INSTALLATION INSTRUCTIONS

FUEL PUMP HANGER

MITSUBISHI EVOLUTION 1-2-3-4-5-6

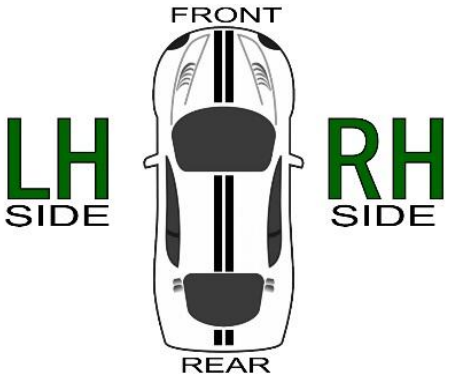
Support: info@radiumauto.com

Document# 19-0459

WARNING: DO NOT EXPOSE WORK AREA TO ANY SPARKS OR FIRE. DO NOT SMOKE WHILE WORKING ON THE FUEL SYSTEM. CLEAN UP ALL FUEL SPILLS IMMEDIATELY. WORK IN A WELL VENTILATED AREA.

1. The terms "driver-side" and "passenger-side" will NOT be referenced. As depicted, these instructions will always reference "LH" and "RH" areas of the vehicle.

NOTES:
a. The fuel pump on the EVO 1-5 is located on the RH side of the fuel tank.
b. The fuel pump on the EVO 6 is located on the LH side of the fuel tank.



2. To reduce fuel spills and make installation easier and safer, the gas tank should be drained.

Fortunately, there are 2 plugs located on the bottom of each side of the tank. Use a 12mm socket wrench. Have a fuel safe bucket ready to catch fuel.

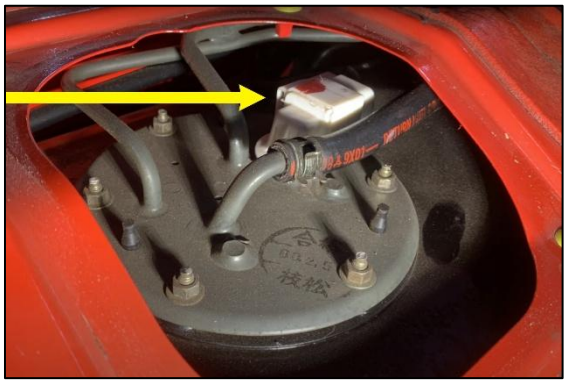
3. To release the rear seat cushion, pull the 2 front anchor point locking tabs forward and simultaneously pull up on the seat, as shown. Remove the rear seat cushion from the vehicle.

Using a screwdriver, remove the 2 fuel tank access panels (shown).

4. To depressurize the system, unplug the fuel pump connector. NOTE: The fuel pump on the EVO 1-5 is located on the RH side of the fuel tank. The fuel pump on the EVO 6 is located on the LH side of the fuel tank.

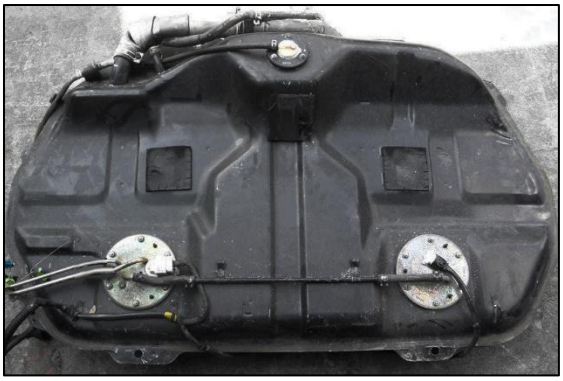
On top of the fuel pump housing, squeeze the tab (shown yellow) and carefully pull the white wiring connector away. Start the engine and allow it to stall. Remove the key from the ignition. Unscrew the gas tank filler cap temporarily to relieve any residual pressure.

Using a 10mm socket wrench, disconnect the battery negative terminal. CAUTION: Disconnecting the battery may cancel fault memories of some control units.



5. For the EVO 4-5-6, the fuel tank must be removed. Evolution 5 tank shown. NOTE: Once the Radium fuel hanger is installed, the tank will no longer need to be removed for servicing.

Reference the factory service manual for details as this procedure will NOT be discussed in this manual. It is a job for 2 people. Things like the exhaust and driveshaft will need to be removed. You will also need to figure out which components will stay with the tank and which will stay with the chassis; such as the feed hose, return hose, filler hose, vent hose, etc. It is recommended to disconnect the wiring harness from the cabin and push it through the floor grommet. Also, removing brackets for the brake cables and speed sensor cables is needed for additional slack.



6. It is recommended to clean the top of the fuel tank and the surrounding area. This will prevent loose dirt from falling into the gas tank.

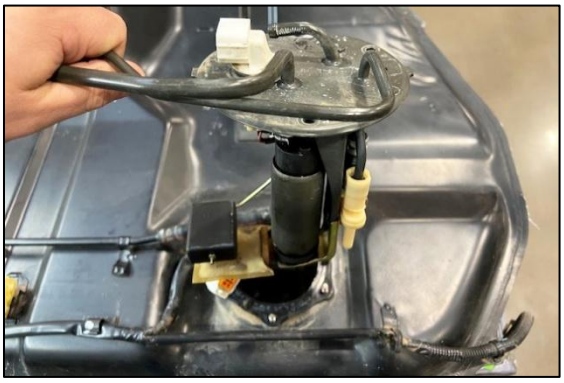
Remove the flange nut that secures the hard lines to the tank using an 8mm socket.

NOTE: The opposing (non pump) “passive side” fuel hat does NOT need to be removed.

7. Using pliers, slide the spring clamps over (as shown) and remove the short rubber crossover hose. Evolution 6 tank shown.

Next, using an 8mm socket, remove the 6 flange nuts holding the fuel pump hat. NOTE: There are 6 replacement flange nuts included in the kit.

8. When removing the fuel pump from the tank, it will be necessary to tilt the assembly to get the fuel level sensor float out. Be careful not to damage the fuel level float arm. Pull the fuel pump out and set into a fuel safe bucket. Evolution 6 tank shown.



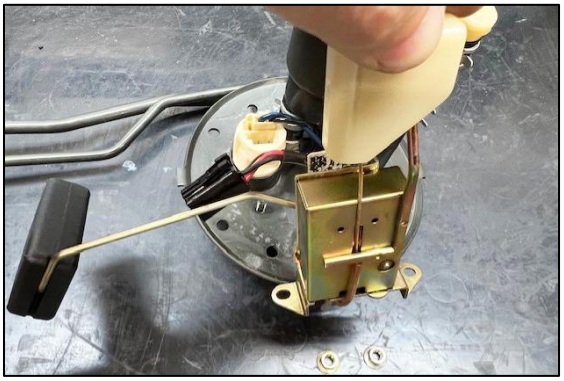
9. Carefully pry off the OEM gasket from the fuel hat. Although the original gasket could likely be reused, it is recommended to replace it as they typically become rigid and difficult to reinstall.

Mitsubishi P/N: MB400461

10. To unplug the black fuel level sensor connector, squeeze the tab and simultaneously pull.

Using an 8mm socket wrench, unscrew the 2 flange nuts from the fuel level sensor studs.

NOTE: The only 2 parts that will be reused are the fuel level sensor and the gasket.



11. **Follow this step for pumps that require a barbed fuel hat fitting**

If installing a fuel pump with a small outlet barb (example: AEM 50-1220 compact), find the 8.5mm barb adapter in the kit.

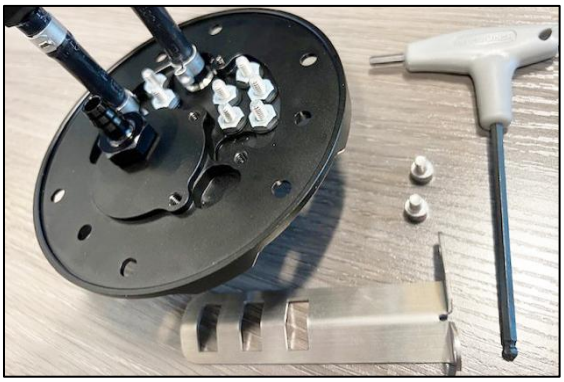
If installing a fuel pump with a large outlet barb (Deatschwerks DW440/810, Fuelab 49614, Protec 11928, etc.), find the 10mm barb adapter in the kit.

NOTE: If the pump does not feature an integrated check valve, there are check valve variations of these fittings at radiumauto.com.

12. **Follow this step for pumps that require a barbed fuel hat fitting**

Using a 4mm Allen Wrench, remove the stainless steel pump bracket, as shown.

Lubricate the barbed fitting O-ring. Using a 19mm wrench, install the appropriate barbed fitting into the port, as shown.

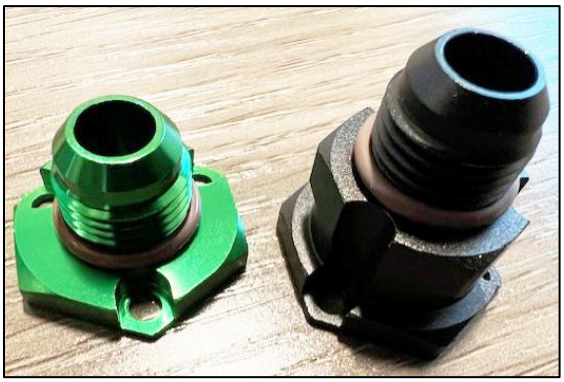


13. **Follow this step for pumps that require a fuel pump outlet adapter**

Because of height constraints, the included low profile fuel pump outlet adapters are required for the following fuel pumps.

If installing a Walbro F90000267, Walbro F90000274, Walbro F90000285, or Walbro F90000295, the black adapter (shown right) is required.

If installing a Bosch BR540 or a Deatschwerks DW400, the green adapter (shown left) is required.



14. **Follow this step for pumps that require barbed fuel hat fittings**

AEM 50-1220 (shown): Cut the small ID tubing 1.5” (37mm) long.
Protec/Fuelab: Cut the large ID tubing 1.8” (45mm) long.
DW440: Cut the large ID tubing 1.7” (43mm) long.
DW810: Cut the large ID tubing 1.0” (25mm) long. Install their provided 10mm barb to the pump outlet.

Apply oil lubrication to the pump barb and to the inner end of the tubing. Gently apply force to push it onto the fuel pump outlet barb. For some pumps, low heat is required to temporarily soften the tubing. If this is the case, be careful not to over-heat and melt the tubing.

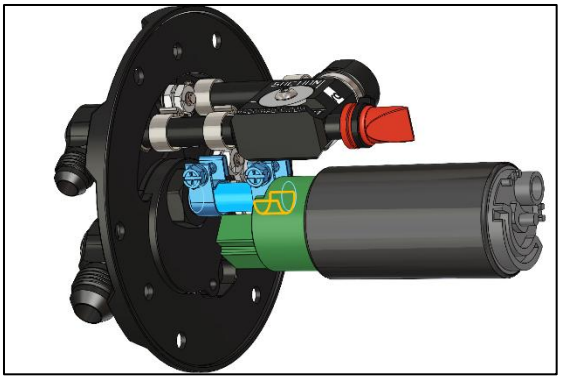
As shown, secure using one of the EFI hose clamps and a 9/32” nut driver. Slide a second EFI hose clamp onto the tubing attached to the fuel pump.

15. **Follow this step for pumps that require barbed fuel hat fittings**

NOTE: For some fuel pumps, the electrical connector must be installed to the pump prior to this step.

Apply oil lubrication to the fitting barb and to the inner end of the tubing. Gently apply force to push it onto the fuel hat barb.

As shown, secure using one of the EFI hose clamps and a 9/32" nut driver. NOTE: Do not tighten this hose clamp yet.

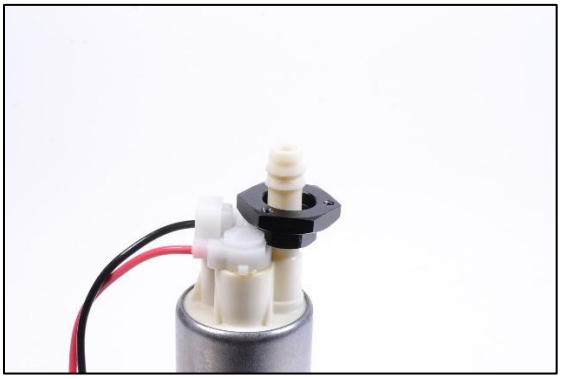


16. **Follow this step for pumps that require a fuel pump adapter**

Before proceeding, inspect the pump outlet hose barb. If the hose barb is deformed, modified or damaged, the Radium Engineering fuel pump outlet adapter will not install correctly and the pump cannot be used.

First, slide the black machined aluminum collar over the pump outlet with the flat surface upward as shown.

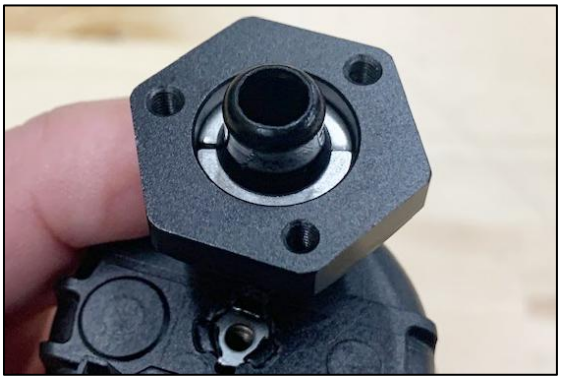
NOTE: The Walbro F90000274 fuel pump is shown.



17. **Follow this step for pumps that require a fuel pump adapter**

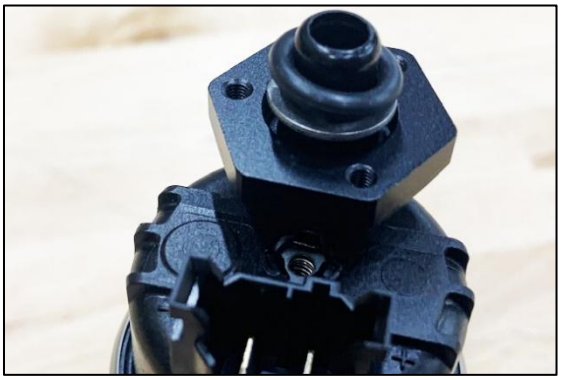
Slip the stainless-steel retainers between the 2 large hose barbs. When assembled, the retainers will lodge themselves under the barb ridge closest to the end of the pump outlet.

NOTE: The Bosch BR540 fuel pump is shown.



18. **Follow this step for pumps that require a fuel pump adapter**

Place the included O-ring on the fuel pump outlet, as shown. Apply a light coat of lubrication to the O-ring.



19. **Follow this step for pumps that require a fuel pump adapter**

As shown, slide the black collar upward. Tuck the O-ring into the groove.

20. **Follow this step for pumps that require a fuel pump adapter**

Line up the upper 6AN fitting holes to the lower fitting threads. NOTE: Because of height discrepancies, the shorter pumps use a BLACK upper fitting (shown) and the taller pumps use a GREEN upper fitting (not shown).

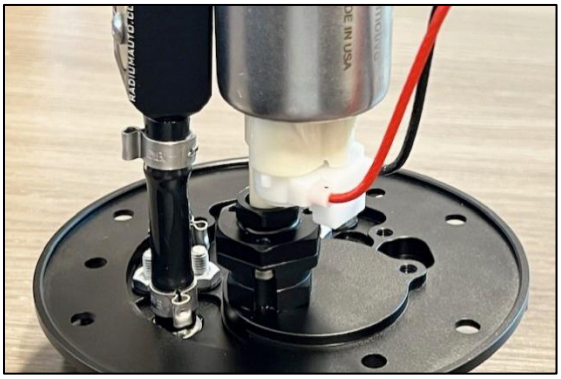
Apply a medium strength thread locking compound to the threads of the 3 included small screws. Secure and tighten all bolts evenly using a 2.5mm Allen wrench.

21. **Follow this step for pumps that require a fuel pump adapter**

NOTE: For the Bosch BR540 and DW400, the electrical connector must be installed to the pump prior to this step.

Using a 4mm Allen Wrench, remove the stainless steel pump bracket.

Lubricate the outlet adapter O-ring with oil. Tighten the adapter to the 6AN ORB port using a 15mm open-ended wrench, as shown.



22. When securing the fuel pump, there is some adjustability put into the mounting bracket. NOTE: the fuel pump may need to be rotated slightly to mate to the mounting bracket.

Fuel pumps that require the bracket rotated in the counterclockwise position (as shown).
Deatschwerks DW400
Deatschwerks DW440

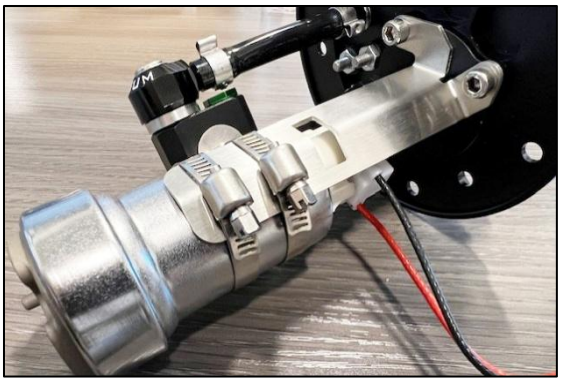
23. Fuel pumps that require the bracket rotated in the clockwise position (as shown).

Walbro F90000 267/274/285/295
Deatschwerks DW810
Protec 11928
Fuelab 49614
AEM 50-1220

Secure the two M5x0.8mm screws using a 4mm Allen wrench.

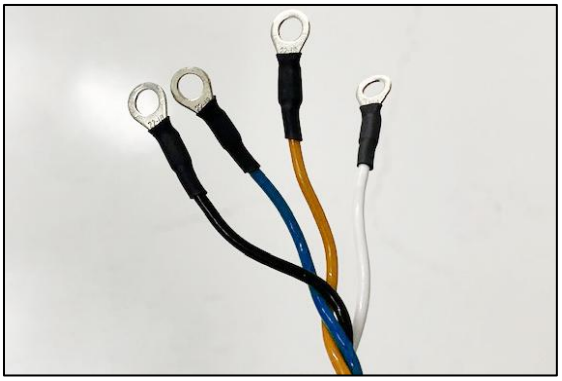
24. There are 2 pairs of worm drive clamps in the kit. All pumps will use the small clamps excluding the large bodied Bosch BR540 (DW400) fuel pump.

Insert each clamp around an appropriate slot in the fuel pump bracket. Before tightening the clamps, make sure the pump is rotated so the outlet to the fuel hat port is not kinked.



25. For Walbro F90000267/274/285/295 pumps, use the included wire connector.

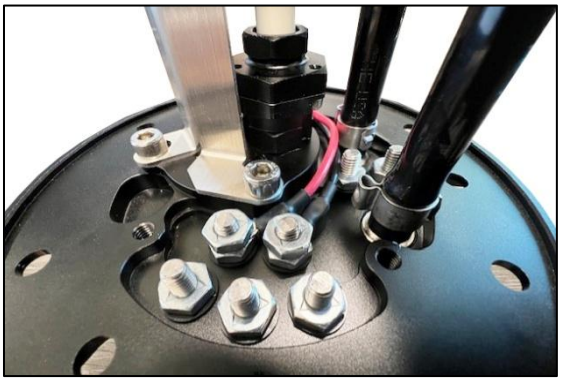
For all other pumps, a flying lead harness is included from the pump manufacturer. The number of wires and color vary. Install the included ring terminals and heat shrink as shown. Using the provided lock nuts and a 3/8” wrench, secure to the appropriate studs.



26. To stay clear of the level sensor (mounted in a later step), route the wires as shown.

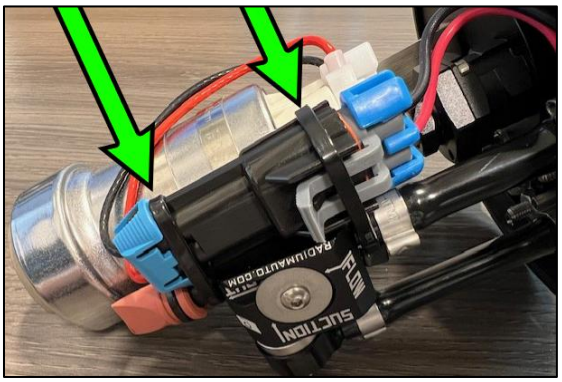
BRUSHLESS: Blue or Green Wire = "A" Walbro & AEM 50-1220: Red Wire = “PUMP +”
BRUSHLESS: White Wire = "B" Walbro & AEM 50-1220: Black Wire = “PUMP -”
BRUSHLESS: Orange or Red Wire = "C”
BRUSHLESS: Black Wire (DW440 only) = "D"

Tighten the included lock nuts with a 3/8” wrench. This is a very tight area so be sure the wires are not contacting each other.



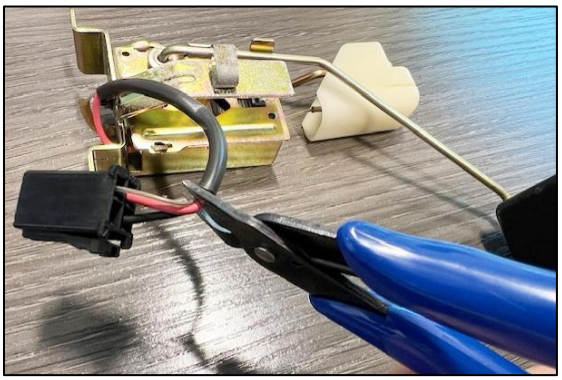
27. Plug in the fuel pump connector.

NOTE: If using a Walbro F90000267/274/285/295 pump and the large connectors are still being used, use the 2 provided zip ties to secure the connectors to the jet pump, as shown. This will streamline the assembly for installation.



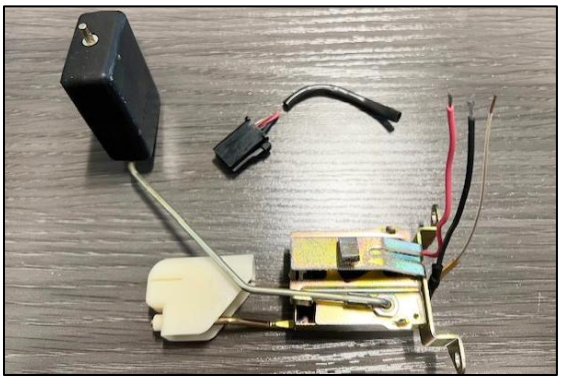
28. Pry the OEM metal stay up slightly to free the OEM wiring loom.

Cut the connector off the fuel level sensor assembly in the location shown.



29. Slide the black rigid sleeve (shown) off the wires. The OEM connector and the wiring sleeve will NOT be reused.

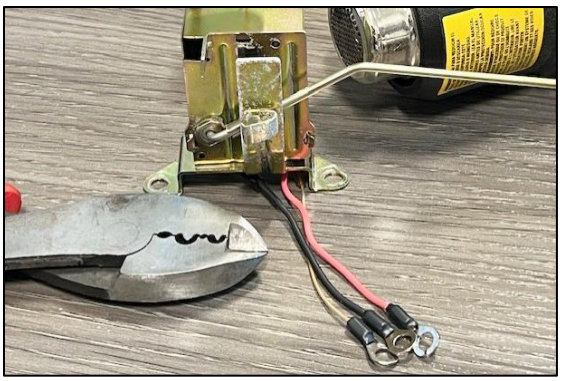
As shown, strip the insulation off the 3 wires.



30. Insert the provided small ID heat shrink tubes over each wire.

Crimp the included small ID ring terminals to each wire.

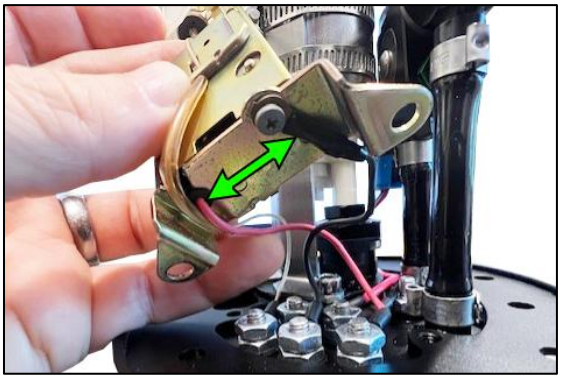
Slide the heat shrink tubes over each crimp and apply heat.



31. Using a small screwdriver, loosen the black ground ring terminal underneath the OEM fuel level sensor. Rotate all the way to the side (as shown) and tighten.

Route the 3 sensor wires as shown. The ground (black) wire connects to the “SENSOR GND” terminal. The level sensor (red) wire connects to the “FUEL LEVEL” terminal. The low fuel (clear) wire connects to the “LOW FUEL” terminal. The 3 lock nuts require a 3/8” wrench.

Before securing the sensor to the fuel hat, push the red and clear wires to the side as shown. This will prevent the wires from accidentally contacting the studs.



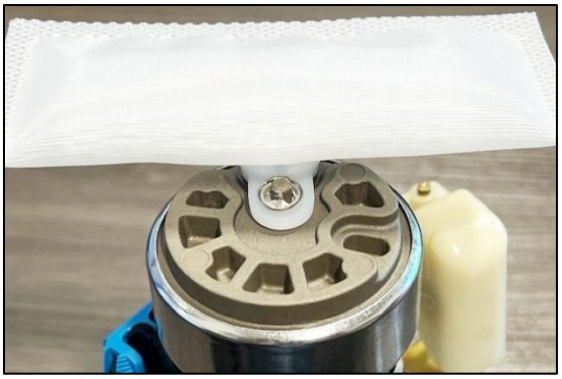
32. When mounting the 2-bolt sensor, do not (mistakenly) have it flipped around 180 degrees.

Using a 4mm Allen wrench and 2 of the provided M5x0.8mm screws, carefully secure the sensor to the fuel hat in the orientation shown.

Double check that the wires are free to move and are not getting pinched.

33. Next, press the filter sock onto the fuel pump inlet and secure with the star washer.

NOTE: The Radium Engineering hanger includes a sock filter that will NOT work with all “compatible” fuel pumps. In this case, use the filter that came with the pump manufacturer.



34. Install the gasket to the fuel tank.

35. When installing, tilt the assembly so the fuel level float enters the tank first. For all EVOs (1-6), the float will enter towards the center of the fuel tank. If this is accidentally installed 180 degrees out, the float will not have enough room inside the fuel tank to move.

NOTES:
a. With the EVO 1-5, the fuel hat will be positioned so that the feed/return fittings will be positioned towards the rear of the tank.
b. With the EVO 6, the fuel hat will be positioned so that the feed/return fittings will be positioned towards the front of the tank.
c. EVO 6 fuel tank shown.

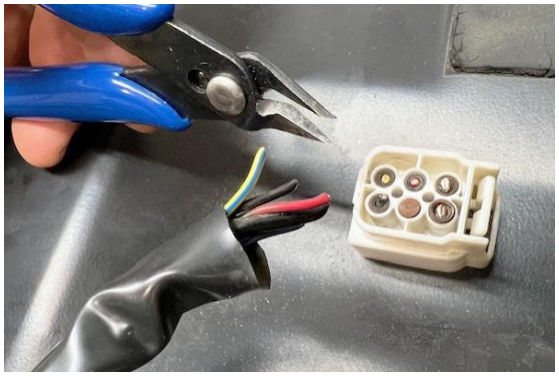
36. When lowering, be sure all internal components do not get hung up. Be sure to fully pull the 3 alignment rubber tabs out of the holes from the top side.

Secure the fuel hat assembly using an 8mm socket and a torque wrench.

NOTES:
1. The OEM flange nuts can be reused or the 6 new provided flange nuts can be used.
2. Torque in an alternating crisscross pattern to the factory spec (23 lb-in or 2.6 Nm).

40. As shown, cut off the 5 wires right at the OEM 6-way connector.

Remove just enough loom for stripping and crimpling wires.



41. Strip the insulation off all 5 wires. As shown, be sure the thick gauge wires use the large heat shrink and the thin gauge wires use the small heat shrink. Extra parts may be present in the kit and can be used as spares.

NOTE: OEM wiring should NOT be used with aftermarket pumps that draw more than 15A of current. It is recommended to use the OEM wiring to trigger a fused relay power source for the pump(s) for high current pumps. More information below.

42. For reusing the OEM fuel pump wiring, follow the steps below.

Be sure the thick gauge wires use the large ring terminals and the thin gauge wires use the small ring terminals. Extra parts may be present in the kit and can be used as spares.

As shown, crimp the terminals then use a heat gun for the shrink tubing.

43. For the EVO 6, additional wire slack is required. Unlatch and move the wire loom, as shown.

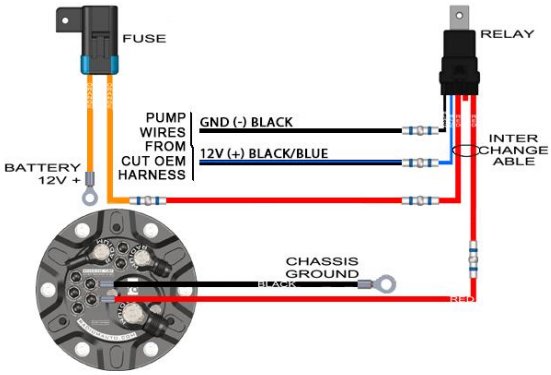
44. Install the ring terminals to the appropriate studs.

OEM Thin AWG Wire, Fuel Level Sensor: Yellow/Blue
OEM Thin AWG Wire, Low Fuel Sensor: Red/Blue
OEM Thin AWG Wire, Sensor Ground: Black
OEM Thick AWG Wire, Pump Power: Black/Blue
OEM Thick AWG Wire, Pump Ground: Black

As shown, secure the ring terminals using the insulating acorn nuts and an 8mm socket.

45. **Optional high-current wiring**
For high current aftermarket fuel pumps, consider using Radium DIY wiring kit 17-0031 (shown). This includes a dedicated fuse, relay, 10AWG wire, etc.

Extra electrical connection parts may be present in the kit and can be used as spares.



46. Insert the provided 5/16” crossover hose to the center hard tube. Secure using one of the provided spring clamps, as shown. EVO 6 fuel tank shown.

47. Lineup the 5/16” EFI hose to the “CROSSOVER” barb fitting. Make a cut line on the hose. Cut the 5/16” EFI hose at the mark.

EVO 6 fuel tank shown. EVO 1-5 will look slightly different.

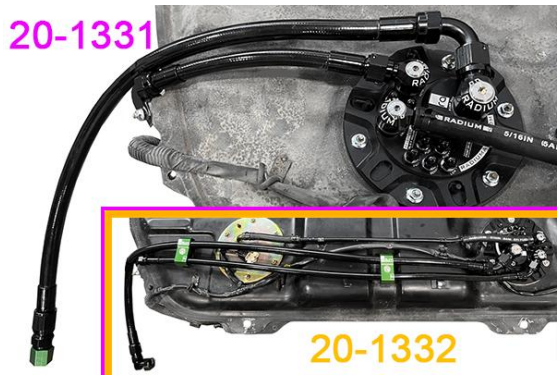
48. Secure the 5/16” crossover EFI hose using the other spring clamp. EVO 6 fuel tank shown.

If the optional fuel hanger connection/plumbing kits were NOT purchased, skip the following.

Follow the PURPLE areas below for the 20-1331 (EVO 1-2-3-4-5) connection kit.
Follow the ORANGE areas below for the 20-1332 (EVO 6) connection kit.
Follow the GREEN areas below for both 20-1331 and 20-1332 connection kits.
Follow the RED areas below for the 20-1334-03 and 20-1334-05 plumbing kits.

49. **Optional 20-1331 and 20-1332 Fuel Hanger Connection Kits**

In the following steps, these 2 connections kits will be assembled. Shown are the differences between them when the install is finished.



50. **Optional 20-1331 Fuel Hanger Connection Kit**

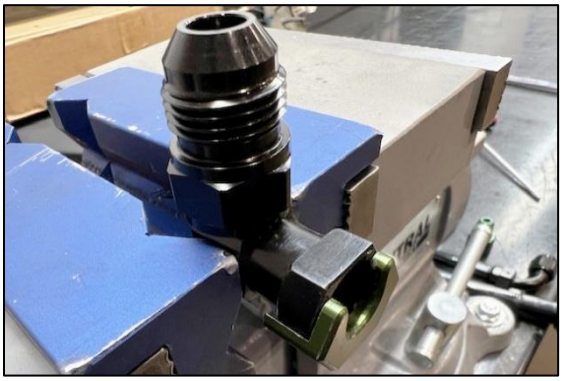
For the EVO 1-2-3 (only), secure the green 6AN male to inverted flare female fitting to the 8AN male to 6AN female fitting, as shown.

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.

51. **Optional 20-1331 and 20-1332 Connection Kits**

For the EVO 4-5-6 (only), secure the 5/16” SAE quick connect to the 8AN male to 6AN female fitting. Use a 20mm wrench and a 5/8” wrench (or a vice).

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.



52. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Find the 8AN PTFE hose from the 20-1331 or 20-1332 connection kit.

Now find the 8AN male to 8AN male coupler fitting from the 20-1334-03 or the 20-1334-05 plumbing kit.

Using a 7/8” wrench and an 13/16” wrench, secure the fitting to the straight hose end of the PTFE hose, as shown.

53. **Optional 20-1331 and 20-1332 Connection Kits**

For EVO 1-2-3-4-5-6, secure the provided 6AN male to ¼" barb fitting to the 90 degree hose end on the included 6AN PTFE hose. Use an 11/16" wrench and a 19mm wrench (or a vice).

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.

54. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Find the 6AN PTFE hose from the 20-1331 or 20-1332 connection kit.

Now find the 6AN male to 6AN male coupler fitting from the 20-1334-03 or the 20-1334-05 plumbing kit.

Using a 11/16" wrench and a 5/8" wrench, secure the fitting to the 90 degree hose end of the PTFE hose, as shown.

55. **Optional 20-1331 Fuel Hanger Connection Kit**

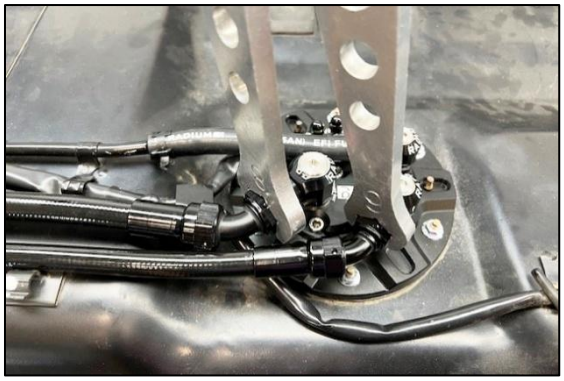
For the EVO 1-2-3-4-5, install the 90 degree 8AN PTFE hose end to the 8AN male banjo fitting on the "PUMP OUT" port using a 7/8" wrench.

Install the straight 6AN PTFE hose end to the 6AN male banjo fitting on the "RETURN" port using an 11/16" wrench.

56. **Optional 20-1332 Fuel Hanger Connection Kit**

For the EVO 6, install the 45 degree 8AN PTFE hose end to the 8AN male banjo fitting on the "PUMP OUT" port using a 7/8" wrench.

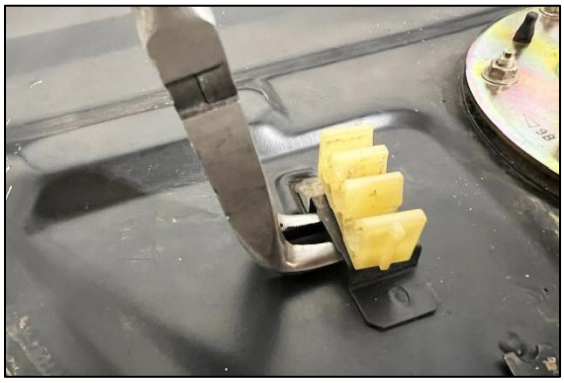
Install the 90 degree 6AN PTFE hose end to the 6AN male banjo fitting on the "RETURN" port using an 11/16" wrench.



57. **Optional 20-1332 Fuel Hanger Connection Kit**

On top of the fuel tank, the EVO 6 (only) has 2 plastic hard line retainers for the OEM fuel lines.

From underneath, squeeze the tabs together and pull up to remove.

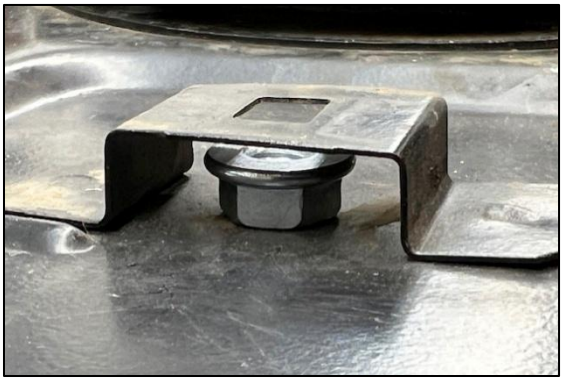


58. **Optional 20-1332 Fuel Hanger Connection Kit**

Shown are both plastic hard line retainers removed from the EVO 6 fuel tank.

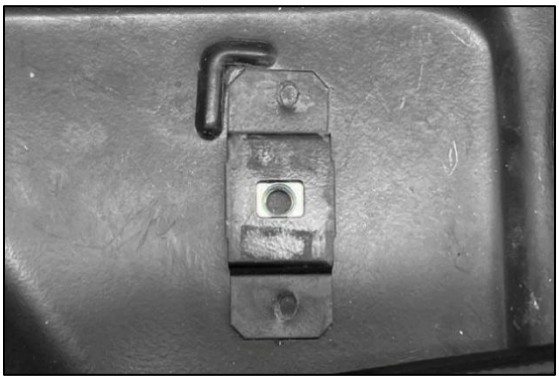
59. **Optional 20-1332 Fuel Hanger Connection Kit**

Find one of the M6x1mm flange nuts in the kit. Flip the flange nut upside down and place it underneath one of the metal tabs. Lineup and center the nut in the rectangular hole.



60. **Optional 20-1332 Fuel Hanger Connection Kit**

As shown, lineup and center the nut in the rectangular hole.

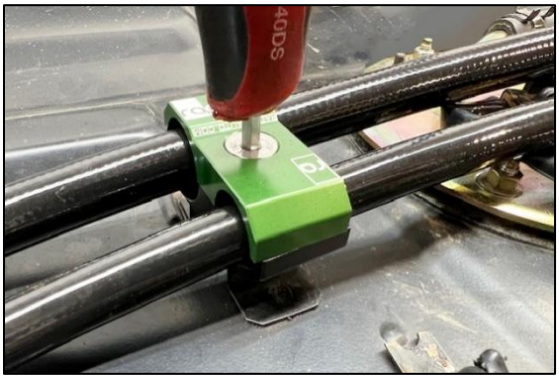


61. **Optional 20-1332 Fuel Hanger Connection Kit**

Grab 1 green clamp and 1 black clamp and sandwich them over the PTFE hoses. NOTE: the clamp holes are slightly different sizes.

Now insert one of the M6x1mm flat head screws through the clamp and seat it in the machined countersink. Carefully lineup the screw to the aforementioned flange nut and tighten.

NOTES:
1. Sometimes the nut will need to be held to prevent spinning.
2. Perform this exact procedure on the other fuel tank metal tab.



62. **Optional 20-1331 and 20-1332 Connection Kits**

Place the 6AN 90 degree hose end with the ¼" barb fitting into the location shown.

The 8AN PTFE hose end just needs to hang off the end of the tank in the orientation shown.

63. **Optional 20-1331 Fuel Hanger Connection Kit**

For the EVO 1-2-3, secure the green flare fitting (at the end of the 8AN PTFE hose) to the OEM flare fitting on the OEM hard line. Use a 14mm flare nut wrench and a 19mm wrench.

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.

64. **Optional 20-1331 and 20-1332 Connection Kits**

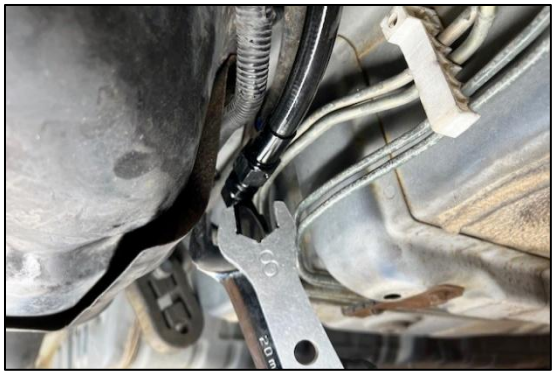
For the EVO 4-5-6 (only), lubricate the internal O-rings inside the black 5/16" SAE quick connect adapter. Slide the adapter down the OEM feed hard line until it bottoms out. Place the green lock on (as shown) and secure the #5-40 threaded screw using a 5/64" Allen wrench.

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.

65. **Optional 20-1331 and 20-1332 Connection Kits**

For the EVO 4-5-6, secure the 8AN PTFE hose end to the 8AN adapter on the aforementioned SAE quick connect. Use a 20mm wrench and a 7/8" wrench.

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.



66. **Optional 20-1331 and 20-1332 Connection Kits**

For EVO 1-2-3-4-5-6, mockup the provided ¼" return line between the 6AN PTFE hose barb fitting and the OEM hard line barb. Cut the hose to length. Secure the hose using the 2 EFI clamps included in the kit.

NOTE: this step is not required if the 20-1334-03 or 20-1334-05 plumbing kit was purchased.

67. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

From the engine bay, unplug the mass air flow sensor on the intake. Remove the mass air flow housing from the vehicle. Disconnect the hoses on top of the EVAP charcoal canister and pull the EVAP charcoal canister up out of the engine bay. Unscrew the screw that secures the fuel return and EVAP lines to the fuel filter clamp. Loosen the nut on top of the fuel filter and remove the banjo feed line connection. Using a 14mm flare nut wrench, attempt to break the fitting loose on the lower fuel filter inlet. If the fuel filter spins, hold the integrated nut on the bottom of the fuel filter with a 19mm wrench. Remove the 2 mounting screws that secure the fuel filter bracket to the chassis.

As shown, remove the OEM fuel filter assembly from the vehicle.

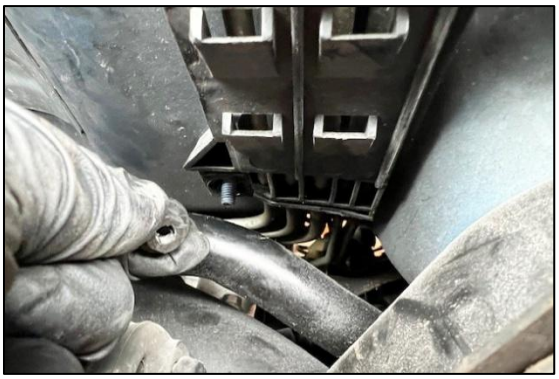
68. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

In order to remove the front plastic fuel/brake line retainer underneath the vehicle, the sway bar needs to be temporarily moved out of the way.

Using a 14mm socket and wrench, remove the front sway bar end links, as shown.

69. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Using a 10mm open-ended wrench, remove the nut that secures the front plastic fuel/brake line retainer.



70. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

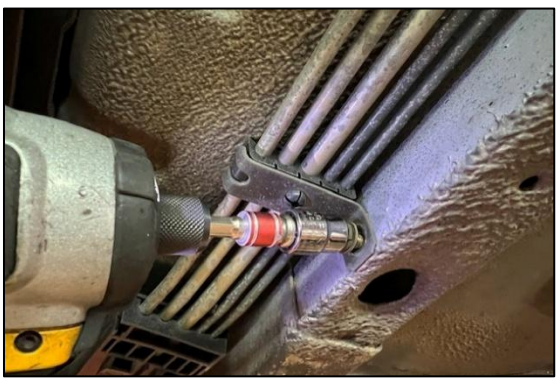
To remove the large plastic fuel/brake line retainer from the vehicle, pry the fuel/brake lines from the internal plastic retainers.

This will NOT be reused.

71. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

There are a couple of fuel/brake line retainers that look as shown. Remove them from the chassis using a 10mm socket. Pop the steel brackets from the plastic retainers. Pry the fuel/brake lines from the plastic retainers.

These will NOT be reused.



72. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

There is a fuel/brake line retainer that looks as shown. Remove it from the chassis using a 10mm socket. Pop the steel brackets from the plastic retainers. Pry the fuel/brake lines from the plastic retainers.

This will NOT be reused.

73. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

There are a couple fuel/brake line retainers that do not secure to the chassis. As shown, pop the steel portion from the plastic retainers. Pry the fuel/brake lines from the plastic retainers.

These will NOT be reused.

74. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Allow the fuel/brake lines to hang temporarily.

75. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

From the engine bay near the fuel filter location, separate the EVAP and return line by removing the clamp shown.

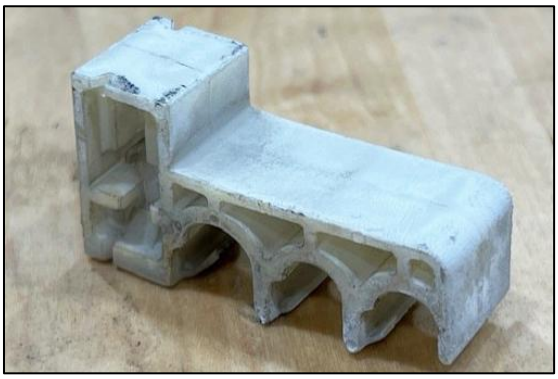
This will NOT be reused.

76. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

There are a couple of plastic retainers that secure the OEM fuel feed line, return line, and the EVAP line to the firewall. They are slightly difficult to reach. A pry bar will be handy.

77. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

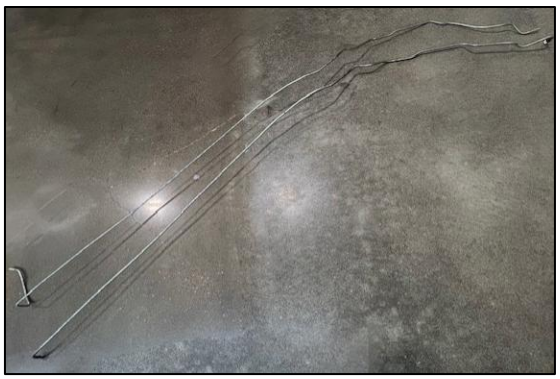
Carefully pop both plastic retainers off the firewall. Only one will be reused.



78. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

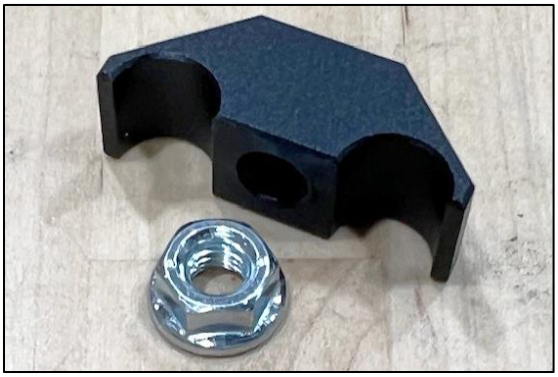
Carefully remove the fuel feed line and the return line from the vehicle.

NOTE: do NOT remove the EVAP line.



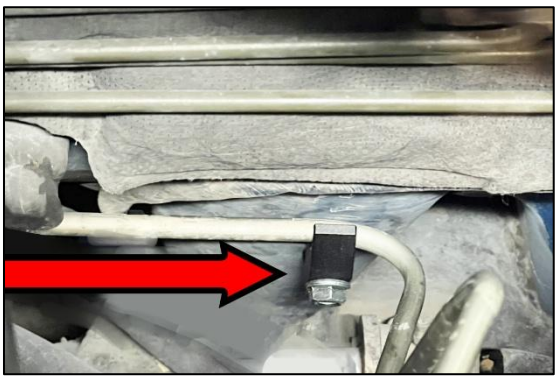
79. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Find the billet clamp and M6x1mm flanged nut in the kit.



80. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Using a 10mm socket, install the provided billet clamp and flanged nut to the firewall stud on the LH side of the EVAP line (near the fuel filter).



81. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

To secure the OEM EVAP line to the RH side of the firewall, reuse the plastic retainer. Simply push it back over the firewall stud, as shown.

82. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

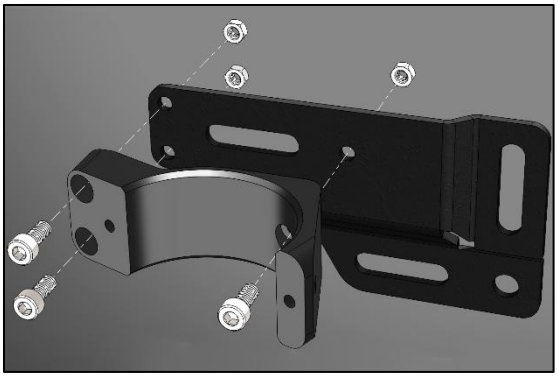
Lubricate the O-rings on the provided 10AN ORB to 8AN male fittings.

Secure the fittings to the fuel filter ports using an adjustable wrench and a 1” wrench.

83. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

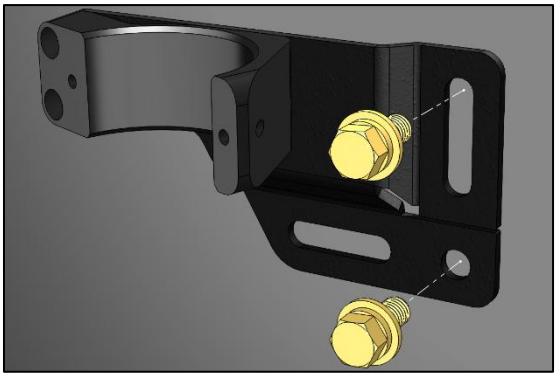
Find three of the M5x0.8mm socket head screws and the three M5x0.8mm locking nuts.

Using a 4mm Allen wrench and an 8mm socket wrench, secure the lower fuel filter mount to the fuel filter chassis bracket, as shown.



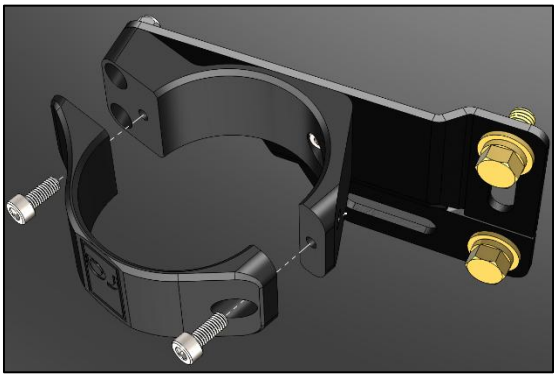
84. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Using a 12mm socket wrench and the two OEM fuel filter bracket screws, secure the fuel filter chassis bracket.



85. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Apply a medium-strength thread locker to the last two M5x0.8mm socket head screws. Position the upper fuel filter clamp and loosely thread the two M5x0.8mm socket head screws to the lower fuel filter clamp. Do NOT tighten the screws yet.



86. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

When sliding the fuel filter down into place, make sure the “INLET” is down and the “OUTLET” is up. To secure, tighten the 2 clamp screws using a 4mm Allen wrench.

NOTE: the fuel filter can slide up and down for optimal position in the specific vehicle. For example, the filter may need to be dropped slightly for the filter outlet hose to clear the charcoal canister. However, it might need to be raised slightly for the filter inlet hose to clear the steering rack.

87. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Find the long 8AN PTFE hose in the kit. From the RH side of the engine bay, send the straight hose end down the firewall where the hard lines run under the vehicle. This side of the hose will be sorted later. NOTE: Be careful not to kink the hose.

Install the 90 degree hose end to the fuel filter inlet fitting and push the hose towards the firewall. As shown, secure the PTFE hose to the EVAP hard line using a cable zip tie. Once everything is positioned properly, tighten the 90 degree hose end using a 7/8” wrench.

88. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

NOTE: An installed aftermarket fuel rail (not included) with an 8AN ORB (3/4”-16) threaded port on each side is required for these plumbing kits.
-Suggested Fuel Rail for EVO 1-3 = Radium Engineering P/N: 20-0533-02
-Suggested Fuel Rail for EVO 4-6 = Radium Engineering P/N: 20-0119-12

Find the 8AN ORB to 8AN male fitting in the kit. Lubricate the O-ring and install to the LH fuel rail port using a 7/8” (22mm) wrench.

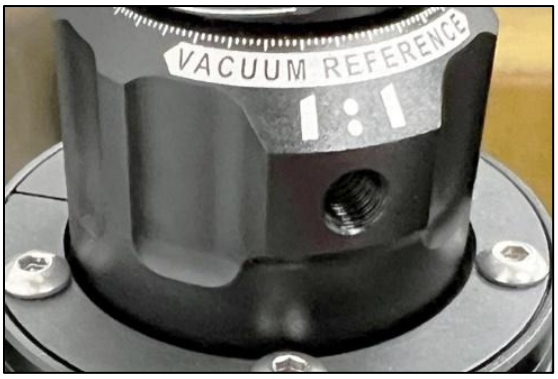
89. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Find the short 8AN PTFE hose in the kit. Install the straight hose end to the fuel rail fitting and the 90 degree hose end to the fuel filter outlet fitting. Once everything is positioned properly, tighten both hose ends using a 7/8” wrench.

90. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Find the direct mount regulator (DMR) provided in the kit. Install 1 of the 4 fittings to the vacuum port. All fittings (excluding the push-to-connect) require a wicking thread locker, such as green Loc-Tite 290. NOTE: the threaded plug keeps a constant (static) pressure that would NOT mimic OEM fuel pressure. All other fittings permit a 1:1 fuel pressure ratio which mimics OEM fuel pressure.

NOTES:
1. Simply finger tighten the fitting.
2. If installing the 3AN fitting, do NOT over torque. Hold the fitting with a wrench when securing the hose end. These are manufactured from high strength steel, but are very small.



91. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

A gauge is provided to calibrate fuel pressure. PTFE (Teflon) paste is required for sealing as the threads are tapered NPT.

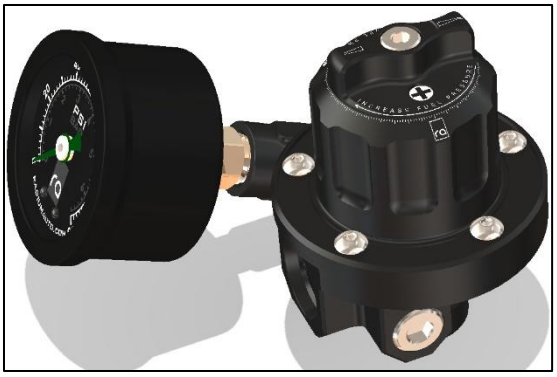
There are 3 different methods to plumb the gauge into the fuel system. The first is simply installing it directly to one of the available 1/8” NPT ports on the DMR, as shown.

92. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Alternatively, the provided 8AN ORB to 1/8” NPT female fitting can be installed to a fuel rail port (if available). Then the fuel pressure gauge can be installed to that fitting, as shown.

93. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

And lastly the included 1/8” NPT male to female street elbow can be installed to get the fuel pressure gauge in an ideal viewing area. This could be used in either option above.



94. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Apply a PTFE (Teflon) paste to the 1/8” NPT fittings and insert them into the side ports. Hand tight each fitting then add 1.5-3 turns. The plugs require a 3/16” Allen wrench.

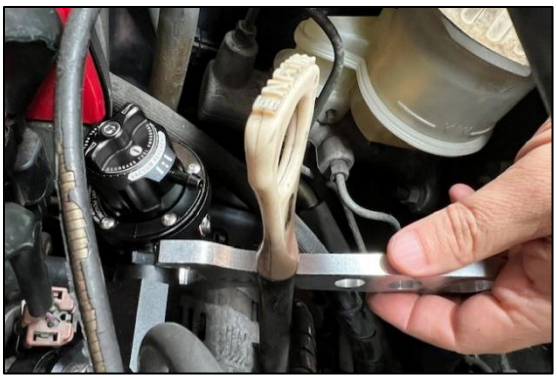
Lubricate the O-ring and install the 6AN male banjo fitting into the bottom “return” port using a 4mm Allen wrench.

Lubricate the O-ring and install the swivel union adapter into the front “fuel rail” port of the DMR using an 8mm Allen wrench.

95. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

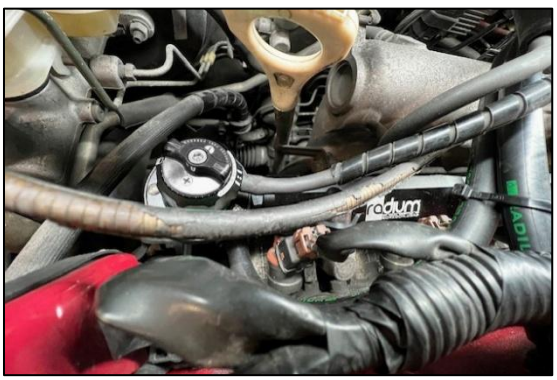
Screw the DMR adapter fitting into the RH fuel rail port using a 7/8” (22mm) wrench or an adjustable -AN wrench.

NOTE: The DMR can be oriented any way, including upside down.



96. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

If applicable, connect the vacuum hose to the DMR.



97. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

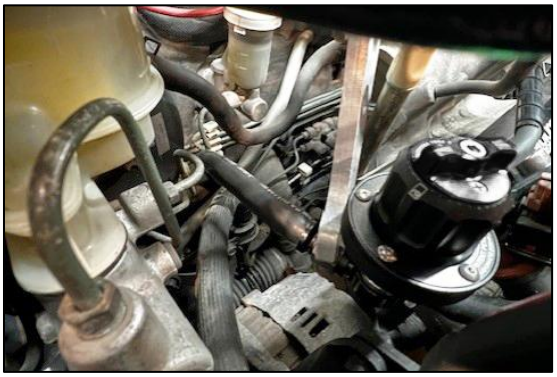
Find the long 3/8” (6AN) EFI fuel hose and the 6AN straight pushlok hose end in the kit. Lubricate the pushlok barbs liberally and fully insert it into the 3/8” EFI hose.

NOTE: Pushlok hose ends do NOT require hose clamps.

98. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

From the RH side of the engine bay, send the opposite side of the 3/8" EFI hose (without the pushlok hose end) down the firewall where the hard lines run under the vehicle. This side of the hose will be sorted later.

Thread the straight 6AN hose end to the return fitting on the DMR. Once everything is positioned properly, tighten the straight hose end using a 9/16" wrench.



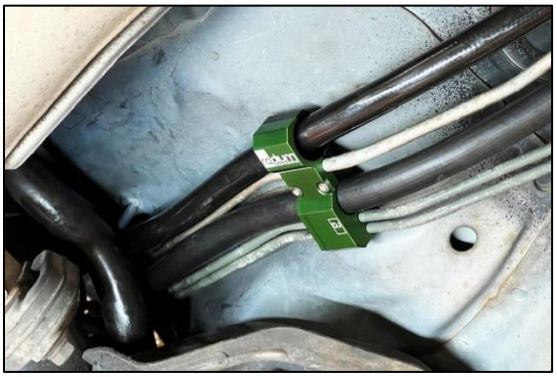
99. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

From underneath, position the new fuel feed and fuel return hoses for optimal fitment.

100. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

The fuel/brake line retainers will be installed from front to back. Arrange the hoses so the 3/8" (6AN) hose is positioned in the outer slot and the PTFE feed line in the inner slot.

As shown, the first retainer will NOT be secured to the chassis. Tighten the small M3x0.5mm screws using a 2.5mm Allen wrench.



101. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

As shown, the next retainer will be secured to the chassis using an M6x1mm socket head screw and a 5mm Allen wrench. Tighten the small M3x0.5mm screws using a 2.5mm Allen wrench.

102. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

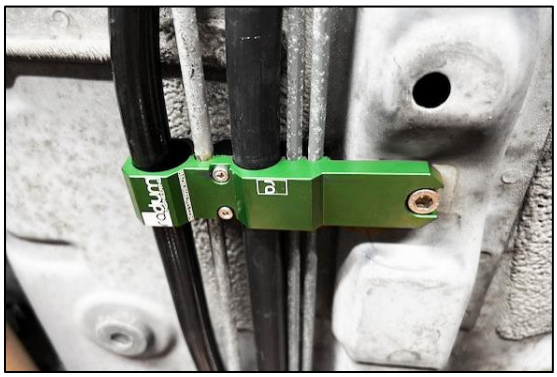
As shown, the next retainer will NOT be secured to the chassis. Tighten the small M3x0.5mm screws using a 2.5mm Allen wrench.

103. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

As shown, the next retainer will be secured to the chassis using an M6x1mm socket head screw and a 5mm Allen wrench. Tighten the small M3x0.5mm screws using a 2.5mm Allen wrench.

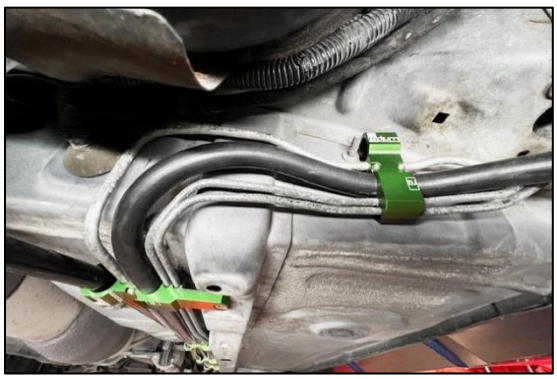
104. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

As shown, the next retainer is unique. It will still be secured to the chassis using an M6x1mm socket head screw and a 5mm Allen wrench. Tighten the small M3x0.5mm screws using a 2.5mm Allen wrench.



105. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

As shown, the next retainer is positioned around the corner, perpendicular to the others. It will NOT be secured to the chassis. Also, the 8AN PTFE fuel feed line will not go through this retainer as it would require too tight of a bend for the PTFE to manage. Tighten the small M3x0.5mm screws using a 2.5mm Allen wrench.



106. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Temporarily install the provided 90 degree pushlok hose end to the 6AN male return adapter that comes down from the top of the fuel tank.

Line up the 3/8” EFI return hose and cut it to length.

107. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Liberally, lubricate the 90 degree pushlok hose end barbs and the inside of the return hose. Fully insert the 90 degree pushlok hose end into the 3/8” EFI hose. This takes force and may be easier on a work surface. NOTE: Pushlok hose ends do NOT require hose clamps.

108. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

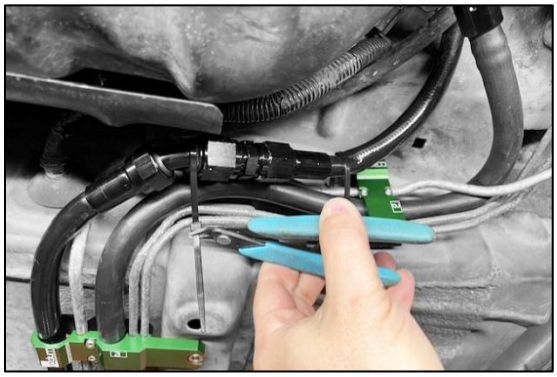
As shown, secure the 90 degree hose end to the 6AN male fuel return adapter using two 11/16" wrenches.

109. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Position the 8AN PTFE hose for optimal fitment towards the 8AN feed line adapter. As shown, secure the 45 degree 8AN hose end using 7/8" wrenches.

110. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

Secure the 8AN PTFE feed line using the provided cable zip ties.

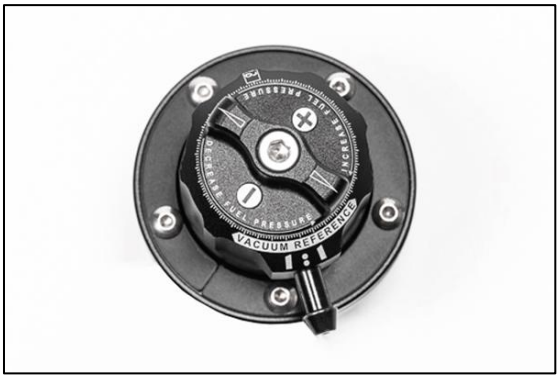


111. Refuel the gas tank reconnect the battery. Prime the fuel pump, check for leaks and fix any that may occur. Start the engine.

NOTE: A means of monitoring fuel pressure is required. Factory fuel pressure on the EVO 1-6 is 43.5psi (3bar) static. In some cases (depending on the fuel pump installed), the OEM fuel pressure regulator will NOT be able to bypass enough fuel at idle. Replacing the rest of the return line and/or the fuel pressure regulator (for higher flow) is recommended.

112. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

The regulator is NOT pre-set out of the box. To set static fuel pressure:
-Disconnect the vacuum line from the vacuum port, if applicable.
-Temporarily plug the line to the intake manifold to prevent a vacuum leak.
-Leave the regulator port open to atmosphere to allow venting.
-Activate the fuel pump manually or by starting the engine.
-Tighten the knob (clockwise) to increase fuel pressure.
-Loosen the knob (counter-clockwise) to decrease fuel pressure.
-Turn OFF the engine and reattach the line back to the vacuum port, if applicable.
-No locking is necessary. Do not attempt to the tighten the Allen screw.
-After the engine is fully warmed up, verify fuel pressure.



113. **Optional 20-1334-03 and 20-1334-05 Plumbing Kits**

If experiencing a rapid fall of fuel pressure when the engine shuts off, this is considered normal operation for aftermarket fuel pressure regulators, regardless of brand. For regulators to have the ability to regulate high fuel flow rates, the size of these components must be increased. This creates larger sealing surfaces between the components, preventing them from forming a perfect seal, even with high spring rates. Fuel pressure will reset immediately when the fuel pump is activated again.

IMPORTANT! Do NOT tighten the adjustment knob more than 16 revolutions from full loose. This will result in damage to internal threads. If target fuel pressure is not obtained within those 16 revolutions, inspect the fuel system for issues or contact technical support.

114. **Optional 20-1331 Fuel Hanger Connection Kit**

For EVO 1-2-3-4-5, the RH fuel pump access cover will NOT clear the large 8AN feed line.

As shown, remove the original foam from the underside of the cover.

115. **Optional 20-1331 Fuel Hanger Connection Kit**

Install the thick adhesive foam in the same area. Cut to length.

116. **Optional 20-1331 Fuel Hanger Connection Kit**

Place the 2 long aluminum spacers directly down on the 2 rear plastic threads.
Place the 2 short aluminum spacers directly down on the 2 front plastic threads.

117. **Optional 20-1331 Fuel Hanger Connection Kit**

When securing the OEM fuel pump access cover, use the 2 long self-tapping screws for the 2 long spacers. Use the 2 short self-tapping screws for the 2 short spacers.