



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

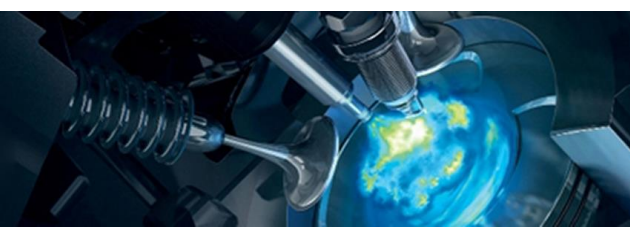


## installation manual Engine Kit part 2/2



MANUFACTURER  
TYPE  
ENGINE DISPLACEMENT  
NUMBER OF VALVES  
ENGINE CODE / NUMBER  
VEHICLE CATEGORIES  
TRANSMISSION  
VERSION  
PETROL ECU MANUFACTURER / CODE  
HIGH PRESSURE PETROL PUMP  
HIGH PRESSURE PETROL INJECTOR  
MODEL YEAR:  
SYSTEM APPROVAL NUMBER ( R115 )  
LOCATION R115 SYSTEM STICKER  
ENGINE SET NUMBER  
MANUAL NUMBER  
DATE

Volkswagen  
Golf Sportsvan  
1200  
16  
CYVA  
M  
MT  
**AFC-2.1**  
Bosch Med 17.5.25  
Continental 04E127026E.01  
Bosch HDEV-5-2 0261.500.248  
11-2013  
E4-115R-000010 / DLM-LPG 03  
right side, centre door post  
366/071081/A  
076/3602500  
2015-26-1  
Version 2013-09-28 D



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

## 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-2.0 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 / servicing** 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 the 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 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
- 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 ( 5-50Nm )
- 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 )
- 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	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
( filtered ) Banjo bolt	10	14
Supply line connection	15	13
Fuel module Allen bolts	20	7
Filler hose connection	50	22
Boost pump clamp	7	10
High pressure petrol fuel line	24-35	17

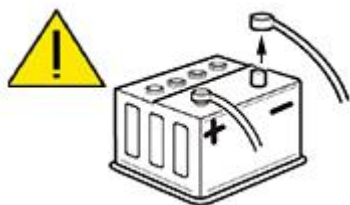
### EXPLANATION OF SYMBOLS :



= IMPORTANT, CAUTION

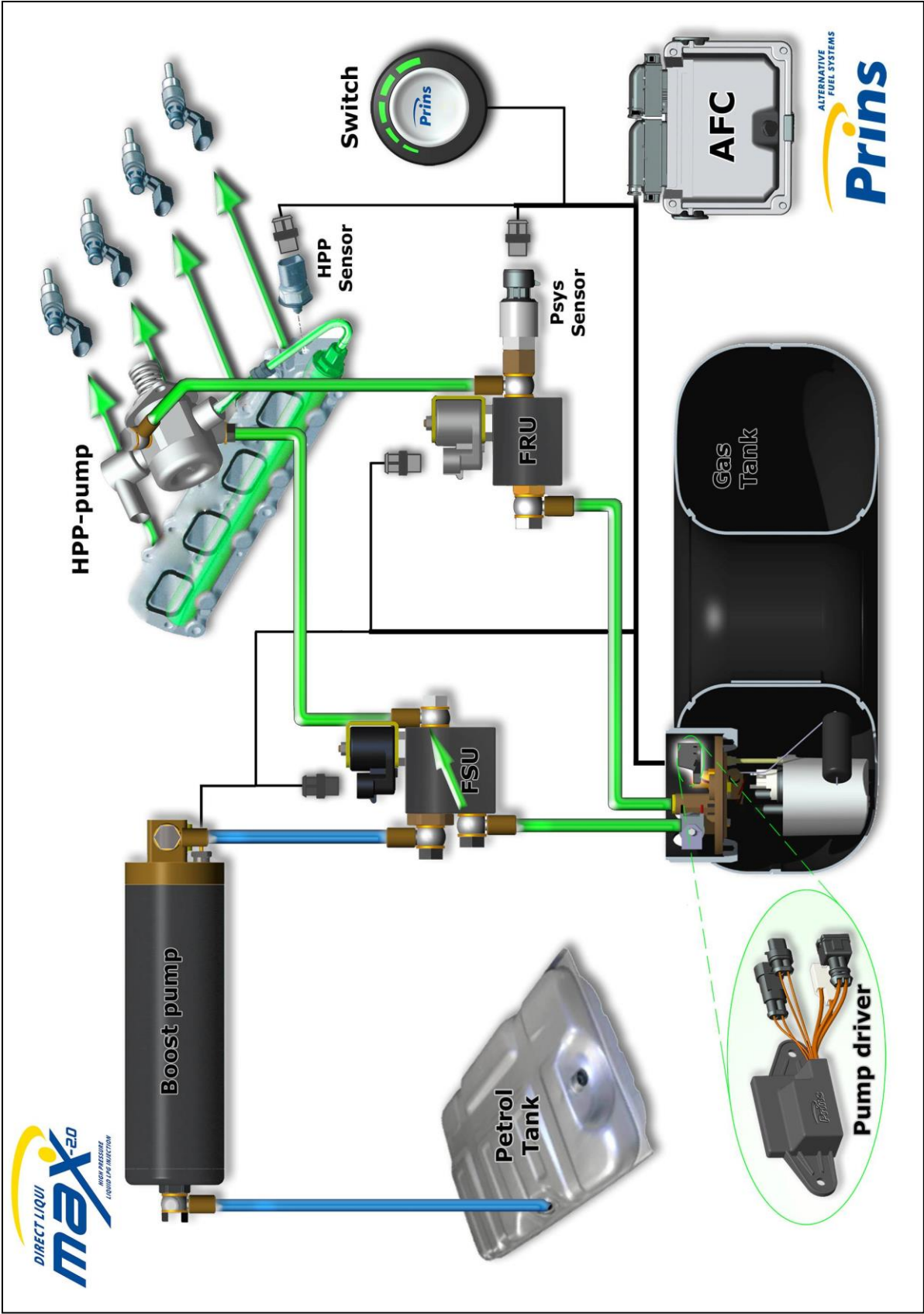


= WEAR SAFETY GOGGLES

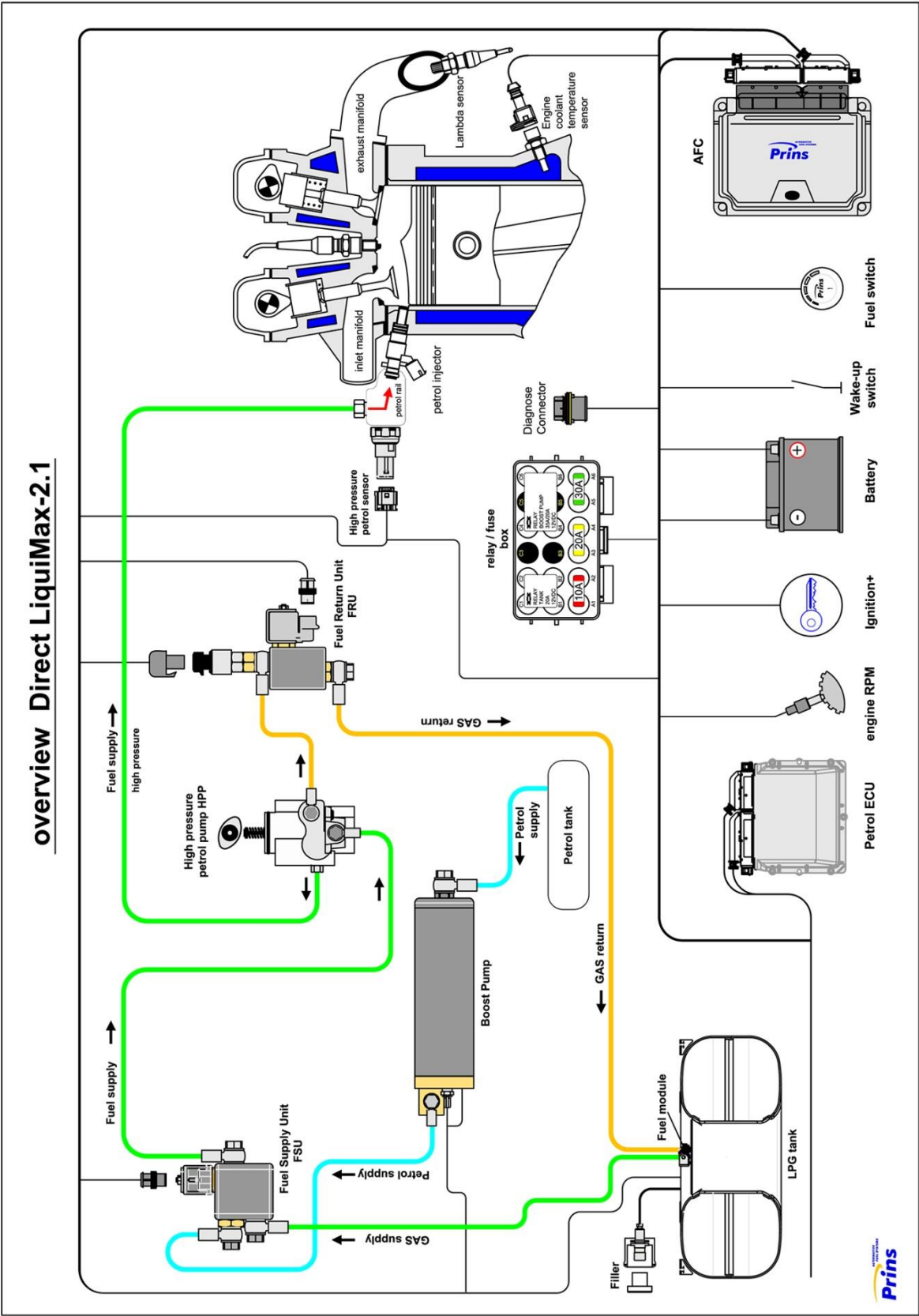




Direct LiquiMax-2.0, AFC-2.1



Direct LiquiMax-2.0 diagram, AFC-2.1


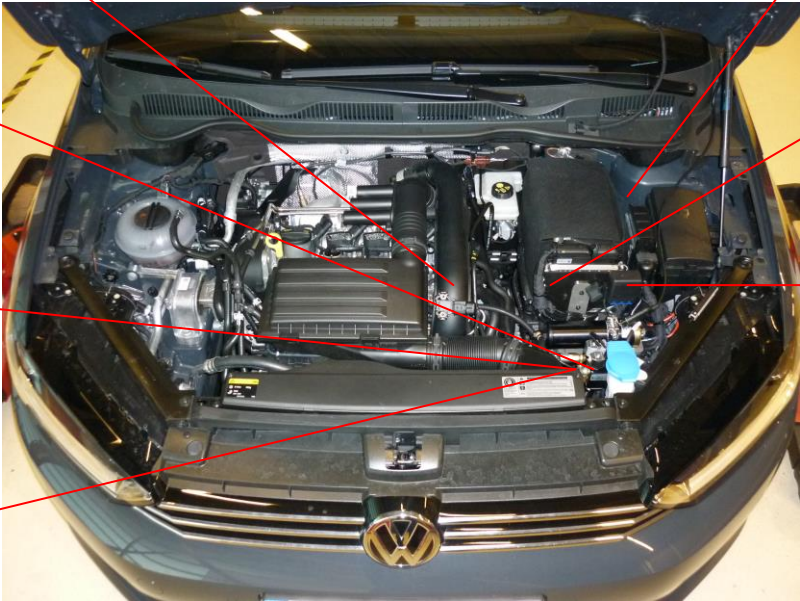



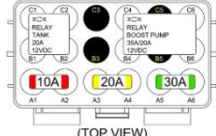




## Direct LiquiMax parts / approval numbers

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



DLM component location overview

<p><b>HPP pump</b></p> 		<p><b>Petrol ECU</b></p>
<p><b>FSU</b></p> 		<p><b>AFC</b></p> 
<p><b>FRU</b></p> 		<p><b>Fuse / relay box</b></p> 
<p><b>Boost pump</b></p> 		

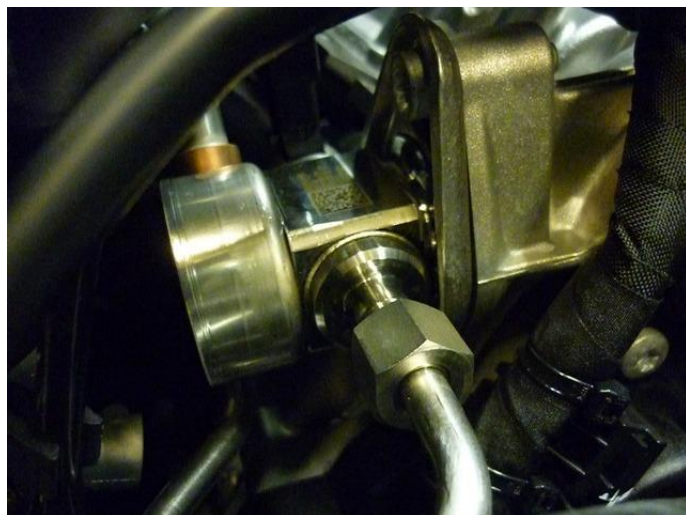
	<p>R115 approval sticker : Right side centre door post</p>
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## High pressure petrol pump installation



Replace the original high pressure petrol pump for the adapted high pressure petrol pump.  
( Follow the workshop manual of the car )

Remove complete air filter



original



## High pressure petrol pump installation



Replace the original high pressure petrol pump for the adapted high pressure petrol pump.  
( Follow the workshop manual of the car )



Carefully heat up the FSU out - XD-5 hose and push it over the inlet.

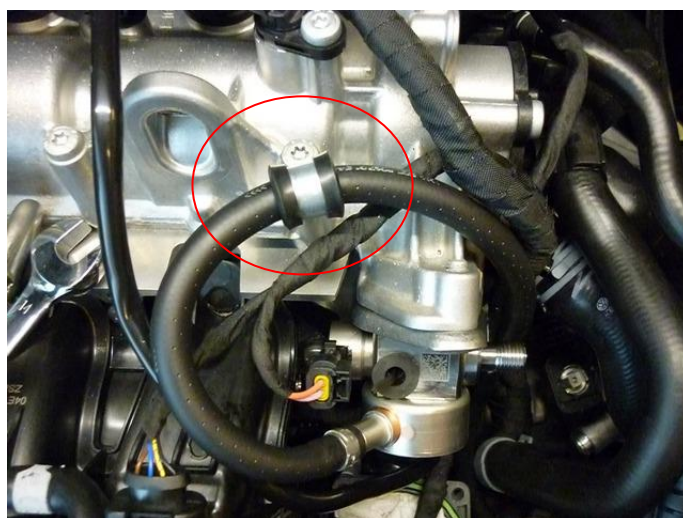
**CUT the hose on length : 80 CM before installing onto the pump.**



**USE two 12.8 clamps !!**

Clamp on the hose for the FSU.

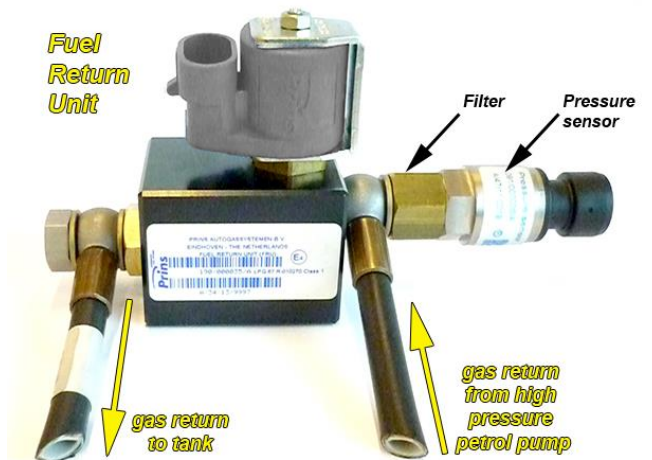
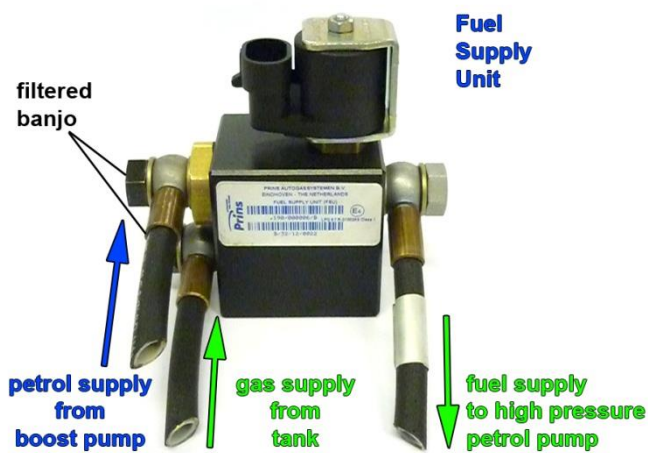
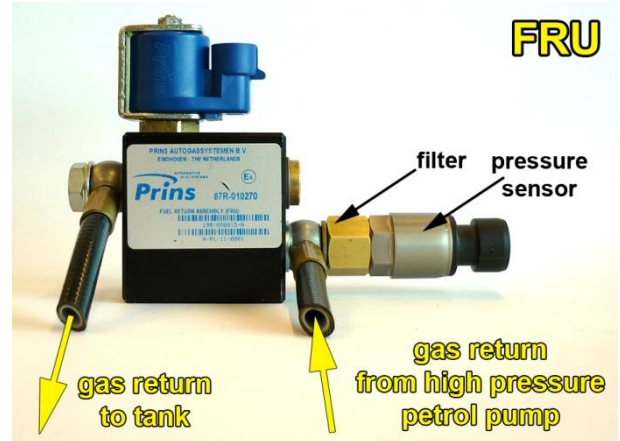
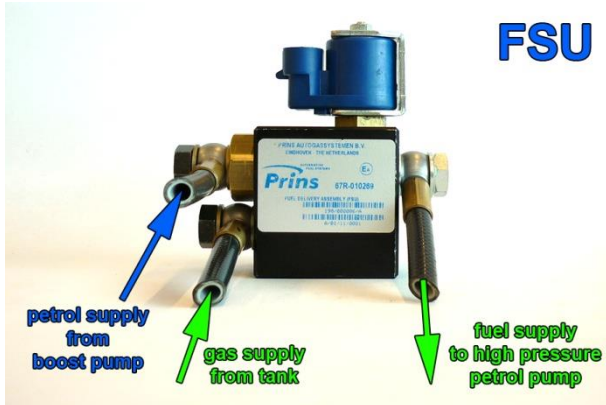
## High pressure petrol pump LPG return and supply



Use a 13mm clamp for the hose, use cover bolt.



# Fuel Supply Unit / Fuel Return Unit

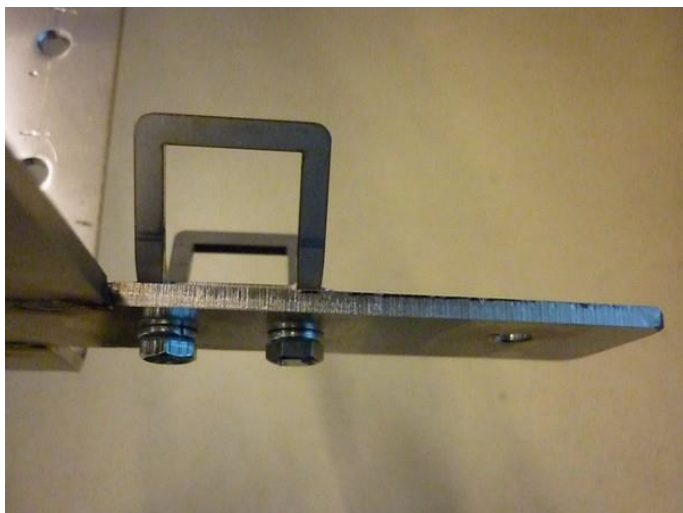


Black filtered banjo will only be used on inlet connections !

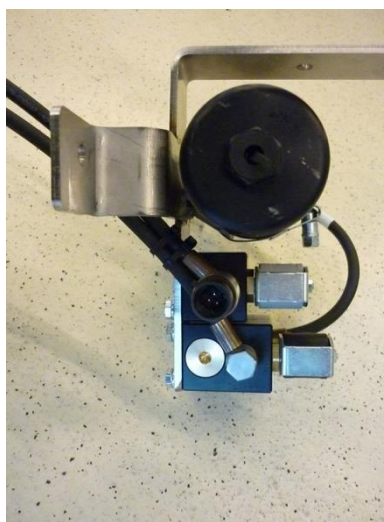
Filter inside sensor banjo



## Installation of the DLM system onto the bracket

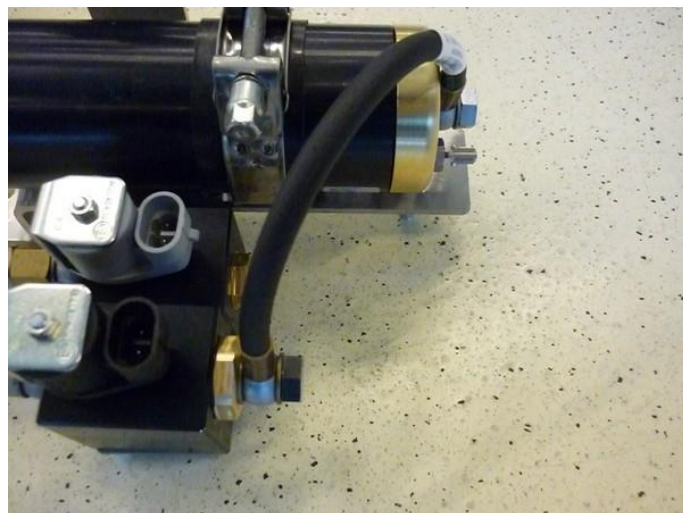


**Install M8 bolt before mounting the boost pump !**





## Installation of the DLM system onto the bracket

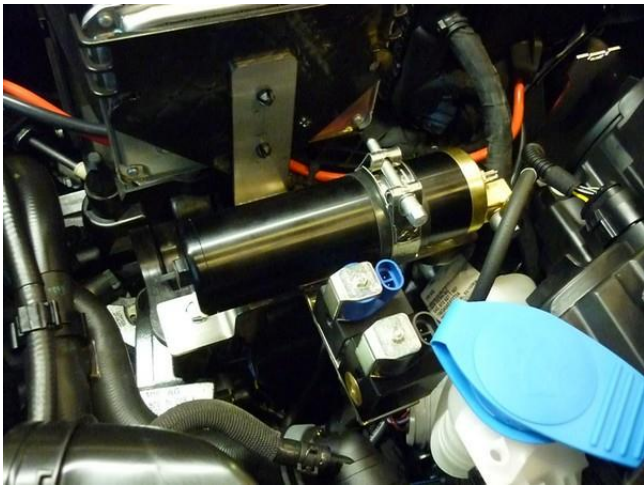
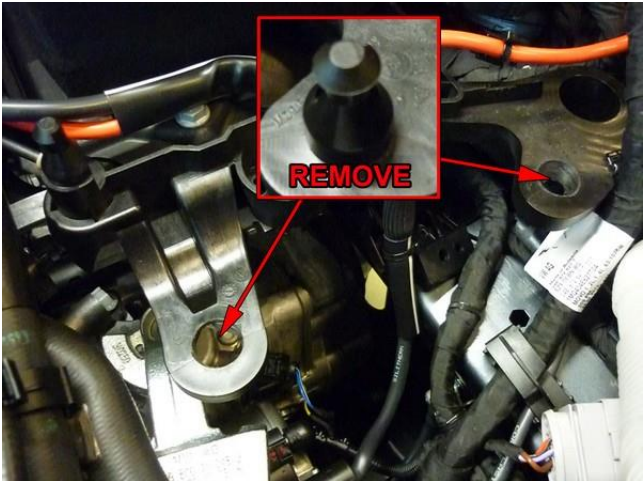


Boost pump with other cover:





Mounting the DLM system bracket



Bolt on the bracket with big washer plates on the underside.



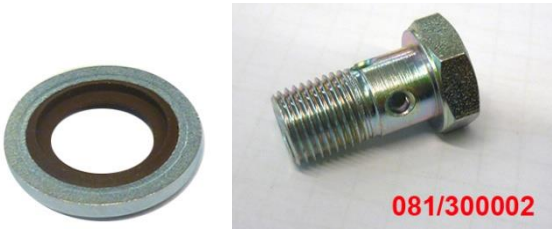


LPG / petrol fuel lines

Hose	from	to	Length ( cm )
1 petrol hose	Adapter original petrol hose	Petrol boost pump	45
2 XD	Fuel supply unit	High pressure petrol pump	80 (original 100cm!)
3 XD	Petrol boost pump	Fuel supply unit	20
4 XD	Fuel return unit	High pressure petrol pump	40



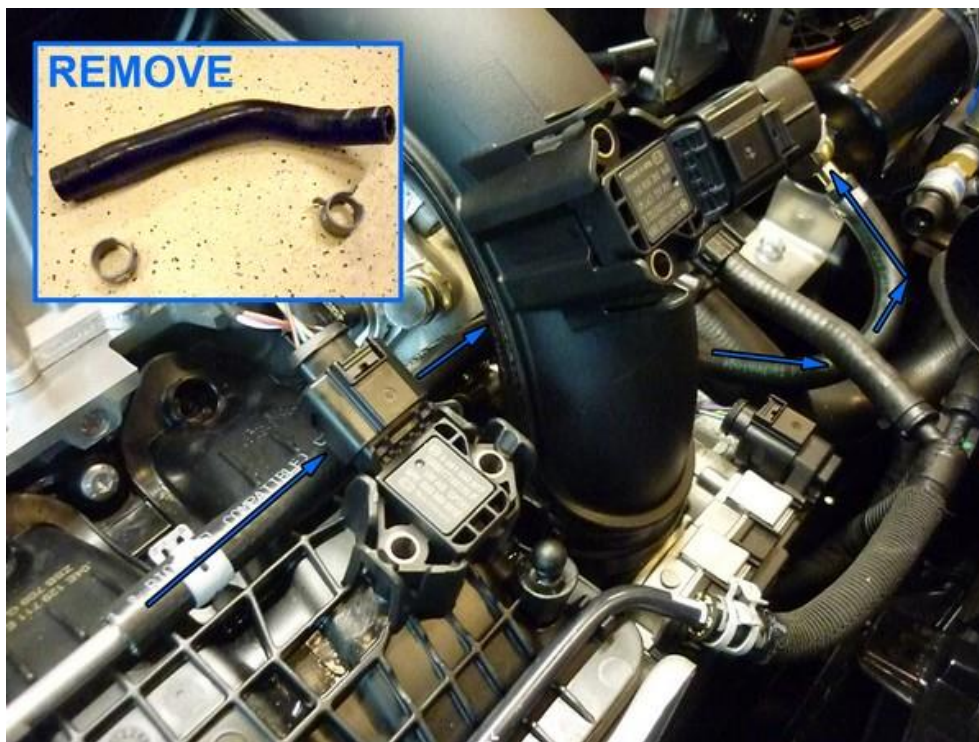
Install the fuel line using two bonded seal washers and banjo bolt :



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



## Boost pump supply



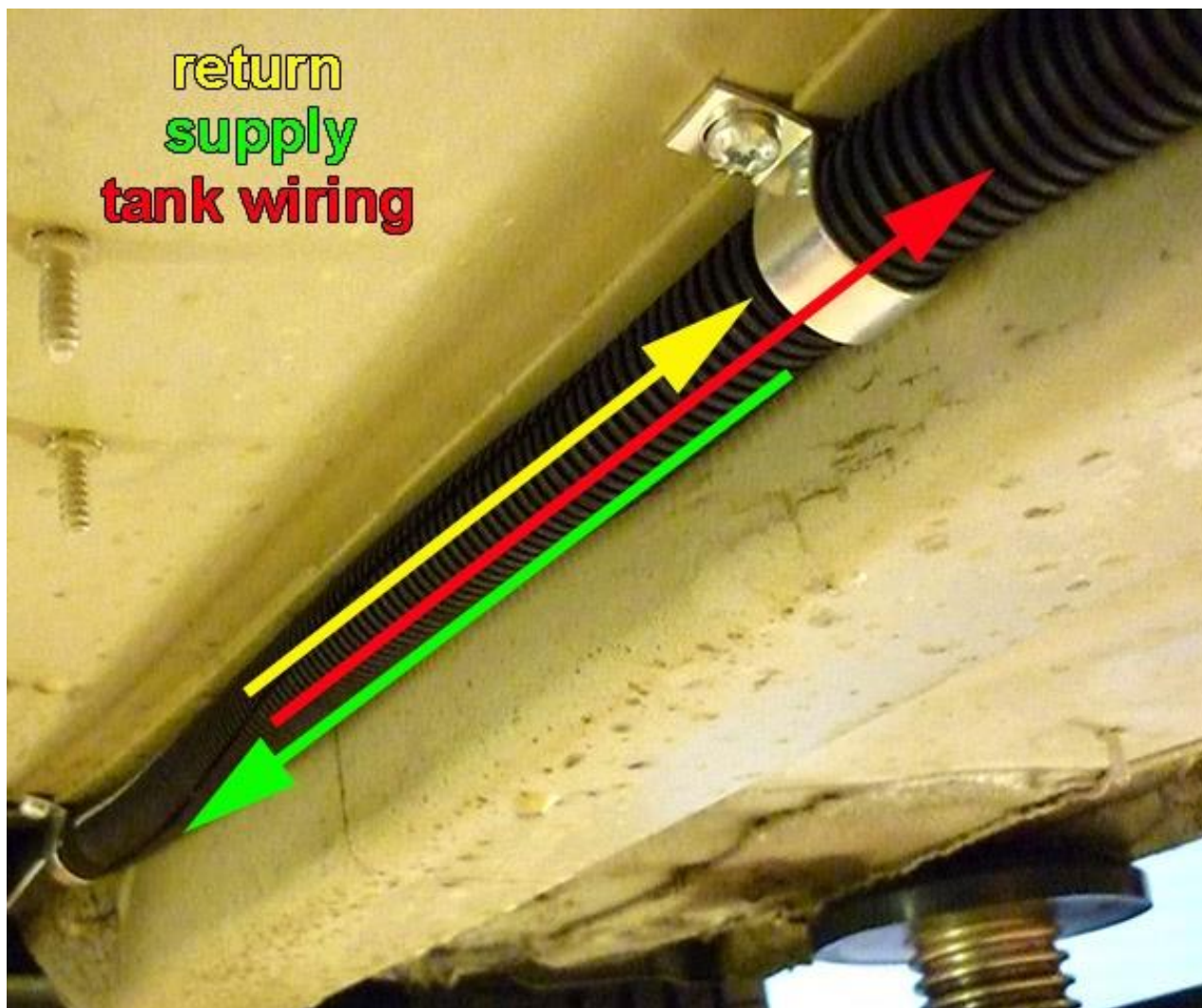
Remove original hose and install the new longer hose ( 45cm )  
Install on boost pump side a XD5 banjo eye with clamp 15.3 onto the hose.





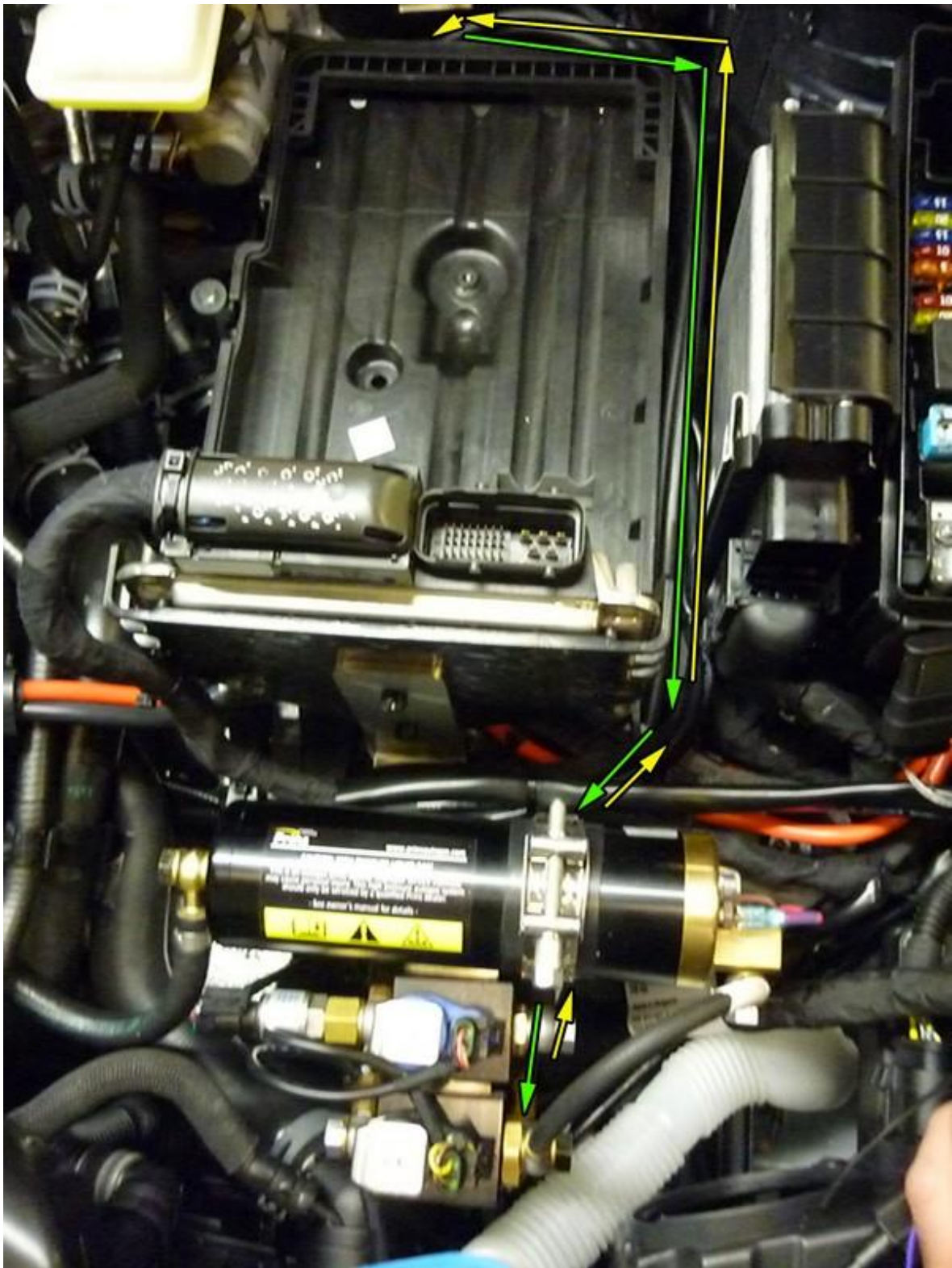
### Supply hose – Return hose – Tank wiring

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.



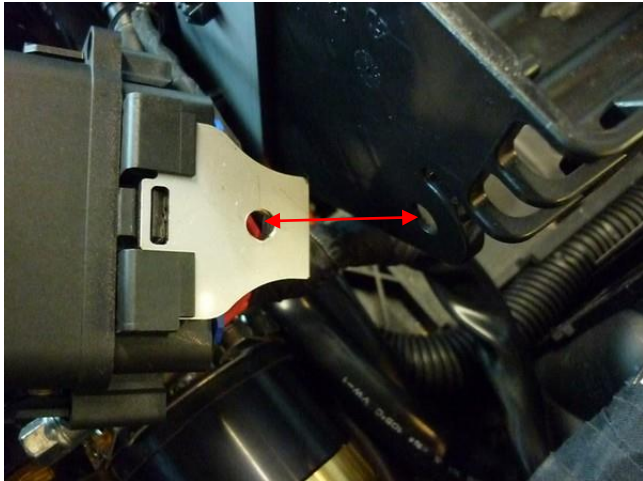
Demo photo

Hose routing to tank

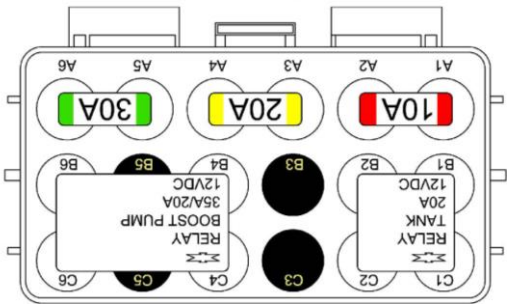




Mounting the DLM fuse box



bolt with ( spring or jagged ) washer



With AFC Clip mounted onto bracket.

Wiring AFC



Grommet

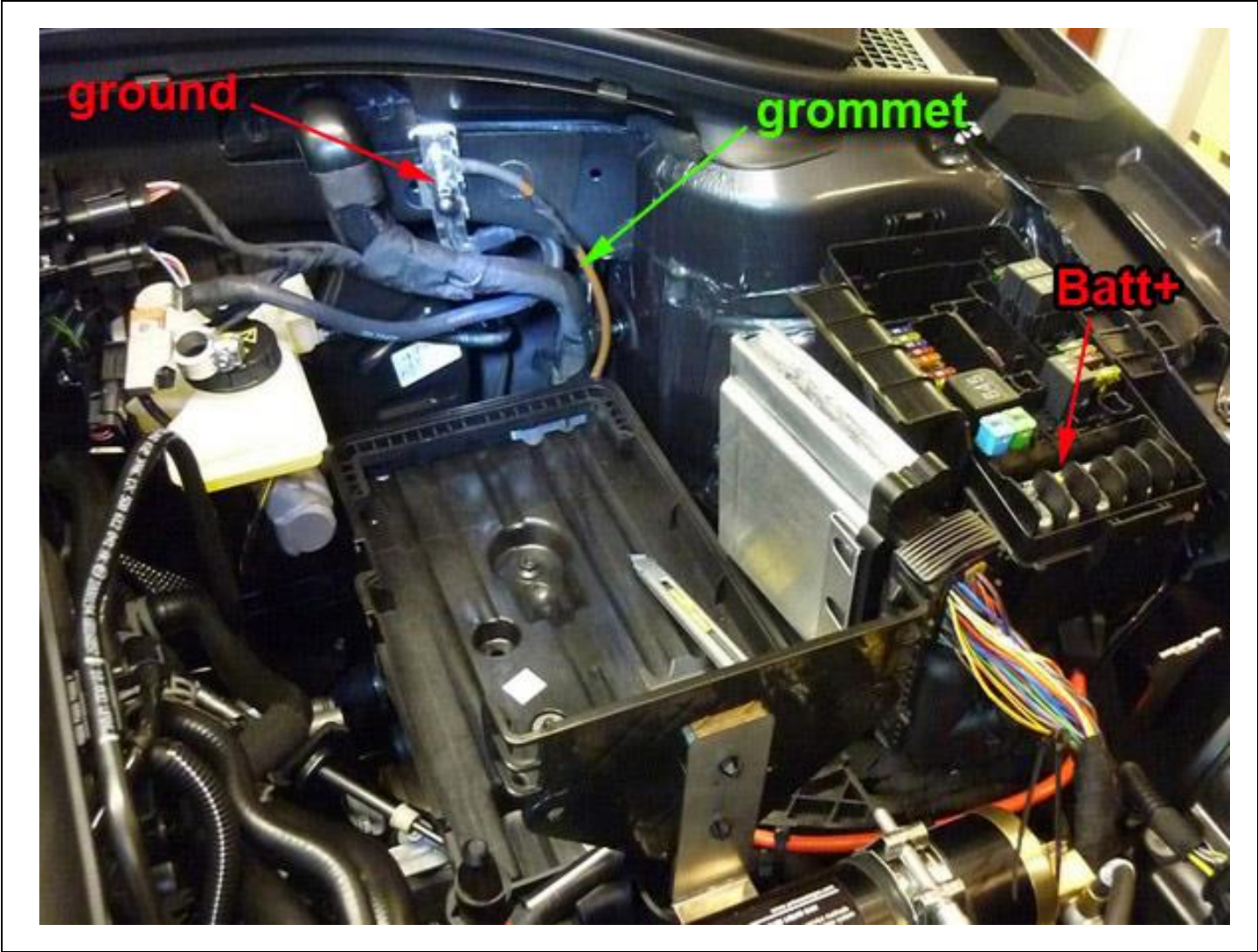




Wiring battery + in fuse box



Wiring







Mount the switch, drill Ø8,2mm.

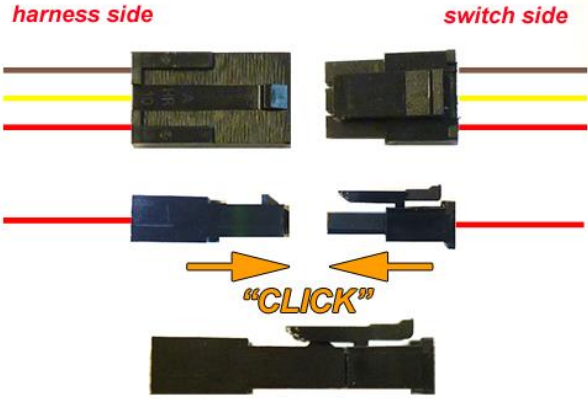
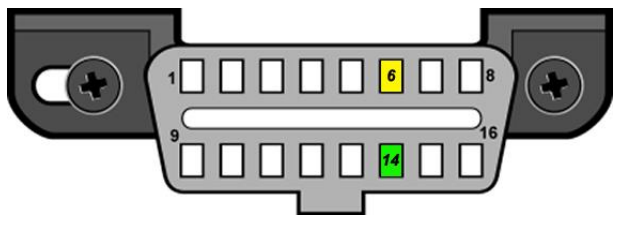
## Mounting the fuel selection switch



Electrical connections

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

Driver room

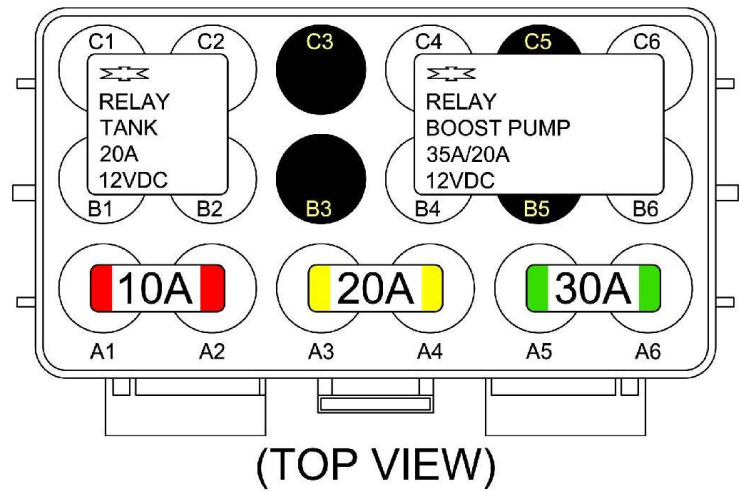
Wire number / code		Wire colour	Connection
3-pole micro connector			
66	Ground fuel switch	Brown-black	Connect the 3-pole connector to the Prins fuel selection switch.
3	+12V fuel switch	Red-white	
49	LIN fuel switch	Yellow	
			
51	CAN-High	Yellow	EOBD connector pin 6, orange-red
70	CAN-Low	Green	EOBD connector pin 14, orange-black
			



Electrical connections

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

1-32 MAIN GND ecu MAIN GROUND SENSE	Brown	Connect to the '-' of the battery ( -31 ) ; use a ring terminal. Wire location : original ground point behind battery
4 – 13 +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. <b>Do not place the fuses</b> before having completed the installation of the lpg system. Wire location : fuse box



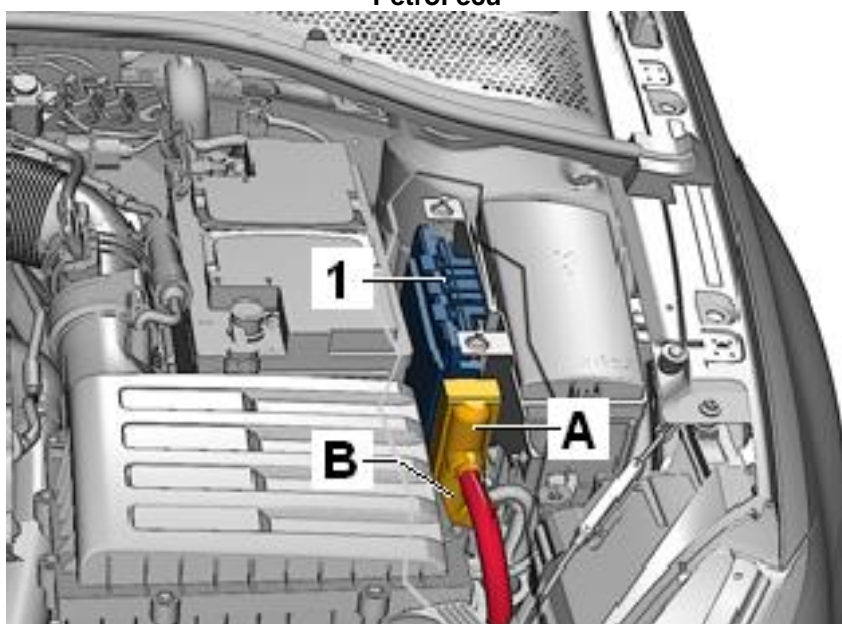
## Electrical connections

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

### Insulate not used wires.

Wire number / code		Wire colour	Connection
10	DAC 2	Green	insulate
17	AD 2	Blue-green	insulate
19	AD 4	Blue	insulate
20	AD 3	Blue-pink	insulate
21	AD 9	Blue-purple	insulate
22	LSS 1	Purple-white	insulate
23	LSS 2	Purple-green	Insulate
42	Digital out pull up 2	Red-purple	Insulate
56	DI 2	Yellow-green	Insulate
58	+12V switched	Red-white	Insulate
60	DI 3	Yellow-pink	Insulate
61	DI 4	Yellow-blue	insulate
74	DAC 3	Green-pink	insulate

Petrol ecu



A=T60

B=T94



## 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
		<i>High pressure petrol sensor signal interruption</i> Wire colour : red-yellow Wire location : petrol ecu, connector T60 / pin 10
36 AD 6	Blue-brown	Sensor side
25 DAC 1	Green-white	Petrol ecu side
63 Ground Shift	Blue-orange	<i>High pressure petrol sensor ground</i> Wire colour : brown Wire location : petrol ecu, connector T60 / pin 28
40 Wake-up	Grey-red	<i>High pressure petrol sensor 5Volt supply / car wake-up</i> Wire colour : yellow-red Wire location : petrol ecu, connector T60 / pin 3
18 AD 1	Blue-white	<i>Analog in ( sensor side ) MAP sensor in</i> Wire colour :black Wire location : petrol ecu, connector T60 / pin 8
8 RPM engine speed	Purple-white	For measuring the engine speed signal. Wire colour : brown-yellow Wire location : petrol ecu, connector T60 / pin 21
15 T-ect	Grey	For measuring the engine coolant temperature. Wire colour : green-zwart Wire location : petrol ecu, connector T60 / pin 27
7 +12V IGNITION	Grey - white	Make a connection to +ignition / contact+ ( +15 ). <b>Do not place the fuses</b> in the holder before having completed the installation of the lpg system. Wire colour : purple-black Wire location : petrol ecu, connector <b>T94</b> / pin 87

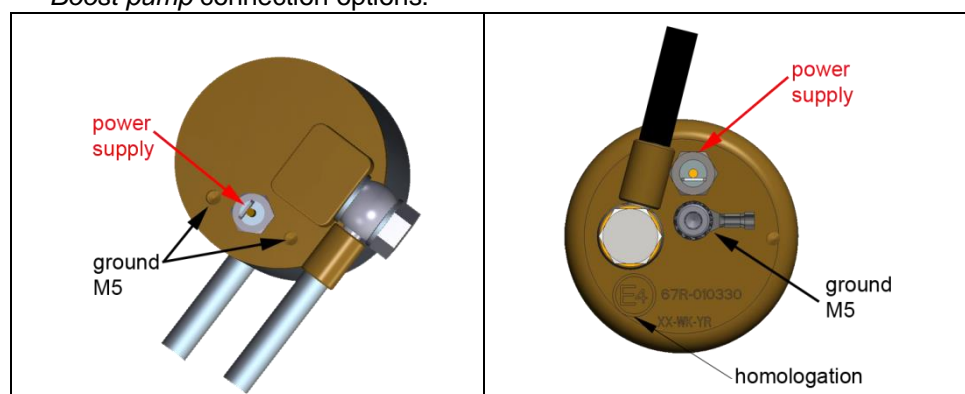
## Electrical connections

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
<b>3-pole connector</b>		
35 Ground Psys pin A	Brown	Connect the 3-pole connector to the Psys sensor positioned into the Fuel Return Unit.
9 +5V sensor pin B	Red-blue	Sensor wire pin A
16 Psys pin C	Green	Sensor wire pin B
		Sensor wire pin C
<b>2-pole connector FSU, black</b>		
24 + Lock-off FSU	Yellow-green	Connect the 2-pole connector to the lock-off valve of the Fuel Supply Unit
31 C Ground	Brown-black	
<b>2-pole connector FRU, grey</b>		
43 + Lock-off FRU	Red-white	Connect the 2-pole connector to the lock-off valve of the Fuel Return Unit
34 C Ground	Brown-black	
<b>4-pole diagnose connector</b>		
46 Service TxD	Grey	Diagnose connector for service / diagnosis
65 Service Rx D	Grey	Connector pin 1
68 C Ground	Brown-black	Connector pin 2
		Connector pin 4
<b>Boost pump relay</b>		
2 + relay boost pump	Red-white	Pin 86 of the boost pump relay C4
26 Ground BP relay	Purple-blue	Pin 85 of the boost pump relay B6
+12V fused BATT	Red 2.5mm2	Pin 30 of the boost pump relay C6-A5
+12V Boost pump	Red 2.5mm2	Pin 87 of the boost pump relay B4
<b>Wiring tank pump driver relay</b>		
57 + driver relay	Red-white	Pin 86 of the driver relay C1
73 LSS 4 tank relay	Purple-blue	Pin 85 of the driver relay B2
+12V BATT fused	Red 2.5mm2	Pin 30 of the driver relay C2-A4
+12V driver	Red 2.5mm2	Pin 87 of the driver relay B1

### Boost pump connection options:



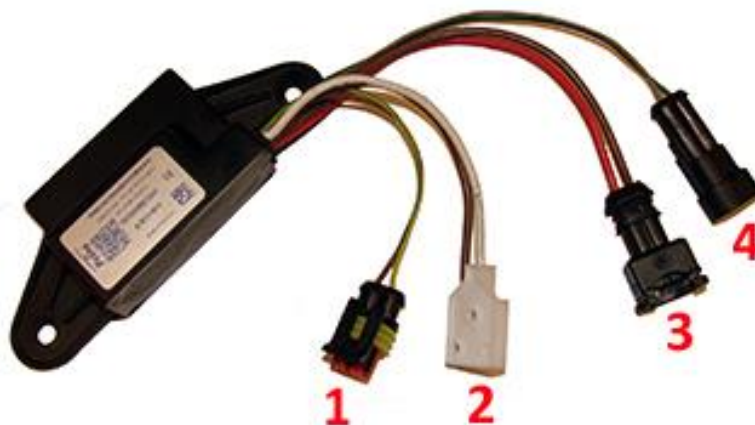


## Electrical connections


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 33 Ground tank gauge 12 Tank level in 11 + tank level supply	Brown-black Blue Red-blue	Connect the 3-pole connector to the tank level sensor.
2-pole driver connector 71 LSS 3 PWM driver 64 AD 5 driver diagnose	Purple-pink Blue-grey	Connect the 2-pole connector to the pump driver (4).
1. 2-pole connector tank lock-off	Green-yellow Brown	From tank pump driver From tank pump driver
2. 3-pole connector tank pump	Red 2.5mm <sup>2</sup> Brown 2.5mm <sup>2</sup>	From tank pump driver From tank pump driver
3. 2-pole connector power driver	Red 2.5mm <sup>2</sup> Brown 2.5mm <sup>2</sup>	From tank pump relay 87 From main ground
4. 2-pole connector driver	Green Grey	From AFC pin 71 pwm From AFC pin 64 diagnose



Prins safety stickers



A photograph of the engine compartment of a vehicle. A red arrow points from a Prins safety sticker on the engine cover to the main safety sticker image on the right.






**Prins**  
ALTERNATIVE FUEL SYSTEMS  
www.prinsautogas.com


**CAUTION: HIGH PRESSURE LIQUID GAS!**

This is an Autogas (LPG) vehicle. Improper service methods may cause personal injury. This high pressure autogas system should only be serviced by a qualified Prins dealer.

- See owner's manual for details -


  

**Boost pump**




A photograph of the boost pump. A red arrow points from the main safety sticker image to the Prins safety sticker on the pump.

**Drivers door**



A photograph of the driver's side door. A red arrow points from the main safety sticker image to the Prins safety sticker on the door.

**LPG TANK**



A photograph of the LPG tank. The Prins safety sticker is clearly visible on the tank's access panel.



## 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.