Installation manual
PART 2/2

MANUFACTURER	Renault / Dacia
TYPE	(Based on Renault Scenic)
ENGINE DISPLACEMENT	1300cc
NUMBER OF VALVES	16v
ENGINE CODE / NUMBER - OUTPUT	H5H - TCe100/115/130/140/150/160 75/85/96/103/110/117/120kW
FIRING ORDER	1-3-4-2
VEHICLE CATEGORIES	M
TRANSMISSION	MT
VERSION	AFC-2.1 DI-LPG
TYPE VSI INJECTOR	KN9 – 63cc
TYPE INJECTION MODULE	Gen2 Type 2
PETROL ECU MANUFACTURER / CODE	Continental EMS3160
MODEL YEAR:	2018
SYSTEM APPROVAL NUMBER (R115)	N.A.
LOCATION R115 SYSTEM STICKER	right side, centre door post
ENGINE SET NUMBER	359/121003/A
MANUAL NUMBER	076/1908100-5
DATE	2020-04-16

Revision: 5

TABLE OF CONTENTS

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

Manual updates / revision

Rev. nr	Rev. Date	Subject update
3	2019-09-27	Start with revision management & added engine codes
4	2020-03-20	Added fuel reset module option for Dacia Lodgy 2020
5	2020-04-16	Added rail bracket adaption on some vehicles + reset module Renault Captur 2020

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 and 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 AFC fails, it will automatically switch over to petrol.
  Never disconnect the AFC 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 100mm 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 the exterior filler into the 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 no. 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 Ø4 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)

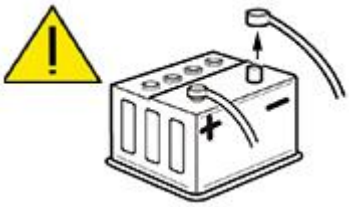
Tightening moments

		Nm	Spanner mm
M5 x 0,8		6.5	8
M6 x 1,0		11.3	10
M8 x 1,25		27.3	13
M10 x 1		52	15-16-17
M10 x 1,5		54	15-16-17

LPG manifold nipple		1	3.5 Allen
Reducer nut - bracket		10	13
Lock-off nut		15	16
Fuel line nut – lock-off		20	13
Fuel line tank – lock-off		20	16
Filling hose connections		50	22

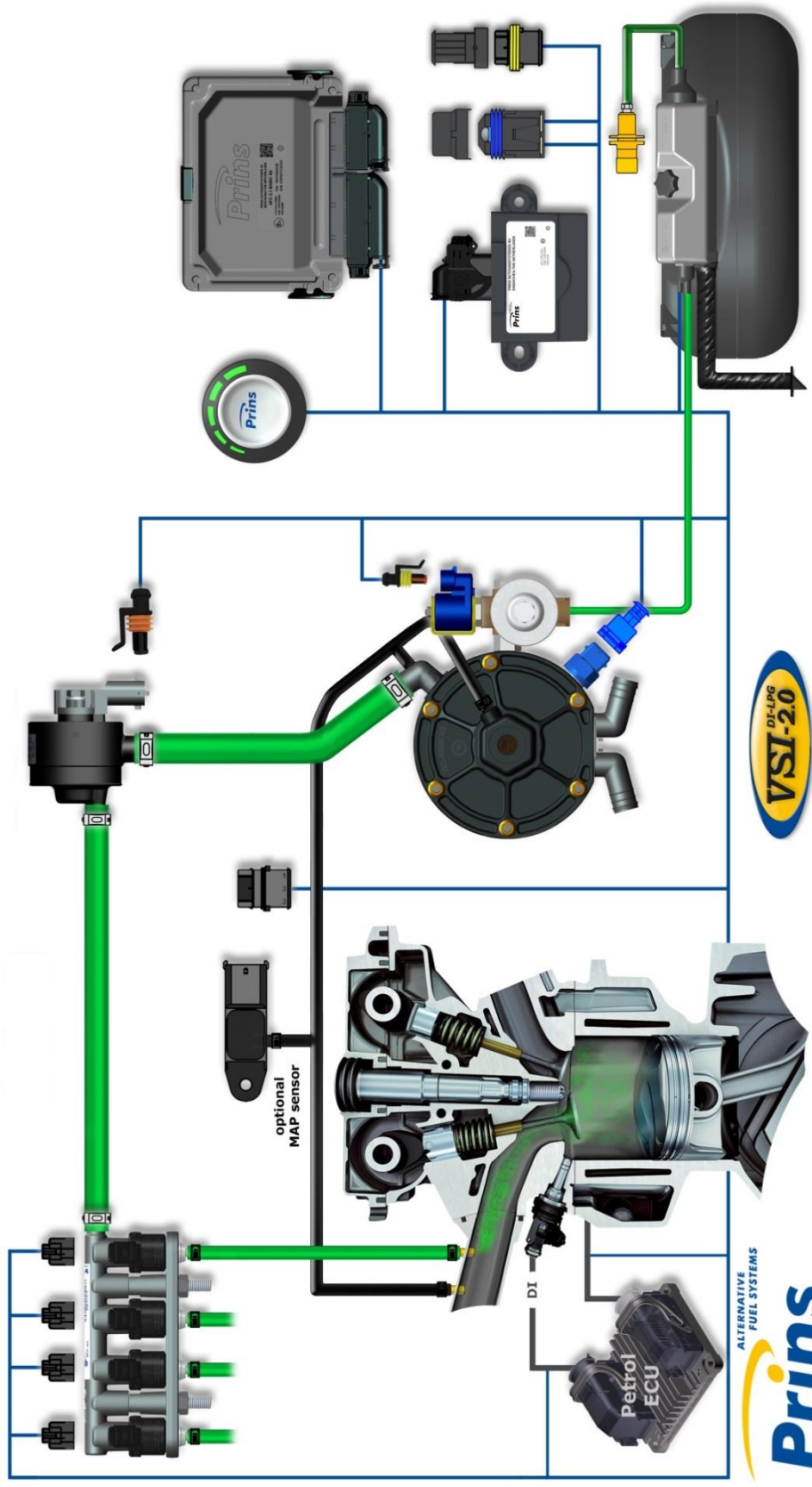
EXPLANATION OF SYMBOLS:

= IMPORTANT, CAUTION



= WEAR SAFETY GOGGLES

Basic System Overview



VSI approval numbers

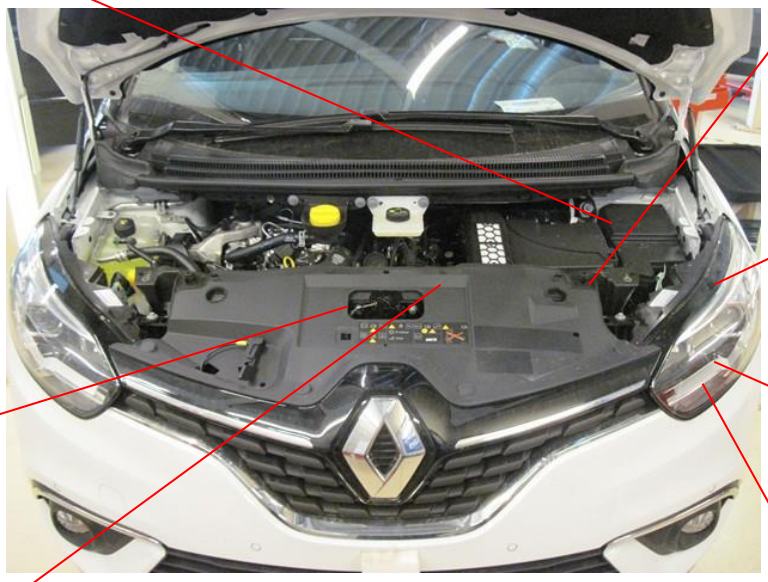
	
Reducer VSI LPG Prins : E4-67R-010054 Lock-off valve OMB : E8-67R-014327 Lock-off valve Valtek : E4-67R-010041	Injector rail Prins : LPG E4-67R-010093 CNG E4-110R-000021
	
Filter unit T1 / T2 Prins : LPG E4-67R-010096 CNG E4-110R-000028	Injector Keihin KN9 : LPG E4-67R-010310 CNG E4-110R-000295
	
Prins 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 Thunderflex LPG E24-67R-010018 CNG E24-110R-000040

VSI component location overview

(example Renault Scenic 2018)

Fuse

Petrol ECU



Injection module

Rail(s)

AFC

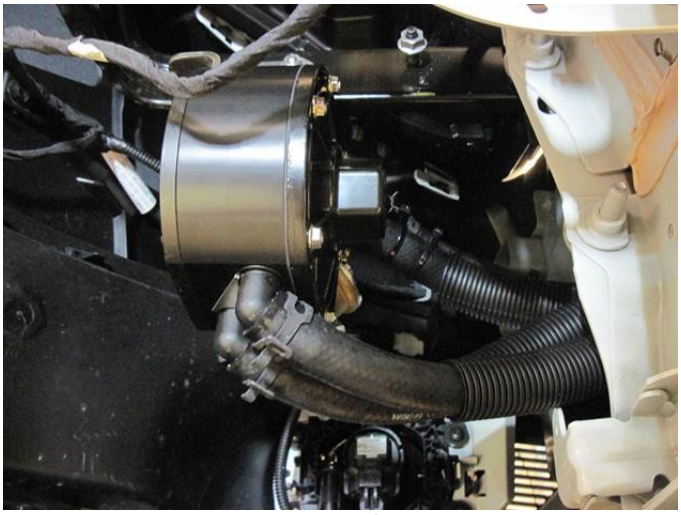
Filter

Reducer

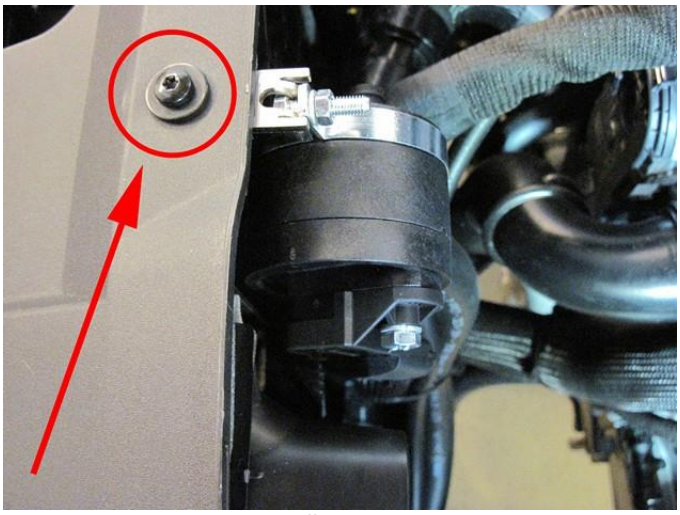
If applicable, R115 approval sticker :
Right side centre door post

Examples

(based on Renault Scenic 2018)

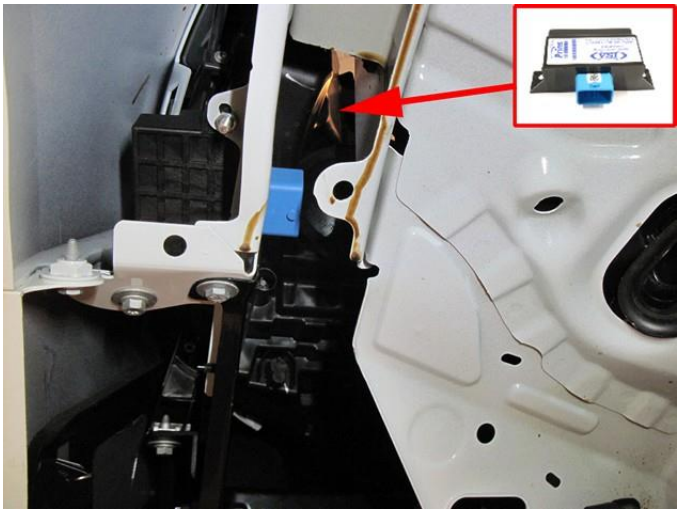


Reducer



Filter

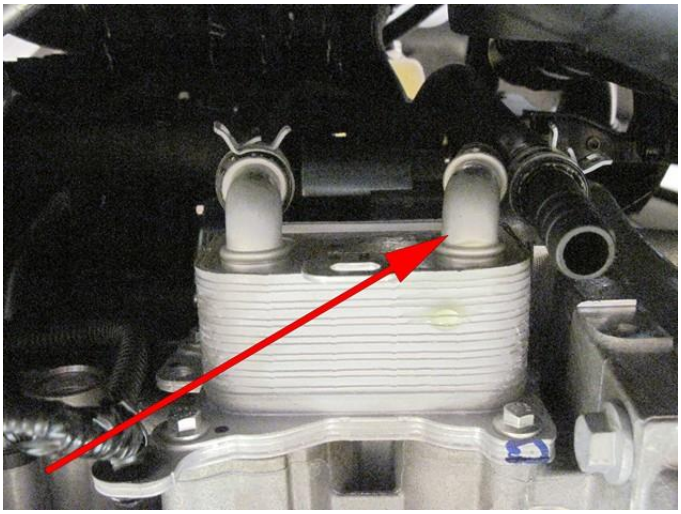
AFC



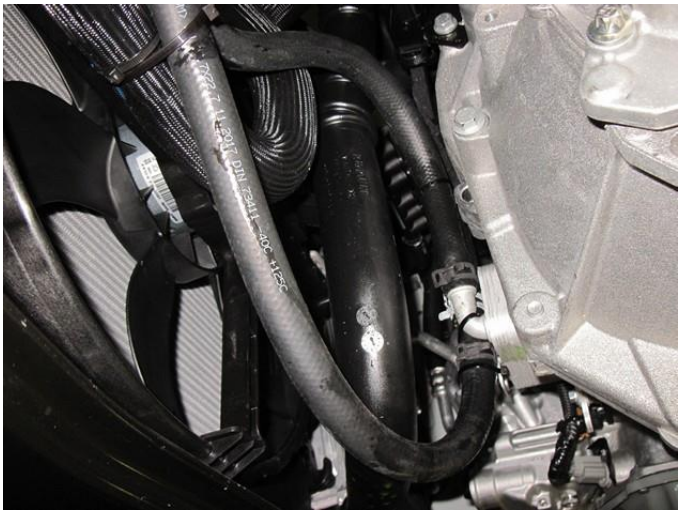
Injection Module

Water connections

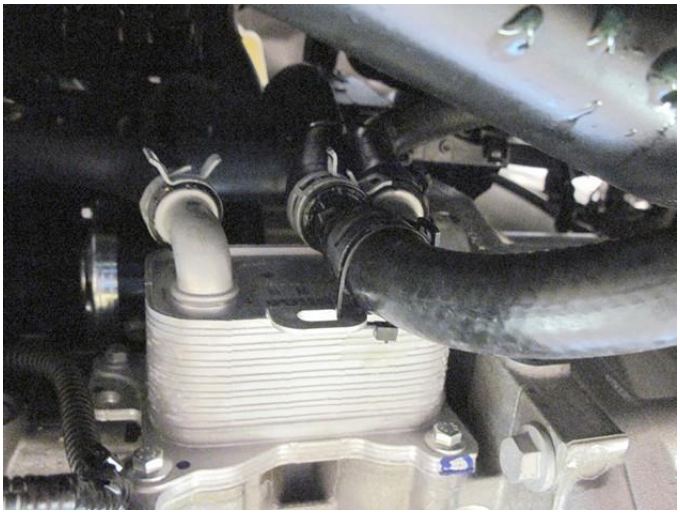
(example Renault Scenic 2018)



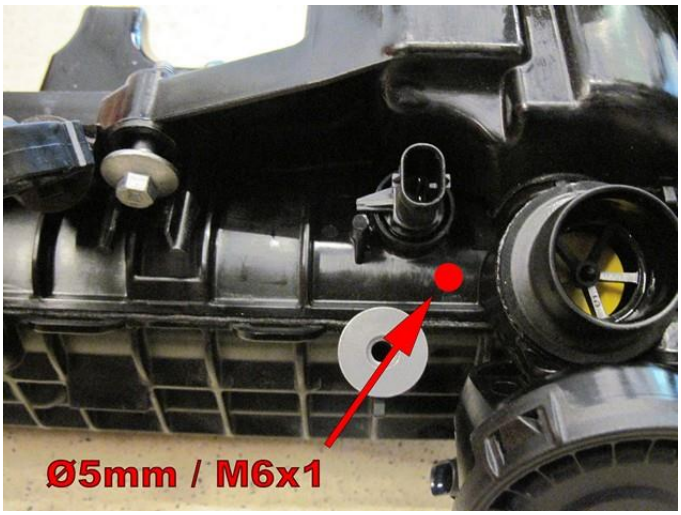
Connect the water hoses to the cooler on the engine. Mount a coupler to the original hose.

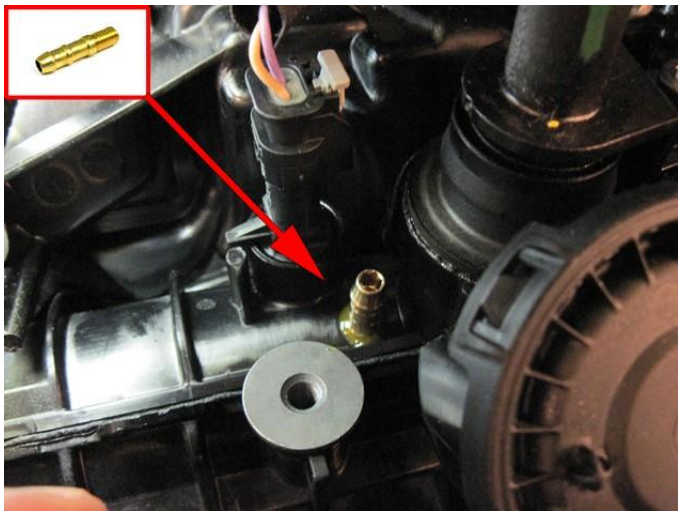


Mount the water hoses from the reducer to the cooler, for routing, see pictures.



Overpressure / MAP connection

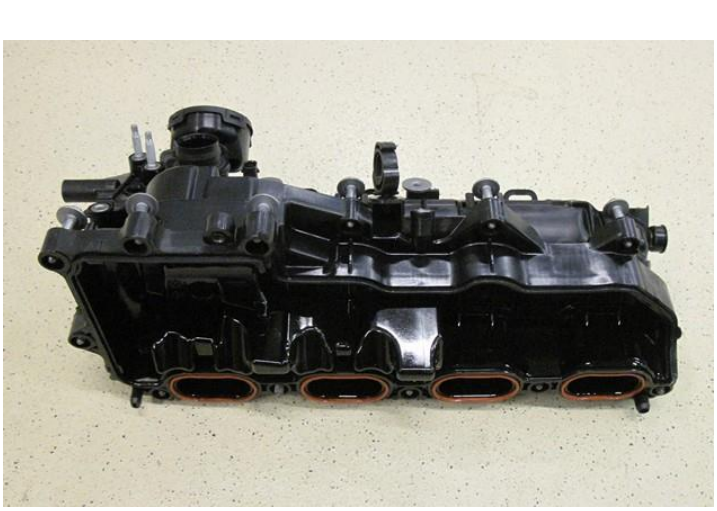


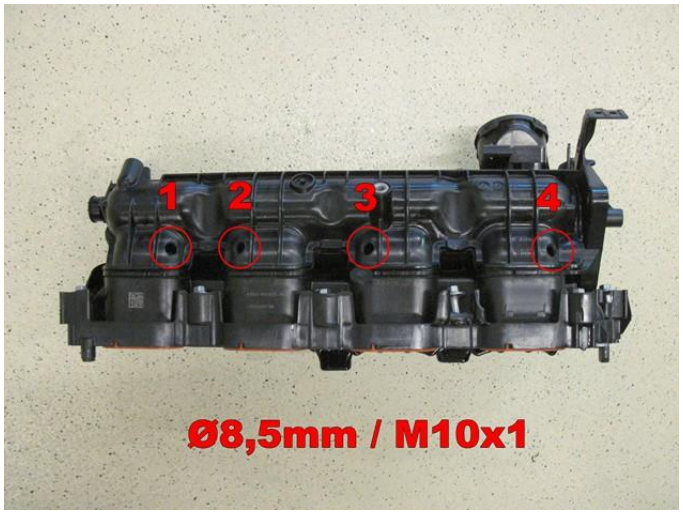


Remove manifold, drill hole Ø5mm and cut thread M6x1.

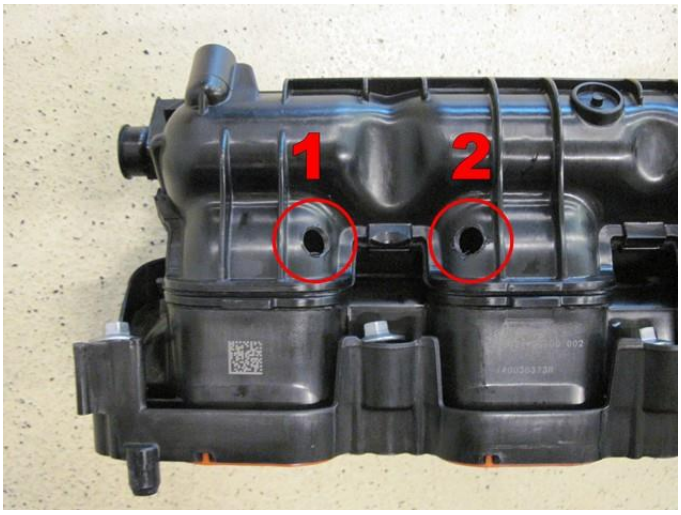
Mounting the inlet manifold couplings 1

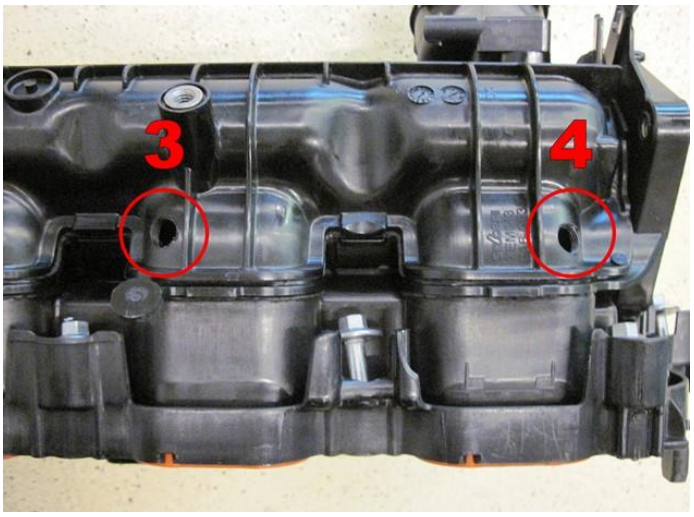
Remove the inlet manifold.
Drill **4** holes of **Ø8,5mm** in the inlet manifold. Cut **M10x1** thread in these holes.
Place the VSI couplings with a locking compound in the inlet manifold.
Watch out that the lock compound doesn't come inside the VSI couplings.
Place the inlet manifold back on the engine.



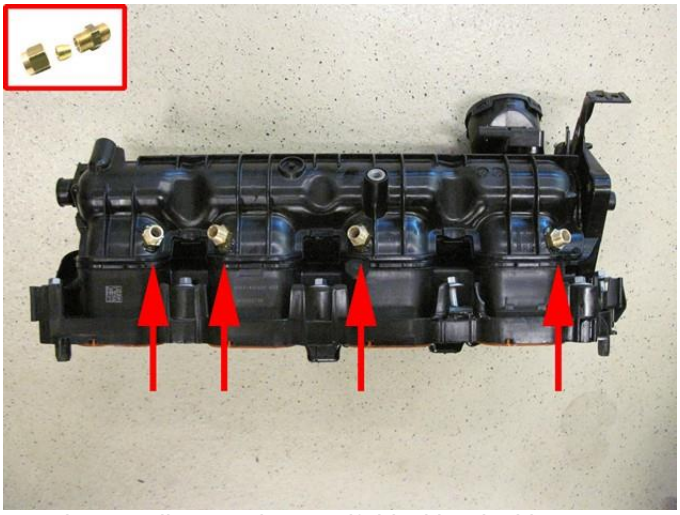


Remove the manifold and drill holes Ø8,5mm and cut thread M10x1.

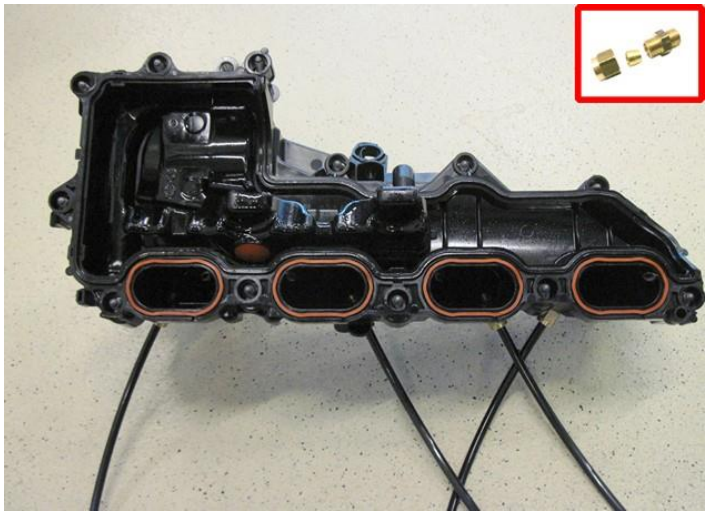




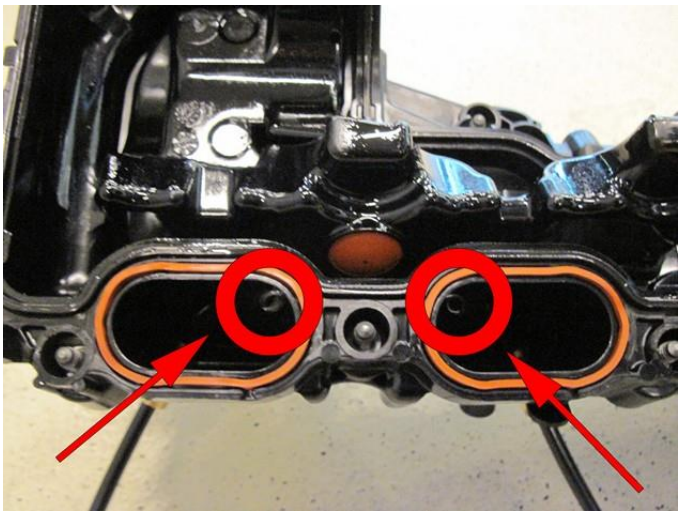
Mounting the inlet manifold couplings 2

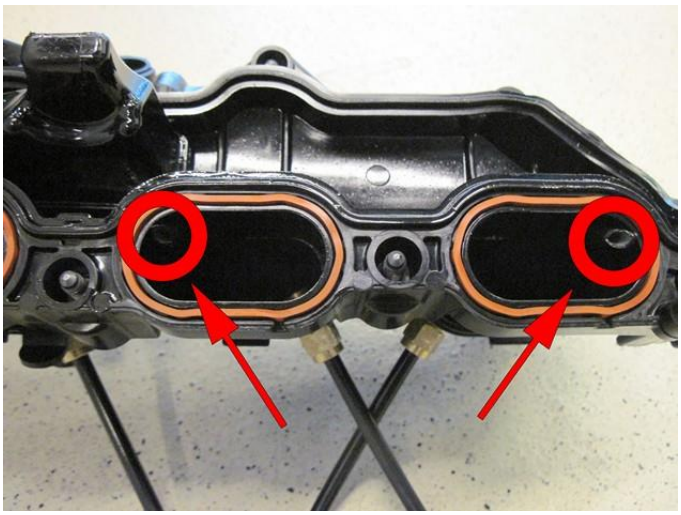


Mount the couplings to the manifold with a locking compound.



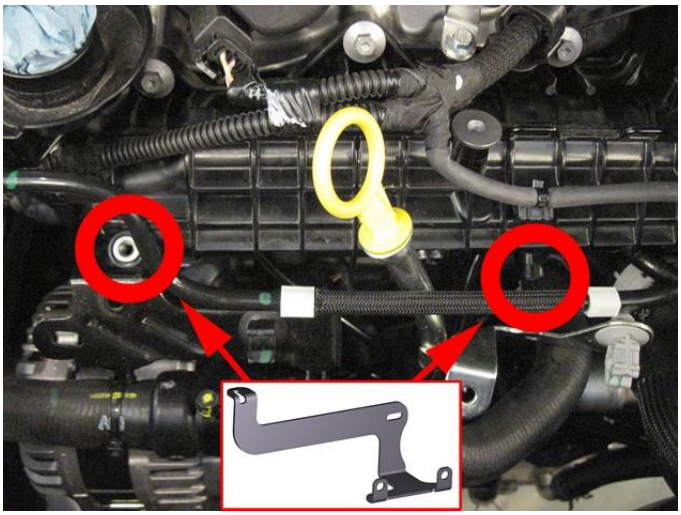
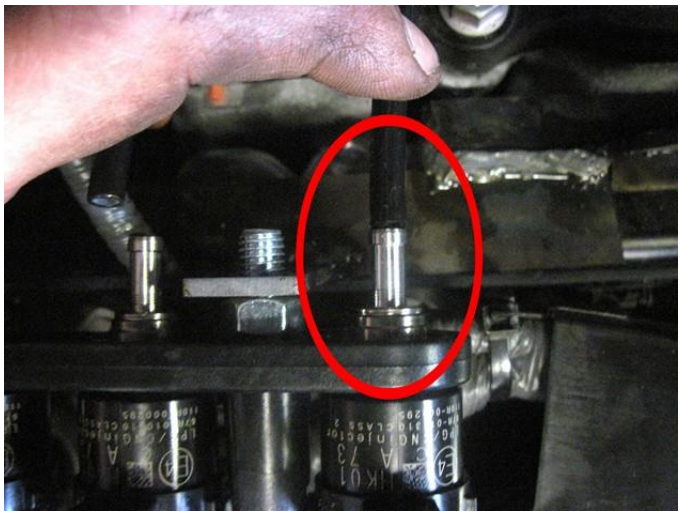
Mount the hoses to the couplings.



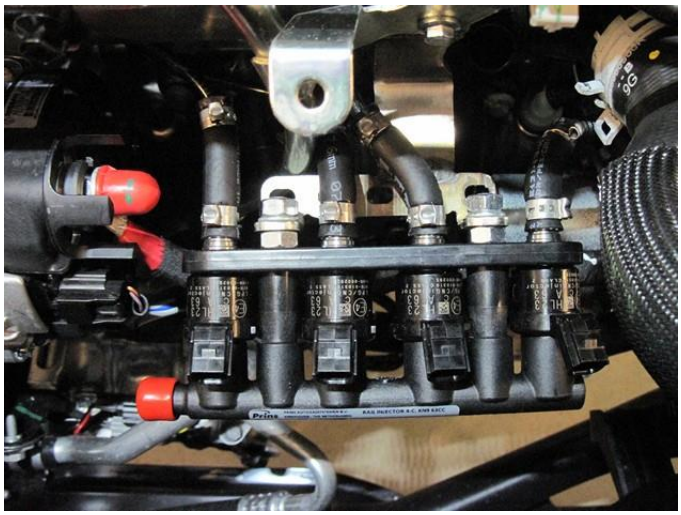


Mount the hoses to the couplings, cut the hoses on length as shown (equal to the manifold).
Mount the manifold back to the engine.

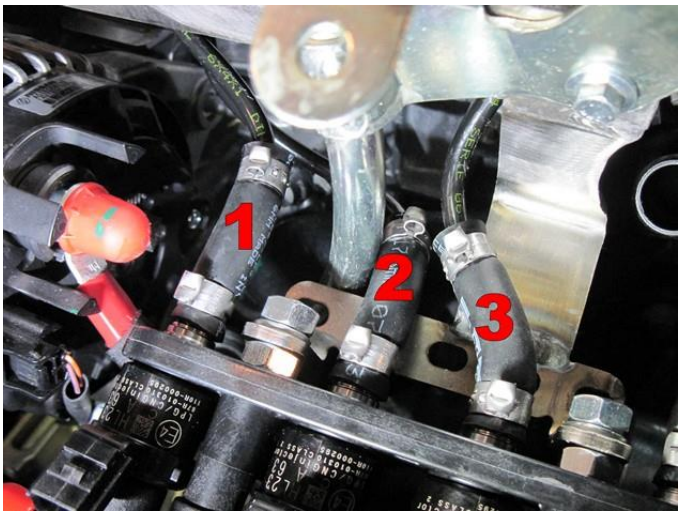
Mounting the VSI injector rail (option 1 - standard)

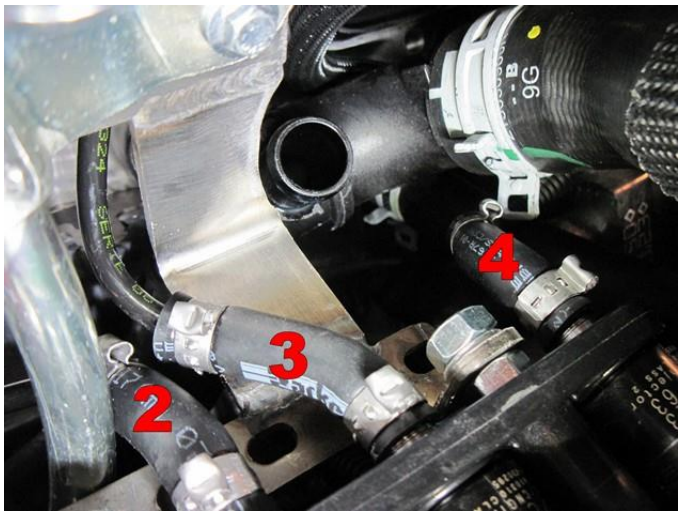



Mount the rail to the manifold. Cut the nylon hoses on length to the injector rail (see picture).

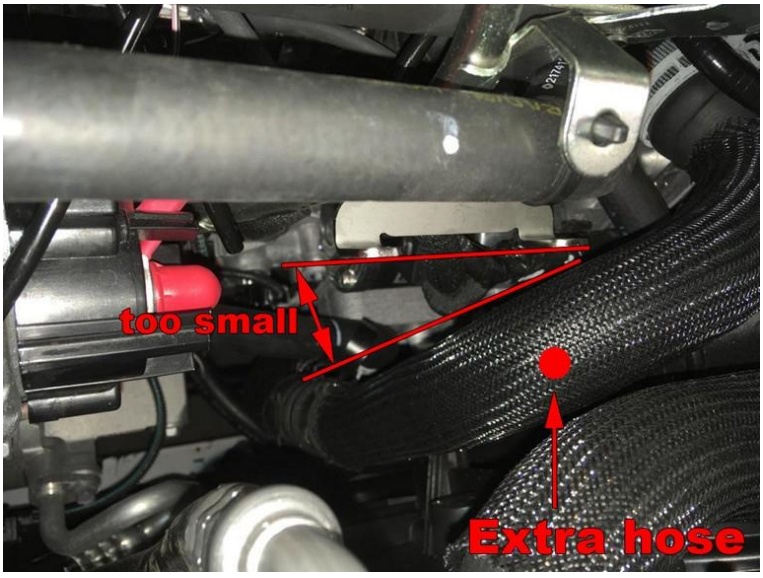
Mount the nylon injector hoses to the rail with the 6mm LPG hoses.



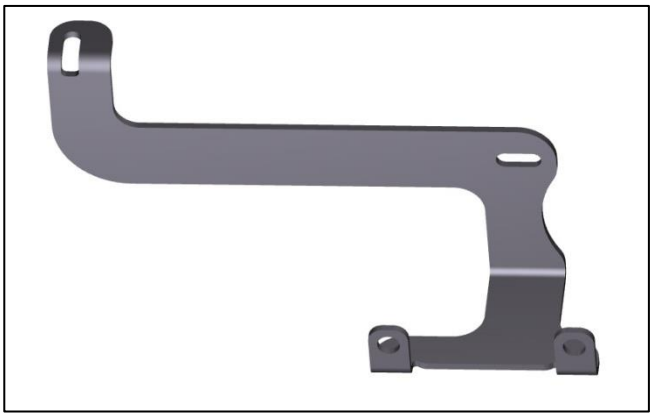


Routing hoses.

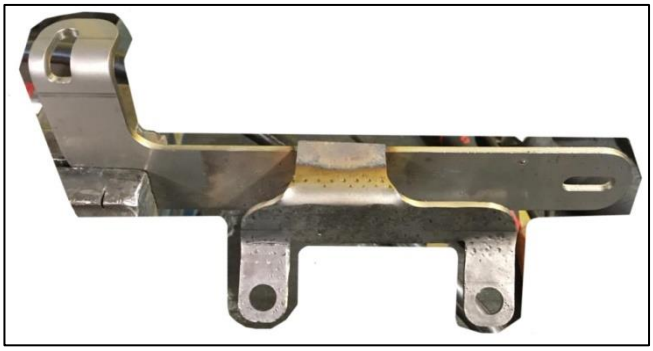
Mounting the VSI injector rail (option 2 - with extra hose)



Because of an extra hose in some vehicles you need to adapt the injector rail bracket as shown in the picture.



Original →

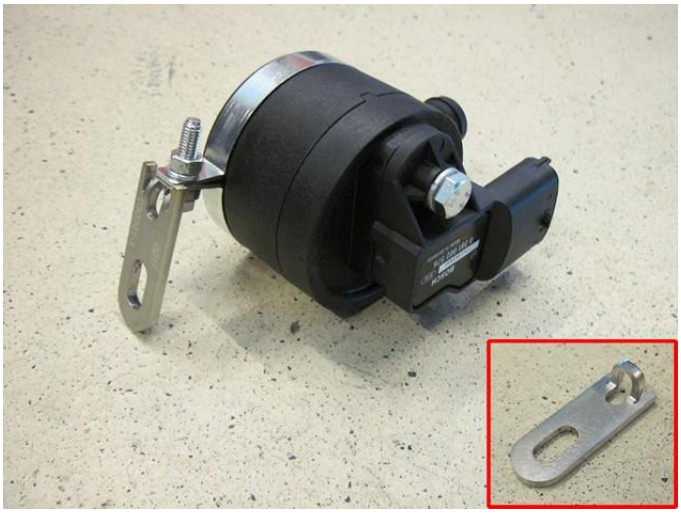


Adapted

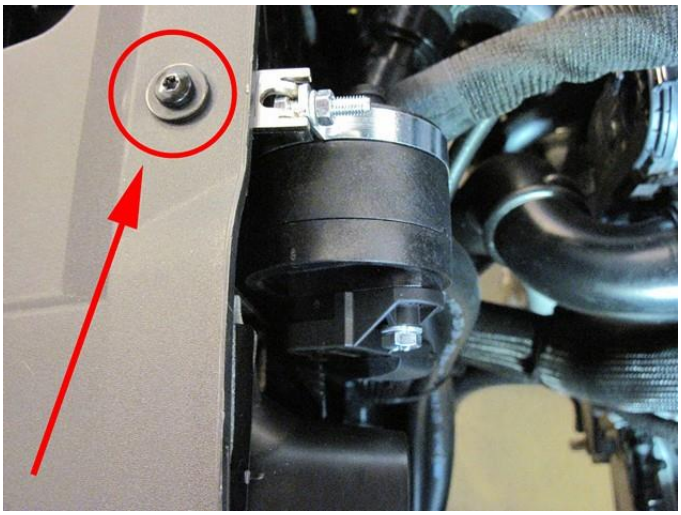
Rail mounted.

Mounting the Prins filter unit

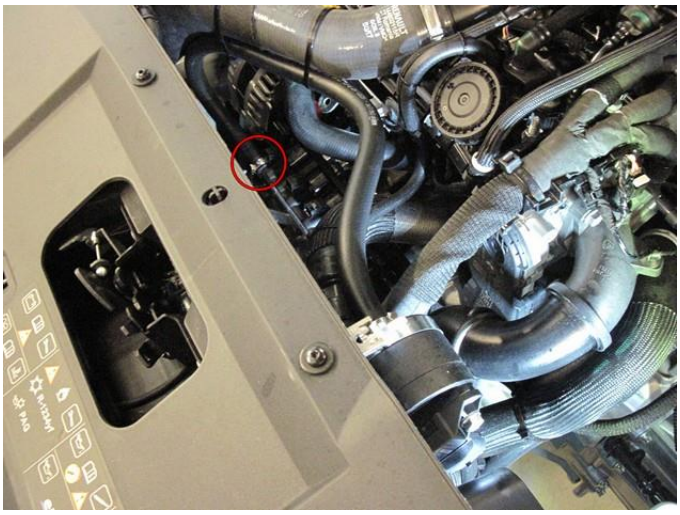
(example Renault Scenic 2018)



Mount the filter to the bracket.



Mount the bracket to the vehicle and connect the 11 & 16mm LPG hose to the filter & injector rail.



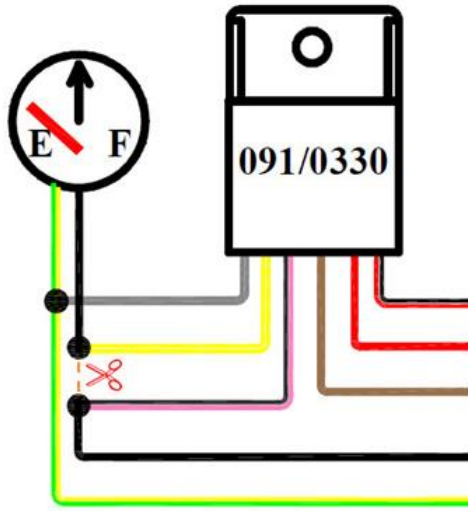
Please observe that there is no damage or fouling to the hoses

Connecting the fuel gauge reset module – Dacia Lodgy 2020

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



+15 red/white, 3-way wire, **blue**

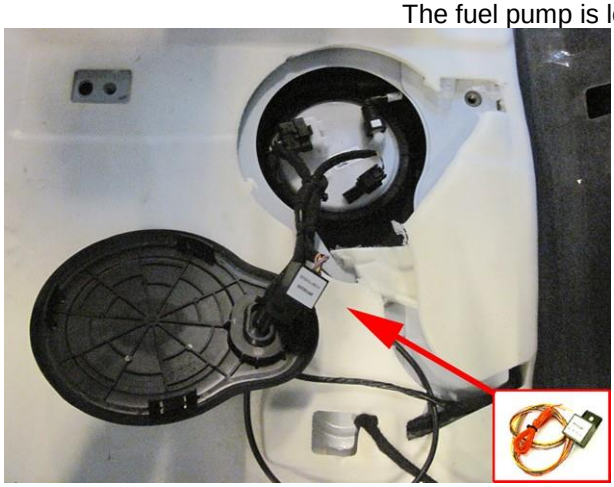
+30 red, 3-way wire, **red**

-31 brown, 3-way wire, **black**

Pin 2, beige

Pin 1, green

The fuel pump is located under the back seat.



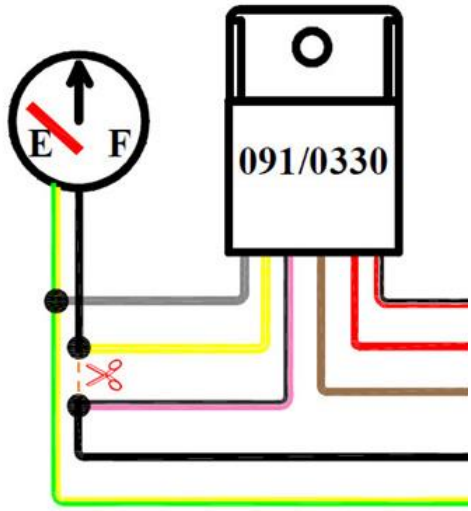
Mount the fuel reset to the wiring with a pull-strap.

Connecting the fuel gauge reset module – Renault Captur 2020

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



+15 red/white, 3-way wire, **blue**

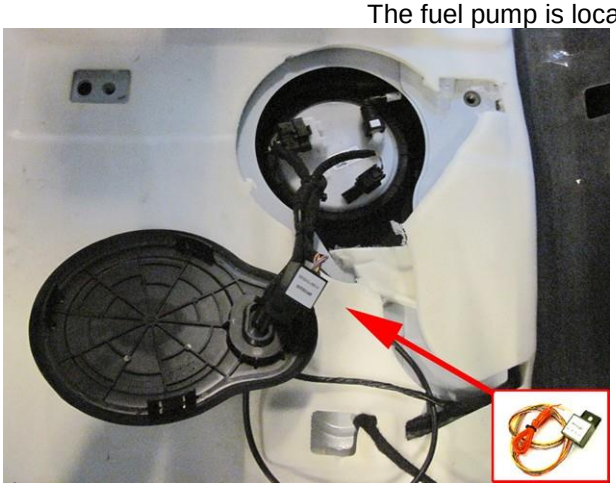
+30 red, 3-way wire, **red**

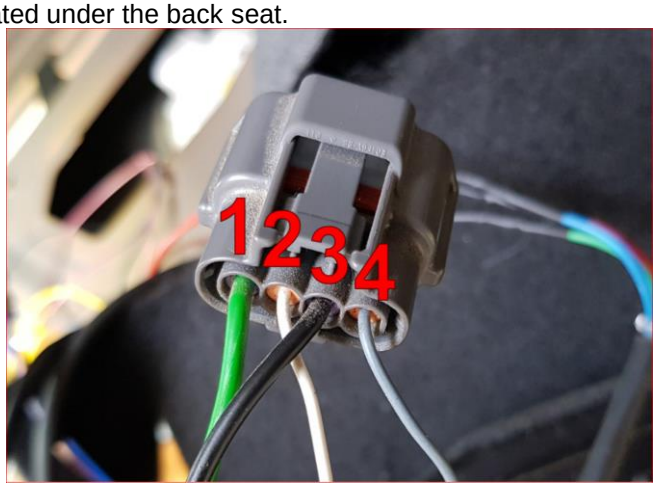
-31 brown, 3-way wire, **black**

Pin 4, purple

Pin 2, white

The fuel pump is located under the back seat.





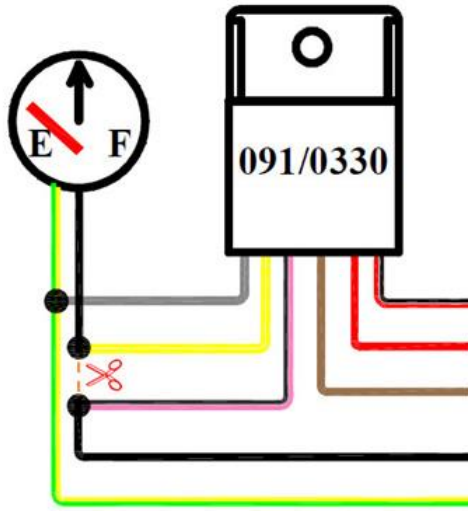
Mount the fuel reset to the wiring with a pull-strap.

Connecting the fuel gauge reset module – Renault Scenic 2018

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



+15 red/white, 3-way wire, **blue**

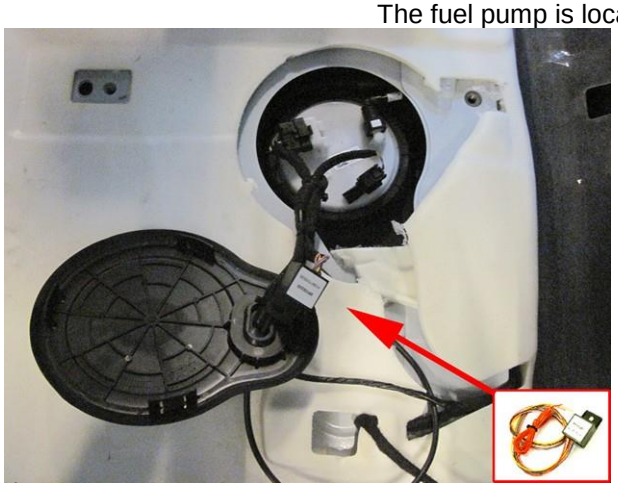
+30 red, 3-way wire, **red**

-31 brown, 3-way wire, **black**

Pin 2, grey

Pin 1, pink

The fuel pump is located under the back seat.

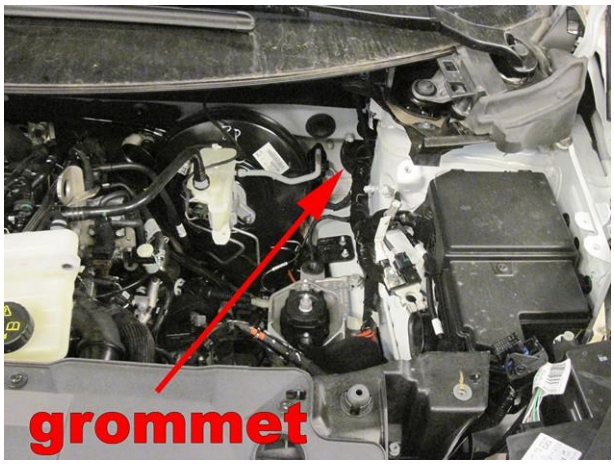


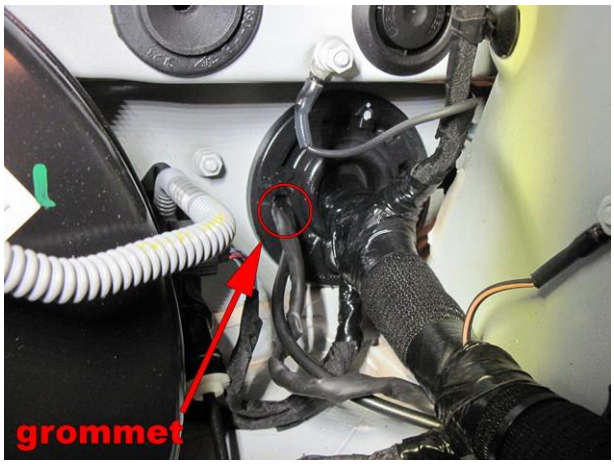
Mount the fuel reset to the wiring with a pull-strap.

Grommet / Mounting the fuel selection switch / CAN

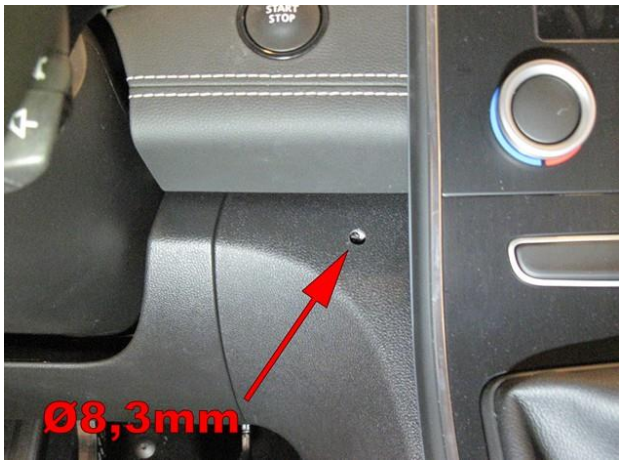
(Based on Renault Scenic 2018)

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





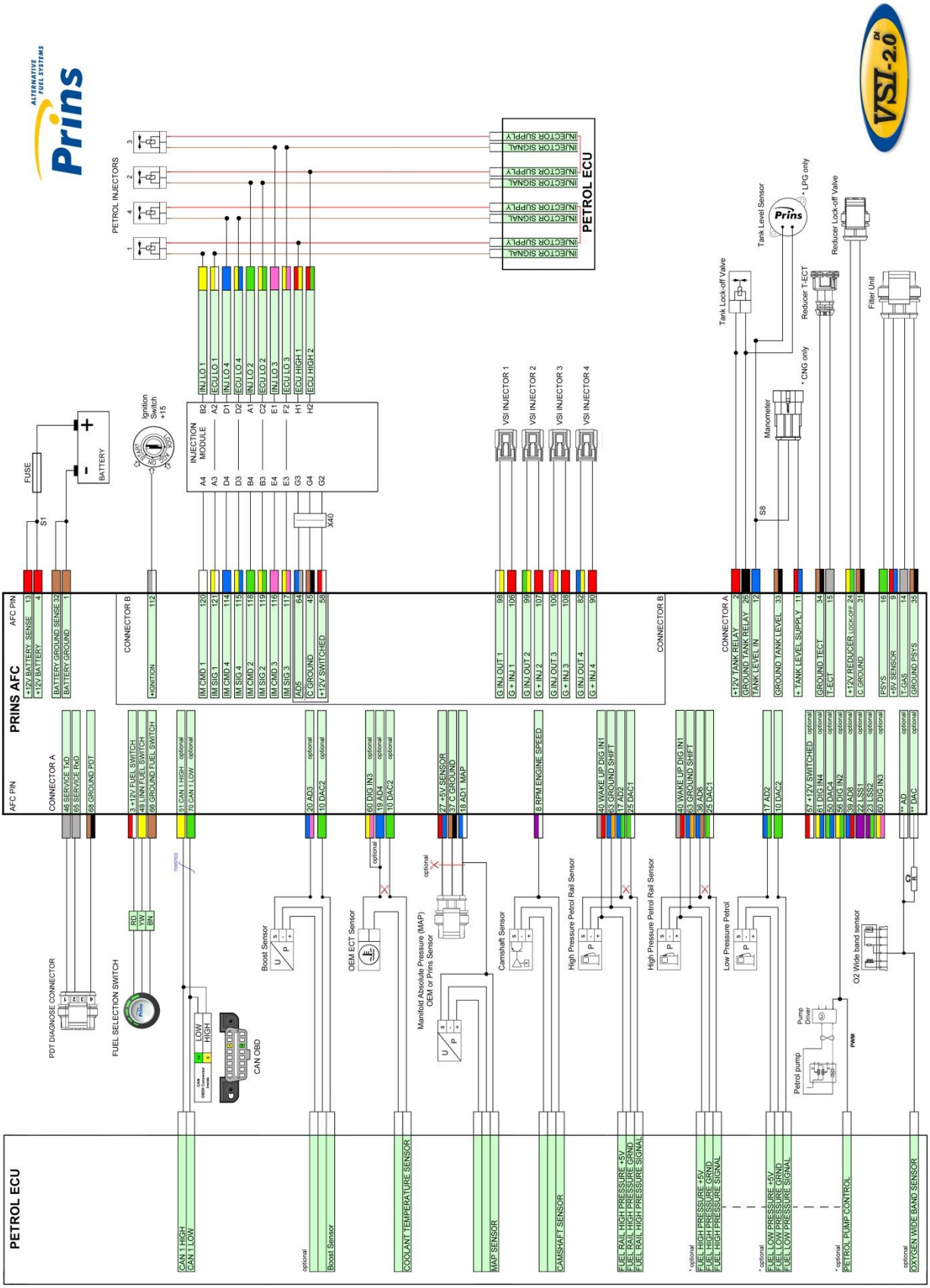
Grommet location for the switch, CAN and fuel gauge reset wires.



Drill hole Ø8,3mm and mount switch.

OBD / CAN connection.

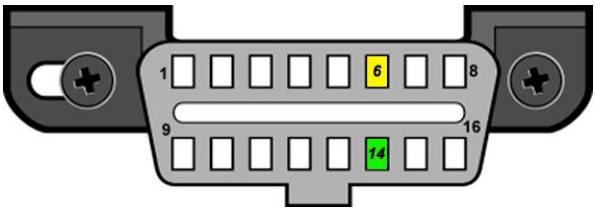
Basic Wiring Diagram



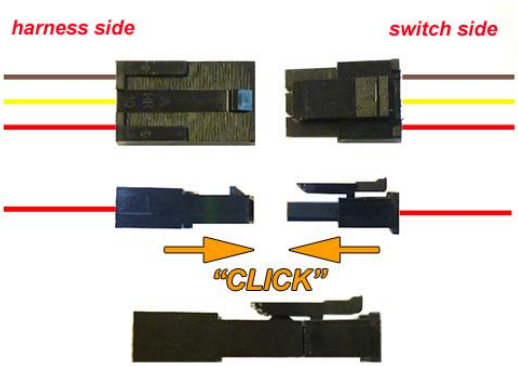
Electrical connections

Driver room

				Connect to EOBD diagnose connector.
51	CAN1 High		Yellow	Pin : 6
70	CAN1 Low		Green	Pin : 14



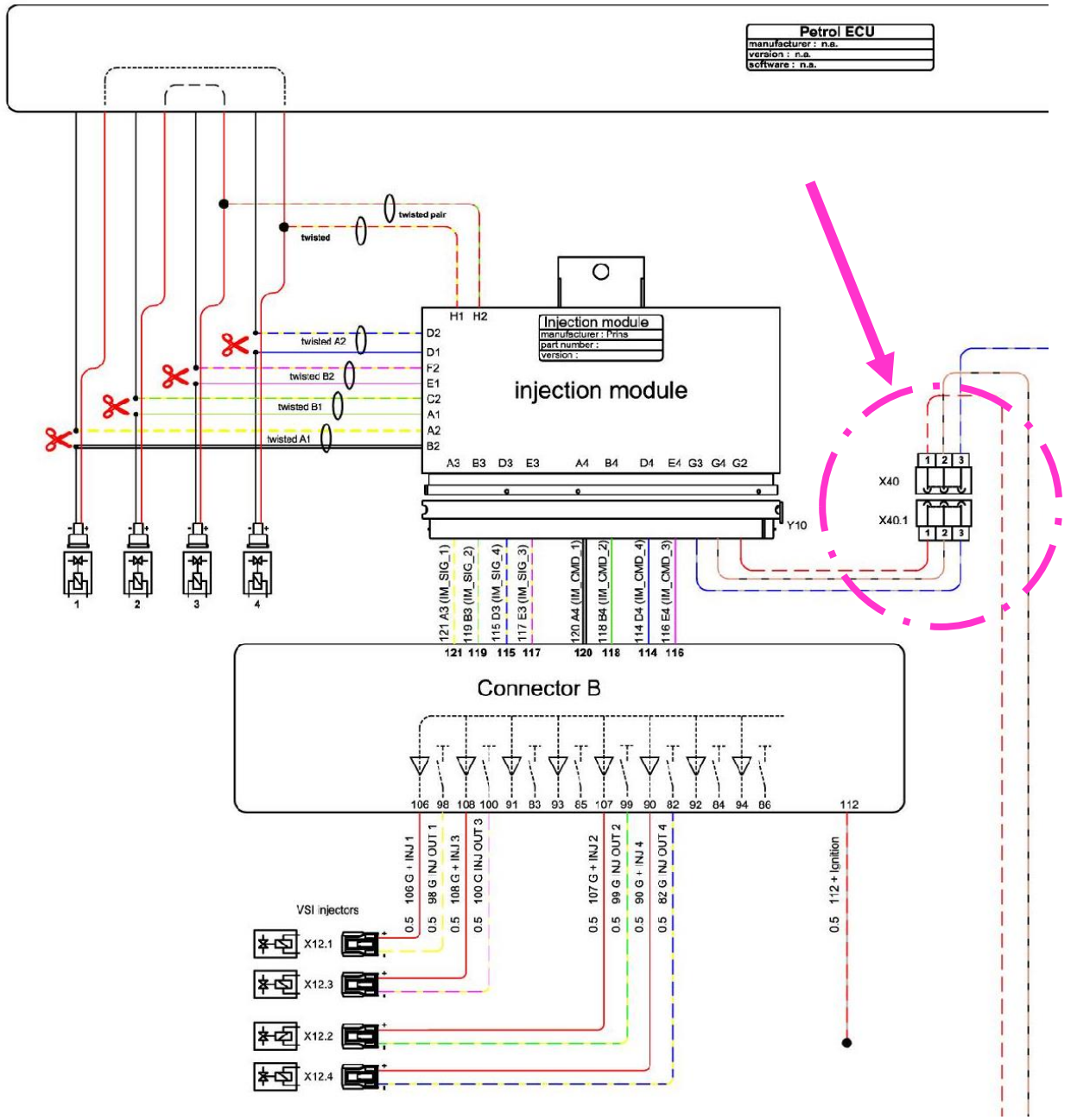
3-pole micro connector				*Connect to* the Prins fuel selection switch
66	Ground fuel switch		Brown-black	
3	+12V fuel switch		Red-white	
49	LIN fuel switch		Yellow	



Electrical connections

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

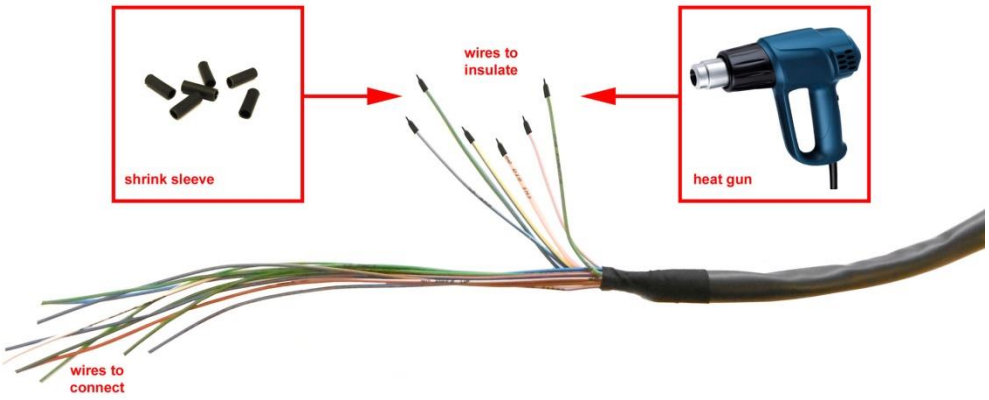
Connector Injection Module



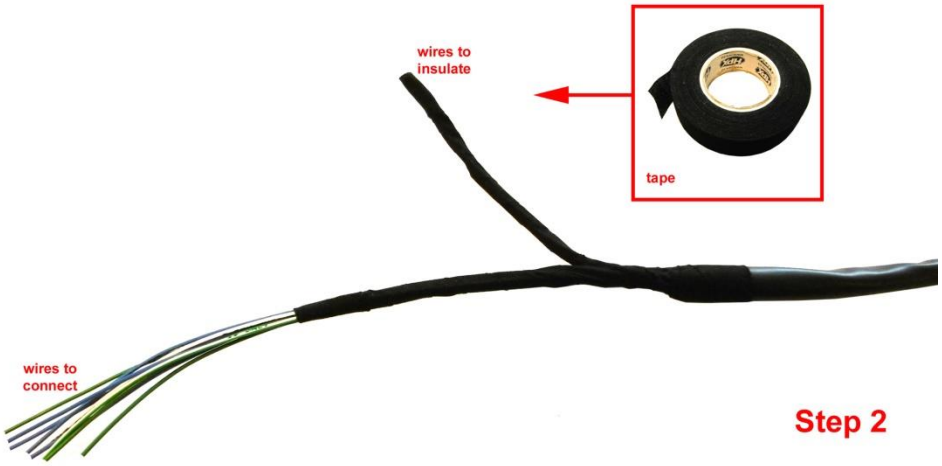
Electrical connections – Insulate

10	DAC 2		Green	***Insulate***
19	AD4		Blue	***insulate***
20	AD3		Blue-pink	***Insulate***
22	LSS1		Purple	***Insulate***
23	LSS2		Purple-green	***Insulate***
36	AD 6		Blue-brown	***Insulate***
38	AD7		Blue-light Blue	***Insulate***
39	AD8		Blue-red	***Insulate***
43	+12 Valve 2		Red-white	***Insulate***
50	DAC4		Green-blue	***Insulate***
56	DI2		Yellow-green	***Insulate***
60	DIG IN3		Yellow-pink	***Insulate***
61	DIG IN4		Yellow-blue	***Insulate***
62	C Ground		Brown-black	***Insulate***
74	DAC3		Green-pink	***Insulate***
Insulate all not used (extra) wires				

How to insulate



Step 1

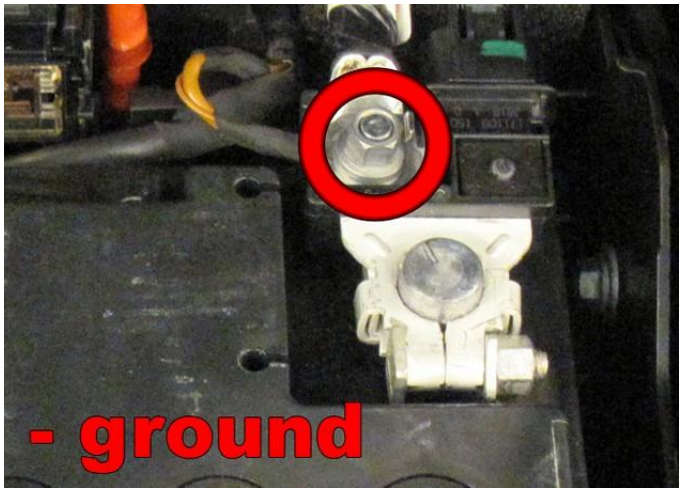


Step 2

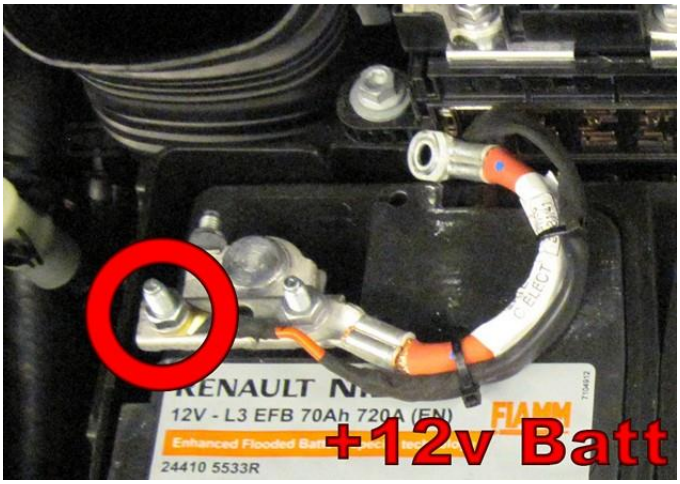
Electrical connections

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

32 Ground sense1 Ground battery		Brown	*Connect to the '–' of the battery; use a ring terminal or solder:* Wire location: Directly to the battery ***negative*** on original nut



4 +12V Battery		Red	*Connect to the '+' of the battery; use a ring terminal or solder:* Wire location : Directly to the battery ***positive*** on original nut



Do not place the fuse in the holder before having completed the installation of the LPG system.

Electrical connections

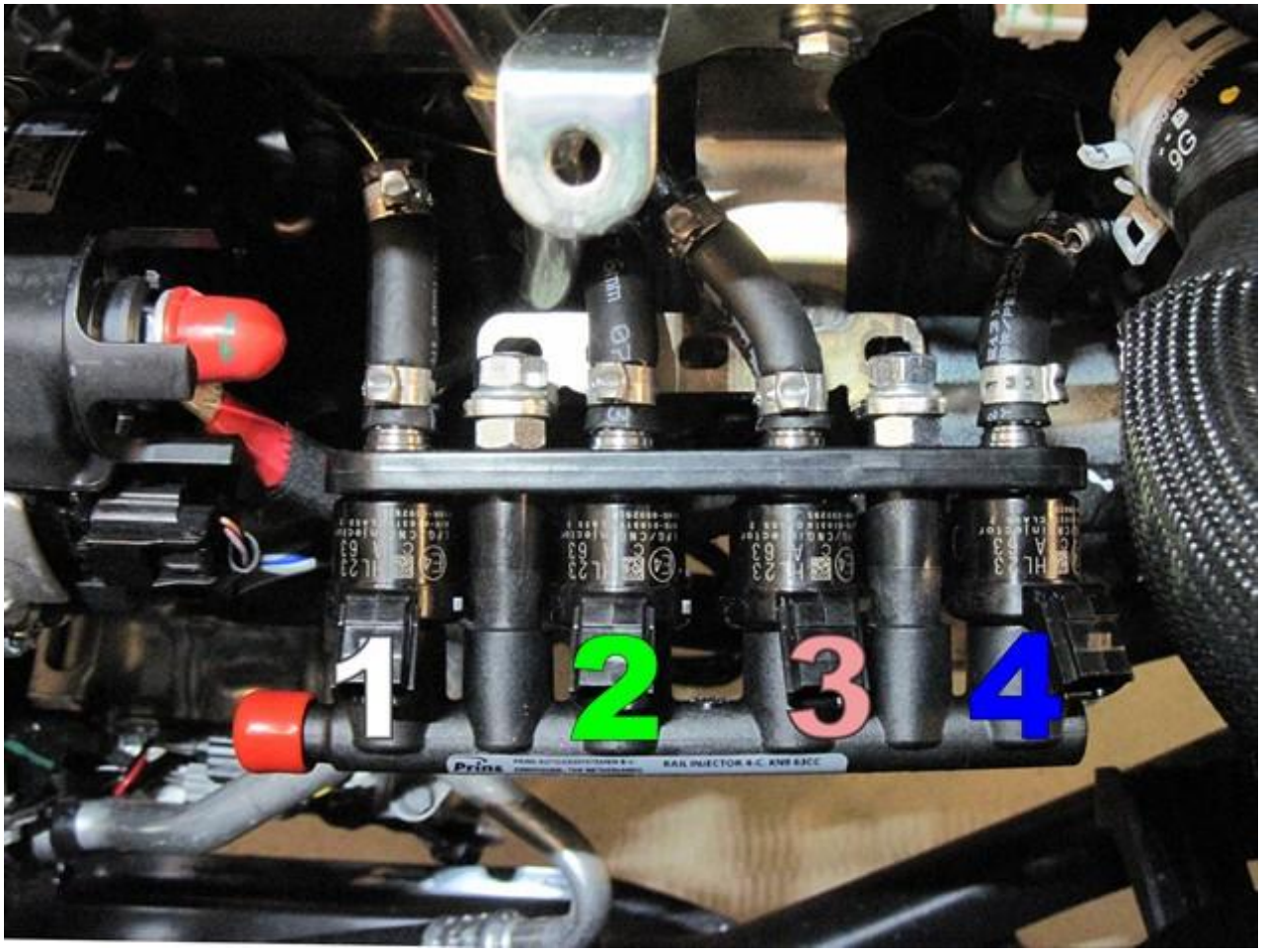
Check and measure the wiring in case of changes in the cars wiring colours.

98 98 G INJ OUT **1**	**White-yellow**	Connector VSI-injector to cylinder **1**. Timing belt/chain side
106 106 G + INJ 1	**red**	

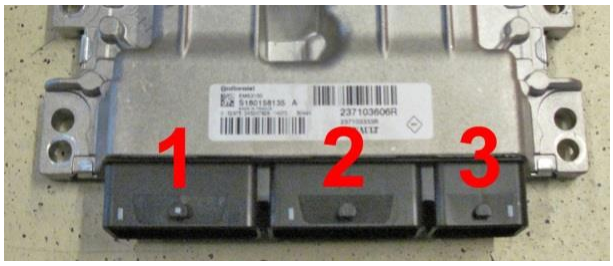
99 99 G INJ OUT **2**	**Green-yellow**	Connector VSI-injector to cylinder **2**.
107 107 G + INJ 2	**red**	

100 100 G INJ OUT **3**	**Pink-yellow**	Connector VSI-injector to cylinder **3**.
108 108 G + INJ 3	**red**	

82 82 G INJ OUT **4**	**Blue-yellow**	Connector VSI-injector to cylinder **4**.
90 90 G + INJ 4	**red**	



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	Q1
				3AJP		3LP					3LQ		3BY	
						X					X		X	
	A2	B2	C2	D2	E2	F2	G2	H2	J2	K2	L2	M2	N2	Q2
		3AJQ	3LN								3AJR			3BU
			X								X			X
	A3	B3	C3	D3	E3	F3	G3	H3	J3	K3	L3	M3	N3	Q3
				3BX	3CK		3CH				3EN	3CF	3CG	3CE
				X	X		X				X	X	X	X
	A4	B4	C4	D4	E4	F4	G4	H4	J4	K4	L4	M4	N4	Q4
		3IA	3UCB						3AJB	3AJC				
		X	X						X	X				

P1	Q1
3L	3CR
X	X
P2	Q2
3LC	3CU
X	X
P3	Q3
3LB	3CT
X	X
P4	Q4
3LA	3CS
X	X

Connector 1 (grey)

	A1	B1	C1	D1	E1	F1	G1	H1	J1	K1	L1	M1	N1	Q1
		3S				3MQ		3BGA	3LX	3ALW	3ALV		3MN	
		AG				X		X	X	X	X		X	
	A2	B2	C2	D2	E2	F2	G2	H2	J2	K2	L2	M2	N2	Q2
		3AA		3SV	3SX			3SY	3GJ	3MQ	TBI		300	3BL
				X	X			X	X	X	X		X	X
	A3	B3	C3	D3	E3	F3	G3	H3	J3	K3	L3	M3	N3	Q3
	3BG	3AC			3SW	3LY			3LZ				3ALG	
	X	X			X	X			X				X	
	A4	B4	C4	D4	E4	F4	G4	H4	J4	K4	L4	M4	N4	Q4
						3GL	3C	3MP		3JK	3AT	3BB	3VL	3K
						X	X	X		X	X	X	X	X

P1	Q1
3FBI	3FB2
X	X
P2	Q2
3SZ	
X	
P3	Q3
3GF	3ZP
X	X
P4	Q4
3GG	3HI
X	X

Connector 2 (big black)

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

Connector 3 (small black)

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.

Petrol injector **cyl. 1**		
INJ LO 1	White	Injector side
ECU LO 1	**White-yellow**	ECU side
IM pos. B2 / A2		Colour : **Pink** Location : Petrol ecu **GREY** connector, pin **Q1**

Petrol injector **cyl. 4**		
INJ LO 4	Blue	Injector side
ECU LO 4	**Blue-yellow**	ECU side
IM pos. D1 / D2		Colour : **Pink** Location : Petrol ecu **GREY** connector, pin **Q3**

(cyl. 1-4)		
ECU HIGH **A**	**Red-yellow**	Injector side
IM pos. H1		Colour : **Green** Location : Petrol ecu **GREY** connector, pin **P1**

Petrol injector **cyl. 2**		
INJ LO 2	Green	Injector side
ECU LO 2	**Green-yellow**	ECU side
IM pos. A1 / C2		Colour : **Blue** Location : Petrol ecu **GREY** connector, pin **Q4**

Petrol injector **cyl. 3**		
INJ LO 3	Pink	Injector side
ECU LO 3	**Pink-yellow**	ECU side
IM pos. E1 / F2		Colour : **Purple** Location : Petrol ecu **GREY** connector, pin **Q2**

(cyl. 2-3)		
ECU HIGH **B**	**Red-green**	Injector side
IM pos. H2		Colour : **Beige** Location : Petrol ecu **GREY** connector, pin **P4**

Electrical connections

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

			For measuring the engine speed signal. Wire colour : Wire location : Petrol ecu **GREY** connector, pin **D4**
8 RPM		Purple-white	

3-pole connector			*For measuring the inlet manifold pressure (MAP).* ***Cut-off connector***.
27 +5V Sensor		Red-blue	insulate
37 C ground		Brown-black	insulate
18 AD1		Blue-white	Wire colour : **White** Wire location : Petrol ecu **BIG BLACK** connector, pin **L3**

17 & 25			*High pressure petrol sensor signal interruption.* Wire colour : **Pink** Wire location : Petrol ecu **BIG BLACK** connector, pin **N1**
17 AD 2		Blue-green	Sensor side
25 DAC 1		Green-white	Petrol ecu side

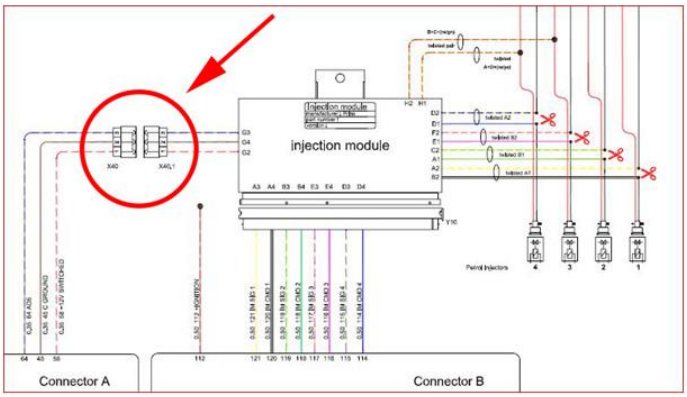
			High pressure petrol sensor ground. Wire colour : **White** Wire location : Petrol ecu **BIG BLACK** connector, pin **J2**
63 Ground Shift		Blue-orange	

			High pressure petrol sensor supply 5V. Wire colour : **Green** or **Brown** Wire location : Petrol ecu **BIG BLACK** connector, pin **E1**
40 Wake-up		Grey-red	

112			*Connect to +ignition / contact+ (+15).* *Do not place the fuses in the holder before having completed the installation of the LPG system.* Wire colour : **Yellow** Wire location : Petrol ecu **SMALL BLACK** connector, pin **D1**
112 + Ignition		Red-grey	

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	***Cut off connector and insulate wires***

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 AFC with the diagnostic software.
   When the AFC has not been activated, the switch will keep blinking.
   To activate the AFC, select function *activate ECM* in the diagnostic software.

3. Check whether the program in the AFC 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 reducer heats up.
   Check the engine signals, petrol injection time, RPM, ECT, lambda, MAP signal and petrol pressure signal.
   Let the engine run idle on LPG.
   Adjust the reducer pressure.
   Refer to *Basic → System* in the diagnostic software for the idle level value set.
   Adjust the reducer 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 reducer 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.

ALTERNATIVE FUEL SYSTEMS
Prins