



Quality, innovation and customer care, it's in our nature



Installation manual Dedicated PART 2/2

MANUFACTURER	VW
TYPE	Jetta
ENGINE DISPLACEMENT	1200
NUMBER OF VALVES	16
ENGINE CODE / NUMBER	CBZA-CBZB
VEHICLE CATEGORIES	M
TRANSMISSION	MT(6)
VERSION	Direct LiquiMax-2.0
PETROL ECU MANUFACTURER / CODE	Continental Simos 10.10
HIGH PRESSURE PETROL PUMP	Hitachi type 2
HIGH PRESSURE PETROL INJECTOR	Magnetti Marelli 03F 906 036B
MODEL YEAR:	2011
SYSTEM APPROVAL NUMBER (R115)	E4-115R-000010 / DLM-LPG 03
LOCATION SYSTEM STICKER	right side, centre door post
ENGINE SET NUMBER	366/070010/A
MANUAL NUMBER	076/2611900
DATE	2014-04-03

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Version 2012-05-21 D



TABLE OF CONTENTS

General instructions	2
Required equipment / tools / materials for installing a complete system	3
Vehicle check.....	3
Tightening moments.....	4
Direct LiquiMax	5
Overview Direct LiquiMax	6
Direct LiquiMax parts / approval numbers	7
Mounting and connection points	8
High pressure pump Supply	9
High pressure pump Return.....	10
Boost pump / Fuel hose connection boost pump.....	11
Mounting the FSU and FRU	12
Lpg / petrol fuel lines.....	13
Supply hose – Return hose – Tank wiring.....	14
Hose routing.....	15
Mounting the AFC fuses and relays.....	16
Fuel switch / CAN wiring / petrol pump wiring grommet	17
Wiring routing.....	18
EOBD connector	19
Mounting the fuel selection switch	19
Electrical connections.....	20
Electrical connections.....	21
Electrical connections.....	22
Electrical connections.....	23
Electrical connections.....	24
Checklist after installation.....	25

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.
- For an optimal functioning of the Direct LiquiMax system, maintain a clean and organized work environment during installation and maintenance to prevent pollution of the LPG components.
- 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.
- Wear safety goggles when working on petrol filled system / connections (pressurized petrol)
- Do not place the main fuse into the fuse holder before having completed the installation of the system.
- The AFC has to be activated by means of the Prins diagnosis software.
- Never disconnect the AFC connector, unless you have removed the main fuse.
- When installing the 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 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.
- 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 a exterior filler into body work).
- After having completed the installation, check the whole system for lpg leakage; use a lpg leak detection device. Also check for 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 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.

Register (warranty card) the system on the Prins warranty portal .



Required equipment / tools / materials for installing a complete system

- Complete workshop toolbox (wrenches, screwdrivers, cutters, pliers, ratchet, sockets)
- Car lift
- Portable computer : operating on Windows 98, W2000 or XP.
 - Internal memory : 16 Mb or more
 - Memory HD space : 5MB
 - Screen : 256 colours, advise colours 16 bits or more
 - Com port : 1 free COM port 1 or COM port 2 with a 9 or 25 pins connector
- Vehicle fuel system scan tool or OBD scan tool Prins (part nr. 099/99928)
- Exhaust gas analyser
- Multimeter
- Oscilloscope
- Prins diagnostic software
- Prins serial interface
- Torque wrench (10Nm)
- Torque wrench (200-250Nm)
- Portable light
- Assortment drill bits 4 to 12 mm
- Assortment cutters (ø 20, 30, 50, 70 mm)
- Portable drill or pneumatic drill
- Thread cutting device (male M6x1, M8x1, M10x1)
- Socket 46mm
- 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 analyzer)
- Check the condition of the ignition system (spark plugs, cables, coil)



Tightening moments

	Nm	SW
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	50,1	13
M 8 x 1,25	27,3	13
M 10 x 1	103	15-16-17
M 10 x 1,5	54	15-16-17
(filtered)Banjo bolt	10	14
Supply line connection	15	13
Fuel module Allen bolts	20	7
Filler hose connection	50	22
HPP cover Hitachi	220	46

EXPLANATION OF SYMBOLS :



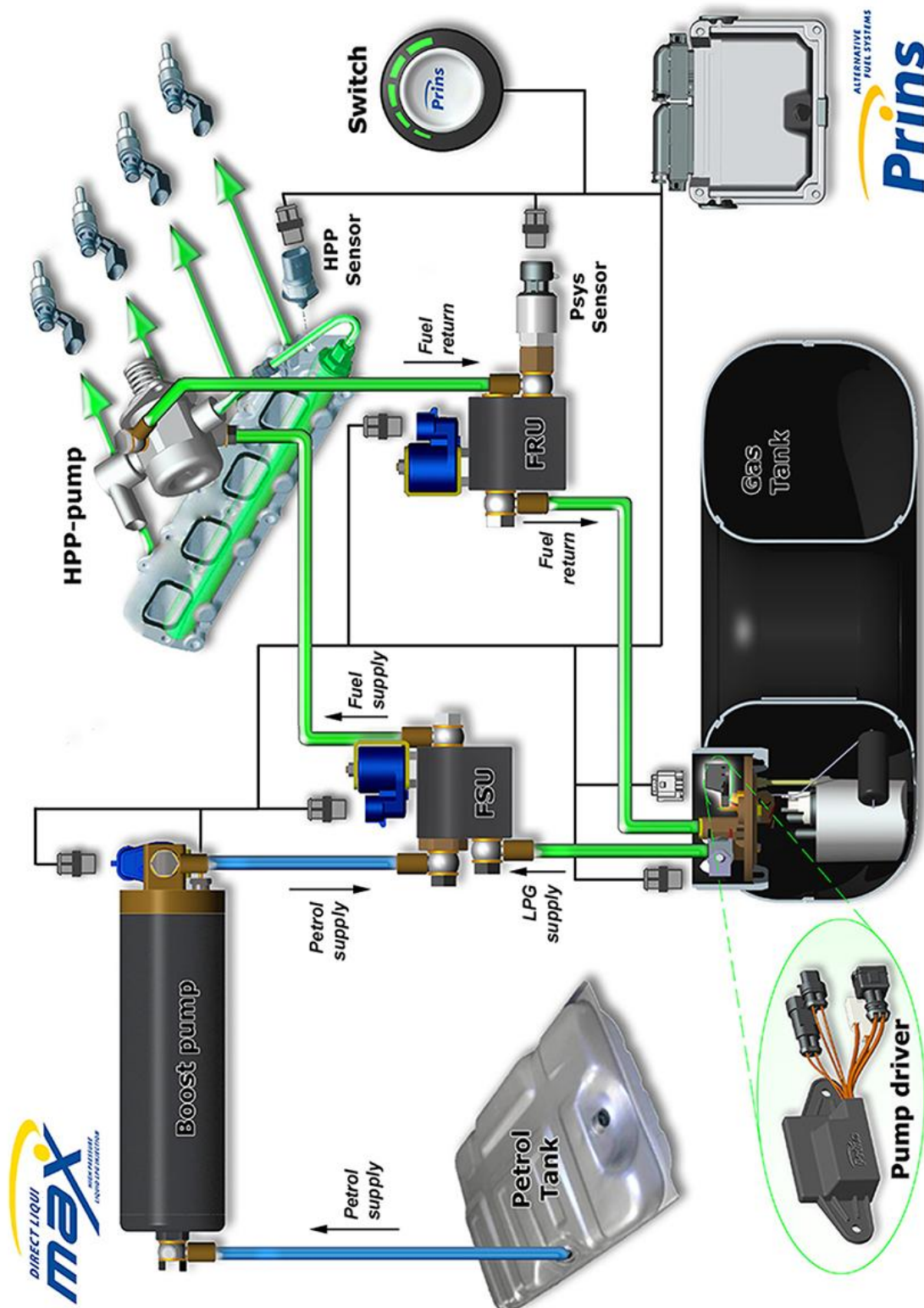
= IMPORTANT,
CAUTION



= WEAR SAFETY GOGGLES

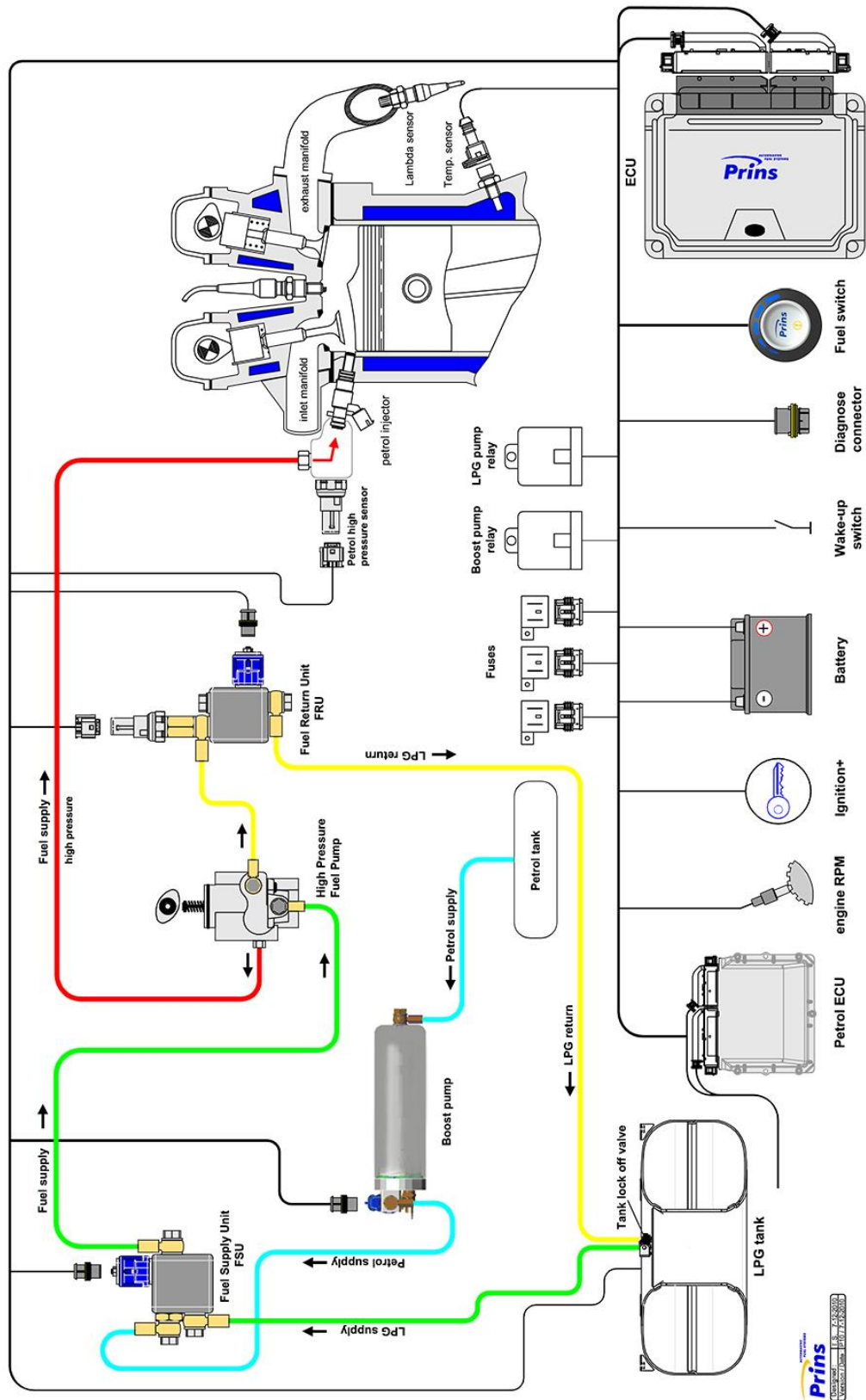


Direct LiquiMax



Overview Direct LiquiMax

overview Direct Liqui Max



Direct LiquiMax parts / approval numbers

 1st generation  2nd generation	 1st generation  2nd generation
Fuel Supply Unit : E4-67R-010269	Fuel Return Unit : E4-67R-010270 Pressure Sensor : E4-67R-010051
	
Boost pump	High Pressure Pump : E4-67R-010266 High Pressure Rail : E4-67R-010267 High Pressure Injectors : E4-67R-010309
	 XD-3 LPG  XD-4 LPG
Prins ECU : E4-67R-010098 E4-10R-030507	Fuel lines series XD : E4-67R-010247 XD3 E4-67R-010247 XD4



Mounting and connection points



A : High pressure petrol pump	L : R115 Approval sticker
B : Fuel Supply Unit : FSU	M : Grommet
C : Fuel Return Unit : FRU	N : Gas system fuses
D : Boost pump	P : T-ect
E : AFC	Q : Low pressure signal (not connected)
F : Boost pump relay	R : MAP, Analog 3
G : Tank relay	S : Analog 2
H : Petrol ECU	T : Analog 4
I : Engine speed signal RPM	V : Digital input 3
J : “+” ignition	W : Wake-Up
K : High pressure signal Analog 1	X : Digital input (not connected)



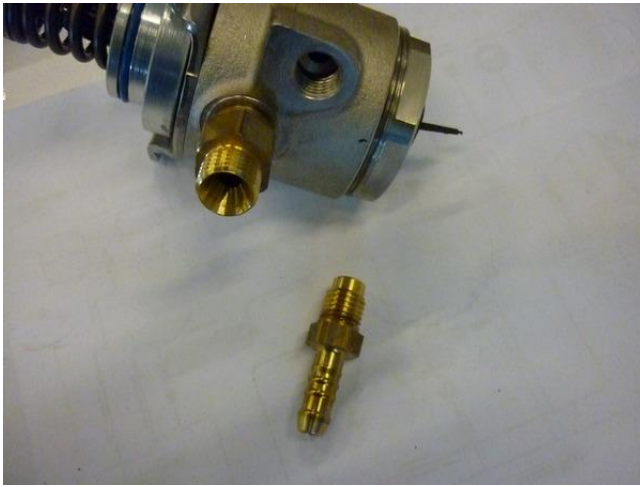
L:
R115 approval sticker :
Right side centre door post



High pressure pump Supply



Remove the High petrol pressure pump. Careful : petrol !
(Follow the workshop manual of the car) also see page 4.



Remove petrol inlet.



Mount supplied inlet.



High pressure pump Return

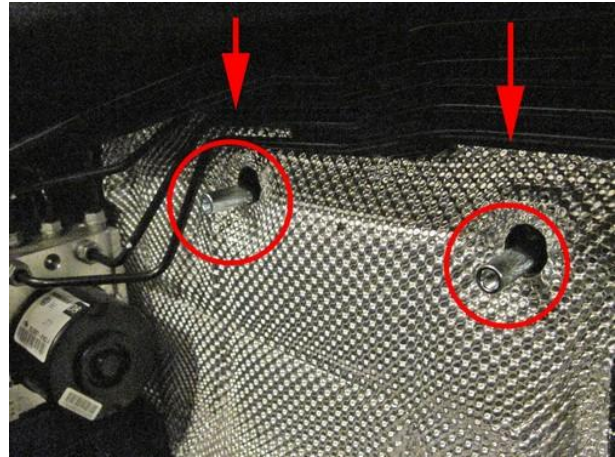
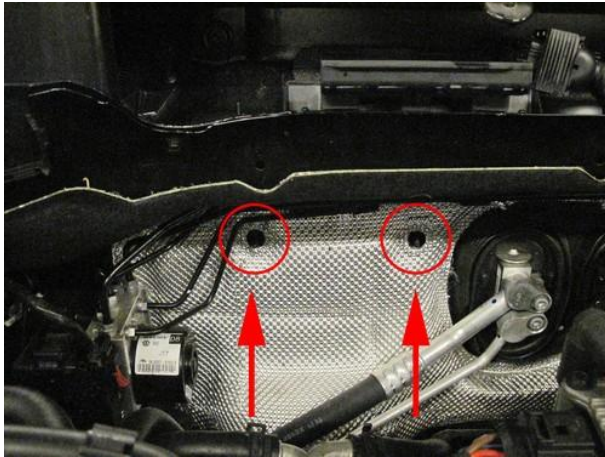
Replace the high pressure pump cover (46mm) for the adapted high pressure pump. Careful : petrol !
Carefully cut the cover, remove shockers and install them into the new cover.



Tighten cover with 220 Nm, do not forget the sealing ring between pump and pump cover.



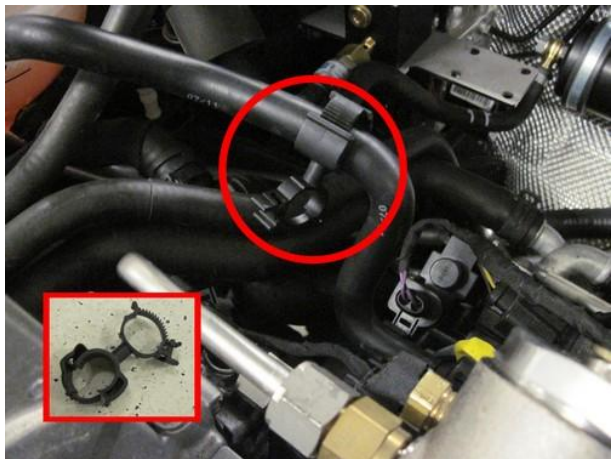
Boost pump / Fuel hose connection boost pump



Mount spacers on original threaded ends to firewall.



Mount boost pump with clamp, bolts and spring washers to spacers.



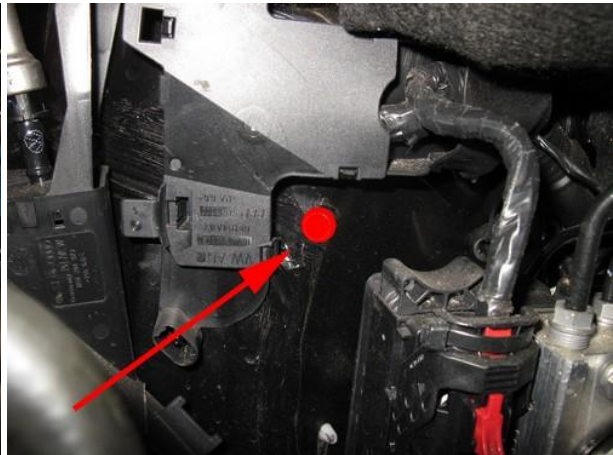
Connect the fuel hose with the XD-5 banjo eye to the inlet of the boost pump.
Remove the clip from the original hose, you will use this clip later on.



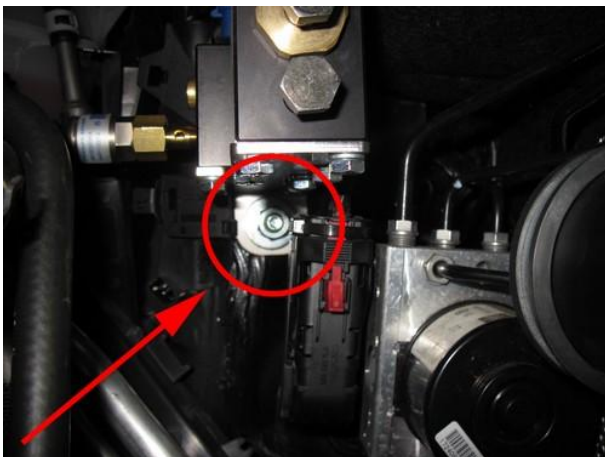
Mounting the FSU and FRU



Mount the FSU and FRU on the bracket.



Hold bracket with FSU & FRU in place and mark hole to drill. Drill hole $\varnothing 11\text{mm}$ and protect against corrosion.



Mount bracket with units with M10 bolt, nuts and (spring) washers.

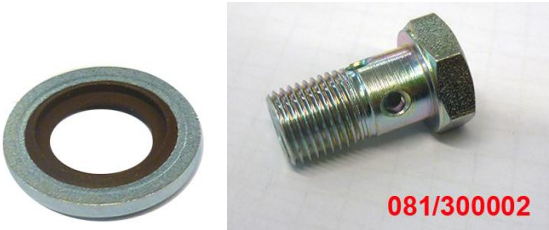


Lpg / petrol fuel lines

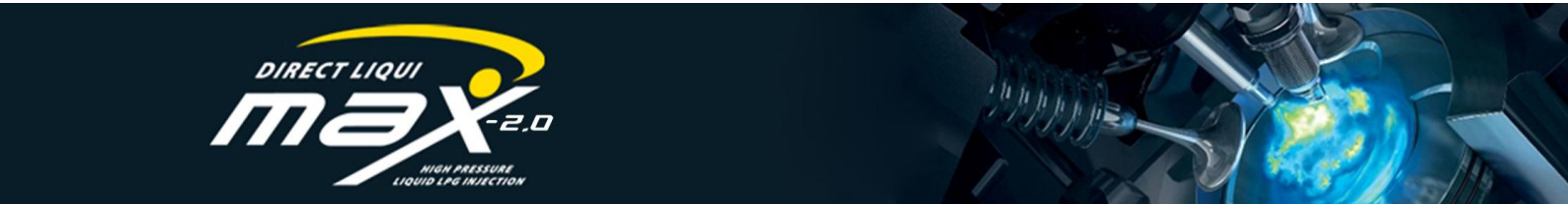
Hose	from	to	Length (cm)
	Adapter original petrol hose	Petrol boost pump	original
XD-3	Fuel supply unit	High pressure petrol pump	40
XD-3	Petrol boost pump	Fuel supply unit	40 (90°)
XD-3	Fuel return unit	High pressure petrol pump	35 (90°)
	Fuel return unit	High pressure petrol rail	n.a.



Install the fuel line using two bonded seal washers and banjo bolt :

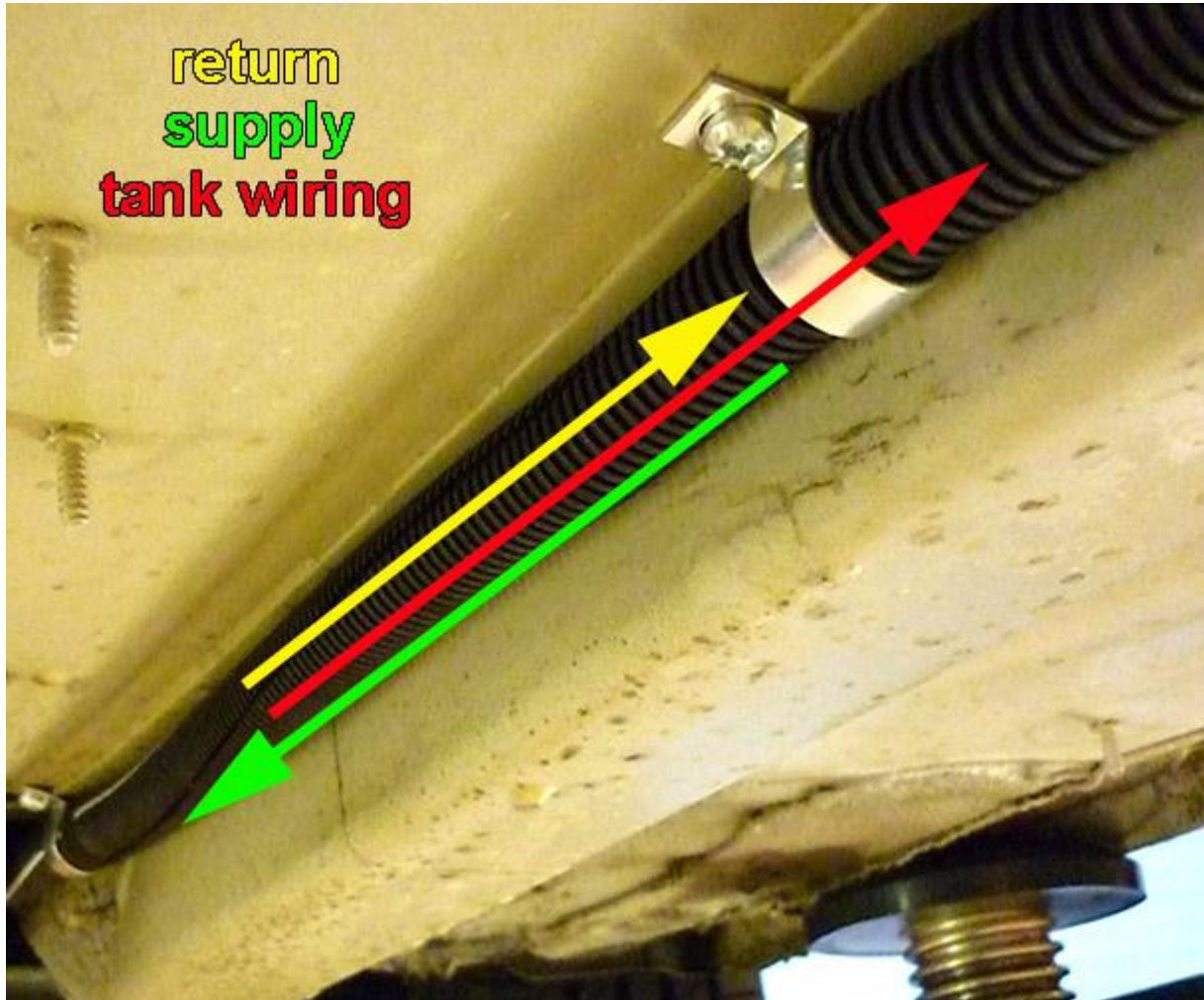


Filtered banjo: (FSU supply inlets / boost pump inlet : black filtered banjo) :



Supply hose – Return hose – Tank wiring

Protect the supply- and return hose together with tank-wiring using the Ø16 split tube.
Mount the "hose assembly" with clamps, with a maximum distance of 40cm.



Hose routing



Re-use clip that you previously removed.



Mounting the AFC fuses and relays



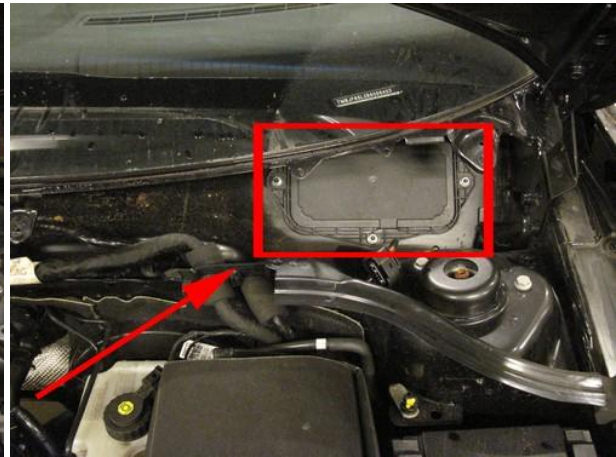
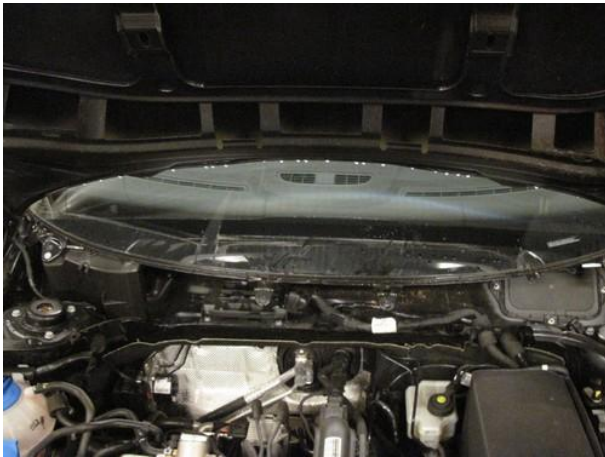
Mount plastic AFC clip on AFC bracket with quick clips & mount on original battery mounting bolt.



Mount the AFC on the plastic AFC clip.
Mount fuses & relays to the AFC bracket with bolts M6x10 and (spring)washers.



Fuel switch / CAN wiring / petrol pump wiring grommet



Remove wipers, wiper box cover and wiper motor. Remove cover behind wiper motor.



Drill hole Ø20mm and mount transit rubber. Mount cover back and stab wiring through the grommet.



Use a sealant for a watertight transit.

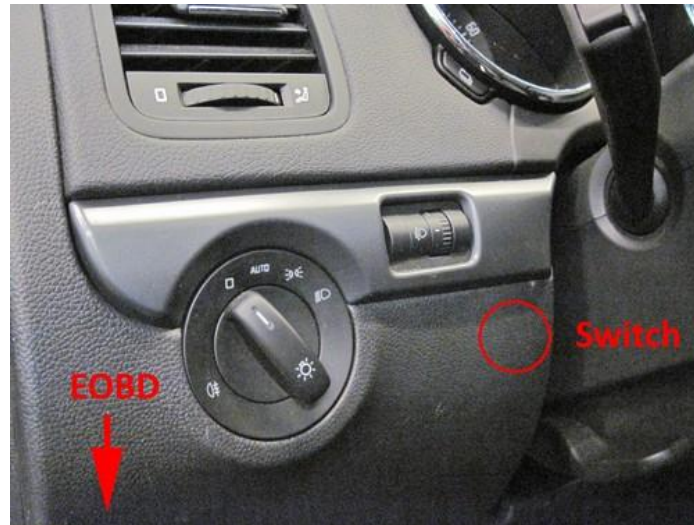


Wiring routing



 Mount the switch.

EOBD connector



Connector located underneath steering wheel.

Mounting the fuel selection switch

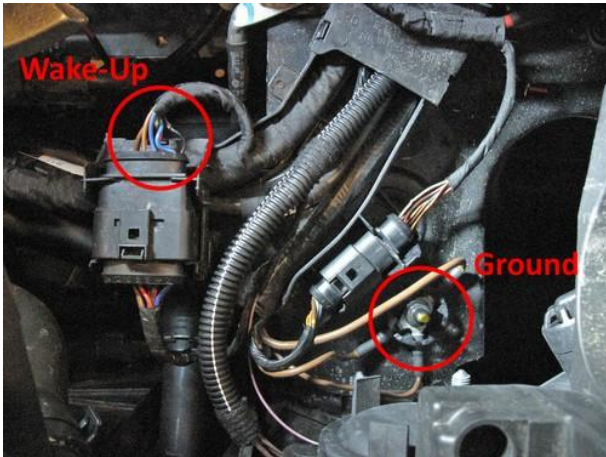


Drill hole Ø8,5mm and mount switch.



Electrical connections

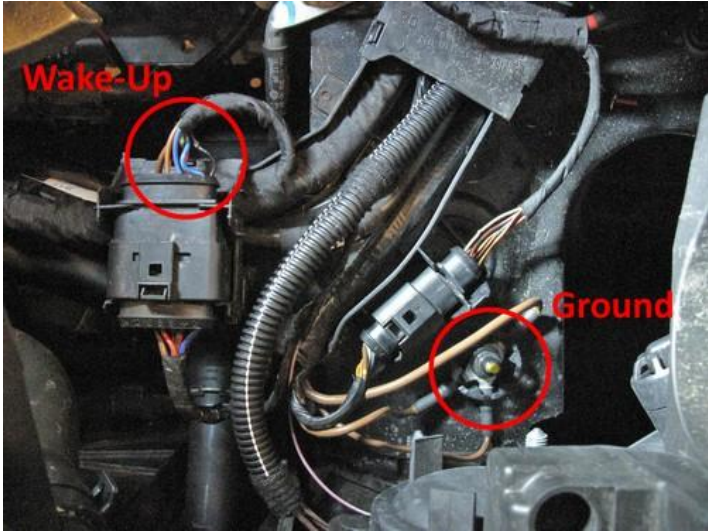
**Check and measure the wiring in case of changes in the cars wiring colours.
Insulate not used wires.**

Wire number / code	Wire colour	Connection
1-32 MAIN GND ecu MAIN GROUND SENSE MAIN GND pump driver MAIN GND boost pump	brown	Use a ring terminal. Wire location : left underneath air filter housing on chassis beam Original ground point. 
4 – 13 – 44 +12V BATT sense +12V BATT fused +12V BATT boost pump +12V BATT pump driver	red	Connect to the '+' of the battery (+30); use a ring terminal. Do not place the fuse in the holder before having completed the installation of the lpg system. Wire location : in relay / fuse box left side engine room 



Electrical connections

Check and measure the wiring in case of changes in the cars wiring colours.
Insulate not used wires.

121	Wake-up	Red-grey	Wire colour : black Wire location :14-pole connector underneath air filter housing 
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23	Digital Simulation	Green-red	insulate
115	Digital input 4	Yellow-red	insulate
119	Digital input 2	Yellow-grey	insulate
10	Simulation 2	Green-black	insulate
6	Lambda1 WB	Orange	insulate
42	Lambda2 WB 10KΩ	Orange-white	insulate
97	Digital input 5	Yellow-orange	insulate
113	Digital input 6	Yellow-purple	insulate



Electrical connections

**Check and measure the wiring in case of changes in the cars wiring colours.
Insulate not used wires.**

Wire number / code	Wire colour	Connection
18 Analog 1 25 Simulation 1	Blue-red Green-grey	<i>High pressure petrol sensor interruption</i> Sensor side. ECU side. Wire colour : grey-black Wire location : petrol ecu, connector T60, pin 40
19 Analog 4	Blue-white	<i>High pressure petrol sensor ground offset</i> Wire colour : brown-blue Wire location : petrol ecu, connector T60, pin 13
117 Digital input 3	Yellow-black	<i>High pressure petrol sensor supply 5V</i> Wire colour : red-blue Wire location : petrol ecu, connector T60, pin 29
7 +12V IGNITION	grey - white	<i>Make a connection to ignition + / contact + (+15). Do not place the fuse in the holder before having completed the installation of the lpg system.</i> Wire colour : black-yellow Wire location : petrol ecu, connector T94, pin 87
17 Analog 2	Blue-black	<i>Intake air temperature</i> Wire colour : yellow Wire location : petrol ecu, connector T60, pin 42
27 +5V sensor 37 C ground 20 Analog 3 MAP	Red Brown Blue	For measuring the inlet manifold pressure (MAP).
Cut off connector:	Red:insulate Brown:insulate Blue	For measuring the inlet manifold pressure engine MAP sensor. Wire colour : purple-black Wire location : petrol ecu, connector T60, pin 55
8 RPM	Purple-white	For measuring the engine speed signal. Wire colour : black Wire location : petrol ecu, connector T60, pin 53
15 T-ect	Grey	For measuring the engine coolant temperature. Wire colour : brown Wire location : petrol ecu, connector T60, pin 57



Electrical connections

Check and measure the wiring in case of changes in the cars wiring colours.
Insulate not used wires.

Engine room

Wire number / code	Wire colour	Connection
<i>3-pole connector</i>		Connect the 3-pole connector to the Psys sensor positioned into the Fuel Return Unit.
35 C Ground pin A	Brown	Sensor wire pin A
9 +5V sensor pin B	Red	Sensor wire pin B
16 Psys pin C	Green	Sensor wire pin C
14 T-LPG	Grey	Not used, insulate.
<i>2-pole connector Boost Pump</i>		
106 + Lock-off Boost Pump	Red	Connect the 2-pole connector to the lock-off valve of the Boost Pump.
98 Ground lock-off	White-yellow	
<i>2-pole connector FSU</i>		
108 + Lock-off FSU	Red	Connect the 2-pole connector to the lock-off valve of the Fuel Supply Unit
100 Ground lock off	Pink-yellow	
<i>2-pole connector FRU</i>		
90 + Lock-off FRU	Red	Connect the 2-pole connector to the lock-off valve of the Fuel Return Unit
82 Ground lock off	Blue-yellow	
<i>4-pole diagnose connector</i>		Diagnose connector for service / diagnosis
46 Service TxD	Grey	Connector pin 1
65 Service RxD	Grey	Connector pin 2
68 C ground	Brown	Connector pin 4
<i>Boost pump relay</i>		
107 + relay boost pump	Red	Pin 86 of the boost pump relay
99 GND relay boost pump	Green-yellow	Pin 85 of the boost pump relay
+12V fused BATT	Red	Pin 30 of the boost pump relay
+12V Boost pump	Red	Pin 87 of the boost pump relay

Driver room

<i>3-pole micro connector</i>		
66 Ground fuel switch	Brown	Connect the 3-pole connector to the Prins fuel selection switch.
3 +12V fuel switch	Red	
49 LIN fuel switch	yellow	
51 CAN-High	Blue-yellow	EOBD connector pin 6 :
70 CAN-Low	Blue	EOBD connector pin 14 :

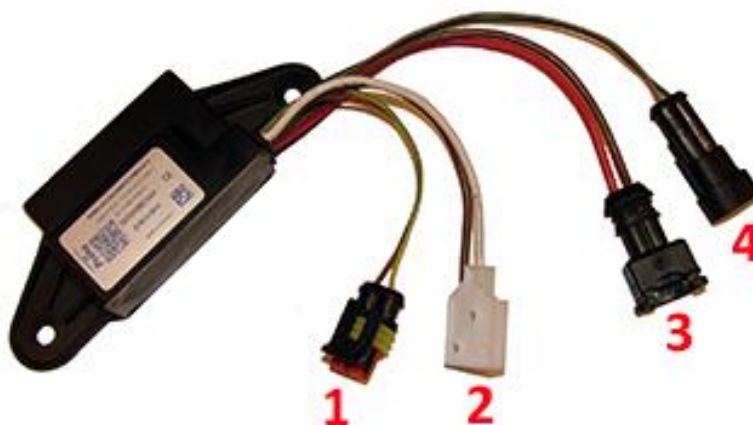


Electrical connections

Check and measure the wiring in case of changes in the cars wiring colours.
Insulate not used wires.

Lpg tank housing

Wire number / code	Wire colour	Connection
3-pole tank level connector 40 Ground tank gauge 12 Tank level in 11 + tank level supply	Brown Blue Red	Connect the 3-pole connector to the tank level sensor. Connector pin 1 Connector pin 2 Connector pin 3
1. 2-pole connector tank lock-off	Green-yellow Brown	Pump driver to lock-off power Pump driver to lock-off ground
2. 3-pole fusite	Red Brown -	1. Pump power 2. Pump ground 3. not used
3. 2-pole connector tank pump	Red 2.5mm ² Brown 2.5mm ²	Pump driver power Pump driver ground
4. 2-pole connector	Grey Green	Pump driver diagnose Pump driver control



Wiring tank relay 2 + tank relay 26 Ground tank relay +12V BATT fused +12V pump driver	Red Green-yellow Red 2.5mm ² Red 2.5mm ²	Pin 86 of the tank relay Pin 85 of the tank relay Pin 30 of the tank relay Pin 87 of the tank relay
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Checklist after installation

1. Install the system fuses.
Turn on ignition.
Connect the Prins interface wire and run the Prins diagnosis program.
When working on the car, beware of moving and rotating parts in the engine compartment (even when the engine is not running !!).
2. When commissioning the LPG system, you must activate the AFC with the diagnosis software.
3. Check whether the program in the AFC matches with the car (dedicated engine set):
See "Identification" in the diagnosis program.
4. Check all components and connections for any LPG leakage, use a LPG leak detector device or a fluid detection like soap. Also check for petrol leakage. Make sure the solenoid valves are in open position.
No evidence of leakage is permitted.
Caution for moving and rotating parts in the engine compartment !
5. Use the diagnosis software to check again all input and output signals.
6. Check the system for error codes and solve these, if required.
Check the petrol MMS for EOBD error codes.
Place the protection connector back on the diagnose connector.
7. Make a test drive and check the cars drivability on LPG and petrol.

