Holley GM LS7 Street Single-Plane Intake Manifold Kits

300-269 / 300-269BK	LS7 Street Single-Plane Intake Manifold, Port-EFI W/Fuel Rails
300-270 / 300-270BK	LS7 Street Single-Plane Intake Manifold, Carbureted/TB EFI

INSTALLATION INSTRUCTIONS 199R11701

IMPORTANT: Before installation, please read these instructions completely.

APPLICATIONS:

The Holley LS Street single-plane intake manifolds are designed for GM LS7 engines used in retrofit engine installations into older classic/high performance cars and trucks. This product is intended for carbureted, throttle body EFI, or port EFI applications.

The LS Street single-plane intake manifolds are produced for street and performance engine applications, 5.3 to 6.2+ liter displacement, and maximum engine speeds of 6000-7000 rpm, depending on the engine combination. The Street single-plane design provides the lowest carburetor/throttle body flange height possible while providing maximum performance to 7000 rpm. These intake manifolds are sold for (pre-emissions control) applications only and will not accept stock components and hardware.

EMISSIONS EQUIPMENT:

Holley LS Street single-plane 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.

IGNITION CONTROL:

For intake manifold P/N's 300-270 and 300-270BK, retrofit carbureted or throttle body EFI applications, ignition control will need to be accomplished with a separate ignition control module. It is recommended to use an MSD 6LS ignition controller, MSD P/N 6012 for LS7 (58 tooth crank trigger engines). The MSD ignition controller will function with the OE crank trigger, cam timing sensor, and coils. A separate map sensor will need to be used if vacuum timing advance is desired with the MSD ignition controller. Holley 1bar MAP sensor P/N 538-24 is recommended.

For intake manifold P/N's 300-269 and 300-269BK, port EFI applications, the EFI control unit used may not provide ignition control with the OE LS engine sensors and ignition coils. In that case, the MSD 6LS ignition controller is also recommended as specified above.

ELECTRONIC FUEL INJECTION:

Intake manifold P/N's 300-269 and 300-269BK are intended for use with multi-point (or port) electronic fuel injection. While intake manifold P/N's 300-270 and 300-270BK are designed for retrofit carbureted applications, a throttle body electronic fuel injection system may be fitted to these intake manifolds. 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 controlled fuel injected engine for applications ranging from street to heads-up competitive racing with forced induction or nitrous.

DIMENSIONS:

NOTE: All heights measure to the lifter valley cover flange on the engine block.

- A-B Height (Carbureted or EFI): Same for both – A & B – 5.42" (0° carb flange angle)
- Port Size – 2.33" Height x 1.27" Wide
- Mounting Flange Gasket Type – .103" Round FKM O-Rings – Size 2-144, 2-1/2" I.D. **(included)**
- Carburetor Flange – Standard 4150 for up to 1-3/4" diameter throttle bores
- As-Cast Runner Cross-Sectional Area – 3.00 in² at the runner entry tapered to 2.85 in² at the flange exit.
- Vacuum Port Size and Thread **(plugs included for each if port not used)** –
  300-269 – (1) ¼ NPT, (1) 3/8 NPT, and (1) LS Style MAP (Manifold Absolute Pressure) sensor port
  300-270 – (1) ¼ NPT, (1) 3/8 NPT, and (2) 1/8 NPT
- Mounting Bolt Thread and Lengths – M6 x 1 x 50mm long 10 places

HARDWARE INCLUDED:

300-269 300-269BK	300-270 300-270BK		
QTY.	**QTY.**	**HARDWARE**	**APPLICATION**
10	10	M6 X 12 FLAT WASHER	INTAKE MOUNTING
10	10	M6 X 1.0 X 50MM HEX HEAD SCREW	INTAKE MOUNTING
6		5/16-18 X .75" HEX HEAD FLANGE SCREW	FUEL RAIL BRACKETS TO MANIFOLD
6		5/16-18 X .625" BUTTON HEAD SCREW	FUEL RAILS TO BRACKETS
1		1/4-20 X .875" BUTTON HEAD SCREW	MAP SENSOR SCREW

INSTALLATION INSTRUCTIONS:

Installation on Modified Engine Components –

The LS Street Single-Plane intake manifolds are designed to provide maximum performance for street/performance engine applications. 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.

- As the O-ring grooves are located in the intake manifold mounting flanges, material may not be removed from the intake manifold mounting flanges without jeopardizing the sealing of the manifold. Any material removal required to align the port flange openings should be removed from the cylinder head not the intake manifold.

- When port matching the intake manifold port openings to the cylinder head openings, care should be taken not to break into or damage the O-ring groove, or the O-ring seal will not be effective. The intake manifold mounting surfaces on the cylinder heads should be in good condition (free of nicks or scratches) where the sealing O-rings will seat to ensure proper sealing.

Installation of the Intake Manifold –

1. Before installing the intake manifold, perform a test fit without the sealing O-rings installed. Make sure the appropriate bolts (supplied) thread freely into the cylinder heads through the intake manifold mounting holes. The flange should seat properly and the bolts, without washers installed, should not bottom out in the threaded holes.

2. Check the alignment of the intake manifold port opening to the cylinder head port. Make any necessary adjustments to match alignment as closely as possible to ensure maximum performance from the manifold.

3. Test fit the carburetor/throttle body, fuel and vacuum plumbing, throttle linkage, wiring, etc. to ensure there are no fitment issues before performing the final intake manifold installation.

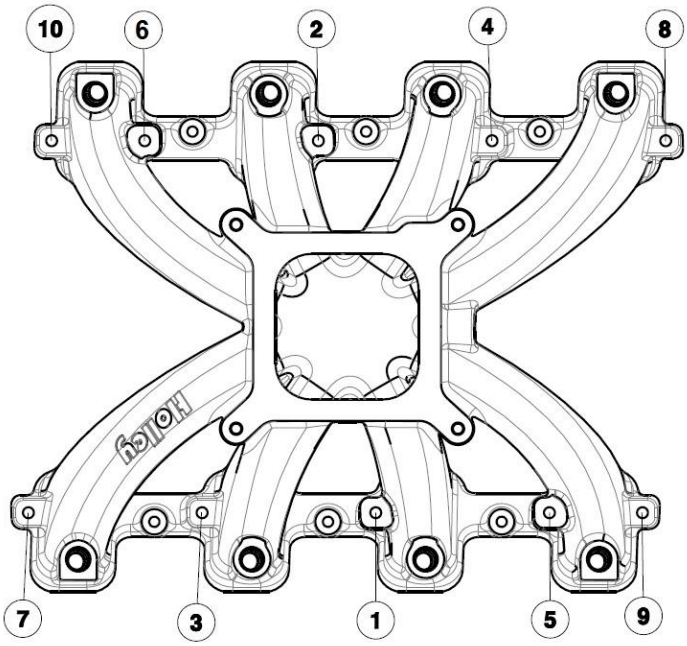
4. For final installation, install the eight port O-rings (provided) into the mounting flange O-ring grooves. Applying a silicone lubricant to the O-rings will help with installation.

5. Place the intake manifold on the cylinder head mounting flanges. Be sure that all O-rings are still in the grooves and are not being crushed between the flanges.

6. Apply a small amount of engine oil to the threads, install the mounting bolts and washers into the manifold mounting holes, and thread into the cylinder heads. Tighten the bolts lightly per the tightening sequence (see the tightening sequence diagram below), until the O-rings are compressed and the bolts are seated.

WARNING! The M6x1 threads in the aluminum cylinder head will not withstand abuse. Care must be taken to have proper thread engagement and to tighten the fasteners to the proper specifications.

7. In two steps, tighten the mounting bolts first to 50 in-lbs and then to 106 in-lbs (8.8 ft-lbs) following the tightening sequence diagram below.



Manifold Tightening Sequence

There are NPT ports below the carb flange on the manifold for a vacuum source. These ports are connected to the plenum of the manifold and can be used for power brakes, vacuum reservoir, etc. The carburetor or throttle body may also provide vacuum sources and ports for plumbing a PCV (Positive Crankcase Ventilation). It is preferable to use the ports below the manifold carb flange as a vacuum supply, not for PCV. It is best to route PCV to the proper port on the carburetor or throttle body to ensure proper distribution of the crankcase oil vapor into the intake manifold. Confirm that all unused vacuum ports on the intake manifold and the carburetor or throttle body are plugged or capped. NPT plugs for the manifold have been provided for this purpose.

On direct-port EFI manifolds, an LS Style MAP (Manifold Absolute Pressure) sensor port is available. Remove the cover plate if utilizing this port. Torque supplied ¼-20 x .875" sensor bolt to 9 ft./lbs.

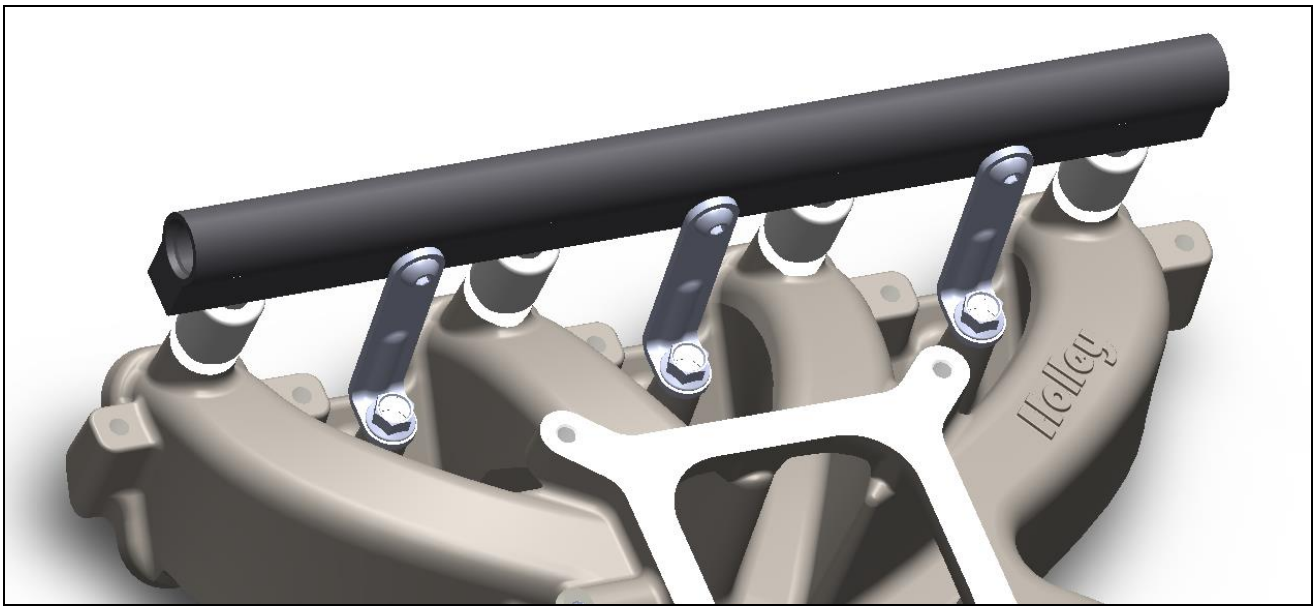
Installation of the Fuel Rails (included) –

Fuel rails are mounted to the intake manifold by three brackets per fuel rail. Two different length bracket sets are included; the long brackets are for mounting the fuel rails at a height for Bosch style EV1 type fuel injectors. The short brackets are for mounting the fuel rails at a height for GM OE LS7 fuel injectors. When using the OE GM LS7 injector, the O-ring on the outlet (intake manifold) end of the injector must be changed to the O-ring supplied in the short bracket pack.

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 lettering 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 injector bosses in the base intake manifold applying gentle downward pressure on the fuel rail.

3. Once the injectors are inserted into the intake manifold, place the appropriate brackets in position. Before installing the fasteners, apply a drop of oil to the threads of the flanged hex head screws. Attach the brackets to the intake manifold with the 0.75" long flanged hex head screws. Attach the brackets to the fuel rail with the 0.625" long button head screws. Hand tighten the fasteners, making sure that the brackets are properly seated on both the intake manifold and the fuel rail. Make sure the fuel rail is properly positioned, and the fuel injectors are properly positioned. Ensure the injectors are floating on the O-rings. Rotate the injector back and forth to confirm that there is no load on the injector bodies. The injectors should have 0.020-0.040" of end play and the O-ring seals must stay in the O-ring seal counterbores.



4. Tighten the mounting fasteners in two steps, 7 ft-lbs for the first step and 12-15 ft-lbs for the second step.

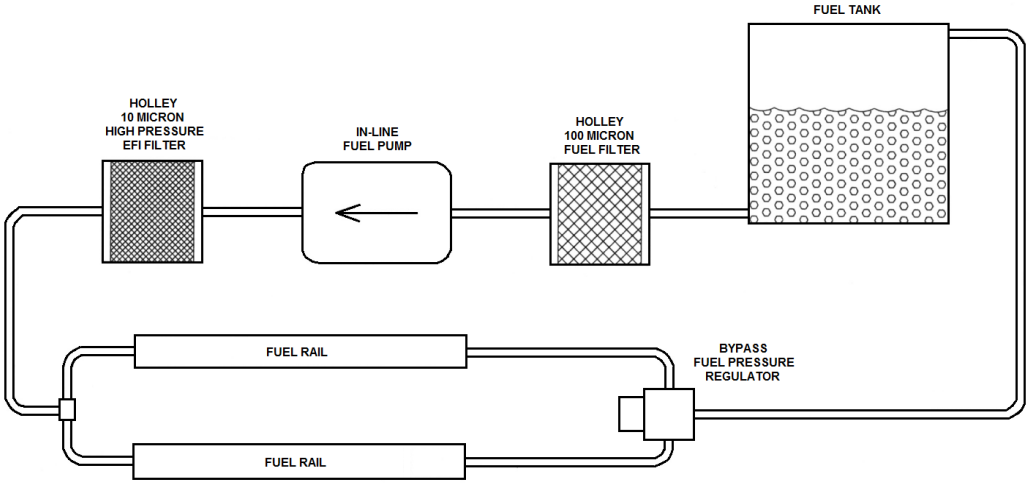
5. Once the fasteners are tightened, re-check and ensure the injectors are floating on the O-rings; rotate the injectors back and forth to confirm that there is no load on the injector bodies.

6. Make sure the fuel rail and the fuel injectors are properly positioned. Gently rotate the injector back and forth to confirm that there is no load on the injector bodies. The injectors should also have a small amount of endplay (up and down movement), but the O-ring seals **MUST** stay inside the injector counter bores.

7. Repeat steps 1 thru 6 for the second fuel rail.

Plumbing (not included) –

- The fuel rails are machined to receive an adapter fitting for ¾-16 (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.



Plumbing Diagram

Installation of the Carburetors or Throttle Bodies –

1. When installing the carburetor or throttle body, consult the manufacturer installation instructions for proper installation and tuning procedures. Confirm that the carburetor or throttle body to intake manifold gasket to be used will properly seal.

2. With the carburetor or throttle body mounted on the intake manifold and the throttle linkage connected, check to be sure that all throttle levers, linkage components, fuel lines, and vacuum lines have adequate clearance from the intake manifold and each other. Confirm that the throttle linkage has adequate return springs and that WOT is achieved when the throttle pedal is fully depressed.

3. Before starting the engine, run the fuel pump to build fuel pressure and confirm that there are no fuel leaks and that the fuel pressure is correct. To prevent the engine from flooding with fuel, confirm that there is not fuel running into the intake manifold from the carburetor boosters (proper needle and seat closing) or from the throttle body EFI fuel injectors (proper fuel injector closing).

Tuning with Carburetor /Throttle Body Spacers –

The Holley Street Single-Plane intake manifolds are designed to provide minimum carb flange height (maximum hood clearance). If there is enough air cleaner to hood clearance available, the use of carb spacers may provide opportunities for performance and/or drivability improvements. Tuning with carb spacers is an easy, usually inexpensive, and interesting exercise that can improve performance. The following carb spacer guidelines are typical, but your results may vary based on your engine combination:

1” Thick Four-Hole Spacer – Usually improves fuel distribution and may shield the carburetor from signal pulsations that could disrupt a smooth A/F curve. While peak horsepower may not be improved, often the torque curve may be broadened and drivability improved.

1” Thick Open Spacer – An open spacer increases the intake manifold plenum volume and depth. Increased plenum volume may change the tuning of the intake manifold to move the torque curve peak to a higher engine RPM. Increased plenum depth may provide the air/fuel charge a better flow path into the runner entries at higher engine RPM. Peak horsepower may be increased sometimes, trading some lower engine RPM torque for higher RPM power improvement.

2” Thick Open Spacer – The 2” spacer increases the intake manifold plenum volume and depth more than the 1” open spacer. Larger engine displacement combinations may benefit from a taller open spacer. As the open spacer height is increased, returns may be diminished. If a 2” spacer gives a substantial improvement over a 1” open spacer, the engine combination may benefit from an intake manifold with a larger runner cross-sectional area. Once again, peak power may be increased while low engine RPM performance may be sacrificed.

2” Thick Four-Hole/Open Combo Spacer – This spacer is a four-hole spacer for the first 1” exiting the carburetor and then is open under the four hole section. This spacer may combine the effects of the 1” four-hole spacer and the 1” open spacer. If there is space for a 2” spacer, the combo spacer may work well.

Various Height Reverse Taper or Contoured Section Spacers – With the use of current CNC machine technology there are a myriad of carb spacer designs available. The results on your engine combination will vary depending on many factors. Testing is the way to determine if a specific design will provide an improvement on a specific engine. Without testing on a specific engine combination, no one can claim with certainty that a given carb spacer will provide a performance improvement.

Carburetor Recommendations:

7.0 LITERS, STOCK ENGINE STREET APPLICATIONS:

0-3310SA	750 CFM, aluminum V-bowl, vacuum secondaries, manual choke, dual fuel inlet, traditional 0-3310 perf.
0-80508SA	750 CFM, aluminum V-bowl, vacuum secondaries, electric choke, dual fuel inlet
0-83770	770 CFM Street Avenger, aluminum V-bowl, vacuum secondaries w/ Quick Change spring cap, 4-corner idle, electric choke, dual fuel inlet
0-86770BK, BL, RD, HB	770 CFM Ultra Street Avenger, Street Avenger w/ Billet baseplate and metering blocks
0-82750	750 CFM Street HP Vac. Sec. – HP main body (no-choke), vacuum secondaries w/ Quick Change spring cap
0-82751	750 CFM Street HP Mech. Sec. – HP main body (no-choke), vacuum secondaries w/ Quick Change spring cap, 4-corner idle

7.0+ LITERS, MODIFIED ENGINE, HI-PERF STREET/STRIP:

0-4779S or C	750 CFM Double Pumper, Mechanical Choke
0-4781S or C	850 CFM Double Pumper, Mechanical Choke **(recommended only for all-out WOT performance application, 400+ c.i.)**
0-80496-1	950 CFM HP, HP main body (no choke), screw-in air bleeds, 4-corner idle, 1-3/4" throttle bore, & 1-3/8" venturi dia.
0-80803BKX, RDX, HBX	750 CFM Alum. Ultra XP, 1-3/4" throttle bore & 1-3/8" venturi dia.
0-80804BKX, RDX, HBX	850 CFM Aluminum Ultra XP, 1-3/4" throttle bore & 1-9/16" venturi **(recommended only for all-out WOT performance application, 400+ c.i.)**

Carburetors and all other complimentary components are available for direct sale on the Holley website.

Throttle Linkage, Cable Brackets, and Fuel Line Recommendations:

534-202	Throttle Position Kit for Electric Choke Carburetors – used for supplying a TPS signal for electronic automatic transmission controllers.
20-88	Carburetor Throttle Cable Bracket – 4150 & 4160 carburetors, includes return springs, throttle cable mount only – does mount a trans kickdown cable.
20-95	Throttle and Trans Kickdown Cable Bracket – 4150 & 4160 carburetors and 700R-4 transmissions.

Throttle linkage, cable brackets, fuel line kits, and other accessories are available or under development at this time. To see what parts are available and search for new products, please consult the Holley website.

Intake Manifold Service Parts:

508-36	Replacement Hardware - Carbureted Applications (300-270 and 300-270BK)
508-37	Replacement Hardware and Fuel Rail Brackets - EFI version (300-269 and 300-269BK)
508-38	Replacement Fuel Rails (300-269 and 300-269BK)
508-39	Port Flange O-Rings, .103" Round, Size 2-144, FKM, set of 8,
534-104	Fuel Injector O-Rings, Set of 16, O-ring to adapt LS7 injectors