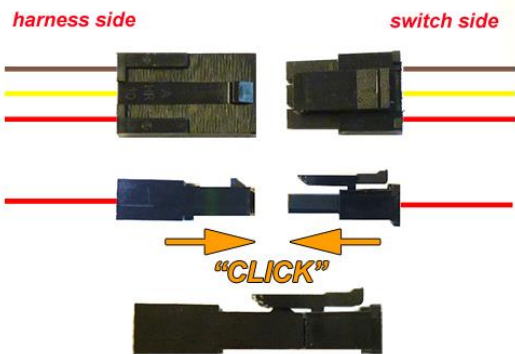
Insulate all not used wires

20	AD3	Blue-pink	<i>Insulate</i>
22	LSS1	Purple	<i>Insulate</i>
23	LSS2	Purple-green	<i>Insulate</i>
36	AD6	Blue-brown	<i>Insulate</i>
38	AD7	Blue-lightblue	<i>Insulate</i>
39	AD8	Blue-red	<i>Insulate</i>
50	DAC4	Green-blue	<i>Insulate</i>
60	DI3	Yellow-pink	<i>Insulate</i>
61	DI4	Yellow-blue	<i>Insulate</i>
74	DAC3	Green-pink	<i>Insulate</i>
<i>Insulate additional loose wires</i>			



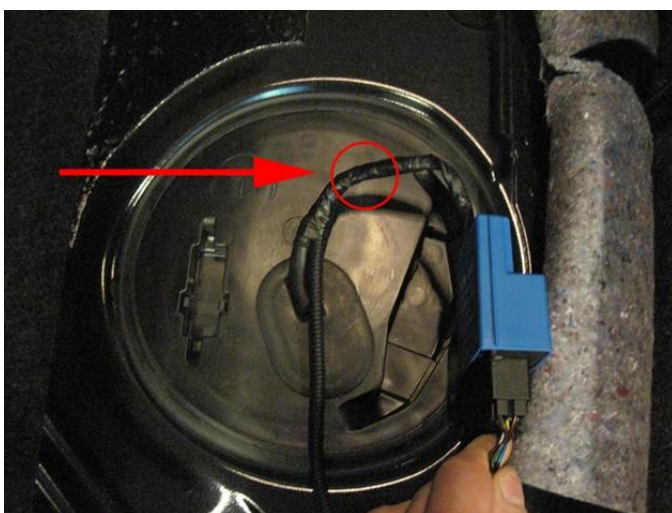
Electrical connections

Driver room

51 70	CAN1 High CAN1 Low	Yellow Green	Connect to EOBD diagnose connector Pin : 6 Pin : 14
			
3-pole micro connector 66 3 49	Ground fuel switch +12V fuel switch LIN fuel switch	Brown-black Red-white Yellow	Connect the 3-pole connector to the Prins fuel selection switch
			
56	DI2	Yellow-green	<i>Petrol Fuel Pump Driver Signal.</i> Extend the wire with the supplied wire (and split-tube for protection) to the petrol fuel pump driver underneath the back seat. See next page(s) for the connection. Skoda Superb: Wire color: Red Wire location : Petrol pump driver to fuel pump, T5/1 VW Touareg: Wire color: Yellow-black Wire location : Petrol pump driver to fuel pump, T6/3

Petrol Fuel Pump Driver Signal (Skoda Superb)

Extend wire **56 DI2** underneath the dashboard and use split tube for protection.



Petrol Fuel Pump Driver Signal (VW Touareg)

Extend wire **56 DI2** and use split tube for protection
Connect the wire **INSIDE** the vehicle between the pump driver and the fuel pump.



Location of the connector **UNDERNEATH** the vehicle.

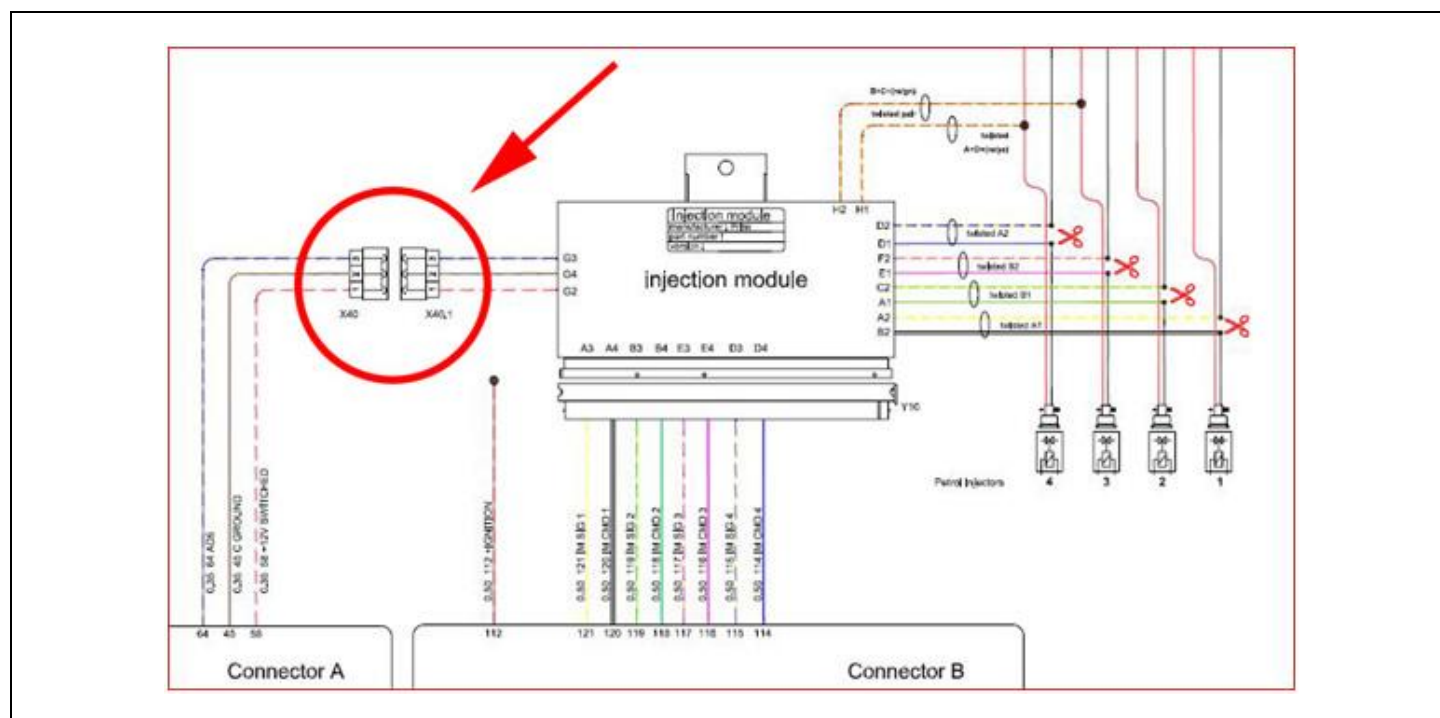


Connect the wire **INSIDE** the vehicle under the back seat on this location.

Electrical connections

Check and measure the wiring in case of changes in the cars wiring colours.

Wire number / code	Wire colour	Connection
32 Ground sense 1 Ground battery	Brown Brown	Connect to the '-' of the battery; use a ring terminal or solder: Wire colour: Black or Brown Wire location: Ground battery
4 +12V Battery	Red	Do not place the fuse in the holder before having completed the installation of the LPG system. Wire colour: Red Wire location: +12V Battery
98 98 G INJ OUT 1 106 106 G + INJ 1	White - yellow red	Connector VSI-injector to cylinder 1. Timing belt side
99 99 G INJ OUT 2 107 107 G + INJ 2	Green - yellow red	Connector VSI-injector to cylinder 2.
100 100 G INJ OUT 3 108 108 G + INJ 3	Pink - yellow red	Connector VSI-injector to cylinder 3.
82 82 G INJ OUT 4 90 90 G + INJ 4	Blue - yellow red	Connector VSI-injector to cylinder 4.
83 83 G INJ OUT 5 91 91 G + INJ 5	Grey - yellow red	Connector VSI-injector to cylinder 5.
84 83 G INJ OUT 6 92 91 G + INJ 6	Brown - yellow red	Connector VSI-injector to cylinder 6..



Petrol ECU



Electrical connections

Check and measure the wiring in case of changes in the cars wiring colours.

T60

27	+5V Sensor	Red - blue	For measuring the inlet manifold pressure (MAP).
37	C ground	Brown - black	Connect the 3-pole connector to the Prins MAP sensor.
18	AD1	Blue - white	
17 & 25			Interrupt high petrol pressure sensor signal. Colour: White Wire location: Petrol ECU, T60/25
17	AD2	Blue-green	Sensor side
25	DAC1	Green-white	ECU side
63	Ground shift	Blue-orange	High petrol pressure sensor signal ground. Colour: Brown Wire location: Petrol ECU, T60/14
40	Wake-up	Grey-red	High pressure petrol sensor 5Volt supply / car wake-up. Colour: Grey Wire location: Petrol ECU, T60/26
8	RPM engine speed	Purple-white	For measuring the engine speed. Colour: Red Wire location: Petrol ECU, T60/44

T94

112	+ Ignition	Grey-red	Connect to +ignition / contact+ (+15). Colour: Wire location: Petrol ECU, T94/87
19 & 10			Interrupt low petrol pressure sensor signal. Wire colour: Yellow-grey or Brown-purple Wire location: Petrol ECU, T94/15
19	AD4	Blue	Sensor side
10	DAC2	Green	ECU side

Electrical connections

Check and measure the wiring in case of changes in the cars wiring colours.



For measuring the petrol injectors :

Interrupt each petrol injector control wire (injector min)

Each VSI wire has a petrol injector / cylinder number printed on the wire, connect this wire to the corresponding petrol injector / cylinder.

Connect the **bicoloured** VSI measuring wire to the **ecu side**, (wire code: ecu-lo).

Connect the **corresponding full coloured** VSI wire to the **petrol injector side** (wire code: inj-lo).

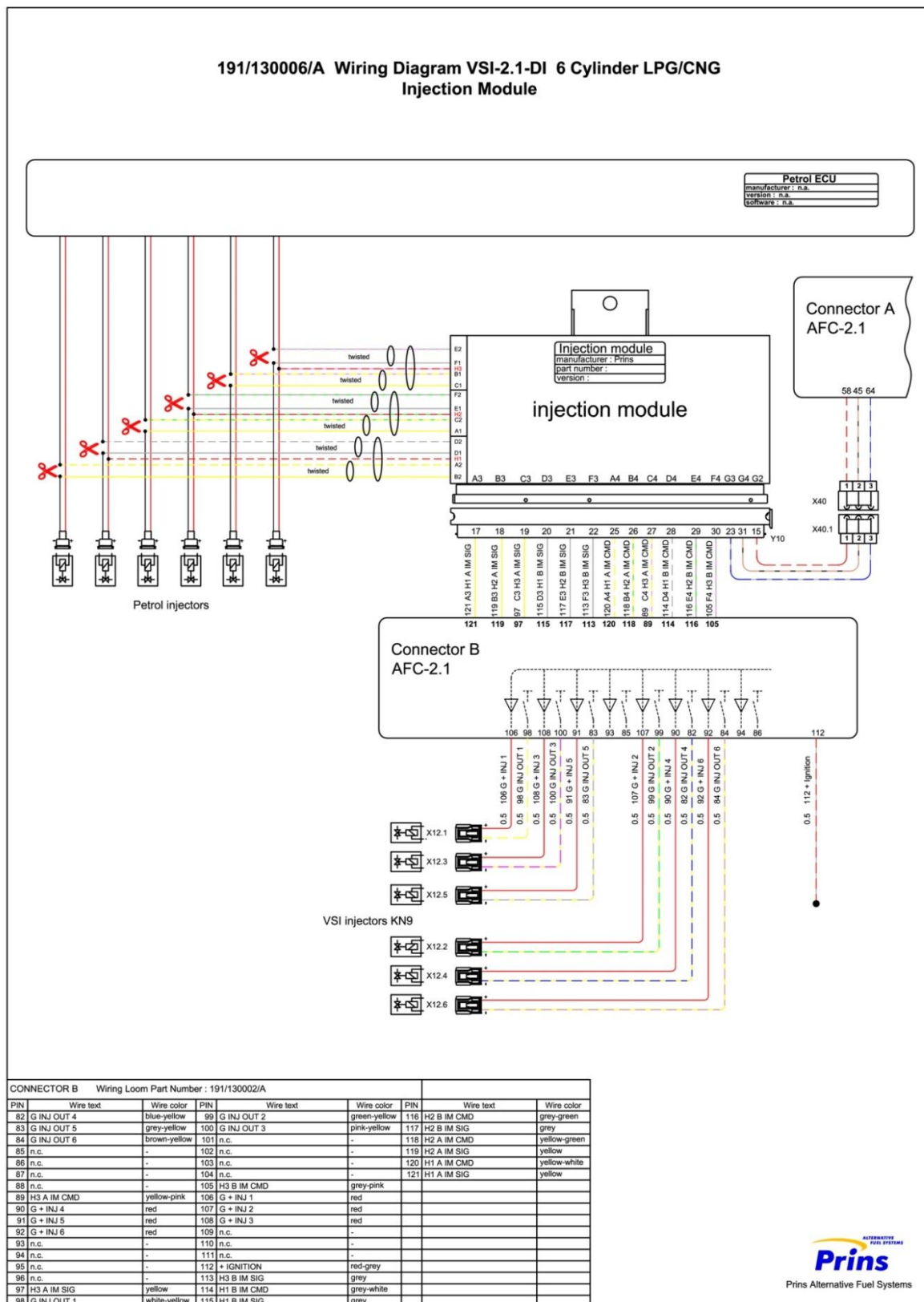
See diagrams: Installation manual general part 1 / 2.

Attention:

Each bicoloured measuring wire corresponds to a specific LPG injector and petrol injector / cylinder number. Do not interchange the wires.

VSI measure wire nr. :	Full coloured / Bicoloured Module position	Interrupt petrol injector wire
H1 (INJ LO A) / H1 (ECU LO A) Petrol injector cyl. 1	Yellow / yellow-white B2 / A2	Wire colour: Red-grey Location: Petrol ECU, T60/2
H1 (INJ LO B) / H1 (ECU LO B) Petrol injector cyl. 6	Grey / grey-white D1 / D2	Wire colour: Brown-white Location: Petrol ECU, T60/16
H1 (ECU HIGH 1) + Petrol injector (cyl.1)	Red-white H1	Wire colour: Green-black Location : Petrol ECU, T60/33
H2 (INJ LO A) / H2 (ECU LO A) Petrol injector cyl. 2	Yellow / yellow-green A1 / C2	Wire colour: Red-Purple Location: Petrol ECU, T60/1
H2 (INJ LO B) / H2 (ECU LO B) Petrol injector cyl. 5	Grey / grey-green E1 / F2	Wire colour: Brown-yellow Location : Petrol ECU, T60/17
Special connection! H2 (ECU HIGH 2) + Petrol injector (cyl. 2) + Petrol injector (cyl. 5)	Red-green H2 H2  Strip & Twist 47&32	Special connection! Wire colour: Brown-blue Location: Petrol ECU, T60/47 Wire colour: Location: Petrol ECU, T60/32 Connect H2 to pin 47 & 32. Strip and Twist wires 47 & 32, connect H2.
H3 (INJ LO A) / H3 (ECU LO A) Petrol injector cyl. 3	Yellow / yellow-pink C1 / B1	Wire colour: Grey-green Location: Petrol ECU, T60/18
H3 (INJ LO B) / H3 (ECU LO B) Petrol injector cyl. 4	Grey / grey-pink F1 / E2	Wire colour: Red-purple Location: Petrol ECU, T60/3
H3 (ECU HIGH 3) + Petrol injector (cyl. 3)	Red-pink H3	Wire colour: Brown-green Location: Petrol ECU, T60/31

Electrical connections Injection Module



Electrical connections

Connectors in wiring loom

2-pole blue connector 15 T-ECT 34 Ground T-ECT	Grey Brown - black	For measuring the engine coolant temperature (Tect) Connect the connector to the reducer temperature sensor.
4-pole connector 35 Ground Psys 14 T-Gas 9 +5 Volt sensor 16 Psys	Brown - black Grey Red - blue green	For measuring gas pressure and temperature. Connect the connector to the filter unit sensor.
2-pole connector 24 +12V reducer lock-off 31 C Ground	Yellow - green Brown - black	Connect the connector to the reducer lock-off valve.
4-pole connector 46 Service TxD 65 Service RxD 68 Ground PDT	Grey Grey Brown - black	Diagnose connector.
Tank wiring loom 2 +12V Tank relay 12 Tank level IN 26 Ground tank relay	red blue black	Connect to the tank lock-off. Connect the tank level gauge. Connect to the tank lock-off.
Wiring loom link 45 C ground 58 +12V switched 64 AD5	Brown – black Red – white Blue - grey	Connection from AFC connector A to connector B

Optional:

3-pole connector 11 + manometer 12 tank level in 33 ground manometer	red blue brown	<i>Cut off connector and insulate wires</i>
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Checklist after installation

1. Connect the Prins Diagnostic Tool and run the VSI diagnostic program.
Install the VSI fuse, turn the ignition key in the accessory position.
When working on the car, beware of moving and rotating parts in the engine compartment.
2. When commissioning the LPG system, you must activate the VSI computer with the diagnostic software.
When the VSI computer has not been activated, the switch will keep blinking. To activate the VSI computer, select function activate ECM in the diagnostic software.
3. Check whether the program in the VSI computer matches with the car (dedicated engine set) :
Refer the car description in the diagnostic software (Basic → Identification) and compare these with the set number.
4. The system will switch over to LPG as soon as the temperature of the coolant becomes higher than parameter 70 - Switch over ECT.
5. Check all components and connections for any gas leakage (use a LPG leak detector device or a fluid detection like soap). Caution for moving and rotating parts in the engine compartment !
6. Let the engine run warm on petrol >80°C.
Check if the evaporator heats up.
Check the engine signals, petrol injection time, RPM, ECT, lambda, MAP signal, petrol pressure signal.
Let the engine run idle on LPG.
Adjust the evaporator pressure. Refer to Basic → System in the diagnostic software for the idle level value set.
Adjust the evaporator pressure in such a way that the pressure measured (P-sys) equals the idle level value.
Turn the socket-head screw at the front of the evaporator to adjust the pressure.
An error code will be generated whenever the pressure variation is too high.
7. Use the diagnostic software to check again all input and output signals.
8. Check the system for error codes and solve these, if required.
Check the petrol ECM for EOBD error codes.
Place the protection connector on the VSI communication connector.
9. Take a test drive and check the drivability on LPG and petrol.

