



# INSTALLATION INSTRUCTIONS

VW/AUDI 1.8T 20V FUEL RAIL

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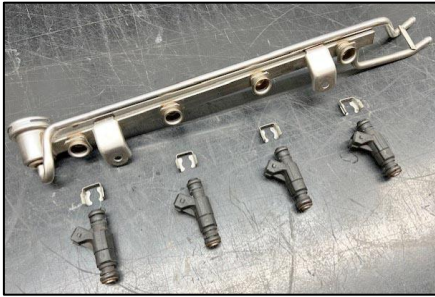

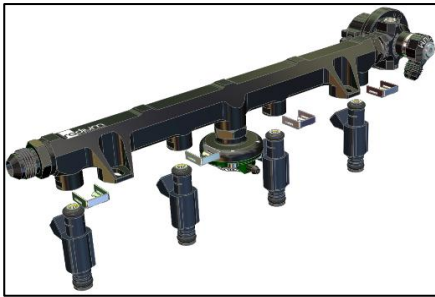
## CAUTION

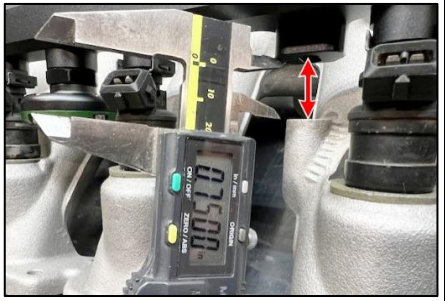

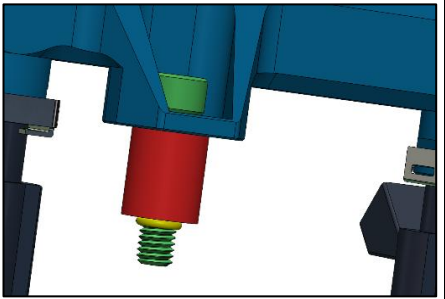
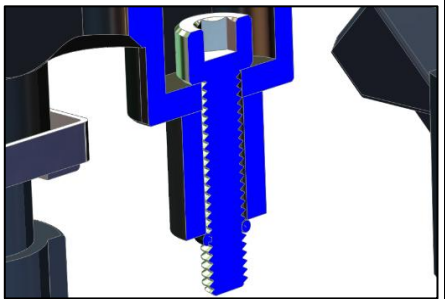


Only a qualified technician following applicable safety procedures should perform the installation of this product.  
One must have knowledge in repair and modification of fuel systems and general vehicle modifications to install this product.  
**Gasoline and other fuels are flammable and can be explosive.**  
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    |              | NOTE: This fuel rail is compatible with many different models. Thus, in depth instructions will NOT be covered. It is recommended to have a factory Workshop Manual for your specific vehicle.  |       |
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|      |              |   |       |
| 2    |              | <p>First, the fuel system will need to be depressurized. On late model fuel rails there is a Schrader valve that can be pressed.</p> <p>For all other applications, temporarily remove the 15A fuel pump fuse from the driver side fuse box. Next, start the vehicle and allow the engine to stall. Reinstall the fuse and remove the key from the ignition switch.</p> |       |
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| 3    | 10mm Socket  | <p>To disconnect the battery, first remove the plastic covers. Next, remove the negative terminal (as shown).</p> <p>CAUTION: Disconnecting the battery may cancel the fault memories of some control units.</p>  |       |
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|      |              |   |       |
| 4    | Pick         | <p>Open the hood and find the fuel rail and fuel injectors.</p> <p>Squeeze all 4 fuel injector connectors and simultaneously pull up to release, as shown.</p> <p>If equipped, remove the plastic harness clips from the fuel rail.</p>   |       |
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| 5  | Pliers           | If equipped, carefully pull off the vacuum hose from the fuel pressure regulator (FPR).  |    |
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|    |                  | NOTE: For late model engines, the FPR is integrated with the fuel filter (underneath the vehicle).   |   |
|    |                  |  |   |
|    |                  |  |   |
| 6  | Pliers           | Before disconnecting the fuel feed line and return line, note which fuel line is the feed and which is the return.   |    |
|    | 14mm Wrench      |  |   |
|    | 19mm Wrench      | NOTES:<br>1. Late model engines do NOT have a fuel rail return line.<br>2. Mid to late model engines require wrenches on the feed line.<br>3. Mid model engines use an unserviceable pinch clamp. This will need to be picked apart to remove the return line.<br>4. Early model engines use spring clamps (pictured). |   |
|    | Pick             |  |   |
|    | Rag              |  |   |
|    |                  |  |   |
| 7  | 5mm Allen Wrench | Unscrew the 2 fuel rail mounting bolts. Pull up and separate the fuel rail injectors from the intake manifold, as shown.   |   |
|    | Rag              |  |   |
|    |                  | NOTES:<br>1. Be careful as fuel will drip out of the fuel rail ports.<br>2. The fuel injectors should remain attached to the fuel rail.<br>3. Bring the fuel rail assembly to a workbench.   |   |
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| 8  | Rag              | To unlock the fuel injectors, pry off the 4 metal retaining clips from the fuel rail. These will be reused.  |  |
|    | Pick             |  |   |
|    |                  | Next, pull the 4 injectors from the fuel rail.   |   |
|    |                  |  |   |
|    |                  | Inspect the fuel injector O-rings and replace if necessary.  |   |
|    |                  |  |   |
| 9  | Oil Lubrication  | Adapter fittings will need to be purchased separately. There are three 3/4"-16 (8AN ORB) threaded ports on the fuel rail.  |  |
|    |                  |  |   |
|    |                  | Go to <a href="http://www.radiumauto.com">www.radiumauto.com</a> and click on the 8AN ORB fittings product page to see the plethora of options. Be sure to lubricate the O-rings (shown) prior to installation.  |   |
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| 10 | Oil Lubrication  | For ease of installation, lubricate the injector O-rings, intake manifold injector seats, and fuel rail injector bores.  |  |
|    |                  |  |   |
|    |                  | Fully insert the injectors into the fuel rail injector bores. Orientate the fuel injectors until they face the proper direction. Next, insert the OEM injector clips making sure they lock in place.   |   |
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| 11 |                  | Temporarily place the fuel rail assembly onto the intake manifold.   |    |
|    |                  | Measure the dimensional gap between the fuel rail mounts and the threaded bosses intake manifold.  |   |
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| 12 |                  | There are 3 different sets of thermal insulating spacers and corresponding M6x1mm stainless steel screws. These different heights compensate for the particular injectors and intake manifold types used with the 1.8T 20V engines. These make the fuel rail compatible with all OEM injector and OEM intake manifold scenarios. |    |
|    |                  | NOTE: Aftermarket parts may differ.  |   |
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| 13 |                  | Once the proper spacer height is determined, pull the fuel rail assembly back off the intake manifold.   |   |
|    |                  | First, insert the appropriate length screws (green) down through the fuel rail mounting holes (blue). Next, insert the appropriate length spacers (red) over the screws from the bottom side of the fuel rail. Lastly roll the rubber spacer retainers (yellow) up the screws.   |   |
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| 14 |                  | Shown is a section view of how this assembly works. This procedure keeps everything in tact and will prevent the hardware from falling into the engine bay when servicing.   |  |
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| 15 | 5mm Allen Wrench | Line-up and place the fuel rail assembly onto the intake manifold. Push the fuel rail downwards to fully seat the injectors into the intake manifold ports. Once everything is positioned correctly, tighten the M6x1mm socket head screws to secure the fuel rail.  |  |
|    |                  | Plumb the rail to your fuel system (not covered in this manual).   |   |
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|    |                  |  |   |
| 16 | 10mm Wrench      | After everything is reinstalled, reconnect the battery.  |  |
|    |                  | Cycle the keyed ignition switch ON/OFF a few times (without starting the engine). This allows the fuel pump to prime the system. Check for leaks.  |   |
|    |                  | Start the engine and confirm again while the engine is running.  |   |
|    |                  | <b>INSTALLATION COMPLETE</b>   |   |
|    |                  |  |   |
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