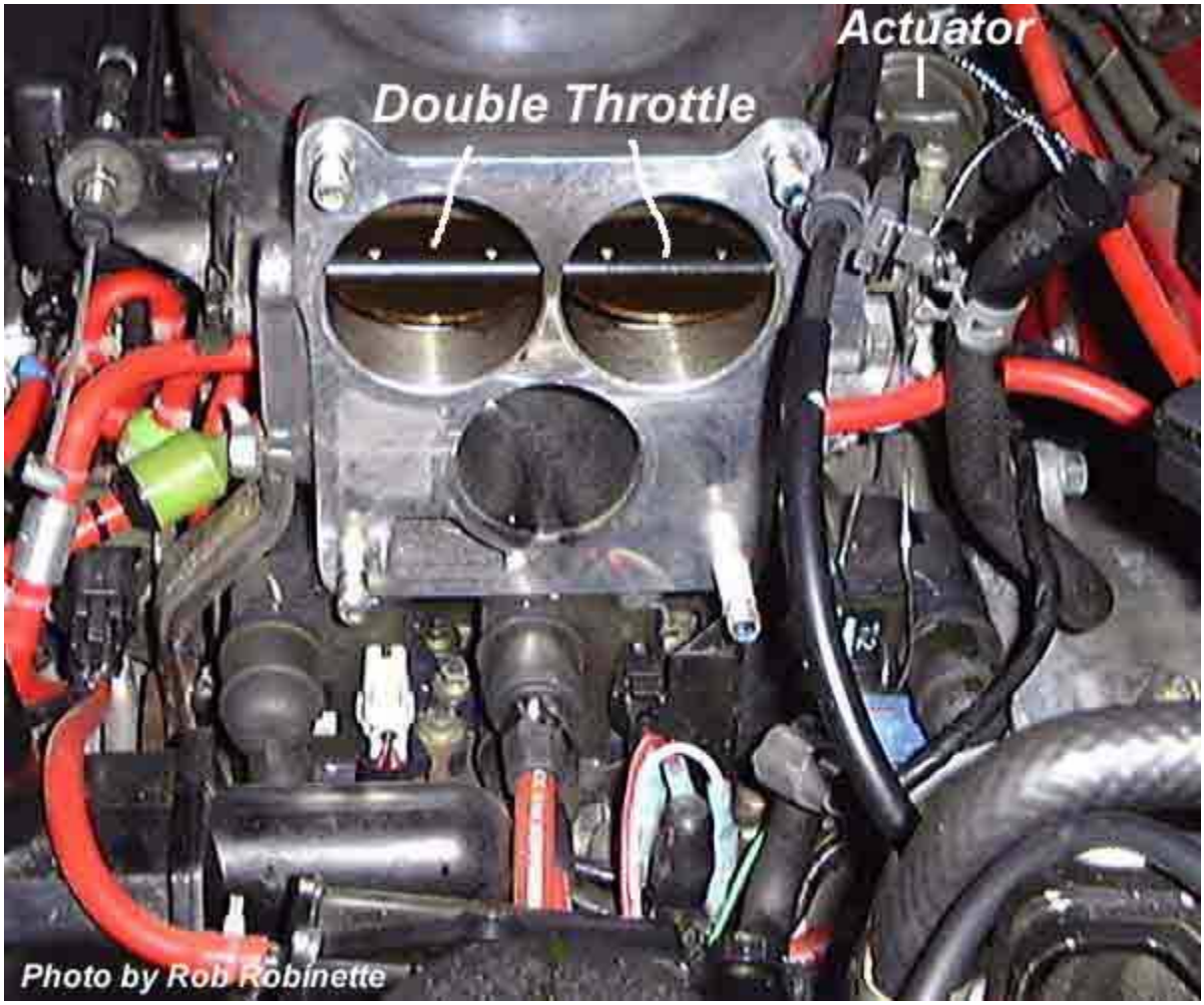
How to Disable or Remove the Double Throttle

By Rob Robinette

The double throttle prevents you from using too much throttle before the car has completely warmed up and can help prevent surging as you open the throttle. But it can also cause boost problems if it fails to fully open once the car has warmed up and it also constricts the intake tract. Many of us have disabled or completely removed it to clean up the intake tract (remove some restriction in the extension manifold). My car drove the same with it disabled as it did with it enabled so I decided to completely remove the butterflies. With the butterflies completely out my high RPM boost creep was higher than ever, so it did seem to increase airflow.

Disabling the Double Throttle

You can disable it by simply plugging the vacuum tube that feeds into the double throttle actuator on the extension manifold's firewall side. An easy temporary fix is to put a clamp style paper clip on the vacuum hose and see how you like it. You can of course remove the vacuum line that feeds the actuator. Be sure to plug the hose nipple on the extension manifold. Remember to take it easy on the throttle until the car is fully warmed up.

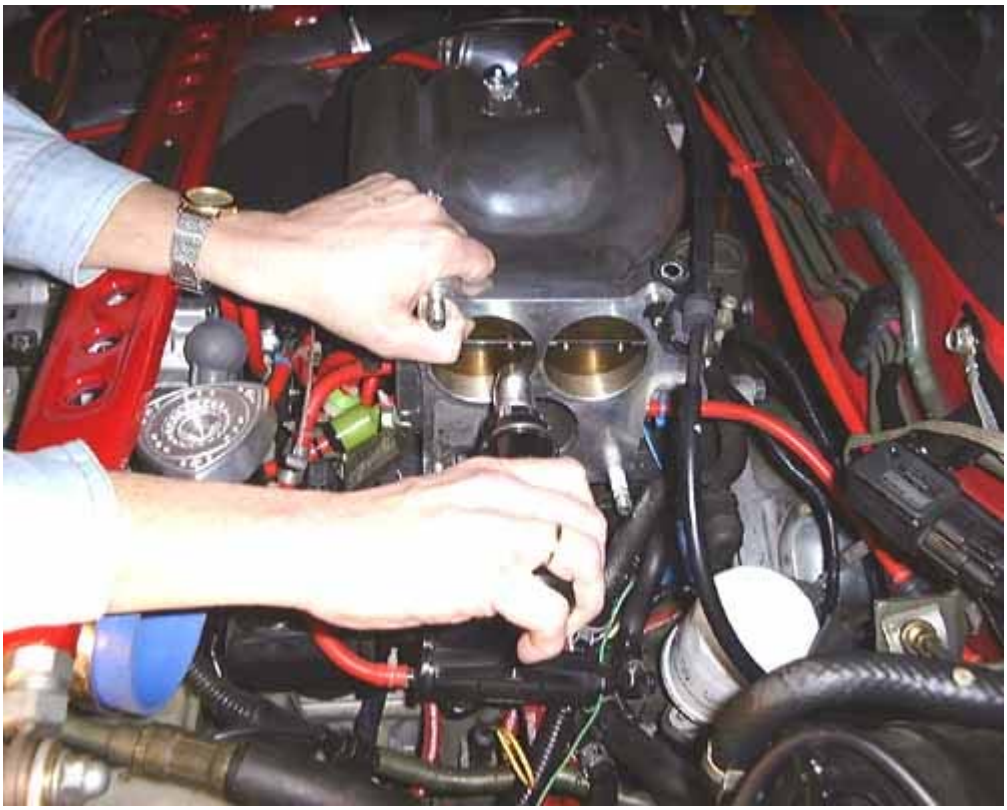


Double throttle butterflies (copper colored), and actuator (top right)

Removing the Double Throttle

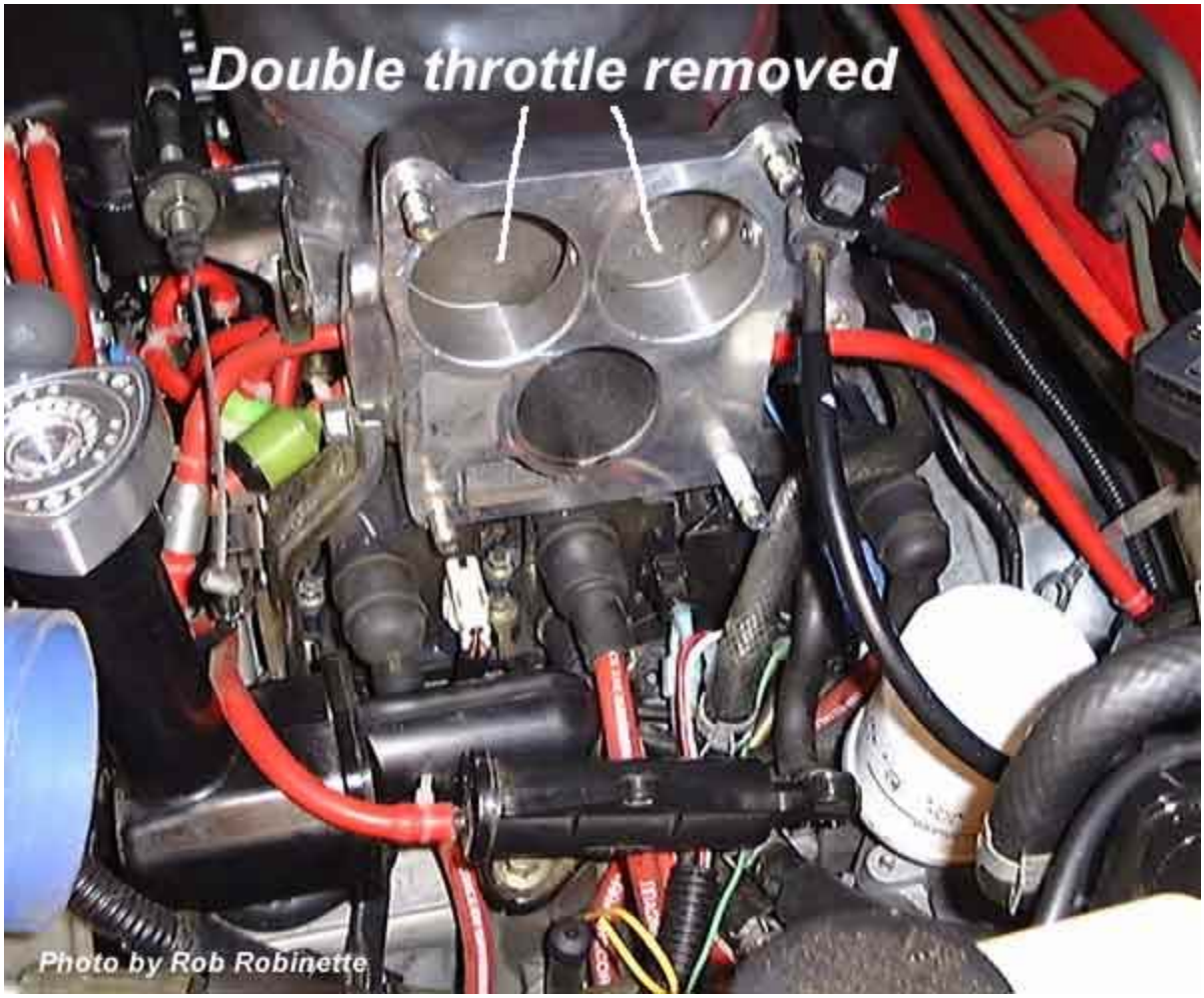
I liked the way the car drove with the double throttle disabled so I decided to follow the lead of some other RX-7 enthusiasts and remove the double throttle butterflies.
You have to remove the intake elbow and throttle body. See the Extension Manifold Removal How To for help removing the throttle body.
Note: Mazda changed to a metal gasket between the throttle body and the extension manifold. My original, paper gasket ripped when I removed the throttle body.
It is possible to remove the double throttle while leaving the extension manifold bolted to the engine, but it's difficult and you will have to cut the double throttle shaft that the butterflies are screwed to in order to get it out. If you want the option of reinstalling the double throttle

you'll have to pull the extension manifold off. This is also a good time to remove the coolant flow to the throttle body and change the plug wires.



Removing the screws with an impact screwdriver (not my hands)

Once you have the throttle body off, use an impact type screwdriver to remove the 4 screws holding the butterflies in place. The rear of the screws have been flattened to lock them in place (you don't want a screw coming loose and going into the engine).
Note: Ryan Schlagheck had to drill his screws out, see his write-up at the end of this how-to. I had my wife hold the butterflies closed while I beat the hell out of the screws. This will take time because the impact will have to be used until the screws are almost all the way out. Be careful and don't strip the screws. When the screws are out the butterflies slide out of the shaft. Remove the 10mm bolt on the firewall side of the extension manifold that holds the double throttle actuator and butterfly rod. You can then slide out the butterfly shaft. If the manifold is still on the engine you'll have to pull the shaft out as far as it will go, then cut the shaft close to the manifold using a hacksaw or a Dremmel tool with a cutting disk. After you cut the shaft remove the rest of it.



Butterflies removed, note the small bolt sealing the shaft hole

I sealed the shaft hole by filling it from the inside with silicone sealant. I then put some more silicone on a small 5/16" bolt and washer and inserted them into the hole from the inside. I put some Locktite on the end of the bolt, slipped on another washer and then the nut on the firewall side of the hole and tightened it up. I cleaned up the excess silicone on the inside and added some more Locktite to the outside end of the bolt after I tightened it (you don't want this bolt to come loose). To minimize airflow blockage and turbulence I ground off most of the bolt's head before I installed it.
Make sure there's no debris in the extension manifold and bolt the throttle body and intake back up and enjoy your cleaner flowing intake.

One thing I noticed about the removal of my secondary butterfly plates was that the screws that you chose to remove with an impact screwdriver were mushroomed on the other side on my intake plenum, thereby making backing out of the screws impossible. Your model may vary but people pondering this mod should be aware that they may have to drill through the plates at the screws if the head is mushroomed. I speculate that the screws are mushroomed

to prevent the constant heating and cooling action from slowly backing out the screws and falling into the intake tract. My vehicle is a '94 Touring, so the '93's may have had a different secondary plate setup.
I chose a drill bit slightly larger than the shaft of the screw (the head is larger so you'll end up drilling that out like you would a sheared bolt) and then I slid the plates out from the center of the rod, pulled out the rod and replaced the hole in the plenum with an aluminum hex bolt (basically the same as you did).
I also recommend that you remove the intake plenum altogether, to prevent bits and pieces of metal filings from falling into the lower intake plenum.