Installation Instructions

There are several benefits to a cold air intake especially if it is well designed. The flow of air into the engine experiences little resistance. The air is cold and more dense, thus increasing the amount of air and fuel. There is potentially some benefit to increasing the density of the charge because of sound waves going back and forth as well.

A potential problem with an intake is the increase in induction noise.

The TurboXS Cold Air Intake is easy to install.

Inventory

The above picture shows the list of components:

1. K&N air filter (RX-3900-1)
2. mass air flow sensor mount (polished tube with mount)
3. sensor to air cleaner pipe (curved black tube)
4. pipe support (L bracket with U support)
5. nipple cap (small black cap on white stickers)
6. two silicon hose connectors
7. four hose clamps
8. mandatory stickers!

Lotus Manual on Mass Air Flow and Air Temperature Sensor

The stock parts that need to be replaced are the air snorkel, air filter, and the mass air flow body and sensor. These parts are located in the upper left portion of the engine compartment. The air snorkel and air filter are located just behind the air intake grille in front of the left wheel. They are most easily accessed through the left wheel well. Interestingly enough, it was difficult to find, including the mass air flow pipe and sensor in either the Lotus or the Toyota manuals.

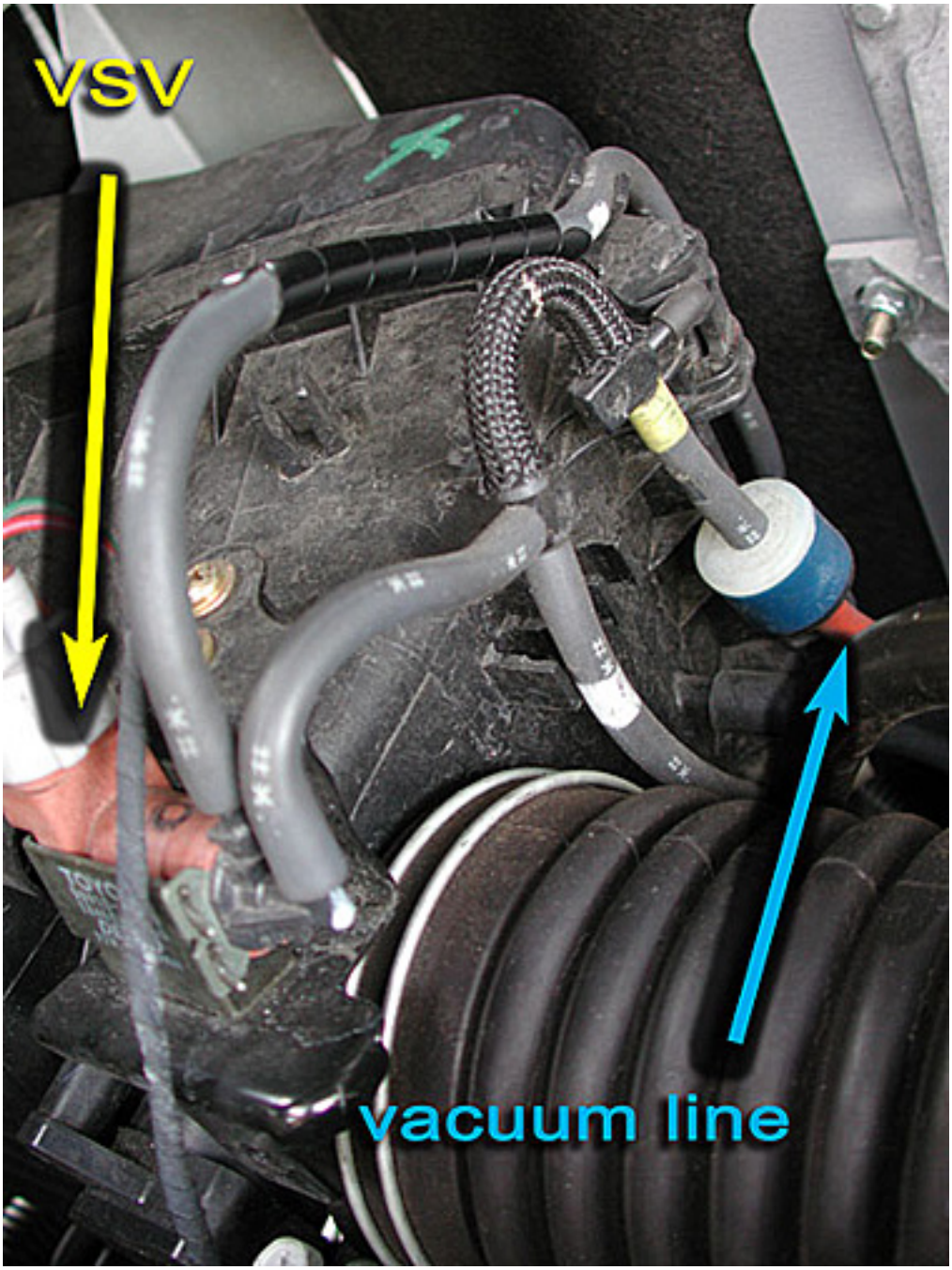
Removing Existing Parts

The intake is shown above. It is the ribbed rubber tube and the wire clamp that attaches it to the throttle body and intake of the engine. To the left of the ribbed tube is the air filter housing.

Tools

- flat blade screwdriver
- Philips screwdriver
- 13mm socket and wrench
- 10mm socket
- Allen wrench?
- lug wrench
- car jack

Process



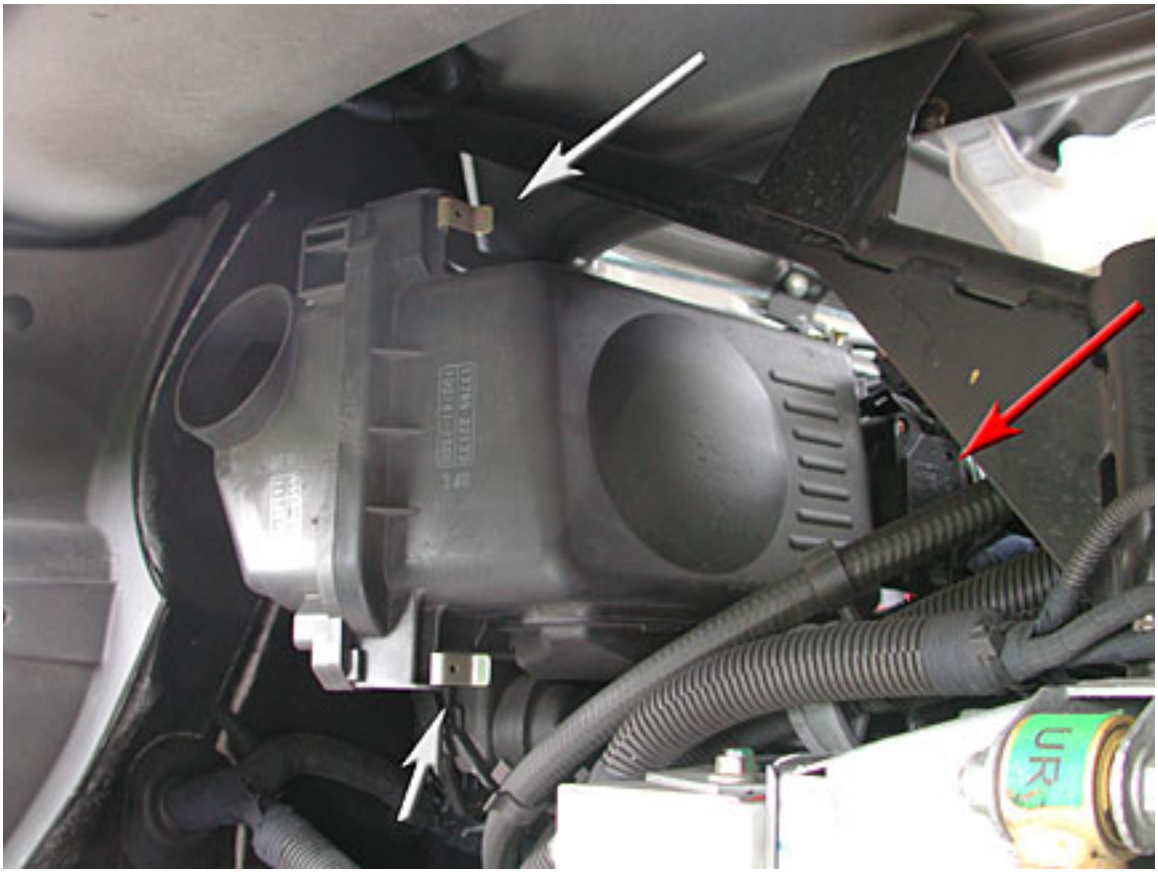
1 remove the electrical connector to the VSV (airbox flap valve vacuum switch), pointed to by the yellow (left) arrow. The plug has a tab that must be depressed to remove the connector.

2 remove the vacuum line connected to the anti-backfire valve, pointed to by the green (right) arrow, from the intake on the engine. Plug the vacuum nipple with the rubber cap provided in the kit.

3 loosen the wire band that holds the rubber tube to the throttle body on the engine. (See picture of engine compartment shown above, wire clamp is on the ribbed rubber tube, on the right hand side of the tube.)

4 using the center jacking point A and remove the wheel and tire.

5 remove the wheel well liner. To remove, unscrew and remove the Philips head screws and pull the plastic liner from the mounting point. The expanded fastener will pop loose. There are six fasteners including one under the frame



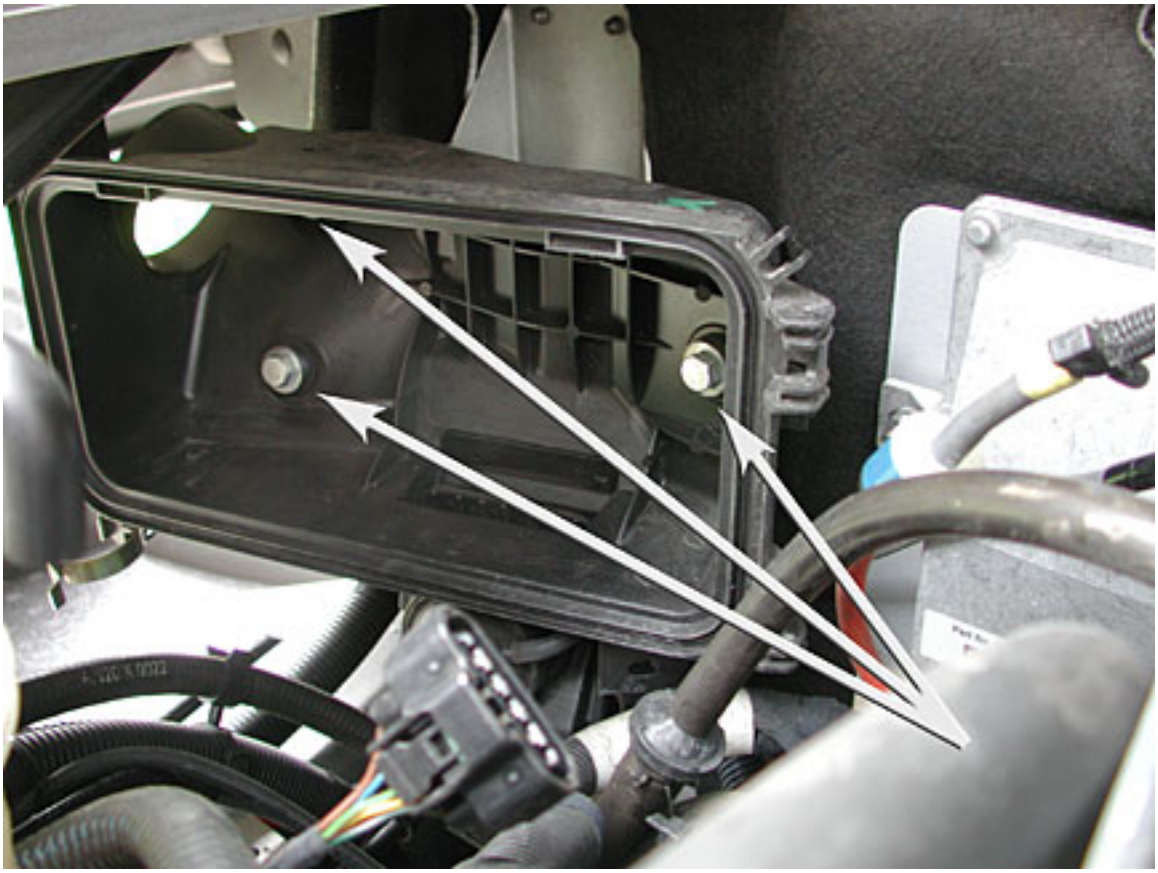
6 open the clips on the air filter housing and remove the air filter

7 rotate the air filter housing and intake tube to get access to the mass air flow sensor plug. Remove the plug by depressing the tab on the connector.

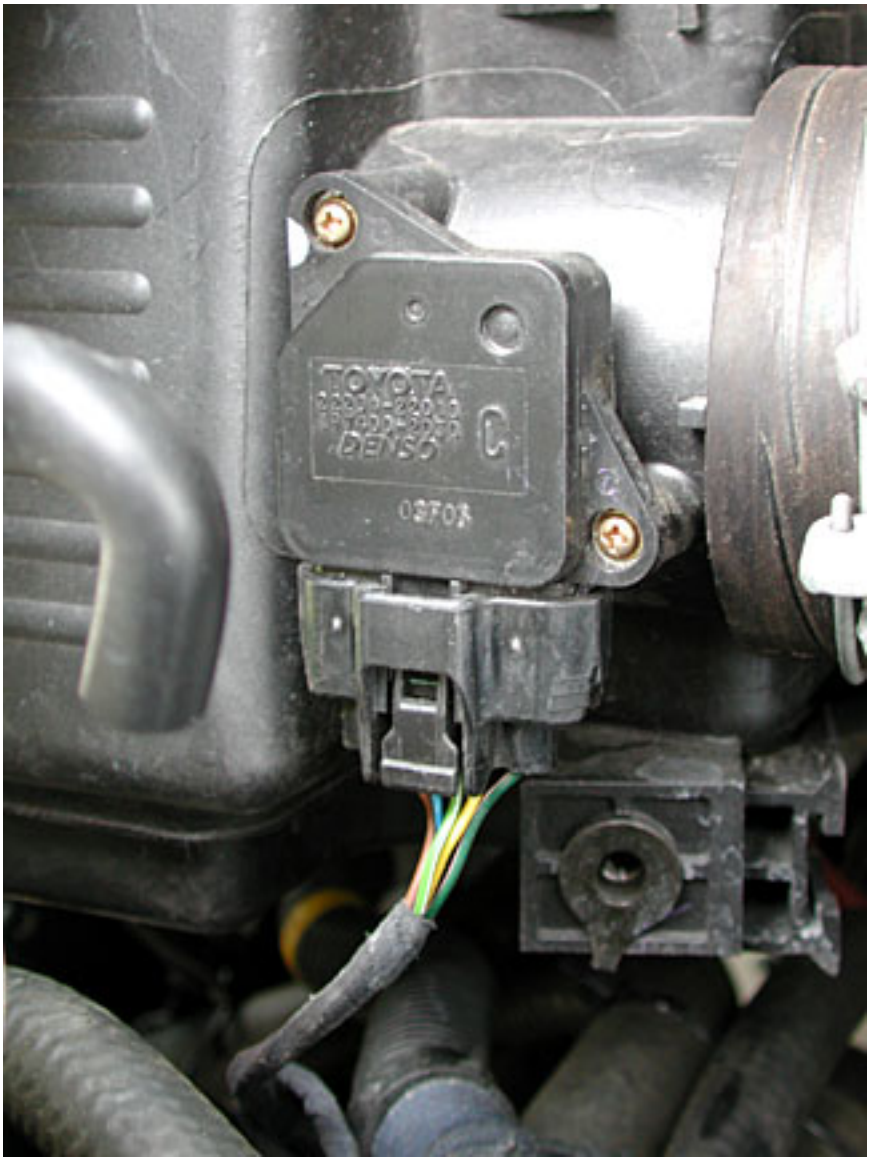
8 disconnect the vacuum line from the engine intake. Remove the line that leads to the back flow valve, a one inch cylinder. Plug the nipple on the back flow valve.

9 tie back the vacuum line making sure to keep it from the throttle sector that rotates near the throttle body.

10 extract the air filter cover out of the engine compartment or through the wheel opening.



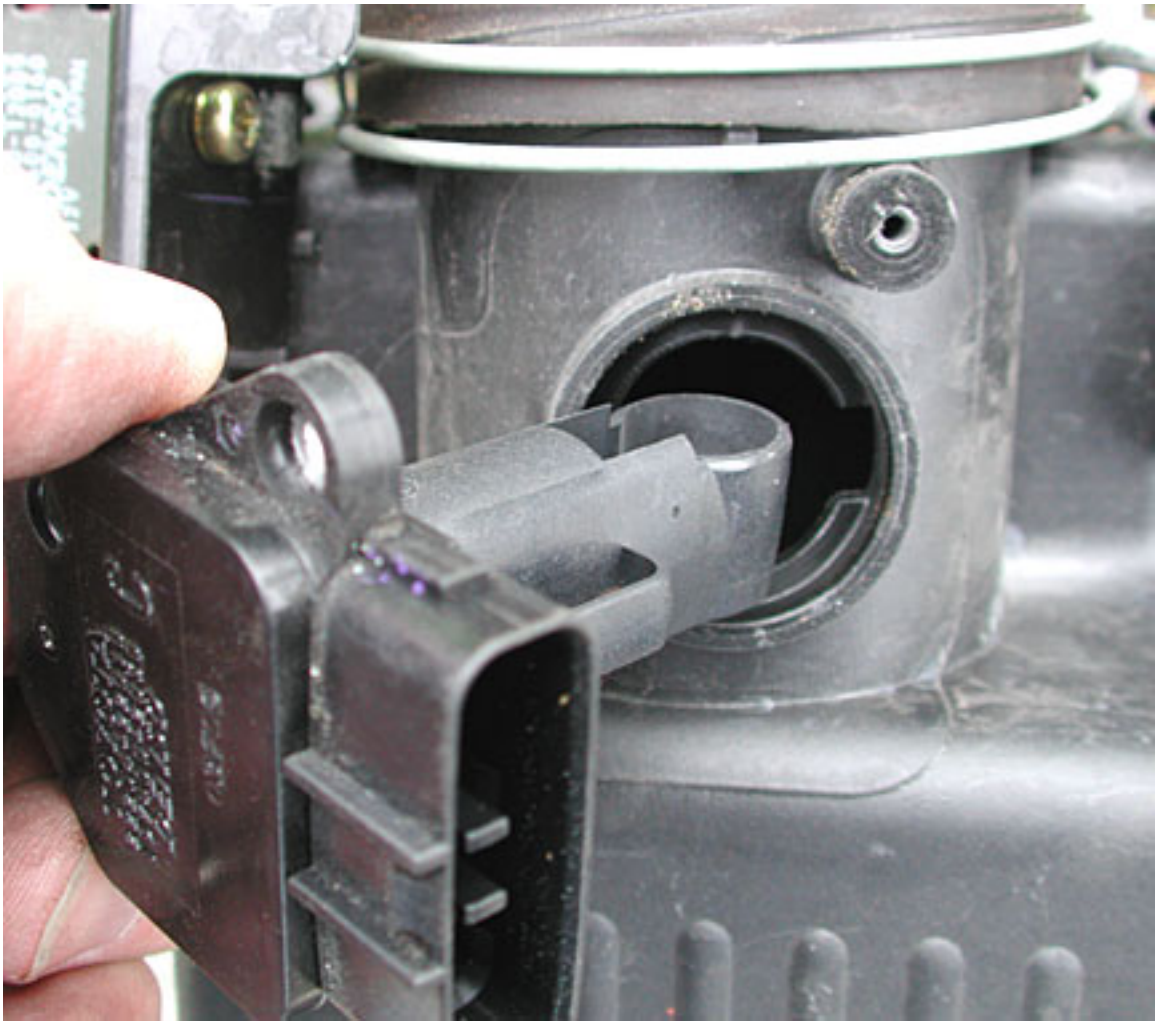
11 remove the three 13mm hex head bolts that mount the air filter box and remove it as well.



12 remove the mass air flow sensor from the stock intake by removing the two brass colored Philips head screws. These screws may have machine M4 threads and can be reused.

Note carefully the orientation of the sensor as shown below, especially at the end where the air flows through the hole. The small end (hole) with plastic buttresses points to the source of air and the air filter. The big end (hole) points to the throttle body and the engine. The lettering on the top of the sensor as shown in the picture above reads from left to right and the air should pass over the sensor from left to right. The air temperature sensor is at the base and to the right of the mass air flow sensor "tower" as viewed from the path of the incoming air. The direction the air passes over the sensor is critical and will need to be the same when the sensor is mounted in the new intake.

intake or air filter side



output or throttle body side

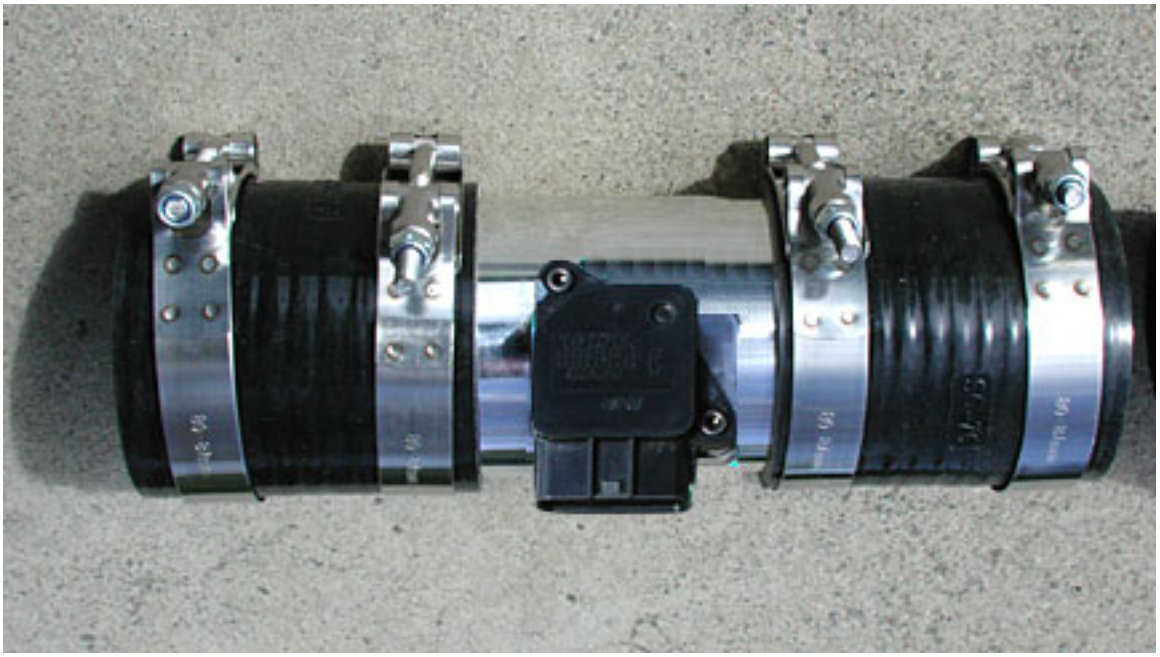
Installing the TurboXS Intake

Tools

- Philips screwdriver
- 13mm socket and wrench
- 10mm socket
- Allen wrench?
- lug wrench
- car jack

Process

1 mount the mass air flow sensor on the intake tube. It will only fit one way. Use Allen head cap screws, M4 x 13mm. The O ring is not meant for re-use but can be if it still supple. Note the view down the tube as it is from the air filter side. Note the buttresses on the small hole at the end of the mass air flow sensor.



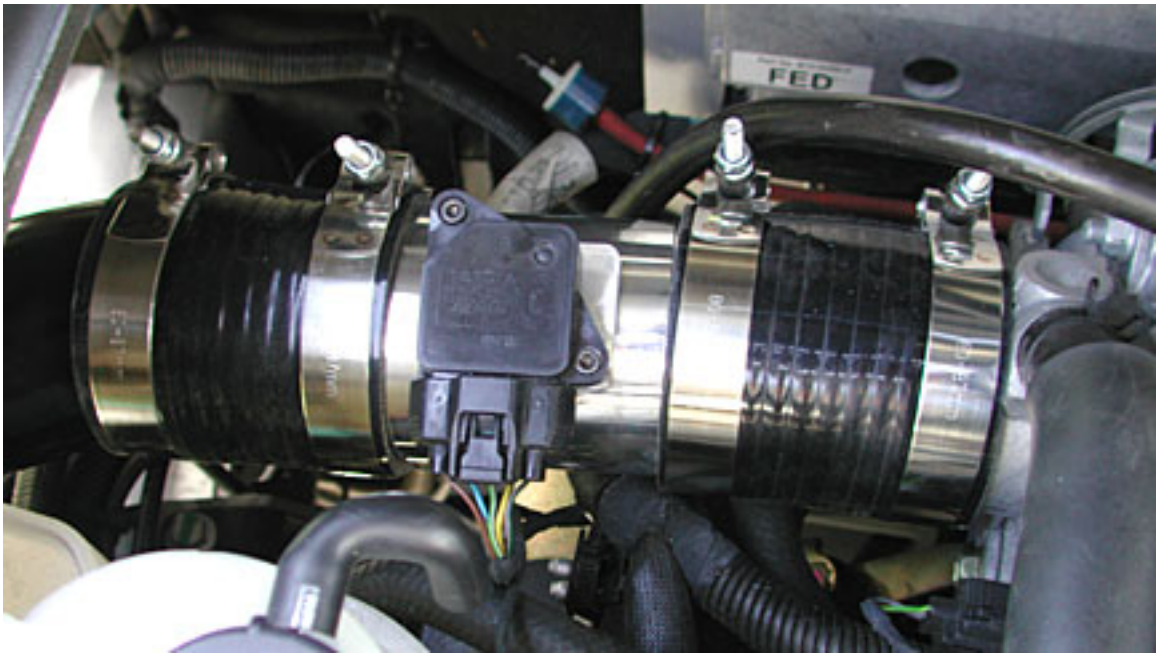
2 add a hose to both sides of the intake and attach with the hose clamps. Note the position of the band tightening screws at the top. The air flow is from left to right and you should be able to read the information stamped on the mass air flow sensor.

The tightening screws will interfere with fewer hoses if mounted above the intake tube but the clamps will work either way.

Add hose clamps to both ends but do not tighten.

3 slide the air filter onto the bent tube at the end with the sharpest bend. Add and tighten the hose clamp supplied with the air filter.

Care must be taken to make sure the bent tube stays all the way inside the air filter when the clamp is tightened.



4 test fit the intake in the car. Push the right side rubber tube onto the throttle body of the engine. Push the air filter and bent tube into the intake side of the mass air flow tube. Do not tighten the clamps.

Rotate the air filter so that it is in the desired position. There is some room to move it and the bent tube provides a different location as it rotates. Make sure the air filter does not rest on any bodywork or on the wheel well liner.

5 mount the yoke L bracket in a position where it can support the bent tube. There is a bolt on the frame that should be used.

6 the bent tube can be attached to the Y yoke with tie wraps or left as it is.

The Y yoke is a temporary solution until the heat shield becomes available as the shield will limit the movement of the intake.

7 Note the hole at the bottom of the Y yoke. The solenoid for the VSV can be mounted here if it is retained.

8 tighten all clamps.

Make sure no parts interfere or rub against any rubber tubing. Make sure the clamps are tight and do not allow any air leaks.

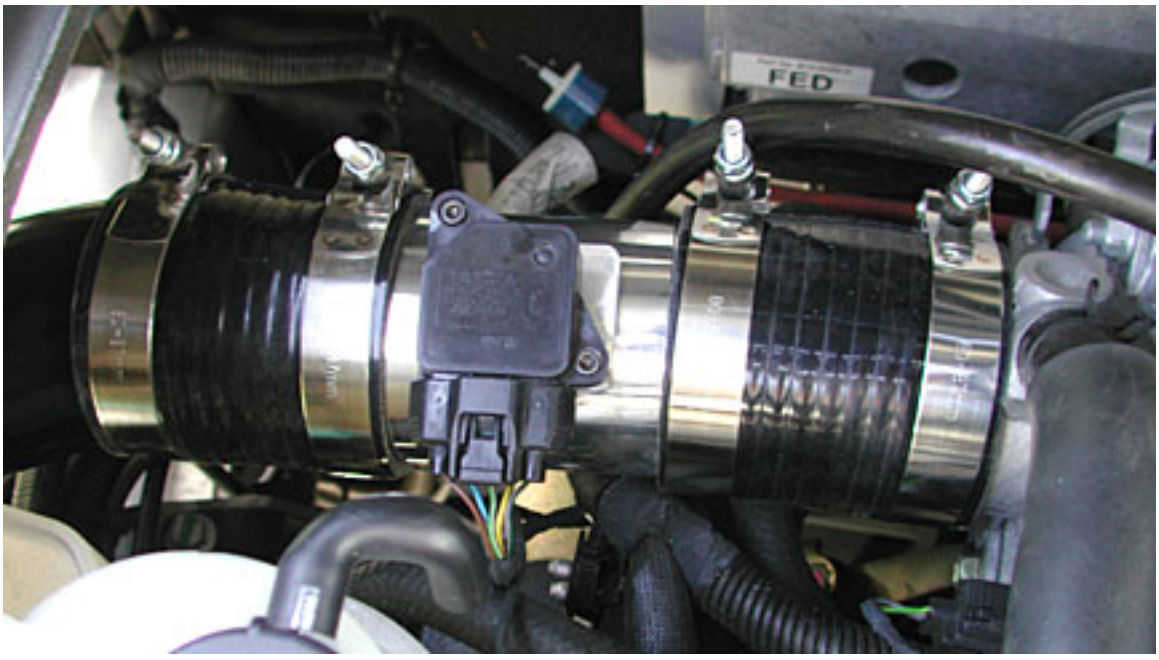
9 plug in the mass air flow sensor cable.

10 reinstall the wheel liner using the same six fasteners..

11 mount the tire and wheel

12 lower car and remove jack

13 torque lug nuts on wheel to 77 ft-lbs.



Admire your hard work and enjoy your first drive with the new intake.

Use of the Car with the TurboXS Cold Air Intake

When starting your car, you will notice a hissing intake noise. This is normal and is most apparent when the engine is warming up. However you need to make sure there are no vacuum leaks which will sound similar. Once warmed up, the hissing is no longer apparent. Make sure the vacuum nipple that powered the VSV is plugged.

The car should be allowed to idle for 15 minutes as the engine control unit (computer) learns the characteristics of its new intake. This learning will continue once you start driving your car. It will take some driving before the full potential of the new intake is realized.

Drive the car a short distance and make sure the intake is not coming loose and no parts have shifted.

Upon driving the car aggressively for the first time, be prepared for a loud intake noise the first time you press the throttle. The noise is loud and is generated just over your left shoulder. The original

stock intake was designed to retain the intake noise and is much quieter.

Finally be prepared for another intake noise the first time the car accelerates and the engine transfers to the second cam profile. The noise is very, very loud and can surprise anyone who is not prepared.