

# **INSTALLATION INSTRUCTIONS**

## **Atomic® AirForce Intake Manifold for LT-1 2014-on Corvette PN 2700**

**ONLINE PRODUCT REGISTRATION:** Register your MSD product online. Registering your product will help if there is ever a warranty issue with your product and helps the MSD R&D team create new products that you ask for! Go to [www.msdpower.com/registration](http://www.msdpower.com/registration).

**WARNING:** When installing the Atomic AirForce Intake Manifold disconnect the battery cables. When disconnecting, always remove the negative cable first and install it last.

**Note:** It is recommended to have the Service Manual for procedures related to removing the engine cover, air ducting and other components.

**Note:** The AirForce Intake Manifold, PN 2700, is NOT legal for use in California and other states that require a CARB EO Number.

### **Parts Included:**

1 – Intake Manifold Assembly	1 – Fastener Kit
1 – Plenum Seal <sup>1</sup>	8 – M6x1.0x30mm Socket Head Cap Screw (Pinch Bolts)
4 – M6x1.0x30mm Socket Head Cap Screw <sup>1</sup>	2 – M6x1.0x25mm Socket Head Cap Screw (MAP Sensor, EVAP Purge Solenoid)
4 – ID6.4 xOD17x3mm Thick Flat Washer <sup>1</sup>	8 – ID6.4xOD17x3mm Thick Flat Washer
3 – Plenum Post Seals <sup>1</sup>	10 – M6 Compression Limiter Bolts
6 – ID8.4 xOD24x2mm Thick Flat Washer <sup>1</sup>	4 – ID6.4 xOD12.5x1.4mm Thick Flat Washer (TB)
6 – M6x1.0 w/8mm x 8mm Shoulder <sup>1</sup>	4 – M6x1.0x40mm Socket Head Cap Screw (Electronic Throttle Body)
1 - Seal Kit	
1 - Molded Throttle Body Seal	
1 - Die Cut Throttle Body Gasket (OEM Throttle Body Only)	
1 - Aluminum Throttle Body Seal Plate (OEM Throttle Body Only)	<sup>1</sup> – Pre-Installed

### **Parts or Tools Required:**

O-Ring Assembly Lube  
OEM port seals are required, GM #12626354  
(8 required)  
Blue Loctite®

**Note:** When installing an OEM Throttle Body to the AirForce Intake, the supplied seal plate and gasket must be used.

### **⚠ WARNING**

Installation of this product requires detailed knowledge of automotive systems and repair procedures. Installation of fuel system parts and any modifications must be carried out by a qualified automotive technician. Installation of fuel system parts requires handling of gasoline. Ensure that work is performed in a well ventilated area with an approved fire extinguisher nearby. Extinguish all open flames, prohibit smoking and eliminate all sources of ignition in the area of the vehicle before beginning the installation. When working with fuel systems, eye goggles and other safety apparel should be worn to protect against debris and sprayed gasoline. The finished work must be thoroughly checked to ensure there are no fuel leaks.

Thank you for choosing the MSD Atomic AirForce intake manifold. We've taken great care during the development of the this manifold to ensure you are getting the most power possible out of your LT1 engine. If you have any questions during the installation, please contact our tech staff at 915-855-7123 or email; [tech@msdpower.com](mailto:tech@msdpower.com). Share your performance results with us on our forums at [www.atomicEFI.com](http://www.atomicEFI.com) as well.



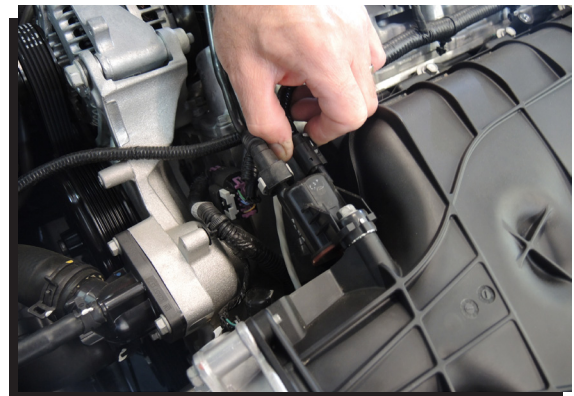
Figure 1 Vacuum Ports of the AirForce LT1 Manifold.

**REMOVAL OF THE OEM MANIFOLD**

1. Remove the fresh air intake duct assembly (refer to the OEM Service Manual). Before disassembly of the intake manifold, clean the entire intake area with compressed air to remove any dirt or debris that could fall into the engine or interfere with the installation.
2. Disconnect the Electronic Throttle Control (ETC) connector and MAP Sensor (Figure 2, Figure 5).
3. Disconnect the PCV hose from the intake, as well as the EVAP Purge Solenoid tube and electrical connector from the passenger side (Figure 3).
4. Remove the four bolts holding the electronic throttle body to the intake (Figure 4). The four OEM throttle body bolts will be replaced with the shorter bolts provided in the MSD manifold fastener kit. The MSD-supplied bolts (M6x1.0x40mm) **MUST** be used during re-assembly. Damage to the intake shell could occur by using the longer stock bolts.
5. Fully loosen the 10 intake-to-cylinder head bolts using a 10mm socket or wrench. The two rear bolts (one on each side) are partially hidden under the cowl and difficult to reach. These two bolts may need to be held up with rubber bands to keep them from dropping down and snagging on the intake ports.
6. With the intake bolts fully loosened, the OEM manifold assembly will need to be lifted up and moved forward. Note that at this time the brake booster vacuum tube is still attached. Move the intake forward and position the vacuum tube where you have access to it (Figure 6).



**Figure 2 Disconnect the ETC.**



**Figure 3 Disconnect the EVAP Solenoid and Tube.**



**Figure 4 Remove the Throttle Body.**



**Figure 5 Disconnect the MAP Sensor.**

7. The vacuum tube push-to-connect fitting must be released so that the tube can be worked out of the OEM intake. Use of two small flat tip screwdrivers provides the best access. Apply steady inward pressure to the collet ring, while simultaneously pulling outward on the vacuum tube. The vacuum tube extends over an inch into the intake where there is an internal O-ring seal. Care must be taken not to damage the plastic tube assembly (Figure 7).
8. With the vacuum tube disengaged from the OEM push-to-connect fitting, lift the intake off and set it aside. Clean any material and debris away from the top of the cylinder head ports to prepare for the MSD intake installation.

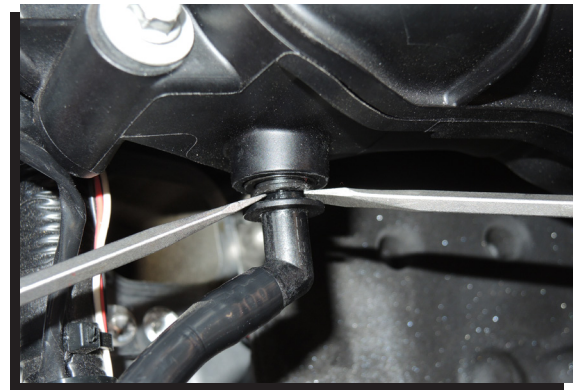
### PREPARING THE AIRFORCE FOR INSTALLATION

The AirForce intake requires that the remaining pinch bolts be installed and torqued to the required specifications prior to installation. Also, it is recommended to use an O-ring lubricant (such as Silicone spray or vacuum grease) on the brake booster vacuum tube, MAP sensor port, EVAP Solenoid port, and the PCV nipple.

1. Locate the remaining M6x1.0x30mm socket head cap screws, the ID6.4mmxOD17mmx3mm Thick washers, and install them into the remaining pinch bolt locations.
2. Tighten the top three stanchion bolts, followed by the pinch bolts, in the pattern shown in Figure 10. Always use at least two complete sequences leading up to the final torque of 75 in-lb for all of the bolts.
3. Spray or place the O-Ring lubricant on the chamfered leading edge of the brake booster vacuum tube, as well as for the MAP sensor port, EVAP Solenoid port and the PCV nipple.
4. If re-using the port seals, remove them from the OEM intake manifold and ensure that they are not torn, damaged or suffering from excessive compression set. Wipe with a clean cloth or towel to remove any oil film or debris. It is recommended to install new seals, AC Delco PN 12626354 (sold individually, eight required). Install the eight port seals and ensure that they are fully seated in the retention grooves (Figure 11).
5. Use the supplied M6x1.0x25mm socket head cap screws to attach the MAP sensor and Purge Solenoid. Re-use the OEM Purge Solenoid flat washer.



**Figure 6 Brake Booster Vacuum Connection.**



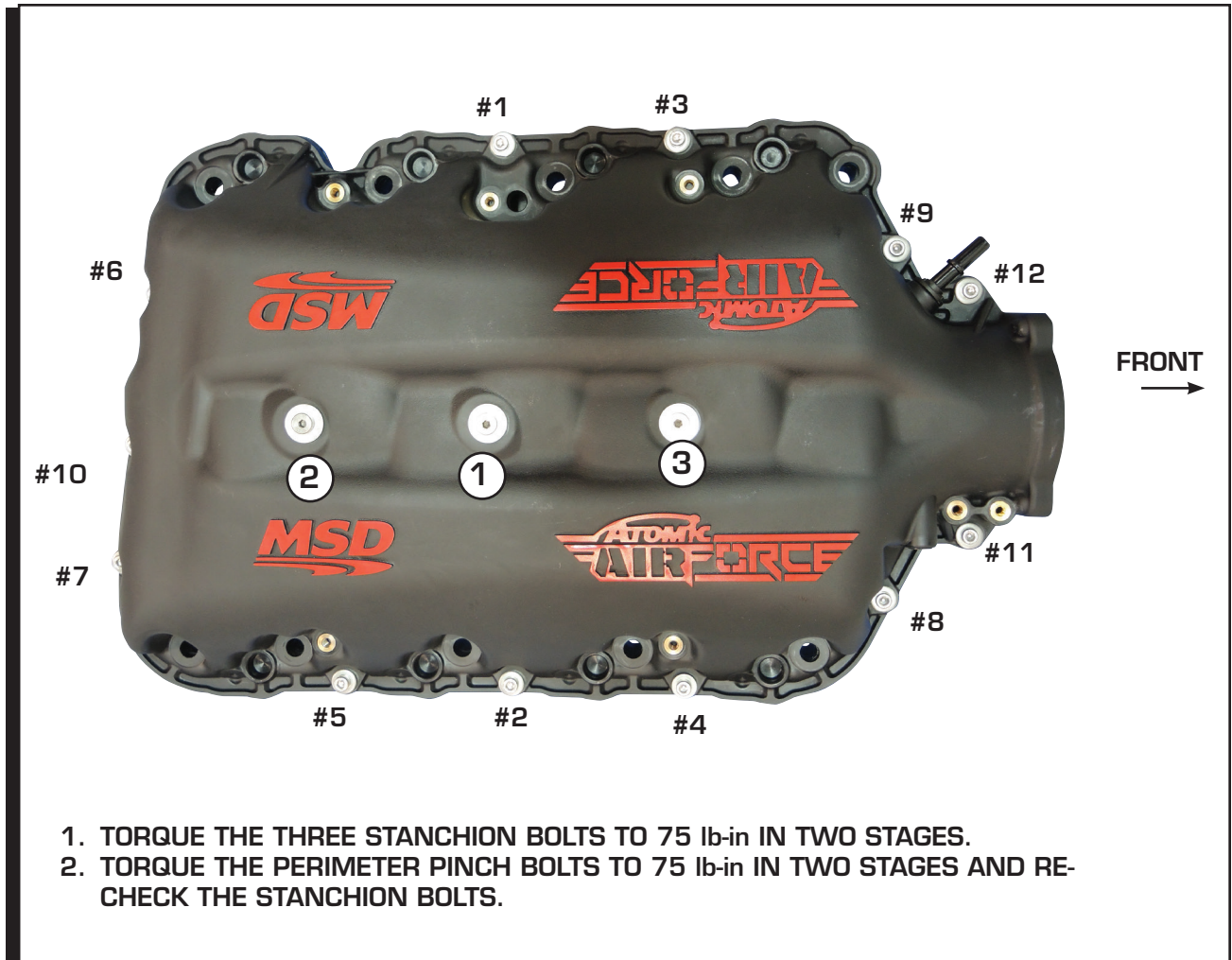
**Figure 7 Removing the Brake Booster Tube.**



**Figure 8 Install the MAP Sensor.**



**Figure 9 Install the EVAP Solenoid.**



1. TORQUE THE THREE STANCHION BOLTS TO 75 lb-in IN TWO STAGES.
2. TORQUE THE PERIMETER PINCH BOLTS TO 75 lb-in IN TWO STAGES AND RE-CHECK THE STANCHION BOLTS.

Figure 10 Intake Upper Shell - Torque Pattern.

### INSTALLATION TO THE ENGINE

- Locate the remaining M6 compression limiter bolts.

**Note:** The MSD-supplied bolts require an 8mm socket or wrench.

- Apply Blue Loctite® thread locker to the bolt threads.
- Ensure that each port seal is installed properly around runner port and that the heads are clean.



**Figure 11 Install the Port Seals.**

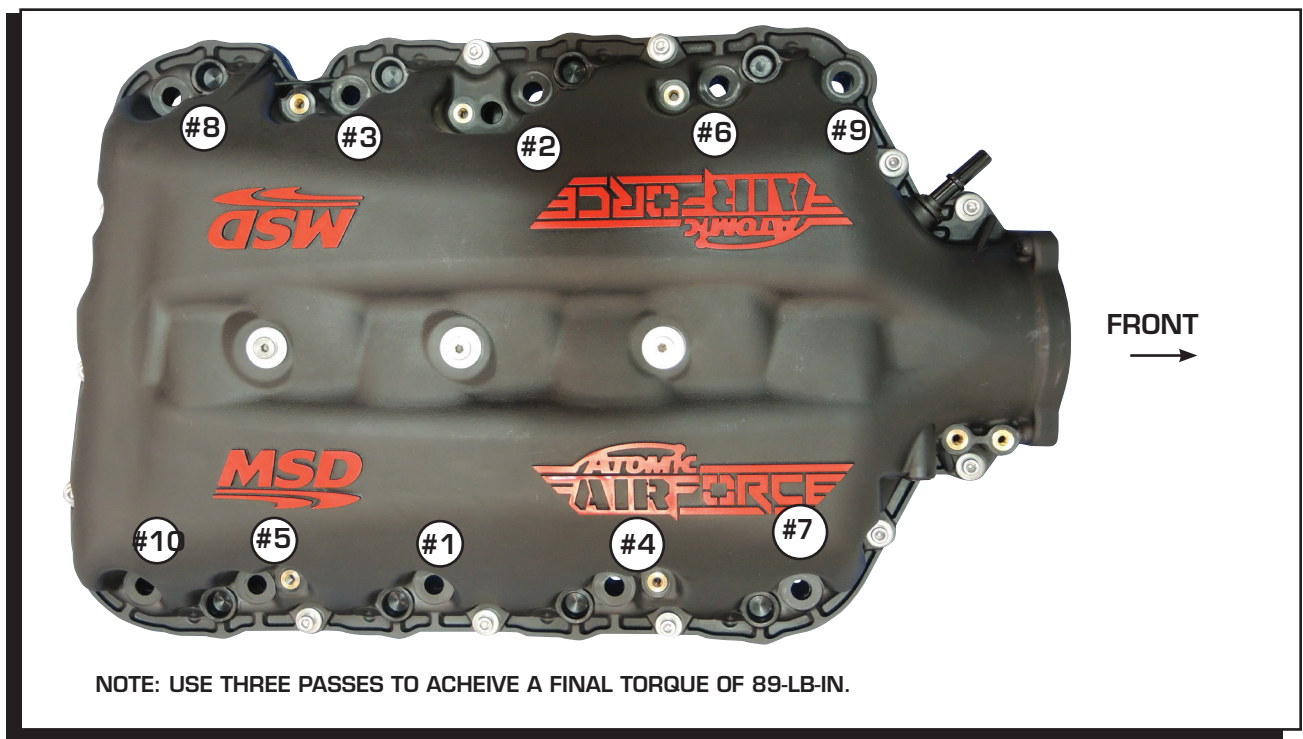
1. With the AirForce intake assembled and the seals in place, position the intake onto the engine so the brake booster tube can be installed.
2. Lube the vacuum port O-ring and the tube itself. Insert the tube into the manifold pressing it in straight until it stops and is secure (Figure 12).
3. Insert two of the new M6 compression limiter bolts into the rear most holes. Use rubber bands to keep the bolts from dragging and hanging up in the intake ports.
4. Lift and slide the intake onto the engine and under the cowl.

**Note:** Special care must be taken when maneuvering the manifold around the low-pressure fuel supply line - located on the driver's side near the rear. This is best accomplished with two people - one on either side of the engine.

5. Once in place, install the rest of the M6 compression limiter bolts being sure to start each bolt by hand.
6. Tighten the 10 compression limiter bolts using the sequence shown in Figure 13. Use multiple passes (a minimum of three are recommended) to achieve a final torque of 89-lb-in.



**Figure 12 Connect the Brake Booster Tube.**



**Figure 13 Intake-to-Cylinder Head Torque Sequence.**

**CAUTION:** Failure to ensure a stable final torque value may result in subsequent vacuum leaks or other driveability problems. DO NOT overtighten the fasteners, as this can damage the intake assembly and/or the threads in the cylinder heads.

7. If re-installing the OEM Electronic Throttle Body, locate the supplied throttle body seal plate and adhesive-backed flat gasket (see Figure 14). Remove the gasket backing material and lay the gasket adhesive side up. Carefully lower the seal plate onto the gasket - making sure all the holes are aligned properly.
8. Install the seal plate assembly between the intake manifold throttle body flange and the throttle body. Ensure that the flat gasket is facing outward (towards the throttle body), and the raw surface is facing towards the molded intake manifold seal.
9. Locate the four new M6x1.0x40mm bolts and washers (ID6.4xOD12.5x1.4mm Thick). Torque uniformly to 89in-lb (Figure 15).



**Figure 14 TB Seal Plate and Gasket**

**Note:** If an aftermarket mechanical throttle body is being used, you must ensure that the mounting bolts are not long enough to pass through the heat-staked brass inserts and damage the intake manifold shells.



**Figure 15 Installing the Throttle Body.**

# **INSTALLATION INSTRUCTIONS**

**CAUTION:** Do NOT use the OEM throttle body retaining bolts. The OEM bolts will contact the lower manifold housing and result in irreparable damage.

10. Install and check the wiring connections for the ETC, EVAP solenoid, MAP and install the air duct.
11. Reconnect the battery negative terminal.
12. Fire up the engine, inspect for vacuum leaks, ensure a solid brake pedal effort and feel. Hit the road and enjoy the performance of your AirForce Intake Manifold!

## **FASTENER TORQUE CHECKS**

In order to ensure trouble-free long-term operation, it is recommended that you re-torque the following fasteners after 1,000 miles of operation, and again after 3,000 miles of operation:

1. The ten (10) M6 compression limiter bolts that attach the intake manifold to the cylinder heads (Final Torque 89 in-lb)
2. The four (4) M6x1.0x40mm Socket Head Cap Screws that secure the OEM throttle body to the intake manifold (Final Torque 89 in-lb)

**Note:** Step 2. is not necessary if the throttle body sealing plate and gasket are not being used.

## **OUTFITTING WITH PORT INJECTORS**

The use of auxiliary port injectors requires drilling of the injector pockets and adaptation of aftermarket fuel rails. The injector O-ring pockets and lead-in chamfers are molded in place, and all that's required is the drilling of 10mm through-holes to intersect the runners. Note that the through-holes will pierce both the upper and lower shells.

### **Service**

In case of malfunction, this MSD component will be repaired free of charge according to the terms of the warranty. When returning MSD components for warranty service, **Proof of Purchase** must be supplied for verification. After the warranty period has expired, repair service is based on a minimum and maximum fee.

**All returns must have a Return Material Authorization (RMA) number** issued to them before being returned. To obtain an RMA number please contact MSD Customer Service at 1 (888) MSD-7859 or visit our website at [www.msdpower.com/rma](http://www.msdpower.com/rma) to automatically obtain a number and shipping information.

When returning the unit for repair, leave all wires at the length in which you have them installed. Be sure to include a detailed account of any problems experienced, and what components and accessories are installed on the vehicle. The repaired unit will be returned as soon as possible using Ground shipping methods (ground shipping is covered by warranty). For more information, call MSD at (915) 855-7123. MSD technicians are available from 7:00 a.m. to 5:00 p.m. Monday - Friday (mountain time).

### **Limited Warranty**

MSD warrants this product to be free from defects in material and workmanship under its intended normal use\*, when properly installed and purchased from an authorized MSD dealer, for a period of one year from the date of the original purchase. This warranty is void for any products purchased through auction websites. If found to be defective as mentioned above, it will be repaired or replaced at the option of MSD. Any item that is covered under this warranty will be returned free of charge using Ground shipping methods.

This shall constitute the sole remedy of the purchaser and the sole liability of MSD. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representation whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall MSD or its suppliers be liable for special or consequential damages.

\*Intended normal use means that this item is being used as was originally intended and for the original application as sold by MSD. Any modifications to this item or if it is used on an application other than what MSD markets the product, the warranty will be void. It is the sole responsibility of the customer to determine that this item will work for the application they are intending. MSD will accept no liability for custom applications.