Performance Thermal Intake Spacers

Installation Procedure

2002 - 2008 Nissan Maxima 3.5L

Instructions can also be used for most other FWD Nissans with the 3.5L motor

Disclaimer: These spacers should only be installed by a qualified mechanic. If you decide to do the install yourself, please read everything and make sure you understand everything before beginning. NWP Engineering is not responsible for the content of these instructions. This write-up is to be used only as a guideline to help you during the installation process. Refer to the correct Factory Service Manual for the most accurate and up to date information. NWP Engineering shall have absolutely no liability relating to the use, non-use, improper use, installation or removal of this product. This product is not intended for use on public roads and is not DOT approved. Please use common sense and ask a qualified mechanic if you have any questions. Also, feel free to contact us if you need help!

Pic 1

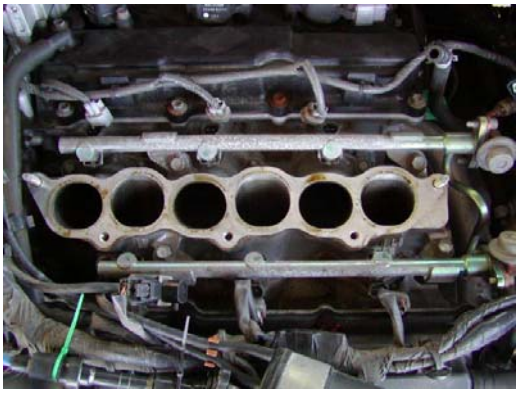
Note: If you have done any port work to your manifold, some minor porting on the spacers may be necessary. **CAUTION:** Wear a suitable respirator or mask when porting or sanding the phenolic spacers! If inhaled, the dust can hurt you!

Note: These spacers are designed to be installed without using any OEM gaskets. RTV silicone sealant is to be used to prevent intake leaks on all mating surfaces. If your engine is force inducted above 6psi of manifold pressure, it is recommended to use Permatex 1 Minute Gasket (Item #25229) instead of Black RTV.

Tools/Materials Needed: Basic Metric Socket set, Basic Metric Open-Ended Wrench set, Metric Allen Wrench set, Pliers, Flathead and Phillips screwdriver, Torque Wrench, E8 External Torx Socket (optional), Permatex Ultra Black RTV Silicone Gasket Maker (598B) or 1 Minute Gasket (25229), Shop Vacuum for removing dirt in engine valley

Estimated Labor Time: 2-3 hours

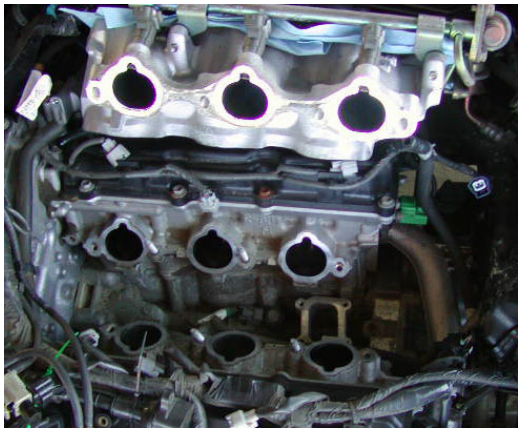
Pic 2



Pic 3

CAUTION: DO NOT attempt to open the throttle body plate manually with your fingers!
This can result in a misalignment of the throttle body and can prevent the engine from idling properly.

1) Unplug Negative Battery Cable
2) Remove Engine Cover and Disconnect Intake Air Tube from Throttle Body **(Pic 1)**
3) Unplug the Drive-By-Wire Throttle Body Connector
4) Unplug the blue EVAP solenoid connector and make sure it's free from the UIM
5) Unbolt VIAS tank and solenoid from Upper Intake Manifold (UIM)
6) Disconnect all the vacuum and breather hoses you see connected to the UIM
7) Undo the two coolant hoses on the bottom of the Elbow near the Throttle Body and install the coolant bypass fitting, connecting the IN and the OUT coolant hose. Leave this fitting permanently installed in order to further reduce intake manifold temps.
8) Unplug the two connectors on the backside of the UIM and unbolt bracket from UIM **(Pic 2)**
TIP: Use small screwdriver to release male connector from bracket in order to separate from UIM.
9) Unbolt power steering hose bracket from elbow if needed by using a 12mm socket
10) There is a support bracket below the Elbow near the firewall.
REMOVE THIS BRACKET COMPLETELY and leave it off the motor. The UIM will not bolt back up if the bracket is left in place with spacers installed.
11) **(For years 04-06)** Unbolt the EGR by removing the two lower bolts, then the two upper nuts. Leave the EGR temp sensor attached to the tube.
12) **(For years 04-06)** Unbolt the EGR bracket strap from the backside of the UIM on the passenger side. There is one bolt holding that bracket in place.
13) Make sure that nothing is still connected to the UIM



Pic 4

14) Unbolt the 3 bolts and 2 nuts securing the UIM to the Lower Intake Manifold (LIM)
TIP: It may help to remove the 4 fuel rail bolts for a little extra wiggle room. Just BE CAREFUL not to move the fuel rail too much or you could damage the injectors!
15) Carefully lift it straight up and remove the UIM, Elbow, and TB all together. **(Pic 3)** **Do not scratch the mating surfaces!!**
16) Cover the intake ports on the LIM immediately with lent free rags
17) Unplug the injector connectors
18) Look closely in the valleys where the LIM meets the heads. You should see a lot of dirt in there that has collected over the years. Get a shop vacuum and remove all this dirt before removing the LIM to prevent debris from falling in the heads.
19) Unbolt the 8 bolts on the LIM
20) Carefully lift the LIM straight up and set it on its side on the rear valve cover as shown below. There should be plenty of slack in the fuel rail hose in order to lift the LIM with the fuel rails still attached. **Make sure nothing drops into the heads!** **(Pic 4)**

CAUTION: If you drop something down in one of the ports on the heads, you've got a BIG problem!

21) Carefully wipe the ports on the heads and the bottom ports on the LIM to remove any dirt or oil from the edges of the ports. Also, wipe the NWP Spacers clean as well.

22) Cover the ports on the heads with lent free rags to prevent anything from falling in the heads.

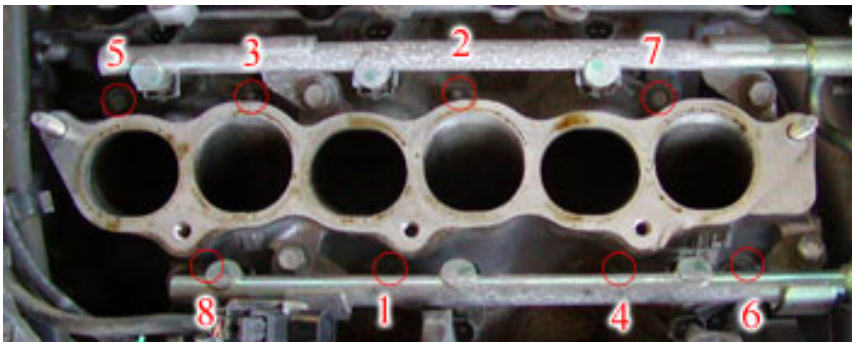
23) Apply RTV to both sides of the 1/16" phenolic LIM spacer as shown. **(Pic 5 & 6)**

Pic 5

Pic 6

Note: If you apply too much RTV, it will squeeze out and obstruct the intake ports when you torque down the manifold bolts. Use extra caution to make sure each port has a consistent application of RTV without any breaks to prevent any intake leaks. The best method is to apply a little RTV to your finger and carefully smear it around each port. Once the RTV is applied around each port, make sure the inside of the port on the spacer is clean. You don't want RTV obstructing the airflow.
Only a consistent, paper thin coating of RTV is needed! Make sure it goes completely around each intake port without any breaks.

24) Press the phenolic LIM spacers firmly onto the bottom of the LIM and make sure the intake ports properly line up. Look to see if RTV squeezes out in the intake port.
25) Repeat steps 23 and 24 for the other 1/16" LIM spacer.
26) Carefully lower the LIM in place and make sure the spacers have not moved from their position. You want the intake ports to line up perfectly or airflow will be hindered!
27) Bolt down the LIM with the bolts that came on the motor and first tighten all bolts and nuts to **4 to 7 ft-lb** (48-84 in-lbs) in numerical order as shown. Then, tighten all bolts and nuts to **20 to 23 ft-lb**. **(Pic 7)**
Check all bolts at least 3 times in numerical order to confirm proper torque!
TIP: If you loosened the fuel rail bolts for extra room when tightening the LIM, then make sure you torque these 4 bolts to 16-19 ft-lbs IN ORDER starting from the bolt closest to the driver's side of the engine bay.

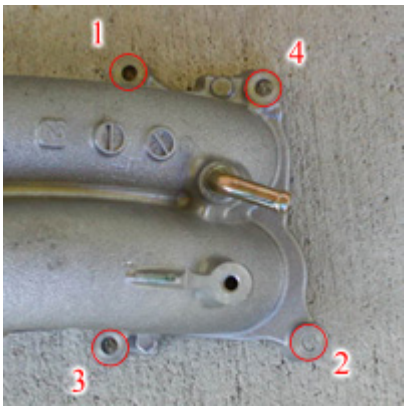


Pic 7

CAUTION: Do not confuse "ft-lbs" with "in-lbs"! Damage to expensive parts can result!

28) Cover the top of the LIM to make sure nothing falls inside the ports.
29) Remove the Throttle Body from the Elbow.
30) Apply RTV on both sides of the TB spacer.
31) Firmly press the spacer on the Elbow and make sure the port **and** bolt holes line up perfectly. If they don't, you have the spacer upside down.
32) Use the 6x60 SHC Throttle Body bolts included in the kit and tighten all bolts to **5 to 7 ft-lb** (60-84 in-lbs) in numerical order as shown. **(Pic 8)**
Check all bolts at least 3 times in numerical order to confirm proper torque!
33) Now, unbolt the Elbow from the UIM.
34) Apply RTV on both sides of the Elbow spacer.
35) Firmly press the spacer on the UIM and make sure the ports line up perfectly.

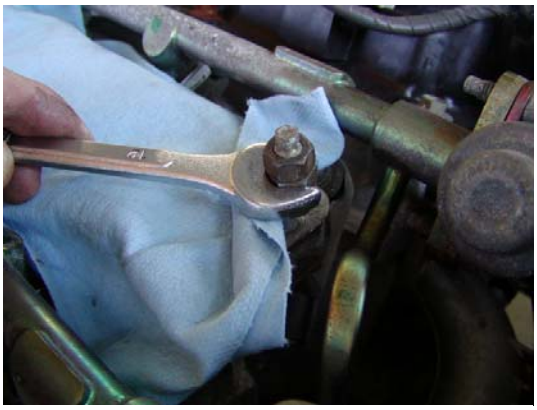
Pic 8



Pic 9

36) Use the 8x35 Hex Elbow bolts included in the kit and tighten all bolts to **13 to 15 ft-lb** in numerical order as shown. **(Pic 9)**
Check all bolts at least 3 times in numerical order to confirm proper torque!

37) Remove the two studs on the LIM. The easiest method to removing these studs is to use an E8 external torx socket. If not available, tighten two nuts together on the stud as shown. Once tight enough, you can use an open-ended wrench on the bottom nut in order to unscrew the stud. **(Pic 10)**
38) Install the two lengthened studs that are included in the kit using two nuts as explained in Step 37. Torque these studs to **7-8 ft-lbs** (84-96 in-lbs).



Pic 10

CAUTION: **DO NOT** over torque these studs or you can crack the manifold!

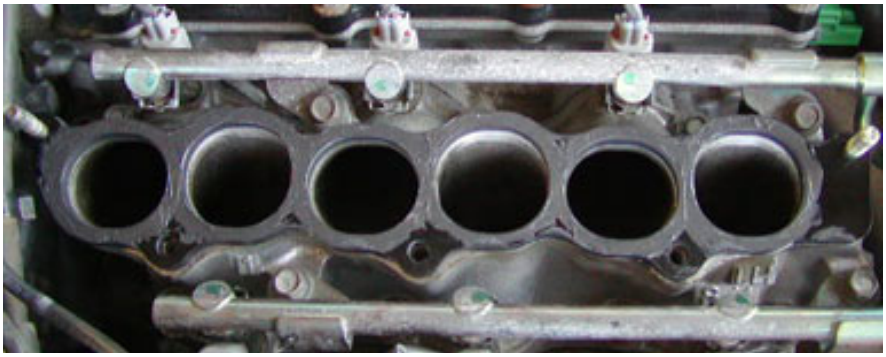
39) Apply RTV on both sides of the UIM spacer.
40) Firmly press the spacer on the LIM and make sure the ports line up perfectly. Do not allow the Spacer to slide around once it is in position. **(Pic 11)**
41) Carefully place the UIM, Elbow, and TB back on the engine.
42) Use the 8x35 Hex UIM bolts included in the kit and tighten all bolts to **13 to 15 ft-lb** in numerical order as shown. **(Pic 12)**
Check all bolts at least 3 times in numerical order to confirm proper torque!
43) **(For years 04-06)** Install the EGR tube and tighten all bolts/nuts to **12 to 13 ft-lb**
44) Follow the instructions in reverse order. Connect all the vacuum and breather hoses back in their same position. Connect all the electrical connectors that were unplugged and make sure everything is assembled the way it was when you started. **But, permanently remove the intake manifold support bracket that was on the backside of the Elbow!**
45) After everything is together again, perform the "Accelerator Pedal Released Position Learning" and the "Throttle Valve Closed Position Learning" procedure if you are experiencing any issues out of the normal (I.E. Delayed Throttle Response, High or Low Idle, etc)

Accelerator Pedal Released Position Learning Procedure

1) Make sure the accelerator pedal is fully released.
2) Turn ignition switch ON and wait at least 2 seconds.
3) Turn ignition switch OFF and wait at least 10 seconds.
4) Turn ignition switch ON and wait at least 2 seconds.
5) Turn ignition switch OFF and wait at least 10 seconds.

Throttle Valve Closed Position Learning Procedure

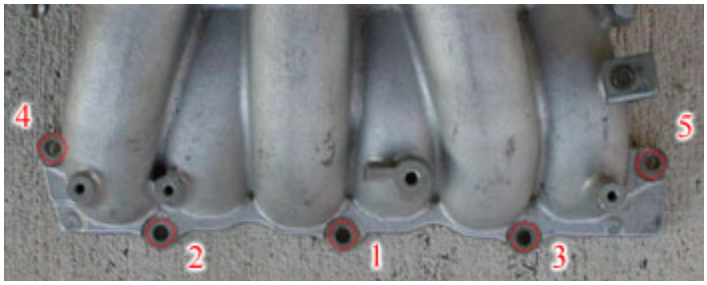
1) Make sure that accelerator pedal is fully released.
2) Turn ignition switch ON.
3) Turn ignition switch OFF and wait at least 10 seconds. Make sure the throttle valve moves during the above 10 seconds by confirming the operating sound.



Pic 11

CAUTION: Make sure the RTV you applied on the spacers has been sitting for at least **one hour** before starting the engine. This allows the silicone sealant to properly setup to prevent any intake leaks.

Note: If you experience a high or erroneous idle or any drivability issues, then perform the "Idle Air Volume Learning" procedure below. A stopwatch or clock with second hand will be needed to ensure you adhere to the proper timing specified in the directions below.



Pic 12

Idle Air Volume Learning Procedure
Before performing this procedure, make sure that all of your electronics are OFF including your radio, headlights, all interior lights, AC, AC/Heater Fan, rear defroster, and any aftermarket electronics such as speaker amplifiers, power inverters, and cell chargers.

Also, make sure these conditions are met if you are having problems successfully doing this procedure:
Battery Voltage: More than 12.9V (at idle)
Engine Coolant Temp: 158-212 degrees F
Automatic Shifter: In Park
Steering Wheel: Straight Ahead Position
Vehicle Speed: Stopped
Transmission: Warmed-up (usually requires a 10 minute drive)

1) Start engine and warm it up to normal operating temperature.
2) Turn ignition switch OFF and wait at least 10 seconds.
3) Confirm the accelerator pedal is fully released, turn ignition switch ON and wait 3 seconds.
4) Repeat the following procedure quickly 5 times within 5 seconds.
    1) Fully depress the accelerator pedal.
    2) Fully release the accelerator pedal.
5) Wait 7 seconds, fully depress the accelerator pedal and keep it for approx. 20 seconds until the MIL stops blinking and turned ON.
6) Fully release the accelerator pedal within 3 seconds after the MIL turned ON.
7) Start engine and let it idle.
8) Wait 20 seconds.
9) Rev up the engine two or three times and make sure that the idle speed is normal (550-725 rpm).

Troubleshooting: If you are still experiencing problems, check for any intake leaks around the Spacers, intake tube coupler, and any breather/vacuum hoses. There should be RTV on both sides of every Spacer. Also, if your tachometer needle moves up and down while idling, then you probably have a leak somewhere. Once everything appears to be installed correctly and there are no leaks, if your idle speed is still high, you may unplug the negative battery terminal for at least 8 hours. This will allow all the memory to drain from the ECU. Then, when you plug your battery back up, it is forced to do an Idle Air Relearn procedure from scratch without any prior memory stored as soon as you crank the engine.