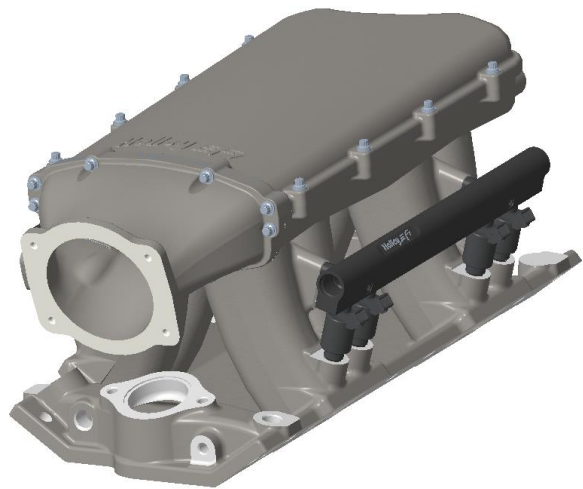




**Holley Hi-Ram Intake Manifold Kits
For Small Block Chevrolet Engines P/N 300-950 & 300-951
Installation Instructions 199R12496**



300-950



300-951

Congratulations on your purchase of the Holley Small Block Chevy Hi-Ram intake manifold! Read and follow these instructions before and during the installation to preserve the warranty. Be certain that all the required parts and tools are on hand before beginning the original manifold assembly.

APPLICATIONS:

300-950 & 300-951 intake manifolds are designed for 1957-86 262-400cid Small Block Chevrolet engines and SBC engines equipped with 1987-91 L98 aluminum Corvette cylinder heads (non-EGR applications). Also, these manifolds will work with any SBC engine equipped with aftermarket cylinder heads, as long as they have a standard port flange opening and bolt hole locations. A modified hood will be required for most vehicle applications.

EMISSIONS EQUIPMENT:

Holley Hi-Ram intake manifolds do not accept any emission-control devices. This part is not legal for sale or use for motor vehicles with pollution-controlled equipment.

ELECTRONIC FUEL INJECTION:

These intake manifolds are intended for use with electronic fuel injection. Holley EFI has a full line of engine management systems, throttle bodies, fuel injectors, and other installation components required to successfully set-up and operate an electronically fuel injected engine for applications ranging from street to heads-up competitive racing with forced induction or nitrous. Go to the Holley EFI home page within www.holley.com for a full description of EFI engine management systems, EFI components, and accessories available for your GM SBC engine and the Holley EFI intake manifolds.

300-950 CONTENTS:

- ☐ Intake Manifold
- ☐ Plenum Top Kit
- ☐ Fuel Rail Kit
- ☐ Installation Kit

300-951 CONTENTS:

- ☐ Intake Manifold
- ☐ Plenum Top
- ☐ Throttle Body Adapter Kit
- ☐ Fuel Rail Kit
- ☐ Installation Kit

300-950 & 300-951 INSTALLATION KIT CONTENTS:

- ☐ 1 – 4.5 ft – O-ring Cord, 3/32" Dia. Round Section Viton, Plenum Flange Seal, Holley Service P/N 508-21
- ☐ 1 – 1/8 NPT Hex Steel Pipe Plug
- ☐ 1 – 1/4 NPT Hex Steel Pipe Plug
- ☐ 1 – 1/2 NPT Hex Steel Pipe Plug
- ☐ 3 – 3/8 NPT Hex Steel Pipe Plug
- ☐ 12 – 1/4-20 x 1" 12-point cap screws
- ☐ 12 – 1/4" Washers

300-950 & 300-951 FUEL RAIL KIT CONTENTS:

- ☐ 2 – Fuel Rails, High Volume, Configured with 3/4-16 O-ring Ports (AN-8)
- ☐ 4 – Fuel Rail Spacers
- ☐ 4 – Screws, Socket Head Cap, 1/4-20 1.88" Long, Fuel Rail to Intake Manifold

300-950 PLENUM TOP KIT CONTENTS:

- ☐ 1 – Plenum Top
- ☐ 1 – Gasket, 105mm LS Throttle Body, Holley Service P/N 508-24
- ☐ 1 – Throttle cable bracket
- ☐ 2 – 1/4-20 x 5/8" low profile socket head screws

300-951 THROTTLE BODY ADAPTER KIT CONTENTS:

- ☐ 1 – Throttle Body Adapter
- ☐ 1 – Gasket, 105mm LS Throttle Body, Holley Service P/N 508-24
- ☐ 1 – Throttle Cable Bracket
- ☐ 2 – 1/4-20 x 5/8" low profile socket head screws
- ☐ 1 – 2 ft – O-ring Cord, 3/32" Dia. Round Section Viton
- ☐ 8 – 1/4-20 x 1" 12-point cap screws
- ☐ 8 – 1/4" Washers

ADDITIONAL PARTS REQUIRED FOR MANIFOLD INSTALLATION:

It may be necessary to purchase some of the parts listed below (or the equivalent) in order to properly complete the manifold installation. Determination of equivalency is the responsibility of the consumer, and Holley does not assume that responsibility.

- A. Intake manifold gasket set, Mr. Gasket 5812 is recommended
- B. Thermostat housing gasket – Mr. Gasket 738G or 740C
- C. Silicone RTV, such as Mr. Gasket 78080G
- D. Pipe thread sealant, such as Earl's P/N D024ERL

INSTALLATION INSTRUCTIONS:

The Hi-Ram modular intake manifolds are designed to provide maximum performance for racing engines. The intake manifold will have the best fitment when the engine block and cylinder heads are machined to standard OE dimensions. If the engine block or cylinder head deck surfaces have been milled significantly, the alignment of the mounting bolt holes and the port flange openings to the cylinder head may be shifted and not match-up satisfactorily. If your engine has had the cylinder head or engine block deck surfaces milled, the following may be necessary for proper intake manifold installation.

- The bolt holes in the intake manifold would have to be slotted to allow the fastener to properly pass through the manifold mounting holes.
- The mounting fasteners must freely thread into the cylinder head while passing through the mounting holes or the manifold may not seat properly onto the cylinder head surfaces when the fasteners are tightened.

INSTALLATION OF BASE INTAKE MANIFOLD:

1. Before installing the intake manifold base, perform a test fit of the intake manifold with intake manifold gaskets in position. Make sure that the mounting bolts thread freely into the cylinder heads through the intake manifold mounting holes and the mounting flange seats properly.

2. Check the port opening alignment. Test fit the plenum top, fuel and vacuum plumbing, throttle linkage, wiring, etc. to ensure there are not any fit issues before performing the final intake manifold installation.
3. Install the mounting studs into the cylinder heads. Apply engine oil to the threads and thread in the stud until all of the threads are engaged by hand.
4. Torque the mounting bolts using the sequence shown, tighten each bolt in several stages. Set final torque to 25 ft./lbs

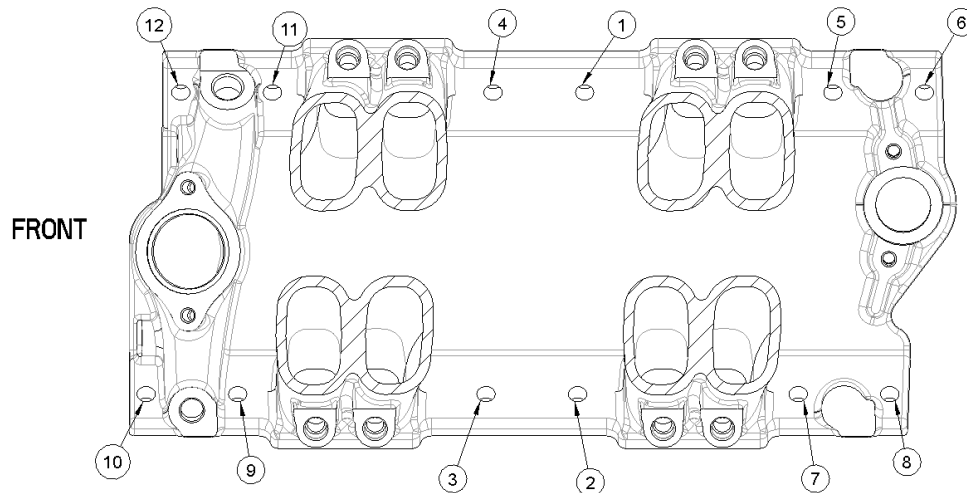


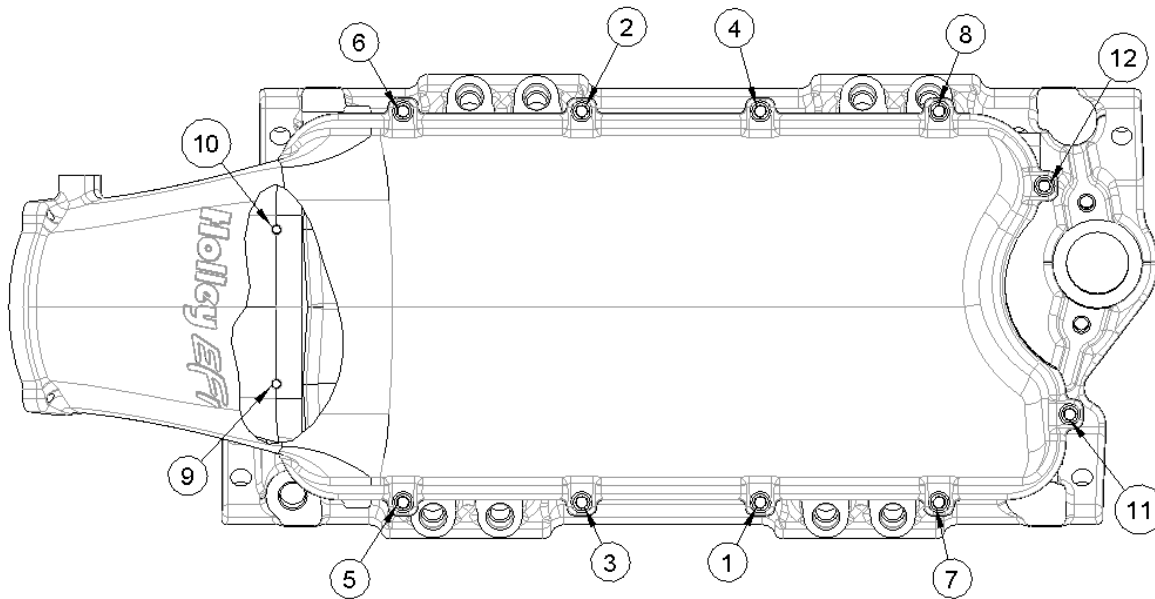
Figure 2

5. Install the thermostat, thermostat housing gasket and the thermostat housing. Be sure that the thermostat housing has been cleaned of any old gasket material.
6. Replace the distributor and set to proper orientation position.

300-950, Installation of the Plenum Top

1. Before installing the plenum top with the supplied O-ring cord. The cord will need to be cut to length and glued together.
 - Lay the O-ring cord into the groove on the plenum flange of the base manifold with the free ends overlapped.
 - Mark the position of the cut to be made across both O-ring cord ends.
 - Lay the O-ring cord on a flat surface with the ends overlapped and the marks aligned as they were when the marks were made.
 - With a sharp razor blade, cut through both ends of the O-ring cord at the mark simultaneously.
 - With a drop of super glue (Cyanoacrylate), bond the ends of the O-ring cord together. The glued joint should be smooth, not offset or kinked.
 - To ensure sealing at the glued joint, apply a thin film of silicone sealer around the O-ring at the glued joint, allowing the silicone to partially cure before installation of the joined O-ring cord in the groove.
2. Install the glued O-ring cord in the groove on the base intake manifold and set the plenum top in place.
3. Apply a drop of engine oil to each of the supplied 1/4-20 x 1" long 12-point cap screws. Thread each screw, along with a washer, through the plenum top and into the base manifold plenum flange, 10 places.

4. Gently tighten the fasteners evenly using the sequence below. Torque the fasteners to 75 in-lbs for the first step, then to the final torque of 130 in-lbs.

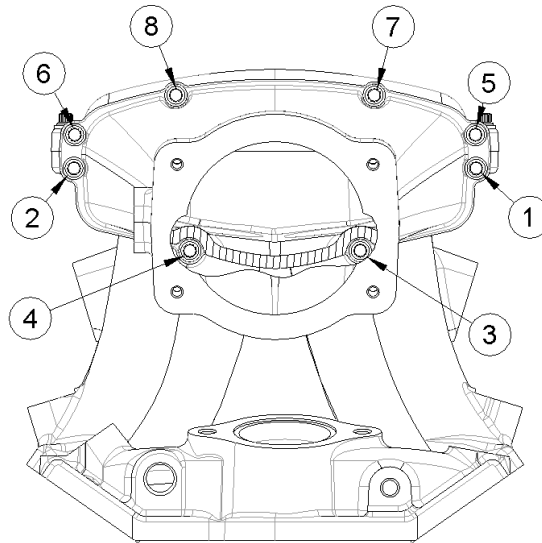


Plenum Top Tightening Sequence

300-951, Installation of the Plenum Top and Throttle Body Adapter

1. Place the supplied O-ring cord in the groove on the base manifold plenum flange so that the ends of the O-ring cord extend slightly out of the groove at the throttle body adapter flange. Then set the plenum top in place.
2. Apply a drop of engine oil to each of the supplied 1/4-20 x 1" long 12-point cap screws. Thread each screw, along with a washer, through the plenum top and into the base manifold plenum flange, finger tight.
3. Using a sharp razor blade, trim-off the two ends of the O-ring cord flush to the throttle body adapter flange on the base intake manifold.
4. Make sure the O-ring seal is not installed in the throttle body adapter during the preliminary installation of this part. Using the supplied 1/4" flat washers, apply a drop of engine oil to, and thread in the supplied 1/4-20 x 1" long 12-point cap screws through the throttle body adapter into the throttle body adapter flange formed by the base intake manifold and then into the plenum top flange (8 places). Lightly tighten the TB adapter fasteners until the throttle body adapter flanges of the base intake manifold and the plenum top are aligned. There may need to be several iterations of loosening and re-tightening the fasteners of the plenum top to make sure the TB adapter flanges are aligned as one flange and the plenum top is seated on the intake manifold with the O-ring compressed. Once the plenum top is properly in position with the fasteners tight enough to retain it in position, remove the throttle body adapter.
5. The supplied O-ring cord, 2-foot long, to seal the throttle body adapter needs to be cut to length and the ends glued together.
 - Insert the O-ring cord into the groove on the mounting flange of the throttle body adapter with the free ends overlapped.
 - Mark the position of the cut to be made across both O-ring cord ends.
 - Lay the O-ring cord on a flat surface with the ends overlapped and the marks aligned as they were when the marks were made.
 - With a sharp razor blade cut through both ends of the O-ring cord at the marks simultaneously.
 - With a drop of super glue (Cyanoacrylate), bond the ends of the O-ring cord together. The glued joint should be smooth, not offset or kinked.
 - To ensure sealing at the glued joint, apply a thin film of silicone sealer around the O-ring cord at the glued joint, allowing the silicone to partially cure before installation of the joined O-ring cord in the groove.

6. Install the glued O-ring cord in the groove on the throttle body adapter mounting flange. The O-ring groove in the throttle body adapter mounting flange is a dove-tail design.
7. Before installing the throttle body adapter, apply a dab of silicone sealer on the mating flange, (2 places), where O-ring seal groove for the plenum top mounting flange intersects throttle body adapter mounting flange. Using the supplied 1/4" flat washers, apply a drop of engine oil to, and thread in the supplied 1/4-20 x 1" long 12-point cap screws through the throttle body adapter and first into the throttle body adapter flange formed by the base intake manifold and after the plenum top flange (8 places). Gently tighten the eight fasteners for the throttle body adapter evenly until the O-ring seal is fully compressed and the adapter is seated on the mating flange.
8. Refer to the plenum top tightening sequence for 300-950, disregarding 9 & 10 in the sequence. Gently tighten the fasteners evenly. Torque the fasteners to 75 in-lbs for the first step, then to the final torque of 130 in-lbs.
9. Gently tighten the fasteners for the throttle adapter evenly using the sequence below. Torque the fasteners to 75 in-lbs for the first step, then to the final torque of 130 in-lbs.



Throttle Body Fastener Tightening Sequence

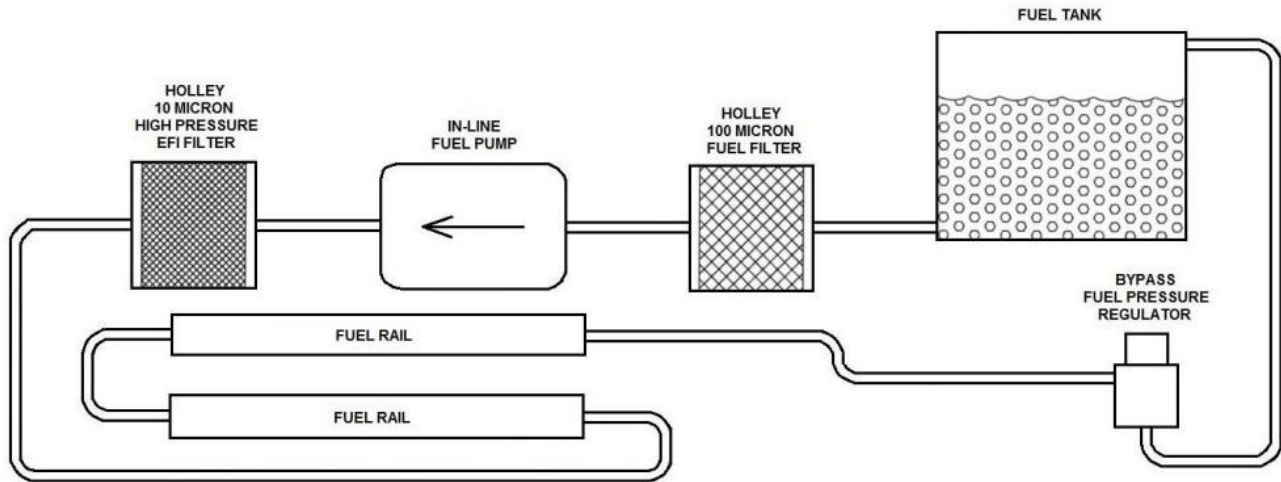
Installation of the Fuel Rails

There are 2 sets of holes for mounting the fuel rails to the intake manifold. The upper holes are for mounting the fuel rails at a height for a Bosch style EV1 type fuel injector. The lower holes are for mounting the fuel rails at a height for GM LS7 style fuel injectors.

1. Apply a silicone lubricant to the O-ring on the inlet end of fuel injectors and insert the fuel injectors into the ports in the fuel rail. To insert the injector without tearing the O-ring, gently rock the injector in the inlet of the port while applying pressure to insert the injector.
2. With the logo on the fuel rail oriented outward, position the injectors to properly orient the wiring plugs, apply silicone lubricant to the injector outlet O-rings, and insert all four injectors into the injector bores in the base intake manifold, applying gentle downward pressure on the fuel rail.
3. Apply a drop of oil to the provided socket head cap screws and use them, along with the provided spacers to attach the fuel rail to the manifold.
4. Tighten the mounting fasteners in two steps, 75 in-lbs for the first step and 130 in-lbs for the second step.
5. Once the fasteners are tightened, re-check and ensure the injectors are floating on the O-rings. Rotate the injectors back and forth to confirm that there is no load on the injector bodies.
6. The fuel rail is designed to provide enough flow and volume to dampen fuel pressure oscillations and variations at the inlet of the fuel injectors. The fuel rails are machined to receive an adapter fitting for 3/4-16 (AN-8) O-ring port.
 - For power levels below 700-750HP, AN-6 (3/8") plumbing to and from the fuel rails should be sufficient.

- For power levels above 750HP, AN-8 (1/2") plumbing is recommended.
- It is always recommended to only use tubular hose ends when a non-straight hose end is required.

7. Thoroughly check for fuel leaks



Plumbing Diagram

CAUTION! Check to ensure that there is adequate clearance for the throttle linkage through range of travel.

IMPORTANT! Check for adequate hood clearance before closing the hood.

1. Operate the engine for 30 minutes. Allow the engine to cool and re-torque the manifold bolts to 25 ft./lbs. to ensure a tight seal to the engine block.

GENERAL INFORMATION:

1. It is advisable to periodically recheck (every 6 months or 6000 miles) the torque on the manifold bolts to minimize the possibility of a manifold vacuum leak.
2. If the cylinder heads have been milled or the cylinder block "decked", the cylinder head faces and the end surfaces of the manifold must be milled to compensate. This is necessary to maintain correct port alignment, minimize the possibility of manifold vacuum leaks, and ensure proper engine performance.

**Holley Technical Support
1801 Russellville Road
Bowling Green, KY 42101**

**Phone: 1-270-781-9741
Toll Free: 1-866-464-6553**

For online help, please refer to the Tech Service section of our website: www.holley.com