



Installation manual PART 2/2

MANUFACTURER	VAG
TYPE	(Based on Seat Arona)
ENGINE DISPLACEMENT	999cc
NUMBER OF VALVES	12
ENGINE CODE / NUMBER - OUTPUT	CHZB – 70kW / CHZC – 81kW / CHZD 85kW / CHZE – 60kW CHZG – 75kW / CHZJ – 85kW / CHZL – 70kW / DKJA – 85kW DKLA – 70kW / DKLB – 63kW / DKLC – 66kW / DKLD – 70kW DKRA – 85kW / DKRB – 85kW / DKRC – 81kW / DKRE – 75kW DKRF – 85kW
FIRING ORDER	1-3-2
VEHICLE CATEGORIES	M
TRANSMISSION	MT / AT
VERSION	AFC-2.1 DI-LPG
TYPE VSI INJECTOR	KN9 - 63 cc
TYPE INJECTION MODULE	Gen2 Type 1 6 Cylinder
PETROL ECU MANUFACTURER / CODE	CHZ* → Bosch MED 17.5.21 / DKJ* & DKL* & DKR* → MED 17.1.27
MODEL YEAR:	2015-
SYSTEM APPROVAL NUMBER (R115)	E4-#115R-000020 / VSI-LPG 31
LOCATION R115 SYSTEM STICKER	right side, centre door post
ENGINE SET NUMBER	366/121032/A
MANUAL NUMBER	076/ 2619600-3
DATE	2020-04-03



TABLE OF CONTENTS

Manual updates / revision	2
General instructions	3
Required equipment / tools / materials for installing a complete system	4
Vehicle check	4
Tightening moments	5
Base diagram	5
VSI approval numbers	7
VSI component location overview.....	8
Grommet	9
Prepare	10
Reducer / AFC / Filter	11
Overpressure / MAP connection	12
Electrical connection Injection Module.....	13
Water connections	14
Mounting the inlet manifold couplings	15
Mounting the VSI injector rail	16
Mounting the VSI injector rail	17
LPG hoses	18
Mounting the Injection Module / Fuse	19
Wiring routing	20
Mounting the fuel selection switch & CAN wiring.....	21
Basic Wiring Diagram	22
Electrical connections – Insulate.....	23
Electrical connections	24
Electrical connections	25
Electrical connections - <i>MED 17.1.27 ECU</i>	26
Electrical connections - <i>MED 17.1.27 ECU</i>	27
Electrical connections - <i>MED 17.5.21 ECU</i>	28
Electrical connections - <i>MED 17.5.21 ECU</i>	29
Electrical connections	30
Electrical connections	31
Checklist after installation	32
FOR EXPLANATION AND CIRCUIT DIAGRAMS SEE : INSTALLATION MANUAL GENERAL PART 1 / 2	



Manual updates / revision

Rev. nr	Rev. Date	Subject update
1	2019-02-20	Start revision management
2	2019-10-08	Added engine codes, ECM codes & minor changes
3	2020-04-03	Added DKLA to D engine codes



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 an 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

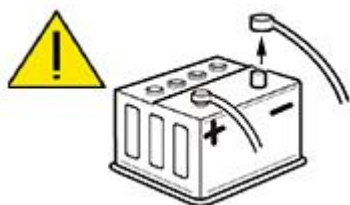
	Nm	Spanner mm
M5 x 0,8	6.5	8
M6 x 1,0	11.3	10
M8 x 1,25	27.3	13
M10 x 1	52	15-16-17
M10 x 1,5	54	15-16-17

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:

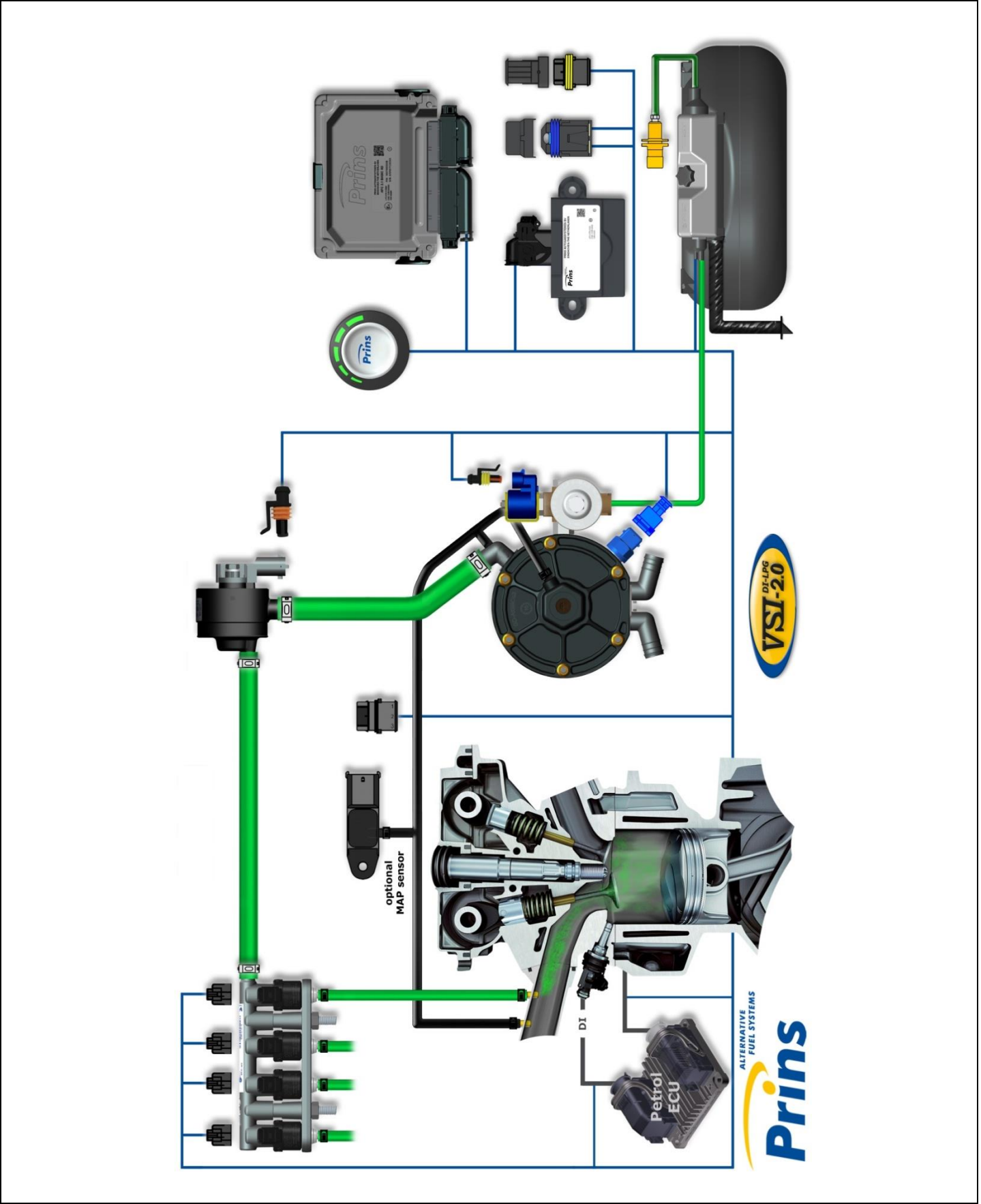


= IMPORTANT, CAUTION



= WEAR SAFETY GOGGLES

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 Thunderflex : LPG E24-67R-010018 CNG E24-110R-000040

VSI component location overview
(Example Seat Arona)

		Petrol ECU 
		IM / Fuse 
		AFC 
Rail 		Reducer Filter 

	R115 approval sticker : Right side centre door post
---	--

Grommet

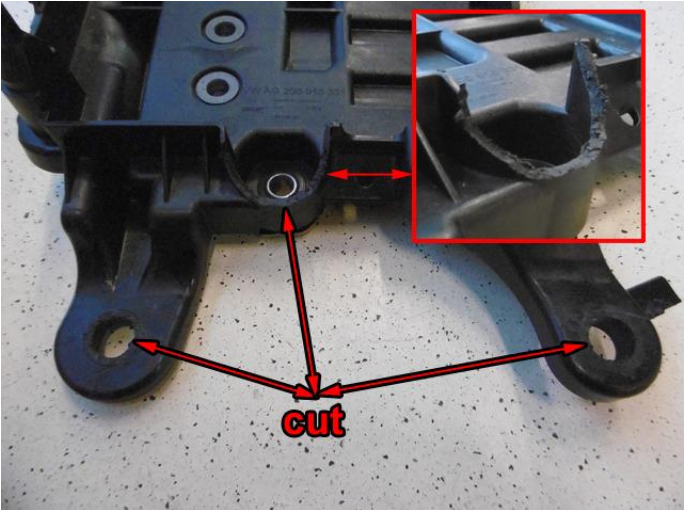
(Example Seat Arona)



For switch and CAN wiring

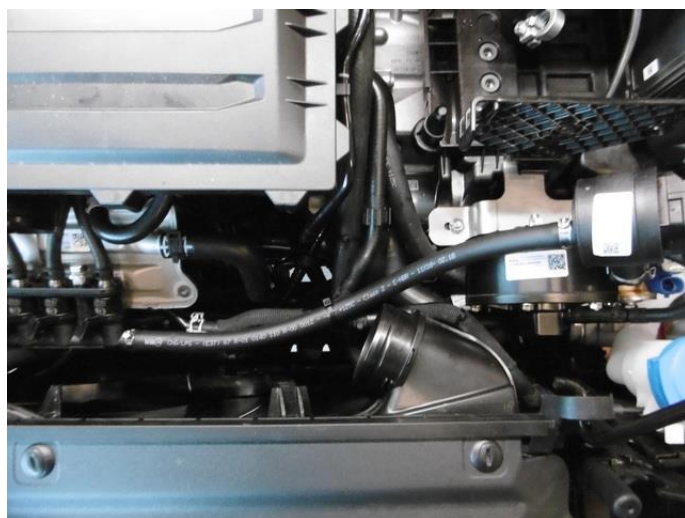


Prepare
(Example Seat Arona)

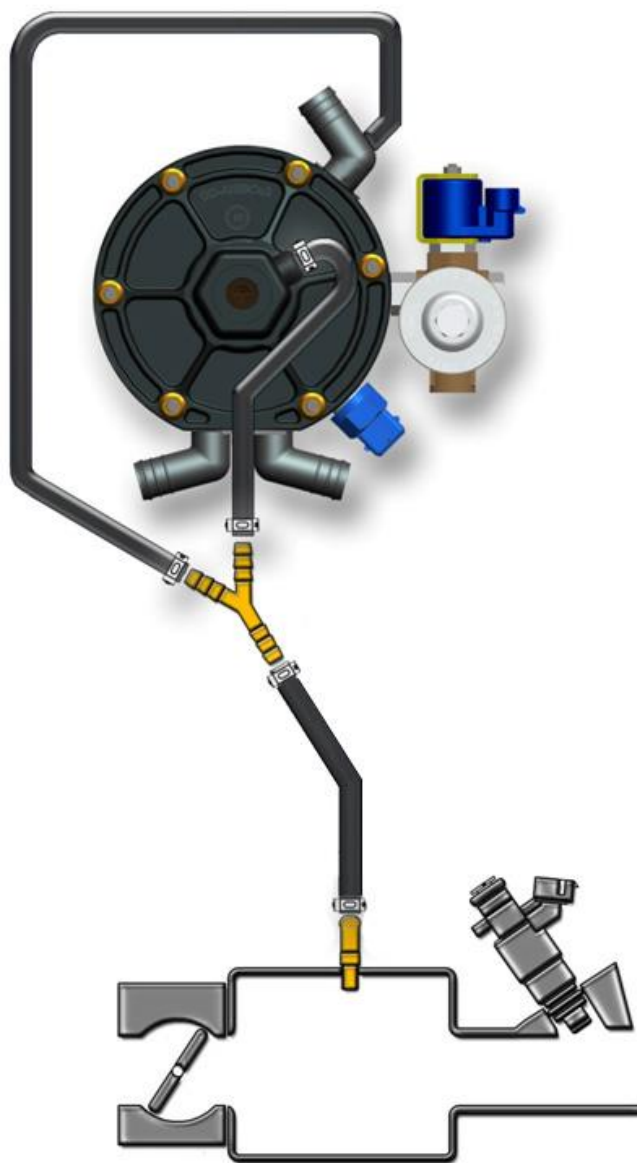


Reducer / AFC / Filter

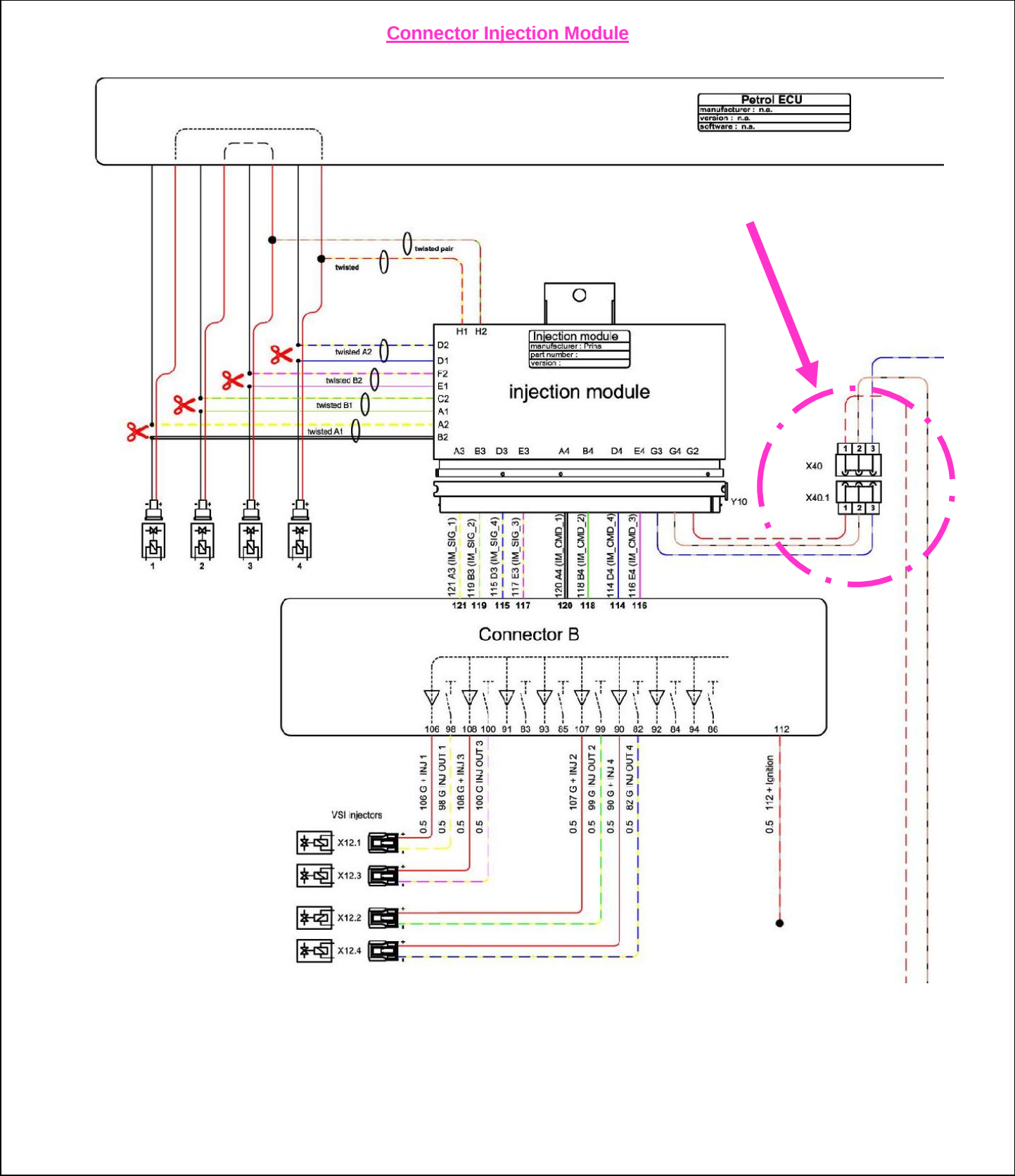
(Example Seat Arona)



Overpressure / MAP connection

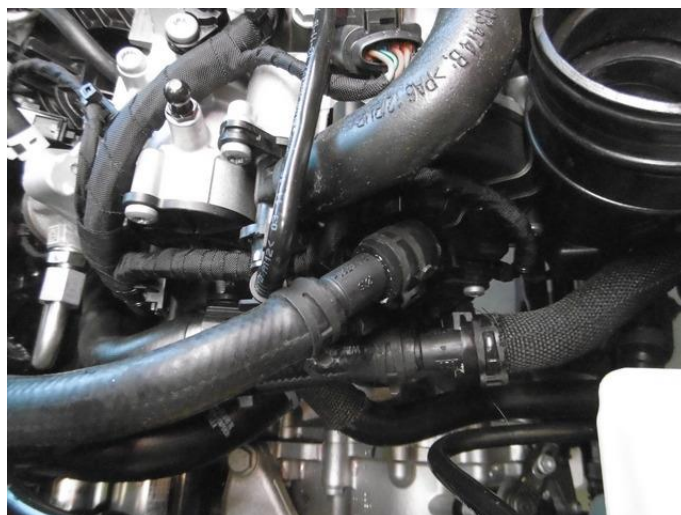


Electrical connection Injection Module



Water connections

(Example Seat Arona)



Rotate engine hose 180 degrees

Mounting the inlet manifold couplings

Remove the inlet manifold.

Drill 4 holes of **5mm** in the inlet manifold. Cut **M6x1** thread in these holes.

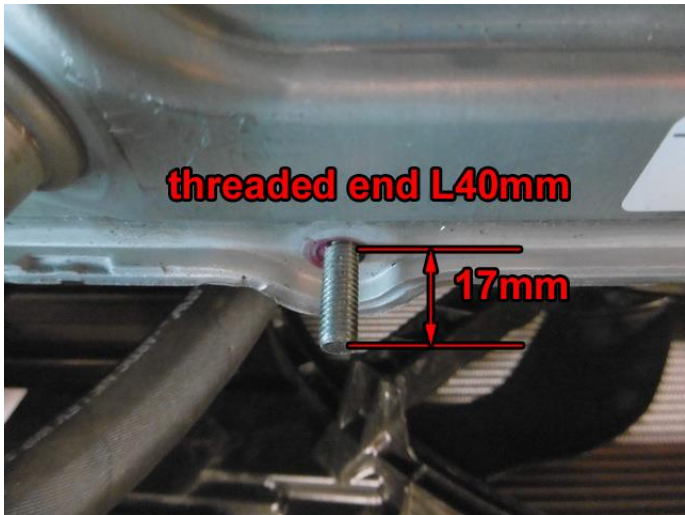
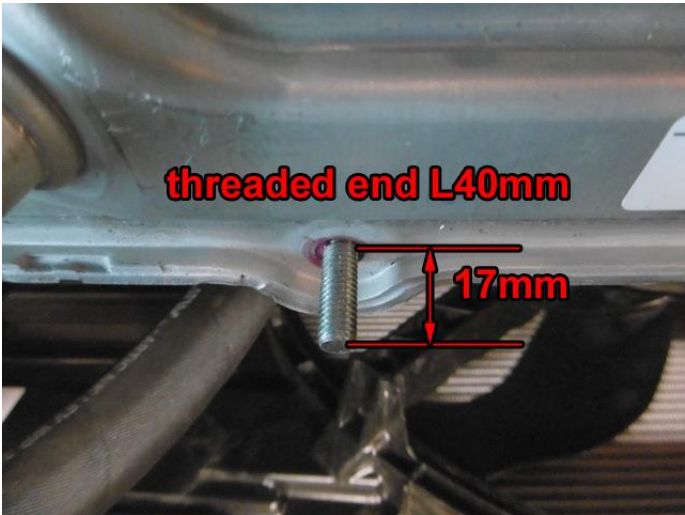
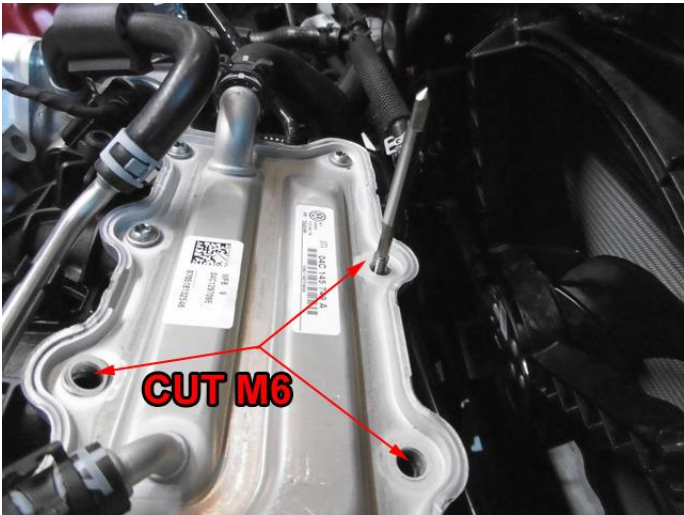
Place the VSI couplings with a lock compound in the inlet manifold.

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



MAP/overpressure connection

Mounting the VSI injector rail



Mounting the VSI injector rail



LPG hoses

(Based on Seat Arona)

<i>Hose (Ø in 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	40
5	VSI injector 1	Inlet manifold coupling cyl.1	19
5	VSI injector 2	Inlet manifold coupling cyl.2	18
5	VSI injector 3	Inlet manifold coupling cyl.3	19
5	Reducer overpressure	Y-piece	14
5	Reducer MAP connection	Y-piece	4
5	Y-piece	Inlet manifold coupling (vacuum)	80

General info.

In Case of a *Keihin* filter : only use two **M6x10mm** bolts with spring washers.

Cut the LPG hoses on length.

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

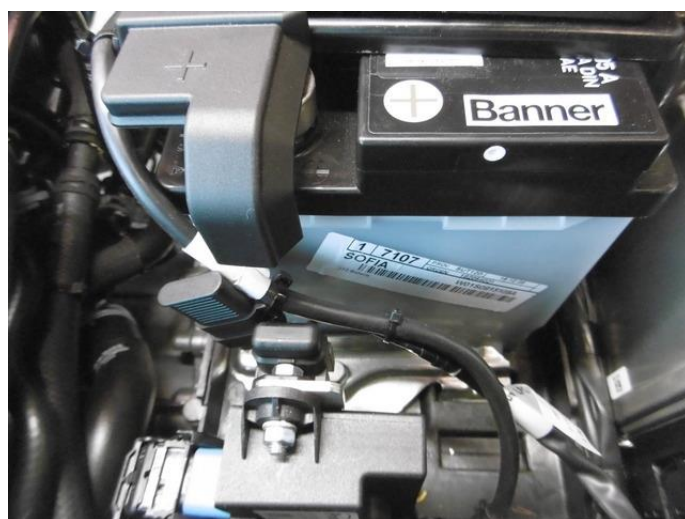
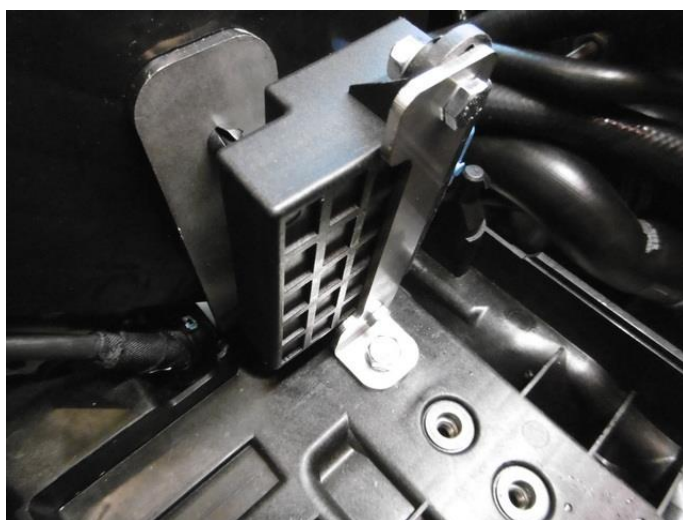


Mounting the Injection Module / Fuse

(Example Seat Arona)



drill up to Ø8.2mm



Wiring routing (Example Seat Arona)



Mounting the fuel selection switch & CAN wiring (Example Seat Arona)



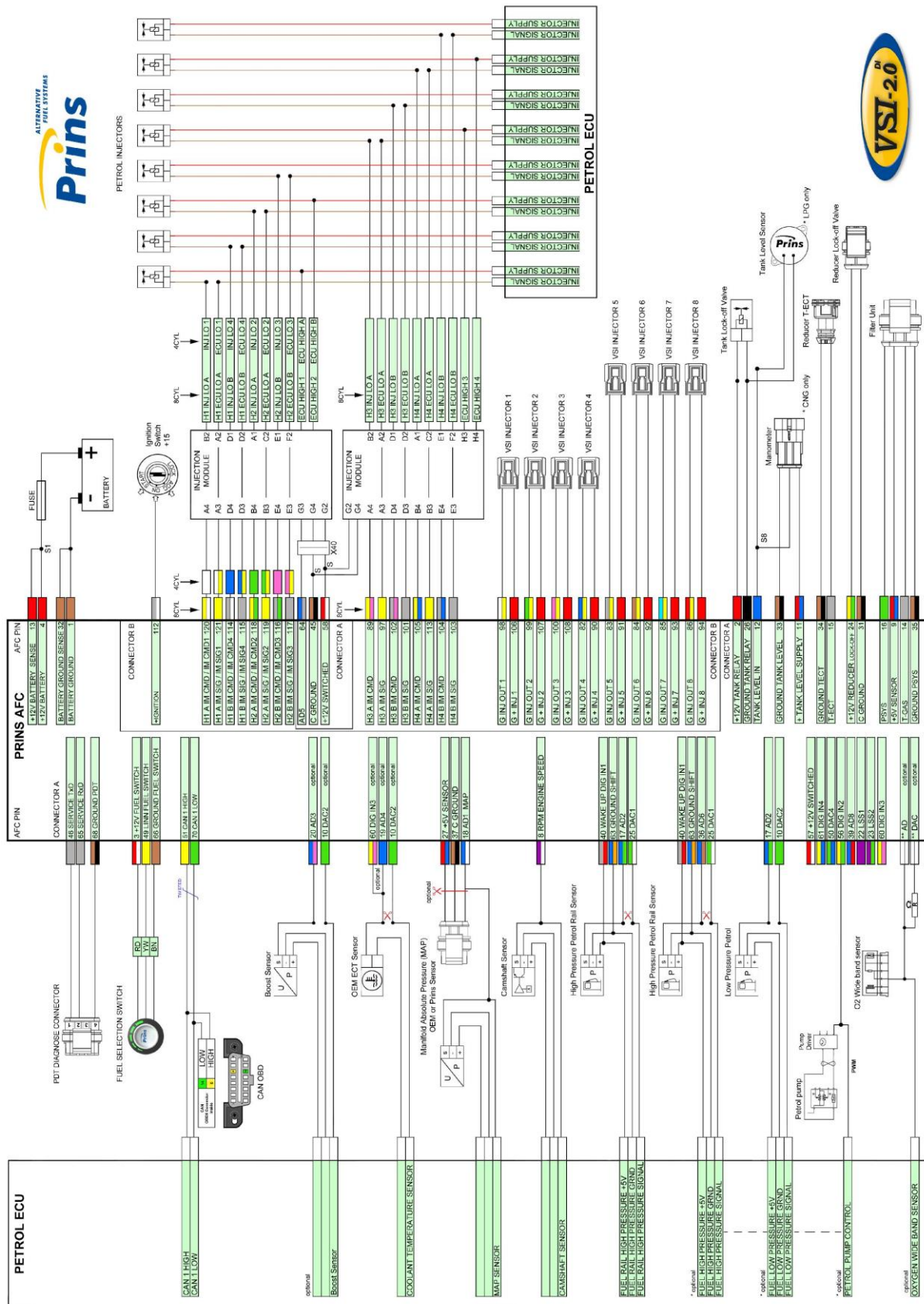
When mounting the switch, only push on its sides.
Pushing the switch hard in the centre may result in damage to the switch.



Or



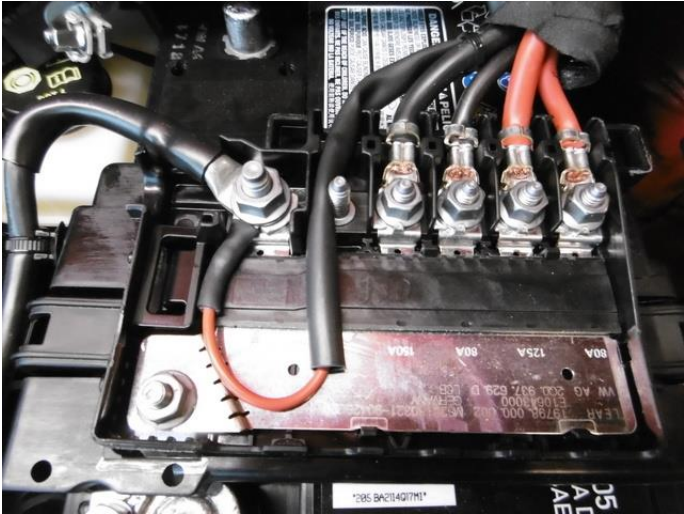
Basic Wiring Diagram



Electrical connections – Insulate

10	DAC 2		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	AD 6		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>
62	C Ground		Brown-black	<i>Insulate</i>
74	DAC3		Green-pink	<i>Insulate</i>
<i>Insulate additional loose wires</i>				

Electrical connections

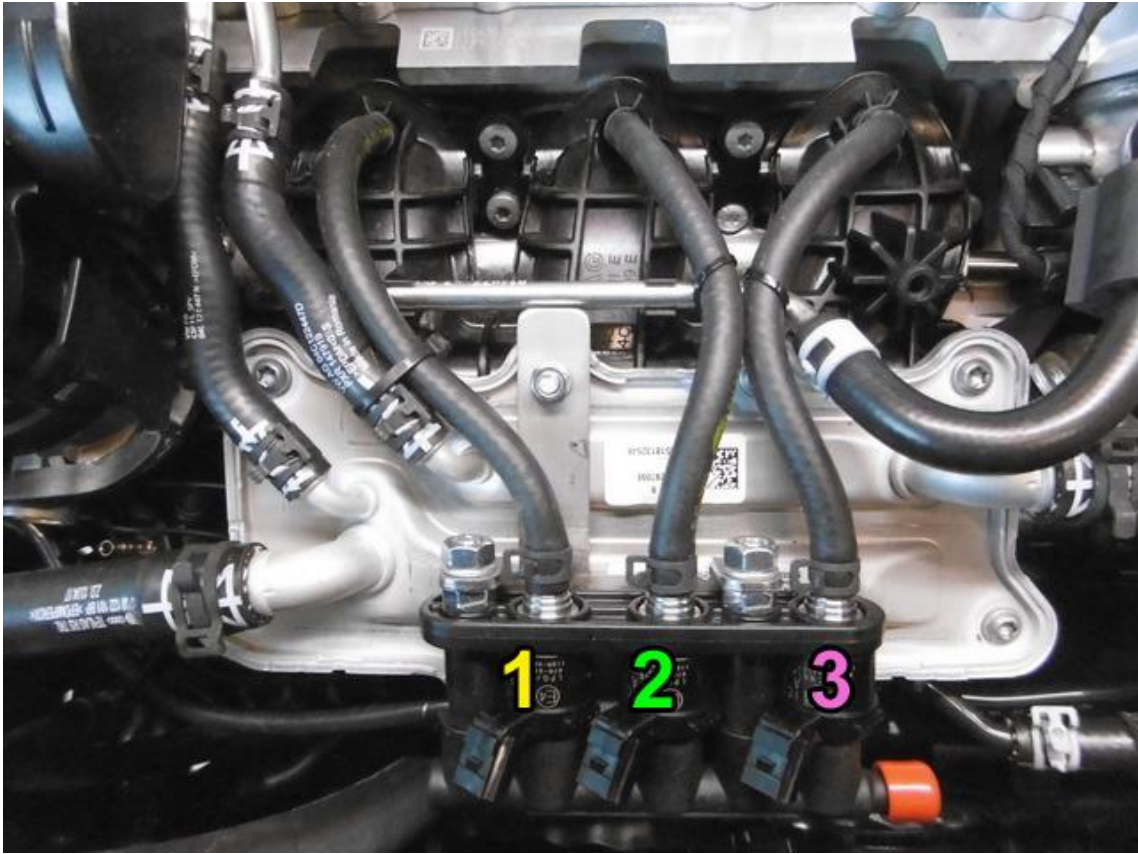
Wire number / code	Wire colour	Connection
32 Ground sense 1 Ground battery	Brown Brown	Connect to the '–' of the battery; use a ring terminal: Wire location : Behind battery  (Example Seat Arona)
4 +12V Battery	Red	Do not place the fuse in the holder before having completed the installation of the LPG system. Wire location :  (Example Seat Arona)



Electrical connections

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

98	98 G INJ OUT 1	White-yellow red	Connector VSI-injector to cylinder 1. Timing belt side
106	106 G + INJ 1		
99	99 G INJ OUT 2	Green-yellow red	Connector VSI-injector to cylinder 2.
107	107 G + INJ 2		
100	100 G INJ OUT 3	Pink-yellow red	Connector VSI-injector to cylinder 3.
108	108 G + INJ 3		



Electrical connections - **MED 17.1.27 ECU**

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 : red-black Location : ecu connector T60 , pin 35

(cyl. 1)			
ECU HIGH		Red-yellow	Injector side
IM pos. H1			Colour : brown-black Location : ecu connector T60 , pin 33

Petrol injector cyl. 2			
INJ LO 2		Green	Injector side
ECU LO 2		Green-yellow	ECU side
IM pos. A1 / C2			Colour : red-yellow Location : ecu connector T60 , pin 50

(cyl. 2)			
ECU HIGH		Red-green	Injector side
IM pos. H2			Colour : brown-white Location : ecu connector T60 , pin 34

Petrol injector cyl. 3			
INJ LO 3		Pink	Injector side
ECU LO 3		Pink-yellow	ECU side
IM pos. E1 / F2			Colour : red-violet Location : ecu connector T60 , pin 20

(cyl. 3)			
ECU HIGH		Red-pink	Injector side
IM pos. H3			Colour : brown-violet Location : ecu connector T60 , pin 49



Electrical connections - **MED 17.1.27 ECU**

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

			High pressure petrol sensor ground. Wire colour : green-violet Wire location : ecu connector T60 , pin 38
63	Ground Shift		Blue-orange

			For measuring the engine speed signal. Wire colour : yellow Wire location : ecu connector T60 , pin 42
8	RPM		Purple-white

3-pole connector			For measuring MAP sensor <i>insulate</i>
27 +5V Sensor			<i>insulate</i>
37 C ground			Wire colour : yellow-red
18 AD1			Wire location : ecu connector T60 , pin 44
18 AD 1			Blue-white

			High pressure petrol sensor supply 5V Wire colour : black Wire location : ecu connector T60 , pin 45
40	Wake-up		Grey-red

17 & 25			High pressure petrol sensor signal interruption. Wire colour : yellow-blue Wire location : ecu connector T60 , pin 56
17 AD 2			Blue-green Sensor side
25 DAC 1			Green-white Petrol ecu side

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 : black-purple Wire location : ecu connector T94 , pin 87
112 + Ignition			Red-grey

Electrical connections - **MED 17.5.21 ECU**

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 : red-black Location : ecu connector T60 , pin 47

(cyl. 1)			
ECU HIGH		Red-yellow	Injector side
IM pos. H1			Colour : brown-black Location : ecu connector T60 , pin 31

Petrol injector cyl. 2			
INJ LO 2		Green	Injector side
ECU LO 2		Green-yellow	ECU side
IM pos. A1 / C2			Colour : red-yellow Location : ecu connector T60 , pin 32

(cyl. 2)			
ECU HIGH		Red-green	Injector side
IM pos. H2			Colour : brown-white Location : ecu connector T60 , pin 18

Petrol injector cyl. 3			
INJ LO 3		Pink	Injector side
ECU LO 3		Pink-yellow	ECU side
IM pos. E1 / F2			Colour : red-violet Location : ecu connector T60 , pin 33

(cyl. 3)			
ECU HIGH		Red-pink	Injector side
IM pos. H3			Colour : brown-violet Location : ecu connector T60 , pin 48



Electrical connections - **MED 17.5.21 ECU**

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

			High pressure petrol sensor ground. Wire colour : brown Wire location : ecu connector T60 , pin 28
63	Ground Shift		Blue-orange

			For measuring the engine speed signal. Wire colour : brown-yellow Wire location : ecu connector T60 , pin 21
8	RPM		Purple-white

3-pole connector 27 +5V Sensor 37 C ground 18 AD1		Red-blue Brown-black Blue-white	For measuring MAP sensor. <i>insulate</i> <i>insulate</i> Wire colour : black Wire location : ecu connector T60 , pin 8
18 AD 1		Blue-white	

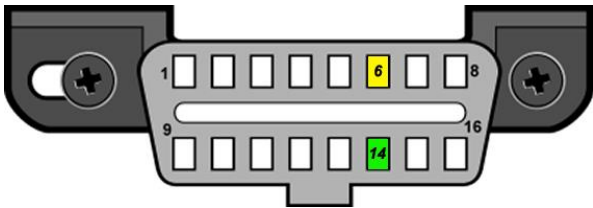
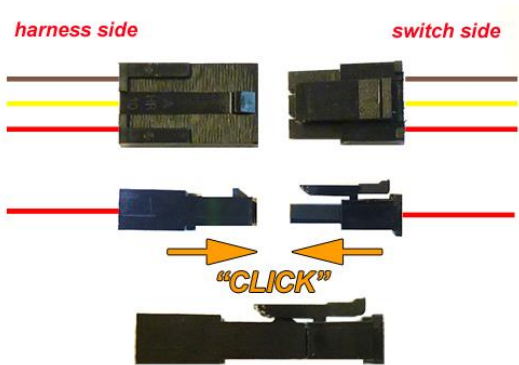
			High pressure petrol sensor supply 5V Wire colour : yellow-red Wire location : ecu connector T60 , pin 3
40	Wake-up		Grey-red

17 & 25			High pressure petrol sensor signal interruption. Wire colour : yellow-brown Wire location : ecu connector T60 , pin 10
17 AD 2		Blue-green	Sensor side
25 DAC 1		Green-white	Petrol ecu side

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 : black-purple Wire location : ecu connector T94 , pin 87
112 + Ignition		Red-grey	

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	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.

