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INSTALLATION MANUAL

AEROFLOW PERFORMANCE

INTAKE MANIFOLD

WARNING!

BEFORE PROCEEDING WITH INSTALLATION PLEASE READ INSTRUCTIONS CAREFULLY. THIS PRODUCT REQUIRES DETAILED KNOWLEDGE OF AUTOMOTIVE SYSTEMS. WE RECOMMEND THAT THIS INSTALLATION BE CARRIED OUT BY A QUALIFIED AUTOMOTIVE TECHNICIAN.

PLEASE CHECK THE INTAKE MANIFOLD THOROUGHLY IN EVERY POSSIBLE WAY. IF YOU SUSPECT A DEFECT OR SHIPPING DAMAGE, CONTACT AEROFLOW PERFORMANCE OR THE DEALER IT WAS PURCHASED FROM BEFORE ANY WORK HAS BEGUN. AEROFLOW PERFORMANCE WILL NOT BE RESPONSIBLE FOR DEFECTS AFTER ANY WORK HAS BEEN STARTED.

It is recommended to inspect all intake passages for defects. Also, wash the manifold using mild soap and water solution. Check the fit on all bolt holes for proper alignment and thread any fittings in first by hand. Failure to perform these simple checks could result in engine damage and may void your warranty.

Due to manufacturing processes associated with cast aluminium, in certain conditions the cast intake manifold may develop a light oxidation on the surface. To prevent this oxidation, thoroughly clean the manifold prior to installation and on a regular basis with a mild cleaner formulated for cast aluminium.

INTRODUCTION

Congratulations on your purchase of Aeroflow Performance Intake Manifold. Aeroflow Performance products cannot and will not be responsible for any damage, or other conditions resulting from misapplication of the parts described herein. However, it is our intention to provide the best possible products for our customer, products that perform properly and satisfy your expectations. Should you have any questions? Please call technical support at +61 2 8825 1979 and have the product part number on hand when calling.

Convert your GM LS engine from EFI to Non-EFI carburettor in retro-fit applications with this Aeroflow Performance Street low rise cast intake manifold. This single-plane intake manifold is designed to keep your air and fuel distribution going into the engine at a steady and even flow for maximum performance and efficiency. The carburettor-mounting pad is designed to accept aftermarket 4150 square-bore carburettors with either manual or electric choke options available on today's market. Specifically designed to suit GM LS Gen III and IV engines equipped with OE or aftermarket LS3 rectangle port cylinder heads.

This product is intended for carburetted, throttle body EFI, or port EFI applications.

GM LS3 Rectangle Port Engines. Non-EFI Applications.

Single Plane Configuration.

RPM operating range - 2500 to 7000.

Port Size of this intake manifold is 2.50" x 1.15".

Overall Height to Carb Pad to Bottom of Intake Manifold is 138mm. **Ensure to Check Bonnet Clearance.**

Carburettor flange is standard 4150 for up to 1-3/4" diameter throttle bores.

Vacuum Port Thread is 1 x 3/8" NPT.

This intake manifold is not equipped with EGR (Exhaust Gas Recirculation); therefore, they are not compatible with exhaust emissions or emissions related components.

MANIFOLD CONTENTS

- 6 x M6 x 1.00mm (50mm UHL) hex head mounting bolts.
- 4 x M6 x 1.00mm (90mm UHL) hex head mounting bolts.
- 10 x Flat washers, M6 x 1.00mm (12mm O.D x 1.6mm thickness)
- 1 x 3/8" NPT hex socket steel pipe plug
- 8 x Round Viton O-Rings (3" I.D.)
- 1 x Installation instructions

Installation Guideline

For a complete installation of the Aeroflow Performance intake manifold you will require some extra components as well as the original parts that must be purchased separately.

This product is intended for carburetted or throttle body EFI applications.

An aftermarket ignition control will be required with a separate ignition control module (sold separately). It is recommended to use an MSD 6LS ignition controller or something similar which 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 an aftermarket ignition controller.

The following list is a guideline of suggested parts that may or may not need to be purchased;

- Oil-resistant, silicone-based sealant (ThreeBond, Gasket Marker)
- NPT plugs or fittings, if required.
- Carburettor-base gasket (usually supplied with carburettor)
- PTFE paste (AeroSeal)

The following installation instructions must be carefully read and understood before you begin the installation procedure below. Improper application or installation of this product may result in unsatisfactory performance, fuel mileage, or emissions.

Check that this intake manifold is the correct choice for your engine application, desired performance level, and local emissions laws. This intake manifold will require an aftermarket manual or electric carburettor.

Check for sufficient bonnet clearance with this intake manifold and intended carburettor / air cleaner combination to be used. Always check bonnet clearance prior to removal of original manifold to determine how much clearance you have. This can be carried out with modelling clay or putty. Position the putty onto the air cleaner in five different areas of the air cleaner, front, rear, each side and center. Close the bonnet and lock into the closed position. Open the bonnet and measure the height of the putty, this figure will give you the amount of clearance you have between the bonnet and the air cleaner.

Before removing the old intake manifold ensure to measure the height and compare to the new manifold to ensure sufficient bonnet clearance. Lay a straightedge across the top of the carburettor pad on the intake manifold. Measure from the engine block to the carburettor pad. Record and compare both measurements on the old and new intake manifold. Ensure to dummy fit both intake manifolds with all require accessories such as intake gaskets and spacers if required.

Check that you have the proper intake manifold fasteners for this application.

Before removing your old intake manifold check all of your fuel, water, and vacuum hoses and their connections. Make sure that there are no leaks and that the hoses are in good condition. Mark the locations of your hoses making sure that there is a corresponding location on your new intake manifold for all of the hose fittings and gauge sensors. Fitting and hoses that are not in good condition should be replaced.

Each intake runner on this intake manifold should be matched to the cylinder head port size on all four sides of runner exit. Any sharp edges left from port runner enlargement should be radius-blended to prevent high rpm air/fuel separation at the cylinder head. Due to the casting on the manifold runners, very small amounts of material may need to be removed to match the ports. No other modification or material removal is necessary. Substantial amounts of grinding away of manifold material can impair its performance by substantially upsetting air/fuel distribution among cylinders.

The intake manifold will have the best fitment when the engine block and cylinder heads are machined to standard OEM 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.

These instruction guidelines listed below are designed to cover a wide variety of vehicle applications. if you are unfamiliar with any of the procedures in these instructions consult a shop manual for your vehicle and engine application.

Intake Manifold Removal Guideline

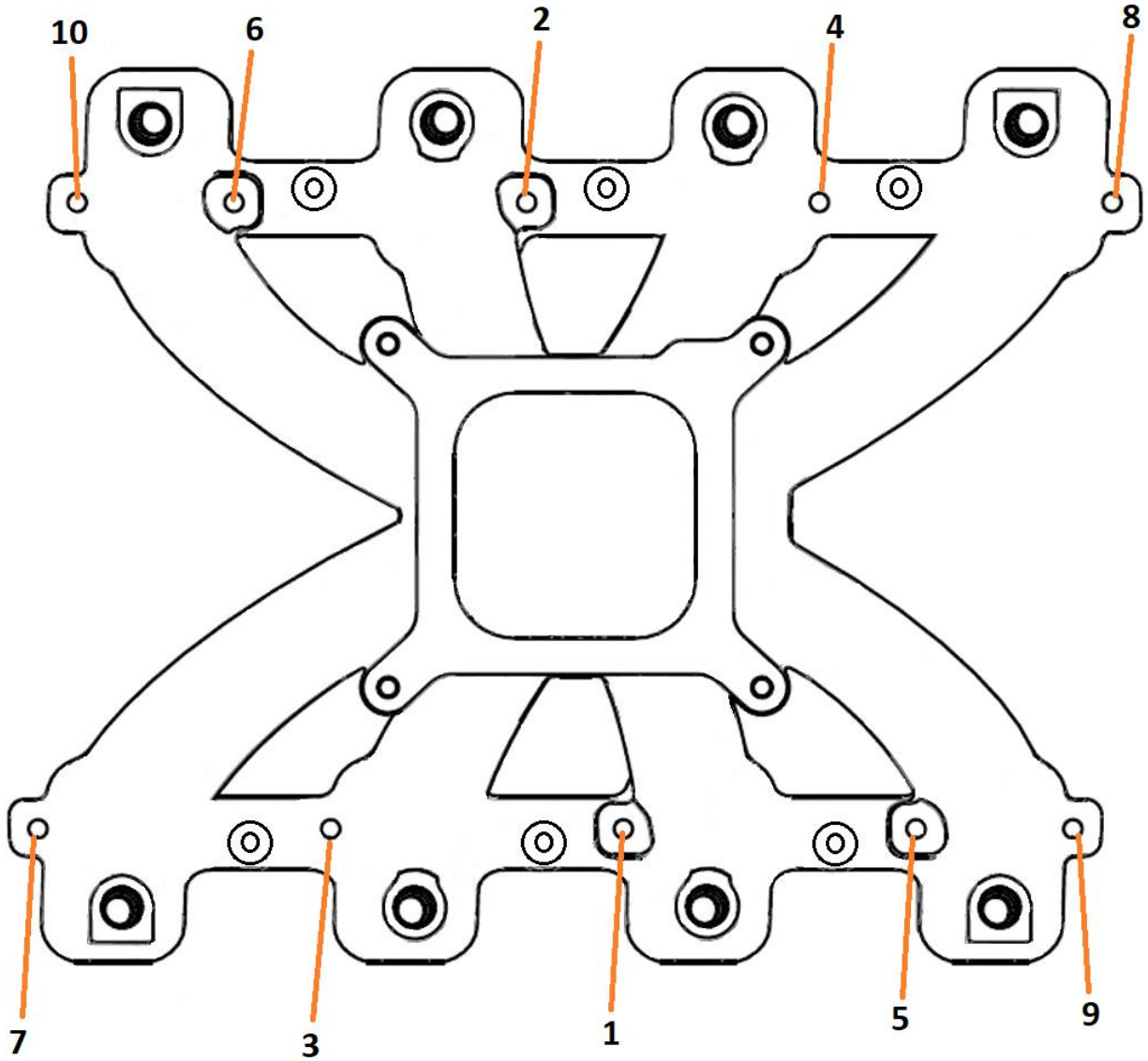
1. Disconnect the ground cable from the battery.
2. Clean any loose debris, dirt, and grease from the top of the engine adjacent to the intake manifold and valve covers. This will help prevent harmful debris from falling into the engine during the installation process.
3. Identify the vacuum and crankcase ventilation hoses (if applicable) leading to the intake manifold. Mark down the routing and connection points.
4. Drain the radiator. (It may be necessary to remove the bottom radiator hose if there is no drain plug in the radiator). **CAUTION : Hot water and steam may be present if the engine is still warm we recommend to allow engine to cool before removing intake manifold.**
5. Disconnect the throttle cable, transmission kick-down linkage (auto transmissions only) and throttle body.
6. Loosen the fuel tank cap to relieve pressure from the fuel system.
7. Disconnect the fuel lines and remove the fuel rails and fuel injectors at the intake manifold. Plug the end of the fuel line to prevent fuel leakage.
8. Mark down and disconnect the ignition coils and ignition harnesses.
9. Remove all water and vacuum fittings from the intake manifold. Mark down where each connection is located.
10. Remove all remaining brackets (if any) from the intake manifold.
11. Remove all intake manifold-to-cylinder head bolts
12. Remove the intake manifold. If the intake manifold is stuck hard to the mounting flanges, do not pry against cylinder head port flanges, as they could become damaged and compromise the gasket sealing with your new intake manifold. Double check that all of the bolts have been removed and pry upward carefully at the engine block end seal surfaces.

Intake Manifold Install Guideline

1. Clean the cylinder head port flange and the engine block end seal surfaces. To prevent gasket pieces from falling into ports and the cylinder head when cleaning old gaskets from head surfaces, stuff paper towels into all the ports. When clean, carefully remove the paper towels from the cylinder head ports. Make sure that all particles that fell on the rags are completely removed. Wipe surfaces with rags soaked in solvent, such as brake cleaner or lacquer thinner to remove any oils or grease. This is a must for proper manifold/gasket sealing.
2. Trial fit your new intake manifold and check the port opening alignment. Place the new intake manifold into position; check that it sits down. Test fit the carburettor/throttle body, fuel and vacuum plumbing, throttle linkage, wiring, etc. to ensure there are not any fit issues before performing the final intake manifold installation. If there are any other fit issues such as hood clearance or installation of components dependent on the manifold, they should be checked at this time.
    - **I.** 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 assure proper engine performance.
    - **II.** Due to the nature of the design, the clearance of the intake manifold to the lifter valley cover may be close. Please ensure that there is no interference with the lifter valley cover that prevents the intake manifold from properly seating on the mounting flanges.
3. For final installation, install the provided eight Viton O-rings in the mounting flange O-ring grooves on the intake manifold. To make sure the O-rings do not fall from the grooves, apply a light coat of grease or Vaseline to the O-rings.
4. Carefully, lay your new intake manifold in place. For the intake manifold bolts, apply thread sealant onto bolt threads. Install the intake bolts initially torquing to 5 ft/lbs (6 Nm), then 10 f./lbs (12 Nm), following the factory sequence.
    - **I.** Be sure that all of the O-rings are still in the grooves and are not being crushed between the flanges.
5. There is a 3/8” NPT port at the rear of the carb flange on the intake manifold for a major vacuum source. This port is connected to the carb/throttle body plenum of the manifold and can be used for power brakes, vacuum reservoir, etc.
    - **I.** Confirm that all unused vacuum ports on the intake manifold and the carburettor or throttle body are plugged or capped.
    - **II.** An NPT plug for the manifold has been provided.

Installation Guideline of the Carburettors or Throttle Bodies

1. When installing the carburettor or throttle body, consult the manufacturer of the specific unit you are using, for installation instructions for correct installation and tuning procedures.
2. With the carburettor 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 wide open throttle 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 carburettor boosters (proper needle and seat closing) or from the throttle body EFI fuel injectors (proper fuel injector closing).
4. Operate the engine for 30 minutes. Allow the engine to cool and re-torque the intake manifold bolts. NOTE; It is advisable to periodically (every six months or 5000 kilometres) recheck the torque on the manifold bolts to minimize the possibility of a vacuum leak.



For more information or technical enquires

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