

INSTALLATION INSTRUCTIONS

FUEL RAILS

NISSAN R35 GTR



Document: 19-0218

Support: info@radiumauto.com

20-0556-02

Fuel Rails, Nissan R35 GT-R

Follow Steps 1-34

20-0556-PK/20-0956-PK

Plumbing Kit, Nissan R35 GT-R

Follow Steps 35-54

CAUTION

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.

Gasoline and other fuels are flammable and can be explosive.

Only install in a well-ventilated location to minimize buildup of fuel vapors.

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.

WARNING

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.

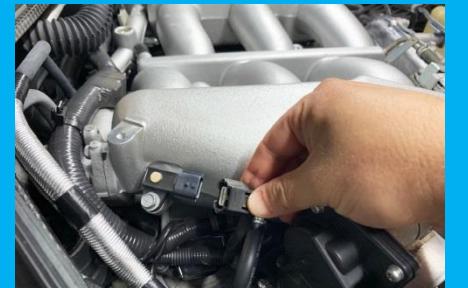
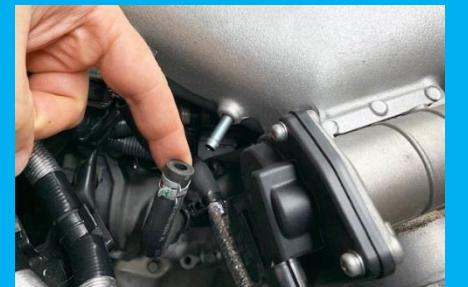
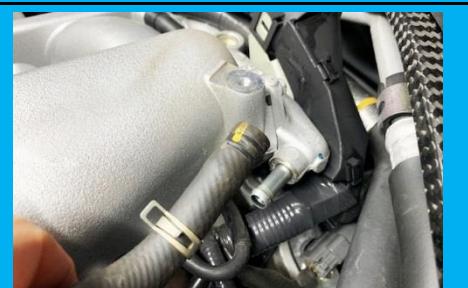
STEP

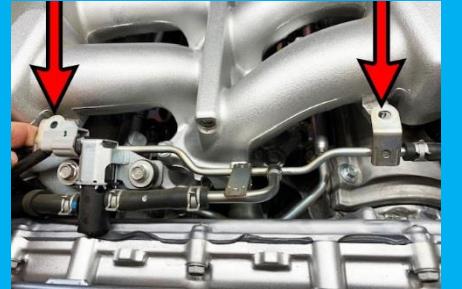
TOOLS NEEDED

INSTRUCTIONS

PHOTO

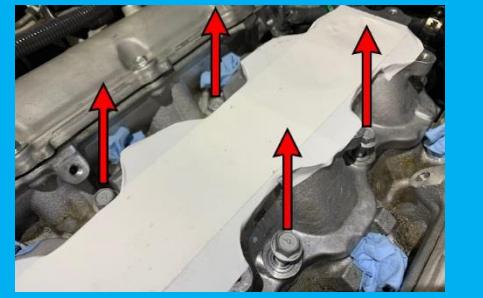
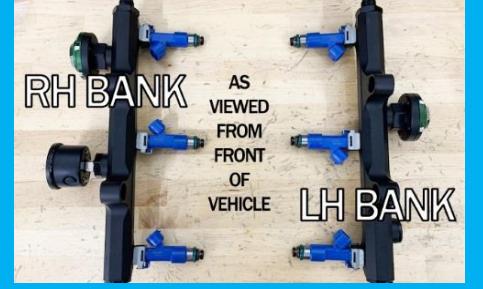
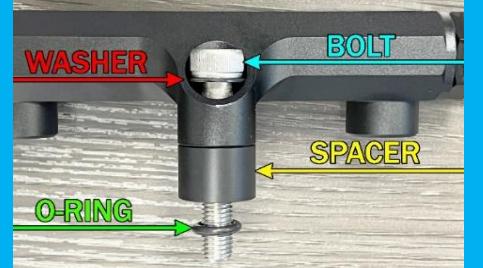
1		20-0556-02 Fuel Rails, Nissan R35 GT-R	
		The picture illustrates the OEM Nissan parts which will be removed.	
	10mm Socket	Lift and remove the plastic battery cover located at the rear of the RH side of the engine bay.	
		Disconnect the negative battery terminal, as shown.	
	5mm Allen Wrench	Allow engine to cool before proceeding.	
		Remove the 4 bolts that secure the engine cover.	
		As shown, remove the engine cover from the vehicle.	
2	7mm Socket	Loosen the hose clamps on both RH and LH throttle body couplers.	
		Dislodge and remove couplers (x2) with clamps (x4) from the vehicle.	

5	Unplug both throttle body connectors.	
6	Unplug the MAP sensor connector.	
7	Pliers Disconnect the hoses just behind both throttle bodies.	
8	Pliers Disconnect the hose just in front of the RH throttle body.	
9	Pliers Disconnect the hose shown.	
10	Pull off the vacuum hose just behind the LH side throttle body.	

11	10mm Socket Wrench	Unscrew both M6 bolts that secure the solenoid bracket assembly on front of the intake manifold.	
12	Pliers	Disconnect the hose at the rear of the intake manifold.	
13		Pry the engine harness stay off the RH backside of the intake manifold.	
14		Pry the engine harness stay off the backside center of the intake manifold.	
15	Flat Head Screwdriver	Dislodge and lift the engine harness from the lock at the LH backside of the intake manifold.	
16	10mm Socket	Unscrew all eight M6 bolts that secure the intake manifold.	

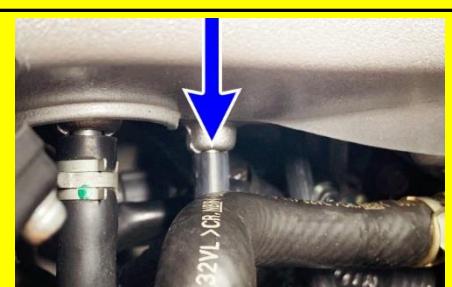
17	<p>Gently lift the intake manifold straight up from the engine. NOTE: The gasket will likely remain under the intake manifold flange.</p> <p>Carefully remove from the vehicle.</p>	
18	<p>Mask the 6 intake ports to prevent foreign debris from falling into the engine.</p>	
19	<p>Needle Nose Pliers</p> <p>Squeeze and push down to dislodge the 4 fuel injector wiring harness plastic stays.</p>	
20	<p>To release, depress the locking thumb tabs of all 6 fuel injector connectors. Pull the fuel injector wiring harness up out of the way, as shown.</p>	
21	<p>Find the fuel feed and return SAE quick connectors near the RH side strut tower area.</p> <p>To disconnect each fitting, first push the connector further onto the hard line. Next, squeeze the locking tabs. Finally, pull upwards to release. Catch all fuel that drips out of these connections and pour into a fuel safe container.</p> <p>NOTE: the SAE quick connect locks will remain on the lines, as shown.</p>	
22	<p>10mm Socket</p> <p>The OEM fuel pressure regulator (FPR) is found on the backside of the LH side fuel rail. It easily identified with a vacuum line. NOTE: All other "diaphragm" shaped objects in the fuel rail system are fuel pulse dampers.</p> <p>Unscrew the 2 FPR bolts. To dislodge from the fuel rail, pull the FPR towards the rear of the vehicle while twisting back and forth to free the O-ring.</p>	

23	<p>12mm Socket</p> <p>10mm Socket</p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>Unscrew the five M8 fuel rail mounting bolts from the cylinder heads.</p> <p>Next, unscrew the M6 bolt in the center rear of the lower intake plenum.</p>	
24	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>Gently pull the fuel rails upwards. Carefully tug around each fuel injector to release the lower O-ring from the cylinder head injector ports.</p> <p>Remove the fuel feed side of the fuel rail assembly from the vehicle and place on a workbench. Catch all fuel that drips out and pour into a fuel safe container.</p> <p>For protection, cover the 6 injector holes to prevent debris from accidentally falling into the engine.</p>	
25		<p>Pull the vacuum tubing off the fuel pressure regulator.</p>	
26	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>To remove the fuel return side of the assembly, the FPR will need to be pushed down around the rear coolant tube. NOTE: Because this is a very tight squeeze, it is a much easier process if a second person is helping from the opposite side.</p> <p>Remove the fuel rail assembly from the vehicle. Catch all fuel that drips out and pour into a fuel safe container.</p>	
27	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>Carefully pull each fuel injector retaining clip to dislodge from the fuel rail assembly. NOTE: These can be reused if an compatible fuel injector is utilized.</p> <p>Gently pull each fuel injector out of the ports. Be prepared with a rag as fuel will likely come out.</p>	
28	<p>10mm Socket Wrench</p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>If the fuel rail mounted fuel pulse damper (FPD) will be reused, unscrew the two M6x1.0 bolts and remove the hold-down bracket. These parts will NOT be reused.</p> <p>To remove the OEM FPD from the fuel rail, simple pull to dislodge. Make sure to keep the black O-ring.</p>	

29	<p>12mm Socket Wrench</p> <p>Remove the 4 inner lower intake manifold M8x1.25 bolts shown. These will NOT be reused.</p>	
30	<p>Petroleum Oil</p> <p>Snap Ring Pliers</p> <p>PTFE Paste</p> <p>7/16" Wrench</p> <p>NOTES:</p> <ol style="list-style-type: none"> If installing Radium fuel pulse damper(s) orient each as described in the plumbing kit section below. FPD disassembly may be required. Also, connect the vacuum hose(s) to an intake manifold port. If reusing the OEM fuel pulse damper (shown), lubricate the O-ring and secure to the 20-0459 adapter using snap ring pliers. If installing a fuel pressure gauge apply PTFE paste to the threads. Hand tighten, then add another 1.5-3 turns using a wrench. 	
31	<p>Petroleum Oil</p> <p>Lubricate the upper injector O-rings and fully seat into the fuel rail ports.</p> <p>Note where the electrical connector for each fuel injector is located in the picture. This matches the factory orientation of the injectors. Rotate each accordingly.</p>	
32	<p>To install the OEM injector clips, pull each fuel injector out of the port just enough to expose the slot where the injector clip will slide in place. Lineup the injector clip. Fully press the injector clip in place to mate the fuel injector to the port. Make sure the slots in the sides of the injector clips line up with the ports' lip. When fully locked, the injector clip will "snap" into place.</p> <p>Injector wiring must be completed prior to mounting the fuel rails. The harnesses should route on the inner side of the fuel rails but underneath the fuel rail mounting tabs. Starting from the rear, plug in the fuel injector connectors one by one moving forward.</p>	
33	<p>6mm Allen Wrench</p> <p>Petroleum Oil</p> <p>Remove the intake manifold injector port protection. Lubricate the lower fuel injector ports and O-rings. Lineup and press the fuel rails down until the fuel injectors are fully seated.</p>	
34	<p>Insert the phenolic washers to the underside of the provided mounting bolt heads. Torque to 10 ft-lbs (13.6Nm).</p> <p>Reinstall all components in reverse order. Start the engine and check for leaks. Contact Radium Engineering for any issues.</p> <p>20-0556-02 Fuel Rails, Nissan R35 GT-R Installation Complete</p>	

35	Petroleum Oil	20-0556-PK Fuel Rail Plumbing Kit, Nissan R35 GT-R ONLY	<p>AS VIEWED FROM FRONT OF VEHICLE</p> 
	5/16" Allen Wrench	Lubricate all O-rings prior to assembly. Install as follows:	
	7/8" Wrench	-8AN ORB plugs in front ports and upper front LH bank.	
	7/16" Wrench	-8AN ORB to 6AN male adapter fittings into rear ports.	
	PTFE Paste	-8AN ORB gauge adapter into the LH upper front port.	
	3mm Allen Wrench	-Fuel pressure gauge into gauge adapter using PTFE paste.	
		-8AN ORB FPD-Rs into the upper rearmost ports.	
36		<i>For intake manifold clearance, FPD-R vacuum nipples should face outwards. New models automatically swivel. For older fuel pulse dampers, remove 5 bolts, cap, rotate, and reassemble.</i>	
	5/64" Allen Wrench	Remove the five 10-32 countersink bolts. Carefully rotate the top cap as shown. This will point the vacuum barb in a favorable location. This step is not necessary for kits purchased after September 2023. The new "RA" series FPRs feature a 360deg swiveling vacuum barb.	
	3/4" Wrench		
	7/8" Wrench		
	1/4" Allen Wrench	Lubricate all O-rings prior to assembly. Install as follows:	
	Petroleum Oil	-6AN ORB plug in the lower front port.	
		-8AN ORB to 6AN male adapter fitting in the upper front port.	
37	10mm Socket Wrench	To remove the fuel line carrier mount from the vehicle, unscrew the two M6x1.0 hex bolts.	
38		Remove the 2 metal sleeves and rubber isolators from the OEM fuel line carrier.	
39	4mm Allen Wrench	Slide the OEM rubber isolators and metal sleeves onto the provided fuel pressure regulator (FPR) mounting bracket.	
		Install the two M6x1.0 button Allen head bolts through the FPR and into the mounting bracket, as shown.	
40	11/16" Wrench	Find the 3 out of the 4 PTFE hoses in the kit that are described below. Tighten the FPR return hose and loosely install the other 2 hoses.	
		1. Low Pressure FPR Return to OEM Fuel Return Line Length: 17.5in, Hose End 1: Straight, Hose End 2: Straight NOTE: This hose will NOT be used if a fuel hanger feed kit is installed.	
		2. High Pressure FPR (RH) Outlet to LH Bank Fuel Rail Rear Inlet Length: 18.0in, Hose End 1: 45degree, Hose End 2: 45degree	
		3. High Pressure FPR (LH) Outlet to RH Bank Fuel Rail Rear Inlet Length: 12.5in, Hose End 1: Straight, Hose End 2: 45degree	

41	10mm Socket Wrench	<p>Insert the FPR assembly into the engine bay.</p> <p>Using the OEM M6x1.0 hex bolts, secure the FPR bracket assembly.</p>	
42	5/64" Allen Wrench	<p>Find the provided SAE adapter fittings. The 5/16" version will be used on the OEM "return" hard line. The 3/8" version will be used on the OEM "feed" hard line.</p> <p>As shown, remove the screw and green SAE retaining lock from each SAE adapter fitting.</p>	
43	Petroleum Oil	<p>Lubricate the internal O-rings on each SAE adapter fitting.</p> <p>Fully insert each fitting onto their respective OEM hard lines. Temporarily, orient each fitting in the direction shown for best access to fastening the SAE lock.</p>	
44	5/64" Allen Wrench	<p>Lineup each green SAE retaining lock and secure with the small screws.</p> <p>Spin each of them in the direction shown.</p>	
45	11/16" Wrench	<p>Route the 2 PTFE hoses to their respective fuel rail ports and tighten.</p>	
46	11/16" Wrench	<p>To tighten the RH side FPR (outer) hose end, the LH side FPR (inner) hose end will first need to be removed.</p>	

47	<p>11/16" Wrench</p> <p></p>	<p>Tighten the LH side FPR (inner) hose end.</p> 
48	<p>11/16" Wrench</p> <p>16mm Wrench</p> <p></p>	<p>Swing the FPR return hose over the top of the FPR and route to the 5/16" SAE quick connect fitting and tighten. NOTE: This hose routing prevents excessive heat transfer from the turbocharger to the fuel lines.</p> <p>Find the fourth PTFE hose in the kit.</p> <p>4. OEM Fuel Feed Line to High Pressure FPR Inlet</p> <p>Length: 9.0in, Hose End 1: Straight, Hose End 2: 90degree</p> <p>NOTE: If installing a fuel hanger feed kit, this hose will act as a new return line. It will be flipped and connect from the FPR return port to the OEM feed line.</p> <p>Secure this hose between the OEM feed line and the FPR inlet.</p> 
49	<p></p>	<p>Reinstall all components in reverse order.</p> <p>Check for fuel pressure gauge and fuel pulse damper clearance. Minor modifications may be required.</p> 
50	<p>Diagonal Cutters</p> <p></p>	<p>Attach the 2 short vacuum hoses to the fuel pulse dampers.</p> <p>Attach the long vacuum hose to the FPR port.</p> 
51	<p>Diagonal Cutters</p> <p></p>	<p>NOTE: The upper intake manifold plenum is not installed in the depiction for clarity of vacuum hose routing. This step should be performed with the manifold on to avoid hose pinching.</p> <p>After assembling the supplied Y-adapters, route the vacuum hoses towards the barb on the LH side of the intake manifold.</p> 
52	<p></p>	<p>Connect the final merged hose to the OEM FPR barb on the intake manifold (shown).</p> 

53	<p>Cycle the ignition switch a few times (without starting engine). This allows the fuel pump to prime the system. CHECK FOR LEAKS! If no leaks are found, start the engine.</p> <p>NOTE: The fuel pressure regulator is NOT preassembled to a specific fuel pressure (see below).</p>	
54	<p>3/8" Wrench 3/32" Allen Wrench</p> <p>Adjusting pressure will differ depending on the FPR. For older versions that feature a set screw with a jam nut, loosen the jam nut then adjust pressure with the set screw. Tighten the jam nut when target pressure has been achieved.</p> <p>For newer RA-series, simply turn the knob until target pressure is achieved. No locking is necessary. Do not attempt to tighten the allen screw.</p> <p>NOTE: OEM VR38DETT static fuel pressure: 3.8 bar (55psi).</p>	