



## **Reference Manual:**

### **Modules**

# Reference manual **Modules**

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## Modules

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## Introduction

This reference manual illustrates the most important aspects of the LiquidSi system. This kit is intended to be mounted into vehicles equipped with a PFI (port fuel injection) engine. The number of cylinders can vary from 2 up to 8. Please consult the configurator on the LiquidSi.com website in order to determine the correct type and number of modules required for the conversion of the vehicle.

The LiquidSi kit is designed to offer highest possible vehicle performance on LPG fuel combined with a low cost level and long-term durability.

In comparison to a normal vapour injection system, the LiquidSi system does not evaporate the LPG before being injected into the engine, instead the fuel is pressurized and injected in a liquid phase into the intake manifold using OEM quality injectors. This results in high accuracy and excellent system stability, eliminating the need for frequent adjustments or tuning.

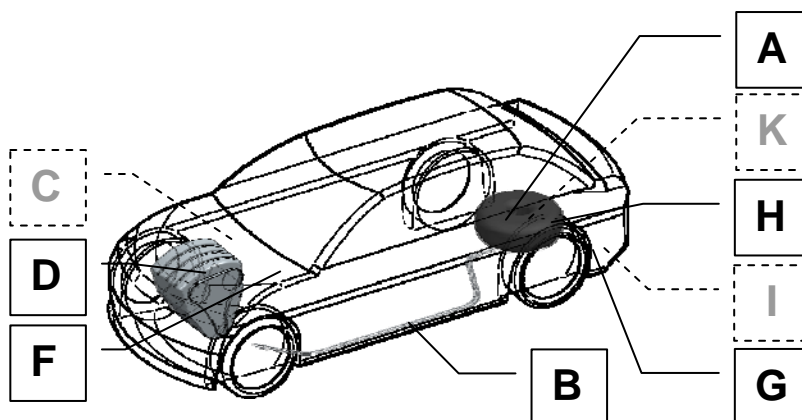
The calibration of the software is easy: the required compensations and corrections for the different influence factors are all pre-programmed into the firmware and require no attention.

Optionally, there are many parameters that can be adjusted in the software in case of need or customer requirement. Please refer to the software reference manual.

## Kit configuration

The LiquidSi kit consists of a number of modules, identified by a capital letter ranging from A .... K. There is also an USB adaptor available, this is module M.

The placement of the modules is presented below. The gray, dotted modules letters are optional modules.



## General instructions

This manual is based on the instructions which apply to the installation of LPG equipment according to Dutch regulations. Most instructions will be similar in other countries, but local installation must always be carried out according to the rules and regulations of the country where the vehicle is registered or will be registered.

Basic safety pre-cautions:

- disconnect the battery before starting the installation work
- remove the system fuses before starting the installation of the LiquidSi system
- no part of the LiquidSi system should be placed near sources of intense heat
- electrical connections not involving connectors shall be soldered and isolated with shrink sleeves
- be sure to test the complete system for leakage after installation.

If drilling holes is required, always make sure to apply anti-corrosion fluids and remove all chips from the hole. For drilling in the inlet manifold we **strongly advise** to remove the manifold from the engine in order to avoid burrs from drilling to enter the engine and cause damage.

Make sure to follow at least the assembly and calibration instructions provided in this reference manual.

The LiquidSi system requires no maintenance and there is no service interval (**unless** local regulations states otherwise).

The owner is can view the User Quick Guide for basic instructions. More details of the LiquidSi system can be found in the User Manual.

Do not tamper with any of the LiquidSi components. They require no adjustment, tuning or tweeking of any kind! Failure to comply with this shall result in a loss of warranty and in potentially dangerous situations.

Please consult the LiquidSi.com website for any updated documentation on a regular basis. Always use the latest version available.

## Required Tool etc.

- General automobile workshop tool collection
- Car lift
- Computer with Windows operating system, 32 or 64 bit (XP or later)
- At least 1 free USB port
- Preferably an internet connection to check for software/firmware updates
- General purpose OBD scan tool
- Gas leak detector or spray
- Multi-meter
- LiquidSi USB adaptor [module M]

M

## Additional tooling for diagnostics

- Exhaust gas analyzer
- Oscilloscope

## Vehicle check

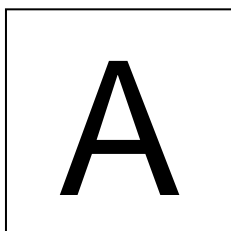
The vehicle must be free of errors before commencing the conversion to LiquidSi.

- the petrol ECU needs to be scanned for errors, errors must be solved before installing.
- the condition of the ignition system should be optimal: spark plugs, high tension wiring etc

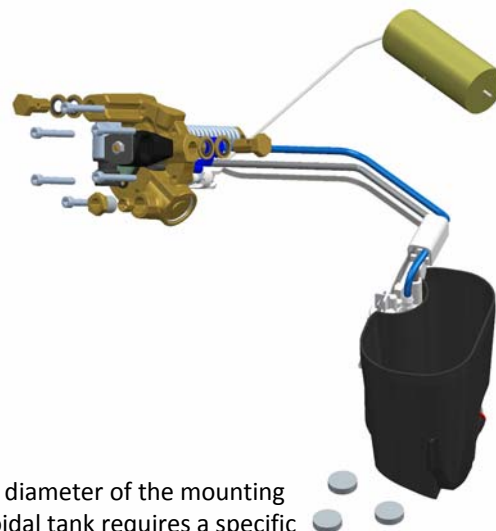
## Advised installation sequence

Generally speaking, the advised order into which the individual modules are to be installed is as mentioned below. However the installer is free to use a different order of installation if the installer wishes to do so.

1. mount the fuel module **A** into the one-hole tank (see also instruction video)
2. fit the tank into the vehicle
3. fit remote filler **G** (optional)
4. install filler hose **H** (optional)
5. mount the engine bay solenoid valve **C** (optional)
6. mount the underbody fuel lines **B**
7. install gas tight housing **K** (cylindrical and 0° tank)
8. install ventilation set **I** (cylindrical and 0° tank)
9. mount ECU, TEC-4/6/8 **F**
10. mount the wiring loom and fuel switch (do not install the fuses!) **F**
11. mount the injection nozzles onto the intake manifold **D**
12. mount the injectors into the adaptors (direct or remote) **E**
13. connect fuel lines **B**
14. run vehicle on petrol and fill up the LPG tank (minimal 30%)
15. insert LPG fuses
16. connect Laptop or PC
17. load firmware into ECU and start autocalibration
18. check all LPG components and connections for leakage (also multivalve-tank flange sealing)
19. fit tank cover **J** (for toroidal and cylindrical in-car tanks)
20. make test drive



# Fuel Module

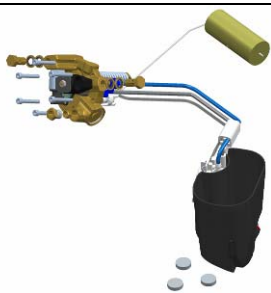
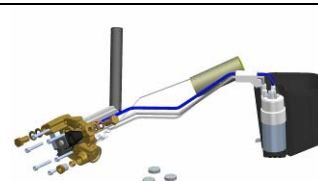
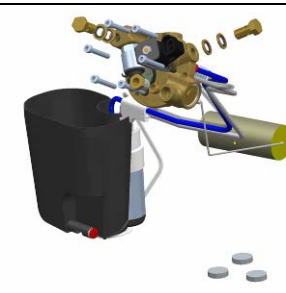


## A: Fuel Module

### General description

The fuel module is designed to fit into any one-hole toroidal or cylindrical tank. The diameter of the mounting hole should be 48mm. The fuel module is tank specific: a certain tank height of toroidal tank requires a specific module type and for each diameter in cylindrical tanks, there is a specific version of the fuel module. All versions are listed in the module overview. You can also use the CONFIGURATOR module on the LiquidSi web site to determine the correct version.

### Module Overview

Picture									
Tank Type	Toroidal			External			Cylindrical		
	Tankheight	Module	Partnr	Tankheight	Module	Partnr	Tankdiameter	Module	Partnr
	180	AT180	311318.	200	AE200	311020.	200	AC200	311120.
	200	AT200	311320.	220	AE220	311022.	244	AC244	311124.
	220	AT220	311322.	230	AE230	311023.	270	AC270	311127.
	230	AT230	311323.	240	AE240	311024.	300	AC300	311130.
	240	AT240	311324.	250	AE250	311025.	315	AC315	311132.
	250	AT250	311325.	270	AE270	311027.	360	AC360	311136.
	270	AT270	311327.				400	AC400	311140.
Approval numbers	Multivalve: Pump: Pressure sensor Lock-off valve Level sensor		E4-67R-010223 E4-67R-010031 E4-67R-010051 E4-67R-010223 E4-67R-010223	E4-10R-031997 E4-10R-031962 E4-10R-031742 E24 10R-030454					
Contents module	1x Fuel Module consisting of: Multivalve, Pump Assy, Jet Buffer Assy, Pump arm and Floater arm. 1x Multivalve accessory set consisting of: 3x Magnets, 2x Banjo Bolts, 4x Bonded Seals, 6x M5x35 Screws, 1x Olive, 1x M12x1 adapter sleeve, 1x washer, 1x screw								

### Installation:

The fuel module is delivered completely assembled and tested. All the necessary mounting material is included in the Multivalve accessory set. If you are new to LiquidSi, it is advised to view the video on YouTube showing you how to correctly mount the magnets and the fuel module into the tank. Use the link posted on the LiquidSi website.

## Step-by-step guide for fitting of fuel module

### Tightening torques:

M5x35 Multivalve screws: 4 [Nm]

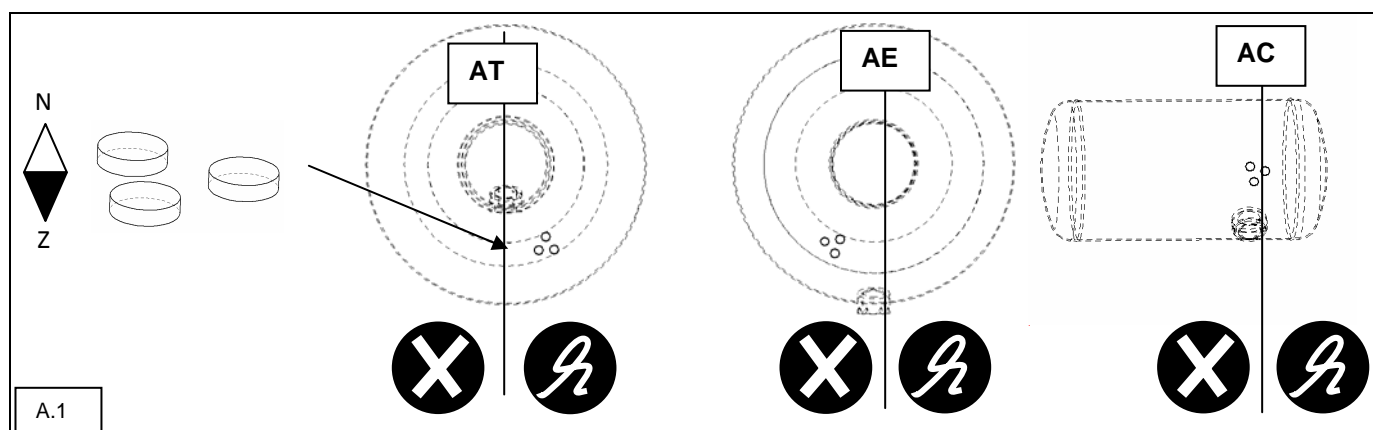
M4 Solenoid screw 4[Nm]

- 1 Check chosen fuel module with chosen tank.

Use the Configurator to check the right fuel module and tank

- 2 Check the inside of the tank for contamination. Too much contamination will shorten the lifetime of the filter. Clean the tank if necessary.

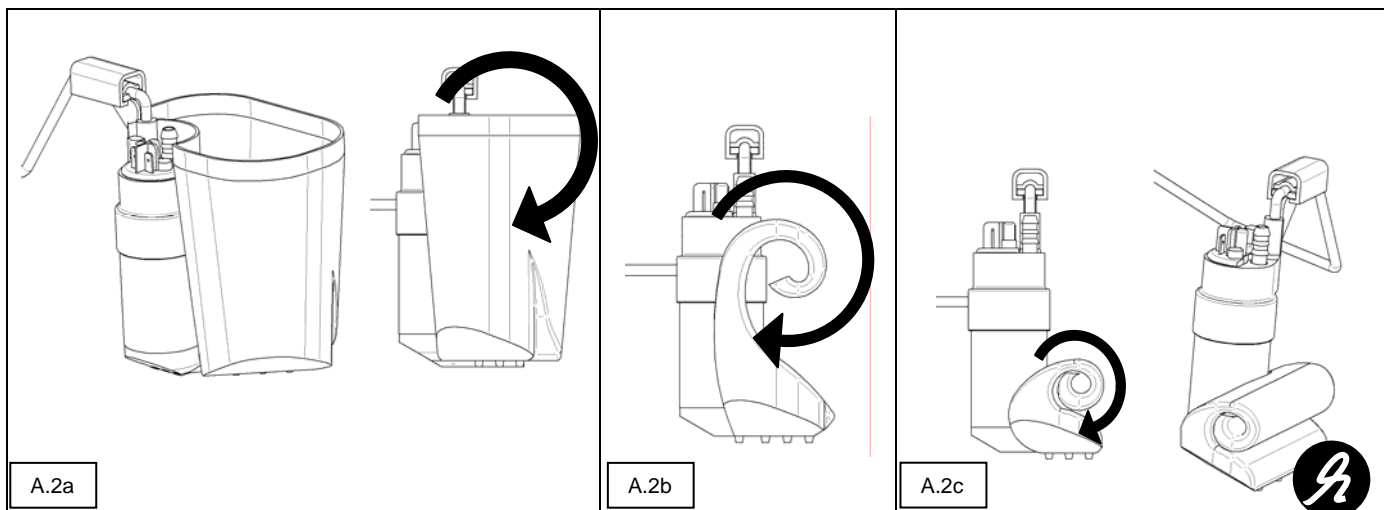
- 3 Place magnet according to the prescribed location



- 4 Lubricate the flange before inserting the Fuel Module

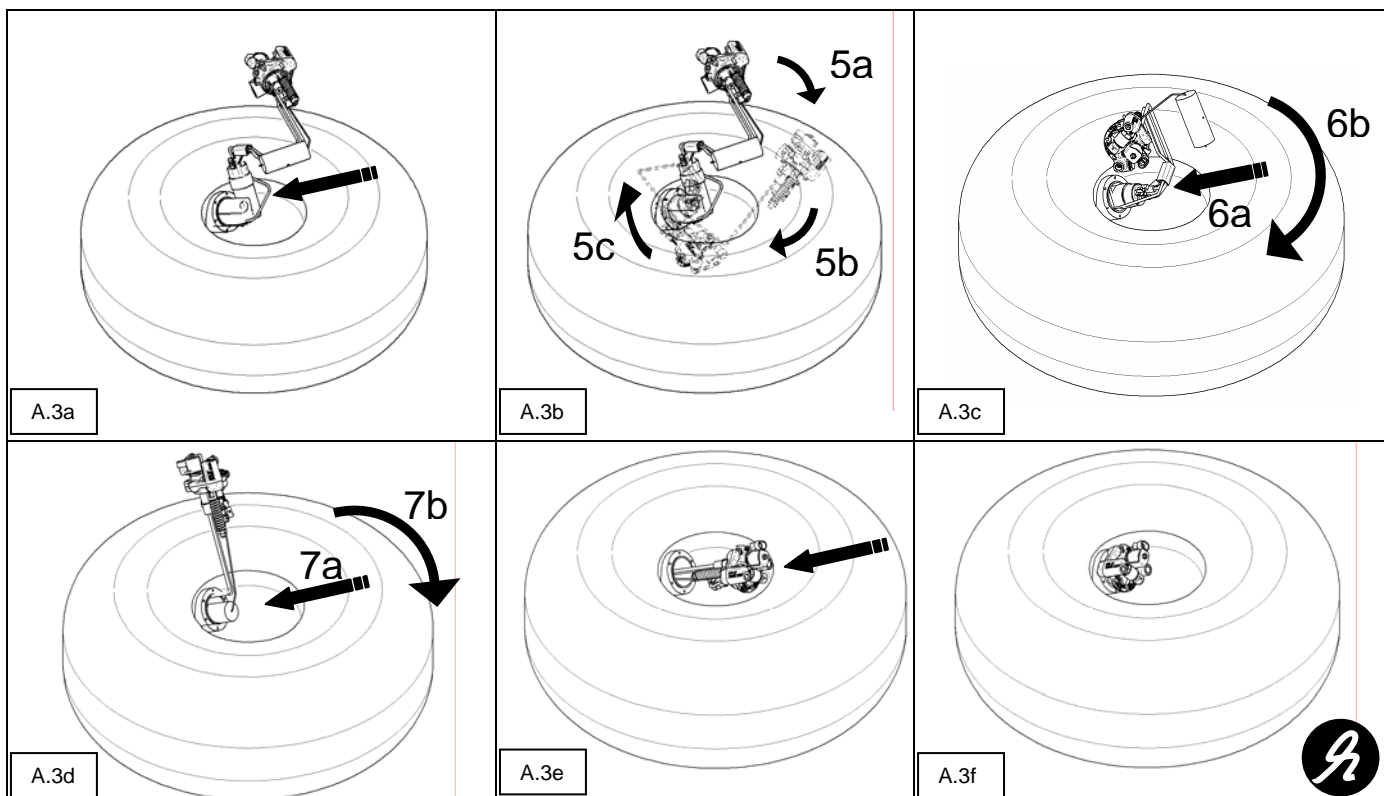
- 5 Fold the Jet Buffer using the illustration





**6**

Insert the Fuel Module – folded jet buffer first - into the lubricated flange. Use the illustration to rotate and push the fuel module into the tank.

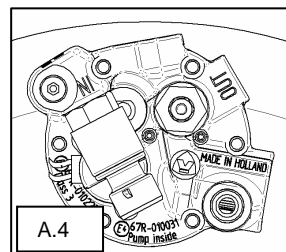


**7**

Before securing the fuel module, check the free movement of the floater arm. The floater should not be obstructed. This will cause a faulty 80% shut-off and level indication

8

Turn the fuel module clockwise for Toroidal tanks and counter-clockwise for cylindrical tanks to place the fuel pump onto the bottom of the tank. The text “Made in Holland” should be positioned according to the picture right. Secure the fuel module with the supplied screws using a crosswise sequence and tighten with the specified torque.

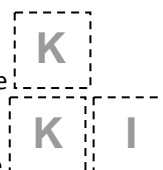


The Solenoid valve coil should be removed to secure the screws. After reinstalling the coil, tighten the M4 nut to the specified torque.

9

Connect modules **B** **F** **H** to the fuel module.

When using an External or Cylindrical tank externally, also install module

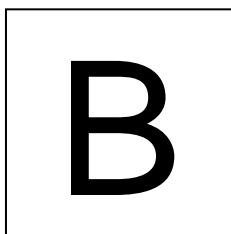


When using an External or Cylindrical tank in the car, also install module

#### After installation

- Make sure that all the six M5 screws are tightened to the specific torque
- Check for leakage after the system is completely installed and operational.

Do not fill up the tank with LPG before the complete kit has been installed into the vehicle



# Fuel line set




## B: Fuel line set

### General description

The LiquidSi system uses 2 flexible fuel lines of 7.5 metres each. One fuel line is intended for the supply of fuel to the injectors and the other as a return line from the injectors to the tank. Each fuel line has 1 banjo connector crimped onto it. The other end of the fuel line can be cut to the required length after it is fitted under the car.

The fuel lines are of a special thermoplastic compound and can resist very high pressures. The thermoplastic compound acts as an insulator and prevents the heating of the fuel which is very important for good filling performance, therefore no other fuel lines should be used.

### Module Overview

Picture		
Part number	311501.0	
Approval numbers	Fuel line	E4-67R-010247
Contents module	2x fuel line with clamped banjo connection. 30x screw, 30x fuel line clamps.	

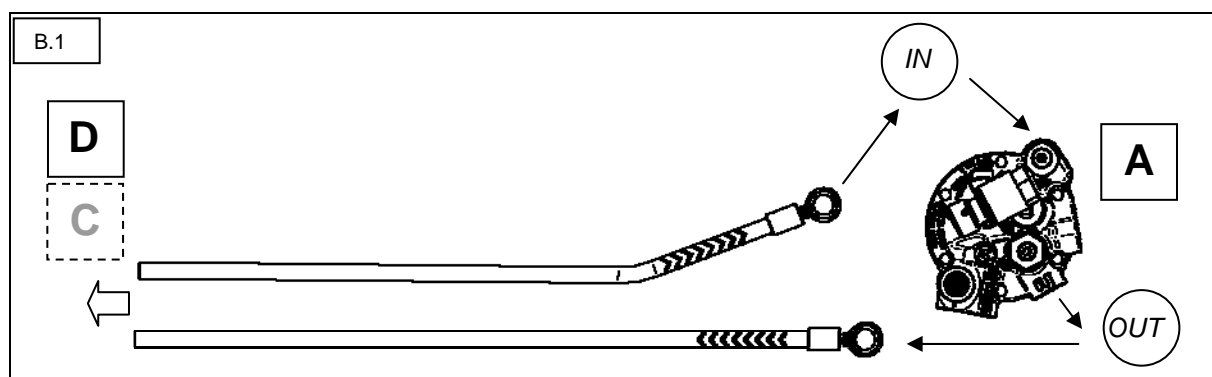
### Installation

#### Tightening torques:

**Banjo Bolts:** 10 [Nm]

We advise to start installation at the tank side with the pre-crimped banjo connectors onto the multivalve. Always use new bonded seals, one on each side of the banjo connector which are provided with the Fuel

module **A**.



- Note the arrows on the hose. Arrows pointing **towards** the banjo connector should be connected to the IN on the multivalve. Arrows pointing **from** the banjo connector should be connected to the OUT of the multivalve.

Fit the fuel lines under body of the vehicle according to the local regulations. Use the supplied clamps and screws to secure the fuel lines.

Use the preventions stated below to install the fuel lines:

- Prevent fuel lines to touch or scrape sharp objects
  - Keep a minimum distance of 10 [cm] to sources of heat
  - Fuel lines cannot be the lowest point of the vehicle, there must always be an object of the vehicle lower to the ground.
  - The distance between clips securing the fuel line to the bottom of the car should never exceed 30 [cm]
  - Prevent sharp bends, minimum radius should always be at least 5 [cm]
  - Prevent tension in the fuel line
- When installing an External or Cylindrical tank externally, feed the fuel lines and wiring loom through module **K** before connecting them to the Multivalve.
  - When using an External or Cylindrical tank **in** the vehicle, feed the fuel lines and wiring loom through module **K I** before connecting them to the Multivalve.

The two loose ends at the front of the vehicle – the engine bay - should be trimmed to the correct length. If

regulations state a Solenoid Valve to cut the fuel during an emergency, Optional Module **C** should be

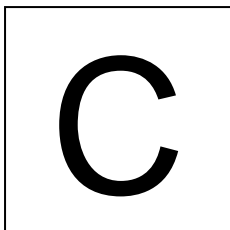
installed. Trim the fuel lines to the correct length for module **C** or directly to module **D**. Use a sharp tube cutter for this or a utility knife.

Do not use a wire cutter because this can damage the hose and could lead to leakage when fitting the connections.

- Note the **arrows** on the fuel lines for flow direction.
- The excess fuel lines are to be used for making the connections between the injectors module **D**. Excess be be used for future use.
- The fuel line can only be used with the crimp connections supplied in set **C** and **D**. Do not use connections from other suppliers, this is not certified and can cause leakage. For installing see chapter C en D.

#### After installation

- Check for leakage **after** the system is completely installed and operational



# Solenoid Valve set

## C: Solenoid Valve



### General description

**C<sub>1</sub>**

The solenoid valve **C<sub>1</sub>** is a shut-off valve which is intended to use in the engine bay and is operated with 12V. Depending on local regulations this unit is mandatory. The valve is to be used with the fittings provided in

**C<sub>2</sub>**

the accessories set **C<sub>2</sub>** in order to make the connections.

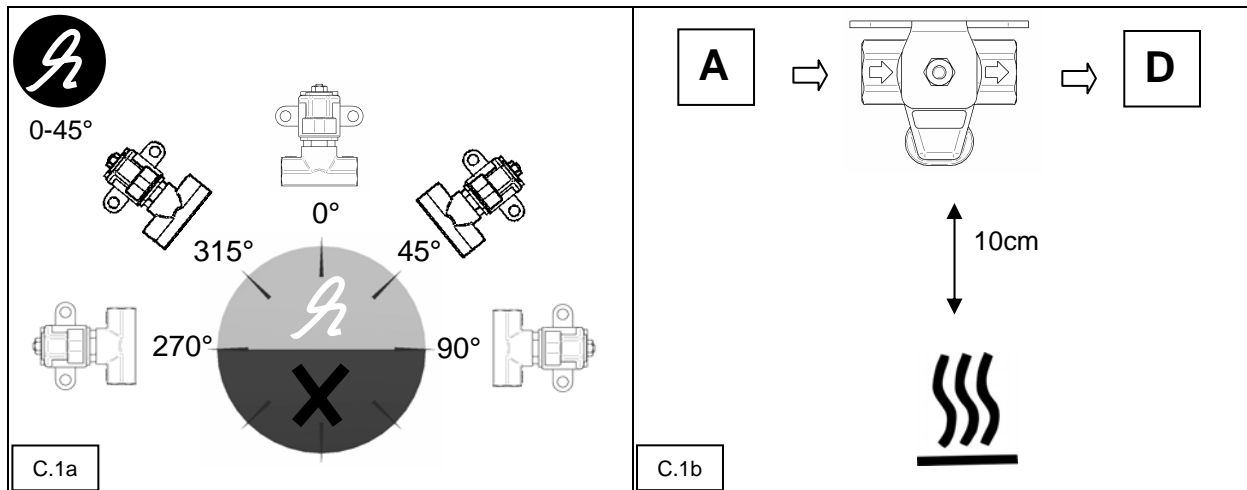
Picture	<div>C1</div> 		<div>C2</div> 
Partnr	311513.0		311512.0
Approval numbers	Solenoid Valve 11W	E8-67R-014327 E8 10R-031742	
Contents module	1x Solenoid Valve 11W 1x Solenoid accessory set consisting of: 3x screw, 3x washer, 1x clamp, 1x feed through, 4x banjo bolt, 8x Bonded Seal, 4 banjo connectors with O-ring, 4x outer Shell, 4x inner Shell, 4x Olive		

### Installation

#### Tightening torques:

*Banjo bolts: 10Nm*

The solenoid valve is typically installed in the engine bay, as close as possible to the engine in the **fuel feed line**, not in the return line. The solenoid valve **must not** be mounted onto the engine. Preferably a position as far as possible from sources of intense heat. The installation angle of the solenoid valve should not exceed 90°. Use the supplied parkers to install the solenoid valve. To install the (return) feed through, use the supplied clamp and parker.

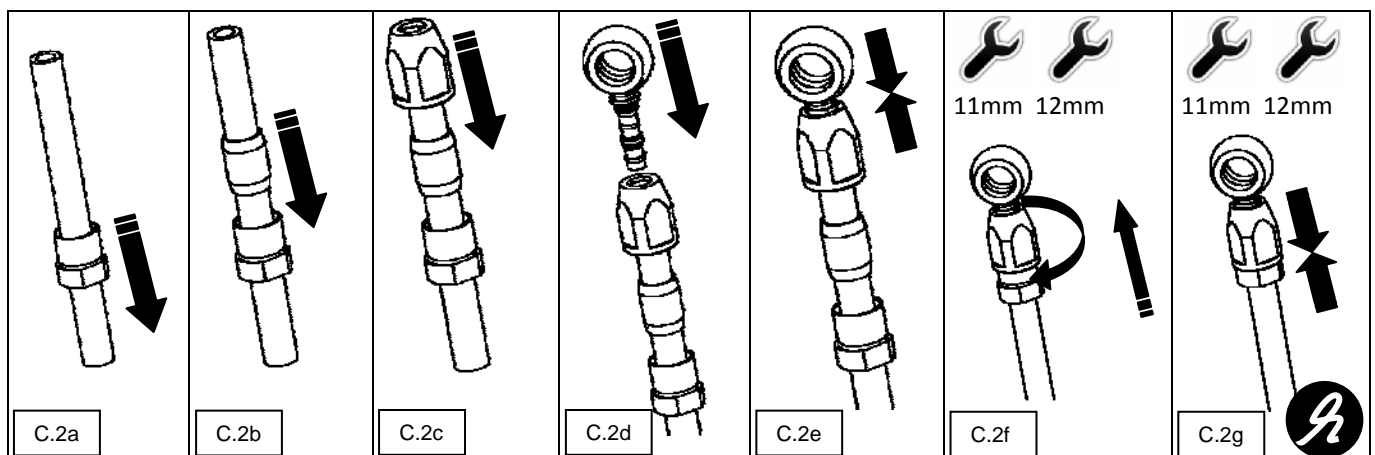


Attention: the injection pulses can become audible when the solenoid valve is mounted rigidly to the bulkhead.

Cut the fuel lines coming from the LPG tank to the required length using a hose cutter or utility knife and install the crimp couplings onto the fuel lines. Then connect the fuel lines to the solenoid valve with the provided banjo bolts and bonded seals.

Take care of flow direction; the arrow on the solenoid valve should point towards the engine.

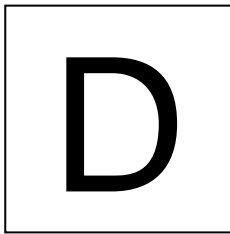
**Crimp couplings: completely assembled (see picture)**



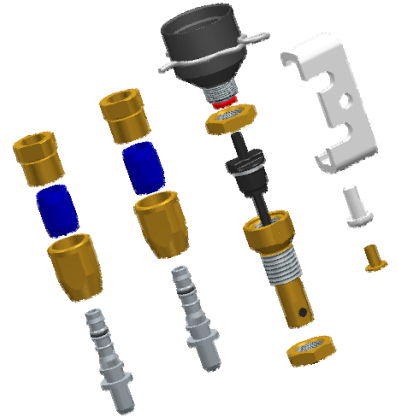
- Slide the inner shell over the fuel line
- Slide the olive over the fuel line
- Slide the outer shell over the fuel line
- Press the Banjo connector with O-ring firmly into the fuel line until blocked by the outer shell.
- Slide olive and inner shell into the outer shell
- Screw the inner shell into the outer shell using a 11. and 12. spanner until it makes firm contact with the outer shell edge.

#### After installation

- Make sure that all the banjo bolts are tightened to the prescribed torque
- Check flow direction.
- Check for leakage **after** the system is completely installed and operational



# Nozzle set

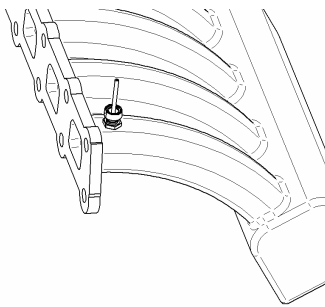


## D: Nozzle set

### Description

The nozzle set contains the injection nozzle and all necessary parts for fitting them and connecting the fuel lines. The nozzle has the task of conducting the high velocity LPG droplets from the injector tip to airstream flowing through the intake manifold. You can either mount the injectors directly onto the nozzles or mount the injectors in a remote location using part or the full length of the supplied pre-installed nozzle (extension) tubes. The distance between injectortip and inlet valve should be as short as possible to ensure optimal driveability.

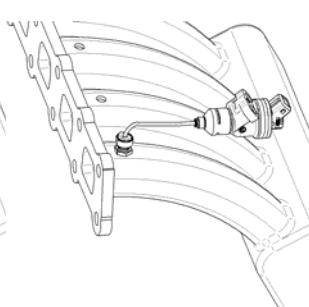
- Directly onto the nozzles is the preferred method because of better driveability.



Nozzle installation

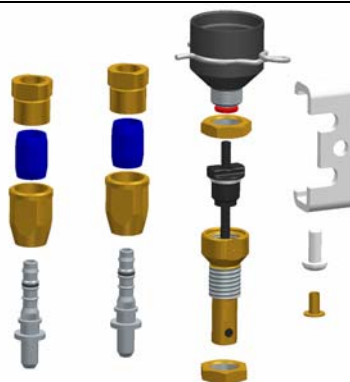


Direct Injector Placing



Remote injector Placing

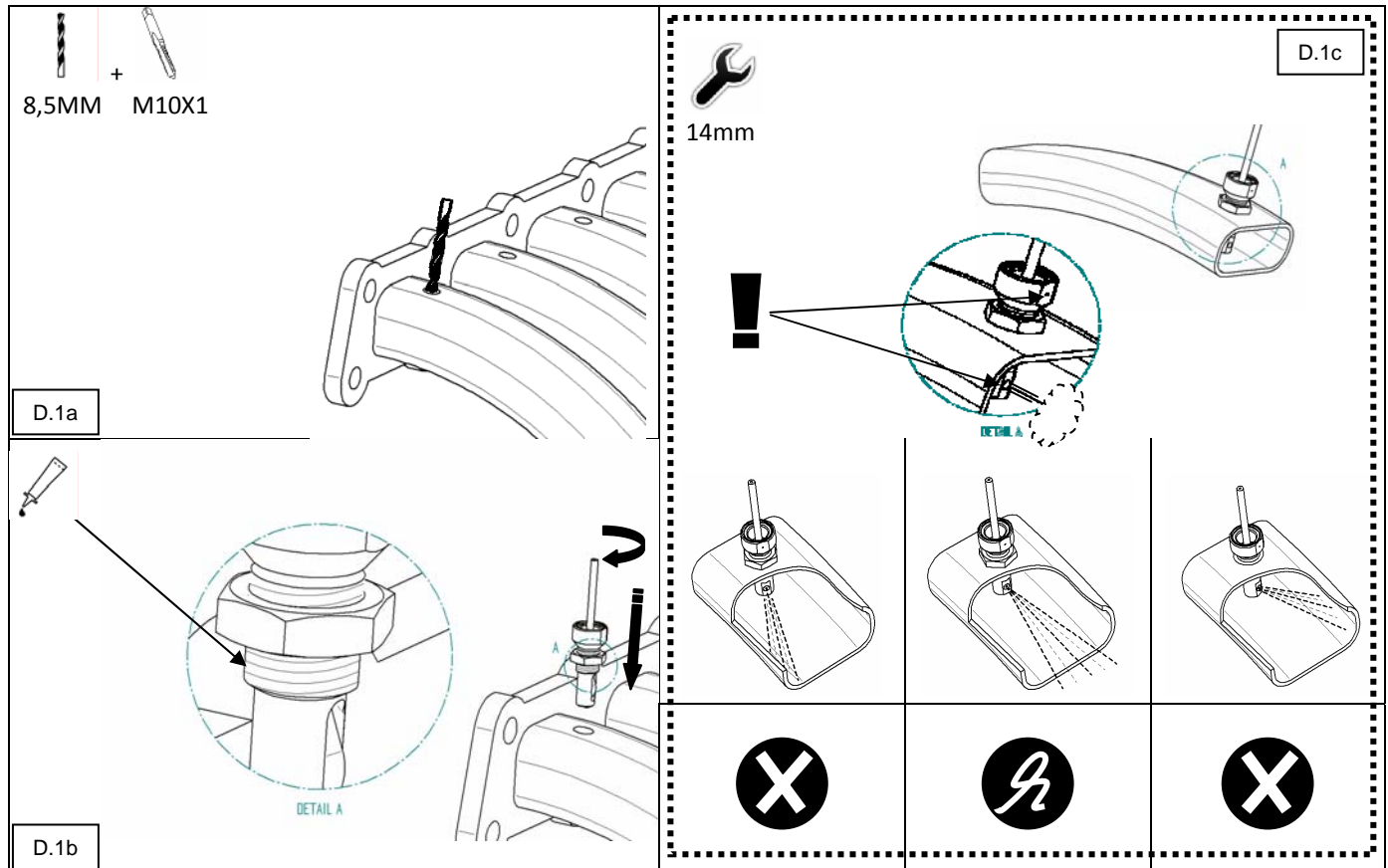
### Module Overview

Picture		
Part number	311520.0	
Approval numbers	Nozzle set	--
Contents module	1x Injector holder, 1x Nozzle, 1x sealing nut M10x1, 2x Nut M10x1, 1x wire clamp, 1x blue O-ring, 1x plastite screw, 1x securing clip, 2x inner shel, 2x outer shell, 2x olive, 2x straight type pillar	

## Installation

It is **strongly advised** to remove the manifold for installation of the nozzles

Make sure that that you install the nozzles with the punched-in dot facing towards the engine. This is of **critical importance**: the out- flowing jet should not contact the intake manifold walls!



- The nozzles are installed by drilling a 8,5 [mm] hole in the intake manifold, as close as possible to the cylinder head. Use a M10x1 thread cutter to create the required threading for the nozzles.
- Upon installation of the nozzles apply a modest amount of sealant to the nozzle thread. This will assure an air tight installation and also prevent unintended loosening of the nozzles. Screw in the nozzle and place the nozzle exit opening as deep into the middle as possible.
- Turn the nozzle with the nozzle exit opening facing towards the center of the manifold channel.(see picture D.1c).  
Secure the Nozzle with the M10x1 nut.

If you use the remote injector placing:

- make sure that you keep the length of the nozzle lines to a **minimum**.
- make sure that all nozzle lines are kept at an equal length.

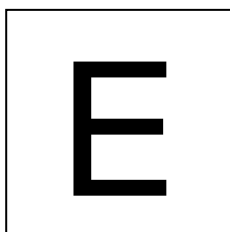
## E

For further instruction please proceed to Module

## After installation

- Check orientation of nozzle (position of the indicator dot)
- Check for leakage **after** the system is completely installed and operational





# Injector assy




## E: Injector assy

### Description

The E-module contains 1 injector. The injectors are specifically designed for Liquid LPG use. High quality O-rings (color: blue) are used. Installers can choose from 5 different flow calibrations. Both the moulded markings in the top of the injector and the colour of the injector are linked to the flow calibration. In the Configurator section of the liquidSi.com website there is a calculator to help you choose the correct injector type.

### Module overview

Picture					
Injector Module	E12	E15	E17	E20	E28
Part number	311712.0	311715.0	311717.0	311720.0	311728.0
Colour	Yellow	Purple	Light Brown	White	Dark Brown
Marking	Vialle12	Vialle15	Vialle17	Vialle20	Vialle28
Engine power per cylinder [kW]	10-15	15-20	20-25	25-30	30-35
Approval numbers	Injector assy Vxx	E4-67R-010069 E4-10R-031963			
Contents module	1x Injector				

### Installation

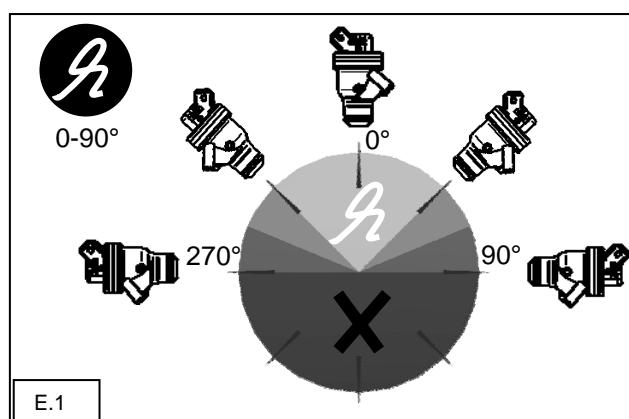
The injector units are to be installed either directly onto the nozzles or they can be mounted remote from the intake manifold.

- The length of the nozzle tube should be as short as possible to increase throttle response.

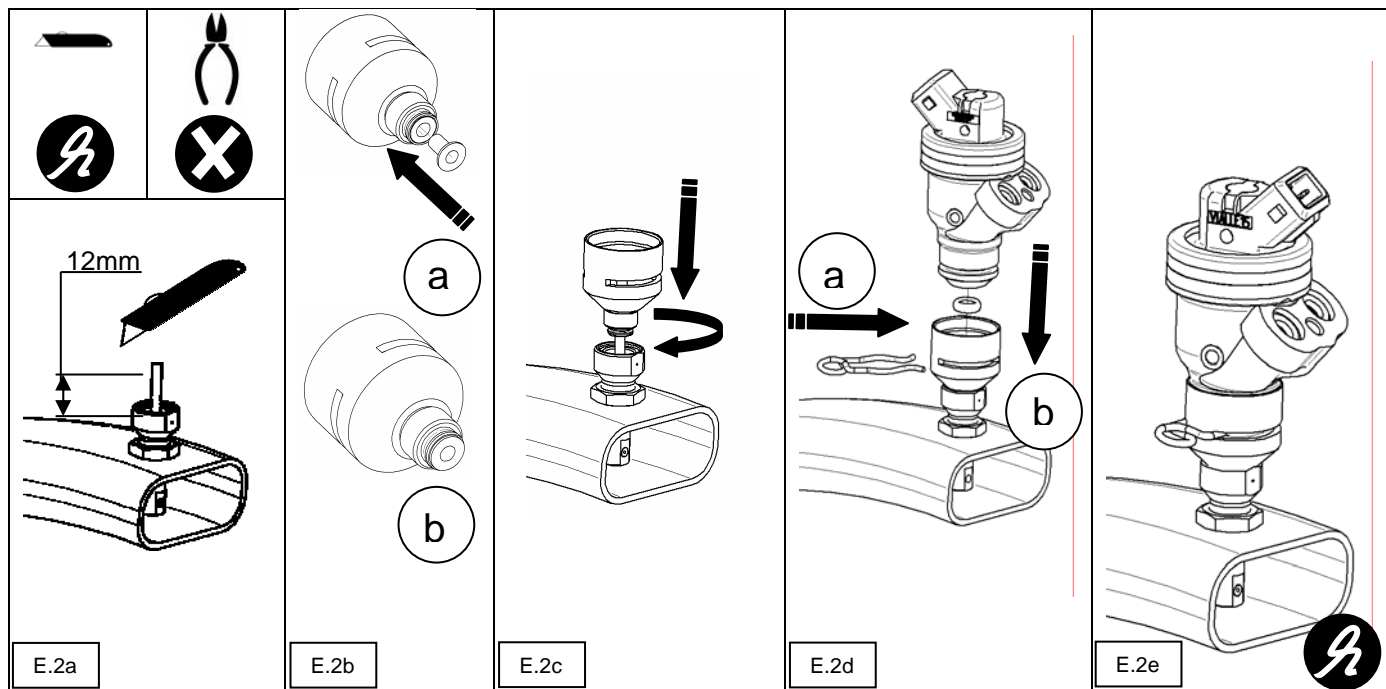
There is no preferred rotational position for the injector unit.

Installation requirements of the injector:

- Do not install the injector near heat sources
- The preferred installation angle is 0-90°. Other angles may cause start problems.



## Installation of Direct placed injectors



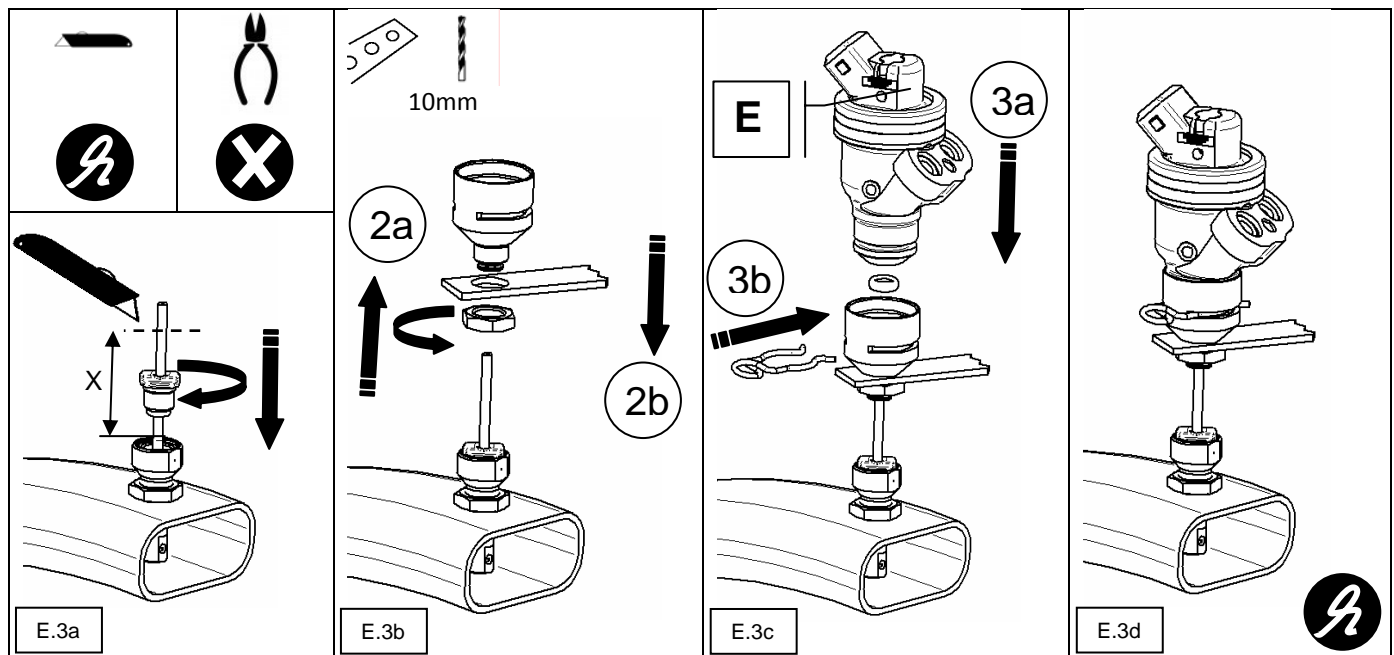
Installation of the nozzle is described in Module

**D**

- Cut the nozzle tube with an utility knife at 12 [mm]
- Press the push-fit sleeve firmly into the injector holder
- Push and screw the injector holder into the nozzle
- Place the blue O-ring and the injector into the injector holder and. Secure the injector with the wire clamp.

To install the injector remote, please continue on the following page

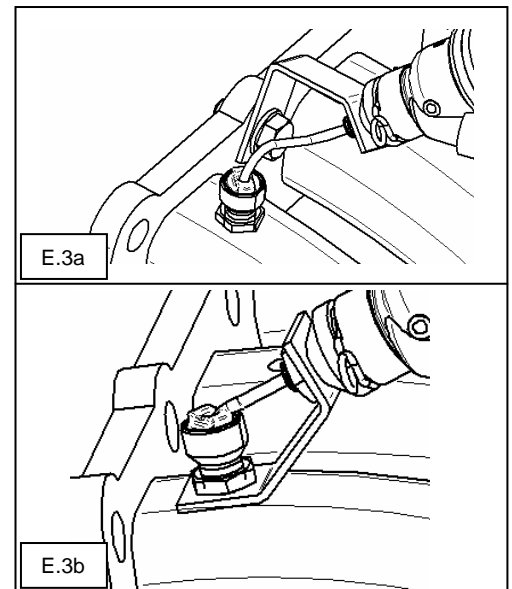
## Installation of the Remotely placed injectors



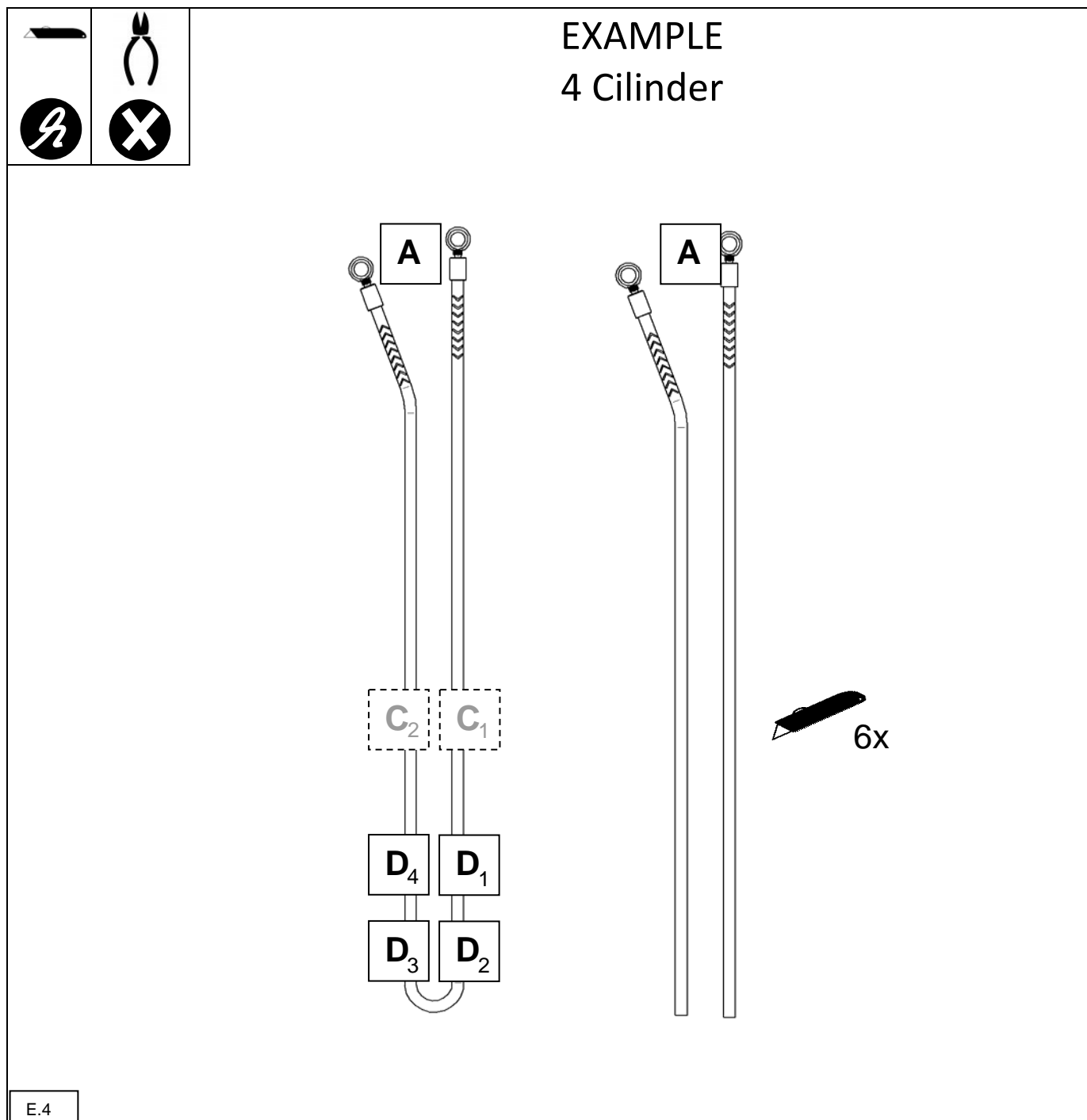
Installation of the nozzle is described in Module

**D**

- Cut the nozzle tube to the required length. This should be as short as possible and be equally as the other nozzle tube in the manifold. Insert the sealing Nut M10x1 into the nozzle.
- Use a strip or other support to secure the injector to the manifold or engine (see pictures E.3a and E.3b). The hole through the strip has to be 10 [mm]. Place the injector holder through the hole and secure it to the strip with the supplied M10x1 nut. Push the nozzle tube firmly into the bottom of the injector holder.
- Place the blue O-ring and the injector into the injector holder and. Secure the injector with the wire clamp.

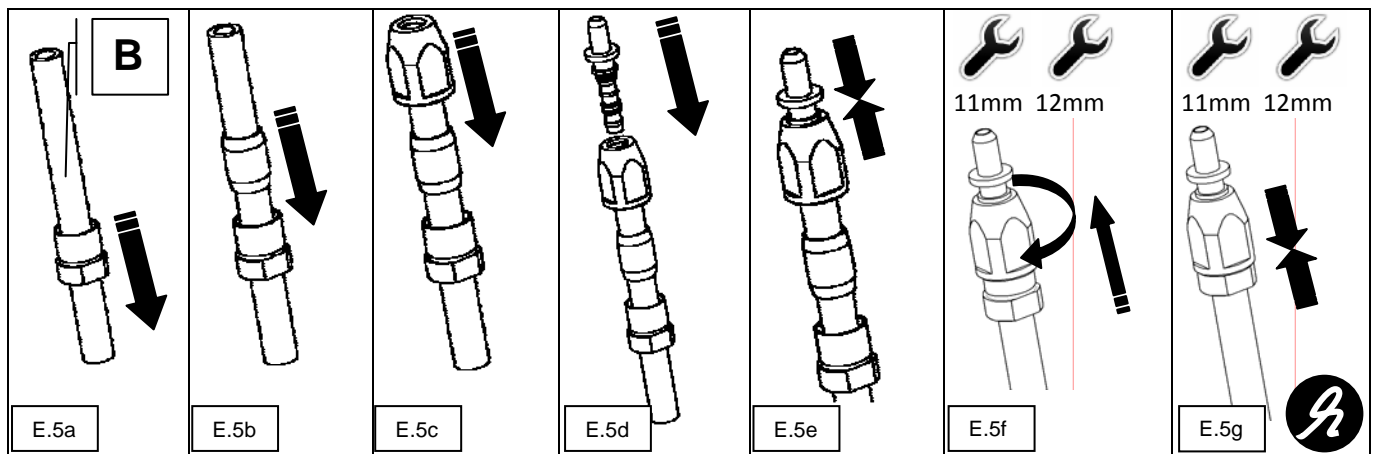


Cut the excess fuel line from module **B** and use it to connect the injectors to module **C** or the fuel module **A**.  
 Use a hose cutter or a utility knife to cut the fuel lines to the specific lengths.



The correct cutted fuel lines should now be equipped with the crimp coupling.

**Crimp couplings: completely assembled (see picture)**

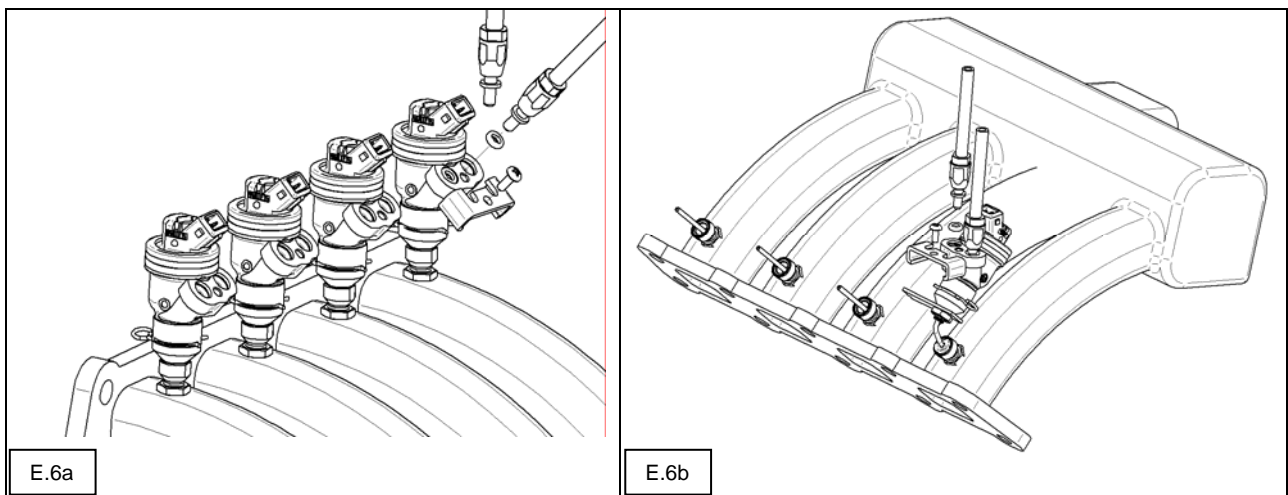


- Slide the inner shell over the fuel line
- Slide the olive over the fuel line
- Slide the outer shell over the fuel line
- Press the straight-type pillar with O-ring firmly into the fuel line until blocked by the outer shell (**use no lubricant**).
- Slide olive and inner shell into the outer shell
- Screw the inner shell into the outer shell using a 11. and 12. spanner until it makes firm contact with the outer shell edge.

Carefully push the fuel line, after installation of the crimp coupling, into the connecting bores of the injector unit. Check if the 2 blue O-rings are in the bores of the injector unit.

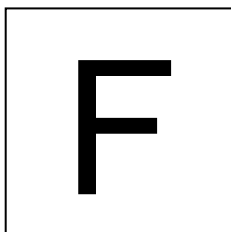
Slide the aluminium retaining clip over the two installed fuel lines. You should apply some downwards force onto the crimp coupling in order to get the retaining clip to slide into position.

Use the supplied Philips plastite screw to secure the retaining clip. Do **not** use a different screw because this can damage the injector holder.



#### **After installation**

- Check for leakage near the injector holder **after** the system is completely installed and operational



# ECU set



## F: ECU Set

### Description

The F-module contains the ECU, the fuel switch, the full wiring loom, the temperature sensor and the fuses. The ECU called the TEC-unit, calculates the injection times of the LPG Injectors. It uses different signals to detect the RPM and, engine temperature.




Using module the software program can be started on your computer. The software is used to set-up and calibrate your TEC-unit and to diagnose problems.

The fuel switch is positioned inside the car and must be in easy reach of the driver. It switches the chosen fuel and displays the amount of LPG left in the tank.

The wiring loom consists of the main connector and several smaller wiring looms running from the main connector to the specific components. 2 longer wiring looms run to the tank at the back and the fuel switch in the interior.

### Module Overview

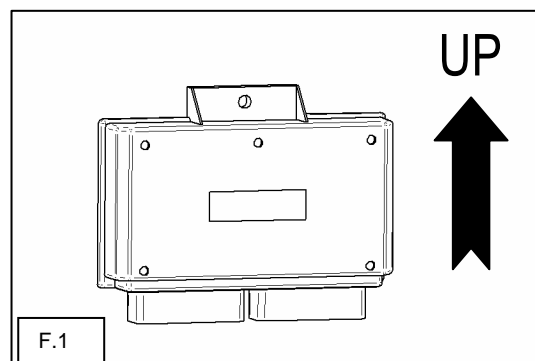
Picture			
Injector Module	F4: ECU set 4-cylinder	F6: ECU set 6-cylinder	F8: ECU Set 8 cylinder
Part number	311704.0	311706.0	311708.0
Max. Cilinders	4	6	8
Approval numbers	TEC Family	E4-67R-010335 E4-10R-042723	
	Switch	E4-10R-042723	
Contents module	F4: ECU Set: 1x ECU (Black), 1x Wiring Loom 4-cylinder, 1x Fuel switch F6: ECU Set: 1x ECU (Aluminium), 1x Wiring Loom 6-cylinder, 1x Fuel switch F8: ECU Set: 1x ECU (Aluminium), 1x Wiring Loom 8-cylinder, 1x Fuel switch		

### Installation

#### TEC-unit (ECU)

The TEC-unit, like all other electronic equipment, should be placed in a relatively cool and dry location in the engine bay. A good position is usually near to the car battery.

The optimal orientation for the ECU is with the connector facing downwards.



### Fuel Switch

The fuel selection switch is placed in the interior of the vehicle within easy reach of the driver. Mount the fuel selection switch back cover using the supplied adhesive sticker, do not apply force onto the centre of the switch but only onto the sides and edges. You may also use the supplied screws to install the back cover.

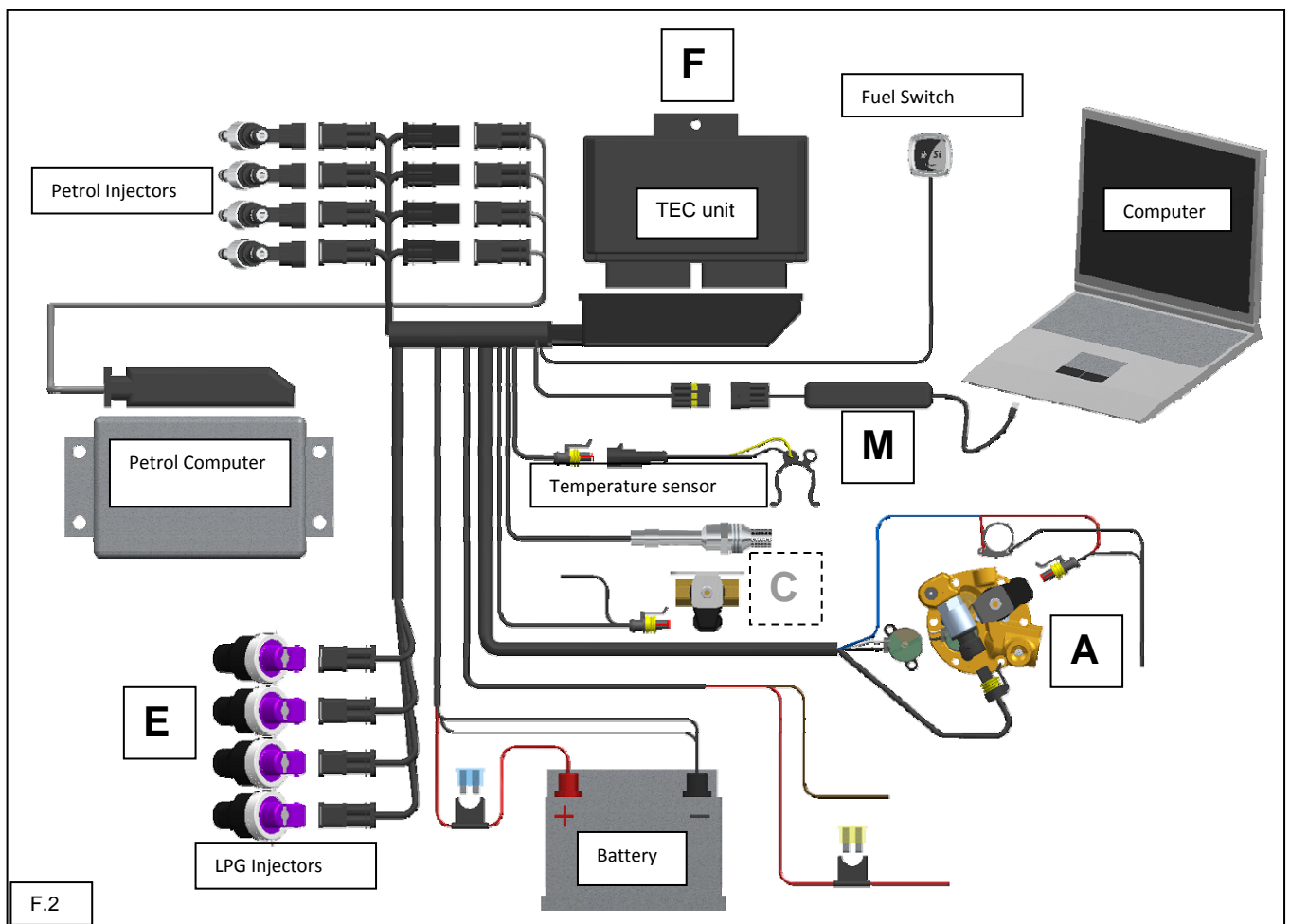
### Wiring loom

The wiring looms connector forms the base for the smaller wiring looms running to the different components in the vehicle:

- Petrol Injectors → the petrol connectors are interrupted using the Male- and female connectors on the wiring loom
- Car battery → the red wire with the 15A fuse
- Engine ground → the double black wire
- Ignition signal → Ignition coil +
- RPM signal → Ignition coil – (optional: if not possible, refer to the Quick Guide Software)

And to the LiquidSi modules

- The long ( $\pm 7\text{m}$ ) wiring loom is used to connect the Fuel Module **A** to the TEC
- The male 2-pole connector with the blue wire and the ground
- The male 2-pole connector (Yellow/Black) is used for the Temperature sensor.
- The male 4-pole connector is only used when module **M** is connected, always refit the plastic cap after using.



For detailed information about the electronic pinning please refer to the Reference Guide Software, available on the LiquidSi website.

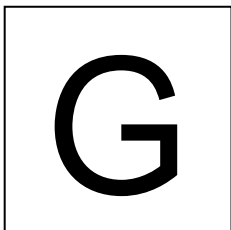
Installation notes:

The wiring loom should be kept at a safe distance from heat sources, sharp edges/objects and scraping against moving parts.

**After installation**

- Check the wiring loom
- All metal parts, included screw should be protected against corrosion.





# Remote filler set


## G: Remote filler set

### General Description

The remote filler set is used to fill the LPG-tank at the gas station. Normally it is placed in the petrol filler cap of the vehicle.

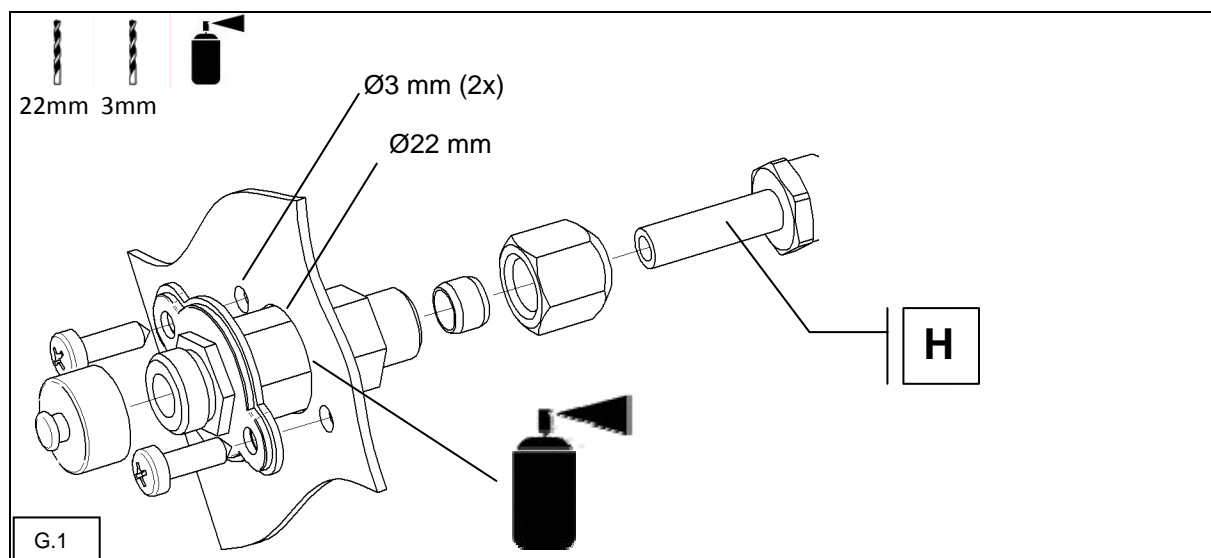


### Module Overview

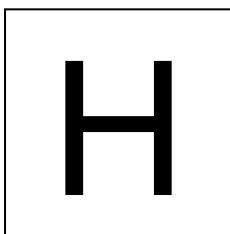
Picture		
Part number	311401.0	
Approval numbers	Remote filler set	E8-67R-013868
Contents module	1x remote filler, 1x rubber strap, 1x cap, 1x olive, 1x flare, 2x parkers	

### Installation

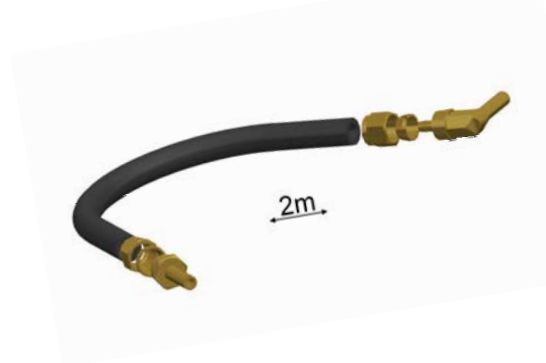
The Remote filler set is installed in the petrol filler cap.



- Drill a hole Ø22 [mm] in the spot you want to place the remote filler.
- Protect the hole with corrosion prevention spray.
- Put in the remote filler and secure with the two screws.
- Connect the rubber strap to the petrol filler cap hinge and the loose cap.
- Connect the filler hose.
- Spray the screws with the corrosion prevention spray.



# Filler Hose set




## H: Filler Hose Set

### General Description

The filler hose is used to connect the Remote filler set **G** with the Fuel module **A**. The hose can be shortened.

### Module Overview

Picture		
Part number	311410.0	
Approval numbers	Remote filler set	E13-67R-010299
Contents module	1x filler hose length 2 [m], 2x flare, 2x olive, 1x pillar straight, 1x pillar 90°	

\* Service item

### Installation

Cut the hose to the required length using a hose cutter or utility knife. Use the flare and olive to complete the filler hose assembly.

Use the flare and olive from Fuel module **A** and Remote filler set **G** to connect the filler hose assembly to the modules.

Fit the filler hose under body of the car according to the local regulations.

Use the preventions stated below to install the filler hose:

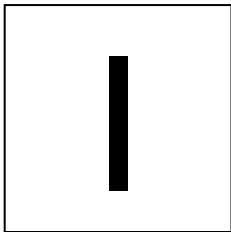
- Prevent fuel lines to touch or scrape sharp objects
- Keep a minimum distance of 10 [cm] to sources of heat
- Prevent sharp bends, minimum radius should always be at least 15 [cm]
- Prevent tension in the filler hose

Dutch regulations state:

- Minimum distance to heat sources, at least 10 [cm]
- Distance between clips securing the filler hose to the bottom of the car should never exceed 40 [cm]
- Filler hose can not be the lowest point of the vehicle. There must always be an object of the vehicle lower to the ground.



- When using an External or Cylindrical tank in the vehicle, feed the filler hose together with the fuel lines and wiring loom through module **K** **I** before connecting them to the Multivalve.



# Ventilation set




## I: Ventilation set

### General Description

The ventilation set is used when installing an External or Cylindrical tank in the vehicle. According to local regulations a secondary set must be used to vent the filler hose.

### Module Overview

Picture		
Part number	311420.0	
Approval numbers	Ventilation set	--
Contents module	1x ventilation tube length 1 [m], 1x feed through, 2x hose clamp, 4x screw	

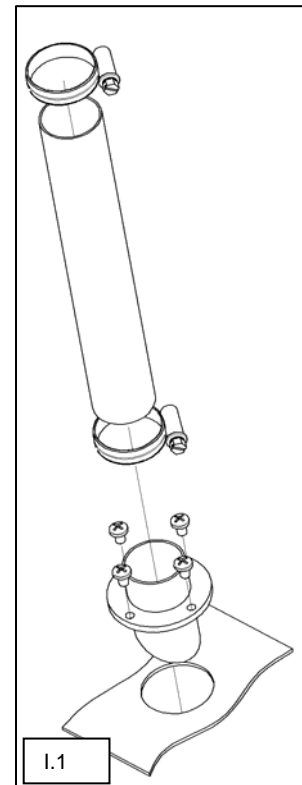
\* Service item

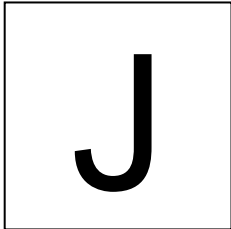
### Installation

Drill a hole of 32mm in the bottom of the vehicle where the ventilation is going to exit the vehicle.

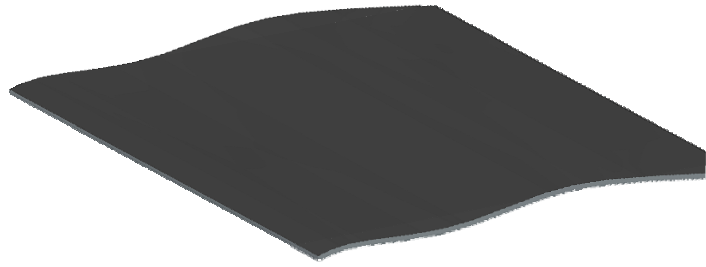
The ventilation must be installed facing towards the ground. If possible place the longer side of the grommet towards the front of the vehicle, the short side facing towards the back.

The hole must be sprayed for corrosion resistance.





# Tank cover



## J: Tank Cover

### General Description

The tank cover is used to isolate unwanted sounds from the LPG tank. It can be used for both the toroidal tank and the cylindrical tank. Only to be used inside the vehicle.

### Module Overview

Picture		
Part number	311430.0	
Approval numbers	Tank Cover	--
Contents module	1x Tank cover 1m <sup>2</sup>	

\* Service item

### Installation

For the installation of the tank cover for a Toroidal tank, cut the Tank cover to the size of the boot using scissors.

For installation onto the cylindrical tank. Drape the tank cover over the tank, at both ends use a cable tie to wrap the ends together.