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GM LS ProRam Intake Installation Instructions

646421/646431 (Silver/Black) - LS1/2/6 102mm (Low Profile with angled throttle body)
646423/646433 (Silver/Black) - LS3 102mm (Low Profile with angled throttle body)
646521/646531 (Silver/Black) - LS1/2/6 102mm (Tall Profile with angled throttle body)
646523/646533 (Silver/Black) - LS3 102mm (Tall Profile with angled throttle body)

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 perfect for boosted applications. 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.

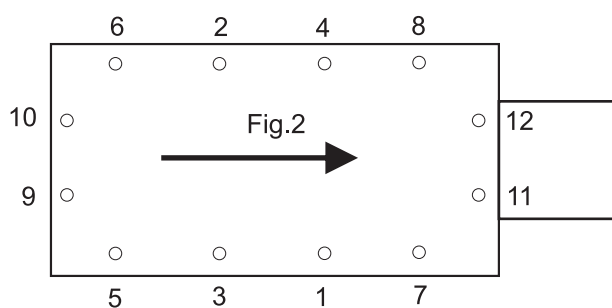
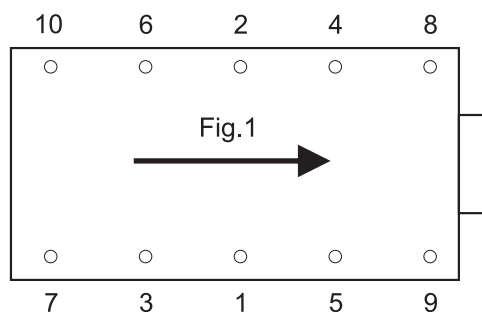
Modified engines/blocks:

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 upper/lower 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 1 x 1/8"npt and 1 x 3/8"npt port. 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 on the lower manifold using a small amount of grease to hold them in position during installation.
- 4) Apply a small amount of lubricant to the mounting studs and thread them all the way in by hand.
- 5) Tighten the lower manifold with nuts & washers in the correct factory sequence as shown (fig.1) in two stages. First to 50 in/lbs., then to 100 in/lbs.



Upper Plenum:

- 1) The 54" o-ring cord will need to be cut to length and glued together using cyanoacrylate (Crazy Glue).
- 2) Place the o-ring in the groove until the ends overlap. Mark the area to cut across both ends. Lay on a flat surface and cut with a sharp razor blade.
- 3) Glue the two ends together ensuring they are straight and not offset.
- 4) When installing on the manifold, use a small amount of silicone at the joint to ensure a perfect seal.
- 5) Using the supplied bolts and washers, tighten in two steps working from the center outwards. (Fig.2) First round to 70 in/lbs, then second round to 120 in/lbs.

Fuel Rails:

- 1) The 646421-646533 ProRam LS intakes have .530" rail and .540" manifold bungs. Use 1.48" LS3 EV6 injectors. LS2 (2.08") injectors can be used by spacing the fuel rail mount up 1/2" (spacers 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 four bosses that should be facing inwards.
- 5) Attach rail mounting brackets using the screws and lock washers 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 for 8AN fuel lines. The kit is also supplied with a 8AN rail connector fuel line. It may or may not be used depending on how your regulator(s) are mounted. If you wish to run 6AN lines, adapters and fittings are available separately.

Throttle Bodies: (NOTE: These intakes use 1/4"-20 thread for T/B mounting - Not standard M6!)

646200/646300 - 92/102mm Silver
646210/646310 - 92/102mm Black
646300E - 102mm DBW Silver
646310E - 102mm DBW Black

Parts List:

- (12) 1/4"-20 x 1.00" socket head bolts (upper plenum)
- (12) 1/4" washers (upper plenum)
- (1) 54" 3/32" o-ring cord (upper plenum)
- (8) #151 intake port o-rings (646121-LS1 646123 - LS3)
- (1) T/B gasket
- (10) M6x1.0 x 70mm intake mounting studs
- (10) M6 intake mounting nuts
- (10) M6 intake mounting washers
- (1ea) 1/8"npt, 1/4"npt and 3/8"npt plugs

Injector Rail Parts List:

- (2) 8AN injector rails
- (1) 8AN rail connector hose
- (3) 8AN ORB to 8AN male fitting
- (1) 8AN ORB plug
- (4) short injector brackets
- (4) tall injector brackets
- (4) 5/16"-24 x 1.50" hex head bolts
- (4) 5/16"-18 x .875" socket head bolts