



# Miata Boost Upgrade Kit Installation Instructions

For Superchargers with old AFPR Fuel Management

FOR 1994-1997 Supercharged Miatas with Factory 1.8L Motors

PART # 999-165

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Tools required: 10mm, 12mm, 14mm, 14mm deep, and 17mm sockets, 13mm combination wrench, 5/16" nut driver, Phillips and flat blade screwdrivers, 4mm Allen wrench, Torque Wrench (6-12 ft-lbs), pliers, strap wrench, rags.

Read and understand these instructions before installing this kit.

## 1.0 SAFETY PREPARATION

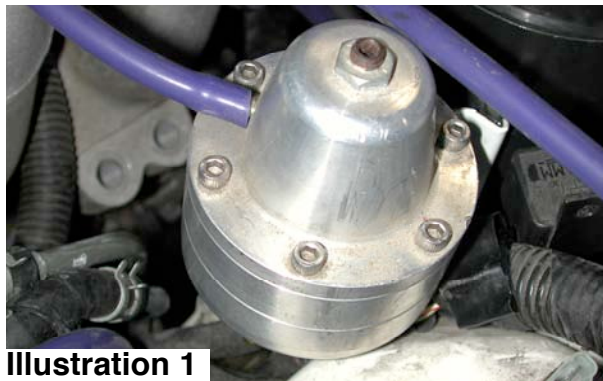
1.1 Do not perform the installation near open flame and do not smoke.

1.2 Remove the gas cap and then reinstall it. This is to relieve pressure in the fuel system.

1.3 Disconnect the negative battery cable. Caution: If you have a code stereo, make sure you know the code and make note of your pre-sets.

## 2.0 AFPR REMOVAL

2.1 The AFPR will no longer be needed once this kit is installed, so it will have to be removed. Illustration 1



2.2 Disconnect the vacuum and fuel lines connected to the AFPR from the vehicle. Leave the vacuum port open. It will be used later for the installation of the PowerCard vacuum line. Illustration 2



2.3 Remove the charcoal canister in order to gain access to the bolt holding the AFPR on. Using a 10mm socket, remove the mounting bolt and remove the AFPR and attached lines from the car and replace the charcoal canister. Illustration 3



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**Illustration 3 con't**

2.4 Reconnect the fuel lines to the stock configuration. Illustration 4



**Illustration 4**

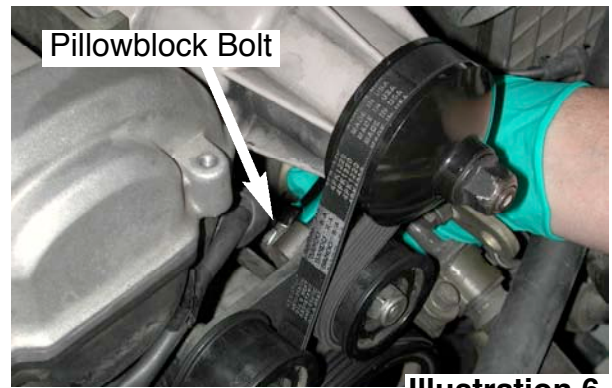
## 3.0 BOOST UPGRADE PULLEY

3.1 Using a 5/16" nut driver or a flat blade screwdriver, loosen the hose clamps holding the crossover tube to the supercharger outlet manifold and the dummy throttle body. Pull the crossover tube out and set it aside. If you have an intercooler type crossover tube, you can just set it on the top of the radiator without disconnecting the coolant hoses. Illustration 5

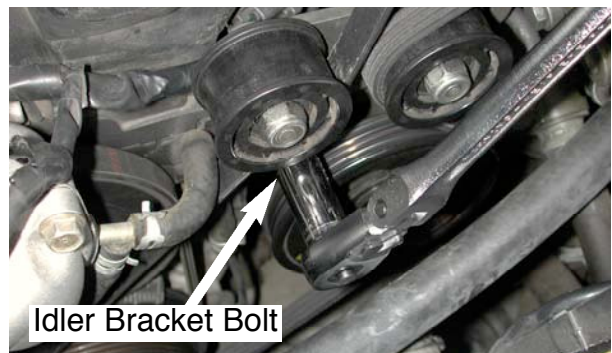
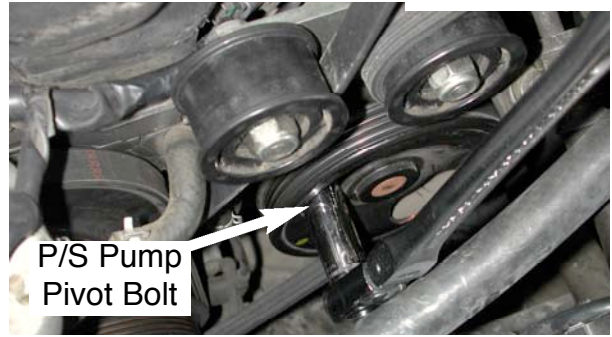


**Illustration 5**

3.2 The next step is to remove the supercharger belt. Loosen the pillow block bolt behind the idler pulley bracket using a 13mm socket, but do not remove. Then, using a 14mm deep socket, just loosen the power steering pump pivot bolt which holds the pump to the engine block. Loosen the idler bracket bolt using a 14mm socket, but do not remove. Then loosen the power steering bracket tensioner bolt using a 12mm socket, but do not remove. Ensure that the power steering pump and idler pulley bracket assembly are now free to move. To remove the supercharger belt, unbolt the driver's side idler pulley using a 17mm socket and pull the belt off with the pulley. This is also how the new belt will be reinstalled. Illustration 6



**Illustration 6**



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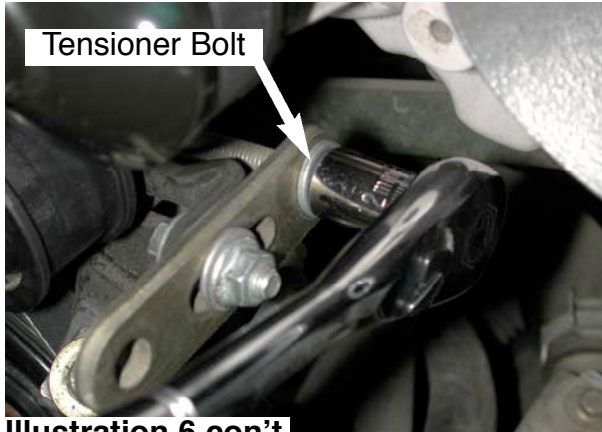


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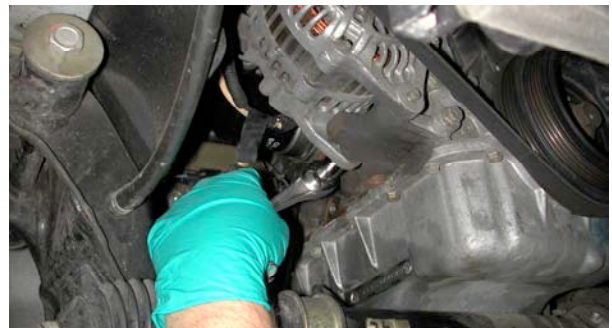


3.3 Once the supercharger belt is off, you must install the new water pump hardware. Loosen the three original water pump pulley bolts, but do not remove them. Loosen the upper alternator bolt, which prevents the alternator from sliding in the slotted tensioner bracket, using a 12mm socket. Then loosen the tensioner bolt using a 12mm socket and see if the alternator rotates freely. If not, the lower alternator bolt will have to be loosened.

Once the belt is loose, do not remove it. Remove the water pump pulley bolts and replace them with the M6x10mm button head cap screws included with the kit. Torque each bolt to 6-8 ft-lbs. Note: Though some of the photos are taken from under the vehicle, this install can be accomplished from above or below the car. Illustration 7



Illustration 7

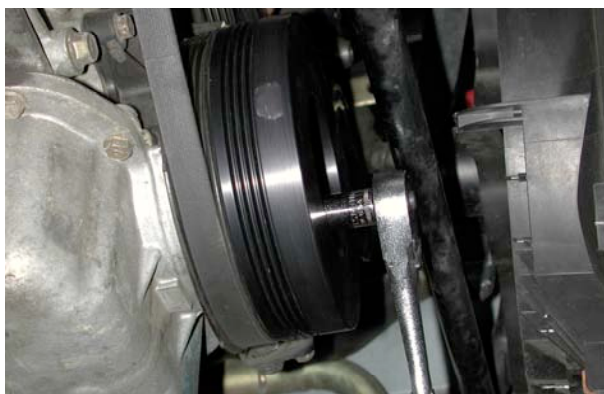
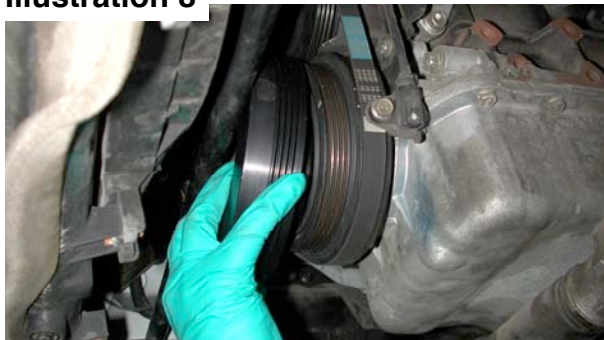


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3.4 After changing the water pump bolts, then comes installation of the boost upgrade pulley. Using a 10mm socket, remove the four bolts and large washer from the center of the stock crank pulley. Do not remove the crank pulley! Use a damp cloth to remove any built up dirt from the center surface of the pulley. Next, install the boost upgrade pulley over the stock crank pulley. Be careful to align the dowel pin with either of the smaller holes on the boost pulley. Then place the large washer over the boost pulley and install the four new pulley bolts and lock washers supplied. Tighten the bolts in a cross pattern to 10-12 ft-lbs. Illustration 8



Illustration 8



3.5 Once the boost pulley is installed, tighten up the alternator belt at the alternator tensioner bolt using a 12mm socket. Once tight, lock the alternator in place by tightening the upper alternator bolt using a 12mm socket. Use a 14mm socket to tighten the lower alternator bolt.

3.6 Now you can install the longer supercharger belt supplied. Wrap the belt in the same way around the pulleys as before. Install the previously removed Idler pulley with the belt wrapped around it in the proper manner. It will take a little effort to slip the idler back over it's bolt with the belt around it, but it can be done as long as the belt is in the grooves of the other pulleys and the slack is taken out. Tighten up the idler pulley with the 17mm socket and then tighten the tensioner bolt on the power steering pump bracket using a 12mm socket. Then tighten the pillow block bolt with a 13mm socket and the power steering pump pivot bolt with a 14mm socket. Finally, tighten the idler pulley bracket bolt using a 14mm socket.

3.7 Reinstall the crossover tube and tighten the hose clamps.

### 4.0 POWER CARD

4.1 From the kit, locate Jackson Racing "PowerCard". It will appear as a small black plastic box with 6 wires. Locate the factory Engine Control Unit (ECU) directly behind the passenger seat.

4.2 Locate the connector on the ECU closest to the passenger door. It will be a 26 pin connector. The fuel injector wires are located on the side of the connector closest to the passenger door. They are color coded, Yellow, Yellow/Black, Green/White, and Green. See the ECU Connector Diagrams attached to assist in locating these wires. Clamp a "T" Tap onto each of these wires. Plug the three gray wires and the one blue wire into these "T" Taps in any order. The Jackson Racing PowerCard establishes which injector is which and applies the correct duty cycle on its own.

4.3 Locate the White/Red wire in the ECU harness. This is the only White wire with a Red stripe. Also locate the correct solid Black wire using the appropriate ECU Connector

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Diagram for your year of car. Clamp a "T" Tap onto each of these two wires. Plug the red wire from the Jackson Racing PowerCard into the White/Red wire. This will be your system 12v power. Plug the black wire from your Jackson Racing PowerCard into the Black wire on the ECU. This will be your system ground.

4.4 You will need to route a hard plastic tube from the intake manifold to the Jackson Racing PowerCard in the interior. Be careful not to kink this tube during installation as it will give the PowerCard false pressure readings. To route the hard plastic vacuum pipe from the engine compartment to the card, you will need to route through the firewall and remove some interior panels to hide the line. The tube will connect to the intake manifold on the passenger side of the engine compartment where the AFPR Vacuum line was disconnected. Attach the PowerCard vacuum tube to this port using the 3/16 elbow. If for some reason this location is already in use, tap into another intake manifold vacuum source using the supplied 3/16 tee and elbow. Then route the tube through the hole in the firewall that is behind the windshield washer reservoir. Have someone watch from the interior with a flashlight as you route it in. When they see it, they can pull it through to the interior. Then it must be routed behind the interior trim. This can be accomplished fairly easily using a screwdriver. The preferred path is to run the tube behind the panel near the passenger's right foot, under the door sill trim, and then under the panel behind the passenger seat by the door jam. Once through, cut the tube to length and connect the vacuum tube to the PowerCard. Illustration 9



Illustration 9 con't

4.5. Using the Velcro supplied with the kit, attach the PowerCard to the face of the ECU. Leave the Velcro attached to itself and peel the paper off one side. Attach it to the PowerCard then peel the paper off the remaining side and position it on the ECU.

## 5.0 INSTALLATION COMPLETION

5.1 Check to make sure all electrical connections are properly plugged in and all fuel hoses are attached and clamped.

5.2 Extensive testing on our dynamometer has shown the best results are achieved with the ignition timing set at a MAXIMUM of 8 degrees BTDC using 91-octane fuel. If detonation is occurring, further retard the timing to eliminate the problem.

5.3 Reconnect the battery.

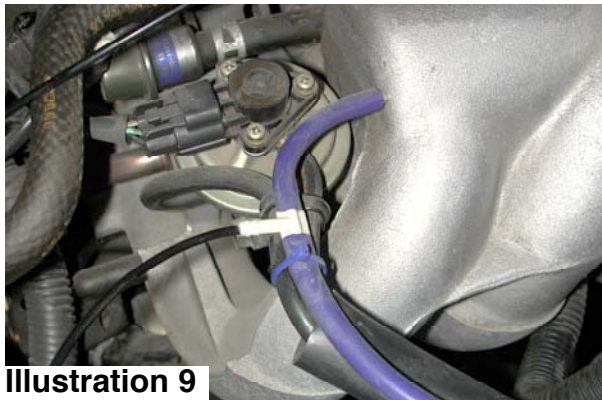
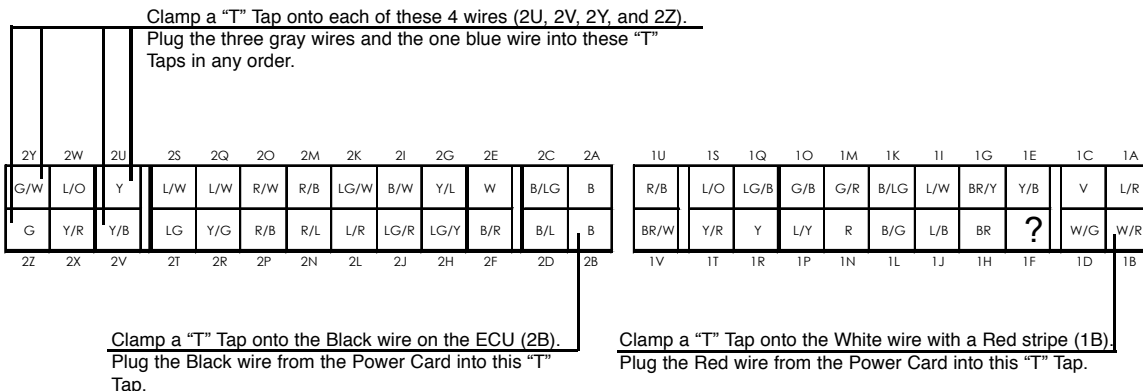


Illustration 9

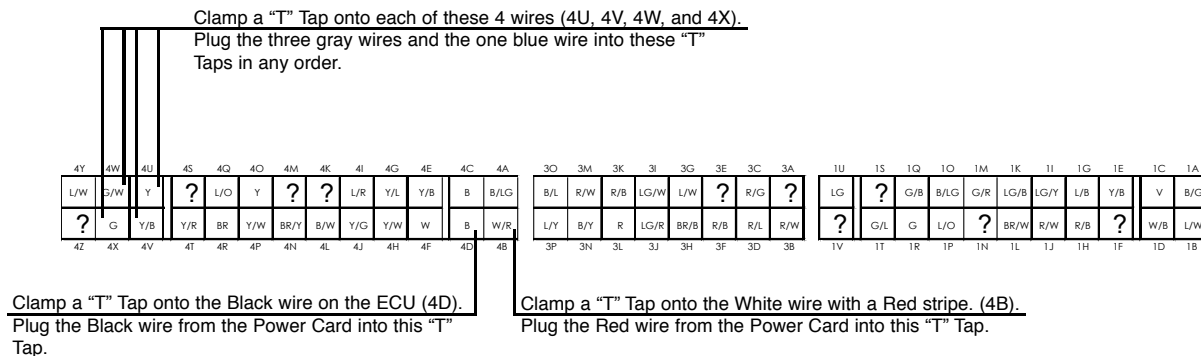
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## ECU Connector Diagrams

### 1994 – 1995 (OBDI) 2 Connector ECU



### 1996 – 1997 (OBDII) 3 Connector ECU



? Indicates empty pin