



Installation Instructions for 2004-2006 Pontiac GTO LPE High Flow Fuel Pump Upgrade Kit

(LS1 & LS2 engine)



PN: L710660504

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About the GTO Fuel System

The 2004 to 2006 Pontiac GTO fuel system uses a method that is referred to as a “return side jet” to fill the fuel pump canister. This means the fuel from the fuel pressure regulator return is being used to create the high velocity jet that fills the pump canister (by inducing a high volume/low pressure flow). The pump itself, like most modern fuel systems, actually pumps the fuel out of the canister to the engine and the jet refills the canister. This means that if you are using all or almost all of the fuel that the pump can deliver, there is little or no fuel returned to the canister by the pressure regulator. Since there is nothing left to drive the jet, the jet is not able to refill the canister and the pump will eventually run dry. For this reason it is especially important on the GTO to have a pump capable of delivering more fuel than is needed by the engine.

PRIOR TO ANY DISASSEMBLY

- 1) Read ALL instructions before starting.
- 2) Run the fuel tank low- the lower the fuel level, the easier the install.
- 3) If your vehicle has a lot of miles on the stock fuel filter, you should consider changing the fuel filter at this time (part number listed on the next page).
- 4) Allow the vehicle to sit for at least one hour prior to changing the fuel pump to allow the fuel pressure to bleed down and for the engine and exhaust to cool down.

IMPORTANT

- Be very careful not to loose or damage the factory fuel pump module and related parts. Many of the parts are not sold individually
- The O-rings used are non-standard size O-rings. If you need new O-rings you will need to purchase the replacement fuel pump filter (part number listed on the next page).

Parts List

2004-2006 Pontiac GTO LPE High Flow Fuel Pump Upgrade Kit PN: L710660504

#	PART NO.	DESCRIPTION
1	TI-GSS340	Walbro high flow fuel pump
1	XX09413-0001	Fuel pump sock spacer
1	XX09413-0002	O-ring retaining washer
1	XX09413-0003	Fuel pump spacer
1	TI-125-135B	Fuel pump filter sock
1	22682111	Fuel sender O-ring seal
1	705-1020	Hose clamp
1	L920010000	LPE decal
1		Installation instructions

TOOLS NEEDED FOR INSTALLATION

- 10 mm deep socket
- 13 mm socket
- 13 mm deep socket
- 17 mm socket
- 17 mm deep socket
- E18 inverted Torx socket
- Ratchet
- Torque wrench
- Two small flat blade screw drivers
- Forked tool or similar for snap-tab removal
- Brass or similar non-sparking punch or GM tool J45722
- Hammer
- High speed rotary tool (Dremel tool) or small knife



OPTIONAL ITEMS

- PN 92146684 GM GTO fuel filter (in tank filter, includes replacement internal O-rings)
 - Note - some GM parts system list PN 92075337 as the 2005-2006 GTO fuel filter - this is not the correct fuel filter part number
- Kenne Bell Boost-A-Pump (40 amp)
 - PN KB-89068 for naturally aspirated applications (vacuum trigger switch)
 - PN KB-89069 for boosted applications (pressure trigger switch)

NOTE: It is easier to start with a nearly empty fuel tank for this installation.



1. Remove all items from trunk. Remove felt spare tire cover.



2. Remove plastic snap-tabs with fork tool or similar tool (7 total snaps.)



3. Remove felt gas-tank cover.



4. Use an E18 inverted Torx socket to remove the bottom two fuel-tank cage retaining bolts.



5. Remove the E18 Torx bolt.



6. Use a 13 mm socket to remove the top two fuel-tank cage retaining bolts.



7. Remove the fuel-tank retaining cage.



8. Unplug the fuel pump wiring harness plug.



9. Remove the top two retaining strap bolts with a 13 mm deep socket.



10. Remove the driver's side plastic vanity cover under the hood.



11. Unscrew the plastic Schrader valve cover.



12. Place a rag underneath the valve & depress the stem with a small screwdriver to relieve fuel pressure.

NOTE: Fuel will escape from the valve. Be sure to keep heat sources away from the area. Eye protection recommended.



13. Replace the Schrader valve cap and vanity cover.

14. Use a jack to lift the vehicle and place on jack stands at locations stated in the owner's manual.



15. Disconnect the quick-disconnect fuel fittings on the bottom of the fuel-tank from underneath the vehicle (the large one must be simply squeezed but the smaller one has a tab on one side that must be pressed in that will allow the line to be disconnected).

NOTE: Fuel will escape from the connection- take care to keep heat sources away from the area. Eye protection recommended.



16. Unclip the plastic differential speed sensor wires and secure out of the way with tape.



17. Unbolt the plastic rear cover using a 17 mm socket (5 total bolts).



18. Move the plastic cover enough to access the fuel-tank restraining strap nuts. Remove these with a 17 mm deep socket.



19. Remove the restraining straps from inside the trunk.



20. Remove the snap-tabs (2) from the passenger side trunk panel. Peel back the felt cover.



21. Open the gas cap. Remove the filler-neck mounting nuts with a 10 mm deep socket.



22. Pull the filler neck into the trunk.



23. Push the tank towards the passenger compartment and lift the retaining strap anchors from the plastic locks in the tank.



24. Remove the fuel-tank from the vehicle.



25. Cut the shipping tie-strap from around the tank and the Oetiker clamp from around the filler neck tube on the tank side.

NOTE: the shipping strap is only for shipping and need not be replaced once the tank is installed in the vehicle.



26. Pull back the rubber filler-tube covering hose and undo the snaps around the perimeter of the tank holding the fuel-tank cover in place. Remove the cover.



27. Pull the sliding tabs on the side of the fuel hose on top of the fuel pump module and disconnect the hose.



28. Disconnect the wiring harness clips from the fuel-pump module.



29. Using a brass or similar non-sparking flat-end punch and a hammer, gently tap the fuel-pump module retaining ring counter-clockwise to release it, and remove (or use GM tool J45722 if available).



30. Pull the module halfway out and remove the fuel module outlet hose from under the top of the module.

NOTE: Fuel will be present after removal-take care to keep heat sources away from the area.



31. While the module is still halfway out of the tank, disconnect the fuel-pump outlet hose from inside the tank. Remove the module. Remove the fuel pump module seal (O-ring). You will be replacing this seal with the new seal provided with the kit.



32. Unclip the fuel level float arm from its black plastic bracket by holding the bracket down while gently pulling up on the arm. Remove both pieces from the assembly by pulling the bent tang of the fuel level float arm out of the fuel pump module then sliding the black plastic bracket upwards. TAKE GREAT CARE NOT TO BEND THE FUEL LEVEL FLOAT ARM OR BRASS CONTACT TIPS ON THE BRACKET, AS THIS WILL UPSET THE PRECISION OF THE FUEL LEVEL GAUGE.



33. Remove the electrical connections from the underside of the top of the module and from the top of the pump.



34. There are four plastic snap retainers around the top of the lower portion of the module. Unsnap these and remove the fuel canister from the bottom of the module. This is most easily done by unsnapping one at a time and gently separating the module from the canister near the clip, working around and repeating the process to keep previously unsnapped fasteners from reconnecting.



35. A bit of force will be required to separate the canister from the module, as there is an O-ring press seal in the bottom.



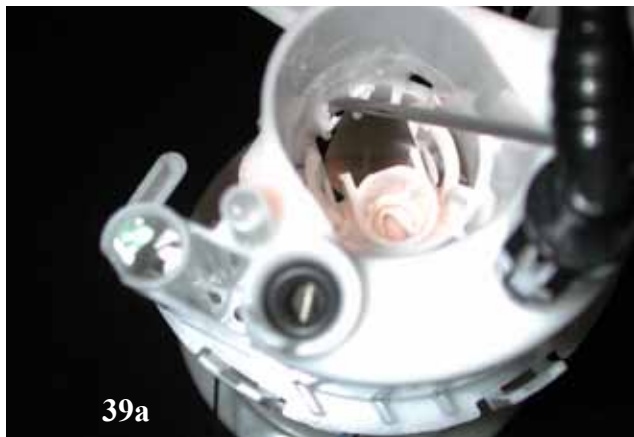
36. Remove the black plastic canister-fill valve from the bottom of the module.



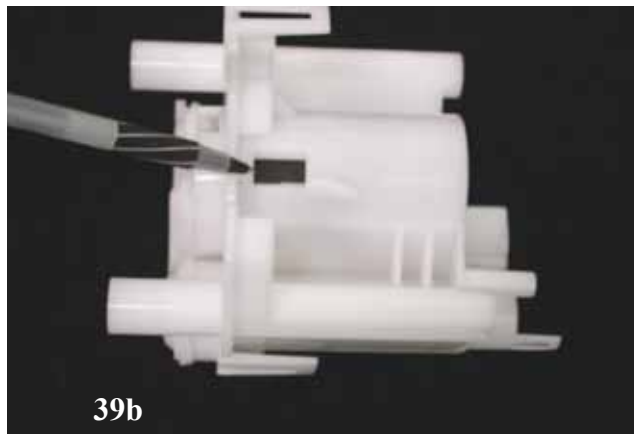
37. The fuel pump is held in place with two snap retainers. Use two small screwdrivers inserted into the top of the lower module to hold these away from the pump, and pull the pump out. There are two inspection ports near the top of the fuel canister that can be used to ensure proper placement of the screwdrivers and proper snap-retainer disengagement. The fuel pump sock may be removed from the pump by using a small screwdriver to remove the snap-ring if fuel pump removal is difficult.



38. Place the supplied LPE fuel pump spacer (PN: XX09413-0003) over the outlet neck of the new fuel pump (TI-GSS340), taking care to ensure the slot in the bottom of the spacer is aligned with the tab on the top of the fuel pump. Then, slide the stock O-ring over the outlet neck so that it rests on the spacer.



39a



39b

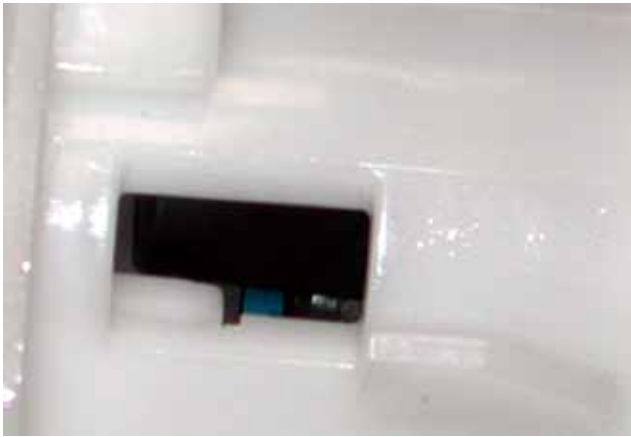


39. For the fuel pump to sit properly in the module, some modifications need to be made. The three ribs inside the top part of the module, indicated by the screwdriver (shown in 39a) must be cut back until they are above the small windows indicated by the pen in figure 39b. Make sure that the ribs inside the fuel pump socket do not interfere with the new pump when it is installed. Removal of the ribs may be done with a die-grinder type tool and coarse cutter/abrasive attachment or a small knife.

If you don't feel comfortable performing this modification, you can purchase an already modified fuel filter from LPE.

40. Turn the canister upside-down. Put the supplied LPE O-ring retention washer (PN: XX09413-0002) into the canister outlet with the chamfer side facing out, as shown.

41. Push the new fuel pump's outlet neck into the modified module (the O-ring should hold the spacer in place).



42. When the pump is fully seated the pump's black electrical connector should be three-quarters the way up the small window, as shown in Figure 3. Make sure that the fuel pump is setting straight and not setting crooked.



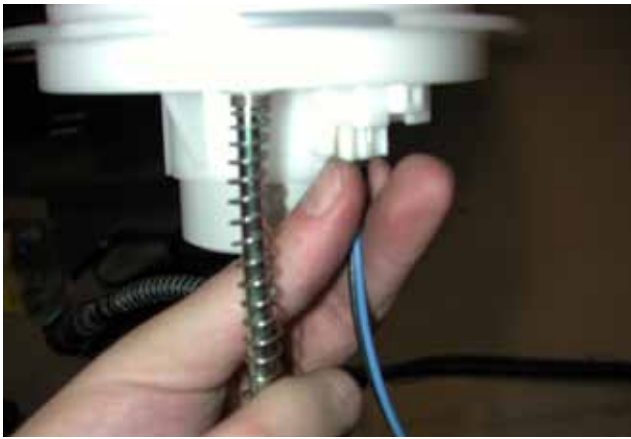
43. Install the fuel sock spacer onto the bottom of the pump so that the slot of the spacer is facing the pump and intersects the plastic rib of the fuel pump.



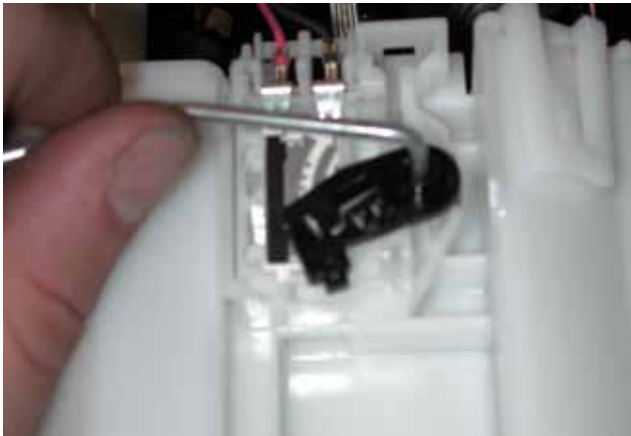
44. Press the included fuel pump sock on the new fuel pump, ensuring it will not interfere with the sides of the canister once installed (this is only important for the portion of the sock directly underneath the pump, as the other portion of the sock will flex to allow for canister installation). Take care during this step, as the sock is not easily removed once installed.



45. Reinstall the black plastic canister-fill valve. Slide the canister back over the assembly, ensuring all snap retainers are properly seated.



46. Reinstall all wires disconnected from the top of the pump and the bottom of the upper module portion.



47. Reinstall the black plastic fuel level bracket and fuel level float arm.



48. Replace the module O-ring seal with the new supplied seal & place the module halfway back into the tank. Reconnect the fuel-pump outlet and fuel module outlet hoses.



49. Place the module back into the tank, making sure that the outlet faces the filler neck and the plastic tab on the module fits between two mounting tabs.



50. Reinstall the retainer ring by using the punch as before (if any radial assembly lines exist, make sure they line up).



51. Reinstall the wiring connections and the outlet hose.



52. Reinstall the black plastic cover, making sure the connecting snap-tabs snap back into place.



53. Slide the rubber hose back in place and use the included hose-clamp in place of the Oe-tiker clamp that was previously removed.



54. Place the fuel-tank back into the trunk, pushing it as far back as it will go.



55. Push the restraining strap anchors back down, and pull the tank forward to lock them in place.



56. Push the filler neck end back through into the fuel-filler recess. Replace the nuts that hold it in place with a 10 mm deep socket.



57. Replace the felt on the passenger side, and reuse the snap-tabs to hold it in place.



58. Replace the quick-disconnect fuel lines.



59. Replace the plastic differential speed sensor wires.



60. Plug the fuel-pump harness connector back in.



61. Replace the retaining straps. The top two bolts (13 mm socket) should be torqued to 15 ft-lbs (20 Nm) and the bottom two nuts (17 mm deep socket) should be torqued to 30 ft-lbs (40 Nm).



62. Replace the plastic rear cover and bolts using a 17 mm socket and torque to 15 ft-lbs (20 Nm).



63. Replace the fuel-tank retaining cage.



64. Replace the four bolts (top 13 mm socket and bottom E18 inverted Torx socket) and torque all to 15 ft-lbs (20 Nm).



65. Replace the felt spare tire cover.

66. Add fuel back to the fuel tank.

67. Start the vehicle. Check to make sure the vehicle is running properly and all of the fuel line connections are connected properly and you do not have any leaks.

Congratulations, you have completed the installation of the Lingenfelter Performance Engineering GTO fuel pump upgrade kit for your Pontiac GTO.

The fuel flow of this pump kit can be further enhanced with the use of a fuel pump voltage boosting device like the Kenne Bell Boost-a-Pump. The Boost-A-Pump is available through Lingenfelter Performance Engineering. The normal and boosted output of the pump is shown in the following table (Table 1).

Table 1

<u>Pump voltage</u>		<u>Flow (at 400 kPa/58 psi)</u>	
<u>Pump</u>	<u>Vdc</u>	<u>Liters/hr</u>	<u>Gallons/hr</u>
Stock GTO	12.0	150	40
Stock GTO	13.5	175	46
GSS340	12.0	190	50
GSS340	13.5	230	60
GSS340	16.0	285	75
GSS340	17.0	300	80

**Durability of the stock pump under continuous use at elevated voltages has not been tested and is not recommended.*

The TI/Walbro GSS series fuel pumps have been durability tested at elevated voltages for in excess of 500 hours of continuous operation.

With a fuel pump voltage boosting device, you only run the pump at the higher voltage when the additional fuel flow is needed. For naturally aspirated and nitrous applications, the elevated voltage mode can be triggered with a vacuum switch or with a TPS switch. On boosted applications (superchargers and turbochargers) the elevated voltage can be triggered with a pressure switch.

Many other items are available from LPE for your 2004-2006 Pontiac GTO, including low temperature thermostats, camshafts, supercharger kits, CNC ported cylinder heads, engine packages, ported throttle bodies, and port matched intake manifolds. Contact LPE, visit our web site, or contact your LPE distributor for information about our many other products.

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