



FI AIRGAP INTAKE INSTALLATION INSTRUCTIONS

Please read and understand all of the instructions and check to make sure that all of the parts (shown on last page) are present before you start the procedure. The installation does not require any specialized tools or equipment and is very straight forward. You are removing the stock "keg" type intake manifold and installing our FI Air-Gap intake manifold. The throttle body, hoses, linkage, fuel rails, injectors, brackets and wiring attach and mount in the same position as original "keg" style intake manifold.

If you have changed the plenum cover/gasket on your manifold, you will find that this swap is virtually identical. If not, (and you are not comfortable doing it without instructions) get a factory service manual! We offer the following suggestions to make the job easier, faster and simpler.

Note: *The adapter and fuel rail brackets are updated from those shown in some photos. Photos that refer to the adapter and fuel rails will be the correct updated versions.*

1. Remove the front accessory drive bracket with the alternator and A/C compressor left in place and lay it off to the side (On the RH inner fender panel). This will eliminate draining and re-filling the A/C system.
2. Remove the injectors and fuel rails as a unit and lay them off to the side (on the LH inner fender panel). CAUTION, they are full of pressurized fuel, don't smoke or make any other stupid mistakes (or you may never see this job completed).

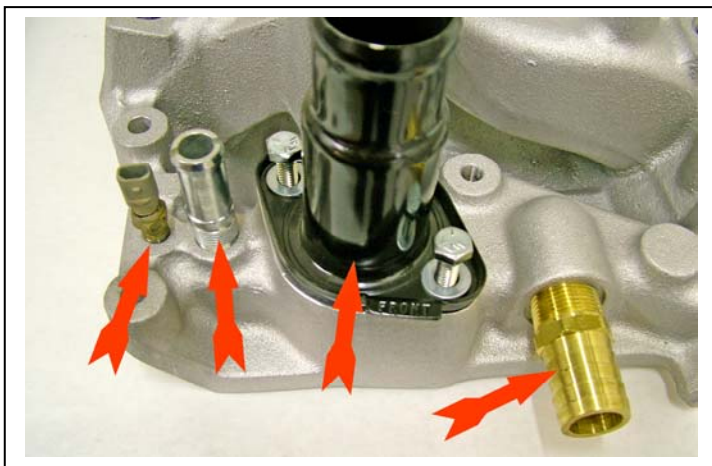
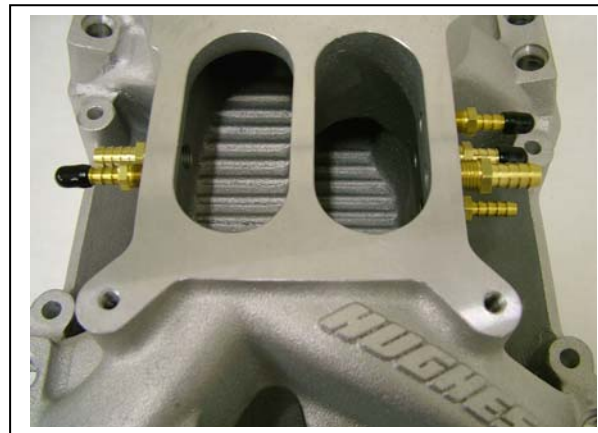


3. Cover the injectors to keep any dirt out. It is not necessary to remove the distributor cap or wires.



4. Cover the lifter valley and plug the ports when scraping the gaskets off of the head surface. The graphite gaskets are good, but it will take some work to remove the material. Use a very sharp scraper not a putty knife.

5. install the brass nipples. We suggest a small amount of sealer on the threads.



6. Install the thermostat housing and the brass by-pass hose fitting, heater hose fitting, and the coolant temperature sensor.

7. Install the throttle body adapter, gasket and the fuel rail brackets before you install the intake on the engine. Do not tighten any of the bolts at this time. Be sure the adapter is positioned as shown, so our name shows. If you do it backwards you will have a giant vacuum leak between the throttle body and the adapter.

Note the locations of long and shorts fuel rail brackets.



8. Install your Hughes FI AirGap manifold with the intake gaskets and bolts provided. The bolts are a TTY (Torque-to-Yield) type. **A diagram showing torque specifications and sequence is on the back page of these instructions.**

9. You may find it necessary to trim about 1" off of the end of the upper by-pass hose to get it to fit properly.

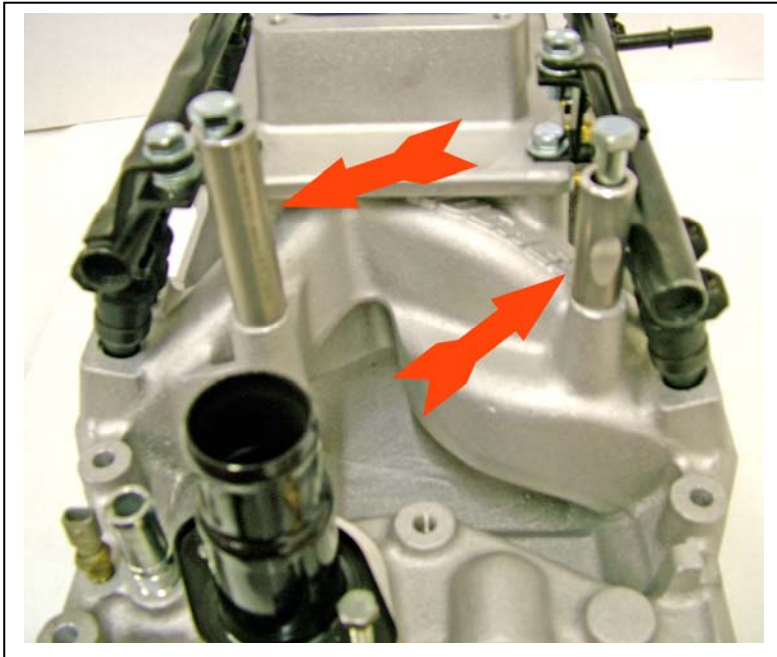


10. Use some grease or cam break-in lube on the injector O-rings and work the injectors carefully into their bores. DO not damage the O-rings or you will waste a lot of time trying to figure out the engine does not run correctly. The crossover fuel line must be shortened due to the closer position of the fuel rails to each other. An extra long piece of new hard plastic hose is included so you don't have to fight the old brittle piece. The hard plastic hose should be 5-9/16" to 5-13/16" long. The hose is very stiff and is easier to work with if heated in very hot water first. Remember, your old hose and rails may have gasoline or fumes in them so if you are re-using either, stay away from flames of any kind. Be sure you do not put any kinks in this hose which will restrict your fuel flow.



Important Notice

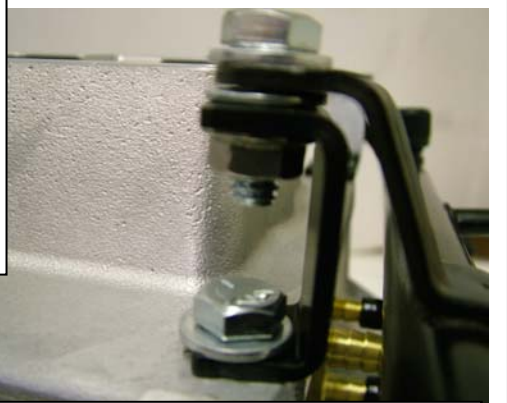
The crossover fuel line must be pushed on to both fuel rails past the 2 barbed areas on each nipple.



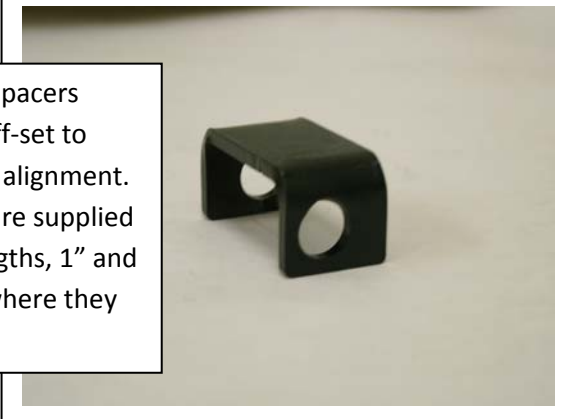
11. Install the long and short spacers for mounting the front accessory bracket.

Note: In some cases the short spacer may need to be notched to clear the left hand fuel rail. The notch is shown 90° out of position in the photo.

12. Production tolerances of everything will now be corrected using shims to get everything to fit correctly. The shims are the 5/16" flat washers supplied with your Hughes FI AirGap manifold assembly. The new fuel rail brackets may need shims on top, bottom or a combination of these areas to accurately clamp the rails into a position that does not move them out of their natural position. The holes in the short brackets are offset to make it easier to find a good position. It is okay to modify the mounting brackets as necessary to get a good fit. See the various possibilities in the photos on the next page.



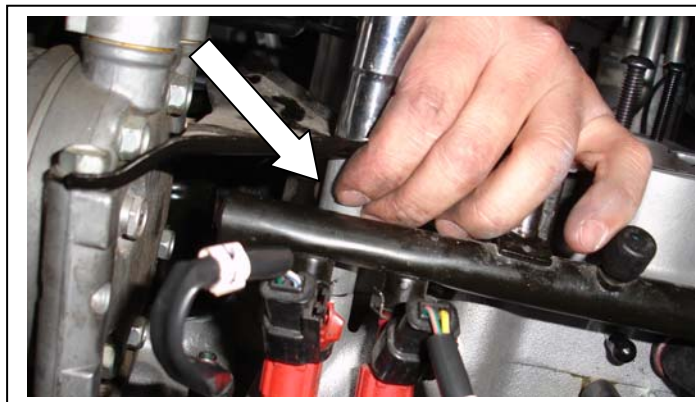
Note: The short spacers have the holes off-set to help with proper alignment. The 5/16" bolts are supplied in 2 different lengths, 1" and 7/8", use them where they fit best.



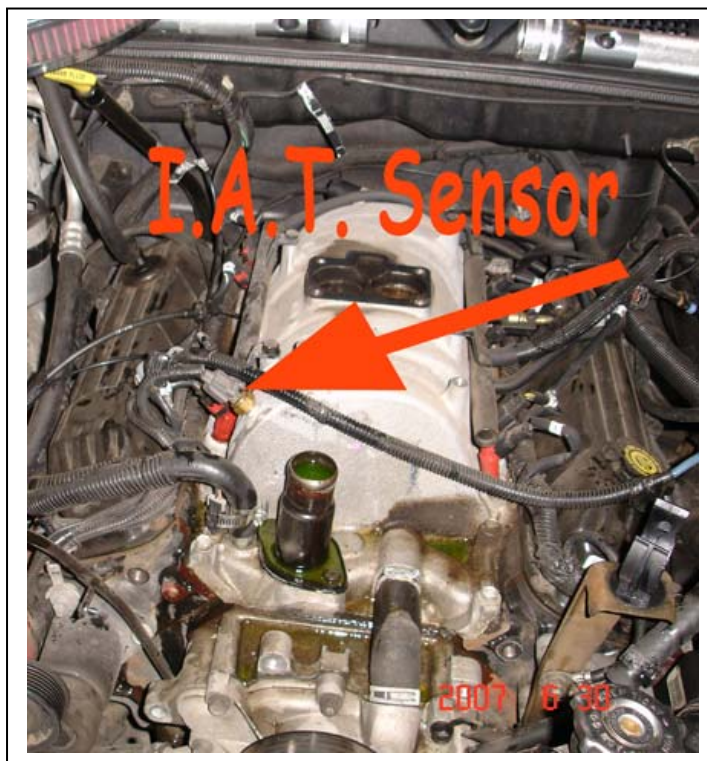
13. Install all of the vacuum hoses as needed and put the plastic caps on the unused tubes.



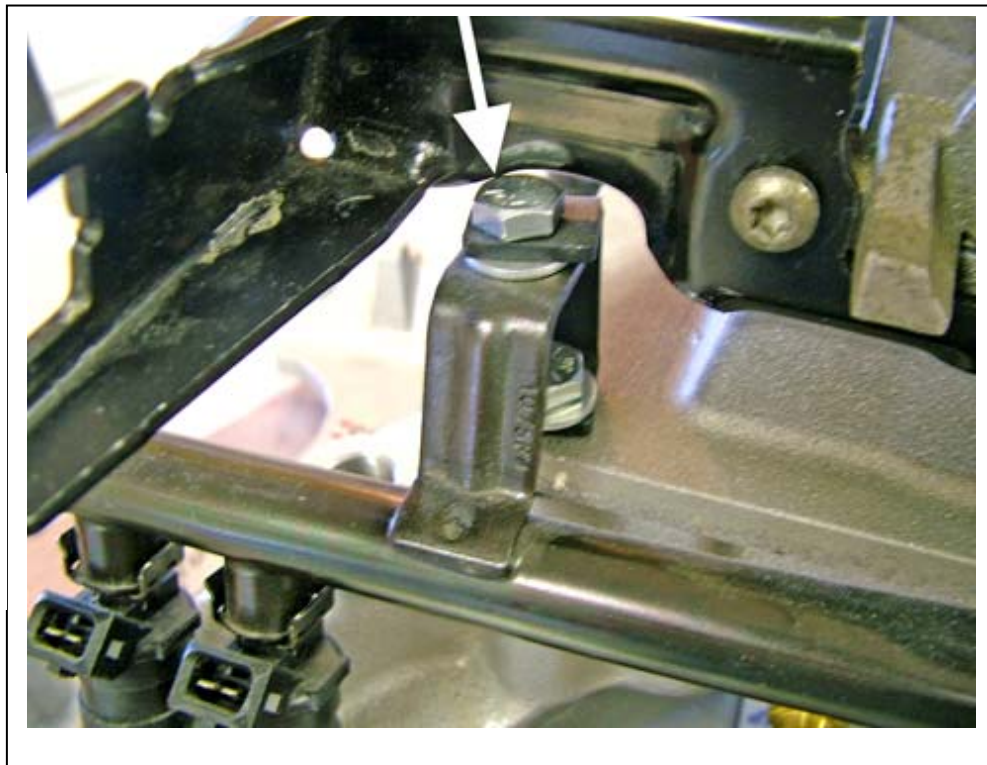
14. Install the front accessory bracket next.



15. All the lines and linkage attach and hook up just like stock. This manifold does not have provisions for the I.A.T. sensor, which is good. The sensor should be installed in the intake air system inlet upstream from the throttle body. Normally there is enough wire to reach the intake tube. Simply cut an "X" in the tube and push the sensor in and then re-connect the wire. If you need an extension for the wiring harness you can order them from Caspers Electronics by calling them at 847-247-0484.



16. In some installations there may be contact between this fuel rail bracket cap screw and the throttle cable bracket on the throttle body. (See arrow in photo to right) If this happens on your engine you will need to grind or file a notch in the cable bracket for clearance. Any contact at all may cause a vacuum leak at the throttle base once you tighten the fasteners, and that would suck!



Break-In Note: Your computer must “Re-Learn” your new FI AirGap intake manifold. This is due to the improved injector position which introduces a more favorable, or burnable, mixture into the combustion chamber.

Re-Learning may be accelerated by removing the battery cables from the battery and touching them together. This clears the old program out of the ECU and lets it start over. Yes, we know that there are dozens of so-called “better” ways to do this, but we like this method. Whatever way you choose, be aware that your performance will improve with use. Don’t judge the performance of your vehicle until the computer has time to “get its mind right”.

As usual, if you have any questions please give us a call at (309) 745-9558.

Drive carefully and enjoy blowing the doors off of those _____. Insert your favorite brand to humiliate here.

Trouble Shooting Tips:

Although there is little to “go wrong” with our FI AirGap intake, there are some areas that require close attention.

1. Make sure that the injector o-rings are not torn and are correctly installed. Oil or grease them before installing them. They should turn back and forth smoothly. Also, improper tightening can move the injector out of position can cause an air leak.

2. Sensors such as the I.A.T., Water temp and O2 are very critical and they do not react well to being removed and reinstalled. Try new ones! The I.A.T. must be in the intake air stream. Leaving it lay on the manifold doesn’t work. Also, check the terminal to wire connection. Weak or poor connections are a problem.

