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pilgrim

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How to replace intake manifold gaskets on 4.3 V6

How to Replace Intake Manifold Gaskets

Chevrolet-GM Vortec V6, 4.3

Original vehicle: 1997 Blazer

Blazer forum ID: Pilgrim

This was written from memory a few days after the procedure.

Right and Left are directions from inside the car, so:

Right = Passenger side

Left = Driver's side.

You should know: the intake manifold is two parts, somewhat like a clam shell. The top half is black polycarbonate. It seals against the bottom manifold by a large O-ring and is held in place by a number of small diameter studs that are torqued very lightly. The bottom half of the intake manifold is machined metal, and holds the fuel distribution assembly (spider).

Specific tools required:

Metric socket set

8MM socket for fuel line retainer

10MM deep well socket

13 or 14MM deep well socket

3/8 drive universal joint

Various 3/8 extensions: 1" , 3" , and two 6" extensions

Torx male bits for distributor cap screws

Tubing wrench for fuel lines

Compression pliers to fit GM hose clamps (or good pliers and patience)

Throughout this process, I strongly recommend that you separate the studs, nuts and bolts by the unit they go on. Especially: keep bolts, nuts and studs for each half of the intake manifold separate.

- Remove serpentine belt from vehicle to get room to work.
- Pull motor end of lower radiator hose and drain coolant. (Drain point on lower corner of radiator's right side is usually impossible to open). Catch as much as possible and store safely; this coolant is poisonous to animals. Discard old coolant by flushing it down the toilet.
- Remove top of air cleaner (four thumbscrews) and the air plenum that goes to the throttle body. Disconnect plenum electrical connections and lay wire over brake booster.

At this point, tie a bag over the open throttle body and use compressed air to blow as much grit and junk off the top of the motor as possible. Also try to blow any grit out of the torx recesses in the screws holding the distributor cap on. Concentrate on areas around the edges of the lower manifold and inner edge of the valve cover. Wear eye protection there may be a lot of stuff flying around.

- Remove hose running from the back side of air plenum to the right side valve cover.
- Pull top radiator hose off inlet pipe at front of intake manifold. Bend hose back out of the way.
- Disconnect various wiring harnesses on both sides of motor. If in doubt as to where they go, make a flag of masking tape around the connectors and label them with a Sharpie. You may also find it helpful to take digital photos of the motor so that you can visually confirm where connectors go. Most connectors are connection-specific and cannot be re-connected improperly. Take specific photos of how the brackets holding the throttle and cruise control cables are mounted. That will help you sort out where the nuts and brackets go.

Note: many of the next steps require a 10MM deep well socket.

- Remove brackets holding throttle and cruise control cables. Pull cables and brackets to left side of vehicle where they're out of the way.
- Disconnect and remove coil from right side of motor.
- Remove two studs and remove the valve found immediately to rear of coil. Stuff this valve back under the hoses as well as you can.
- Disconnect passenger side heater hose from RF corner of manifold (one clamp).
- Disconnect driver side hose from LF corner of manifold (unscrews).
- Disconnect small heater hose at the very front of manifold. It's hidden under another hose running to the water pump.
- Carefully remove PCV valve and short 90 degree hose from the left side valve cover to the manifold. Be careful, it's easy to break the rubber 90 degree hose connection to the manifold.
- Remove the left side spark plug wires from the distributor cap., make sure to twist the rubber boots and pull on the boots, not the wires. If they are not retained and kept in sequence by a nearby factory clamp, use a masking tape flag and Sharpie to label each and note which terminal they go to. Note and mark (white-out) on the side of the distributor body the position of the terminal for plug #1.
- Loosen the distributor cap carefully using the Torx male bit. This is hard to reach and may require an odd combination of tools. Without unduly stressing the plug wires, lay the distributor cap to the side.
- Using a socket on the crank pulley bolt, rotate the engine so that the rotor's contact lines up with plug terminal #1 on the cap & note the mark you made on the body of the distributor.
- Using a 10MM wrench (you may find that a brake bleeding wrench with offset head will reach it a crow's foot wrench also will work) remove

the bolt holding the distributor in place. This is a flaming, royal pain in the butt. Invent new adjectives and verbs as necessary.

- Remove distributor. This is necessary to remove the manifold, and to release the fuel line connections.
- Trace the fuel lines from the top half of the intake manifold back over the left rear side of the motor. Remove the bolt holding the bracket through which they pass.
- Find the pressure relief valve in the fuel line near the rear of the motor. It should have a black plastic cap screwed onto it. Remove the cap, wrap a rag around the line, and press the valve with a fingernail. You will spray gas, which releases pressure in the fuel line.
- Using a tubing wrench and working by feel, disconnect both fuel lines behind the bracket. This requires around a 5/8 or 17MM wrench.
- Remove the two 8MM nuts holding the fuel lines into the manifold. Carefully store the nuts and the metal bar/retainer they hold in place. Note that the flat side of the metal bar faces upward, and must be re-installed in the same position.
- Gently but firmly rock and pull the fuel lines upward.

Be aware that the tip of each fuel line has two O-rings and a metal washer on it. DO NOT LOSE THESE.

If I haven't forgotten too many connections, you're ready to remove the top half (polycarbonate half) of the intake manifold.

- Remove the rest of the studs from around the black top half of the intake manifold. Most are studs with nuts on them and the entire stud will back out. Note that two long studs are located in the front of the throttle body and most also be removed.
- Save all studs and nuts carefully.
- Once all studs have been removed, the top half of the manifold should be loose and move around a bit, but it will resist coming off. If it's not slightly loose, you missed a stud or two.
- There is a big O-ring around the fuel spider (the oval assembly where the fuel lines were connected) that slightly resists pulling the manifold unit off. Keep pulling up gently but firmly and it will come off.
- Set the top half of the manifold down on clean newspaper or some other material.

Now you're looking at the bottom half of the manifold which is the larger part of the intake manifold.

- Re-confirm that all heater hoses have been disconnected.
- There are 8 bolts holding the manifold in place. You will probably find that the left front bolt is inaccessible due to the main air conditioning mount. If you're clever and lucky, you can loosen this bracket enough to shift it forward and get the clearance you need. How? Read on
- Disconnect the electrical connectors from the AC compressor and lay that harness aside.
- Remove four bolts holding the AC compressor in place. Lay compressor to the right in the vacant bottom of the air cleaner box.
- Remove one bolt which retains the tube coming upward out of the power steering pump. Gently pull upward on the tube and it will come out. Replace the bolt in the AC bracket so you'll know where it goes.
- Remove two bolts from the front (upper third) of the AC bracket. Also remove the nut which is visible on a shaft between those two bolts.
- On the inner side of the PS pulley (lower on the bracket) there's another bolt of the same size. Find it and remove it.
- Now get under the Blazer, open the oil filter hatch and look up and in at the very bottom of the bracket. There's a stud at the bottom of this bracket with a nut over it. Remove it. You will need a deep well socket (13 or 14MM) and two six-inch extensions to reach and loosen it with any degree of convenience it's hard to get at. A 3/8 universal joint between the extensions and the deep well socket may also be required, because it's almost impossible to get straight at it.

Hopefully the bracket will be somewhat loose at this point your goal is to pry it forward far enough to reach that ONE bolt on the LF corner of the manifold. If it won't move, look for other bolts. Your setup may be slightly different than mine.

- Now you can remove the 8 bolts holding the lower intake manifold in place.
- Once those bolts are out, pry gently on the edges of the manifold, break it loose, and remove it. Have clean newspaper ready to set it on, as there will be oil and possibly coolant dripping from it.
- Clean all surfaces of the manifold using an appropriate edged tool such as a sharp putty knife with a straight (not beat-up) edge. Razor blades or chisels are also good tools for this job.
- Stuff rags or an old T-shirt into the exposed valley area of the motor, and the intake ports on the heads if you're meticulous. Clean all the surfaces of the heads, and the narrow front and rear block sections that seal the manifold. While you're at it, remove extra grit along the inner edge of the valve covers. Be careful and avoid dropping grit and junk into the intake ports or valley area. (Aren't you glad you put those rags there??)
- When all surfaces are thoroughly cleaned up, look at the heads and your new manifold gaskets (**Felpro MS98002T are the updated, metal framed gaskets that are a vast improvement over the plastic framed gaskets**). You will find that each gasket has two small tits on the backside; these fit into corresponding holes on the heads to keep the gaskets in position while installing the manifold. Cool idea, GM. Thank you.
- The front and rear seals on the manifold require use of RTV sealer. When applying the sealer, use fresh stuff (you don't want to do this again) and make sure to extend the RTV about 1/2 inch up onto the gaskets on each side. This promotes a better seal.
- CAREFULLY and patiently, set the manifold back in place with MINIMAL movement. Try to hit it dead on target. The RTV will move with you, but only so much. If you think you missed and shifted it around much, pull it back off NOW and clean the surfaces, then re-apply RTV and do it again. Take the time to DO IT RIGHT at this point.
- Installation is the reverse of disassembly. Use new O-rings and gaskets as you go. Let your best judgment dictate which ones you replace, but make sure to use a new O-ring on the fuel spider and on the top half of the manifold.
- If you had water or coolant in your motor oil before this job, change the filter and oil BEFORE re-starting the car.
- Double-check all hoses before filling the radiator. It's easy to miss one or more of the small hoses. After checking all hoses, re-fill the cooling system. Add a 50/50 mix of Dex-Cool and water - it probably will require not quite 2 total gallons.

IMPORTANT, IMPORTANT, IMPORTANT:

In all manuals, the torque specs given for the lower and upper manifold are in INCH pounds, NOT foot-pounds!!! Mine had a three-step tightening sequence to 89 inch-pounds, then 106 inch-pounds, then 11 foot-pounds (132 inch-pounds). If you try to tighten any of the bolts to 106 FOOT-pounds by mistake, you will damage the gaskets and probably break the bolts off in your heads. BE CAREFUL!!!!!! When tightening the bolts, work in a circular pattern from the inside out moving back and forth across the intake manifold.

ALSO: the top half of the manifold takes VERY LITTLE torque. Be careful not to over-tighten it or you will at least distort the O-ring, and possibly crack the polymer top.

When re-installing the fuel lines into the fuel spider, you MUST get them in far enough that the O-rings are not visible, and the flat bar/retainer goes fully into place. If you don't achieve this, you will spray fuel all over the place when you start the car. This may cause a fire or explosion, so WATCH THIS ITEM!!

All times are GMT -7. The time now is 11:47 PM.

