

Thermal Spacer Installation/IM Removal Procedure

Tools Needed:

1/4" Drive Ratchet
3/8" Drive Ratchet
3/8" extensions (3in, 6in)
1/4" extensions (3in, 6in)
Needle Nose Pliers
Crescent Wrench
17 mm socket
14 mm socket
12 mm socket
10 mm socket
Magnetic Pickup
Masking Tape

Quick Tips:

- When putting bolts back in you may find it difficult to hold them and reach the holes at the same time. This can be made very easy by wrapping the head of the bolt with 1-2 layers of masking tape. This will cause the bolt to fit tightly in the socket and allow you to guide it in easily.

-Use a magnetic pickup to remove bolts you've loosened from these holes. This will reduce the likelihood of dropping them down into the engine bay area.



First, disconnect the negative terminal of your battery. Next, remove your strut brace by removing the 4 17mm nuts that hold it on. Then proceed to remove all intake components from the throttle body out. Then proceed to use the crescent wrench to remove the large nut holding the EGR tube onto the EGR nipple on your header or exhaust.



Next, using a 14mm socket remove the two bolts that attach the support bracket to the bottom the intake manifold.



To remove the intake manifold you need to remove 2 nuts and 5 bolts. All of which are 12mm. locations of these nuts and bolts can be seen in the above picture of a manifold that has been removed from the vehicle.



Bolt 1: Using the 3/8's drive with a 6" extension and a 12 mm socket, go under the fuel rail between the #1 and #2 injector to remove the bolt there.



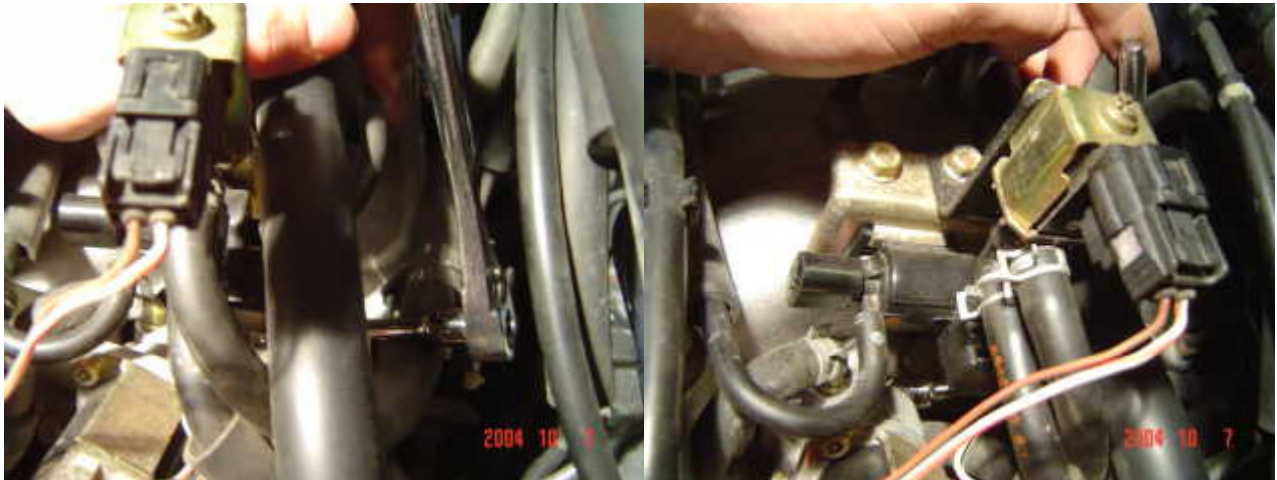
Bolt 2: Using the 3/8's drive with a 6" extension and a 12mm socket, go under the fuel rail between the #3 and #4 fuel injector to remove the bolt there.



Bolt 3: Using the 1/4" drive with both the 6" and the 3" (or one 9") extension and a 12mm socket, go under the VTCS/VICS solenoids between the runners of the manifold to access the bolt there.



Bolt 4: Using a 1/4" drive with a 6" extension and a 12mm socket you can reach through with extension between the loop of the runner to reach the bolt. If you look down through the opening in the runners that is just below the FPR (the dark green barrel with the single hose that you see at the top of the right picture) you can see where the bolt is to guide the ratchet in to this bolt.



Bolt 5: Again using the 1/4" drive with the 6" extension, you can feed the extension and the socket in above the EGR valve through a small opening to reach the bolt hidden back there. Again you look down from the top through a small opening to guide yourself to the bolt.



Nut 1: Using the 3/8" drive with a 3" extension and a 12mm socket you can reach the nut on outside edge as is shown in this picture.



Nut 2: Using the 3/8" drive and a 6" extension with a 12mm socket you can reach the nut on manifold located just under the fuel rail pulse dampener as is see in the picture above.

Having removed these nuts and bolts it is recommended that you put them in a ziploc bag and them so that you do not lose them.

Then proceed to disconnect connectors and hoses to allow you to free the IM completely.

Not necessarily a complete list:

Hoses:

-Disconnect the two coolant hoses that run to the throttle body at the TB. If you want to do a coolant bypass remove the upper hose completely and then connect the open end of the lower hose to the nipple near the engine that you just removed the other hose from. Then use the provided vinyl caps to cover the two open nipples on the TB.

-A small vacuum hose will run to the very lower back passenger side of the IM. Locate this hos and remove it.

-Remove the PCV valve and the hoses associated with it.

Components:

-Remove the VICS and VTCS solenoids (the white and green connectors at the middle of the IM and set them aside safely as they can become damaged during handling of the manifold.

-Remove the purge solenoid shown in the picture below to ensure that it is not damaged during handling of the manifold



Connectors:

-Disconnect the connectors from the purge solenoid (seen above), the EGR solenoid (large black canister with the metal bracket around it, just down and to the right of the purge solenoid as seen above), and from the TPS sensor on the throttle body.

Note: There may be additional hoses, connectors, and wires that are not mentioned above that need to be removed to allow for removal/repositioning of the intake manifold. The above list is meant as a general guide to the majority of necessary items to be concerned with. This document will be updated with user feedback over time to ensure the most accurate guide possible, but should never be considered to be a comprehensive article.

With the above connections and hoses removed the intake manifold should be somewhat free to be repositioned.

The EGR tube will limit the motion of the intake considerably. If you like you can attempt to remove the tube completely, but reaching the fitting on the manifold that the EGR tube connects to can be very difficult. You can safely bend the EGR tube small amounts as necessary for repositioning.

You can remove intake manifold with the EGR tube still attached. To do so, you need to remove several brackets and coolant hoses on the driver's side of the motor. With these removed you can get the EGR tube to be guided back and eventually projected out at an angle toward the battery enough that the manifold can be rotated and lifted out of the engine bay.

This is not necessary for installation of the thermal spacers.

If at any time you feel that the intake manifold is catching, review it carefully to ensure that additional hoses and connectors were not missed.

Putting Your Spacer On

With the intake manifold free, it should be possible to slide it back far enough that it clears the studs. With the manifold pushed back orient your spacer such that it matches the stock gasket. Slide the spacer over the studs and replace the manifold. You can then re-install all hardware & connections and torque to the low side of the factory specs.

It is important that you visually check all surfaces of the gaskets such that they are free of dirt and debris. If you damage any spacer or gasket you should replace it. Getting a tight seal between the head and the intake manifold is important or you will have a vacuum leak that can cause problems with your vehicle.

You can replace the factory gasket if you wish with a new one while you are doing this install. However, they are very hard to remove due to the use of a thermally activated adhesive. Proceed at your own discretion.

Ultimately YOU are responsible for ensuring that the seal created with your installation of the spacers is adequate and secure. NSN Motorsports is not responsible for any leaks or problems sealing due to the installation of this spacer.

