



INSTALLATION INSTRUCTIONS

FUEL PUMP HANGER






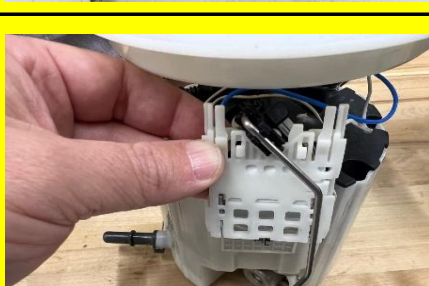
08-17 GM

Document: 19-0318



Support: info@radiumauto.com

COLOR LEGEND FOR EACH STEP	CAUTION
20-1320 AND 20-1322 FUEL HANGER Follow YELLOW areas	<p>Only a qualified technician following applicable safety procedures should perform the installation of this product. One must have knowledge in repair and modification of fuel systems and general vehicle modifications to install this product.</p> <p>Gasoline and other fuels are flammable and can be explosive.</p> <p>Only install in a well-ventilated location to minimize buildup of fuel vapors.</p> <p>No sparks, open flames, smoking or other ignition sources are to be present. Draining and removal of all fuel from the fuel system is recommended. Proper eye and personal protection is required at all times during installation.</p>
20-1320 FUEL PUMP HANGER ONLY Follow ORANGE areas	
20-1322 FUEL PUMP HANGER ONLY Follow GREEN areas	
20-1325-3/5 CTS-V PLUMBING KIT Follow BLUE areas	
20-1326-3/5 CAMARO PLUMBING KIT Follow BLUE areas	WARNING
	<p>The fuel system is under pressure! Do not loosen any connections until relieving the fuel system pressure. Consult a service manual for instructions on relieving fuel pressure safely. This product is designed for off-highway and racing use only. Fuel system components may not be legal for sale or use on emissions controlled motor vehicles. Consult local, state, and federal laws.</p>

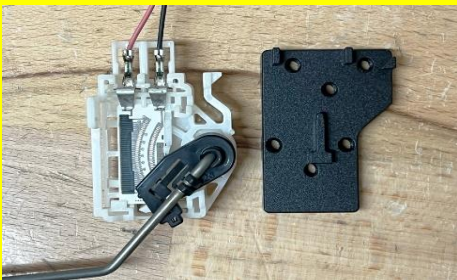
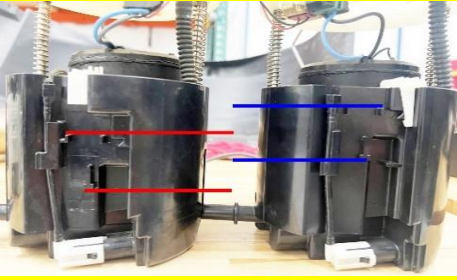
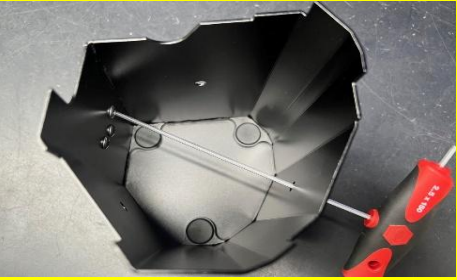



STEP	TOOLS NEEDED	INSTRUCTIONS	PHOTO
1	10mm Socket Wrench	Because this product is compatible with many different applications, the instructions may vary slightly from the exact vehicle used.	
		The terms "driver-side" and "passenger-side" will NOT be referenced. As depicted, these instructions will always reference "LH" and "RH" areas of the vehicle.	
		First, be sure all fuel is removed from the tank. Next, disconnect the negative battery terminal.	
2		The fuel pump is located underneath the RH rear seat. Unfortunately, GM did not incorporate an access panel for these vehicles.	
		For removing the OEM fuel pump, there are 2 options:	
		1. Remove the rear subframe and drop the fuel tank.	
		2. Radium Engineering offers access covers for Camaro (P/N: 20-1323) and CTS V (P/N: 20-0835). But the cutting line dimensions are very specific. For more information, go to www.radiumauto.com .	
		NOTE: This manual assumes the rear sheet metal has been altered.	
3		To unplug the fuel pump connector (shown), depress the thumb lock and pull.	
4	Rag	Push the SAE quick connect fuel feed line fitting further onto the unit, then simultaneously squeeze the 2 locks (shown blue) and pull away. Have a rag handy as fuel will likely spill from this connection.	

5		To release the OEM hold-down metal ring it is recommended to use a special fuel tank lock ring tool such as OEM Tools, P/N: 24398 (shown).	
6	1/2" Drive Breaker Bar	Put the lock ring tool in place and turn counterclockwise. Because the OEM pump unit is spring-loaded, it will pop up when released.	
		Remove the OEM fuel tank lock ring. This will be reused.	
7	Rag	Carefully pull the OEM pump unit upwards just enough to expose the crossover connection. Push the SAE quick connect crossover fitting further onto the unit, then simultaneously squeeze the 2 locks (shown green) and pull away.	
8	Rag	NOTE: Some vehicles (such as the CTS-V) have 2 OEM fuel pumps. As shown with the red arrow, these vehicles will have a fuel level sensor connector that needs to be unplugged.	
9	Bucket	Tilt and twist the assembly to clear the fuel float arm. Pull the pump unit out and drain into a bucket.	
		Inspect the large green fuel tank gasket. Replace if necessary (AC Delco P/N: 22682111). Cover the gas tank opening to prevent dirt and/or debris from accidentally falling in.	
		As shown, there are multiple variations of the OEM pump unit that are compatible with this product.	
10		Set the OEM pump unit onto a workbench.	
		There are a couple variations of fuel level sensors.	
		To remove the fuel level sensor style in the depiction, squeeze the outer locking tabs and pull the sensor up and out of the OEM collector.	







11		To remove the fuel level sensor style in the depiction, squeeze the outer lock (shown yellow) and simultaneously push the sensor up (shown red) to release.	
12		To unplug the fuel level sensor connector (if applicable), depress the thumb lock and pull away. NOTE: The OEM parts that will be reused: fuel level sensor, fuel tank gasket, fuel tank lock ring, internal crossover line, and (optionally) the external fuel feed line.	
13	3mm Allen Wrench	Open the Radium Engineering product box and pull out the assembly. As shown, remove the collector box.	
14	4mm Allen Wrench	Remove the lower bracket assembly.	
15	3/8" Nut Driver	Each product is preassembled with wiring for 1 fuel pump. NOTES: 1. Add the appropriate amount of the (provided) wiring connectors to the bottom side of the fuel hat. Be sure to reference the terminal labeling on the top side. 2. If installing Deatschwerks DW440 pump(s), the preassembled wiring must be removed. Wiring for these pumps will be performed in a later step.	
16		<u>20-1320 FUEL PUMP HANGER ONLY</u> There is a triple pump collector (shown) on the underside of the fuel hat. Each port is dedicated to a fuel pump. The preassembled product from Radium Engineering is ONLY ready for triple pump applications. For single and dual pump applications following the next few steps. For triple pump applications, nothing needs to be modified.	



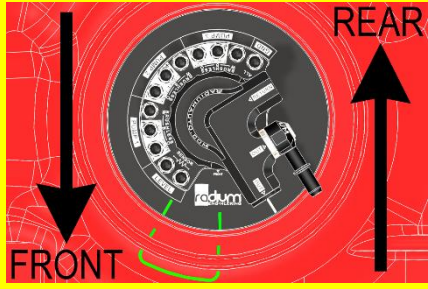



17	4mm Allen Wrench	<u>20-1320 FUEL PUMP HANGER ONLY</u> For single and dual pump applications, plugs will need to be installed into these ports. The provided 2AN ORB plugs must be installed on the opposing side of the collector. First remove the 6 screws.	
18	1/8" Allen Wrench	<u>20-1320 FUEL PUMP HANGER ONLY</u> Install the included 2AN ORB plug(s). Single pump applications: Use 2 plugs (shown) Dual pump applications: Use 1 plug Triple pump applications: Use 0 plugs NOTE: When reinstalling, be sure the gasket (shown) is installed.	
	Oil Lubrication		
19	4mm Allen Wrench	<u>20-1320 FUEL PUMP HANGER ONLY</u> Because of space constraints orient the collector so the port nearest the green venturi jet pump is plugged. This isn't absolutely necessary, but it is ideal for single and dual pump applications.	
20	Oil Lubrication	<u>20-1320 FUEL PUMP HANGER ONLY</u> If installing AEM 50-1220 compact fuel pump(s), use the plastic submersible tubing provided in the kit (not the rubber submersible hose). Lubricate the pump barb and the inner walls of the tube. Apply a small amount of heat and quickly insert. Secure the tubing to the pump(s) using the provided EFI clamp(s).	
	Heat Gun		
	Phillips Screwdriver		
21	Screwdriver	<u>20-1320 FUEL PUMP HANGER ONLY</u> If installing Deatschwerks DW440 fuel pump(s), use the submersible rubber hose provided in the kit (not the plastic submersible tubing). Cut the hose to 52mm for each fuel pump. Secure the hose to the pump(s) using the provided EFI clamp(s).	
22	Screwdriver	<u>20-1320 FUEL PUMP HANGER ONLY</u> Insert the provided EFI clamp(s) over the hose then install the pump(s) to the collector, as shown. Secure the hose to the pump(s) using the EFI clamp(s).	







23		20-1320 FUEL PUMP HANGER ONLY A pump harness (not included) is required. This is typically provided by the pump manufacturer. Plug in the fuel pump connector(s).	
24	Wire Cutter	20-1320 FUEL PUMP HANGER ONLY Route the wires towards the appropriate studs. Reference the terminal labeling on top of the fuel hat. Cut the wires to the appropriate length.	
25	Wire Stripper	20-1320 FUEL PUMP HANGER ONLY	
	Wire Crimper	Install the included ring terminals and heat shrink as shown.	
	Heat Gun	AEM 50-1220 Pump: Red Wire = "+", Black Wire = "-"	
	3/8" Socket Wrench	DW440 Pump:	
	3/8" Wrench	White Wire = "BRUSHLESS-W"	
		Blue Wire = "BRUSHLESS-B"	
		Orange Wire = "BRUSHLESS-O"	
		Black Wire = "GND-ALL" (<-this is shared with pump 1,2,3)	
26	1/4" Allen Wrench	20-1322 FUEL PUMP HANGER ONLY	
	Oil Lubrication	There is a triple pump collector on the underside of the fuel hat. Each port is dedicated to a fuel pump. The provided 6AN ORB plugs must be installed for any unused ports.	
		*Single pump applications: Use 2 plugs	
		*Dual pump applications: Use 1 plug (shown)	
		Triple pump applications: Use 0 plugs	
		<i>*Because of space constraints it is ideal to plug the port nearest the green venturi jet pump for single and dual pump applications.</i>	
27		20-1322 FUEL PUMP HANGER ONLY	
		To install the Walbro F900002XX E85 fuel pump(s), first inspect the pump outlet hose barb. If the hose barb is deformed, modified or damaged, the Radium pump adapter will not install correctly and the pump cannot be used. Slide the black collar over the pump outlet with the flat surface upward.	
		Slip the stainless steel retainers between the 2 large hose barbs. When assembled, it will lodge itself under the hose barb ridge closest to the end of the pump outlet opening.	
		Place the included O-ring on the pump outlet, as shown.	
28	Oil lubrication	20-1322 FUEL PUMP HANGER ONLY	
	Thread Locker	To permit the fitting to swivel when assembled, lubricate the O-ring.	
	2.5mm Allen Wrench	Apply a high strength thread locking compound to the 3 included bolt threads. Slide the black collar upward and line up the green fitting holes to the black fitting threads. Secure and tighten all bolts evenly, as shown.	







35		If your fuel level sensor looks like the one pictured, you will need to install the black fuel level mount shown.	
36		<p>There are 2 different ways to install the black fuel level mount. This will depend on which fuel pump unit you have.</p> <p>Reference the picture and note if you need to install the black fuel level mount in a "high position" or a "low position".</p>	
37	2.5mm Allen Wrench	<p>When installing the fuel level mount, reach into the collector box and start the threads by hand for each of the 3 provided screws. NOTE: If 3 Walbro DCSS 39/50 pumps are used, do not install the middle screw as there will be an interference when inserting the pumps into the collector box.</p> <p>After the screws have been started, insert the Allen wrench through the hole on the opposing side of the 3 collector box holes. Be careful not to cross thread.</p>	
38		Shown is the green fuel level mount installed.	
39		<p>Shown is the black fuel level mount installed in the "high position". To install the mount in the "low position", use the upper 3 threads to effectively drop it down.</p>	
40		<p>Depending on the OEM fuel system, there are 2 different size SAE quick connects for the internal crossover hose.</p> <p>The OEM unit on the left is small. The OEM unit on the right is large.</p>	




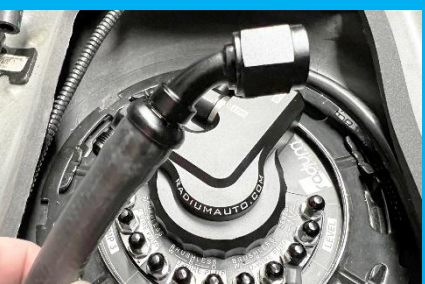
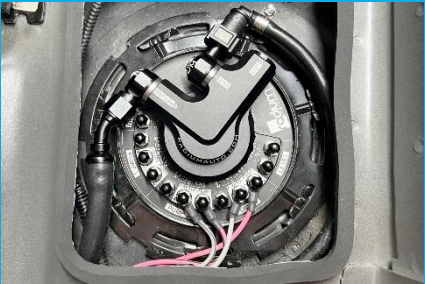

41		There are 2 SAE quick connect adapters included for the internal crossover hose. Use the adapter that matches your OEM unit.	
42	Oil Lubrication	Rotate the non convoluted tube away from the assembly. Lubricate the barb and the inside walls of the tube. Apply a small amount of heat and quickly insert. No clamp is necessary.	
	Heat Gun		
43	3mm Allen Wrench	<p>If the OEM unit had 2 fuel pumps from the factory, the preinstalled blue/brown wire connector is not required. The fuel level is connected within the fuel tank. The 2 ring terminals can be removed from the underside of the fuel hat.</p> <p>When reinstalling the collector box, route the 2-wire brown/blue fuel level connector (if applicable), as shown. Be sure it does not get pinched.</p>	
44	Cutter	<p>FOR FUEL LEVEL SENSORS THAT REQUIRE THE BLACK MOUNT</p> <p>In order for these specific sensors to fit through the fuel tank opening, a minor modification is required. Carefully cut the plastic section off the fuel level sensor in the area depicted in blue.</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. This is NOT removing the mechanical stop for the fuel level float. The mechanical stop is still present. 2. This modification is NOT required if using the green mount. 	
45	Cutter	<p>NOTE: The fuel level sensor wires do NOT need to be cut for OEM units that have 2 pumps stock. The connector will be plugged back into the fuel tank connector in a later step. Because of this, the next few steps related to the assembly of the provided 2 pin connector, can be disregarded.</p> <p>For all other vehicles, cut the 2 fuel level sensor wires.</p>	
46		The next step requires a crimper. For an inexpensive non-ratcheting variation, Moxley 063811-1000 can be used.	







47		As shown, crimp the provided terminals to the OEM wires.	
48		<p>Insert each wire terminal into the included connector until a click is felt.</p> <p>NOTE: Because the sensor measures resistance, wire polarity does not matter.</p>	
49	2.5mm Allen Wrench	<p>Mount the fuel level sensor to the collector box.</p> <p>Black Level Sensor Mount: To install, insert the sensor, then pull downwards until it locks into place, as shown.</p>	
50		<p>Green Level Sensor Mount: To install, lineup the sensor holes to the 3 holes on the mount. Secure the sensor using the 3 small provided screws.</p> <p>Plug the fuel level sensor to the mating electrical connector coming out of the collector box.</p>	
51		<p>As shown, there are 3 different positions that the SAE quick connect fuel feed outlet port points coming out of the OEM pump unit.</p> <p>If your OEM pump unit looks like the "red" port pictured, use the preinstalled straight fitting.</p>	
52	7/8" Deep Socket	<p>If your OEM unit looks like the "black" port pictured in the previous step, replace the preinstalled straight fitting with the 90 degree banjo fitting (shown).</p> <p>If your OEM unit looks like the "blue" port pictured in the previous step, install the fitting which suits your vehicle best.</p>	
	Oil Lubrication		
	4mm Allen Wrench		

53		As shown, place the assembled Radium Engineering fuel pump hanger above the center of the fuel tank. Connect the SAE quick connect crossover. If applicable, plug in the OEM fuel level connector (shown) as well.	
		NOTE: When the fuel pump hanger is fully inside the tank, the crossover line and fuel level connector need to stay on opposing sides from the fuel level float to prevent interference. Meaning, the collector box must be positioned between them.	
54		When lowering the pump hanger into the fuel tank, the float goes in first followed by the crossover hose. But make sure the crossover line (and fuel level connector) stay away from the fuel level float.	
55		Because there are multiple fuel tanks compatible with this fuel pump hanger, the Radium Engineering top hat has 2 pairs of indexing locators.	
		If the fuel tank has an indicator that looks as pictured (shown green), rotate and lineup the specific pair of top hat indicators shown.	
56		If the fuel tank has 2 locators that look as pictured (shown green), rotate and lineup the specific pair of top hat indicators shown.	
		After properly positioned, reinstall the fuel tank lock ring.	
57		A complete fuel plumbing solution is NOT included. There are 2 feed ports on the fuel hanger specifically for retaining the OEM fuel pressure sensor. A couple options are listed below:	
		1. Go to radiumauto.com to check availability of a chassis-specific Radium fuel hanger plumbing kit. They use 2 high flow feed lines while incorporating the OEM fuel pressure sensor.	
		2. A single feed line can be constructed while retaining the OEM fuel pressure sensor. Simply block off the OEM feed line just downstream of the fuel pressure sensor using 1 of the provided fittings (shown). Some vehicles will require the cap and some will require the plug.	
58	Cutter	Cadillac CTS-V ONLY	
		To connect the factory feed line to the Radium Engineering fuel hanger, cut in the location shown.	







59	Oil Lubrication	Cadillac CTS-V ONLY	
	Heat Gun	Slide on the included small EFI hose clamp.	
	Screwdriver		
		Lubricate the provided 90 degree SAE quick connector O-ring as well as the inner wall of the cut tube.	
		As shown, install the SAE quick connect fitting and tighten the clamp.	
60	Oil Lubrication	Lubricate the internal O-rings inside the SAE quick connect fitting and press onto the mating fitting until a "click" is felt. Cadillac CTS-V shown.	
61	Wire Cutter	When connecting the Chevrolet Camaro OEM fuel feed line, no modifications to the tubing are required (shown blue).	
		Next, unravel the electrical tape and cut off the OEM fuel pump connector. Shown is the OEM Chevrolet Camaro single fuel pump connector with fuel level sensor wires.	
62	Wire Cutter	Shown is the OEM Cadillac CTS-V dual fuel pump connector. Notice that there are no fuel level sensor wires, just the 4 wires for the 2 pumps.	
63	Wire Stripper	Cadillac CTS-V ONLY	
	Wire Crimpers	Wiring Assembly	
	Heat Gun	a. Strip 1/4" (6mm) of insulation off the wires.	
		b. Slide a short piece of large heat shrink over the large wires.	
		c. Crimp the large ring terminals to the corresponding wires.	
		d. Slide the heat shrink over the crimped area.	
64	Wire Stripper	Chevrolet Camaro ONLY	
	Wire Crimpers	Wiring Assembly	
	Heat Gun	a. Strip 1/4" (6mm) of insulation off the wires.	
		b. Slide a short piece of large heat shrink over the large wires and slide a short piece of small heat shrink over the 2 small wires.	
		c. Crimp the appropriately sized ring terminals to the corresponding wires.	
		d. Slide the heat shrink over the crimped area.	


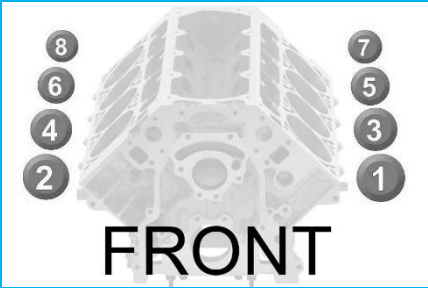




65	8mm Nut Driver	<u>OEM Wiring ONLY</u> Grey = Fuel Pump Power Pink = Fuel Pump Ground Because they have no polarity, the 2 fuel level sensor wires will never be wired incorrectly. Install the ring terminals to the appropriate electrical studs and secure using the provided insulating acorn nuts.	
66	8mm Nut Driver	<u>Aftermarket Wiring ONLY</u> The wire colors connected to the fuel pump hanger will be different when wiring brushless fuel pump controllers or aftermarket relays. NOTE: Three Deatschwerks DW440 brushless controllers are shown.	
67	Jack	<u>20-1325-0X CADILLAC CTS-V PLUMBING KITS ONLY</u> To get fuel lines down underneath the vehicle, there is a small opening at the rear outer side of the fuel tank. Carefully insert the provided 3/8" (6AN) rubber hose down through this opening. Safely raise the vehicle. From underneath, pull the rubber hose down leaving the majority inside the car.	
	Jack Stands		
68	Rag	Starting from the hard line at the rear, the OEM fuel feed line will be repurposed as a return line all the way to the engine. First, follow the OEM feed line down underneath the car. There is a short tube assembly to the RH side of the fuel tank. Push the SAE quick connect fitting further onto the tubing, then simultaneously squeeze the 2 locks (shown blue) and pull away. Be prepared as fuel will spill from this connection.	
69	10mm Socket	Temporarily remove the bolt that secures the fuel line carrier and allow it to hang down. This will permit access to two SAE quick connectors. NOTE: the lower line is for EVAP and will be reinstalled. The upper line is the OEM fuel feed line. Push both SAE quick connect fittings further onto the hard tubing, then simultaneously squeeze the locks and pull away. Be prepared as fuel will spill.	
	Rag		
70		Shown is a portion of the OEM fuel feed line (found on the upper position). This will NOT be reused.	

71	Oil Lubrication	<p>Find the provided SAE quick connect shown. Lubricate the O-ring on the barb and the O-ring inside the fitting.</p> <p>Insert the SAE quick connect fitting into the 3/8" (6AN) rubber hose coming from the fuel pump hanger.</p> <p>As shown, secure the hose using the provided EFI clamp</p>	
	Screwdriver		
72	10mm Socket	<p>Install this new SAE quick connect fitting to the upper hard line. This will be used as the new return line.</p> <p>Reinstall the OEM EVAP line to the lower hard line.</p> <p>NOTE: for both fittings, simply push until a "click" is felt.</p>	
73	Cutter	<p>Find the 45 degree PushLok hose end included in the kit. Temporarily, screw this hose end onto the return port fitting.</p> <p>Pull the rubber hose up leaving just enough slack for the fitting in the previous step.</p> <p>Lineup the rubber hose to the PushLok hose end and cut to length.</p>	
74	Oil Lubrication	<p>Lubricate the PushLok barbs and the inner walls of the rubber hose. Push and fully seat the PushLok hose end into the rubber hose as shown.</p> <p>NOTE: PushLok hose ends do NOT require clamps.</p>	
75	11/16" Wrench	<p>As shown, secure the hose end to the return port fitting.</p>	
76	5/16" Allen Wrench	<p>Remove the 8AN ORB plug from the "OUT" port.</p>	







77	4mm Allen Wrench	Lubricate the O-ring on the provided 90 degree 8AN ORB to 6AN fitting. As shown, install the fitting to the "OUT" port.	
78	11/16" Wrench	Find the long 6AN PTFE hose provided in the kit. Carefully insert the side with the straight hose end down through the same opening as the rubber return line.	
		From underneath, pull the PTFE hose down. This may take a helper. Leave the proper amount of slack at the fuel pump hanger. Leave this hose hanging for the time being.	
		Install and tighten the 90 degree hose end to the "OUT" port.	
79		Find the OEM hard line that was previously disconnected. This is currently connected to the other "OUT" port on the fuel pump hanger. Be sure the end is clean.	
80	5/64" Allen Wrench Oil Lubrication	Find the 6AN male to SAE quick connect adapter included in the kit.	
		Remove the green lock.	
		Lubricate the internal O-rings.	
81		Slide the 6AN male to SAE quick connect adapter over the OEM hard line, as shown.	
82	5/64" Allen Wrench	Using the small screw, reinstall the green lock.	







83		<p>The filter will mount straight forward of these connections. Three M6x1mm bolts will be inserted through the large center hole and sent through smaller holes effectively making "studs". Two studs will point vertically downwards and 1 will point horizontally to the RH side of the vehicle.</p> <p>To hold the "vertical" bolts in place, we wrapped each bolt with a welding rod, as shown. For the horizontal "stud", simply hold the bolt in place through the large hole.</p>	
84	Cordless Impact Gun	<p>Thread the included M6x1mm nuts to the bolts.</p> <p>NOTE: A cordless impact gun can be used to avoid the need to hold the bolt in place.</p>	
	10mm Socket		
85	Oil Lubrication	<p>Lubricate the O-rings on the provided 10AN ORB to 10AN male fitting and the 10AN ORB to 8AN male fitting.</p> <p>Secure the 10AN fitting to the black fuel filter "inlet" port.</p> <p>Secure the 8AN fitting to the silver fuel filter "outlet" port.</p>	
	Adjustable Wrench		
	1" Wrench		
86	4mm Allen Wrench	<p>Place the large fuel filter clamp onto the mounting bracket. Lineup the holes and secure with the M5x0.8mm screws and locking nuts.</p>	
	8mm Socket		
87	4mm Allen Wrench	<p>Place the fuel filter into the large billet clamp. As shown, position it all the way back (do not center the filter). NOTE: When installed, the silver "outlet" will be pointing towards the front of the vehicle.</p> <p>Secure the other half of the clamp using the provided M5x0.8mm socket head screws and a medium-strength thread locker.</p>	
	Thread Locker		
88	10mm Socket	<p>Place the fuel filter bracket assembly over the 3 "studs". Secure using three M6x1mm nuts.</p>	

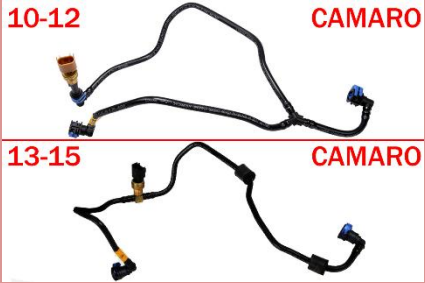

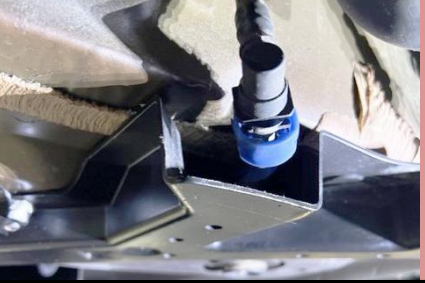



89	11/16" Wrench	Find the short PTFE hose in the kit that has 2 straight hose ends. As shown, install the PTFE hose to the 6AN male to SAE connect adapter fitting.	
	Adjustable Wrench		
90	1" Wrench	Screw the provided y-adapter to the fuel filter 10AN inlet fitting. Prior to tightening, orient so the 6AN males are horizontal with respect to one another, as shown.	
91	11/16" Wrench	Install one of the two 6AN PTFE hoses to the 6AN male fitting shown. NOTE: Do not secure to the outer 6AN male fitting first as it will not be possible to tighten the inner 6AN male afterwards.	
92	11/16" Wrench	Install the other 6AN PTFE hose to the outer 6AN male fitting, as shown.	
93	6mm Allen Wrench	Lift the 6AN PTFE hoses up and place the hose retainer bracket underneath. Insert the hose retainer bracket tab through the floor boards sheet metal hole. Secure using the provided M10x1.5mm screw.	
94	Cutters	Use the provided cable zip ties to secure the 6AN PTFE hoses.	







95		<p>NOTE: An aftermarket Radium Engineering fuel rail must be preinstalled for all parts in this kit to be used.</p> <p>The factory feed hose (shown) will need to be reused.</p>	
96		<p>Reference the LS cylinder firing order for the next few steps.</p>	
97	Oil Lubrication 4mm Allen Wrench	<p>Install the provided 8AN ORB to 6AN female banjo fitting into cylinder 8 fuel rail port.</p>	
98	Oil Lubrication 5mm Allen Wrench	<p>Install the provided 8AN ORB to 8AN male banjo fitting into cylinder 4 fuel rail port.</p>	
99	Oil Lubrication 5mm Allen Wrench	<p>Install the provided 8AN ORB to 8AN male banjo fitting into cylinder 1 fuel rail port.</p>	
100	Oil Lubrication 7/8" Wrench	<p>Install the provided 8AN ORB to 8AN male fitting into cylinder 5 fuel rail port. All other fuel rail ports can be plugged.</p> <p>Find the long 8AN PTFE hose in the kit. Install the 45 degree hose end to the 8AN male fitting and run the hose around the backside of the engine, as shown. Route the hose down along the RH side of the transmission tunnel.</p>	







101	7/8" Wrench	Find the short 8AN PTFE hose in the kit. Install the 45 degree hose end into the cylinder 1 fuel rail 8AN male fitting.	
102		Route the short 8AN PTFE hose around the front of the engine. Install the 45 degree hose end into the cylinder 4 fuel rail 8AN male fitting.	
103	Thread Locker	Find the fuel pressure regulator (FPR) 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. NOTE: the threaded plug keeps a constant (static) pressure that would mimic OEM fuel pressure. All other fittings permit a 1:1 fuel pressure ratio when connected to an intake manifold vacuum port.	
104	Thread Sealant	The following steps for installing NPT fittings will require a PTFE based thread sealant.	
105	Thread Sealant	Apply the PTFE thread sealant to the 1/8" NPT threads on the fuel pressure gauge. Hand tighten the gauge to the FPR port shown. Next, add 1.5 to 3 turns using a wrench.	
	11mm Wrench		
106	Oil Lubrication	Install the 6AN ORB to 6AN male fitting to the FPR port shown.	
	19mm Wrench		







107	3/16" Wrench	Install the 1/8" NPT plug to the FPR port shown.	
108	Oil Lubrication 16mm Wrench	Install the 6AN ORB to SAE quick connect fitting to the FPR return port.	
109	11/16" Wrench	Install the 6AN male FPR fitting to the cylinder 8 fuel rail 6AN female fitting. Orient the FPR as shown.	
110	Oil Lubrication	Push the OEM braided fuel line to the return port on the bottom of the FPR until a "click" is felt.	
111		From underneath the vehicle, find the 8AN PTFE hose that was sent down the RH side of transmission in an earlier step. As shown, slide the provided thermal sleeve over the hose.	
112	10mm Socket Wrench	Remove the OEM bolt shown. This is located to the right of the transmission near the wheel arch.	


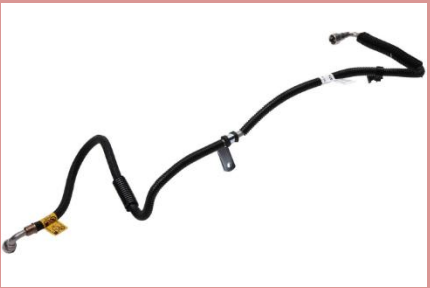

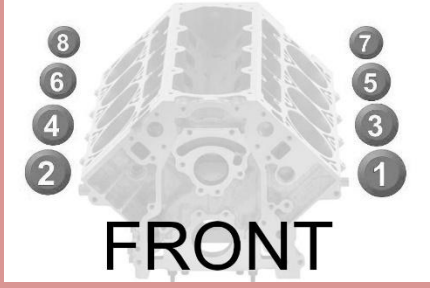


113		Find the large clamp provided in the kit. Secure the clamp to the chassis location from the previous step, as shown.	
		For kits manufactured prior to 2024, reuse the OEM bolt and a 10mm socket wrench to secure the silver clamp (shown).	
		For kits manufactured after 2023, use the provided M6 socket head screw and a 5mm Allen wrench to secure the green clamp (shown in following step).	
114		Slide the 8AN PTFE hose through the loop.	
		Adjust the thermal sleeve to protect the PTFE hose from chaffing and exhaust heat.	
115	7/8" Wrench Adjustable Wrench	As shown, secure the straight 8AN PTFE hose end to the fuel filter outlet fitting.	
116	Cutters	Secure the 8AN PTFE hose to the chassis using the included cable zip ties.	
117		Reconnect the battery and put fuel in the tank.	
		Cycle the ignition switch to allow the pump to prime the fuel system. Check for leaks.	
		Start the engine and check for leaks.	
118		To adjust fuel pressure to the desired level, simply spin the adjustment knob on top of the FPR while viewing the gauge.	
		-A clockwise rotation will increase fuel pressure.	
		-A counterclockwise rotation will decrease fuel pressure.	
		INSTALLATION COMPLETE	






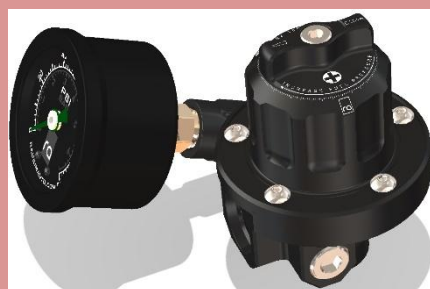
119		20-1326-0X CAMARO PLUMBING KIT, LS3/LS7/L99 ONLY	
		At the rear, there are 2 different types of OEM feed lines between the fuel tank and the hard line. This is dictated by the model year and doesn't affect the installation.	
		10-12 Camaro: the fuel feed splits into 2 lines. As shown, the pressure sensor is dead headed on one line.	
		13-15 Camaro: the fuel feed is simply 1 line. As shown, the pressure sensor runs inline.	
120	Jack	<p>To keep a working OEM fuel pressure sensor, the feed lines (shown above) will need to be reused. However, starting from where these feed lines attach under the vehicle, everything up to the engine will be repurposed as a return line.</p> <p>From inside the vehicle, carefully insert the provided 6AN rubber hose past the small opening at the outer RH side of the fuel tank. Safely raise the vehicle.</p>	
	Jack Stands		
121	Rag	<p>From underneath, pull the rubber hose down leaving the majority inside the car.</p> <p>Next, follow the OEM feed line down underneath the car. There is a short tube assembly to the RH side of the fuel tank. To disengage, pull the blue lock on the SAE quick connect fitting down, as shown.</p>	
122		<p>Pull the fuel feed fitting away from the hard line. Be prepared as fuel will spill from this connection.</p> <p>This junction (shown) is where the fuel feed line and fuel return line will make its change. NOTES:</p> <ol style="list-style-type: none"> 1. The 6AN rubber (return) hose, pushed down from the top of the tank, will attach to this male SAE quick connect. 2. A 6AN PTFE hose will attach from this female SAE quick connect to the fuel filter in a later step. 	
123	Oil Lubrication	<p>Find the provided 90 degree SAE quick connect. Lubricate the O-ring on the barb and the O-ring inside the fitting.</p> <p>Insert the SAE quick connect fitting into the 6AN rubber hose coming from the fuel pump hanger return port.</p> <p>As shown, secure the hose using the provided EFI clamp.</p>	
	Screwdriver		
124		<p>Install this new SAE quick connect fitting to the hard line until a "click" is felt. Again, this is now the "new" fuel return line.</p>	







125	Cutter	Find the 90 degree PushLok hose end included in the kit. From inside the vehicle, temporarily screw this hose end onto the return port fitting on the fuel hat.	
		Pull the 6AN rubber hose up leaving just enough slack for the fitting in the previous steps.	
		Lineup the 6AN rubber hose to the 90 degree PushLok hose end and cut to length.	
126	Oil Lubrication	Lubricate the PushLok barbs and the inner walls of the rubber hose. Push and fully seat the 90 degree PushLok hose end into the 6AN rubber hose as shown.	
		NOTE: PushLok hose ends do NOT require clamps.	
127	11/16" Wrench	As shown, secure the hose end to the return port fitting.	
128	5/16" Allen Wrench	Remove the 8AN ORB plug from the "OUT" port.	
129	4mm Allen Wrench	Lubricate the O-ring on the provided 90 degree 8AN ORB to 6AN fitting. Install the fitting to the "OUT" port, as shown.	
130		Find the longest 6AN PTFE hose in the kit. Carefully insert the straight hose end down along the new rubber "return" hose. NOTE: If you pull off the nearby rubber grommet (shown), the hose can be guided with your fingers easier.	
		From underneath, pull the 6AN PTFE hose down. This may take a helper. Leave the proper amount of slack at the fuel pump hanger. Leave this hose hanging for the time being.	



131	11/16" Wrench	From inside the cabin, install and tighten the 45 degree hose end to the "OUT" port.	
		Reinstall the rubber OEM grommet.	
132	Oil Lubrication	Lubricate the O-rings on the provided 10AN ORB to 10AN male fitting and the 10AN ORB to 8AN male fitting.	
	Adjustable Wrench		
	1" Wrench	Secure the 10AN fitting to the black fuel filter "inlet" port.	
		Secure the 8AN fitting to the silver fuel filter "outlet" port.	
133	4mm Allen Wrench	Place the large fuel filter clamp onto the mounting bracket. Be sure to flip and orient the mounting bracket as shown.	
		Lineup the 3 holes and secure with the M5x0.8mm screws.	
134	4mm Allen Wrench	Place the fuel filter into the large billet clamp. Center the filter within the clamp. NOTE: When installed, the silver "outlet" will be pointing towards the front of the vehicle.	
	Thread Locker		
		Secure the other half of the clamp using the provided M5x0.8mm socket head screws and a medium-strength thread locker.	
135	6mm Allen Wrench	Lineup the 3 holes in the fuel filter bracket assembly to the 3 threaded holes on the RH frame rail. Be sure the bracket "arrow" is pointing towards the front of the vehicle.	
	Thread Locker		
		Secure using three M10x1.5mm screws.	
136		Loosely thread the provided y-adapter to the fuel filter 10AN inlet fitting, as shown.	

137	11/16" Wrench	Find the included 21" long 6AN PTFE hose that has a 45 degree and straight hose end. Secure the included green SAE quick connect male adapter fitting to the 45 degree hose end, as shown.	
	16mm Wrench		
138	Oil Lubrication	Push the male SAE quick connect adapter into the OEM SAE quick connect female. Latch the blue OEM SAE lock, as shown. There will now be two hanging 6AN PTFE hoses. These will attach to the Y-adapter mounted on the fuel filter inlet in the next few steps.	
139	10mm Socket	Remove the 4 plastic nuts in the locations shown.	
140	10mm Socket	Reusing the OEM nuts, secure the 4 green M5x0.8mm threaded adapters. NOTE: Because these are held in with one screw, they can rotate for best clamp fitment in the following step.	
141	4mm Allen Wrench	Route the two 6AN PTFE hoses as shown. Secure using the small provided P-clamps. NOTE: Because these clamps are held in with one screw, they can also rotate for best fitment.	
142	11/16" Wrench	Install the two 6AN PTFE hoses to the Y-adapter. Prior to tightening the 10AN B-nut, orient so the 6AN males are horizontal with respect to one another, as shown.	
	1" Wrench		
	Adjustable Wrench		

143	Cutters	Use one of the provided cable zip ties to secure the 6AN PTFE hose shown.	
144		Because the OEM feed line is now repurposed as the new return line, the fuel rail feed hose will NOT be reused. Be sure this fuel line (shown) is removed from the vehicle.	
145		An aftermarket fuel rail with 8AN ORB end ports must be preinstalled for all parts in this kit to be used. The fuel rail installation will not be covered in this manual. However, a crossover hose is required for the 2 front fuel rail ports, as this system will route in series.	
146		Reference the LS cylinder firing order for the next few steps.	
		Install the provided 8AN ORB to 8AN male fitting to the rear RH fuel rail port (near cylinder #8).	
		Remove any fitting that may be installed in the rear LH fuel rail port (near cylinder #7).	
147		Find the 8AN PTFE fuel hose included in the kit. Slide the provided thermal insulating sleeve over the hose, as shown.	
148	7/8" Wrench Adjustable Wrench	From the engine bay, send the straight hose end down along the RH side of the firewall. From underneath the vehicle, pull the hose to the RH side of the transmission. As shown, secure the straight hose to the fuel filter outlet fitting.	

149	Cutters	Moving towards the front of the vehicle, secure the feed line around the plastic stay using one of the provided cable zip ties.	
150	6mm Allen Wrench	Moving further towards the front of the vehicle, find the threaded hole along the tunnel. Secure the feed line using the included mount and M8x1.25mm socket head screw.	
		Adjust the thermal sleeve to protect the PTFE hose from chaffing and exhaust heat.	
151	7/8" Wrench	Secure the 90 degree hose to the RH rear fuel rail 8AN male port (near cylinder #8).	
152	Thread Locker	Find the fuel pressure regulator (FPR) 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.	
		NOTE: the threaded plug keeps a constant (static) pressure that would mimic OEM fuel pressure. All other fittings permit a 1:1 fuel pressure ratio when connected to an intake manifold vacuum port.	
153	Thread Sealant	The following steps for installing NPT fittings will require a PTFE based thread sealant.	
154	Thread Sealant	Apply the PTFE thread sealant to the 1/8" NPT threads on the fuel pressure gauge, 90 degree adapter, and the plug.	
	11mm Wrench		
	15mm Wrench	Install each to the ports shown. First, hand tighten, then add 1.5 to 3 turns using a wrench.	
	3/16" Allen Wrench		

155	Oil Lubrication	Install the 6AN ORB male to 8AN ORB male fitting to the FPR port shown. This is the fitting that will attach to the fuel rail.	
	8mm Allen Wrench		
156	Oil Lubrication	Install the 6AN ORB male to 6AN male fitting to the FPR return port.	
	19mm Wrench		
157	22mm Wrench	Install the 8AN ORB male on the FPR to the cylinder 8 fuel rail port. Orient the FPR as shown.	
158	5/64" Allen Wrench	Find the provided SAE to 6AN male adapter fitting. Remove the green lock. Be careful not to lose the screw.	
159	11/16" Wrench	Find the 34" long PTFE hose with 90 degree hose ends on both sides. Install the 6AN male side of the SAE adapter into (either) 90 degree hose end.	
	Vice		
160	Oil Lubrication	Lubricate the internal O-rings of the SAE connection and then carefully insert it over the OEM male hard line. As shown, install the SAE quick connect lock using the small provided screw. Route this 6AN PTFE hose over to the return port on the FPR and secure.	
	5/64" Allen Wrench		
	11/16" Wrench		

161		Reconnect the battery and put fuel in the tank.	
		Cycle the ignition switch to allow the pump to prime the fuel system. Check for leaks.	
		Start the engine and check for leaks.	
162		To adjust fuel pressure to the desired level, simply spin the adjustment knob on top of the FPR while viewing the gauge.	
		-A clockwise rotation will increase fuel pressure.	
		-A counterclockwise rotation will decrease fuel pressure.	
		INSTALLATION COMPLETE	