



Installation manual Dedicated PART 2/2



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

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Renault Captur 1200cc 16v H5F 403 TCe120 M AT (EDC) AFC-2.1 Continental EMS3150 Denso 166304016R

#115R-000012 / DLM-LPG 06 right side, centre door post 359/070017/A 076/1907400 2015-06-19

Version 2012-05-21 D



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



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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 / 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 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 is 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 anticorrosion 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.



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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 (10Nm)
- Torque wrench (200-250Nm)
- Portable light
- Assortment drill bits 4 to 12 mm
- Assortment cutters (ø 20, 30 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)



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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	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

EXPLANATION OF SYMBOLS:

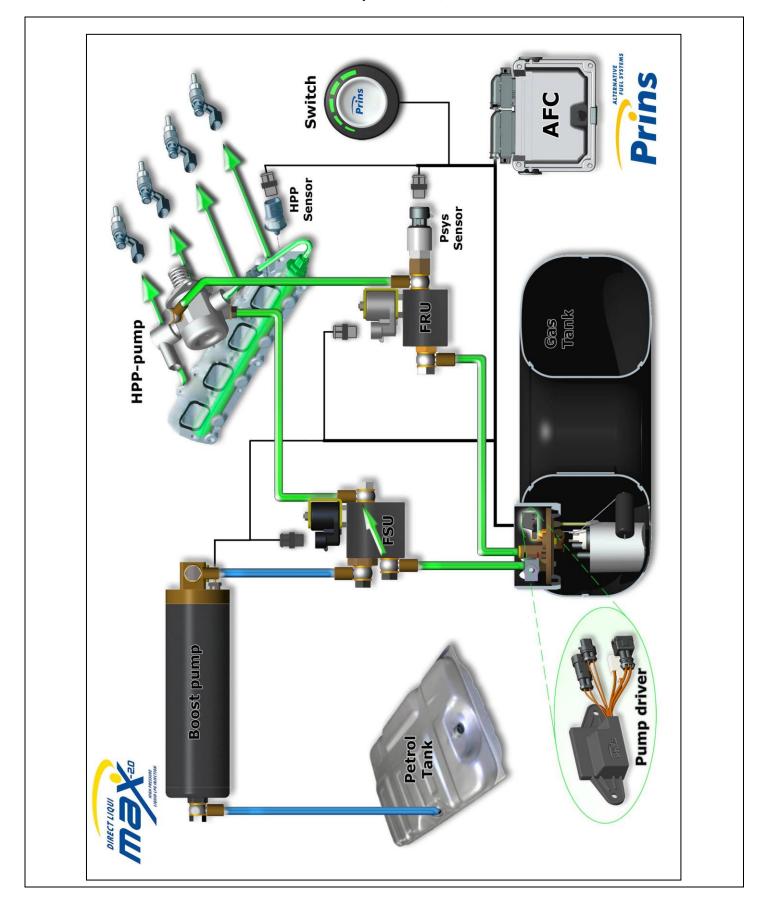


= IMPORTANT, CAUTION



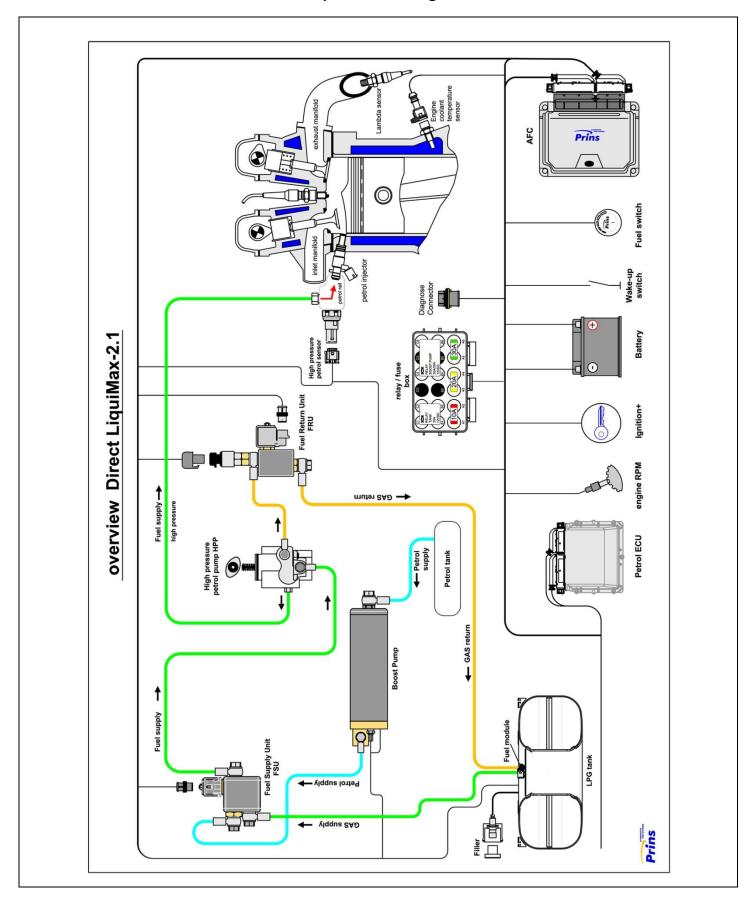


Direct LiquiMax-2.0, AFC-2.1





Direct LiquiMax-2.0 diagram, AFC-2.1





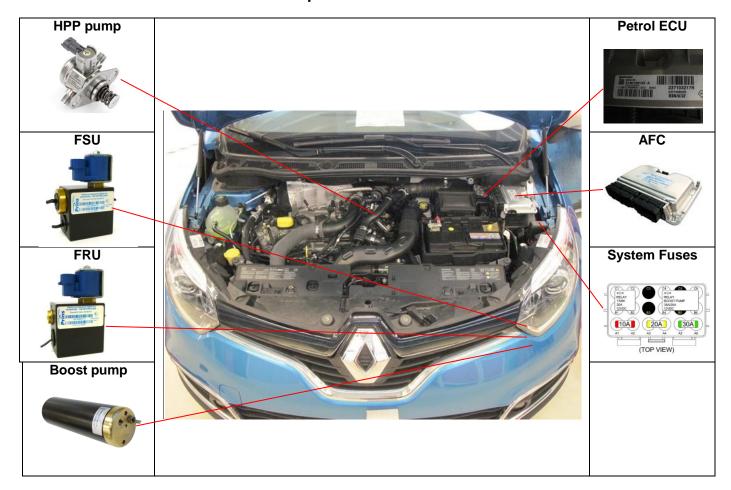
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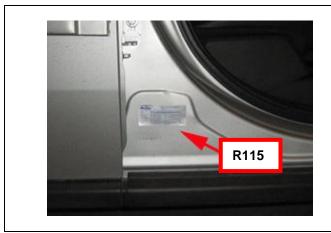
Direct LiquiMax parts / approval numbers





DLM component location overview





R115 approval sticker: Right side centre door post



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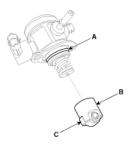
Installation of the Bosch High Pressure Petrol Pump

-INSTALLATION-

Before installing the high pressure fuel pump, position the roller tappet (**B&C**) in the lowest position by rotating the crankshaft. Otherwise the installation bolts may be broken because of tension of the pump spring.

Apply engine oil to the O-ring (**A**) of the high pressure fuel pump, the roller tappet (**B**), and the protrusion (**C**). (roller tappet, only if removed from cylinder head)

Also apply engine oil to the groove on the location where the protrusion (C) is installed.



Installation bolts:

When tightening the installation bolts of the high pressure fuel pump, tighten and turn the bolts in small step (0.5 turns) after tightening them with hand-screwed torque.

High pressure petrol pump installation bolt: 12.8 ~ 14.7 N.m

Petrol pipe:

First hand-tighten the nut(s) fully until they are not fastened any more in order to have them inserted in place and then completely tighten to the specified torque using a torque wrench.

If not tightening the bolts or nuts in a straight line with the mating bolt holes or fittings, it may cause a fuel leak due to broken threads. *Mount the new fuel line free of tension.*

High pressure petrol pipe installation nut: 26.5 ~ 32.4 N.m

Installation is reverse of removal.





It's possible that the new high pressure pump has another thickness of the mounting plate. This deviation in thickness needs your attention and requires an adaption of the mounting bolts. When the new mounting plate has the same thickness as the original, use the original bolts. When the new mounting plate is thicker as the original, use the longer supplied bolts and when the new mounting plate is thinner as the original plate use the shorter supplied bolts. Always check if the new high pressure pump is mounted properly!!



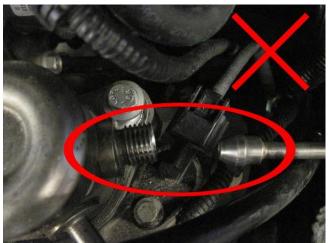


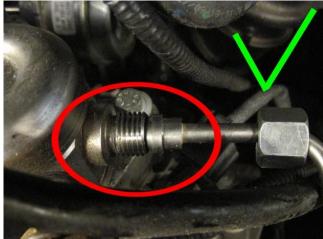
High pressure pump / Fuel line installation





Replace the High Pressure Pump. Replace the Fuel Line between HP pump and petrol injector rail. For easier mounting of the new fuel line, remove the throttle body.





Mount the new fuel line between HP pump and petrol injector rail.

Mount the new fuel line free of tension. If the fuel line does not fit correctly, adapt the fuel line.





Mount the new fuel line between HP pump and petrol injector rail.



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Fuel line installation 2 / Connector





. Mount the fuel line support bracket with clamp to the fuel line.





Mount bracket onto engine, also free of tension.





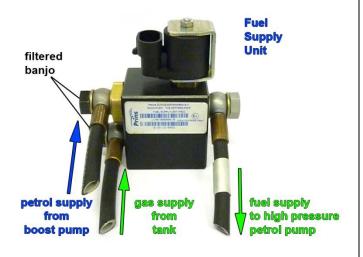
Extend the original wiring by cutting of the original connector. Extend the wiring and connect the new connector. Connect pin 1 from the old connector to pin 1 from the new connector. Mount connector to new HP pump.



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Fuel Supply Unit / Fuel Return Unit

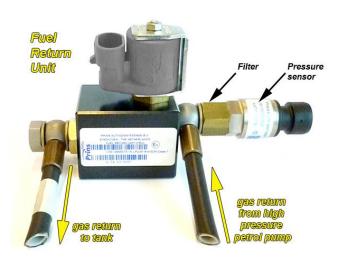




Black filtered banjo will only be used on inlet connections!







Filter inside sensor banjo





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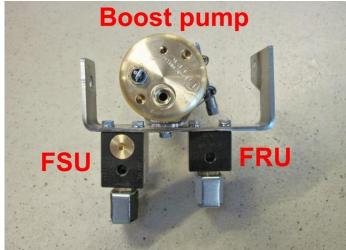
Mounting the FSU / FRU / Boost pump 1





Mount boost pump with clamp & rubber to bracket.





Mount Boost pump, FSU & FRU to bracket





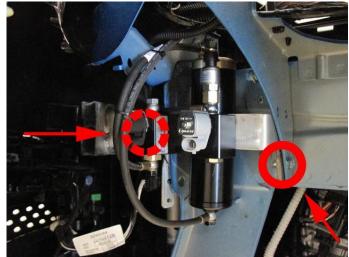
Mounting FRU & FSU.



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Mounting the FSU / FRU / Boost pump 2

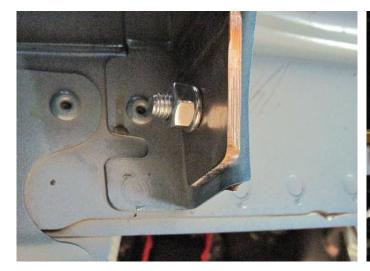




Mount the completed bracket to the original bolt on the front chassis beam (bumper bolt).



Front bolt.



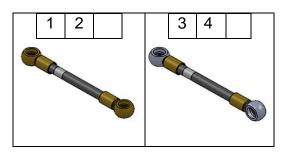




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Lpg / petrol fuel lines

	Hose From		to	Length (cm)
1	XD-3	Adapter original petrol hose	Petrol boost pump	175
2	XD-3	Petrol boost pump	Fuel supply unit	30
3	XD-3	Fuel supply unit	High pressure petrol pump	100
4	XD-3	High pressure petrol pump	Fuel return unit	110





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





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



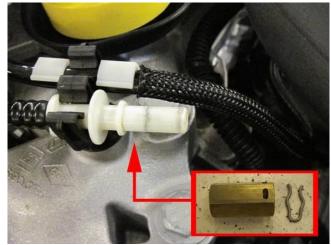
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Connection of the fuel hose to the boost pump

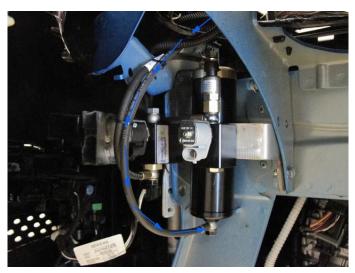




Remove original fuel line to HP pump. Mount adapter to original connection.









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Hose routing Boost pump, FSU & FRU

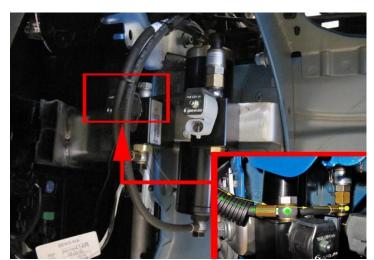




Boost pump -> FSU. Mount adapter to high pressure pump.



Hoses to FRU & FSU.





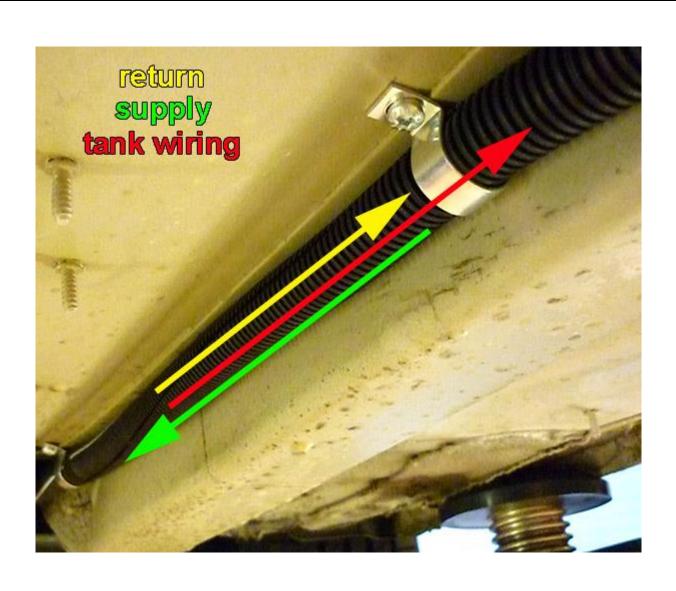
Hoses to FRU & FSU. Mount protection around hoses.



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Supply hose - Return hose - Tank wiring

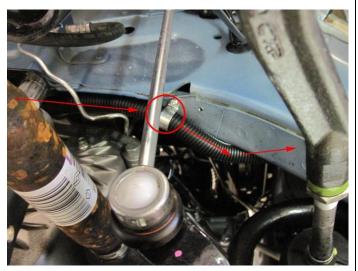
Protect the supply- and return hose together with tank-wiring using the \varnothing 16 split tube. Mount the "hose assembly " with clamps, with a <u>maximum</u> distance of 40cm.



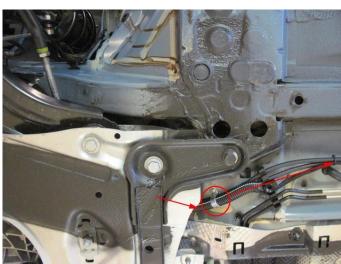


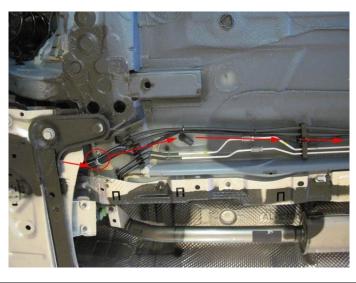
Hose / wiring routing to tank 1

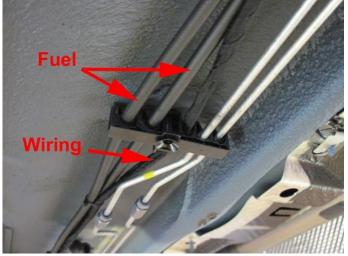








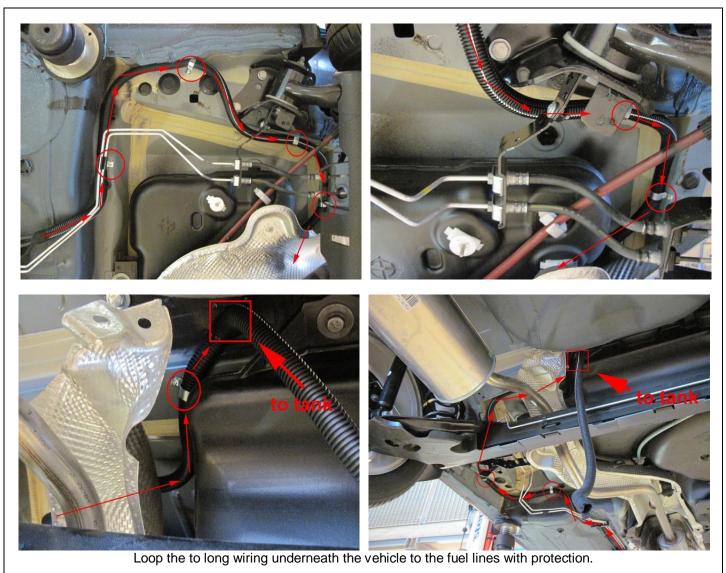






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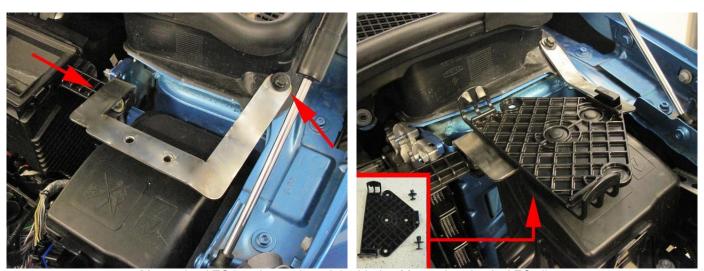
Hose / wiring routing to tank 2



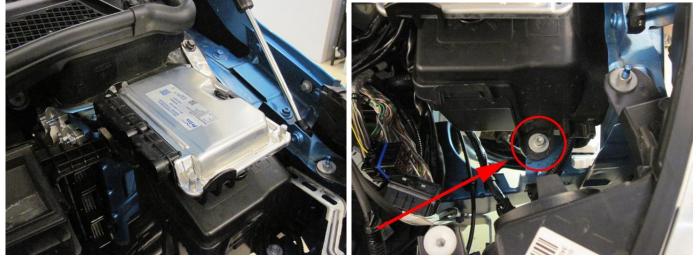


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Mounting the AFC / Mount the fuse-relay bracket



Mount the AFC bracket to the original bolts. Mount the plastic AFC clip.



Mount the AFC. Mount the fuse-relay bracket to the original mounting bolt.

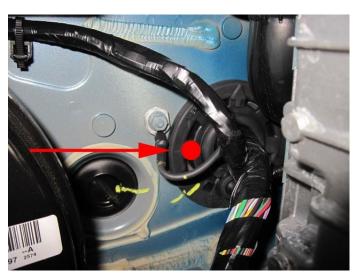


Mount the fuse-relay bracket to the original mounting bolt. Fuse-relay box with diagnostic connector.



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Grommet / wiring transit





Put wiring through grommet and use a silicone sealant around wiring for a waterproof transit. Wiring to passenger room: **Switch/CAN/Wake-up**.



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Wiring routing / Wake-up / Can





Wiring routing inside. Body Control Module (for Wake-up connection).





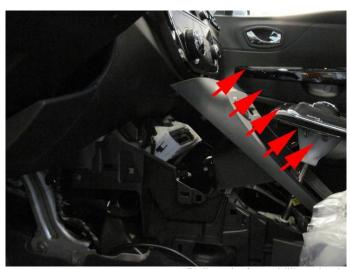
Wake-up connection.





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Switch





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





Drill hole Ø8,3mm. Mount switch.





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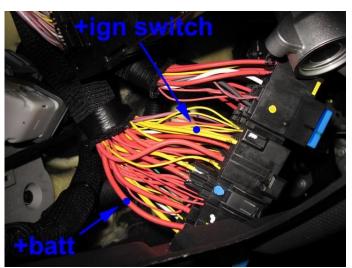
Connecting the fuel gauge reset module 1



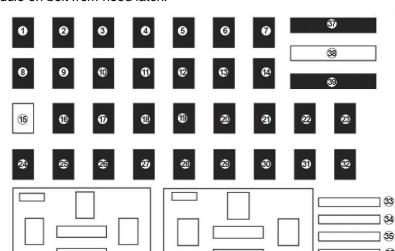


Mount fuel gauge reset module on the left side underneath the dashboard near the fuse box. Connection of the reset wires underneath left doorstep in wiring loom.





Ground of the reset module on bolt from hood latch.



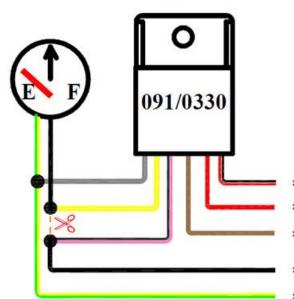
+ign switch from fuse nr 2, thick yellow wire, +batt from thick red wire from lower relais.



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Connecting the fuel gauge reset module 2

Fuel Reset module



- : +15 red/white module; fuse 2, fusebox
- : +30 red module; lower relais, fusebox
- : -31 brown ground; bolt from hood latch
- : Wiring left doorstep, light blue-grey
- : Left doorstep, thickest white-black

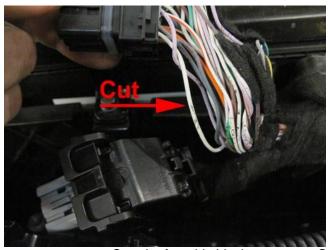


Check and measure the wiring in case of changes in the cars wiring colours, the connector of the fuel pump / tank gauge is located underneath the back seat. Light blue-grey = pos 4, white-black = pos 2.



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Actuator resistance





Cut wire from big black connector, Q4, white and connect extension wires. Mount resistor on bracket with 2x M3 screws and spring washers.





Solder extension cables to resistor (also use shrink sleeves) and mount bracket to original battery mounting.

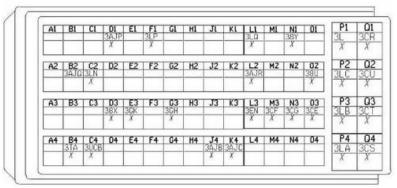


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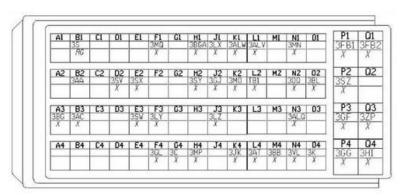
Petrol ECU pinnings



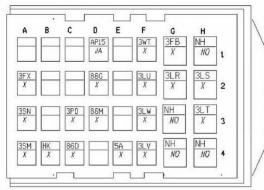
If you have to count from A to Q on the connectors, remember: there is no letter "i" on the connector.



Connector 1 (grey)



Connector 2 (black)



Connector 3 (black)



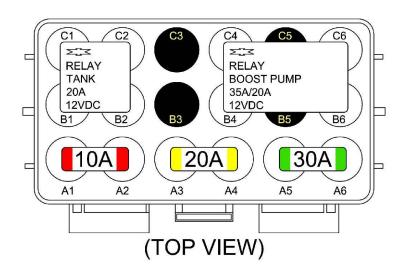
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Electrical connections

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	brown	Connect to the '-' of the battery (-31); using ring terminals. Wire location: ground on battery
		VISSAN TVARTA

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. Do not place the fuse in the holder before having completed the installation of the lpg system. Wire location: +Batt on battery
		SAN





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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	
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
61	DI4	Yelow-blue	insulate
74	DAC 3	Green-pink	insulate



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Electrical connections

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

Driver room

Driver room		
3-pole micro connector 66 Ground fuel switch 3 +12V fuel switch 49 LIN fuel switch	Brown-black Red-white Yellow	Connect the 3-pole connector to the Prins fuel selection switch.
<u>Inside!</u>		harness side switch side
		"CLICK"
51 CAN-High	Yellow	EOBD connector pin 6
70 CAN-Low	Green	EOBD connector pin 14
<u>Inside!</u>		
40 Wake-up Inside!	Grey-red	Wire colour: purple-light blue (wire colours may change) Wire location: P1 (control ECU below dashboard, see picture) pos 5.



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Electrical connections

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

Wire	e number / code	Wire colour	Connection
			High pressure petrol sensor signal interruption Wire colour: white Wire location: Connector 2 petrol ECU → F3
36	AD 6	Blue-brown	Sensor side
25	DAC 1	Green-white	Petrol ecu side
63	Ground Shift	Blue-orange	High pressure petrol sensor ground Wire colour: brown Wire location: Connector 2 petrol ECU → J3
60	DI3	Yellow-pink	High pressure petrol sensor 5Volt supply Wire colour : tan Wire location : Connector 2 petrol ECU → J1
8	RPM engine speed	Purple-white	For measuring the engine speed signal. Wire colour : white Wire location : Connector 2 petrol ECU → D2
15	T-ect	Grey	For measuring the engine coolant temperature. Wire colour : purple Wire location : Connector 2 petrol ECU → G4
18	AD 1	Blue-white	For measuring the inlet manifold pressure from the MAP sensor Wire colour : white Wire location : Connector 1 petrol ECU → B2
7	+12V IGNITION	Grey - white	Make a connection 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: Connector 3 petrol ECU → D1

2-core wire from actuator resistor	Wire colour : White Wire location : Connector 2 petrol ECU → interrupt wire Q4 and connect the 2 resistor wires. Both ways possible.
See page 27	Cut



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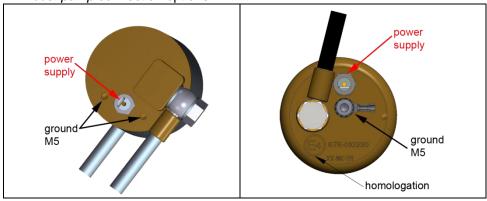
Electrical connections

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

Engine room

	number / code	Wire colour	Connection
	le connector	TTITO GOTOGI	Connect the 3-pole connector to the Psys sensor positioned into the Fuel
Opo	10 00111100101		Return Unit.
35	C Ground pin A	Brown	Sensor wire pin A
9	+5V sensor pin B	Red	Sensor wire pin A
16	•	Green	Sensor wire pin C
10	Psys pin C	Green	Sensor wire pin C
14	T-LPG	Grey	Not used, insulate.
2-po	le connector FSU, black		
24	+ Lock-off FSU	Yellow-green	Connect the 2-pole connector to the lock-off valve
31	C Ground	Brown-black	of the Fuel Supply Unit
	le connector FRU, grey		
43	+ Lock-off FRU	Red-white	Connect the 2-pole connector to the lock-off valve
34	C Ground	Brown-black	of the Fuel Return Unit
<i>4-po</i>	le diagnose connector		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
Wirir	ng tank pump driver relay		
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 DATT tused +12V driver	Red 2.5mm2	Pin 87 of the driver relay B1
	1 12 V GIIVCI	ROU Z.OHIIIZ	Timor of the driver loay by

Boost pump connection options:





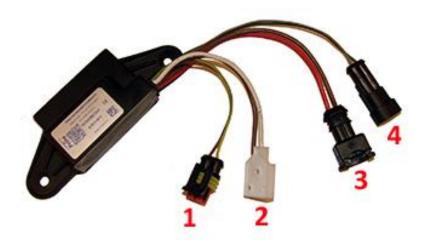
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Electrical connections

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 connector71 LSS 3 PWM driver64 AD 5 driver diagnose	Purple-pink Blue-grey	Connect the 2-pole connector to the pump driver (4).
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 ² Brown 2.5mm ²	From tank pump driver From tank pump driver
3. 2-pole connector power driver	Red 2.5mm ² Brown 2.5mm ²	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





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.
- 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.



