



FAST-500 RETURN FUEL SYSTEM

**INSTALLATION MANUAL FOR:
2009 - 2021 NISSAN 370Z
Compatible w/Infiniti: G37 Coupe /
Sedan & Q60 Coupe (3.7L)**

Version: 06/2021



FAST-500 INVENTORY CHECKLIST

- 1- Aeromotive fuel pressure regulator.
 - *2 x (-6) O-ring fittings & vacuum port preinstalled.
- 2- (M5-1 x 8mm) bolts
- 2- (M5-1) Nylock Nuts
- 1- Fast Intentions fuel rail adapter block.
 - *2 (-6) o-ring fittings & OEM O-ring preinstalled.
- 2- (M6-1 x 35mm) stainless steel socket cap bolts.
- 2- (M6-1) stainless steel flat washers
- 1- (-6) Black Teflon coated fuel line (Return Line: Short) 00*-00*
- 1- (-6) Black Teflon coated fuel line (Return Line: Long) 00*-00*
- 1- (-6) Black Teflon coated fuel line (Feed Line) 120*-00*
 - *Black aluminum AN to Dorman fitting pre-installed.
- 1- (-6) Black fire-retardant heat sleeve. (Feed Line) 15"
- 1- (-6) Black fire-retardant heat sleeve. (Return Line: Long) 18-1/2"
- 1- (#100) Adel clamp
- 1- Velcro heat sleeve 4"
- 1- (-6) to 1/4" Barb fitting with 6" Blue Eaton fuel hose preassembled.
- 1- (-4 to -4 (90*)) Bulkhead w/Jam nut.
- 2- (-4) Dowty seals
- 1- F (-4) to M (-6) expander fitting
- 1- CNC Machined in tank regulator delete w/stainless steel hardware.
- 1- 5/16" Hose Clamp
- 1- (12") piece of 1/8" Black silicone vacuum line
- 2- 8" Zip Ties
- 2- 4" Zip Ties

ADDITIONAL UPGRADES (OPTIONAL)

- 1- Autometer (0-100psi) Fuel pressure gauge
- 1- Pipe 90* Elbow Male/Female

For installation on the Infiniti Series Cars: G37 Coupe / Sedan & Q60 Coupe (3.7L), some images may not visually match those applications and some steps may have a minor variation to them.

Infiniti G37 ONLY

If your Infiniti G37 has a production date prior to 9/2009, and/or your fuel canister is part no: 17040-JL60A, you will need to upgrade to one of the two fuel pump canister assemblies:

Part No: 17040-1NC0C

Part No: 17040-1NC0A

G37 WARNING: You will need to verify that you have one of these two part numbers (updated fuel canister), before proceeding with the FAST-500 Return Fuel System installation.

FAST-500 INSTALLATION (PAGE 1)

WARNING: When replacing fuel components, work in a ventilated area. Make sure there are no sparks or open flames in the area. Have a CO2 fire extinguisher on hand.

- 1) Open both doors and disconnect the negative terminal on the battery (10mm).
- 2) Remove the auxiliary compartment door. (Image 1)
- 3) Remove the rear parcel shelf cover. (Image 2)



- 4) Remove the sound insulating mat. (Image 3)
- 5) Remove the fuel tank access door 4 x 10mm nuts and rubber grommet. (Image 4)



- 6) Disconnect the gray plug. (Image 5)

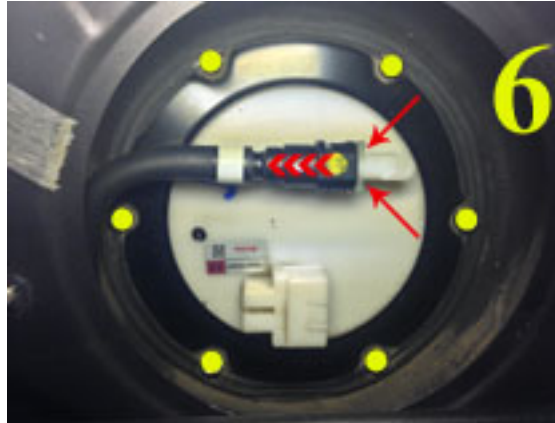


FAST-500 INSTALLATION (PAGE 2)

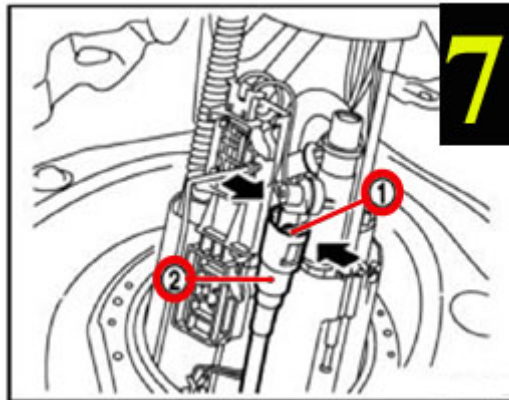
7) Disconnect the "quick connector" and hose from the fitting on top of the fuel pump assembly lid. Squeeze in the (2) tabs (red arrows) and pull the hose away (red chevrons). (Image 6)

8) Remove the (6) 8mm bolts securing the black retainer cover down. (Image 6) The fuel pump assembly lid is spring loaded and has tension on it. Remove the 6 bolts evenly to properly relieve the tension.

NOTE: Cover the hose end with a plastic bag to keep debris out.



9) Lift the fuel pump assembly housing about halfway up. Disconnect the "quick disconnect" crossover hose from the fuel pump assembly. (Image 7) Squeeze in the (2) tabs and pull the hose away.



NOTE: Remember the rotation of the fuel pump assembly. It will be reinstalled in the same orientation.

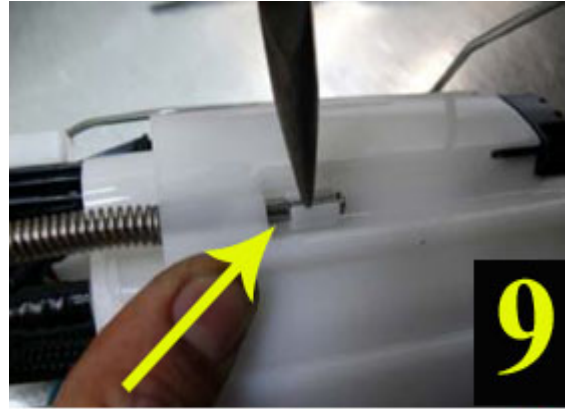
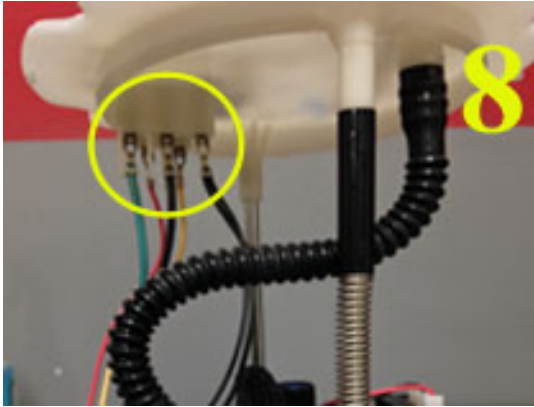
10) Carefully lift the fuel pump assembly out of the fuel tank making sure the "float" does not get bent or damaged during removal.

11) Once the canister is removed, turn the fuel pump assembly upside down to remove the excess fuel, then set aside.

12) Remove the "blue" O ring and wash under warm water immediately, dry off and set aside. **NOTE:** This is performed to help prevent the O ring from swelling in size.

FAST-500 INSTALLATION (PAGE 3)

13) Take a picture of the wires and their specific as shown in (Image 8). Remove the wires one by one by gently releasing the tab located on each connector.



14) Push down on the lid of the fuel pump assembly, putting tension on the spring. Unclip the white "C" clip. (Image 9) The lid will push up and all tension will be relieved off the spring.

15) Lift the lid off and set the clip, black spacer, and spring aside.

NOTE: When reinstalling the lid, the black spacer installs between the spring and lid. (Image 8)

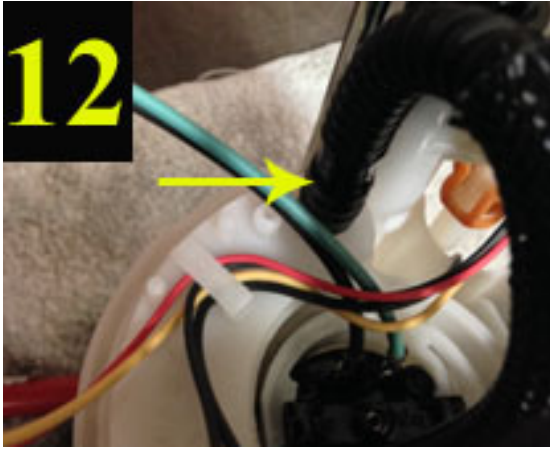
NOTE: The black convoluted line stays attached to the lid and the fuel pump inner basket.

16) Separate the inner fuel pump inner basket from the outer basket. (Image 10 and 11)



FAST-500 INSTALLATION (PAGE 4)

17) Cut the convoluted line with a razor blade so it and the stock fuel pump can be removed from the inner fuel basket cover. (Image 12)

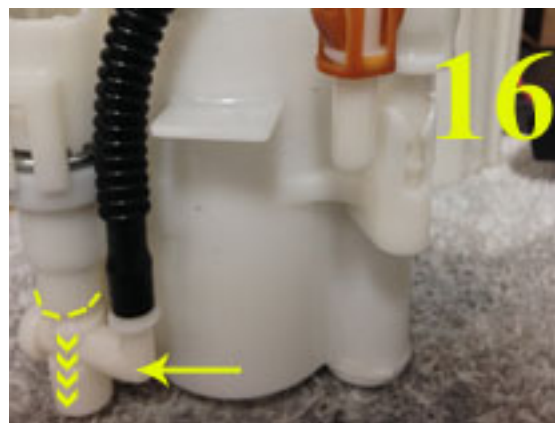


18) Press the tabs in that secure the fuel pump. Turn the pump counterclockwise and it should come out through the bottom of the basket. Remove the pre pump filter from the fuel pump and set aside. (Image 13). Disconnect the black and blue leads from the fuel pump. (Discard the fuel pump-you will not reuse)

19) Cut the tabs out of the inner fuel basket. (Image 14 and 15) show a before and after.

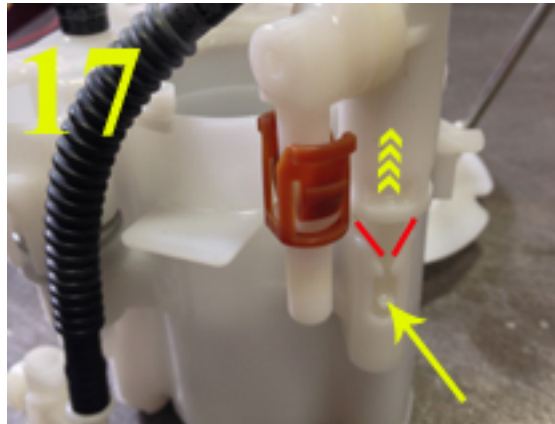


20) Remove siphon regulator tube cover. (Image 16)



FAST-500 INSTALLATION (PAGE 5)

21) Remove siphon regulator tube. (Image 17) As shown with the red lines, gently pry them apart and put up on the siphon tube.



22) Using rubber caps, plug the openings as shown in (Image 18 and 19)

WARNING: Failure to cap these openings will allow debris to enter the fuel system.



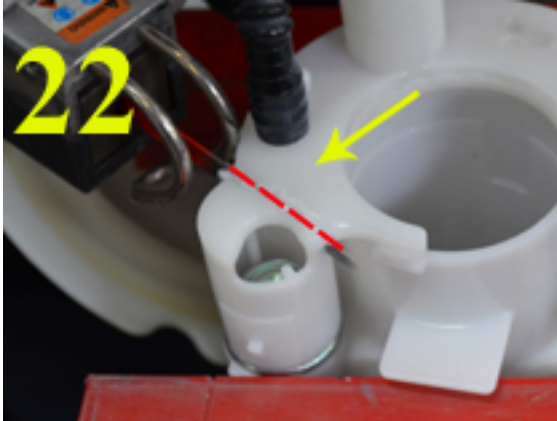
23) Cut off the regulator locking tab. (Image 20) DO NOT cut through the regulator. After the cut, it should appear as it does in (Image 21)



FAST-500 INSTALLATION (PAGE 6)

24) Cut through the regulator housing. (Image 22)

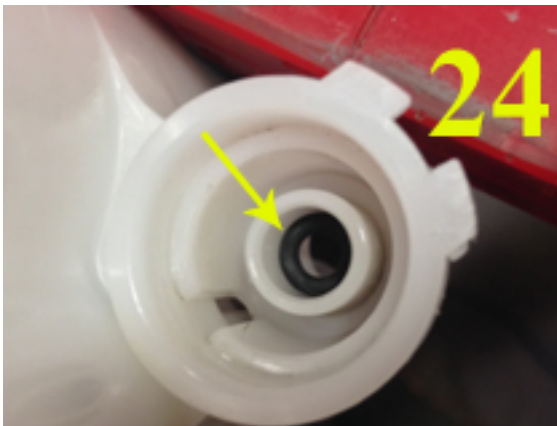
WARNING: DO NOT "breach" or "cut through" the fuel pump canister housing. There is a sealed area containing a paper fuel filter. If this area is breached the fuel system will not hold adequate fuel pressure. If you cut too deep and breach the fuel pump canister, you will need to purchase a new fuel pump canister from Nissan and start over.



25) Once the regulator housing is cut off and removed, it should look like (Image 23). Take the regulator out and discard.

NOTE: When removing the OEM regulator, there will be a "white" shim ring along with black O Ring. (Remove and discard both-you will not reuse)

26) Remove the OEM o ring as shown in (Image 24.)



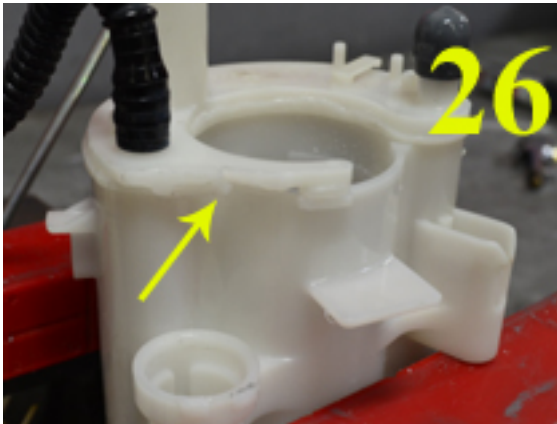
27) Grind excess plastic off the fuel pump canister housing as shown in (Image 25.)

WARNING: DO NOT "breach" or "grind through" the fuel pump canister housing. There is a sealed area containing a paper fuel filter. If this area is breached the fuel system will not hold adequate fuel pressure. If you grind too deep and breach the fuel pump canister, you will need to purchase a new fuel pump canister from Nissan and start over!

FAST-500 INSTALLATION (PAGE 7)

28) Once step 27 is completed, the canister should appear as it does in (Image 26).

NOTE: Wash out the canister and lightly blow off with compressed air. Ensure that all the loose debris from cutting and grinding has been cleaned off and/or removed.



29) Some of the following step will require a "light lubrication" to O Rings prior to installation. We recommend using 3M Silicone Paste. (Image 27)

NOTE: Image 28 has been removed.



30) The "Black" CNC regulator delete is a 2-piece part. Remove the 2 x stainless steel bolts holding it together and it will separate. Once properly taken apart, it should appear as it does in (Image 29.)

NOTE: Image 30 has been removed.

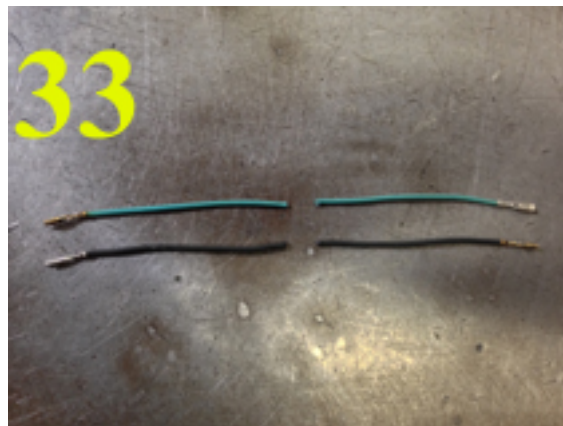
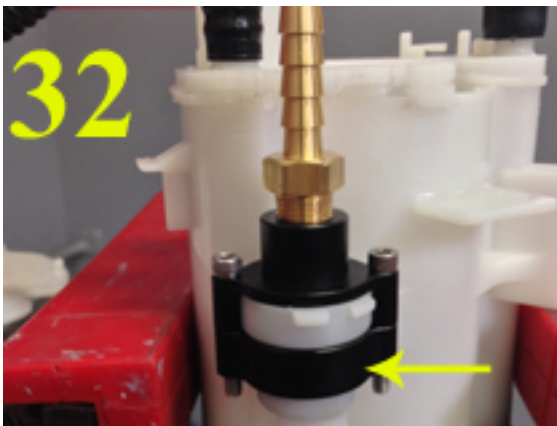
NOTE: Images 31 and 32 visually show an earlier generation regulator delete

FAST-500 INSTALLATION (PAGE 8)



31) Install the regulator delete into the fuel pump canister, as shown in (Image 31.)
WARNING: Make sure that the O Rings properly seat as you push the regulator delete down into the fuel pump housing and they do not get pinched.

32) Install the regulator delete, clamp and hardware and tighten down. (Image 32)



33) The black and blue leads previously removed from the stock fuel pump need to be cut in half. (Image 33)

34) Strip the ends of the black and blue wires as well as the red and black wire on the FI Inc supplied fuel pump wiring harness. Solder the black wire to black wire and the blue wire to the red wire. Once completed install the heat shrink tubing. (Image 34)



FAST-500 INSTALLATION (PAGE 9)

35) Attach the FI Inc supplied billet bracket to the post on top of the inner fuel basket. (Image 35)

NOTE: Face the "notch" down on the billet bracket down so it sits higher on the post. Leave the Allen bolt loose.



36) Attach (1) 2" piece of supplied rubber fuel hose to the Walbro 255LPH fuel pump. (Image 36)

37) Attach the pre pump filter (previously removed in step 17) to the bottom of the Walbro 255LPH fuel pump.

NOTE: Align the notch in the center of pre pump filter with the peg coming out of the bottom of the new fuel pump.

38) Install the fuel pump and pre pump filter as one unit into the inner basket by sliding up from the bottom.

NOTE: Installed in the proper orientation the pre pump filter will visually appear aligned with the bottom of the inner basket. (Image 37)



FAST-500 INSTALLATION (PAGE 10)

39) Now that the fuel pump and 2" rubber hose are installed through the billet bracket, install the 1/4" x 180* hard line, 2" piece of rubber fuel hose and 3 remaining 5/8" hose clamps, as shown in (Image 38.)

NOTE: Notice of the rotation of the 5/8" hose clamps. When properly installed the assembly should appear as it does in (Image 38).



40) Tighten the Allen bolt located in the billet bracket.

41) Connect the fuel pump wiring harness to the fuel pump.

42) Located in the outer basket, remove the black swirl jet so it can be drilled out.

NOTE: To remove the swirl jet push it from the inside of the basket out.

43) Drill out the black swirl jet with a (109 thousandths) or standard equivalent is a 7/64" drill bit.

WARNING: The wall thickness of the swirl jet is very shallow. It takes very little pressure to drill out. DO NOT drill too deep.

44) Wash the swirl jet out and reinstall in the outer basket.

FAST-500 INSTALLATION (PAGE 11)

45) Reinstall the siphon tube (both ends) that was removed in step 21.

NOTE: Check both ends to ensure the siphon tube is fully seated after reinstallation.

46) Locate the fuel pump canister "hat/lid." Mark the center and drill out to 27/64".
(Image 39)

NOTE: You may need to file the hole slightly larger to fit the threads of the 90° bulkhead through it. Once completed clean the fuel pump hat and surrounding area to ensure there are no plastic shavings.



47) Install the 90° bulkhead along with (1) dowty seal. (Image 40)

NOTE: Take note of the proper rotation of the 90° bulkhead. (Image 40)

48) Install the (1) remaining dowty seal and jam nut. (Image 41)

NOTE: When tightening down "jam nut" put a wrench on the 90° bulkhead from the topside. Ensure the bulkhead stays in the proper rotation.



49) Install the inner basket assembly inside of the outer basket and clip in place. The tabs will "click" when the two baskets are fully mated.

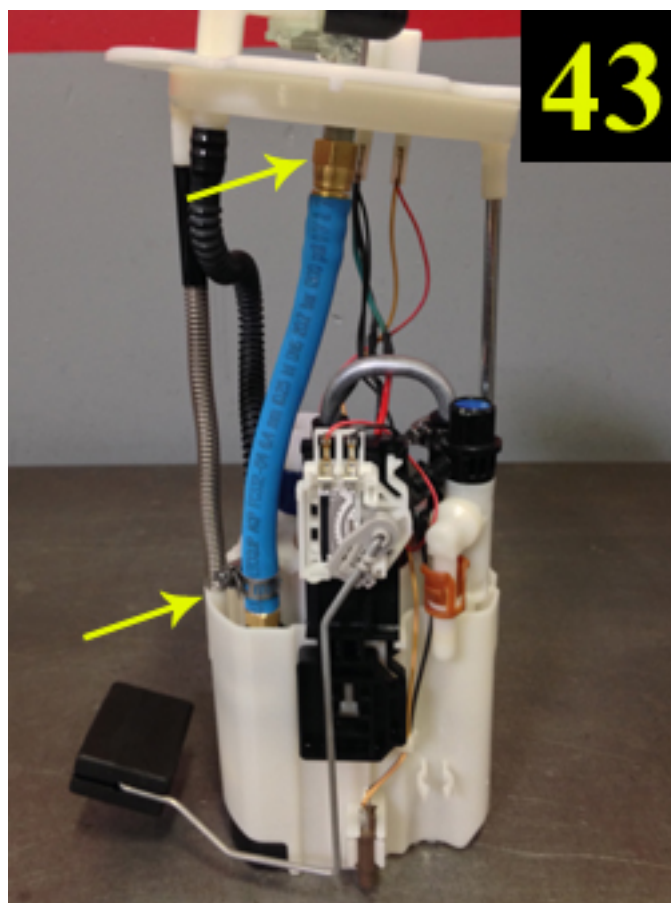
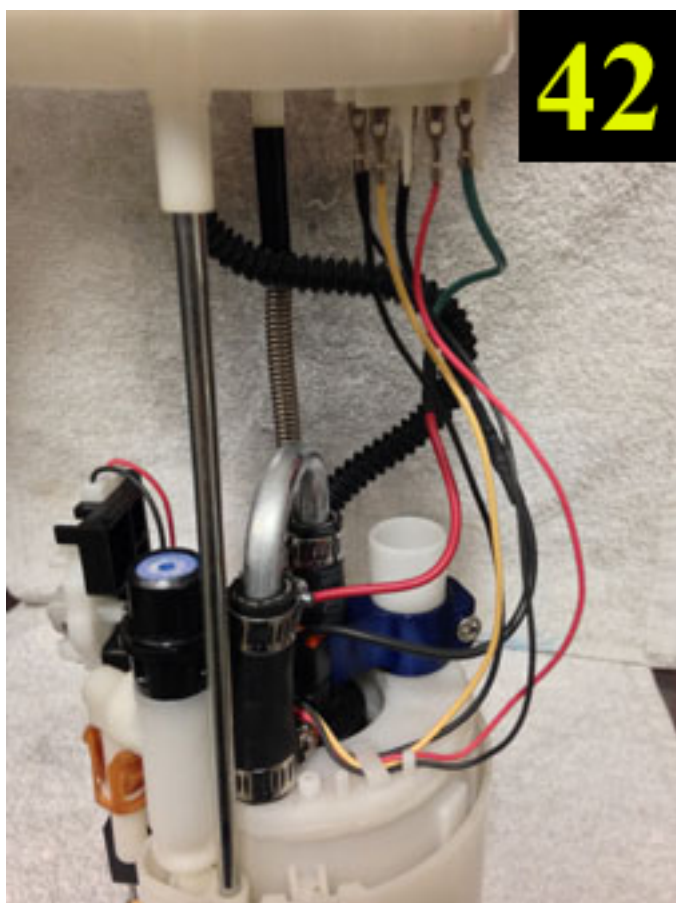
NOTE: When properly seated the swirl jet will sit inside of the siphon regulator tube. Ensure that the pre-pump filter is seated to the bottom of the fuel pump and rotated in the proper orientation.

FAST-500 INSTALLATION (PAGE 12)

50) Installation of the lid assembly will be performed in the opposite of removal in steps 14 and 15.

- Install the black spacer over the rod that is connected to the lid.
- Install the spring over the rod as it will butt up to the black spacer.
- Install the lid assembly to the fuel pump basket assembly.
- Depress the lid putting tension on the spring allowing the white "C" clip to be reinstalled.

51) Route and attach the wires in the exact orientataion that they were prior to removal. Proper routing will appear as it does in (Image 42).



52) (Image 43) Install the black fuel hose to the brass barb on bottom and bulkhead on top. Secure the bottom with the supplied 5/16" hose clamp. Tighten down the top brass fitting to the bulkhead.

NOTE: When tightening the brass fitting to the bulkhead, put a wrench on the top side of the bulkhead to keep the proper rotation as you tighten the brass fitting.

NOTE: When assembled properly the fuel pump canister should appear exactly as it does in (Image 43).

53) Remove the (2) rubber caps previously installed in step 22.

54) "In the vehicle" Seat the "blue" O Ring in place.

FAST-500 INSTALLATION (PAGE 13)

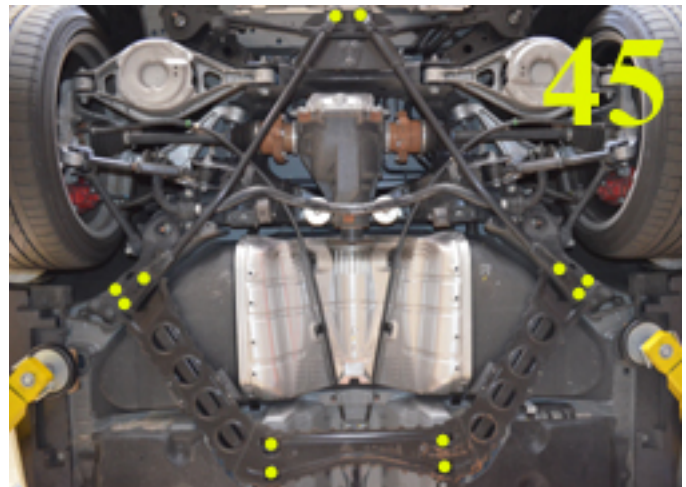
55) Reach down in the fuel tank and pull the crossover hose up.

56) Follow the sub steps below for the installation of the fuel pump assembly.

- Carefully feed the float back in the tank first, ensuring it does not get caught on the crossover hose or bent during installation.
- With the fuel pump canister assembly halfway down install the crossover hose to the siphon regulator tube. When fully seated the quick disconnect fitting will "click" in place indicating it is secure.
- Carefully lower the fuel pump assembly down in place.
- Install the black retainer cover and (6) 8mm bolt. Tighten them in an "X" pattern. **Torque to 20 Inch LBS**

57) Remove the fuel line undertray. (Image 44)

NOTE: Steps 58 and 59 have been removed.



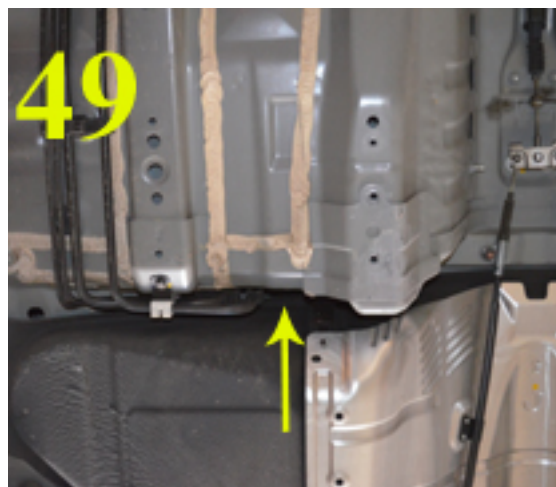
60) Remove the underbracing from the attachment points circled in yellow.
(Image 45)

FAST-500 INSTALLATION (PAGE 14)

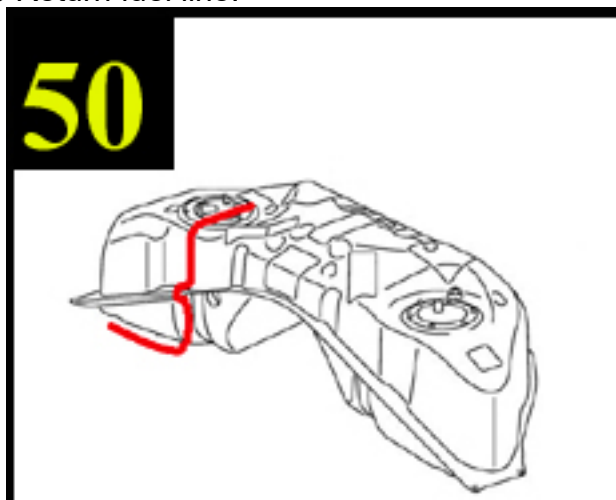
61) Locate the long "-6 Return" fuel line. As the end indicated in (Image 46), put tape around the end being pointed to with the arrow. This is the end that will be fed up into the fuel tank cavity. (Image 47) shows the tape installed.



62) (Image 48 & 49) shows the proper location to feed the "-6 Return" fuel line up into the fuel tank cavity.

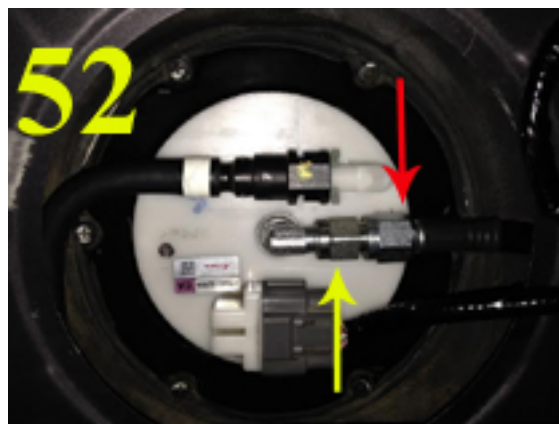
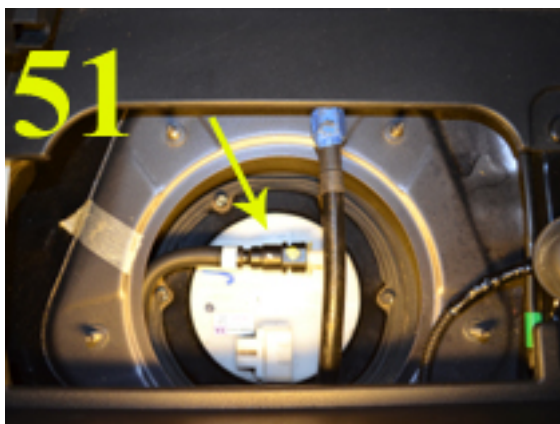


NOTE: (Image 50) is a diagram that shows the fuel tank in an exploded view with the proper routing of the -6 Return fuel line.



FAST-500 INSTALLATION (PAGE 15)

63) (Image 51) indicates the length of line pulled up on top of the fuel tank. Reinstall the quick connector fitting indicated by the yellow arrow.

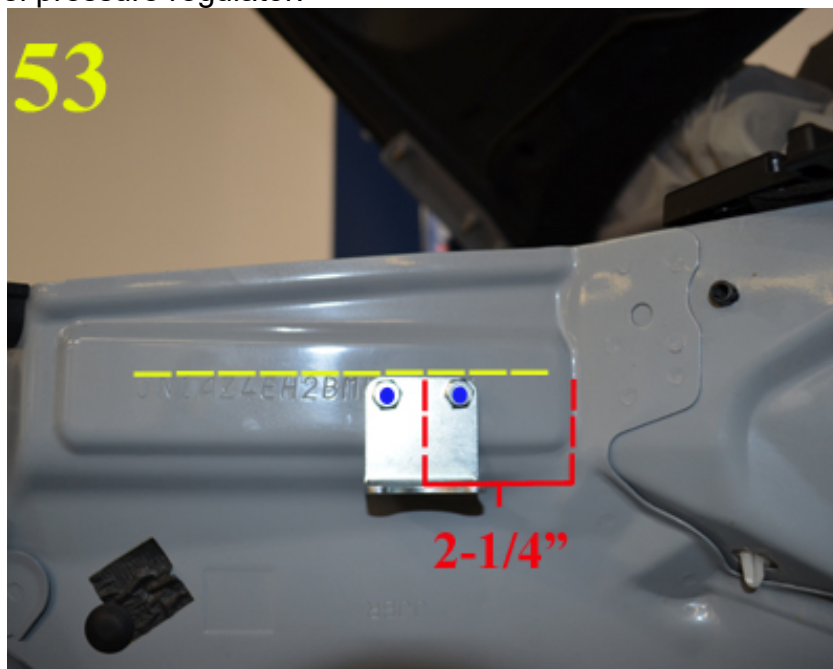


64) (Image 52) you will connect the -4 to -6 expander fitting to the 90° Bulkhead as indicated by the yellow arrow. Once screwed on hand tight tighten down in place. Install the -6 Return fuel line to the expander fitting as indicated by the red arrow. Reconnect the gray plug.

WARNING: Make sure that there is no debris in the fuel line. It is recommended to cap the other end of the fuel line until it is time to install that end.

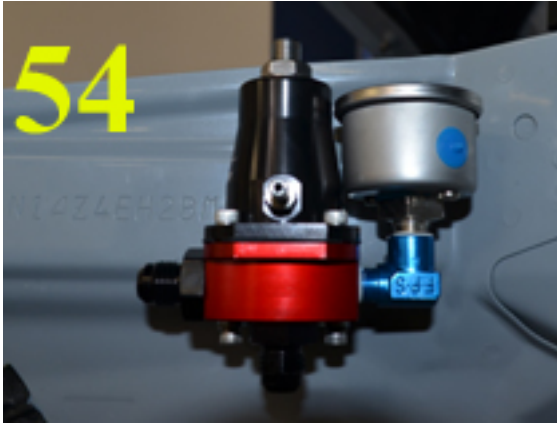
NOTE: At this time, you WILL NOT reinstall the rubber sound insulation mat or the fuel access door.

65) Take the metal bracket attached to the back Aeromotive fuel pressure regulator and hold it up to mark the mounting holes. (Image 53) Inside the engine bay outside of the battery box, you will notice a stamped 17-digit VIN number. The yellow dotted line indicates the top of the numbers. Use the top of the numbers as a reference line up mounting point of the bracket. Measure 2-1/4" in on-center of the bracket from the "crease" as indicated with the red dotted lines. (Image 53) The blue circles indicate the mounting hardware post installation. Mark, punch and drill the mounting 2 mounting holes for the fuel pressure regulator.

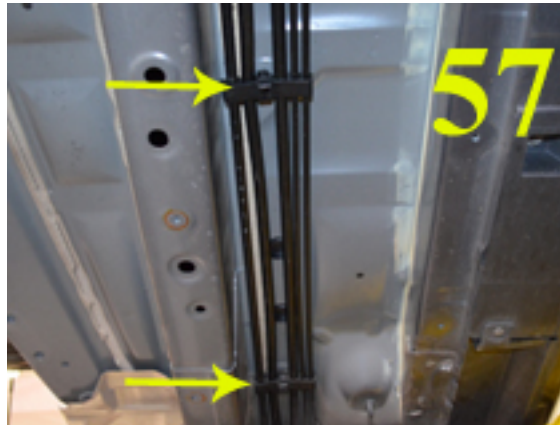
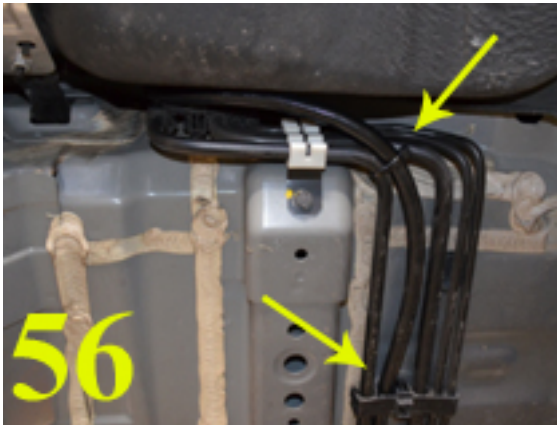


FAST-500 INSTALLATION (PAGE 16)

66) Mount the Aeromotive Fuel Pressure Regulator using the supplied 2x (M5-1) bolt and nylox nuts. (Image 54 and 55)

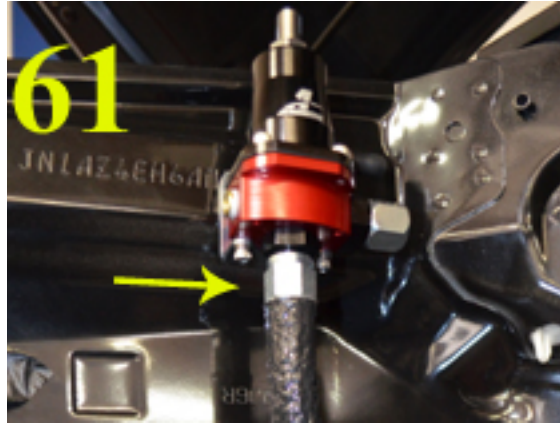
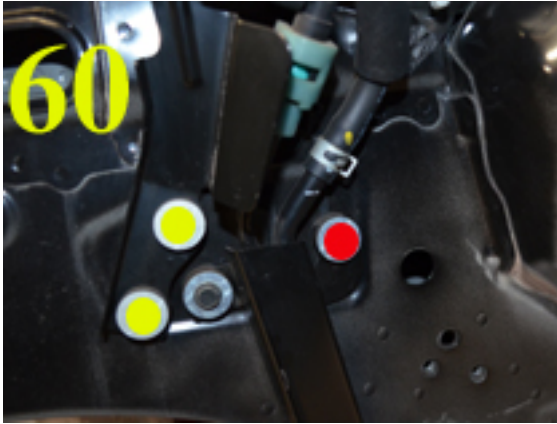


67) You will now route the "-6 Return" fuel line to the Aeromotive Fuel Pressure Regulator. Route the line as shown in images 56 - 59 using supplied zip ties and OEM mounting brackets.



FAST-500 INSTALLATION (PAGE 17)

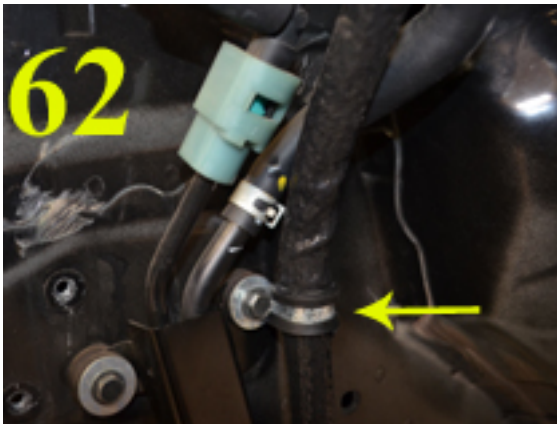
68) "Engine compartment" Remove the 2x yellow and 1x red heat shield bolts. (Image 60)



69) Connect the "-6 Return" fuel line to the bottom port of the Aeromotive Fuel Pressure Regulator and tighten down, as shown in (Image 61).

NOTE: Ensure that the "black" fire retardant heat sleeve is up to the bottom of the fitting.

70) Using the supplied #100 Adel clamp, secure the "-6 Return" fuel line to the frame rail, as shown in (Image 62).



71) Remove the "green" plastic retaining clip from the fuel line. (Image 63) shows it removed.

72) Remove the fuel line, as shown in (Image 64).



FAST-500 INSTALLATION (PAGE 18)

73) After the fuel line is removed, there is a "green" sealing clip that you will remove.

WARNING: DO NOT scar the edge of the fuel line when removing the green sealing clip.

WARNING: DO NOT knock any debris down the open, exposed fuel line.

NOTE: You will need the supplied FI (-6) Black Teflon coated fuel line (Feed Line) 120*-00* Dorman for this next step.

74) Remove the "white" sealing clip from the inside of the 00* Dorman end of the feed line.

75) Install the "white" sealing clip to the OEM fuel (Hard Line), as shown in (Image 65.)

WARNING: DO NOT scar the edge of the fuel line when installing the white sealing clip.

WARNING: DO NOT knock any debris down the open, exposed fuel line.



76) Install 00* Dorman end of fuel line and clip it in place, as shown in (Image 66).

NOTE: Put a light coat of 3M Silicone Paste around the top of the (Hard Line) prior to installing the line.

NOTE: Once the fuel line is installed and clipped in ensure that the "black" fire retardant heat sleeve is to the bottom of the fitting.

77) Reinstall the "green" plastic retaining clip that was removed in step 71.

78) Install the supplied Velcro heat sleeve 4" and reinstall the heat shield that was removed in step 68. (Image 67)



FAST-500 INSTALLATION (PAGE 19)

79) Install the FI Fuel Adapter block to the OEM Fuel Tube using 2 x (M6-1 x 35mm) stainless steel socket bolt and 2 x (M6-1) SS flat washers as shown in (Image 68).
NOTE: Apply a thin film of silicone paste to the O ring and ensure it does not get pinched when installing. **Torque to 74 Inch LBS.**



80) Install the 00*-00* (-6) short return line. One side to the Aeromotive Fuel Pressure Regulator and the other side to the back of the FI Fuel Adapter block and tighten down, as shown in (Image 69).

81) Install the 120* (-6) feed line to the top of the FI Fuel Adapter Block and tighten down, as shown in (Image 70).



82) Once all the lines are installed, ensure they are routed as shown in (Image 71).

FAST-500 INSTALLATION (PAGE 20)

83) Install the supplied (12") piece of 1/8" Black silicone vacuum line to the vacuum port on the Aeromotive Fuel Pressure Regulator, as shown in (Image 72).

NOTE: This is a 1:1 boost reference fuel pressure regulator. For it to work properly the other end of the black silicone vacuum line needs to be attached to a source that will see vacuum and boost.



84) Remove the 9/16" set screw and fuel pressure screw with a 3/16" Allen wrench. Using Ultra Gray RTV silicone, coat the lower threads of the fuel pressure screw. Reinstall the fuel pressure screw. Location is referenced in (Image 73).

85) Remove the 1/8" black silicone vacuum line from the Aeromotive Fuel Pressure Regulator vacuum port to set the fuel pressure.

WARNING: Plug the open end of the 1/8" black silicone line to ensure there is no vacuum leak once the car is started to set the fuel pressure.

86) Perform a visual inspection ensuring that there are no leaks, and everything is tightened down. With both doors open, connect the negative terminal on the battery. (10mm)

87) (Inside car) Connect the gray fuel pump electrical plug that was disconnected in step 6.

88) Turn the key to the ON position and start the car. With the car running, set the fuel pressure to **53 PSI** on the fuel pressure gauge. To set the pressure, turn the fuel pressure screw with a 3/16" allen wrench. Clockwise will increase fuel pressure and counterclockwise will decrease fuel pressure. Once the optimal 53 PSI is achieved, reinstall the 9/16" set screw and tighten down.

NOTE: With the fuel pressure gauge registering fuel pressure check for fuel leaks from and around the Aeromotive Fuel Pressure Regulator and all fuel lines and connections throughout the entire FAST-500 fuel system. If any fuel leaks are found, turn the ignition key to the OFF position, remove any spilled fuel and repair the leak before proceeding.

NOTE: Turn the ignition to the OFF position before proceeding to the next step.

89) Reinstall the 1/8" black silicone vacuum line to the Aeromotive Fuel Pressure Regulator vacuum port. Zip tie both ends of the 1/8" black silicone line with the 2 small zip ties provided.

FAST-500 INSTALLATION (PAGE 21)

- 90)** Turn the ignition to the ON position and start the car. Visually check that the fuel pressure is registering **42 - 44 PSI** on the fuel pressure gauge.
- 91)** Reinstall the fuel line under tray the was removed in step 57.
- 92)** Reinstall the underbracing that was removed in step 60.
- 93)** Install the fuel tank access door 4 x 10mm nuts and rubber grommet. (Image 4)
- 94)** Install the sound insulating mat. (Image 3)
- 95)** Install the rear parcel shelf cover. (Image 2)
- 96)** Install the auxiliary compartment door. (Image 1)



*******INSTALLATION COMPLETE*******

Congratulations on the successful installation of:
"The FAST-500 Return Style Fuel System"
Please enjoy responsibly.