

**How To Install The
OEM Fuel Line Upgrade Kit
In 93+ Mazda RX-7s**

By Dale R. Black

This document is intended to help guide you with the installation of the Mazda “Fuel Line Upgrade Kit” (part number N3A1-13-S70A - \$63.25) and is in no way intended to be a complete instructional “how-to”. You should have confidence in your mechanical abilities before attempting the following procedure. If you are unsure if you can finish the installation, consult with your local Mazda dealer or mechanic. If you are not comfortable doing this maintenance by yourself, ask a friend to help and work as a team. A pizza and some drinks can go a long way.

Read through this entire document in advance and have the factory service manual (FSM) available for any specific maintenance practices, procedures, and torque specifications. Having plenty of time to perform the procedure is recommended, as is a clean work environment.

Before disconnecting any fuel line, depressurize the fuel system using the procedure outlined in the FSM to minimize fuel loss. Do the same for the cooling system by removing the filler cap. Since you will be disconnecting coolant lines, make sure you have some premixed coolant available to replenish the system when the job is complete. Make sure you have something available to plug these lines to minimize the loss of fluids. If you spill any fuel and coolant on the engine, clean it up before starting reassembly (use standard precautions and procedures for removing spilled fuel and coolant from painted surfaces).

Next, seal all air, fuel, and coolant orifices with clean rags, tape, plugs, or plastic upon disassembly to prevent foreign objects entering and causing accidental internal damage. Make sure all such barriers are removed and accounted for during reassembly. This may seem like common sense, but it's very important. A turbo won't spin well with a shop rag wrapped around it. Also, since you will have access to the “rats nest” of vacuum lines, consider the opportunity to replace them if not done already. Make sure you have the necessary materials available to minimize downtime.

This is also a good opportunity to send the fuel injectors out for cleaning and blueprinting, especially if you suspect they are suffering poor performance. Additionally, if you've been contemplating upgrading to higher flow injectors, you may want to have the parts on hand prior to performing the following procedure. An instruction document on how to install stock 850cc secondary injectors in lieu of the 550cc primaries is available from the author (see “*How To Replace Stock 550cc Primary Injectors With OEM 850cc Injectors In The 93+ RX-7*”).

Finally, label parts and electrical connectors as you take them apart to take the guesswork out of reassembly. This saves time by creating efficiency. All things considered, the kit goes together easily as most of the parts are self-explanatory. The pictures throughout this document were provided by Martin Crane, except Figure-1, which was provided by Jeff Hoskinson. They are intended to help clarify any questions you may have during the installation.

How To Install The OEM Fuel Line Upgrade Kit In 93+ Mazda RX-7s

By Dale R. Black

Description Of The Kit: The short line with the banjo bolt uses the short insulator, and interconnects the primary and secondary fuel manifolds. NOTE: The upgraded line with the banjo bolt is a dramatic change from the original part, which looks like a short version of the 90-degree line. The metal crush washers go on the banjo bolt itself. The machine bolts should be used on the other end of the line with the banjo bolt. The two straight lines with the insulators go to the primary fuel manifold and from the secondary fuel manifold. The installation of the long 90-degree line with the insulator has already been covered in a previous "How-To". The extension manifold gasket is obvious. The other metal gasket is for the Air Control Valve (ACV). Six of the metal clamps are used on the three fuel lines (the remaining two were necessary for the installation of the original style line). The eight assorted vacuum lines are those that most of us have already replaced and/or upgraded.



Figure-1

This picture shows the assembled fuel injector manifolds, without the injectors, as they were removed from the subject car. The primary manifold contains the pair of injectors close together and the longer one with the injectors spread farther apart is the secondary manifold. The caps that secure the injectors are in the foreground and background. The three fuel lines shown are from the original recall and will be replaced by those supplied in the upgrade kit.

Note: The 550cc primary injectors are physically larger than the 850cc secondary injectors.



Figure-2

How To Install The OEM Fuel Line Upgrade Kit In 93+ Mazda RX-7s

By Dale R. Black

This picture shows the redesigned (upgraded) replacement line without the heat shield installed. The heat shield can be difficult to install, but feed it over the banjo bolt end. The line itself interconnects the primary manifold to the secondary manifold. The small machine bolts provided in the kit replace the two screws at the flanged end of the line (top of picture). The kit includes two copper crush washers to replace the crush washers installed on the banjo bolt.



Figure-3

When installing the new upgraded line, install the new copper crush washers included in the kit on both sides of the banjo fitting and...



Figure-4

...replace the screws with the machine bolts provided for the flanged connector.



Figure-5

How To Install The OEM Fuel Line Upgrade Kit In 93+ Mazda RX-7s

By Dale R. Black

The two straight lines with heat shields go on the supply and return connections as previously discussed. In the picture to the right, they are setting next to the original lines. They are the same length, so they are interchangeable.

Note: The old lines may be curved slightly from heat and age but that does not represent a problem when installing the new lines.



Figure-6

The remaining parts are the O-rings, pictured in the upper right corner of Figure 1. They form a seal between the manifold and the injector seat. It is highly recommended that you lubricate and install these into the housings when reassembling (more on this later). This picture shows the opening in the intermediate housing with the primary injector manifold removed and...



Figure-7

...one of the secondary openings on the lower intake manifold.



Figure-8

How To Install The OEM Fuel Line Upgrade Kit In 93+ Mazda RX-7s

By Dale R. Black

When inspecting and preparing to re-assemble everything, you may notice some remains of the original O-ring in the housing. Carefully dig it out with a small pick. If you see anything that looks suspect, try to remove the small plastic internal injector deflectors from the manifold, which are indexed so they can only be installed one way (check the FSM for additional clarification). The picture to the right shows one installed and one removed from the primary housing. The difference is more obvious when you're looking at it in person.



Figure-9

Here's what a deflector looks like when removed. Remember, it's plastic so be careful not to break it. If it will not come out easily, you probably have some O-ring debris bonded to the housing and will need to remove it before proceeding.



Figure-10

The O-rings are two different sizes; the ones with the smaller diameter (pictured resting on the manifold mount) are used for the secondary injectors, and...



Figure-11

How To Install The OEM Fuel Line Upgrade Kit In 93+ Mazda RX-7s

By Dale R. Black

...the larger, thicker O-rings (shown sitting on the bench), are used for the primary injectors. Remember to lube and install these in the housings, not on the injectors (use Vaseline™ or something similar). Also, torque the bolts using even increments to prevent accidentally pinching the O-ring.



Figure-12

The picture to the right shows the completed assembly, ready to be reinstalled. You may leave the banjo bolt end loose but doing so should not be a requirement. The tab end of the banjo bolt fitting locks against the top of the fuel manifold when torqued. Also as shown, the secondary injectors and covers are installed and the cover for the primaries is in the center of the picture, ready to be installed.



Figure-13

The remaining parts from the kit should be two of the spring clamps and the vacuum lines (should you choose not to install them). Everything else should be used. Good luck with your installation, and remember to play it safe and smart.