

ALTERNATIVE
FUEL SYSTEMS

Prins



Installation manual Dedicated PART 2/2

MANUFACTURER	RENAULT / DACIA // NISSAN // MERCEDES-BENZ
ENGINE DISPLACEMENT	1200cc
NUMBER OF VALVES	16v
ENGINE CODE / NUMBER	H5F // HRA2 / HR12DDT // M200.711
FIRING ORDER	1-3-4-2
VEHICLE CATEGORIES	M
TRANSMISSION	MT
VERSION	AFC-2.1 DI-LPG
TYPE VSI INJECTOR	KN9 – 52cc
TYPE INJECTOR MODULE	6 Cylinder - Type 3
PETROL ECU MANUFACTURER / CODE	Continental EMS3155
MODEL YEAR:	2013-
SYSTEM APPROVAL NUMBER (R115)	E4 #115R-000022 / VSI-LPG33
LOCATION R115 SYSTEM STICKER	right side, centre door post
ENGINE SET NUMBER	359/121001/A
MANUAL NUMBER	076/1908000

DATE 2018-07-23

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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)



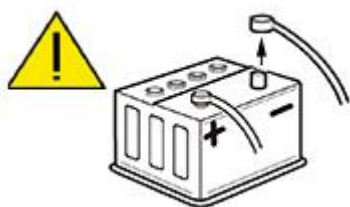
Tightening moments

	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 :

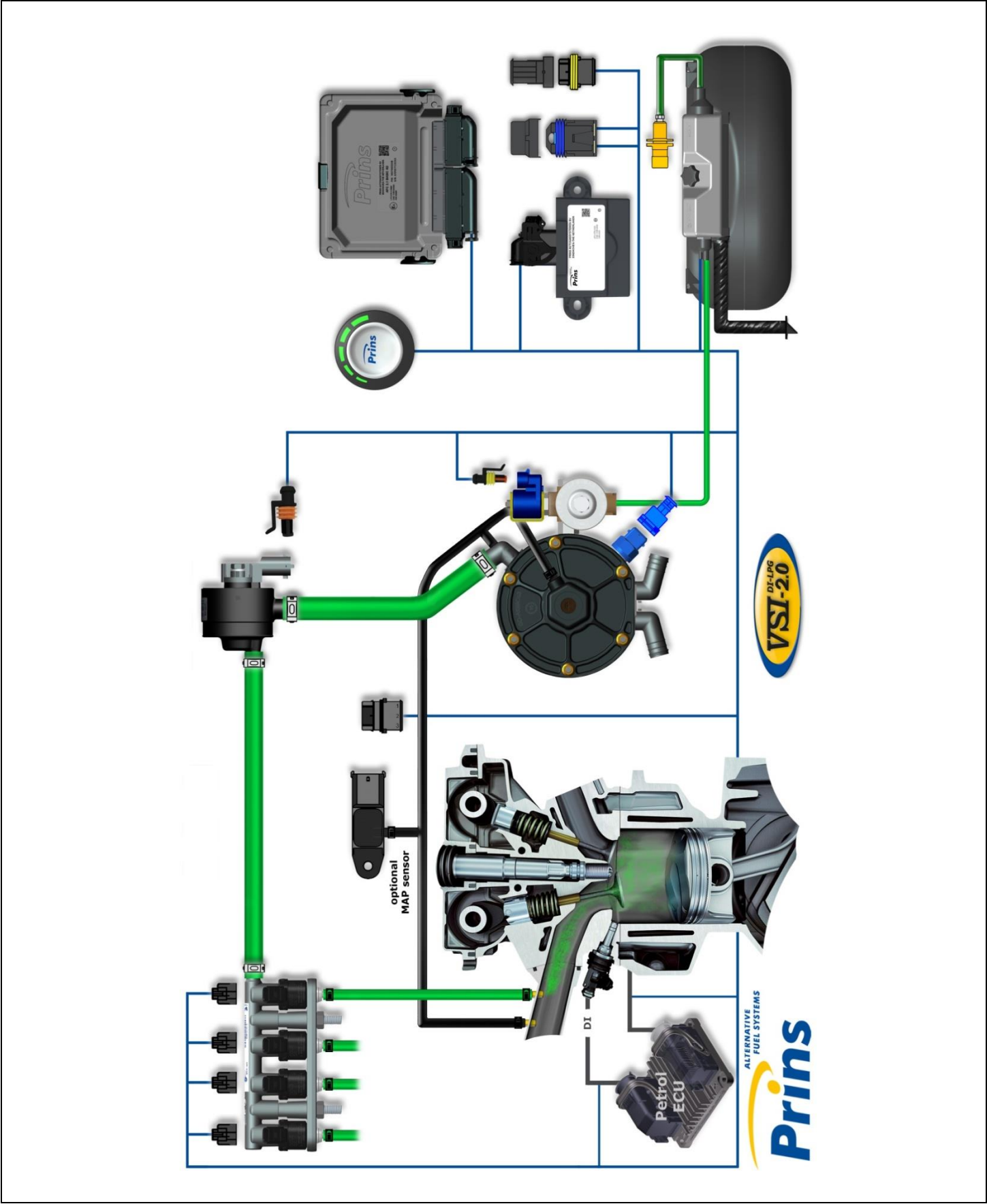


= IMPORTANT, CAUTION



= WEAR SAFETY GOGGLES

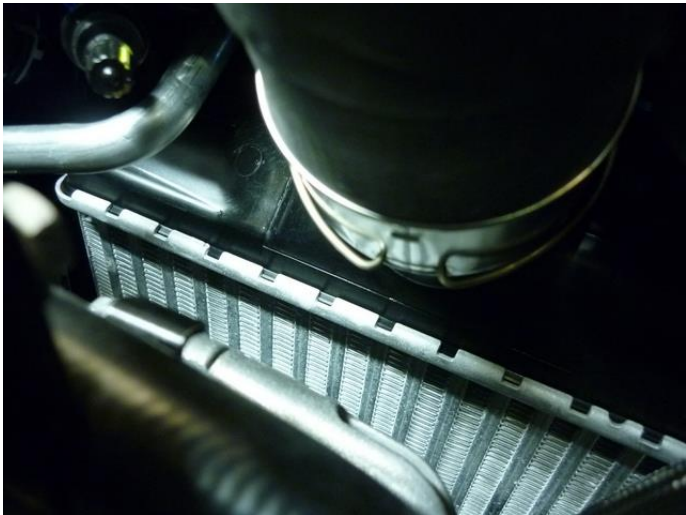
Base diagram



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 Filter unit Keihin: LPG E4-67R-010177 CNG E4-110R-000091	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

Prepare for installation



Mounting the inlet manifold couplings

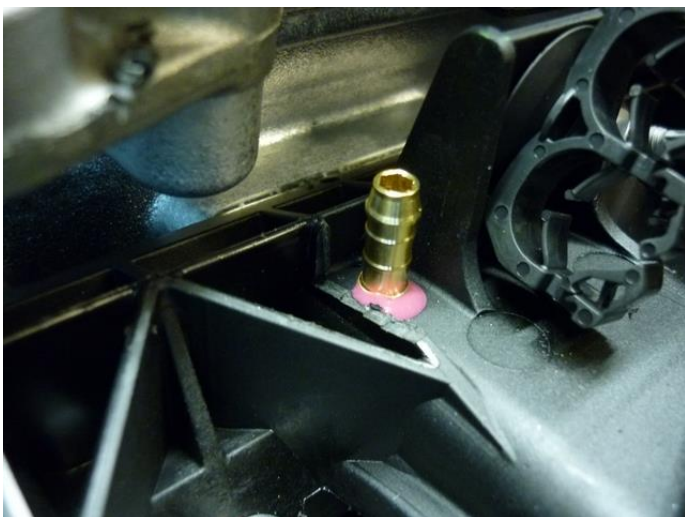
Remove the inlet manifold.

Drill **5** holes of **5mm** in the inlet manifold. Cut **M6** thread in these holes. (1 for MAP, see next page)

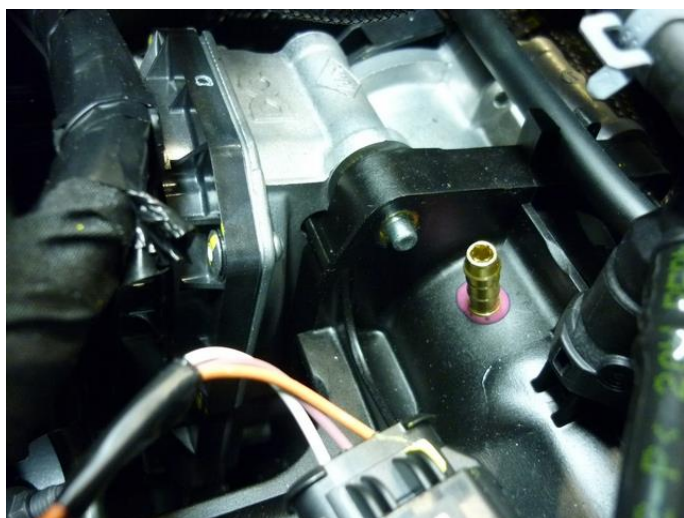
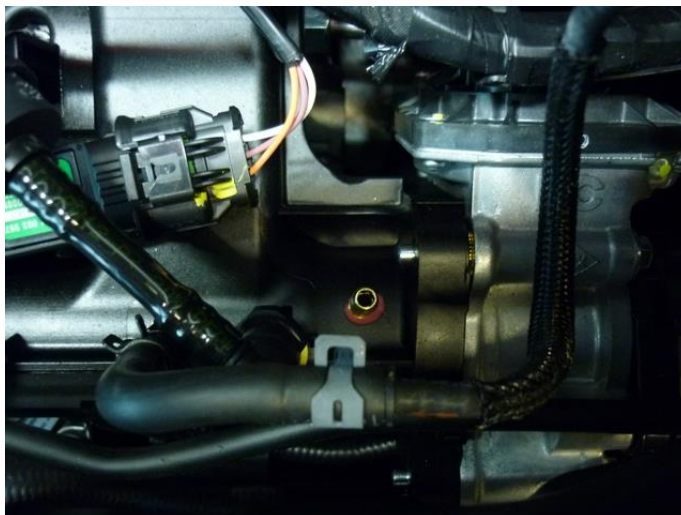
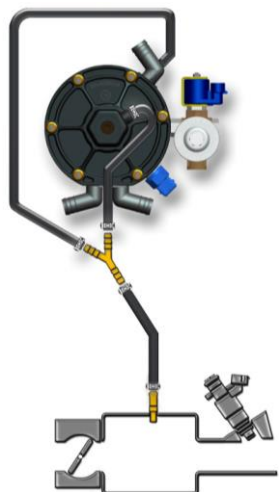
Place the VSI couplings with a lock compound in the inlet manifold.

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

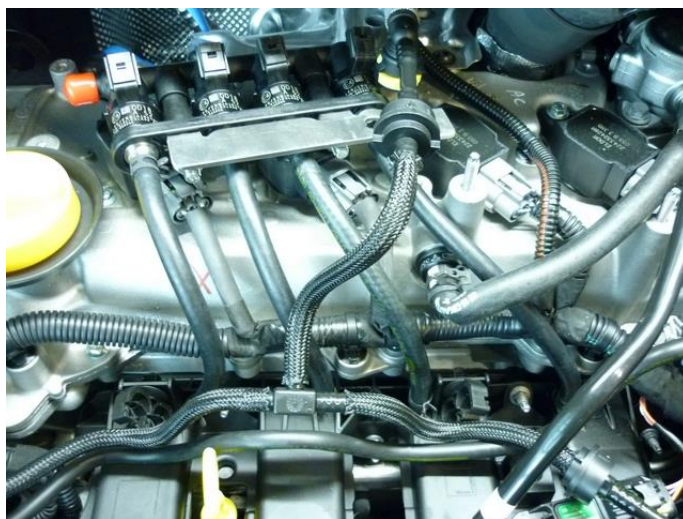
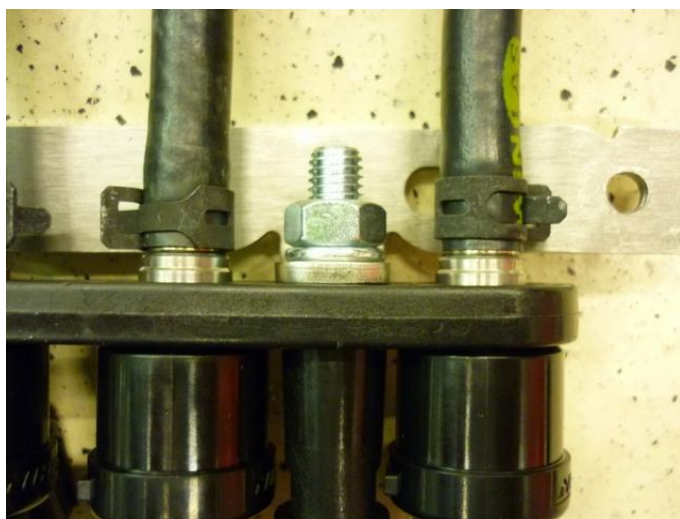
Place the inlet manifold back on the engine.



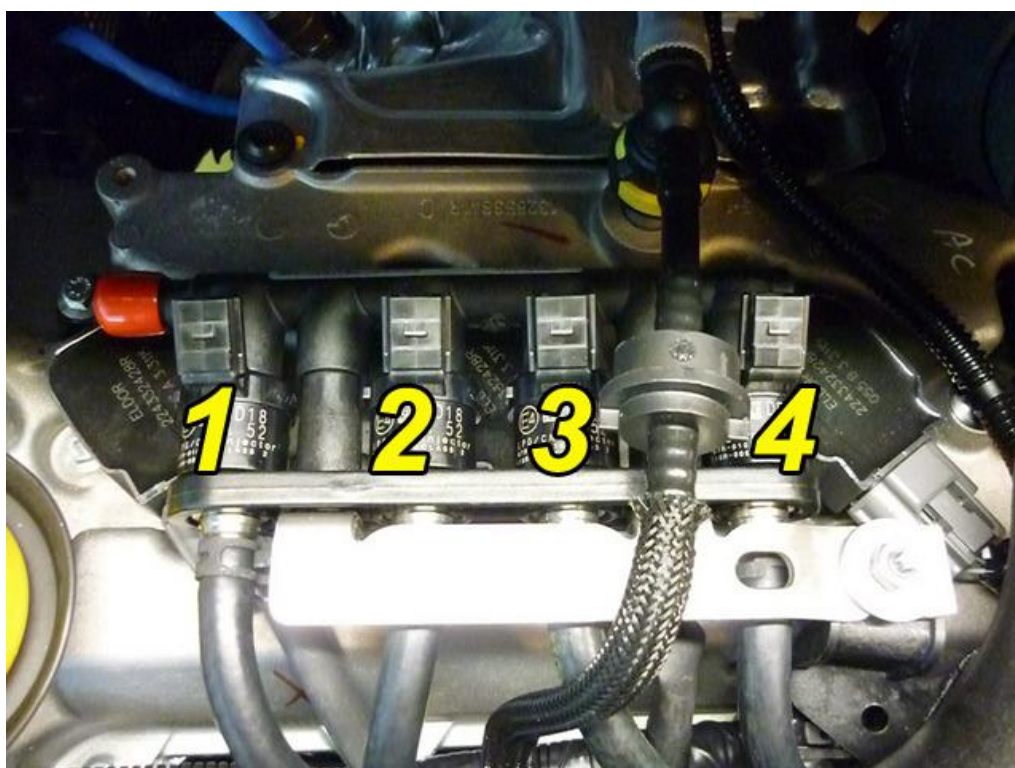
Overpressure / MAP connection



Mounting the VSI injector rail



Mounting the VSI injector rail



LPG hoses

Hose (Ø..mm)	From component	To component	Hose length (cm)
5	VSI injector 1	Inlet manifold coupling cyl.1	18
5	VSI injector 2	Inlet manifold coupling cyl.2	18
5	VSI injector 3	Inlet manifold coupling cyl.3	19
5	VSI injector 4	Inlet manifold coupling cyl.4	21

General info.

Cut the LPG hoses on length.

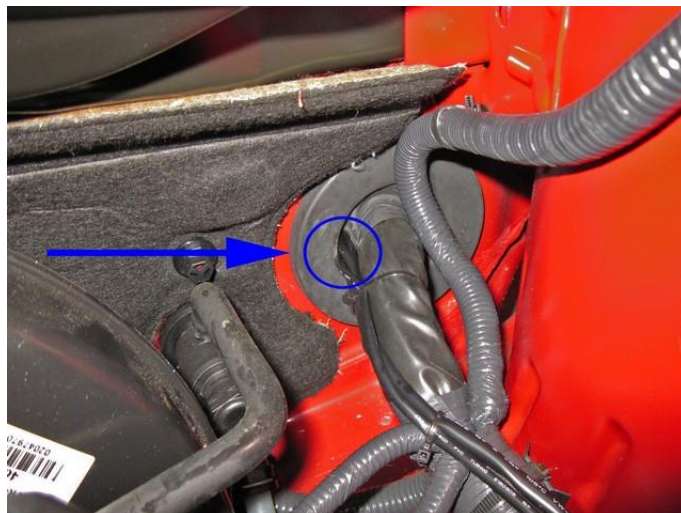
Please observe that there is no damage or fouling to the hoses.



Grommet / wiring transit

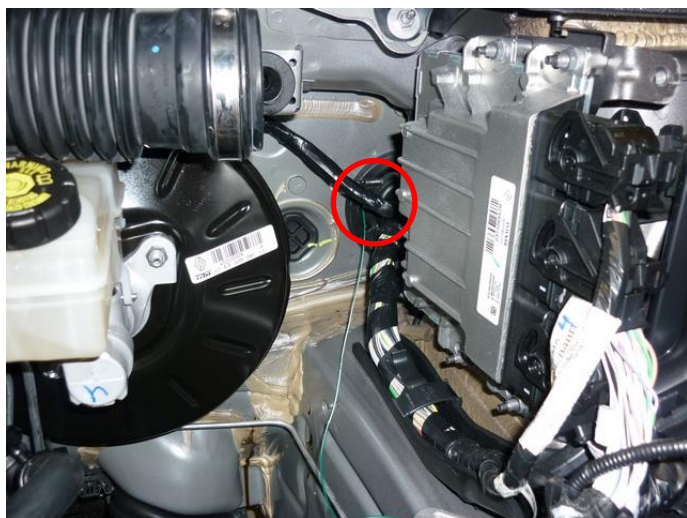
EXTRA WIRING FOR RESET MODULE

See chapters for the reset module connections



Example NISSAN

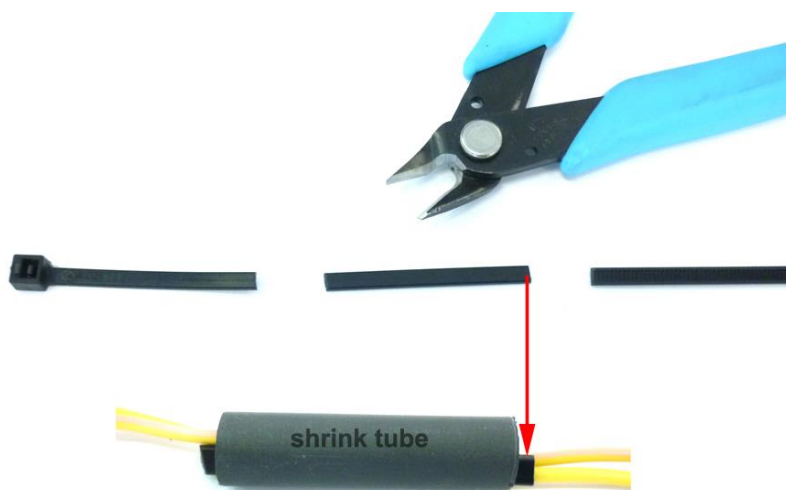
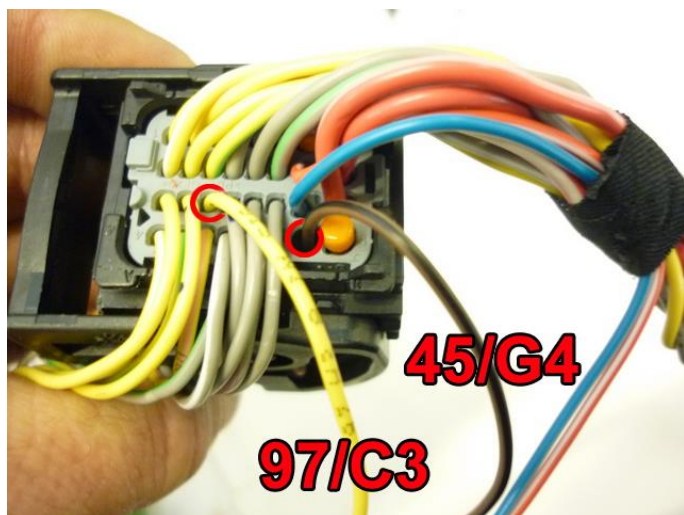
Put wiring through grommet and use a silicone sealant around wiring for a waterproof transit.



Example RENAULT

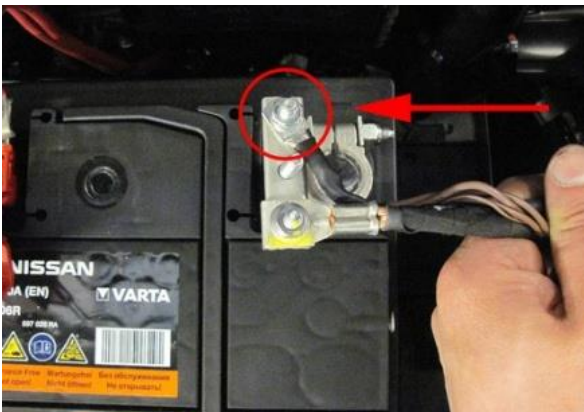
Adapt the 6-cylinder injector wiring loom (EMS3155 only)

Solder a Resistor 1.8 kOhm parallel with 45-ground and 97-H3A-signal in injector connector

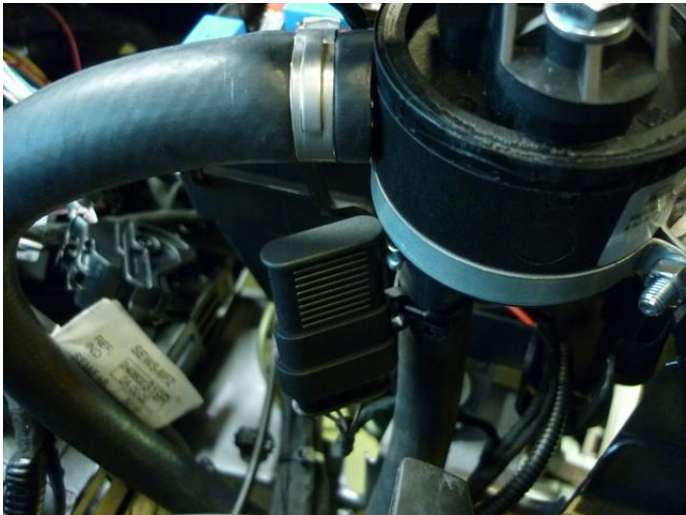
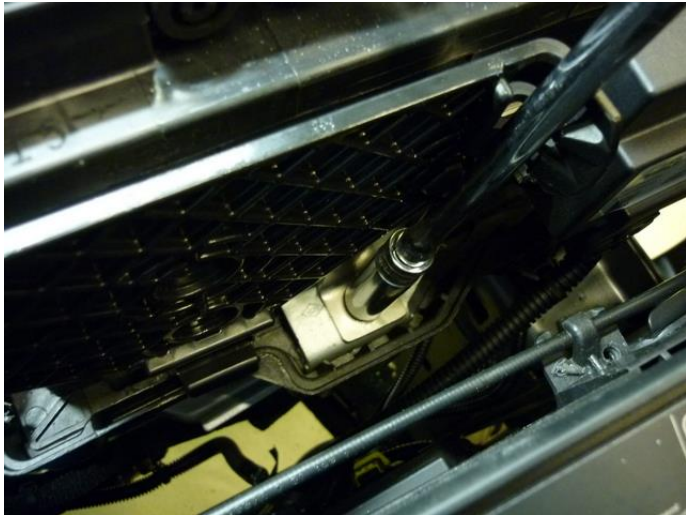


EMS3155 only

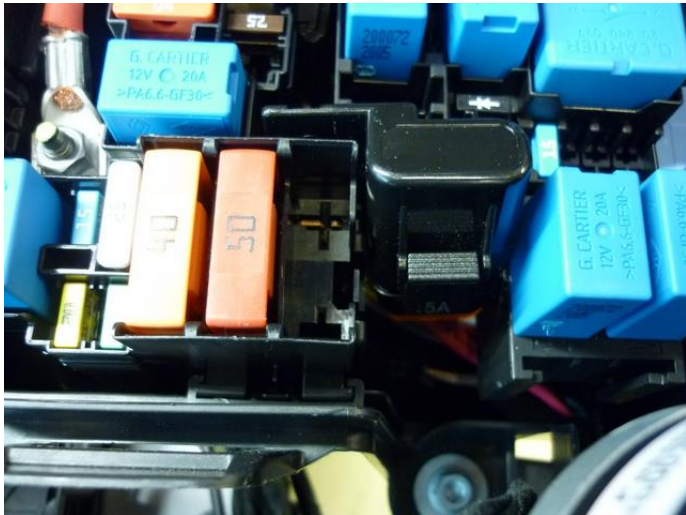
Mounting the AFC Nissan



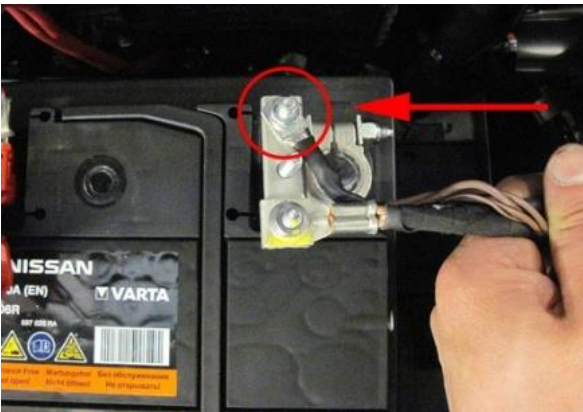
Mounting the AFC / Injection Module Renault



Diagnose connector



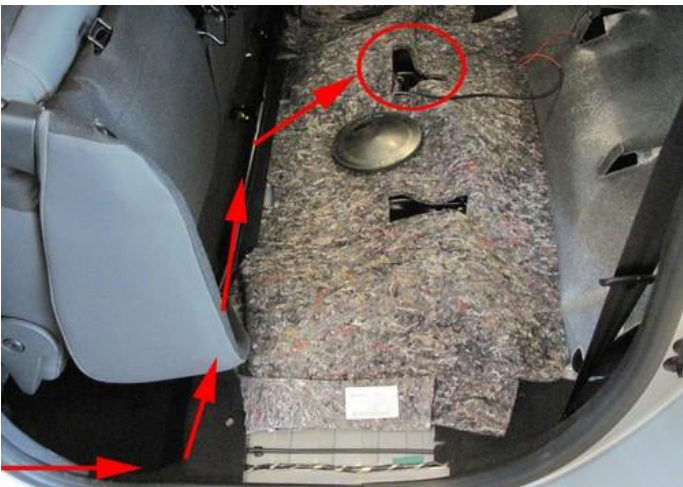
Fuse in fuse box



Connecting the fuel gauge reset module - Renault / Dacia – 1

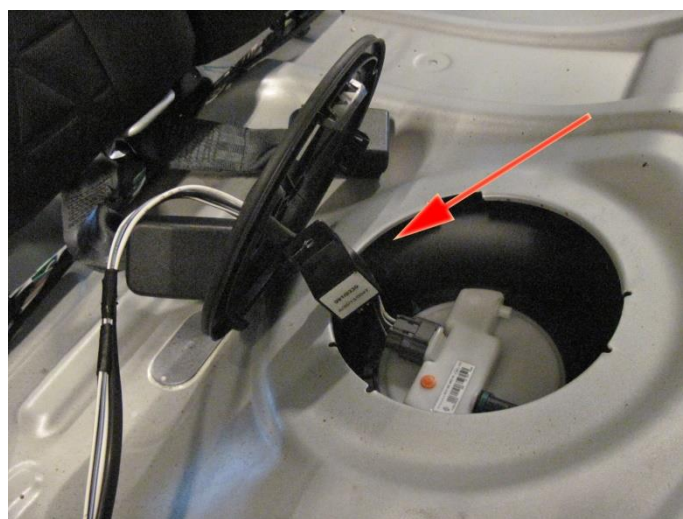
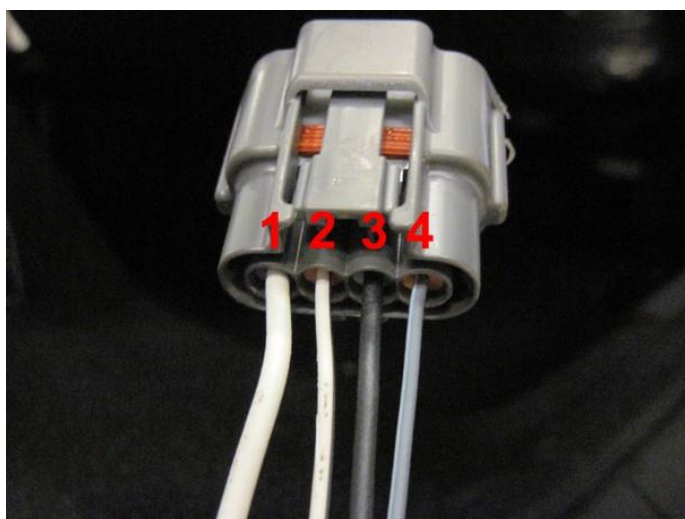
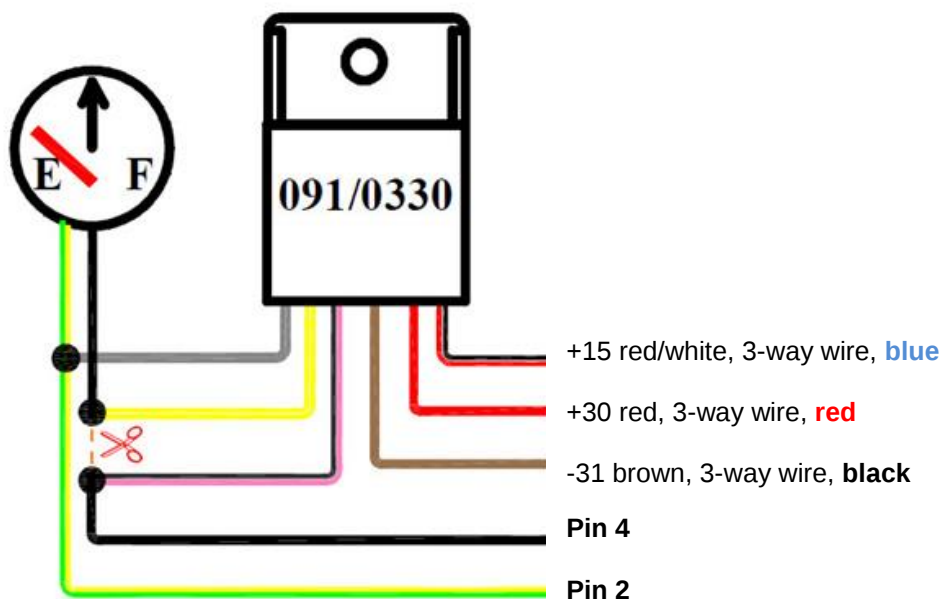
Connect the extra 3-wire cable to the main wiring loom.
Lead this wire to the inside (with switch wiring) and lead this wire until under back seat.
Connect these wires to the Reset module, see next page.

112 + Ignition	Red-grey Small VSI connector	Blue of extension cable
1 Ground battery	Brown Big VSI connector	Black of extension cable
4 +12V Battery	Red Big VSI connector	Red of extension cable



Connecting the fuel gauge reset module - Renault / Dacia – 2

Fuel Reset module



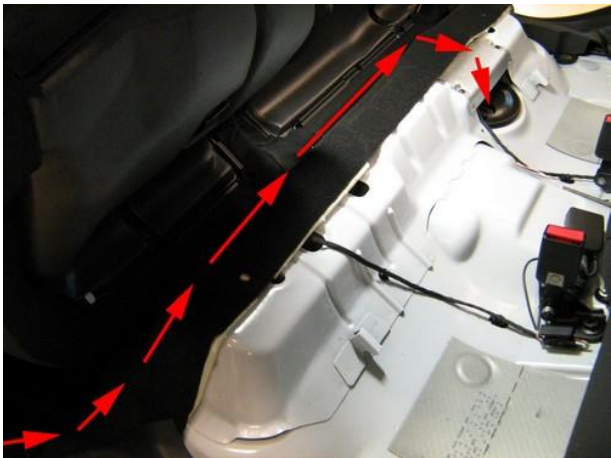
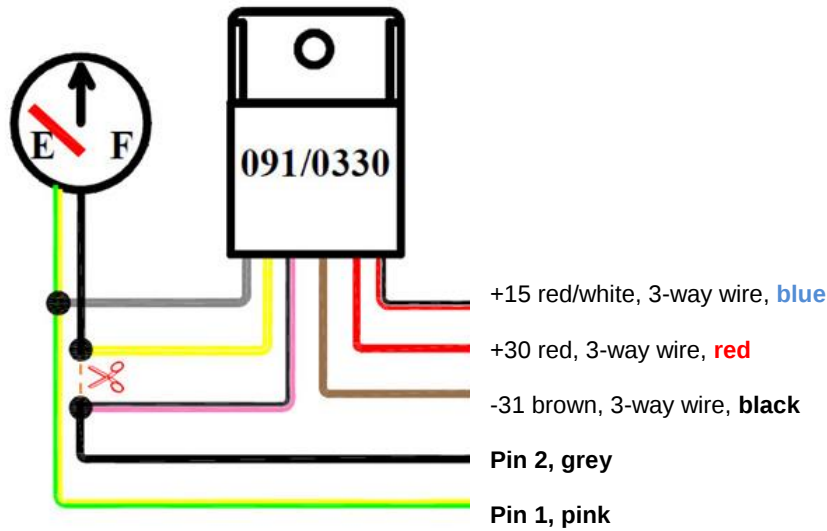
Connect the wires to wiring of the fuel tank.
The reset module will be positioned underneath the black cover on top of the fuel pump/tank gauge.

Connecting the fuel gauge reset module - Renault Megane IV

Connect the extra 3-wire cable to the main wiring loom.
Lead this wire to the inside (with switch wiring) and lead this wire until under back seat.
Connect these wires to the Reset module, see next page.

112	+ Ignition	Red-grey Small VSI connector	Blue of extension cable
1	Ground battery	Brown Big VSI connector	Black of extension cable
4	+12V Battery	Red Big VSI connector	Red of extension cable

Fuel Reset module

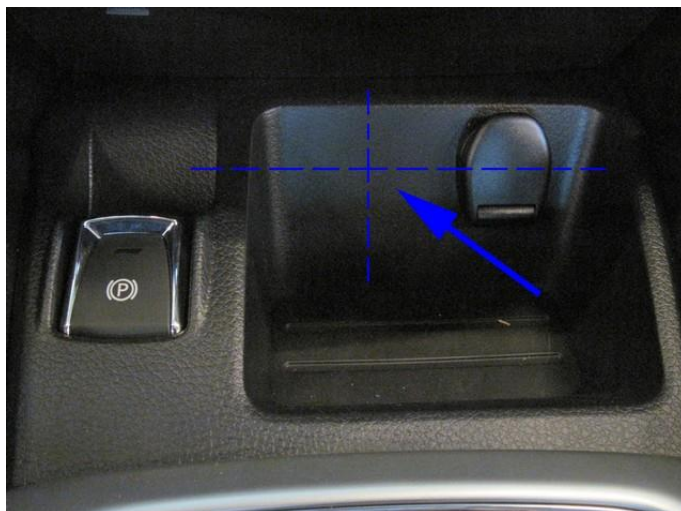


The fuel pump is located under the backseat.

Mounting the fuel selection switch - example Nissan Qashqai



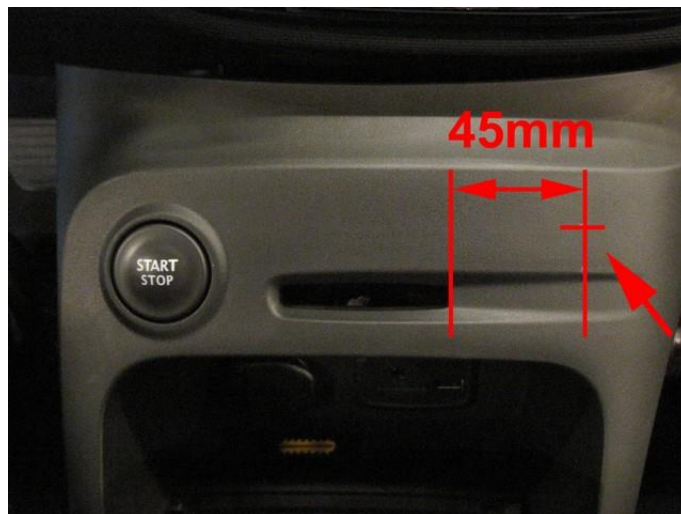
When mounting the switch, only push on its sides.
Pushing the switch hard in the centre may result in damage to the switch.



Mounting the fuel selection switch - example Renault Captur



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



Pull up panel before drilling the hole for the switch. Mark hole.



Drill a hole Ø8,3mm. Mount switch.



Electrical connections – Insulate

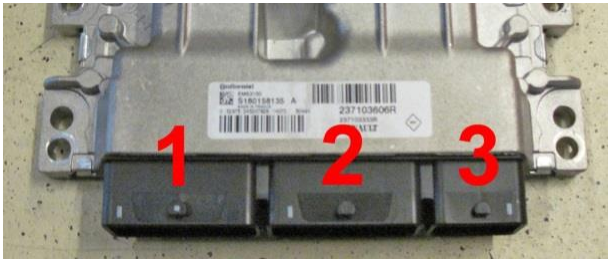
10	DAC2	Green	<i>Insulate</i>
19	AD4	Blue	<i>Insulate</i>
20	AD3	Blue–pink	<i>Insulate</i>
22	LSS1	Purple	<i>Insulate</i>
23	LSS2	Purple-green	<i>Insulate</i>
36	AD6	Blue-brown	<i>Insulate</i>
38	AD7	Blue-light Blue	<i>Insulate</i>
39	AD8	Blue-red	<i>Insulate</i>
43	+12 Valve 2	Red-white	<i>Insulate</i>
50	DAC4	Green-blue	<i>Insulate</i>
56	DI2	Yellow–green	<i>Insulate</i>
60	DIG IN3	Yellow-pink	<i>Insulate</i>
61	DIG IN4	Yellow-blue	<i>Insulate</i>
74	DAC3	Green-pink	<i>Insulate</i>
<i>Insulate additional loose wires</i>			

Optional:

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



Petrol ECU Continental EMS pinning



If you have to count from A to Q on the connectors, remember: there is no letter “ i ” on the connector.

A1	B1	C1	D1	E1	F1	G1	H1	J1	K1	L1	M1	N1	O1	P1	Q1
			3AJD		3LP					3LD		3BY		3L	3CR
			X		X					X		X		X	X
A2	B2	C2	D2	E2	F2	G2	H2	J2	K2	L2	M2	N2	O2	P2	Q2
	3AJD	3LN								3AJR			3BU	3LC	3CU
		X								X			X	X	X
A3	B3	C3	D3	E3	F3	G3	H3	J3	K3	L3	M3	N3	O3	P3	Q3
			3BX	3DK		3CH				3EN	3CF	3CG	3CE	3LB	3CT
			X	X		X				X	X	X	X	X	X
A4	B4	C4	D4	E4	F4	G4	H4	J4	K4	L4	M4	N4	O4	P4	Q4
	3TA	3UCB						3AJB	3AJC					3LA	3CS
	X	X						X	X					X	X

Connector 1 (grey)

A1	B1	C1	D1	E1	F1	G1	H1	J1	K1	L1	M1	N1	O1	P1	Q1
3S					3MD		3GA	3LX	3ALW	3ALV		3MN		3FB1	3FB2
	RG				X		X	X	X	X		X		X	X
A2	B2	C2	D2	E2	F2	G2	H2	J2	K2	L2	M2	N2	O2	P2	Q2
	3AA		3SV	3SX			3SY	3LJ	3MD	3BI		3DD	3BI	3SZ	
			X	X			X	X	X	X		X	X	X	X
A3	B3	C3	D3	E3	F3	G3	H3	J3	K3	L3	M3	N3	O3	P3	Q3
3BG	3AC			3SW	3LY			3LZ				3ALG		3GF	3ZP
X	X			X	X			X				X		X	X
A4	B4	C4	D4	E4	F4	G4	H4	J4	K4	L4	M4	N4	O4	P4	Q4
				3DL	3L	3MP		3JK	3AT	3BB	3VL	3K		3GG	3HI
				X	X	X		X	X	X	X	X		X	X

Connector 2 (big black)

A	B	C	D	E	F	G	H	
			AP15		3WT	3FB	NH	1
			JA		X	X	NO	
3FX			86G		3LU	3LR	3LS	2
X			X		X	X	X	
3SN		3PD	86M		3LW	NH	3LT	3
X		X	X		X	NO	X	
3SM	HK	86D		5A	3LV	NH	NH	4
X	X	X		X	X	NO	NO	

Connector 3 (small black)

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. Wire location : battery
4 +12V Battery	Red	Do not place the fuse in the holder before having completed the installation of the LPG system; use a ring terminal. Wire location : 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.



Electrical connections **GREY** connector EMS3155

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	Injector side. ECU side. Colour : red Location : grey connector 1, pin Q1
H1 (INJ LO B) H1 (ECU LO B) Petrol injector cyl. 4	Grey Grey-white D1 / D2	Injector side. ECU side. Colour : black Location : grey connector 1, pin Q4
H1 (ECU HIGH 1) + Petrol injector	Red-white H1	Colour : green Location : grey connector 1, pin P1

H2 (INJ LO A) H2 (ECU LO A) Petrol injector cyl. 2	Yellow Yellow-green A1 / C2	Injector side. ECU side. Colour : purple Location : grey connector 1, pin Q3
H2 (INJ LO B) H2 (ECU LO B) Petrol injector cyl. 3	Grey Grey-green E1 / F2	Injector side. ECU side. Colour : blue Location : grey connector 1, pin Q2
H2 (ECU HIGH 2) + Petrol injector	Red-green H2	Colour : green Location : grey connector 1, pin P2



Electrical connections **GREY** connector **EMS3155**

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

3-pole connector 27 +5V Sensor 37 C ground 18 AD1	Red-blue Brown-black Blue-white	Cut off the 3-pole connector to the Prins MAP sensor. <i>Not used, insulate</i> <i>Not used, insulate</i> Colour : white or orange Wire location: grey connector 1, pin B2
8 RPM engine speed	Purple-white	<i>For measuring the engine speed.</i> Colour : blue Wire location : grey connector 1, pin K3



Electrical connections **BIG BLACK** connector EMS3155

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

		<i>HPPS wiring: 3-wires twisted together</i>
63	Ground shift	Blue–orange <i>High pressure petrol sensor signal ground.</i> Colour: brown Wire location : big black connector 2, pin H2 , brown
17 25	AD2 DAC1	Blue–green Green-white <i>High pressure petrol sensor signal interruption.</i> Sensor side. ECU side. Colour: green Wire location : big black connector 2, pin H3
40	Wake-up	Grey-red <i>High pressure petrol sensor supply.</i> Colour: tan Wire location : big black connector 2, pin D1

From Injection module

Hpp pump wiring interruption H3 (INJ LO A) H3 (ECU LO A)	Yellow Yellow-pink C1 / B1	<i>Hpp pump actuator wiring interruption</i> Actuator side. ECU side. Colour : black Location : big black connector 2, pin Q4
H3 (ECU HIGH 3)	Red-pink H3	<i>Hpp pump actuator + wiring</i> Colour : white Location : big black connector 2, pin Q3
	Insulate twisted pair: H3 (INJ LO B) / H3 (ECU LO B) Grey / Grey-pink	Insulate

Electrical connections **SMALL BLACK** connector EMS3155

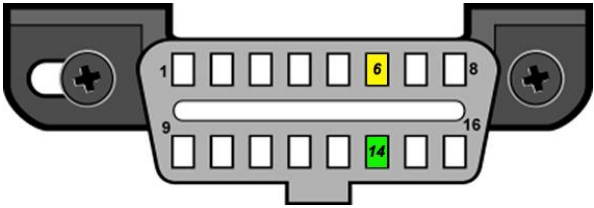
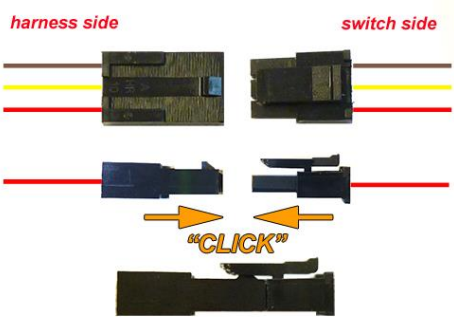
Check and measure the wiring in case of changes in the cars wiring colours.

112 + Ignition	Red-grey	<i>Make a connection to ignition + / contact +.</i> Do not place the fuse in the holder before having completed the installation of the LPG system. Wire colour : grey or yellow Wire location : small black connector 3, pin D1
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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 to switch. Connect the 3-pole connector to the Prins fuel selection switch
			

Electrical connections

Connectors in wiring loom

2-pole blue connector 15 T-ECT 34 Ground T-ECT	Grey Brown-black	<i>For measuring the engine coolant temperature (Tect).</i> 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	<i>For measuring gas pressure and temperature.</i> 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.

