How to Pull the Z32 Plenum and Bypass the Plenum Water Hoses

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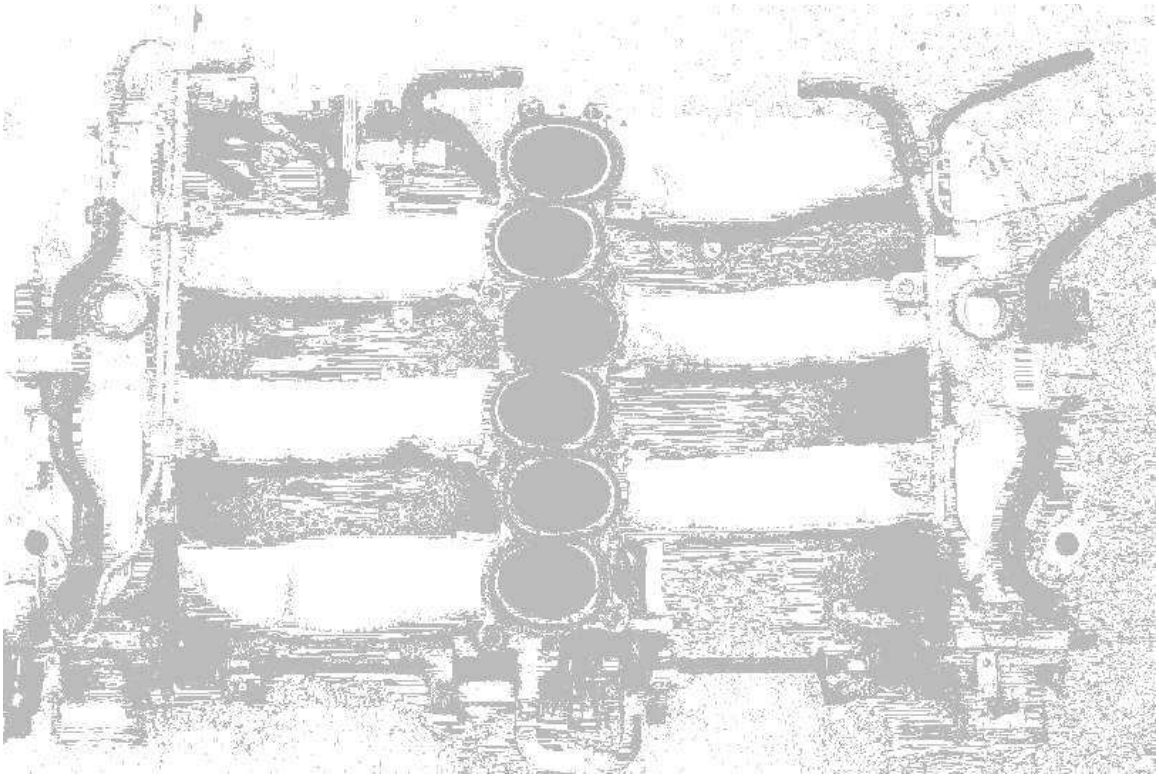

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The Z32 upper intake plenum covers the entire top portion of the VG30DE and VG30DETT engines. The plenum consists of two throttle body mechanisms on either side of the intake chamber and several electronics devices bolted onto the rear and left sides. Each throttle body feeds the cylinders on the opposite side, while the balance tube equalizes pressure amongst the different halves. The electronics devices allow idle adjustments as well as emissions controls.

On the bottom side of the plenum, Nissan has engineered some throttle body water hoses with reasons yet to be confirmed. Some have concluded that the hoses were put there to prevent the throttle body butterflies from freezing in colder climates. While many have yet to see the advantages of having these water hoses, some owners have viewed the hoses as an expensive and troublesome system and chose to remove them.

While the plenum has its purpose, it is bulky and as mentioned above, it covers the entire portion of the engine. To access the fuel injectors for replacement or upgrading or to access the valve covers, the plenum must be removed first.

Once the plenum is removed, some owners choose to bypass the throttle body water bypass hoses. If the said owner does not live in such cold climates, bypassing the hoses may be a wise decision. Doing such will not only allow for less places of coolant leaks, but also allow for an easier plenum removal at a later date. On the financial standpoint, the water hose bypass technique will save the owner a couple hundred dollars in O.E.M. pre-formed hoses.

Tools Required for Plenum Removal

In order to properly remove a plenum, the following tools are required:

- 8mm socket, 10mm socket, 12mm socket, 12mm deep socket
- ratcheting driver for the sockets
- 8mm wrench, 10mm wrench, 14mm wrench
- 5mm allen wrench
- flex joint (universal joint)
- long needle nose pliers
- screwdriver (different sizes) for prying connectors, etc.

If you have a 10mm carburetor wrench, you can use that instead of the 8mm socket and flex joint combination.

And because the plenum gasket is made out of paper, anytime you remove the plenum, you should replace it with:

- upper plenum gasket (Nissan part number 14033-30P02)

If you decide to bypass the throttle body water hoses, you will need:

- 4 feet of 6mm fuel line or water hose
- 3 feet of 6mm vacuum line
- 2 feet of 4mm vacuum line

Other Things to Consider While Doing Plenum Removal

- chroming/powercoating/polishing the plenum
- porting the upper plenum chamber
- replacing or eliminating the throttle body bypass hoses
- replacing the Idle Air Adjusting unit (and gasket)
- upgrading fuel injectors
- replacing the lower fuel lines (or all the fuel lines)
- PCV valve and hose replacement
- fuel filter replacement

NOTE:
This procedure was written by removing the plenum off of a VG30DETT, and assumes all other emissions controls systems are intact. Although there are few differences, the procedure for the VG30DE is very similar.

Plenum Pull Procedure (Preparation stage)

Because the VG30DE and VG30DETT engines have so many parts on top of the plenum, it is necessary to remove these items before the actual plenum can be removed.

1. It is of the utmost importance that you purge the fuel system as found on **TwinTurbo.net** at the following address:

   http://www.ttzd.com/tech/fuelfiltertech.html

2. Continue to remove the fuel lines as stated from the link and disconnect the vacuum lines for the FRPR system
3. Remove the throttle cable cover (4 x 5mm allen wrench)
4. Unbolt the ASCD (cruise control) unit and remove its cable (2 x 10mm socket, 8mm wrench, 14mm wrench) from the throttle linkage
5. Remove the throttle cable (8mm wrench and 14mm wrench) and swing it out of the way
6. Remove the brake assist and clutch assist vacuum lines
7. Remove the balance tube (5 x 12mm socket)
8. Remove the fuel rails along with the Fuel Pressure Regulator and Fuel Damper (5 x 10mm socket)
9. Disconnect the passenger's side wastegate connector, O2 sensor connector, and passenger side vacuum gallery

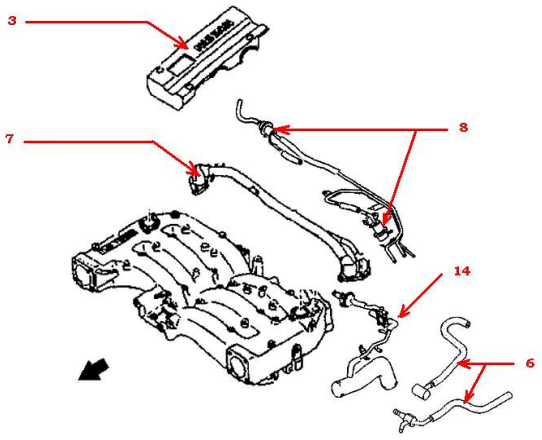

Figure 1: Plenum Removal Preparation

10. Disconnect all the coil pack connectors (for cylinders 1, 2, 3, and 5) and all the fuel injector connectors
11. Disconnect the connectors for the air regulator and detonation sensor (rear middle of the plenum)
12. Swing the entire harness out of the way with the AIV solenoid (if it exists) and EGR solenoid (if all the disconnections were done properly up to this point, the entire harness should swing out of the way to the driver's side fender)
13. Finish disconnecting the coil pack connectors (cylinders 4 and 6) and the electrical connectors for the IAA unit, AAC unit, and the throttle position sensor (now you can swing that portion out of the way)

14. Unclamp and remove the crankcase ventilation hose/pipe assembly that runs from the IAA unit on the rear of the plenum to the turbo compressor hard pipe
15. Remove the four intake pipes (shown in blue in Figure 2) from the front of the plenum (8 x 10mm) (this step can be done at any time)

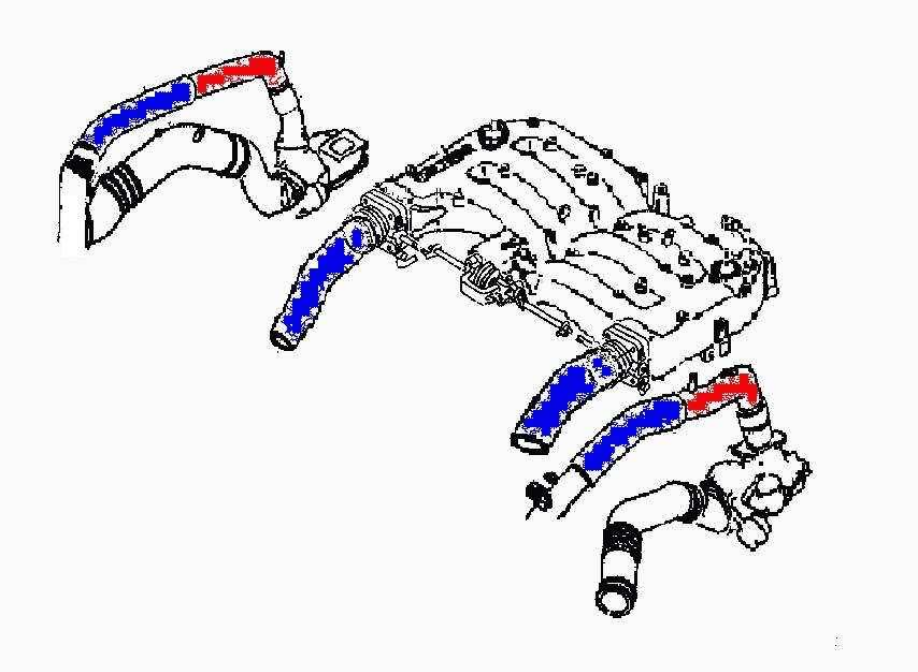

Figure 2: Intake Piping

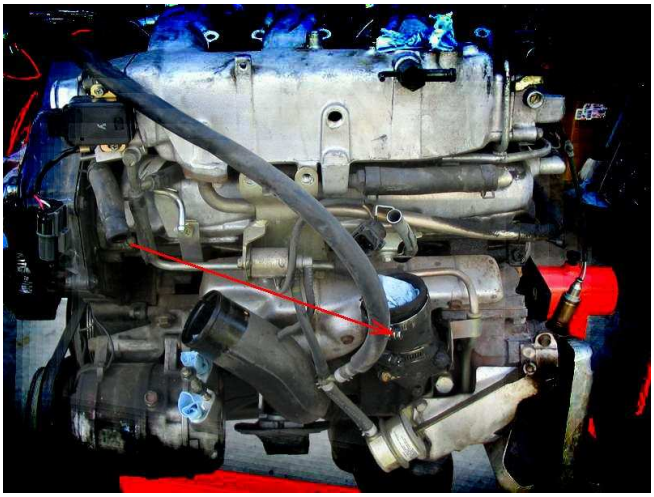

Figure 3: Driver's Side 8mm Clamp

Figure 4: Passenger's Side 8mm Clamp

16. In order to unbolt the EGR tubes at a later step, undo the clamps that hold the hard pipes (shown in red in Figure 2) to the compressor side of the turbos shown in Figures 3 and 4 (2 x 8mm and flex joint, extensions) (NOTE: if you have a 10mm carburetor wrench, you can skip this step)

Reaching the passenger's side clamp is pretty much a given. However, in order to reach the driver's side clamp, a little finesse is required. With the 8mm socket and flex-joint mounted to the tip of a 12-inch or longer extension, the driver's side clamp can be reached from underneath the brake master cylinder. It may be necessary to utilize the space immediately forward of the clutch master cylinder on standard transmission models. Automatic transmission models do not have the clutch master cylinder so there exists extra space in which to operate.

Plenum Pull (Removal Stage)

Once all the parts on top of the plenum has been removed and set aside, the actual plenum removal can begin.

1. On the driver's side, unclamp the PCV hose at the PCV valve location, and then try to pry the PCV hose so that it breaks its seal
2. Unclamp the water hose clamp underneath the throttle body, and try to break its seal; unplug the vacuum hose that connects directly underneath the throttle body
3. Unbolt the bolt that holds the water bypass line bracket (1 x 10mm)
4. Unbolt the bolts that hold the EGR tube to the bottom of the plenum (2 x 10mm and flex, or carburetor wrench) (use the 10mm wrench to break the bolts loose first)
5. Unbolt the two bolts that hold the plenum down to the engine bracket (2 x 12mm)

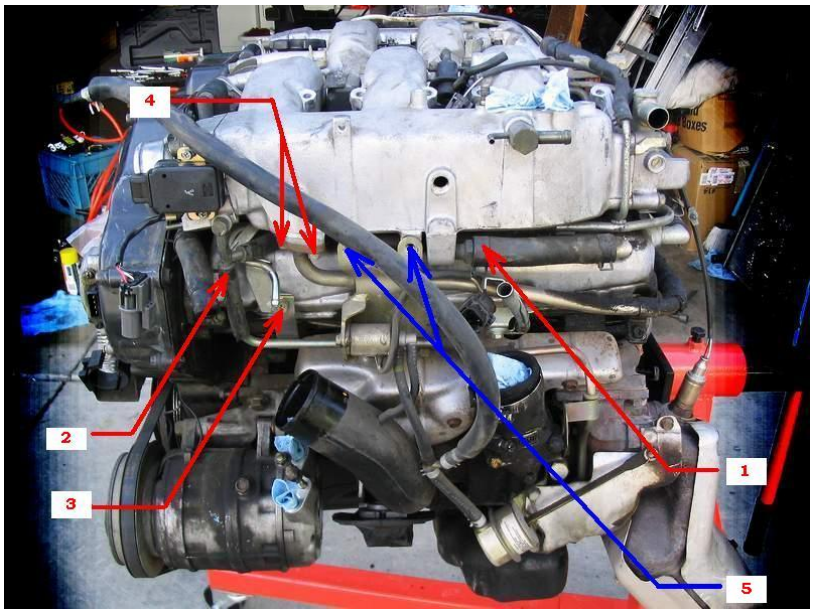

Figure 5: Driver's Side Plenum

6. On the passenger's side of the plenum, unbolt the two bolts holding the plenum to the engine bracket (2 x 12mm)
7. Undo the bolts holding the EGR tube to the bottom of the plenum (2 x 10mm and flex, or carburetor wrench) (use the 10mm wrench to break the bolts loose first)
8. Undo the clamp at the PCV valve and break the seal on the hose
9. Undo the clamp for the turbo water hose and remove the hose from the metal tube (coolant may spill here)

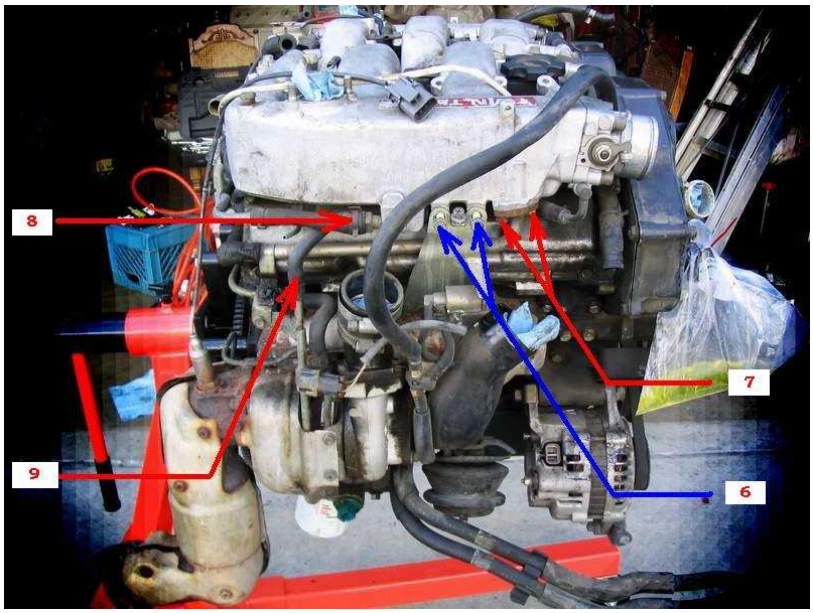

Figure 6: Passenger's Side Plenum

10. On the middle rear of the plenum, remove the water bypass clamp and unplug it from the metal tube
11. On the rear of the plenum toward the passenger side, remove the clamp and remove it from the metal tube
12. Remove the EGR vacuum line at the solenoid location

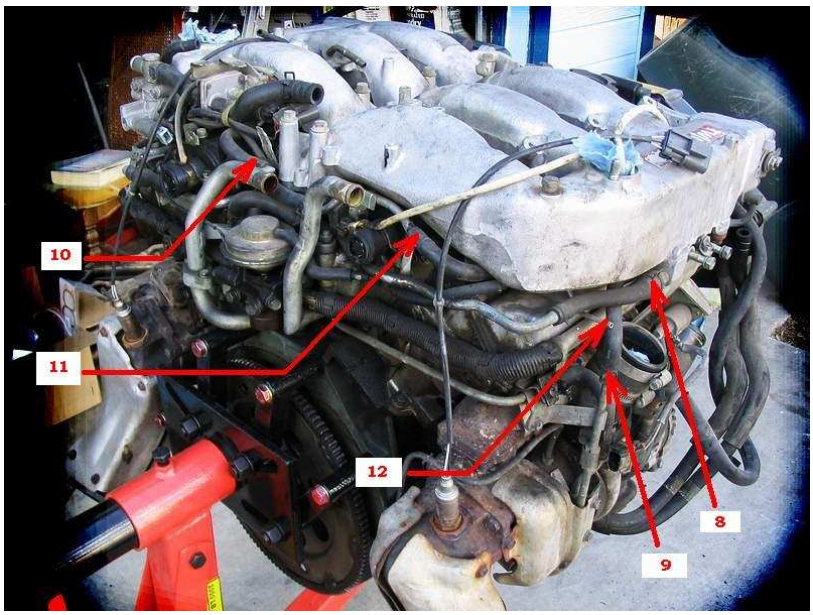

Figure 7: Middle Rear of Plenum

13. Remove the plenum bolts at the top middle of the plenum (8 x 12mm) (NOTE: the shortest bolt is by cylinder 1, and the bolt with a hex top for the throttle cable cover is by cylinder 5)

14. Once everything has been unclamped, unbolted, or removed, lift the plenum straight up from the front (make sure both EGR tubes and the water hose underneath the driver's side throttle body has come loose)
15. Hold the plenum at an angle, and pull toward the front of the car (make sure both PCV hoses come loose)

You have now successfully removed your plenum. Be careful not to damage the electronic devices at the rear of the plenum.

Throttle Body Water Bypass Hose Elimination

Before reinstalling the upper intake plenum, some owners like to bypass the water hoses. As seen in Figure 8, there are many hoses on the bottom side of the plenum. The four bolts seen holding the rails can be removed so that the rails and hoses can be deleted. Note that the smaller pipe (found toward the upper-right of the picture) is for connecting the EGR valve to its solenoid. It will be bypassed also.

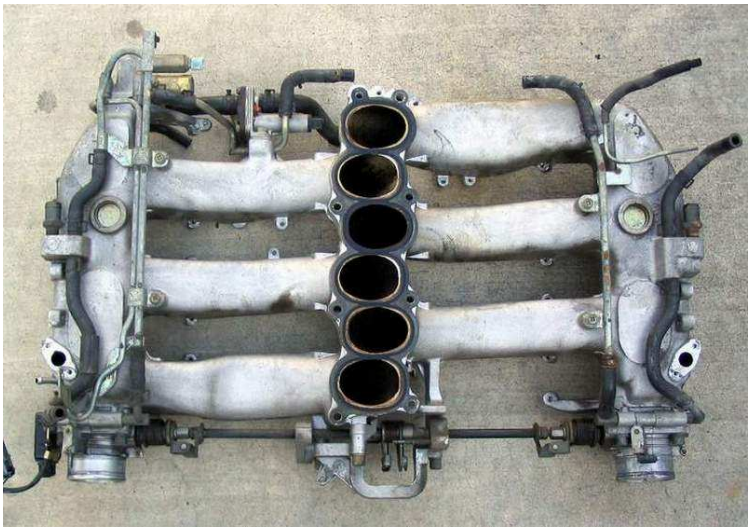

Figure 8: Bottom Side of Plenum with Hoses

Remove the hose connectors from the plenum and throttle bodies. The connectors on the throttle body mechanism can be drilled out. There are pins inside the connector which lock the connector into place. As shown in Figure 9, use a large drill bit, and drill through the hose connector to hit the pin. Use a vacuum cleaner during the drilling process to insure no metal pieces end up inside the plenum. Once the drilling is finished, the metal hose connector can be pulled out.

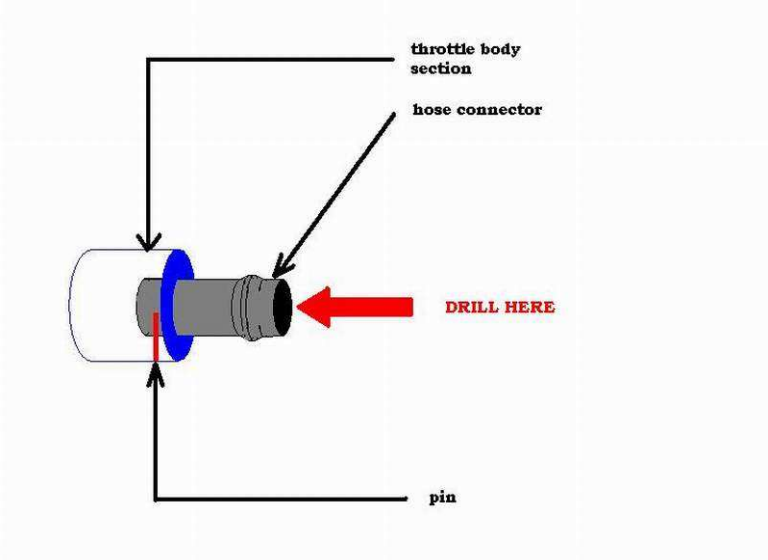

Figure 9: Drilling Out the Throttle Body Hose Connectors

The rest of the hose connectors can be cut off with a cutting wheel, bolt cutter, or whatever means you have. Take note that, in order to remove the metal pipe that runs underneath the IAA and AAV units, you must remove six 10mm bolts. There are four bolts on the IAA unit and two bolts on the air regulator. Be careful not to damage the IAA unit gasket, as it is made out of paper. Figure 10 shows the metal pieces already removed and with new PCV valves installed.

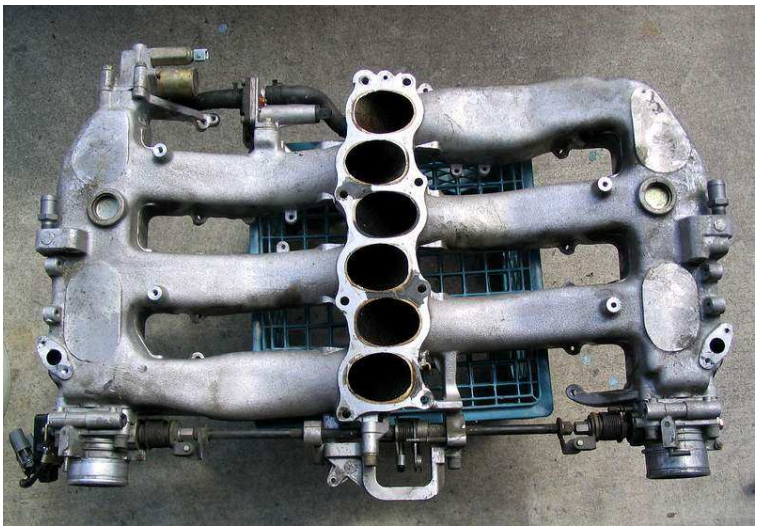

Figure 10: Bottom Side of Plenum with Hoses Already Bypassed

Because the original water hoses routes coolant to and from the turbos, eliminating the hoses has opened up the coolant circuit. The next step is to complete the coolant circulation.

On the driver's side, find the two coolant lines shown in the Figure 11. Use a 2-foot 6mm water hose to complete that coolant circulation path. Be sure to use clamps on both ends. Figure 12 shows the hose in place. Take note, however, that the Figure shows a metal pipe going down to the driver's side turbo is removed for a cleaner look.

Figure 11: Required Coolant Hose for Bypass

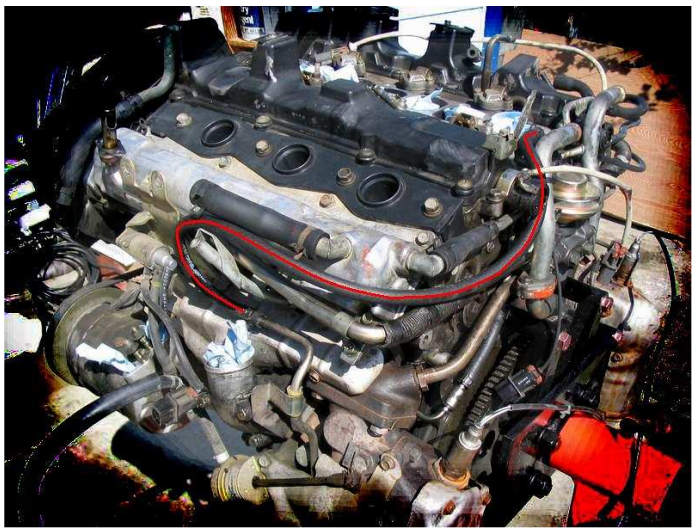

Figure 12: 6mm Hose in Place

IMPORTANT NOTE:
On the driver's side, be sure to run a 3-foot length of 6mm vacuum hose from the carbon canister to balance tube. When eliminating the plenum metal tubing, the mentioned vacuum tubing has also been eliminated. On the original configuration, the hose runs from the carbon canister to a vacuum tube found underneath the driver's side throttle body as shown in Figure 13. The parts outlined in red are the parts eliminated. The green line shows the original hose, whereas the red line shows the new path. The upper end of the new hose attaches to the rear of the balance tube.

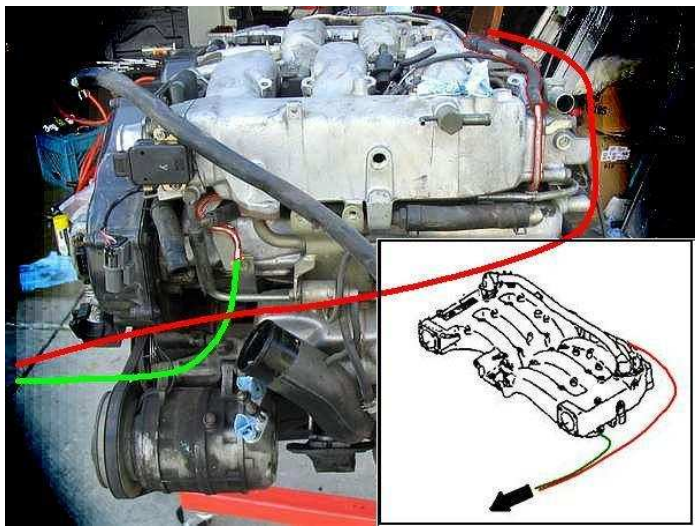

Figure 13: Carbon Canister Vacuum Hose Rerouted

Jumping to the passenger's side of the plenum, find the coolant lines shown in red in Figure 14. Run a 1-foot length of 6mm water hose to complete the coolant circulation. Also, attach a 2-foot 4mm vacuum hose to the EGR or EGR tubing, in preparation for the connection to the EGR solenoid. Figure 15 shows the hoses in place.

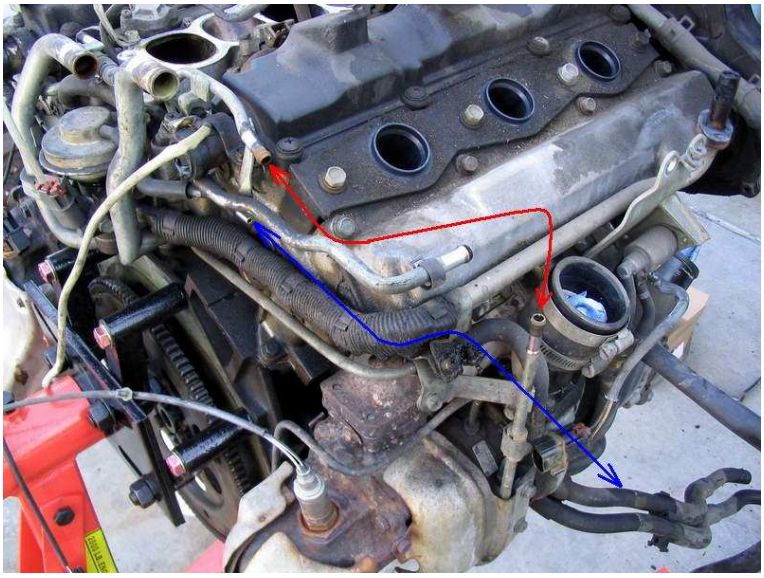

Figure 14: Required Coolant and Vacuum Hoses for Bypass

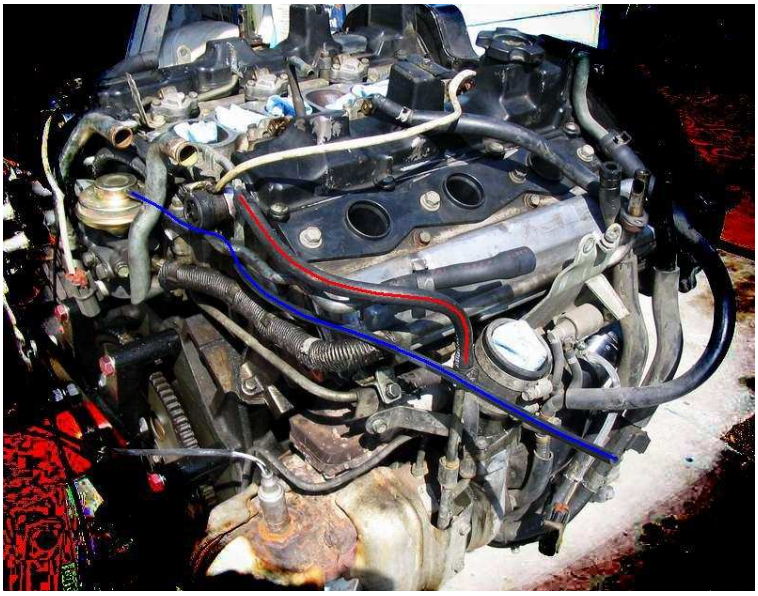

Figure 15: 6mm Hose and 4mm Hose in Place

Upon completion of the water hose bypass, the plenum may be reinstalled. When reinstalling, make sure the PCV valves and hoses are fitted first. Then place the plenum over the EGR tubes for proper alignment.

Make sure the plenum gasket is in place. Do not forget to reconnect the EGR vacuum line to the EGR solenoid.

Disclaimer: Perform the Plenum Water Hose Bypass at your own risk. I, the writer of this procedure, assumes no responsibility in whatever consequences may arise in the bypass.