

INSTALLATION INSTRUCTIONS NISSAN/INFINITI FUEL RAILS

VQ35DE, VQ35HR, VQ37VHR

Document: 19-0188

Support: info@radiumauto.com

For VQ35DE Engines
follow "DE" steps below

For VQ35HR Engines
follow "HR" steps below

For VQ37VHR Engines
follow "VHR" steps below

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.

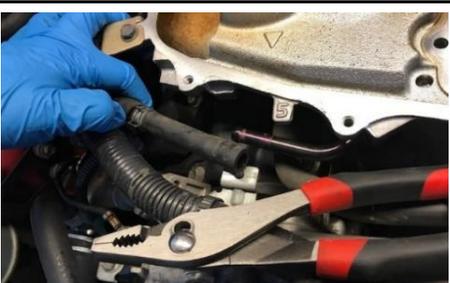
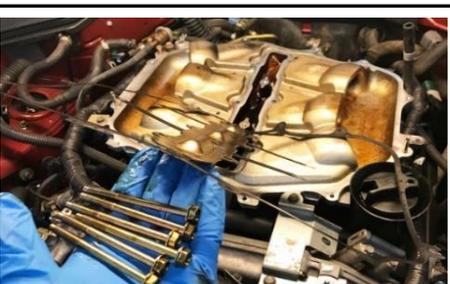
No sparks, open flames, smoking or other ignition sources are to be present. Draining and removal of all fuel from the fuel system is recommended. Proper eye and personal protection is required at all times during installation.

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
DE 1		THIS SECTION IS FOR VQ35DE ENGINES ONLY	<p>FIRING ORDER 1-2-3-4-5-6</p>
		NOTE: Because this instruction manual covers many years of various vehicles, there may be subtle differences not shown.	
		First, it is important to understand where each sequential fuel injector is located and the corresponding bank for the respective cylinder.	
DE 2	10mm Wrench	If there is residual pressure in the fuel lines, it is recommended to disconnect the 15A fuel pump fuse under the wiper blade cowl next to the battery. Run the engine until it stalls. Reference specific vehicle's Factory Service Manual for more details on relieving fuel pressure.	
		Disconnect the negative battery terminal, as shown.	
DE 3	14mm Socket	If equipped, the strut tower brace will need to be removed.	
		NOTE: This procedure will differ depending on the vehicle or if an aftermarket strut bar was installed.	
DE 4	10mm Socket	Unscrew the engine cover bolts.	
		Remove the engine covers from the vehicle.	

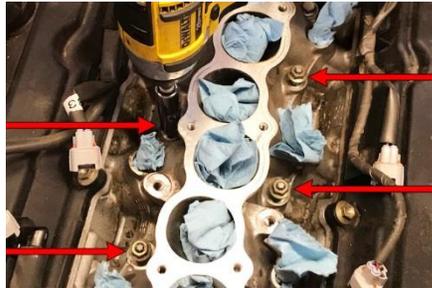
DE 5		Unplug the MAF sensor electrical connector found on the air intake pipe.	
DE 6	Pliers	Loosen the throttle body coupler clamp and slide off the air intake pipe slightly.	
		Rotate the intake pipe just enough to expose the crankcase breather hose. Loosen the spring clamp.	
DE 7		Pull the crankcase breather hose off the barb. Remove the air filter and intake pipe from the vehicle.	
DE 8		To unplug the large throttle body electrical connector, depress the thumb tab and simultaneously pull away from the throttle body.	
		NOTE: A throttle re-learn procedure may need to be completed after fuel rail installation is complete. Consult the factory service manual for details.	
DE 9	Pliers	Loosen the spring clamp and dislodge the EVAP hose on the rear portion of the upper intake manifold plenum.	
DE 10	10mm Socket	Unbolt the EVAP solenoid mounting bracket from the upper intake manifold plenum.	
		NOTE: Depending on the model year, this EVAP solenoid may look slightly different.	

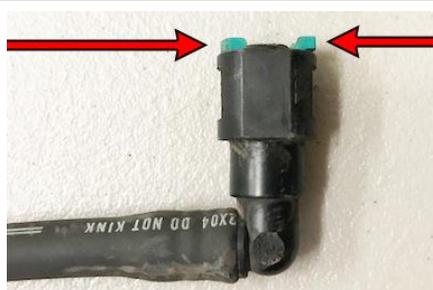
DE 11	Pliers	Loosen the spring clamp and dislodge the brake hose on the RH portion of the upper intake manifold plenum, as shown.	
DE 12	10mm Socket	Remove the hardware that attaches the upper intake manifold plenum to the lower plenum. There are 2 nuts and a mix length of 17 bolts. NOTE: Be careful to not drop any hardware into the engine bay.	
DE 13	Pliers	Pull the upper plenum up to dislodge the large gasket. Tilt the plenum just enough to expose the coolant hose under the throttle body. Loosen the spring clamp and dislodge the coolant hose, as shown.	
DE 14	Pliers	Retilt the upper plenum just enough to expose the other coolant hose attached under the backside area. Loosen the spring clamp and dislodge the hose, as shown. Remove the upper intake manifold plenum from the vehicle.	
DE 15	Pliers	Loosen the spring clamp and dislodge the PCV hose on the lower front portion of the lower intake manifold plenum, as shown.	
DE 16	10mm Socket	Remove the six M6 bolts in the center of the lower intake manifold plenum. Next, carefully remove the intake manifold plenum gasket.	

DE 17	10mm Socket	Remove the hardware along the perimeter of the lower intake manifold plenum. This will include 2 nuts and 4 bolts.	
DE 18		Remove the lower intake manifold plenum from the vehicle, as shown.	
DE 19		Clean the top flange of the lower intake runners. For protection, cover the 6 intake manifold runners to prevent debris from accidentally falling into the engine.	
DE 20		Unplug all 6 fuel injector electrical connectors by depressing the locking thumb tabs and pulling away from the injector.	
DE 21	Pliers	Find the loose steel bracket that was previously mounted to the intake manifold plenum. Loosen the 2 spring clamps and dislodge the 2 EVAP hoses, as shown.	
DE 22	10mm Socket	Unscrew the two M6 bolts that secure the fuel feed line flange to the aforementioned mounting bracket. Before separating the two pieces, place a shop rag under the connection as fuel will leak out.	

DE 23	12mm Socket	Remove the 4 mounting bolts that secure the fuel rails to the intake manifold runners. NOTE: The location of these bolts will be slightly different on various engines.	
DE 24		Carefully rock the fuel rail assembly back and forth while gently pulling upwards to dislodge the lower fuel injector O-rings from the injector seats.	
		Remove the fuel rail assembly from the vehicle and drain all of the remains in a fuel safe container. Place the assembly on a work bench.	
DE 25		Remove the black fuel rail spacers from the intake manifold mounting holes. These will NOT be reused.	
DE 26	Oil Lubrication	Clean the 6 intake manifold runner injector seats.	
	Cotton Swabs		
DE 27		For protection, cover the 6 injector holes to prevent debris from accidentally falling into the engine.	
DE 28		Carefully slide off all 6 injector clips. These will be reused.	
		Gently pull each injector out of the fuel rail ports.	
		Inspect all injector O-rings and replace if necessary.	

DE 29	10mm Socket	If the single OEM VQ35DE fuel pulse damper on the fuel rail end port will be reused, unscrew the 2 bolts. Gently pull the fuel pulse damper off the fuel rail. Inspect the O-ring and replace if necessary. NOTE: The two M6 bolts will be reused.	
DE 30	Light Oil	<p>If a plumbing kit was NOT purchased, 8AN ORB adapter fittings will be required for all ports. These are available at www.radiumauto.com.</p> <p>20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ35DE</p> <p>Lubricate the O-rings on the 6AN adapters and plugs and install, as shown. When installed, the 6AN fittings will be on the rear ports and the plugs will be on the front ports. To reuse the OEM VQ35DE fuel pulse damper, use the 8AN ORB adapter (top right) in the port shown instead of a plug.</p>	
	7/8" Wrench		
	5/16" Allen Wrench		
DE 31	Light Oil	<p>20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ35DE</p> <p>Install the included 8AN ORB plugs into the center ports. NOTE: Up to two Radium 20-0176 fuel pulse dampers can be installed (one per side). Two plugs must be used on the center ports closest to the original fuel rail mounting boss, as shown.</p>	
	5/16" Allen Wrench		
DE 32	Light Oil	<p>Lubricate the upper O-rings on all fuel injectors.</p> <p>Press the fuel injectors in each port. Rotate and orientate as shown.</p> <p>If installing aftermarket injectors, make sure they are the same fitment (height and o-ring diameter) as the OEM injectors.</p>	
DE 33		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.	
DE 34		Fully press the injector clip in place to mate the fuel injector to the port. Make sure the slots of the injector clips line up with the ports lip. When fully locked, the injector clip will "snap" into place.	

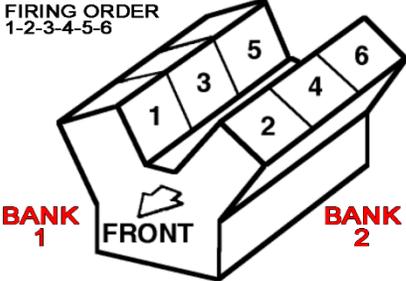
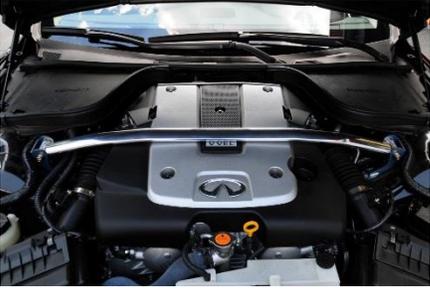
DE 35		Repeat the procedure above for all 6 fuel injector clips.	
DE 36	12mm Socket	Remove the 4 nuts (pictured) that secure the lower intake manifold runners to the cylinder heads.	
DE 37	12mm Socket	Install the included stainless steel fuel rail mounting brackets in the 4 locations from the previous step. Before tightening the OEM nuts, orientate the mounting brackets as shown and be sure they are not crooked. NOTE: The mounting brackets are slotted and can be readjusted in later steps if the fuel rails do not lineup perfectly.	
DE 38	Needle Nose Pliers	To gain the needed access for fuel rail mounting, unclip the fuel injector wiring harness by squeezing the plastic tabs and pulling away.	
DE 39	Light Oil	Remove the intake manifold injector port protection.	
	Thread Locker	Lubricate the lower fuel injector O-rings. Next, lineup and press the fuel rails down until the fuel injectors are fully seated.	
	3mm Allen Wrench	Apply any medium thread locker to the provided stainless steel M5 button head screws. Insert the 8 screws through the mounting brackets and secure them into the fuel rails.	
DE 40	Light Oil	Follow this procedure only if the OEM VQ35DE fuel pulse damper is reused. NOTES: 1. This adapter can be purchased separately (P/N: 20-0460). 2. For fitment purposes, this adapter must be installed into the front fuel rail port of bank 1 near injector 1, as shown.	
	10mm Wrench	Lubricate the OEM fuel pulse damper O-ring. Place the Radium 2-bolt flange onto the 8AN ORB adapter fitting with the recess pointing towards the front of the vehicle. Press the OEM fuel pulse damper into the 8AN ORB adapter fitting. Orientate the fuel pulse damper, as shown. Tighten using the OEM hardware.	

DE 41		Plug in all 6 fuel injector electrical connectors.	
		Snap-in the plastic fuel injector wiring harness clips.	
		Skip to Step 53 unless installing 20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ35DE	
DE 42		20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ35DE: Follow Steps 41-52	
		Lift the vehicle and support with appropriate jack stands.	
		Find where the hard fuel feed line connects to the SAE quick connect feed hose along the RH frame rail (pictured).	
DE 43		Pry and pull to remove the SAE quick connect cover protector (shown).	
DE 44		Prepare to catch spilled fuel.	
		To release the SAE quick connection, first push the fitting further onto the hard line, then simultaneously squeeze the SAE locking tabs. Now pull the SAE quick connect hose off the hard line.	
DE 45		Pry the SAE quick connect locking tab (shown) off the hard line to remove. Insert the locking tab back into the SAE quick connect fitting.	
DE 46		The OEM fuel feed hose is attached just downstream further up on the RH frame rail.	
		Pry and swing the retaining lock open, as shown.	
		Pull the OEM fuel feed hose out of the retainer. This hose will NOT be reused.	

DE 47	5/64" Allen Wrench	<p>Find 1 of the 3 included PTFE hoses. These hoses are identical having a 45 degree hose end on one side and a straight hose end on the other.</p> <p>Find the provided SAE adapter fitting. Remove the screw and green retaining lock. Install this fitting into the PTFE 45 degree hose end. Before tightening, be sure the thread (shown) is orientated as pictured. This will make the SAE lock connection in later steps easier.</p> <p>NOTE: Aluminum wrenches are recommended to prevent marring.</p>	
	11/16" Wrench		
	3/4" Wrench		
DE 48	Light Oil	<p>Lubricate the internal O-rings of the SAE fitting.</p>	
DE 49	5/64" Allen Wrench	<p>From underneath the vehicle, run the straight hose end up along the RH frame rail keeping the Radium SAE fitting down low.</p> <p>Slide the SAE fitting onto the OEM SAE male connection that was previously unplugged. After fully engaged, reinstall the green retaining lock onto the SAE fitting and secure with the small screw.</p>	
DE 50		<p>Loosely assemble the other 2 PTFE hoses and the Y-fitting underneath the nearby components in the engine bay, as pictured. Point the Y-adapter (inlet) towards the RH frame rail.</p> <p>NOTES: The bank 1 fuel rail will have the straight hose end installed into the rear port. The bank 2 fuel rail will have the 45 degree hose end installed into the rear port. Reference the picture for clarification.</p> <p>Do not tighten the hose ends yet.</p>	
DE 51		<p>Find the PTFE hose from RH frame rail underneath the vehicle. The hose end should be a straight (not 45 degree).</p> <p>Route the PTFE hose under the nearby components and connect to the Y-adapter, as shown.</p>	
DE 52	11/16" Wrenches	<p>Tighten the 3 hose ends on the Y-adapter fitting.</p> <p>NOTE: Aluminum wrenches are recommended to prevent marring.</p>	

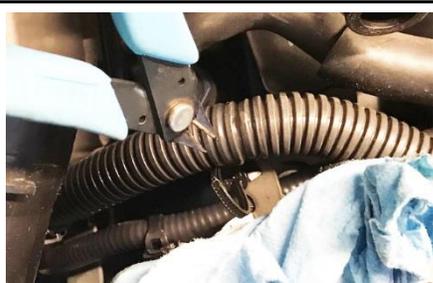
DE 53	11/16" Wrenches	Tighten the 2 hose ends on the rear port fittings. Be careful to not over stress the fuel rail mounting tabs. Aluminum wrenches are recommended to prevent marring.	
		NOTE: Now is a good time to check for fuel leaks. Temporarily reconnect the battery and turn the ignition to the ON position <u>without starting the engine</u> . This will allow the fuel pump to prime for a few seconds. Check for leaks and fix if necessary. Afterwards, disconnect the battery.	
DE 54		Remove the protection from the intake manifold runners. Inspect the intake manifold runner and plenum gaskets and replace if necessary.	
		Reinstall all components in reverse order.	
DE 55		The steel mounting bracket and 2 bolts shown will NOT be reused. However, the pictured EVAP bulkhead hard tube will be addressed in the following steps.	
DE 56	Pliers	Loosen the spring clamp and dislodge the short hose (shown) attached to the green EVAP service port.	
DE 57	Pliers	Loosen the spring clamp and dislodge the hose (shown) attached to the EVAP solenoid. This will be replaced with the included hose. Do NOT remove the other OEM EVAP hose.	
		NOTE: Depending on the model year, this EVAP solenoid may look slightly different.	
DE 58	Pliers	Install the provided 1/4" hose to the EVAP solenoid. As shown, secure using the OEM spring clamps from the previous steps.	
		NOTE: Depending on the model year, this EVAP solenoid may look slightly different.	

DE 59	10mm Socket	Secure the EVAP solenoid bracket to the intake manifold plenum. Attach the new hose to the EVAP service port barb and the OEM hose back to the intake manifold plenum barb.	
	Pliers		
DE 60	10mm Socket	Reconnect the battery. Cycle the ignition switch a few times (without starting engine). CHECK FOR LEAKS! If no leaks are found, start the engine and check again while the engine is running.	
	Coolant		
		NOTE: once the engine has heat-cycled long enough for the thermostat to open, check the coolant level. Depending on how much fluid was lost during the installation, this may need to be topped off.	
		Installation complete	

HR 1		THIS SECTION IS FOR VQ35HR ENGINES ONLY	<p>FIRING ORDER 1-2-3-4-5-6</p> 
		NOTE: Because this instruction manual covers many years of various vehicles, there may be subtle differences not shown.	
		First, it is important to understand where each sequential fuel injector is located and the corresponding bank for the respective cylinder.	
HR 2	10mm Wrench	If there is residual pressure in the fuel lines, it is recommended to disconnect the 15A fuel pump fuse under the wiper blade cowl next to the battery. Run the engine until it stalls. Reference specific vehicle's Factory Service Manual for more details on relieving fuel pressure.	
		Disconnect the negative battery terminal, as shown.	
HR 3	14mm Socket	If equipped, the strut tower brace will need to be removed.	
		NOTE: This procedure will differ depending on the vehicle or if an aftermarket strut bar was installed.	
HR 4	10mm Socket	Unscrew the engine cover bolts and remove the engine covers from the vehicle.	
HR 5	10mm Socket	Remove the M6 bolt that secures the crankcase vent chamber to the intake manifold plenum.	
HR 6	Pliers	Loosen the OEM spring clamp and dislodge the rubber crankcase vent hose, as shown.	

HR 7	8mm Socket	Loosen the two OEM worm drive clamps and remove the intake hose.	
HR 8	5mm Allen Hex Wrench	Remove the four M6 socket head screws that secure the throttle body to the intake manifold.	
		Do not unplug the electrical connector on the throttle bodies.	
HR 9		Pull the throttle body off the intake manifold.	
		NOTE: Do not misplace the OEM gasket as it will be reused.	
HR 10	Pliers	From just behind the throttle body flange, loosen the OEM spring clamp and pull the EVAP hose off the intake manifold barb, as shown.	
		Perform all of these associated steps on the opposing side of the intake.	
HR 11	Pliers	From the front of the engine, loosen the OEM spring clamps and pull the PCV hoses off the intake manifold barbs, as shown.	
HR 12	10mm Socket	Remove the two M6 bolts from the EVAP solenoid bracket on the rear of the intake manifold.	

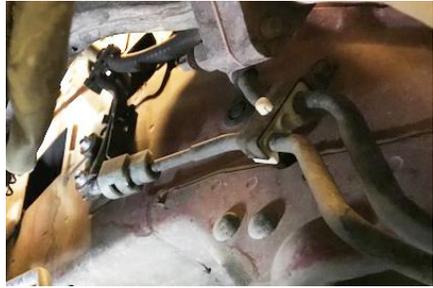
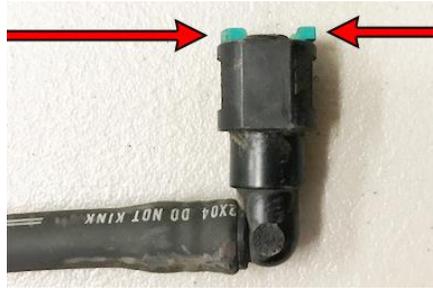
HR 13	10mm Socket	To separate the hard line mount from the rear of the intake manifold, remove the first of two M6 bolts (shown).	
HR 14	10mm Socket	To separate the hard line mount from the rear of the intake manifold, remove the second M6 bolt (shown).	
HR 15	Pliers	Loosen the OEM spring clamp and pull the brake booster line from the intake manifold barb.	
HR 16		Unplug the MAP sensor electrical connector on the rear of the intake manifold, as shown.	
HR 17	12mm Socket	Remove all 8 of the intake manifold plenum bolt/nuts. NOTE: be careful to not loose the front and rear nuts.	
HR 18		Carefully pull up to dislodge the intake plenum from the lower intake runners. Remove the intake plenum from the vehicle.	

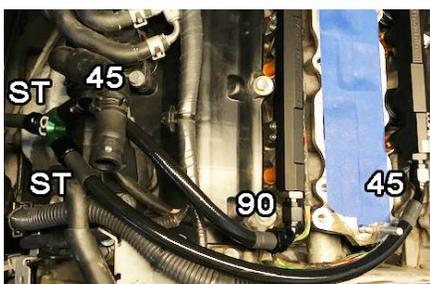
<p>HR 19</p>		<p>Clean the top flange of the lower intake runners. For protection, cover the 6 intake manifold runners to prevent debris from accidentally falling into the engine.</p>	
<p>HR 20</p>	<p>10mm Socket</p>	<p>Remove the M6 bolt that secures the sheet metal bracket shown.</p>	
<p>HR 21</p>	<p>12mm Socket</p>	<p>Remove the M8 bolt that holds the fuel feed hard line bracket.</p>	
<p>HR 22</p>	<p>10mm Socket</p>	<p>Remove the two M6 bolts that secure the fuel feed line. Gently pull up to release the O-ring. Have a rag handy as fuel will leak out of this connection.</p>	
<p>HR 23</p>	<p>Diagonal Cutter</p>	<p>Cut the zip tie that holds the electrical wiring loom shown.</p>	
<p>HR 24</p>	<p>10mm Socket</p>	<p>Remove the two M6 bolts that secure the hard line to the fuel rail.</p>	

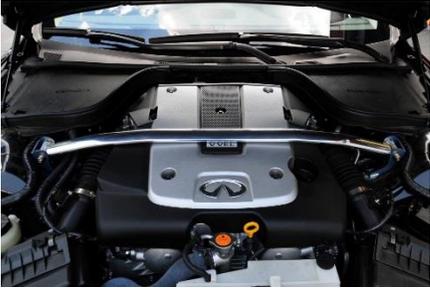
HR 25	10mm Socket	Remove the fuel feed hard line from the vehicle. There will be fuel in the line. Have a rag handy.	
		Resecure the sheet metal bracket using the OEM M6 bolt (not shown).	
HR 26	12mm Socket	Remove the four M8 fuel rail mounting bolts.	
HR 27		Carefully rock the fuel rail assembly back and forth while gently pulling upwards to dislodge the lower fuel injector O-rings from the injector seats.	
		Remove the fuel rail assembly from the vehicle and drain all of the remains in a fuel safe container. Place the assembly on a work bench.	
HR 28	Oil Lubrication	Clean the 6 intake manifold runner injector seats.	
	Cotton Swabs		
HR 29		For protection, cover the 6 injector holes to prevent debris from accidentally falling into the engine.	
HR 30		Carefully slide off all 6 injector clips. These will be reused.	
		Gently pull each injector out of the fuel rail ports.	
		Inspect all injector O-rings and replace if necessary.	

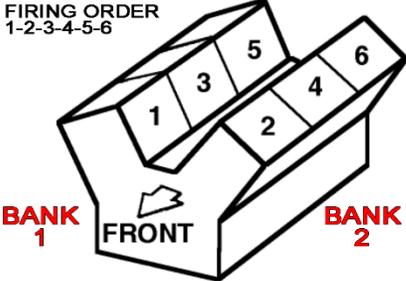
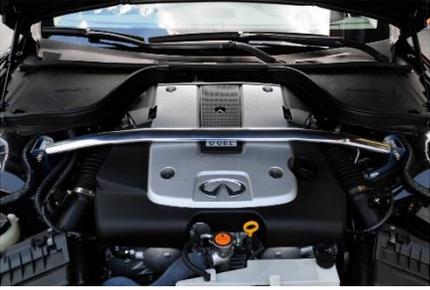
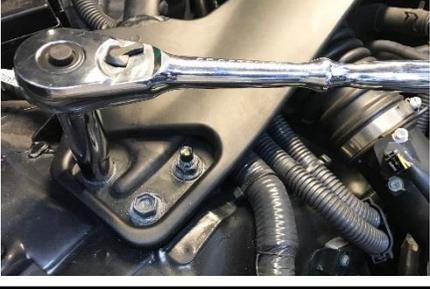
HR 31	10mm Socket	<p>If the two OEM VQ35HR fuel pulse dampers will be reused, unscrew the 4 bolts (2 on each side). Gently pull the fuel pulse dampers off the fuel rails. Inspect the O-rings and replace if necessary. NOTE: The bolts and mounting flanges will NOT be reused.</p>	
	Light Oil		
	7/8" Wrench		
	5/16" Allen Wrench		
HR 32	Light Oil	<p>If a plumbing kit was NOT purchased, 8AN ORB adapter fittings will be required for all ports. These are available at www.radiumauto.com.</p> <p>20-0469 FUEL RAIL PLUMBING KIT, NISSAN VQ35HR</p> <p>Lubricate the O-rings on the 6AN adapters and plugs and install, as shown. When installed, the 6AN fittings will be on the front ports and the plugs will be on the rear ports. Install the included 8AN ORB plugs into the center ports.</p>	
	7/8" Wrench		
	5/16" Allen Wrench		
HR 33	Light Oil	<p>20-0469 FUEL RAIL PLUMBING KIT, NISSAN VQ35HR</p> <p>To reuse the OEM VQ35HR (or VQ37VHR) style fuel pulse damper, first lubricate the OEM O-ring. Next, insert and fully seat the OEM fuel pulse damper into the Radium adapter. Use snap ring pliers to secure the included lock ring to the adapter.</p>	
	Snap-Ring Pliers		
HR 34	Light Oil	<p>The OEM VQ35HR fuel pulse dampers can be installed on any 2 of the 4 center ports of the fuel rail, as shown. Be sure to lubricate the 8AN O-ring prior to securing in place.</p> <p>NOTE: This fuel pulse damper adapter is also sold separately, part number 20-0459.</p>	
HR 35		<p>NOTE: Up to four Radium 20-0176 fuel pulse dampers (shown) can be installed (2 per side) in replace of the 8AN ORB plugs. However, Radium generally recommends one per fuel rail.</p>	
HR 36	Light Oil	<p>Lubricate the upper O-rings on all fuel injectors.</p> <p>Press the fuel injectors in each port. Rotate and orientate as shown.</p>	

<p>HR 37</p>		<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.</p>	
<p>HR 38</p>		<p>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>HR 39</p>		<p>Repeat the procedure above for all 6 fuel injector clips.</p>	
<p>HR 40</p>	<p>12mm Socket</p>	<p>Remove the 4 bolts (pictured) that secure the lower intake manifold runners to the cylinder heads. Install the included stainless steel fuel rail mounting brackets in the 4 locations from the previous step.</p>	
<p>HR 41</p>	<p>12mm Socket</p>	<p>Before tightening the OEM bolts, orientate the mounting brackets as shown and be sure they are not crooked. NOTE: The mounting brackets are slotted and can be readjusted in later steps if the fuel rails do not lineup perfectly.</p>	
<p>HR 42</p>	<p>Needle Nose Pliers</p>	<p>To gain the needed access for fuel rail mounting, unclip the fuel injector wiring harness by squeezing the plastic tabs and pulling away.</p>	

HR 43	Light Oil	Remove the intake manifold injector port protection.	
	Thread Locker	Lubricate the lower fuel injector O-rings. Next, lineup and press the fuel rails down until the fuel injectors are fully seated.	
	3mm Allen Wrench		
		Apply any medium thread locker to the provided stainless steel M5 button head screws. Insert the 8 screws through the mounting brackets and secure them into the fuel rails.	
HR 44		Plug in all 6 fuel injector electrical connectors.	
		Snap-in the plastic fuel injector wiring harness clips.	
		Skip to Step 56 unless installing 20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ35HR	
HR 45		20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ35HR: Follow Steps 45-55	
		Lift the vehicle and support with appropriate jack stands.	
		Find where the hard fuel feed line connects to the SAE quick connect feed hose along the RH frame rail (pictured).	
HR 46		Pry and pull to remove the SAE quick connect cover protector (shown).	
HR 47		Prepare to catch spilled fuel.	
		To release the SAE quick connection, first push the fitting further onto the hard line, then simultaneously squeeze the SAE locking tabs. Now pull the SAE quick connect hose off the hard line.	
HR 48		Pry the SAE quick connect locking tab (shown) off the hard line to remove. Insert the locking tab back into the SAE quick connect fitting.	

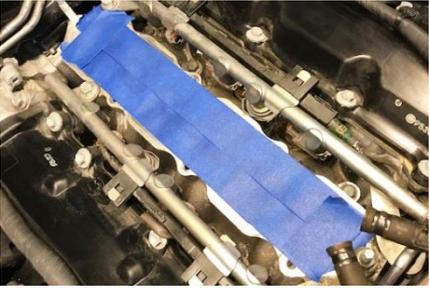
HR 49		The OEM fuel feed hose is attached just downstream further up on the RH frame rail.	
		Pry and swing the retaining lock open, as shown.	
		Pull the OEM fuel feed hose out of the retainer. This hose will NOT be reused.	
HR 50	5/64" Allen Wrench	Find the 1 included PTFE hose in the kit that has a 90 degree hose end on one side and a straight hose end on the opposite side.	
	11/16" Wrench		
	3/4" Wrench	Find the provided SAE adapter fitting. Remove the screw and green retaining lock. Install this fitting into the PTFE 90 degree hose end.	
		NOTE: Aluminum wrenches are recommended to prevent marring.	
HR 51	Light Oil	Lubricate the internal O-rings of the SAE fitting.	
HR 52	5/64" Allen Wrench	From underneath the vehicle, run the straight hose end up along the RH frame rail keeping the Radium SAE fitting down low.	
		Slide the SAE fitting onto the OEM SAE male connection that was previously unplugged. After fully engaged, reinstall the green retaining lock onto the SAE fitting and secure with the small screw.	
HR 53		Loosely assemble the other 2 PTFE hoses and the Y-fitting underneath the nearby components, as pictured. Point the Y-adapter (inlet) towards the RH frame rail. Do not tighten the hose ends yet.	
		Bank 1 will have a 90 degree hose end installed into the front port and a 45 degree to the Y-adapter. Bank 2 will have the 45 degree hose end installed into the front port and a straight end to the Y-adapter. Install the straight hose end from the RH frame rail to the Y-adapter (inlet).	
		Reference the picture illustrating the hose end types for clarification.	
HR 54		Secure PTFE hose along the RH frame rail using the included rubber cushioned P-clamp.	

HR 55	11/16" Wrenches	Tighten the Y-adapter hose ends (shown). Tighten the 2 hose ends on the front port fittings. Be careful to not over stress the fuel rail mounting tabs. NOTE: Aluminum wrenches are recommended to prevent marring.	
		NOTE: Now is a good time to check for fuel leaks. Temporarily reconnect the battery and turn the ignition to the ON position <u>without starting the engine</u> . This will allow the fuel pump to prime for a few seconds. Check for leaks and fix if necessary. Afterwards, disconnect the battery.	
HR 56	10mm Socket	Remove the protection from the intake manifold runners. Inspect the intake manifold runner and plenum gaskets and replace if necessary. Reinstall all components in reverse order. Reconnect the battery.	
		Cycle the ignition switch a few times (without starting engine). CHECK FOR LEAKS! If no leaks are found, start the engine and check again while the engine is running.	
		Installation complete	

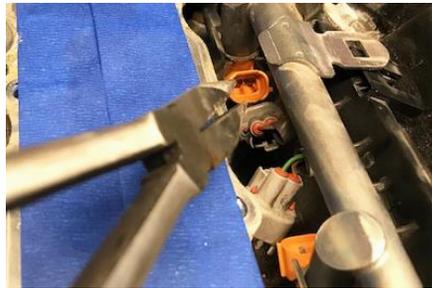
VHR 1		THIS SECTION IS FOR VQ37VHR ENGINES ONLY	<p>FIRING ORDER 1-2-3-4-5-6</p> 
		NOTE: Because this instruction manual covers many years of various vehicles, there may be subtle differences not shown.	
		First, it is important to understand where each sequential fuel injector is located and the corresponding bank for the respective cylinder.	
VHR 2	10mm Wrench	If there is residual pressure in the fuel lines, it is recommended to disconnect the 15A fuel pump fuse under the wiper blade cowl next to the battery. Run the engine until it stalls. Reference specific vehicle's Factory Service Manual for more details on relieving fuel pressure.	
		Disconnect the negative battery terminal, as shown.	
VHR 3	14mm Socket	If equipped, the strut tower brace will need to be removed.	
		NOTE: This procedure will differ depending on the vehicle or if an aftermarket strut bar was installed.	
VHR 4		For vehicles that use a triangulated strut bar, carefully pop up the center cowl section, as shown.	
VHR 5	Pliers	Flip the center plastic cowl piece over and release the rubber trim clip (shown).	
VHR 6	14mm Socket	Remove all associated strut bar bolts and nuts.	

<p>VHR 7</p>		<p>Carefully remove the strut bar from the vehicle.</p>	
<p>VHR 8</p>	<p>10mm Socket</p>	<p>Unscrew the engine cover bolts and remove the engine covers from the vehicle.</p>	
<p>VHR 9</p>	<p>10mm Socket</p>	<p>Remove the M6 bolt that secures the crankcase vent chamber to the intake manifold plenum.</p>	
<p>VHR 10</p>	<p>Pliers</p>	<p>Loosen the OEM spring clamp and dislodge the rubber crankcase vent hose, as shown.</p>	
<p>VHR 11</p>	<p>8mm Socket</p>	<p>Loosen the two OEM worm drive clamps and remove the intake hose.</p>	
<p>VHR 12</p>	<p>5mm Allen Hex Wrench</p>	<p>Remove the four M6 socket head screws that secure the throttle body to the intake manifold.</p>	

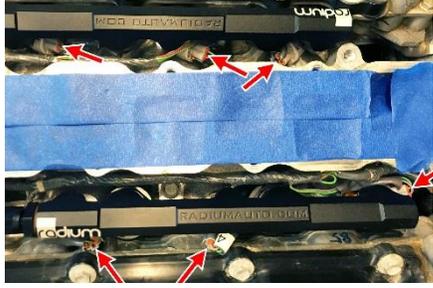
VHR 13		Pull the throttle body off the intake manifold. Do not unplug the electrical connectors.	
		NOTE: Do not misplace the OEM gasket as it will be reused.	
VHR 14	Pliers	From just behind the throttle body flange, loosen the OEM spring clamp and pull the EVAP hose off the intake manifold barb, as shown.	
		Perform all of these associated steps on the opposing side of the intake.	
VHR 15	Pliers	From the front of the engine, loosen the OEM spring clamps and pull the PCV hoses off the intake manifold barbs, as shown.	
VHR 16	10mm Socket	Remove the two M6 bolts from the EVAP solenoid bracket on the rear of the intake manifold.	
VHR 17	10mm Socket	To separate the hard line mount from the rear of the intake manifold, remove the first of two M6 bolts (shown).	
VHR 18	10mm Socket	To separate the hard line mount from the rear of the intake manifold, remove the second M6 bolt (shown).	

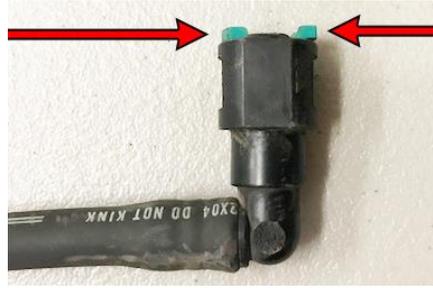
VHR 19	Pliers	Loosen the OEM spring clamp and pull the brake booster line from the intake manifold barb.	
VHR 20		Unplug the MAP sensor electrical connector on the rear of the intake manifold, as shown.	
VHR 21	12mm Socket	Remove all 8 of the intake manifold plenum bolt/nuts. NOTE: be careful to not loose the front and rear nuts.	
VHR 22		Carefully pull up to dislodge the intake plenum from the lower intake runners. Remove the intake plenum from the vehicle.	
VHR 23		Clean the top flange of the lower intake runners. For protection, cover the 6 intake manifold runners to prevent debris from accidentally falling into the engine.	
VHR 24	10mm Socket	Remove the M6 bolt that secures the sheet metal bracket shown.	

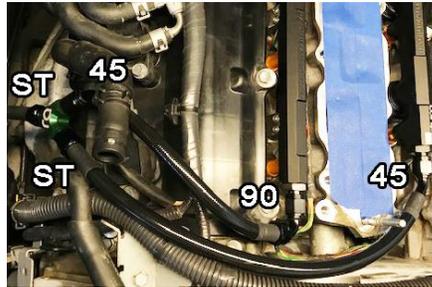
VHR 25	12mm Socket	Remove the M8 bolt that holds the fuel feed hard line bracket.	
VHR 26	10mm Socket	Remove the two M6 bolts that secure the fuel feed line. Gently pull up to release the O-ring. Have a rag handy as fuel will leak out of this connection.	
VHR 27	Diagonal Cutter	Cut the zip tie that holds the electrical wiring loom shown.	
VHR 28	10mm Socket	Remove the two M6 bolts that secure the hard line to the fuel rail.	
VHR 29	10mm Socket	Remove the fuel feed hard line from the vehicle. There will be fuel in the line. Have a rag handy. Resecure the sheet metal bracket using the OEM M6 bolt (not shown).	
VHR 30	Flat Blade	Pry the 4 wiring harness clips from the fuel rail tabs.	

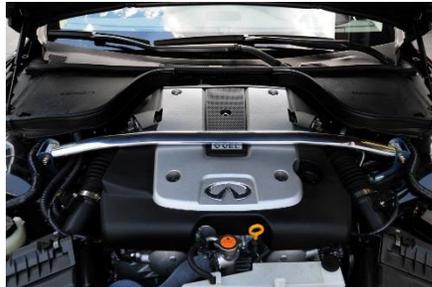
VHR 31	Flat Blade	At the rear, pry the wiring harness clip from the fuel rail tab.	
VHR 32	Pliers	In the front of the fuel rails, squeeze and press downwards to release the 2 wiring harness clips.	
VHR 33		Unplug the 6 fuel injectors. TIP: A pair of long needle nose pliers can be used if struggling with finger fitment. Be careful to not damage the connectors.	
VHR 34	12mm Socket	Remove the four M8 fuel rail mounting bolts.	
VHR 35		Carefully rock the fuel rail assembly back and forth while gently pulling upwards to dislodge the lower fuel injector O-rings from the injector seats. Remove the fuel rail assembly from the vehicle and drain all of the remains in a fuel safe container. Place the assembly on a work bench.	
VHR 36		Unplug the fuel injector harness connector at the rear of the engine.	

VHR 37		Label each fuel injector's electrical connector with its corresponding cylinder number (1-2-3-4-5-6) before proceeding. Injector 5 is shown.	
	Flat Blade	To remove the 3 rigid plastic sections (shown) from the fuel injector wiring harness, use a flat blade to pry the locks off. The OEM tape will need to be cut in certain spots. Retape if necessary.	
VHR 38		Install the fuel injectors to the fuel injector wiring harness as shown. NOTE: Specifically for the VQ37VHR engine, the connectors cannot be plugged into the injectors once the fuel rails are installed.	
VHR 39	Oil Lubrication	Clean the 6 intake manifold runner injector seats.	
	Cotton Swabs		
VHR 40		For protection, cover the 6 injector holes to prevent debris from accidentally falling into the engine.	
VHR 41		Carefully slide off all 6 injector clips. These will NOT be reused.	
		Gently pull each injector out of the fuel rail ports.	
		Inspect all injector O-rings and replace if necessary.	
VHR 42			

VHR 43	Flat Blade	If the two OEM VQ37VHR fuel pulse dampers will be reused, unlatch each damper clip. Gently pull the fuel pulse dampers off the fuel rails. Inspect the O-rings and replace if necessary. NOTE: The damper clips will NOT be reused.	
VHR 44	Light Oil	If a plumbing kit was NOT purchased, 8AN ORB adapter fittings will be required for all ports. These are available at www.radiumauto.com . Be sure to lubricate the 8AN O-ring prior to securing in place. 20-0469 FUEL RAIL PLUMBING KIT, NISSAN VQ37VHR To reuse the OEM VQ37VHR (or VQ35HR) fuel pulse damper, first lubricate the OEM O-ring. Next, insert and fully seat the OEM fuel pulse damper into the Radium adapter. Use snap ring pliers to secure the included lock ring to the adapter.	
	Snap Ring Pliers		
VHR 45	Light Oil	Radium 20-0459 can be purchased separately to reuse the VQ37VHR (or VQ35HR) style OEM fuel pulse dampers. For clearance purposes, they must be installed in the lower ports of the bank 2 fuel rail, as shown. 20-0469 FUEL RAIL PLUMBING KIT, NISSAN VQ37VHR Lubricate the O-rings on the 6AN adapters and plugs and install, as shown. When installed, the 6AN fittings will be on the front ports and the plugs will be on the rear ports. Install the included 8AN ORB plugs into the center ports.	
	7/8" Wrench		
	5/16" Allen Wrench		
VHR 46	12mm Socket	Remove the 4 bolts (pictured) that secure the lower intake manifold runners to the cylinder heads. Install the included stainless steel fuel rail mounting brackets in the 4 locations from the previous step.	
VHR 47	12mm Socket	Before tightening the OEM bolts, orientate the mounting brackets as shown and be sure they are not crooked. NOTE: The mounting brackets are slotted and can be readjusted in later steps if the fuel rails do not lineup perfectly. Remove the intake manifold injector port protection.	
VHR 48	Light Oil	Lubricate all injector O-rings. Route the injector assembly around the lower intake manifold. To be sure the injectors are in the appropriate location, reference the connector labeling (1-2-3-4-5-6). Fully seat each lower injector O-ring. NOTE: Because of the limited space associated with the VQ37VHR engine, the fuel injector connectors can NOT be orientated perpendicular to the fuel rails. Place the fuel rails onto the upper injector O-rings. Rotate the electrical connectors, as shown. Once properly orientated, carefully press the fuel rails downwards, fully seating the injectors.	
	Thread Locker		
	3mm Allen Wrench		

VHR 49	Thread Locker	Apply any medium thread locker to the provided stainless steel M5 button head screws. Insert the 8 screws through the mounting brackets and secure them into the fuel rails. Skip to Step 63 unless installing 20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ37VHR	
	3mm Allen Wrench		
VHR 50	Flat Blade	20-0468 FUEL RAIL PLUMBING KIT, NISSAN VQ37VHR: Follow Steps 50-62 Find where the flexible fuel feed tube connects to the hard fuel feed line along the RH frame rail. There is an EVAP line (shown left) and fuel feed line (shown right) in the clamp connector. Pry and swing the retaining lock open, as shown. Pull both hoses out of the retainer.	
VHR 51	10mm Socket	Remove the two M6 bolts that secures the metal protection shield to the frame rail. Temporarily remove the shield with hose retainer clamp from the vehicle, as shown.	
VHR 52		Pry and pull to remove the SAE quick connect cover protector (shown).	
VHR 53		Prepare to catch spilled fuel. To release the SAE quick connection, first push the fitting further onto the hard line, then simultaneously squeeze the SAE locking tabs. Now pull the SAE quick connect hose off the hard line. Pry the SAE quick connect locking tab (shown) off the hard line to remove. Insert the locking tab back into the SAE quick connect fitting.	
VHR 54		Remove the flexible OEM fuel feed line from the vehicle. This will not be reused.	

VHR 55	5/64" Allen Wrench	Find the 1 included PTFE hose in the kit that has a 90 degree hose end on one side and a straight hose end on the opposite side. Find the provided SAE adapter fitting. Remove the screw and green retaining lock. Install this fitting into the PTFE 90 degree hose end. NOTE: Aluminum wrenches are recommended to prevent marring.	
	11/16" Wrench		
	3/4" Wrench		
VHR 56	Light Oil	Lubricate the internal O-rings of the SAE fitting.	
VHR 57	5/64" Allen Wrench	Slide the SAE fitting onto the OEM SAE male connection that was previously unplugged. After fully engaged, reinstall the green retaining lock onto the SAE fitting and secure with the small screw. NOTE: If the black SAE connector's small threads cannot be seen or cannot be easily accessed, remove the hose. Loosen the SAE fitting and orientate it accordingly. Retighten the SAE fitting to the hose end.	
VHR 58		Loosely assemble the other 2 PTFE hoses and the Y-fitting underneath the nearby components, as pictured. Point the Y-adapter (inlet) towards the RH frame rail. Do not tighten the hose ends yet. Bank 1 will have a 90 degree hose end installed into the front port and a 45 degree to the Y-adapter. Bank 2 will have the 45 degree hose end installed into the front port and a straight end to the Y-adapter. Install the straight hose end from the RH frame rail to the Y-adapter (inlet). Reference the picture illustrating the hose end types for clarification.	
VHR 59	10mm Socket	Reattach the metal shield protector allowing the RH frame rail PTFE hose to route above the plastic retainer clamp retainer, as shown. Reattach and secure the EVAP hose to the plastic retainer clamp.	
VHR 60	10mm Socket Wrench	Remove the exhaust heat shield ground bolt on the RH frame rail. This is where the cushioned clamp will be installed in the next step.	

VHR 61	10mm Socket Wrench	Secure PTFE hose along the RH frame rail using the included rubber cushioned P-clamp.	
		Be sure to place the exhaust heat shield grounding ring terminal underneath the p-clamp and retighten the OEM bolt.	
VHR 62	11/16" Wrenches	Tighten the Y-adapter hose ends (shown). Tighten the 2 hose ends on the front port fittings. Be careful to not over stress the fuel rail mounting tabs. NOTE: Aluminum wrenches are recommended to prevent marring.	
		NOTE: Now is a good time to check for fuel leaks. Temporarily reconnect the battery and turn the ignition to the ON position without starting the engine. This will allow the fuel pump to prime for a few seconds. Check for leaks and fix if necessary. Afterwards, disconnect the battery.	
VHR 63	10mm Socket	Remove the protection from the intake manifold runners. Inspect the intake manifold runner and plenum gaskets and replace if necessary. Reinstall all components in reverse order. Reconnect the battery.	
		Cycle the ignition switch a few times (without starting engine). CHECK FOR LEAKS! If no leaks are found, start the engine and check again while the engine is running.	
		Installation complete	