



Assembly Instructions for GM 4.8/5.3/6.0L V8 Intake Manifold

- 1.0 Remove the positive terminal from the vehicle's battery
- 2.0 Remove the bolt from the front of the top of the engine holding the engine cover down. Raise the engine cover and pull slightly to remove the engine cover from the top of the manifold
- 3.0 Loosen the two hose clamps on both ends of the air inlet duct. This will be where the air inlet duct connects to the throttle body and the connection of the duct to the air cleaner box. Remove the plastic push in pin from the engine mount. This will allow for the removal of the air inlet duct from the front of the engine.
- 4.0 The wiring harness running down the side of the manifold on the driver side is secured to the intake manifold near the front of the manifold on the driver's side. Remove the hex nut that holds down the small plastic bracket which the wiring harness is secured. Once the nut has been removed, move the wiring harness of to the side of the intake manifold.
- 5.0 **CAUTION: Read all of step five prior to actually completing the work**
 - 5.1 On the passenger side of the intake about in the middle of the fuel rail you will find a pressure relief valve. Remove the cap on the top of the pressure relief valve.
 - 5.2 With a towel covering the valve press the needle in the center of the valve downward to release the fuel pressure in the fuel rail assembly. A small amount of fuel will come out when the pressure is relieved.
 - 5.3 Once the pressure has been relieved put the cap back on to the pressure relief valve.
 - 5.4 On the driver side of the manifold is where the connection between the fuel line and the fuel rail assembly. Remove the safety clip for this connection.
 - 5.5 Using an "A/C & Fuel Line Quick Disconnect Tool" disconnect the fuel line from the fuel rail assembly.
 - 5.6 Remove the safety clip on all eight of the electrical connectors for the fuel injectors
 - 5.7 Remove all eight electrical connectors from the fuel injectors. It is recommended that these are labeled prior to disconnecting to assure they are reinstalled in the proper location.
- 6.0 Looking at the throttle body, slide the hose clamp back on the coolant line going to the bottom right corner of the throttle body. Remove this coolant line, during removal a small amount of coolant will drain from the hose.
- 7.0 Remove the hose on the passenger side of the manifold near the throttle body
- 8.0 On the driver side near the fire wall is where the PCV valve and PCV hose connection is. Remove the rubber hose connected to the PCV Valve. Also remove the rubber hose at the point it attaches to the intake manifold. This will allow for the nylon formed tube with the two rubber hose connectors attached to be removed from the engine compartment. Once this has been removed the rubber hose connector on the end that connected to the manifold needs to be removed. Set PCV tube aside until reassembly.
- 9.0 Remove the electrical connector going to the MAP sensor and set aside to assure it will not be damaged during removal and installation of the intake manifold
- 10.0 Remove the hex head bolt that secures the purge solenoid to the intake manifold. Gently rotate while pulling upward to remove the purge solenoid. Set the purge solenoid with the hose attached aside to prevent damage during the removal and installation of the intake manifold.
- 11.0 Remove the ten hex head bolts that mount the intake manifold to the cylinder heads. The bolts are captive to the manifold and will not be used to install the new intake manifold.
- 12.0 The manifold is now ready to be removed from the engine. Pull up on the intake manifold and place it on angle with the throttle body facing up. Remove the three hex nuts securing the throttle body to the intake manifold. Remove the throttle body and set aside with the electrical connectors attached to prevent damage during the removal and installation process.
- 13.0 With the manifold removed from the engine you can now remove the following items
 - 13.1 Remove the plastic bracket that retains the end of the engine cover by removing the three hex head bolts
 - 13.2 Remove the four hex head bolts that secure the fuel rail and by pulling straight up while holding onto the fuel rail remove the fuel rail assemble from the intake manifold. Place the fuel rail on a clean cloth to assure no dirt can get in the fuel injectors
 - 13.3 Remove the MAP sensor from your old intake manifold and install this MAP sensor into your new intake manifold. Use a self tapping screw with washer provided in the component kit in the boss next to the MAP sensor opening. Tighten the screw until the washer begins to contact the MAP sensor tabs, **DO NOT TIGHTEN MORE THAN 5NM. DO NOT OVERTIGHTEN!**
- 14.0 Install the plastic bracket onto the new intake manifold that retains the rear of the engine cover. Use three of the large thread-forming screws supplied in the kits bag to secure the bracket to the manifold. Tighten to 5 Nm. **DO NOT OVERTIGHTEN!**
- 15.0 Remove the eight bolts from the mounting bosses on the new intake manifold. Keep the eight bolts and thick washers as they will be used to mount the intake manifold to the cylinder heads in a later step. The nuts and thin washer can be disregarded and discard the nuts as they will not be required in later steps.

- 16.0 Now the intake manifold is ready to be installed to the engine. Place the intake manifold into the valley of the engine with the throttle body flange on a slight incline so that the throttle body can be reinstalled.
- 17.0 Install the three-provided double-ended studs to the throttle body flange. Place the throttle body over the three studs and secure the throttle body with the hex nuts removed when the throttle body was removed from the old manifold **NOTE: This must be installed on the manifold prior to the manifold being completely installed onto the cylinder heads.**
- 18.0 With the manifold still on a slight incline also reconnect the electrical connector to the MAP sensor manifold **NOTE: This must be installed on the manifold prior to the manifold being completely installed onto the cylinder heads.**
- 19.0 Proceed now with aligning the manifold with the cylinder head. Take caution to not damage any of the electrical wires that have disconnected during the removal of the old intake manifold. Also be cautious to not damage the knock sensor wires installed in the valley of the engine.
- 20.0 With the manifold aligned start all ten cylinder head mounting bolts. Eight of these bolts we removed from the new intake manifold in an earlier step and two of these bolts are included in the kits bag.
- 21.0 Torque all ten bolts in the sequence specified in the intake manifold. Also ensure that the required torque that is called out on the manifold is obtained.
- 22.0 Reinstall the plastic bracket connected to the wiring harness. Place the plastic bracket over the stud on the intake manifold and secure it using the hex nut previously removed from the old manifold.
- 23.0 Install the fuel rail assembly into the new intake manifold. Press down lightly on each side of the fuel rail to initial seat the fuel injector in there pockets. Once the initial seating has been completed press on the fuel rail directly above each injector to fully seat each fuel injector. Secure the fuel rail assembly to the manifold using four of the large thread-forming screws supplied in the kits bag. Tighten to 5 Nm. **DO NOT OVERTIGHTEN!**
- 24.0 Reinstall the eight electrical connectors to each fuel injector. Take caution to make sure that the proper connector is mated up with the proper fuel injector.
- 25.0 Reinstall the safety clip on each of the eight electrical connectors for each fuel injector.
- 26.0 Reinstall the coolant hose to the bottom of the throttle body. Once the hose has pushed onto the fitting completely pinch the hose clamp and slide back up the hose to secure the hose to the nipple.
- 27.0 Reinstall the hose on the passenger side of the intake manifold near the throttle body
- 28.0 Reconnect the fuel line to the fuel rail assembly. Take extreme caution to assure this connection is made properly and completely by pulling on the fuel line to ensure a secure connection.
- 29.0 Replace the safety clip for this connection
- 30.0 Now install the PCV nylon tube back into manifold. The end in which the rubber connection was removed from the nylon needs to pushed into the rubber hose that is installed on the top of the intake manifold. Make sure that the nylon tube is pressed into the rubber hose completely to prevent any leakage. The other end of the nylon tube with the rubber connector still installed needs to be pushed over the PCV valve completely.
- 31.0 Reinstall the purge solenoid by gently rotating the pushing down on the purge solenoid. Once the purge solenoid is seated rotate the base to align the screw hole with the mounting hole. Use one of the large thread-forming screws supplied in the kit bag to secure the purge solenoid to the intake manifold. Tighten to 5 Nm. **DO NOT OVERTIGHTEN!**
- 32.0 Reinstall the plastic bracket connected to the wiring harness. Secure the plastic bracket to the intake manifold using one of the large thread-forming screws supplied in the kits bag. Tighten to 5 Nm. **DO NOT OVERTIGHTEN!**
- 33.0 Replace the engine cover making sure to engage the retaining features in the back of the cap and screw the front of the cap by tightening the hex head bolt that is captive to the engine cover
- 34.0 Replace the air inlet duct and secure both hose clamps at the throttle body and the air cleaner
- 35.0 Reconnect the positive battery terminal.

Specific Application Notes:

For vacuum assist brake boost applications prior to reinstalling the brake boost hose to the manifold put the corrugated plastic hose protector over the hose along with the hose clamp removed when removing the plastic cap from the manifold. Position the hose protector so that the fuel lines will rest on the hose protector. Install the hose over the brake boost nipple and install the clamp.

For mechanical throttle body applications there are three large thread-forming screws in the kit bag for installing you throttle cable bracket. Do not use the bolts from your old manifold. Tighten to 5 Nm. **DO NOT OVERTIGHTEN!**

For High Output applications use the double ended stud in the kits bag and install in the same location as your old manifold. This stud will act as your engine cover hold down.