



# INSTALLATION INSTRUCTIONS

## MAZDA ROTARY FUEL RAILS

ENGINES: 13B-REW, 13B-RE, 20B-REW

Document: 19-0195

Support: info@radiumauto.com

**For 13B-REW Engines**  
follow "13B-REW" below

**For 13B-RE Engines**  
follow "13B-RE" below

**For 20B-REW Engines**  
follow "20B-REW" 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.

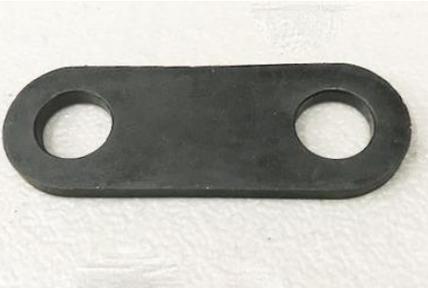
Proper eye and personal protection is required at all times during installation.

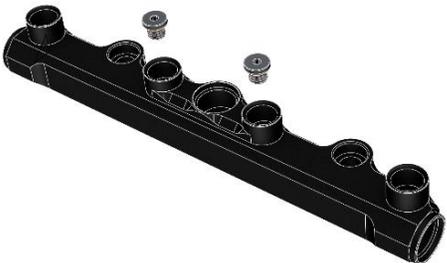
### WARNING

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
13B-REW 1	10mm Wrench	<b>13B-REW FUEL RAILS (ALL)</b> <b>NOTE: Because this instruction manual covers vehicles with various modifications, there may be differences not shown.</b>  If there is residual pressure in the fuel lines, it is recommended to disconnect the green fuel pump relay (shown) in the fuse box next to the battery. Run the engine until it stalls.  Disconnect the negative battery terminal.	
	17mm Wrench	Reference the Factory Service Manual to remove the upper intake manifold and all associated vacuum lines, oil lines, solenoids, etc. The lower intake manifold can remain installed. Disconnect the fuel lines with a 17mm wrench and pliers. Unscrew the fuel rail mounting bolts using a 12mm wrench. 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.  For protection, cover the intake manifold and injector ports to prevent debris from accidentally falling into the engine.	
	Pliers		
	12mm Wrench		
13B-REW 3		It is recommended to reuse the OEM fuel injector diffusers to prevent wall wetting and permit optimal driveability. To inspect, shine a light down into the ports to be sure the diffusers are still in good condition.  <b>NOTE: The diffusers are not absolutely necessary and many will argue they are not required. If removal is required, gently apply pressure to the inner walls with needle nose pliers or use a pick to pull out as shown.</b>	
13B-REW 4	Oil Lubrication	<b>20-0445 Fuel Rail, Top Feed Conversion, 13B Primary</b>  Clean the OEM primary fuel injector ports.  Lubricate the provided injector seat O-rings and firmly push the injector seats into place, as shown.	

13B- REW 5	Oil Lubrication	Prepare the fuel rail for installation. 8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a> . Lubricate the O-rings prior to installing.	
13B- REW 6	Oil Lubrication	Reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors.	
		Lubricate the upper O-rings on the fuel injectors. Press the fuel injectors in each port.	
13B- REW 7		If applicable, the OEM fuel rail mounting spacer (shown) will NOT be reused.	
13B- REW 8	Oil Lubrication	Next, press the included phenolic spacers into the fuel rail mounts.	
	6mm Allen Wrench	Lubricate the lower injector O-rings. Lineup and press the fuel rail down until the injectors are fully secure in the Radium injector seats.	
		Install the provided phenolic washers under the included M8x1.25mm bolts and secure to the engine.	
		<b>Install Complete: 20-0445 Fuel Rail, Top Feed Conversion, 13B Primary</b>	
13B- REW 9	10mm Socket	<b>20-0449 ACV Delete, Mzada 13B-REW</b>	
		The ACV (Air Control Valve) must be permanently removed if installing Radium P/N: 20-0447 Fuel Rail, Top Feed Conversion, 13B-REW Secondary into the OEM lower intake manifold. NOTE: This product is sold separately.	
		Remove the three M6 nuts and pull the ACV off the intake manifold.	
13B- REW 10	10mm Wrench	To remove the OEM ACV mounting studs, install two of the OEM M6 nuts onto each stud. Mate the flange sides together. Next, lock them together, as shown.	
	10mm Socket		

13B- REW 11	10mm Wrench	Unscrew the lower nut to loosen and remove each stud from the intake manifold, as shown.	
13B- REW 12		Inspect the ACV gasket (shown). Replace if necessary.  Mazda P/N: N3A3-13-996	
13B- REW 13	4mm Allen Wrench	Place the ACV gasket down and then the Radium delete plate. Tighten using the supplied screws.  <b>Installation Complete for 20-0449 ACV Delete, Mazda 13B-REW</b>	
13B- REW 14	Oil Lubrication	<b><u>20-0447 Fuel Rail, Top Feed Conversion, 13B-REW Secondary</u></b>	
	1/8" Allen Wrench	If this fuel rail will be installed on the OEM 13B-REW (2-port) lower intake manifold, the provided 2AN ORB plugs need to be installed into the 2 center injector ports, as shown. First lubricate the O-rings.  If this fuel rail will be installed on an aftermarket 13B-REW 4-port lower intake manifold, the provided 2AN ORB plugs are NOT needed.	
13B- REW 15	Oil Lubrication	Clean the fuel injector ports. For OEM Mazda (2-port) and Elite Rotary Shop (4-port) intake manifolds, lubricate the provided injector seat O-rings and firmly push the injector seats into place, as shown.  NOTES: 1. For Elite Rotary Shop 4-port intake manifolds, 2 extra injectors seats must be purchased separately (P/N: 20-0444, Quantity: 2) 2. The Xcessive Manufacturing 4-port intake manifold does not require the injectors seats as they are already machined to accept 14mm lower injector O-rings.	
13B- REW 16	19mm Socket	Install the two included M8 x 1.25mm extension mounts to the threaded fuel rail bosses, as shown.	

13B- REW 17		<p>Prepare the fuel rail by installing the necessary adapter fittings and accessories. 8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a>. Lubricate the O-rings prior to installing. Check for clearance with other components before final installation of the fuel rail.</p>		
	Oil Lubrication			<p>Reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors.</p>
				<p>Lubricate the upper O-rings on the fuel injectors. Press the fuel injectors in each port (2-port variation shown).</p>
13B- REW 18	Oil Lubrication	<p>Press-in the included phenolic spacers. NOTE: The OEM and Elite intake manifolds require the 20mm spacers. The Xcessive manifold (that doesn't need the provided injector seats) requires the 11mm spacers. Lubricate the lower injector O-rings. Lineup and press the rail down until the fuel injectors are secure in their respective seats.</p> <p>Install the provided phenolic washers under the included M8x1.25mm bolts and secure to the extension mounts.</p> <p><b>Installation Complete: 20-0447 Fuel Rail, 13B-REW Secondary</b></p>		
	6mm Allen Wrench			
13B- REW 19	10mm Socket	<p>Plumbing will still need to be configured and adapted to the fuel rail(s). Reinstall all components in reverse order. Reconnect the battery.</p> <p>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.</p> <p><b>Installation Complete</b></p>		

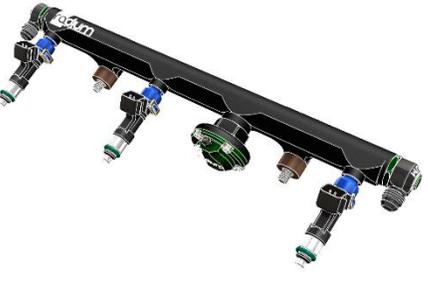
13B-RE 1	10mm Wrench	<b>13B-RE FUEL RAILS (ALL)</b> <b>NOTE: Because this instruction manual covers vehicles with various modifications, there may be differences not shown.</b>	
		If there is residual pressure in the fuel lines, it is recommended to disconnect the green fuel pump relay (shown) in the fuse box next to the battery. Run the engine until it stalls.	
		Disconnect the negative battery terminal.	
13B-RE 2	Pliers	Reference the Factory Service Manual to remove the upper intake manifold and all associated vacuum lines, oil lines, solenoids, etc. The lower intake manifold can remain installed. Disconnect the fuel lines with pliers. Unscrew the fuel rail mounting bolts using a 12mm wrench. 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.  For protection, cover the intake manifold and injector ports to prevent debris from accidentally falling into the engine.	
	12mm Wrench		
13B-RE 3		It is recommended to reuse the OEM fuel injector diffusers to prevent wall wetting and permit optimal driveability. To inspect, shine a light down into the ports to be sure the diffusers are still in good condition.  NOTE: The diffusers are not absolutely necessary and many will argue they are not required. If removal is required, gently apply pressure to the inner walls with needle nose pliers or use a pick to pull out as shown.	
13B-RE 4	Oil Lubrication	<b>20-0445 Fuel Rail, Top Feed Conversion, 13B Primary</b>  Clean the OEM primary fuel injector ports.  Lubricate the provided injector seat O-rings and firmly push the injector seats into place, as shown.	
13B-RE 5	Oil Lubrication	Prepare the fuel rail for installation. 8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a> . Lubricate the O-rings prior to installing.	
13B-RE 6	Oil Lubrication	Reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors.  Lubricate the upper O-rings on the fuel injectors. Press the fuel injectors in each port.	

13B-RE 7		If applicable, the OEM fuel rail mounting spacer (shown) will NOT be reused.	
13B-RE 8	Oil Lubrication 6mm Allen Wrench	Press-in the included phenolic spacers. Lubricate the lower injector O-rings. Lineup and press the fuel rail down until the injectors are fully secure in the Radium injector seats.  Install the provided phenolic washers under the included M8x1.25mm bolts and secure to the engine.  <b>Install Complete: 20-0445 Fuel Rail, Top Feed Conversion, 13B Primary</b>	
13B-RE 9	Oil Lubrication	<b>20-0446 Fuel Rail, 13B-RE Secondary</b> If OEM style fuel injectors are to be used, the spacing that the OEM diffusers produce is required as they provide a mechanical stop. Otherwise the stock injector will fall down and out of the fuel rail port.  If aftermarket injectors are used, the included injector seats provide the actual mechanical stop. Furthermore, the injector seats were designed for flexibility as the OEM diffusers can be either reused or removed (as shown) with no change in fitment. This decision is up to the installer.	
13B-RE 10	Oil Lubrication	If installing injectors that are NOT stock replacements (or equivalents), reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors. These aftermarket injectors have a 14mm lower O-ring which require the included injector seats to be installed. Do NOT perform this step if using OEM style injectors.  First, clean the OEM injector ports. Lubricate the provided injector seat O-rings and firmly push the injector seats into place, as shown.	
13B-RE 11	Oil Lubrication	Prepare the fuel rail for installation by installing the necessary fittings and adapters. 8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a> .  Lubricate both the fitting and upper injector O-rings prior to installing. Press the fuel injectors into each port.	
13B-RE 12	Oil Lubrication 6mm Allen Wrench	For aftermarket injectors that require the included injector seats, press-in the provided phenolic spacers. With OEM equivalent injectors (shown), the phenolic spacers are NOT required.  Lubricate the lower fuel injector O-rings. Lineup and press the fuel rail down until the fuel injectors are fully secure in their respective seats. Next, install the provided phenolic washers under the included M8x1.25mm bolts and secure to the lower intake manifold.  <b>Installation Complete: 20-0446 Fuel Rail, 13B-RE Secondary</b>	

13B- RE 13	10mm Socket	Plumbing will still need to be configured and adapted to the fuel rail(s). 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.
		<b>Installation Complete</b>



20B-REW 1	10mm Wrench	<b>20B-REW FUEL RAILS (ALL)</b> <b>NOTE: Because this instruction manual covers vehicles with various modifications, there may be differences not shown.</b>	
		If there is residual pressure in the fuel lines, it is recommended to disconnect the green fuel pump relay (shown) in the fuse box next to the battery. Run the engine until it stalls.	
		Disconnect the negative battery terminal.	
20B-REW 2	Pliers	Reference the Factory Service Manual to remove the upper intake manifold and all associated vacuum lines, oil lines, solenoids, etc. The lower intake manifold can remain installed, as shown.	
	12mm Wrench	Disconnect the fuel lines and unscrew the fuel rail mounting bolts. 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.	
		For protection, cover the intake manifold and injector ports to prevent debris from accidentally falling into the engine.	
20B-REW 3		It is recommended to reuse the OEM fuel injector diffusers to prevent wall wetting and permit optimal driveability. To inspect, shine a light down into the ports to be sure the diffusers are still in good condition.	
		<b>NOTE:</b> The diffusers are not absolutely necessary and many will argue they are not required. If removal is required, gently apply pressure to the inner walls with needle nose pliers or use a pick to pull out as shown.	
20B-REW 4	Oil Lubrication	<b>20-0464 Fuel Rail, Top Feed Conversion, 20B-REW Primary</b> Clean the 3 OEM primary fuel injector ports.	
		Lubricate the provided injector seat O-rings and firmly push the injector seats into place, as shown.	
20B-REW 5	Oil Lubrication	Prepare the fuel rail by installing adapters or accessories into the open ports. 8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a> . Lubricate the O-rings prior to installing.	
20B-REW 6	Oil Lubrication	Reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors.	
		Lubricate the upper O-rings on the fuel injectors. Press the fuel injectors in each port.	

20B- REW 7		If applicable, the OEM fuel rail mounting spacers will NOT be reused.	
	Oil Lubrication	<p>Press-in the included phenolic spacers. Lubricate the lower injector O-rings. Lineup and press the fuel rail down until the injectors are fully secure in the Radium injector seats.</p> <p>Install the provided phenolic washers under the included M8x1.25mm bolts and secure to the engine.</p> <p><b>Install Complete: 20-0464 Fuel Rail, Conversion, 20B-REW Primary</b></p>	
	6mm Allen Wrench		
20B- REW 8	Oil Lubrication	<p><b>20-0465 Fuel Rail, 20B-REW Secondary</b></p> <p>If OEM style fuel injectors are to be used, the spacing that the OEM diffusers produce is required as they provide a mechanical stop. Otherwise the stock injector will fall down and out of the fuel rail port.</p> <p>If aftermarket injectors are used, the included injector seats provide the actual mechanical stop. Furthermore, the injector seats were designed for flexibility as the OEM diffusers can be either reused or removed (as shown) with no change in fitment. This decision is up to the installer.</p>	
	6mm Allen Wrench		
20B- REW 9	Oil Lubrication	<p>If installing injectors that are NOT stock replacements (or equivalents), reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors. These aftermarket injectors have a 14mm lower O-ring which require the included injector seats to be installed. Do NOT perform this step if using OEM style injectors.</p> <p>First, clean the OEM injector ports. Lubricate the provided injector seat O-rings and firmly push the injector seats into place, as shown.</p>	
20B- REW 10	Oil Lubrication	<p>Prepare the fuel rail by installing the necessary adapter fittings or fuel system accessories. 8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a>.</p> <p>Lubricate both the fitting and upper injector O-rings prior to installing. Press the fuel injectors into each port.</p>	
20B- REW 11	Oil Lubrication	<p>For aftermarket injectors that require the included injector seats, press-in the provided phenolic spacers (shown). With OEM equivalent injectors, the phenolic spacers are NOT required.</p> <p>Lubricate the lower fuel injector O-rings. Lineup and press the fuel rail down until the fuel injectors are fully secure in their respective seats. Next, install the provided phenolic washers under the included M8x1.25mm bolts and secure to the lower intake manifold.</p> <p><b>Installation Complete: 20-0465 Fuel Rail, 13B-REW Secondary</b></p>	
	6mm Allen Wrench		
20B- REW 12	Oil Lubrication	<p>Lubricate the lower fuel injector O-rings. Lineup and press the fuel rail down until the fuel injectors are fully secure in their respective seats. Next, install the provided phenolic washers under the included M8x1.25mm bolts and secure to the lower intake manifold.</p> <p><b>Installation Complete: 20-0465 Fuel Rail, 13B-REW Secondary</b></p>	
	6mm Allen Wrench		

20B- REW 13	19mm Socket	<b>20-0466 Fuel Rail, 20B-REW Secondary, 6-Port</b>	
		Install the two M8 x 1.25mm extension mounts included to the threaded fuel rail bosses, as shown.	
20B- REW 14		8AN ORB fittings will be required for all ports. A wide selection of adapters are available at <a href="http://www.radiumauto.com">www.radiumauto.com</a> . Lubricate the O-rings prior to installing.	
20B- REW 15	Oil Lubrication	Reference the product page at <a href="http://www.radiumauto.com">www.radiumauto.com</a> to find appropriately sized top feed fuel injectors.	
		Lubricate the upper O-rings on the fuel injectors. Press the fuel injectors in each port.	
20B- REW 16	Oil Lubrication	Press-in the included phenolic spacers. Lubricate the lower injector O-rings. Lineup and press the fuel rail down until the fuel injectors are fully secure in their respective seats.	
	6mm Allen Wrench	Install the provided phenolic washers under the included M8x1.25mm bolts and secure to the extension mounts.	
		<b>Installation Complete: 20-0466 Fuel Rail, 20B-REW Secondary, 6-Port</b>	
20B- REW 17	10mm Socket	Plumbing will still need to be configured and adapted to the fuel rail(s). 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.	
		<b>Installation Complete</b>	