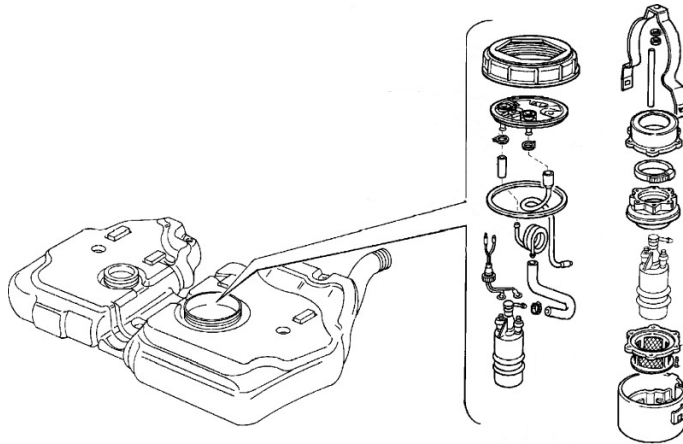


Lancia Delta HF Integrale Replacing the Fuel Pump



Overview

This document describes replacing the fuel pump. The fuel pump is located inside the fuel tank, which can be accessed under the left-side rear seat. It is part of an assembly that includes a top mounting plate (with fuel line and electrical connectors), hoses and wiring from that plate to the pump, and a fuel strainer and swirl pot.

The output port of the original fuel pump is connected to the top mounting plate and outlet to the fuel line through a 90-degree fitting to a rubber fuel line to a coiled metal fuel line (to cool the fuel) to another short section of rubber fuel line to the bottom of the top plate. Aftermarket fuel pumps omit most of this and are connected to the bottom of the top mounting plate through one piece of rubber fuel line, oriented in a S-shape.

The fuel pump is held in the fuel strainer assembly (inside of the swirl pot) with a rubber fitting. If the fuel pump is a different diameter from the OEM part (such as the commonly used Walbro fuel pumps), a different rubber fitting will be needed. (The correct rubber fitting should be supplied with the fuel pump.)

Warning: When installed, the fuel pump is immersed in fuel. Fuel will drip from the fuel pump assembly when it is removed from the tank. Fuel will come out of the fuel lines when they are removed from the fuel pump assembly. Be careful. Do not smoke or keep other ignition sources away from the car while performing the tasks described here.

Removal of the fuel pump assembly

Some of the tasks for removal and installation of the fuel pump assembly is easier if the fuel level in the tank is low.

1. Disconnect the battery.
2. Raise the left-side rear seat.
3. Pull back the plastic covering to expose the fuel pump cover.

4. Remove the fuel pump cover.

This is attached to the car by four Phillips head screws that go through the outer edge of the fuel pump cover. Take care not to damage the fuel pump electrical leads that go through the cover when removing the cover.

5. Disconnect the electrical connector from the top mounting plate.

The electrical connector is retained by a clip that engages on the inward side of the connector. The clip can be pried up and released with a flat head screwdriver. Once the clip is released, pull up on the connector to remove it. After the connector is removed, set the electrical lead to the side so that it is not in the way when the fuel pump assembly is removed.

6. Disconnect the fuel outlet and return lines.

A single bracket locks down both fuel lines. The bracket is held in place by a 8mm nut and washer. Remove them and then the bracket can be maneuvered into a position that allows it to be removed.

With the bracket out of the way, pull up on each line until it comes free from the top mounting plate. If the fuel has not been removed for some time, it may be hard to remove. Be careful not to damage the plastic fittings. Once disconnected, put the ends of the lines into a plastic bag to catch any fuel that continues to drain from the lines.

Warning: When the fuel lines are removed, a small amount of fuel will spill onto the top mounting plate. Have a cloth ready to clean it up.

7. Remove the plastic ring holding the top plate onto the tank.

The plastic ring is removed by rotating it counter-clockwise. It has ridges around its outside that may be tapped to get the ring to rotate. A flat head screwdriver and hammer may be used to do this.

There is a large o-ring that is placed on the underside of the top mounting plate that is used to seal against the fuel tank. It will become loose when the plastic ring is removed. Be careful not to accidentally drop the o-ring into the fuel tank when removing the plastic ring.

8. Remove the fuel pump assembly from the fuel tank.

Lift the fuel pump assembly from the fuel tank. The lower portion of the assembly is offset from the top, so the assembly needs to be rotated for the lower portion to clear the tank opening.

The swirl pot will hold some fuel, so pause once the assembly is higher than the fuel in the tank to allow the fuel in the swirl pot to drain out. Once fuel is no longer dripping from the swirl pot, continue removing it.

Warning: There will still be some fuel in passages on the rubber fitting that holds the fuel pump as well as possibly some fuel still in the swirl pot, so be careful when removing the fuel pump assembly from the car to avoid spilling fuel on the interior. Be sure that what the fuel pump is placed on after it is removed is something that can tolerate fuel.

Removal of the fuel pump from the fuel pump assembly

1. Detach the top mounting plate from the swirl pot.

Detach the drain hose from the side of the swirl pot. At its end, it is press-fit over the end of plastic barb fitting; pull the hose off of this fitting. Remove the metal tabs of the bracket

inserted into either side of the swirl pot. Disconnect and remove the electrical connector from the underside of the top plate and the fuel pump. Disconnect the fuel line from the underside of the top plate and the fuel pump. This can be done by removing a hose clamp from both ends.

2. Remove the fuel pump from the rubber fitting.

There may or may not be a hose clamp holding the fuel pump in the rubber fitting. If there is a hose clamp, remove it. Pull the fuel pump straight up from the rubber fitting. The OEM fuel pump has a bump around it that locates it in the rubber fitting that puts up some resistance when pulling the pump out. Also, over time, the rubber gets stuck onto the fuel pump, which makes it harder to remove the pump.

3. Remove the rubber fitting from the component that it is fitted with.

The rubber fitting has a groove that locates it in the strainer assembly. Press the rubber fitting in towards the center of the hole that it is mounted in. It is stiff, so it can take a little effort to do this.

4. Remove the strainer assembly from the swirl pot.

The strainer assembly is held in place by clips into the bottom of the swirl pot. It is removed by pulling straight up to release it from the clips.

5. Split the fuel strainer assembly.

Six Phillips head screws hold the two halves of the strainer together. Remove the screws and pull the assembly apart.

Preparation for the new fuel pump

If replacing the fuel pump with the same type as had been previously installed, aside from cleaning out the strainer (described below), no additional preparation is needed.

If replacing an OEM-style fuel pump with an aftermarket fuel pump (such as a Walbro), the connectors on the end of the electrical leads that connect to the fuel pump may need to be changed. Ring terminals are used with the OEM-style fuel pump, while spade connectors are used with the Walbro fuel pump (with different sizes between the terminals).

The wiring between the top plate and the fuel pump swaps polarity from where expected from the wiring schematics. The black lead is connected to the "+" post on the fuel pump and the other lead (non-black) is connected to the "-" post.

When only a rubber fuel line is used to connect the fuel pump to the top mounting plate outlet port, it needs to make two 180-degree bends. The gap between the top of the port and the underside of the top plate is short enough that care must be taken not to kink the line when bending it.

The old rubber fuel line might be deteriorated from being submerged in fuel. Small pieces of that hose may be floating around the fuel tank or caught in the strainer in the swirl pot. Even if the old rubber line looks to be in good condition, the fuel line before that may have deteriorated and left debris in the tank. Be sure that the strainer is cleaned out before reassembly.

Reassembly of the Fuel Pump Assembly

1. Insert the rubber fitting that holds the fuel pump into the top half of the strainer assembly.
The lower portion of the rubber fitting is wider and has a groove just above where it is wider. The inner edge of the opening in the top half of the strainer assembly goes into the groove and positions the rubber fitting vertically.
2. Insert the fuel pump into the rubber fitting inserted into the strainer assembly above.
Slide the fuel pump into the rubber fitting. The OEM fuel pump has a ridge that has a corresponding groove in the rubber fitting; push the pump in until the ridge locks into the groove. For the Walbro fuel pump, press it into the fitting until it reaches the bottom and the top of the body of the pump is level with the top of the rubber fitting. If there was a hose clamp holding the fuel pump in the rubber fitting, refit it.
3. Attach the upper and lower halves of the strainer assembly together.
Place the two halves of the strainer assembly together, align the screw holes, and screw them together using the six Phillips screws.
4. Insert the strainer assembly into the swirl pot.
Place the strainer assembly into the swirl pot and then press down on the strainer assembly until it engages on the tabs at the bottom of the swirl pot and is held in place by the tabs.
5. Reattach the top plate and its connections.
Connect the fuel line to the fuel pump's outlet port and the underside of the outlet port on the top plate. If using one piece of rubber fuel line, make sure there are no kinks in the line. Regardless of the top of fuel line used, make sure that all hose clamps are tightened. Position the top mounting plate above the strainer/swirl pot assembly so that the bracket from the top plate straddles the assembly. Slide the ends of the bracket into the slots on the side of the assembly. Confirm that there are still no kinks in the fuel line. Confirm that the end of the electrical connector that attaches to the top plate is firmly in place. Connect the leads at the other end of the connector to the terminal on the fuel pump, connecting the black lead to the '+' terminal and the other lead to the '-' terminal. Clip the end of the rubber hose from the return line into the plastic barb fitting at the bottom of the swirl pot and the hose itself into the side of the swirl pot.

Installation

Reverse the removal instruction to install.

Slowly lower the fuel pump assembly into the tank, particularly if the fuel level in the tank is high, so that the fuel does not overflow out of the tank. The swirl pot will displace a lot of fuel unless it is allowed to slowly fill through a small hole in the bottom.

It can be tricky to get the o-ring between the fuel tank and the top plate of the fuel pump assembly to stay in place when tightening down the plastic ring, particular if the old o-ring is being reused. Press down on the top plate to hold the o-ring in place against the lip of the fuel tank opening, then thread the plastic ring on. This can be harder to do if there is too much fuel in the tank.