07/07/2026

GM LS Fabricated Intake Installation Instructions

Parts List:

- Intake Manifold
- O-ring seals, mounting bolts, vacuum fittings & hardware
- 8AN Fuel rail kit including mounting brackets, fittings and necessary hardware

PLEASE READ THROUGH THESE INSTRUCTIONS BEFORE STARTING INSTALLATION

Flow EFI has manifolds available for GM LS Gen III & IV engines with either cathedral port (LS1/2/6) or rectangle port (LS3). They are designed to work with OE or aftermarket cylinder heads. They are designed for high performance engines and perform best at higher RPM's. Check for hood & accessory clearance (alternator location etc.) on all vehicles **BEFORE** your start your installation. Adapters and fittings are available to fit most configurations.

Modified engines/blocks:
If your block has been milled or has had any deck modifications, you will need to take steps to align the ports and mounting points as required.
1) Check for intake mounting bolt hole alignment. The fasteners must thread easily into the cylinder head or improper sealing may result.
2) DO NOT remove material from the intake flanges as the o-rings need to seat correctly. Any modifications should be done on the cylinder head, not the manifold.
3) Use caution when port matching on the intake to not damage the o-ring grooves.

Installation:

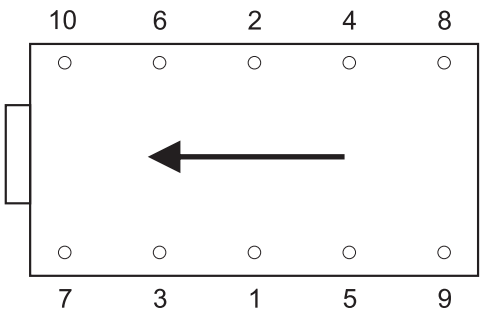
1) Before installation, test fit the manifold without o-rings to ensure the mounting bolts thread in easily and the surfaces mate appropriately.

2) Test fit all vacuum lines, fuel line plumbing, throttle body linkage and cable and other wiring and sensors to ensure there will be no issues after the manifold has been mounted in position. Decide which vacuum ports on the intake will be used (or not) and thread in fittings or plugs accordingly using PTFE thread sealer. Intake has 3 x 1/8"npt and 1 x 1/4"npt ports. There is also a provision for a Map Sensor (LSA/LS9 style) at rear of intake = Use GM#55567257 (2.7-Bar) or 12591290 (1-Bar)

3) Install the eight o-rings using a small amount of grease to hold them in position during installation.

4) Apply lubricant to the mounting bolts and thread them all the way in by hand.

5) Tighten the bolts in the correct factory sequence as shown in two stages. First to 44 in/lbs., then to 89 in/lbs.



Fuel Rails:

1) LS1/2/6 cathedral intakes have .530" rail and .540" manifold bungs. Use 2.55" LS1 EV1 or 2.08" LS2 EV6 injectors (LS2 injectors will require lower o-ring change). LS3 rectangle port intakes have .530" rail and .560" manifold bungs. Use 1.48" LS3 EV6 injectors. LS2 injectors can be used by spacing the fuel rail mount 1/2" (spacer not supplied)

2) Apply silicone lubricant the top o-rings (inlets) of the injectors and gently rock back and forth to install them into the fuel rails.

3) Position the injectors correctly as to the connector locations.

4) Apply silicone lubricant to the bottom o-rings (outlet) of the injectors and gently insert into the manifold using slight pressure on the rail. Note: The rails have countersunk mounting holes that should be facing outwards. (Flow EFI logo faces outward)

5) Attach rail mounting brackets using the screws, washers and nuts supplied. After tightening (DO NOT OVERTIGHTEN!) check that the injectors twist within their seated positions and there is no load on the injector bodies.

6) Attach fuel lines according to your application. The fuel rail is equipped with 8AN ORB threads. The fittings included adapt to 6AN which will support up to 600HP. The kit is also supplied with a 6AN rail connector fuel line. It may or may not be used depending on how your regulator(s) are mounted. For applications over 600HP, you will need fittings such as our #9200808 (8AN to 8AN ORB). 90 degree ORB to AN fittings also available for applications where clearance may be an issue.

Manifolds:
646301 - LS1/2/6 92/102mm Silver (Low Profile with angled throttle body)
646303 - LS3 92/102mm Silver (Low Profile with angled throttle body)
646311 - LS1/2/6 92/102mm Black (Low Profile with angled throttle body)
646313 - LS3 92/102mm Black (Low Profile with angled throttle body)
646501 - LS1/2/6 92/102mm Silver (Tall Profile with straight throttle body)
646503 - LS3 92/102mm Silver (Tall Profile with straight throttle body)
646511 - LS1/2/6 92/102mm Black (Tall Profile with straight throttle body)
646513 - LS3 92/102mm Black (Tall Profile with straight throttle body)
Throttle Bodies:
646200 - 92mm (Silver), 646210 - 92mm (Black)
646300 - 102mm (Silver), 646310 - 102mm (Black)
646300E - 102mm (DBW Silver), 646310E - 102mm (DBW Black)
Throttle Cable Brackets
646100 - (Silver) or 646110 - (Black) (OE Style Cable)
646105 - (Silver), 646115 - (Black) (Lokar Style Cable and TH700R4 TV Cable Mount Optional)
646140 - Replacement 4 bolt gasket (supplied in 646100/646110)
Replacement O-Rings 8/pk
646121 - LS1 (Cathedral)
646123 - LS3 (Rectangle)
Steam Port Fittings/Kits:
82002 (4AN adjustable 2/pk), 82004 (4AN non-adjustable 2/pk)
82000 (2 port soft line kit), 82001 (4 port soft line kit)
82003 (4 port hard line kit)

Questions? Please e-mail us at sales@performance-world.com