INSTRUCTIONS

FAST® LSX$_R$™ 102mm Intake Manifold
Part #146202 / #146202B LS7

Thank you for choosing FAST® products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information. Contact us toll free at 1.877.334.8355 or at www.fuelairspark.com under Tech Help with any questions.

Warning: Please review the packaging contents to ensure you have all hardware and read the complete instructions, especially the torque specs, before installation.

Package Contents

Hardware Included In Packet #CF007-711	
2	M6 x 15mm Socket Head Cap Screws (Throttle cable bracket)
4	M6 x 40mm Socket Head Cap Screws (OEM DBW Throttle Bodies)
1	M4 x 20mm T-20 Torx Head Screw (MAP sensor hold down)
10	M6 x 10mm Wide x 5mm Tall Hex Nuts (Upper shell hold down)
18	M6 x 80mm Socket Head Cap Screws (Bolts manifold to cylinder heads and upper shell)
18	M6 x 16.5mm O.D. x 3.5mm Thick Flat Washer (Manifold to cylinder head bolts)
10	M8 x 30mm Button Head Cap Screws (Replacement OEM valley plate bolts)

FAST®
3400 Democrat Rd.
Memphis, TN 38118
Phone: (901) 260-3278 Fax: (901) 375-3408
www.fuelairspark.com

Part #FAST4-153
Revised 4/24/17

Hardware Pre-Installed In LSX$_R$™ Manifold #146202 / #146202B	
3	M6 x 16mm Socket Head Cap Screws (Rear upper shell hold down)
2	M6 x 40mm Socket Head Cap Screws (Front upper shell hold down)
2	M6 x 10mm Wide x 5mm Tall Hex Nuts (Upper shell hold down)
2	M6 x 80mm Socket Head Cap Screws (Bolts manifold to cylinder heads and upper shell)
8	M4 x 20mm T-20 Torx Head Screw (Runner hold down)
2	M6 x 16.5mm O.D. x 3.5mm Thick Flat Washer (Manifold to cylinder head bolts)
8	M4 x 10mm T-20 Torx Head Self-Tapping Screw (LS7 Runner insert hold down)
5	6mm x 12mm O.D. x 1.5mm Thick Flat Washer (Upper shell front and rear hold downs)
2	Phillips Head Self-Tapping Screw (Vacuum nipple)
O-Ring Gasket Included in Package	
8	Port Seals (Intake to cylinder head)
1	102mm Seal (Throttle Body)

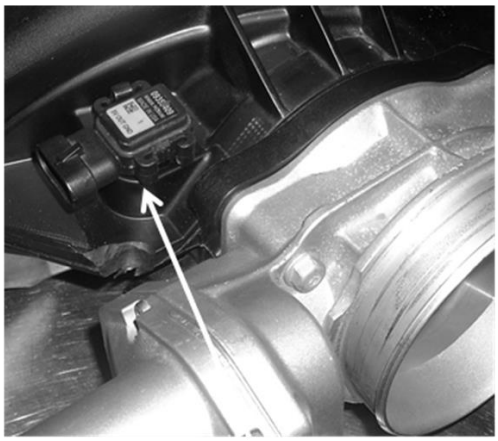
Stock Manifold Disassembly:

1) Allow engine to cool, disconnect the negative battery cable and remove coil (beauty) covers, if applicable. Relieve fuel pressure by depressing the Schrader valve on the end of the rail. Cover with a towel to absorb lost fuel.

2) Clean off any excess dirt and debris around the intake manifold that could become dislodged and fall into your engine during removal.

3) Disconnect fuel line from rail by using quick-connect separator tool (J37088-A). Place shop towels around connection to catch additional gasoline.

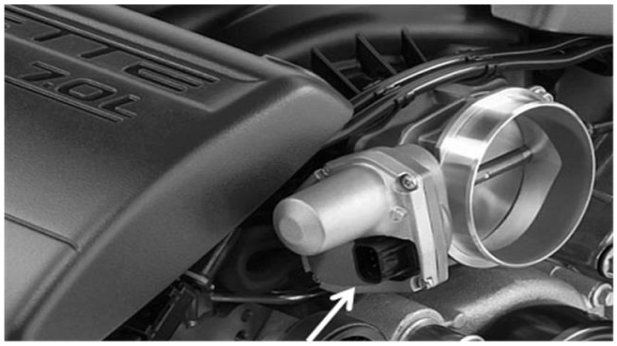
4) Unplug Mass Air Flow (MAF) and Manifold Absolute Pressure (MAP) connectors and remove air cleaner assembly.



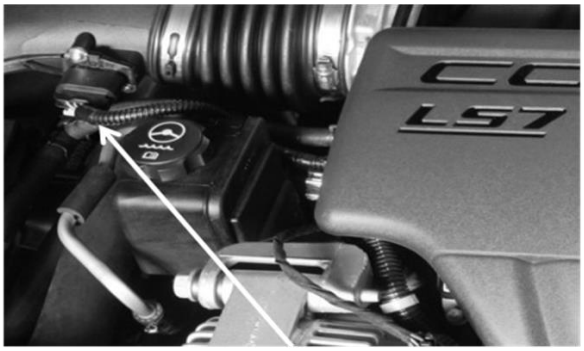
MAP Sensor

5) Disconnect any PCV hoses or vacuum lines on the intake manifold, including the brake booster hose. Take note of positions for reinstallation.

6) Disconnect the electronic throttle body connector.



Electronic Throttle Body



MAF Sensor

7) Unplug all eight (8) fuel injectors.

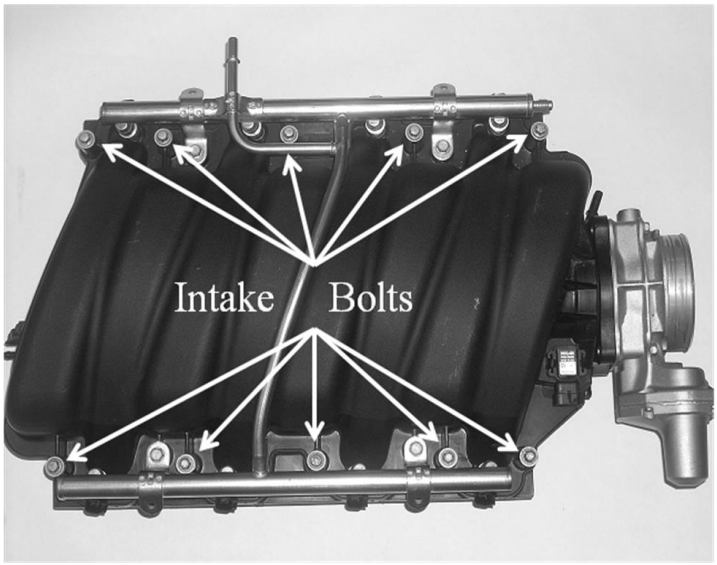
8) Loosen all ten (10) intake manifold bolts (8mm hex).

9) The stock manifold is ready to be removed. Carefully lift the manifold and remove.

10) Clean any remaining dirt and debris that may dislodge and enter the engine.

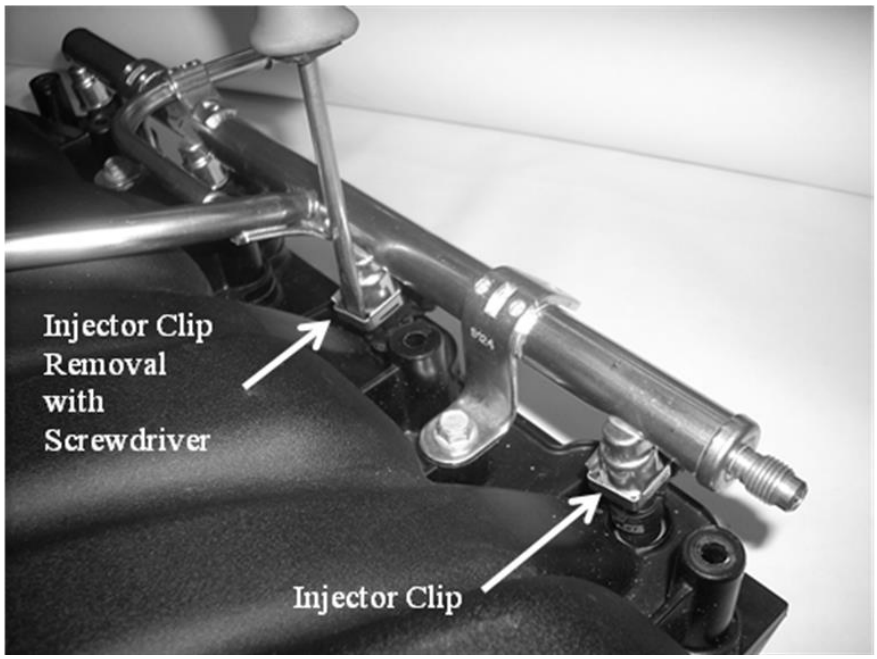
11) Cover the open cylinder head ports with a clean, lint-free rag to prevent anything from entering your engine.

12) Remove the four (4) fuel rail mounting bolts and remove the stock fuel rail and injectors as an assembly.



13) Remove injector clips using a screw driver to gently pry them off.

14) Remove injectors from the fuel rail, remembering that the fuel rail is still full of fuel. Take precautions to contain the excess fuel that will leak out. Rubber gloves and safety glasses are required.



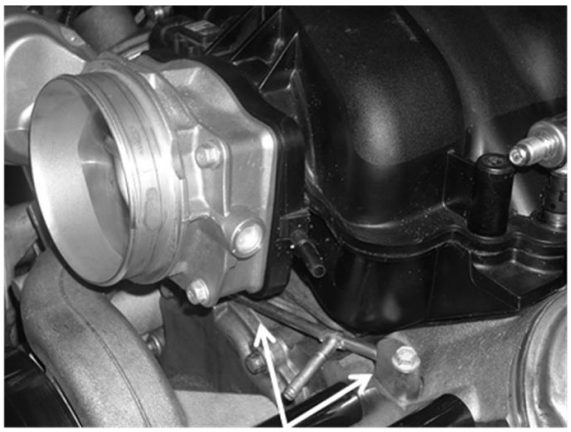
Required Modifications:

1) **IMPORTANT: Replace 10 valley plate bolts with the button-head cap screws provided. Torque to 18ft./lbs. Failure to replace these bolts could damage the FAST™ manifold.**

2) Coolant crossover lines modification and/or replacement may be required depending on application. Use GM Part #12602544 front only crossover, and two (2) of Part #12602540 plugs if needed.

3) Remove the upper shell from the manifold. Due to the wide range of applications the LSX_R™ was designed to fit, MAP sensor locations require drilling. There is a front and a rear location provided. Both are intentionally shipped plugged.

4) The LS7 uses the front MAP sensor location, it will need to be drilled all the way through to allow the MAP sensor to read manifold vacuum.



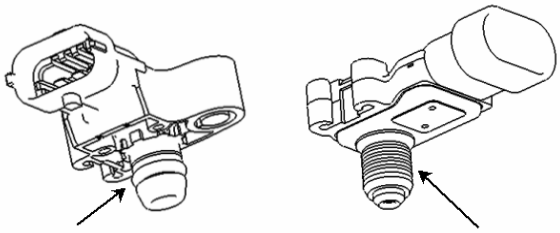
Coolant Crossover Tube

5) There are two different MAP sensors that can be used. If your MAP is a grommet style, use a 3/8" drill bit to drill through the front MAP port location. If your MAP sensor is O-ring style, you must drill out the front MAP sensor location with a 15/32" drill bit.

6) A MAP sensor hold-down insert and bolt has been added to the LSX$_R$™ intake to help hold the MAP sensor tightly in position. The MAP sensor should not be torqued past 19 in./lb., when attaching the MAP sensor to the LSX$_R$™ intake.

7) Remove all shavings left over from drilling the MAP sensor.

MAP Sensor Identification



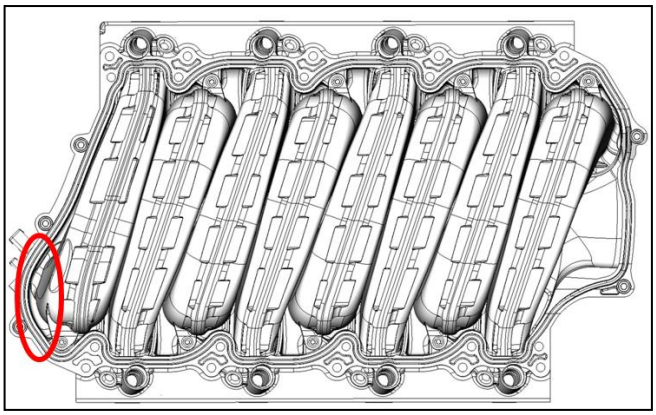
O-ring style, drill out with 15/32"

Grommet style, drill thru with 3/8"

Before Installation in Vehicle:

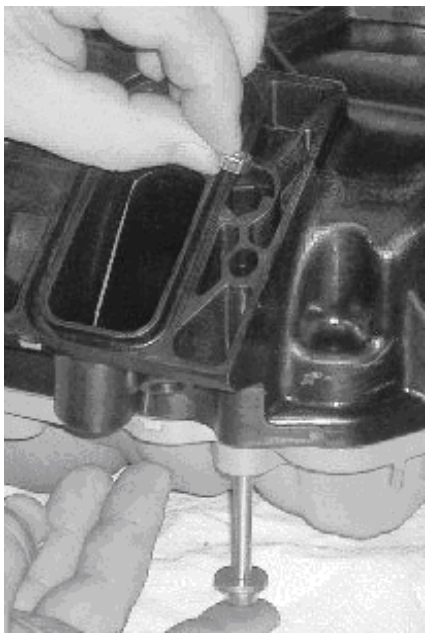
1) Before reassembly, reapply a small amount of RTV in the rear seal grove to ensure a proper reseal of the manifold.

2) You will notice that two of the upper shell bolts are installed for you during shipment. The other eight (8) need to be installed at this time using the supplied M6 x 80mm bolts and nuts. To install, using some soft clean rags, flip the manifold upside down (see picture).

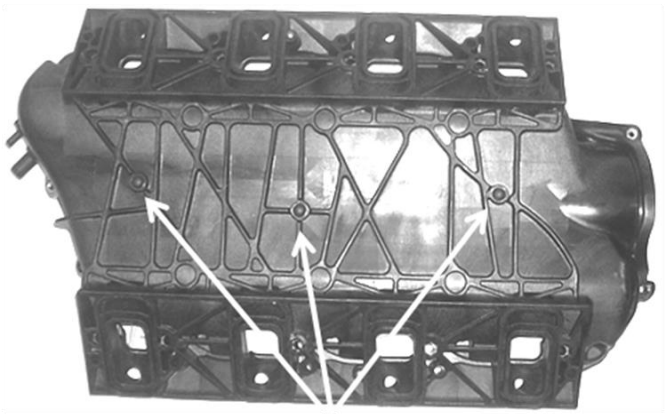


3) Install an M6 x 80mm bolt and matching washer, noting that the washer's bottom side is flat while the top side is slightly convex. Insert a bolt with washer into an upper shell hold down hole. Next, install the nut in its opening on the lower flange of the manifold near the port seals. At this time the nut should be laying flat on top of the bolt. Start turning the bolt by hand to start the threads together. Repeat until all ten (10) upper shell hold down bolts are started.

WARNING: It is critical to ensure that the upper lid has seated correctly into the lower shell all the way around, thereby tightening the upper shell to the lower shell. Failure to ensure this step may result in damage to the intake manifold.

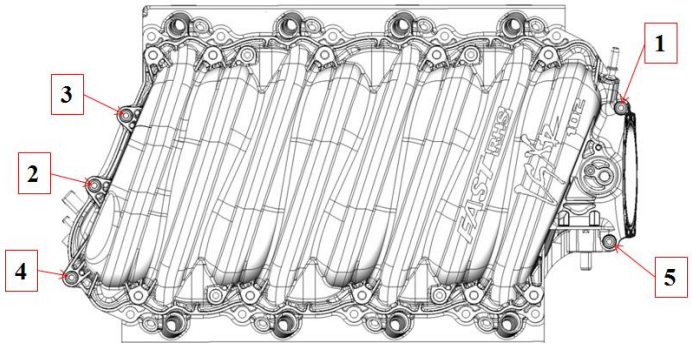


4) Flip over the intake and when viewing the bottom side you will see there are three circles molded into the base for rubber bumper installation. Because the bumpers are self-adhesive it is important to pre-clean the base of the manifold where the bumpers are to be installed with a cleaner (such as isopropyl alcohol) and allow it to dry. Next install the three (3) included rubber bumpers to the bottom side of the intake by sticking them onto the clean surface.



Rubber Bumpers Installed

5) Flip the LSX_R™ back over, and torque the upper shell-bolts to 70-89in/lbs. There are five (5) upper shell hold-down bolts, two (2) in the front near the throttle body and three (3) in the rear of the LSX_R™. Tighten using medium-strength thread locker and in the proper sequence as pictured. Torque upper shell bolts to 70-89in./lbs. These were installed prior to shipping and were removed during upper lid removal. **IMPORTANT: Failure to properly align the upper shell to the lower shell could damage the FAST™ manifold.**

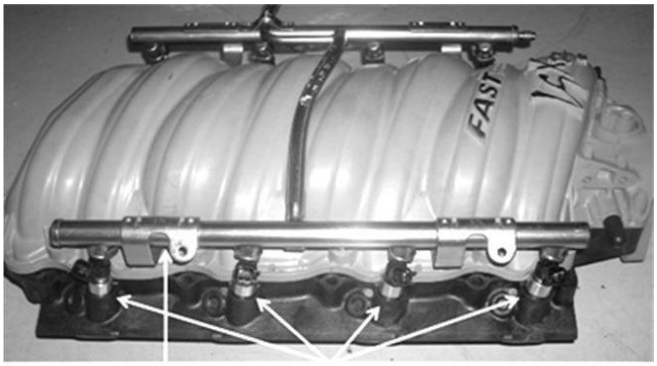


6) Inspect the LSX_R™ manifold, ensuring that there are not any loose nuts or bolts that may fall into your engine.

7) Uncover cylinder head ports.

8) Install injectors into the OEM-style fuel rail. Inspect injector o-rings for damage. The OEM recommends new o-rings after disassembly, however replacement is not necessary if the seals are not worn or damaged. Lubricate ALL o-rings with clean engine oil. Reinstall injector clips.

9) Install injector cup adapters with o-rings to the bottom of the LS7 injectors. Lubricate ALL o-rings with clean engine oil. **NOTE: OEM style fuel rail, bolts, injector cup adapters and o-rings are provided in Part #146020-KIT.**



OEM Type Fuel Rail with Injector Cup Adaptors

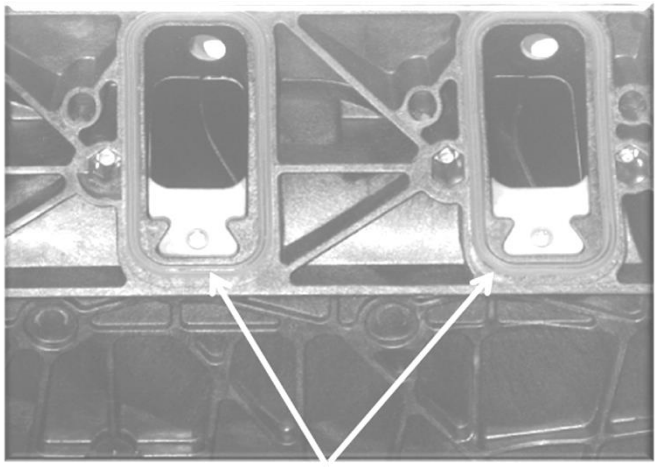
10) Install injectors into the LSX$_R$™ manifold. Carefully start all injectors in pockets, then firmly seat one side at a time. Do not reuse the OEM fuel rail hold-down bolts. Be sure to use the four (4) M6 x 12mm button-head bolts that are included in Part #146020-KIT and torque to 70-89in./lbs.

IMPORTANT: Do not reuse OEM fuel rail mounting bolts! Failure to replace these bolts may damage the FAST™ manifold.

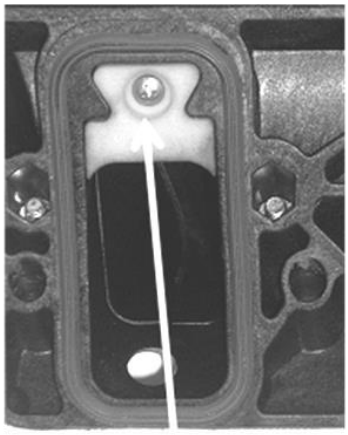
11) Install intake port seals. Failure to install these seals will cause massive vacuum leaks.

12) Make sure your selected MAP sensor port has been drilled and is all the way through.

NOTE: It is not recommended that the port adapter and screw be removed from the intake assembly. If removed, torque to 8-9 in./lbs. The port adapter screw can strip easily and that is why removal is not recommended.



Intake Port Seals Installed



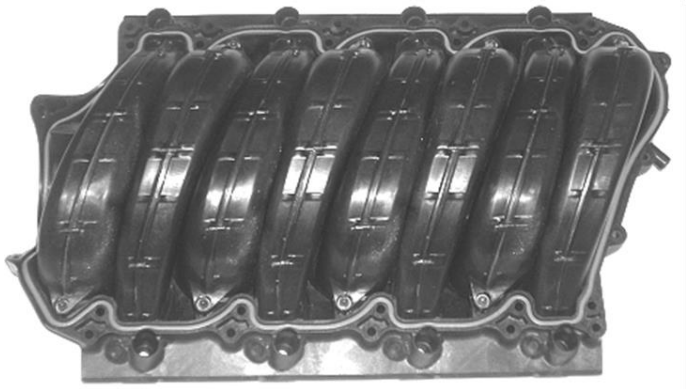
Do Not Remove

Individual Runner Removal (Not required):

1) Remove intake from engine if installed.

2) Remove the upper shell from the intake, being sure to account for any loose hardware to expose runners.

3) Using a T-20 Torx, remove the runner hold down bolt for each individual runner.



Upper Lid Removed with Runners Exposed

Individual Runner Reinstallation:

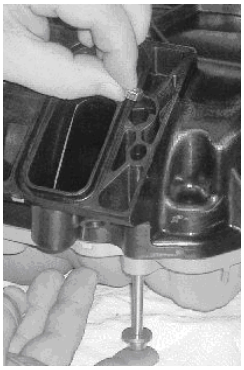
1) To facilitate assembly of the runner tube and to minimize potential damage to the o-ring, the customer should apply a light coating of soap-water solution to the o-rings. The soap-water solution can be made with one (1) tablespoon of gentle hand soap in one (1) cup of warm water which should be mixed well.

2) Install the rear most runner first and work your way to the front.

3) While holding the runner tube into the pocket of the lower manifold with light but firm force, the M4 screws should be torqued to 19 in./lb. Tightening the screws beyond this can result in stripping of the fastener or damaging of the inserts and is not necessary.

4) Thread-locker has been provided on the fasteners. Additional thread-locker should not be necessary but can be reapplied if the thread-locker is removed through repeat installation/removal of the runners.

5) For best engine performance the runner tube o-ring should always be used. Should your o-ring require replacement, these can be ordered individually (Part #146006-1). They can also be ordered as a set of eight (8) (Part #146006-8).



CAUTION: Do not remove the upper lid to expose the individual runners while the intake is still on the engine. The nuts that were previously installed to hold the upper and lower together can fall into your engine and cause catastrophic engine failure!

Manifold to Engine Assembly:

1) Reconnect the coolant crossover line hose. Torque crossover pipe bolts to 106 in./lbs.

2) Place the manifold in the valley but do not place all the way rearward. Attach the brake booster hose and push in the MAP sensor by sliding in the small vacuum nipple. MAP sensor bolt-down insert threads are also provided with the LSX_R™. Reconnect the MAP sensor to the harness.

3) Move manifold into position. **DO NOT SLIDE THE MANIFOLD ON THE CYLINDER HEAD** because seals could be damaged or become dislodged. Once in correct position, the bolt bosses will find counter bores in the cylinder heads.

4) Add medium strength thread locker to all ten (10) intake bolt threads hand start all ten (10) fasteners. Don't forget the fuel rail stop bracket(s), if required.

5) Make two (2) passes in the sequence shown below. First pass (45in./lbs.), final pass (89in./lbs.). **Caution: Over-torquing will damage the manifold and cause improper sealing!**

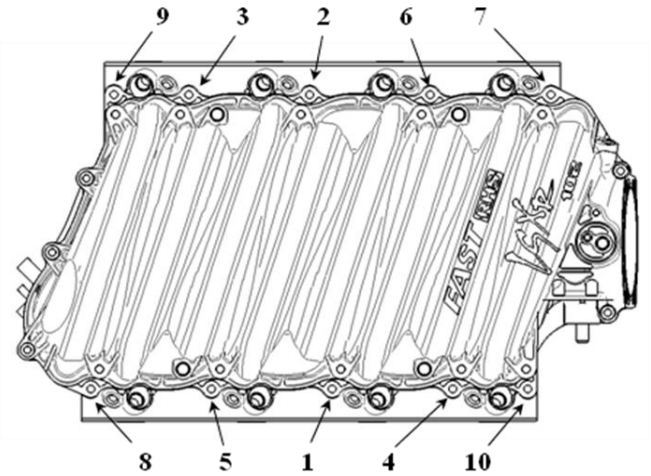
6) Ensure the throttle body seal is installed. Next, install the four (4) M6 x 40mm supplied bolts and throttle body, torque to 70-89 in./lbs. **IMPORTANT: Do not reuse your OEM throttle body bolts. Failure to replace these bolts could damage the FAST™ manifold.**

7) Reconnect any PCV hose on the manifold that was previously removed, reconnect all eight (8) fuel injector wire connectors and finally reconnect the MAF sensor and induction system.

8) Add a few drops of clean engine oil to the male end and securely reconnect fuel line to rail.

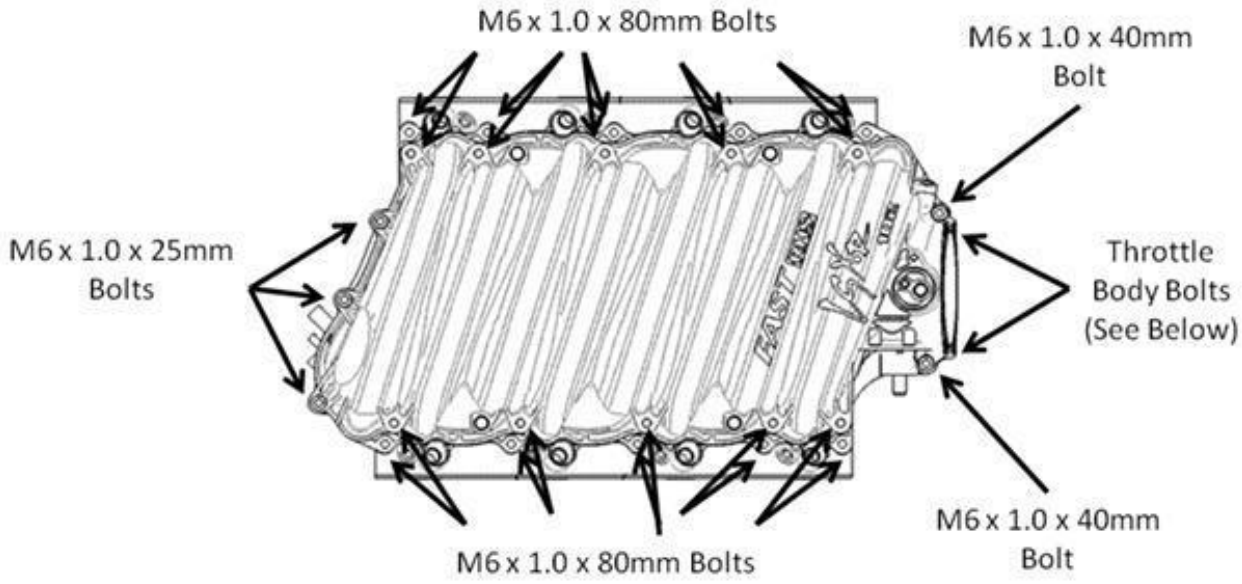
9) Reconnect the battery and check for fuel leaks before starting the engine by cycling the key a few times to build pressure in the fuel system.

10) After the engine has started, recheck again for any fuel leaks.



Manifold cylinder head fastener torque sequence for LS7

FAST 102mm LSXR Intake Manifold Bolt Placement For #146202 (LS7)



Throttle Body Bolts

OEM Drive By Wire 90mm Throttle Body use M6 x 1.0 x 40mm

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Replacement Parts:

Your FAST® LSX$_R$™ Manifold can be purchased in individual components:

FAST™ (Part #)	Description	QTY
146201	Lower Shell	1
146253	LS7 Runner Set	8
146000	Upper Shell – 102mm	1
146004	Throttle Body Seal – 102mm	1
146203-1	Cylinder Head Port Seal	1
146203-8	Cylinder Head Port Seals	8
146006-1	Runner Seal	1
146006-8	Runner Seals	8

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FAST®
LIMITED LIFETIME WARRANTY AND LIMITED WARRANTY

FAST® warrants that its EZ-EFI™ products are free from defects in material and workmanship for the lifetime of the product. This **Limited Lifetime Warranty** shall cover **only** the original purchaser. All other FAST™ products are covered by a **Limited Warranty** which covers defects in material and workmanship for a period of **one year** from the date of purchase.

FAST's obligation under this warranty is limited to the repair or replacement of its product. To make a warranty claim, the part must be returned directly to FAST® at the address listed below with a valid Return Merchant Authorization Number (RMA), freight prepaid. Items covered under warranty will be returned to you freight collect. To obtain an RMA, call 877-334-8355 to report the issue you are experiencing. At that time, FAST® will attempt to trouble shoot your issue.

It is the responsibility of the installer to ensure that all of the components are correct before installation. We assume no liability for any errors made in tolerances, component selection or installation.

There is absolutely no warranty on the following:

A. **Any parts used in racing applications or subject to excessive wear;**

B. **Any product used in marine applications, unless that product is listed by FAST™ as a specific marine product;**

C. **Any product that has been physically altered improperly installed or maintained;**

D. **Any product used in improper applications, abused, or not used in conjunction with the proper parts.**

There are no implied warranties of merchantability or fitness for a particular purpose. There are no warranties which extend beyond the description of the face hereof. **FAST® will not be responsible for incidental and consequential damages, property damage or personal injury damages**. Where required by law, implied warranties or merchantability and fitness are limited to terms outline above.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.