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INSTALLATION MANUAL

AEROFLOW PERFORMANCE

ALUMINIUM BARE CYLINDER HEADS

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 HEAD 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.

INTRODUCTION

Congratulations on your purchase of Aeroflow Performance Cylinder Head. 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.

The Aeroflow Performance LS3 Chevy cylinder heads are designed for street / race performance engines to give the ultimate in flow at a competitive price. Made from A356-T6 aluminium castings they feature full CNC ports and combustion chamber, 15 degree rectangle ports that are designed to fit LS large bore engines with a 3.89" minimum bore. These bare 276cc heads accept 2.165" (55mm) diameter intake valves and 1.59" (40.64mm) exhaust valves. This cylinder head is designed to suit the 4 bolt block design. Available in OE 4 bolt design or 6 bolt design to suit standard or LSX block designs. Note: Thread sealant must be used on all rocker bolts as threads intersect with intake ports.

Cylinder One Flow Testing on Flow Bench
NOTE: ALL FLOWBENCHES ARE NOT CREATED EQUAL!
Data from one bench to the next can be vastly different.
The data on this table is for reference only.

Port	Lift	L / D	Cylinder One Average CFM	Port	Lift	L / D	Cylinder One Average CFM
Intake	0.100	0.046	74.100	Exhaust	0.100	0.063	56.100
Intake	0.200	0.092	160.000	Exhaust	0.200	0.125	119.100
Intake	0.300	0.139	209.700	Exhaust	0.300	0.188	169.800
Intake	0.400	0.185	262.100	Exhaust	0.400	0.251	212.100
Intake	0.500	0.231	302.100	Exhaust	0.500	0.313	238.900
Intake	0.600	0.277	323.100	Exhaust	0.600	0.376	251.000
Intake	0.700	0.323	337.600	Exhaust	0.700	0.439	258.700
Intake	0.750	0.346	343.300	Exhaust	0.750	0.470	260.500

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SPECIFICATIONS	
Material	A356 Aluminum
Combustion Chamber CC	68cc
Intake Port Volume CC	276cc
Intake Port Dimension	1.30" x 2.61"
Exhaust Port Volume CC	92cc
Exhaust Port Dimension	1.47"H x 1.65"W
Spark Plug Location	OE Stock
Intake Valve Diameter	2.165" x 4.89"
Exhaust Valve Diameter	1.59" x 4.91"
Valve Stem Diameter	8mm
Valve Spring Pocket I.D.	1.30"
Valve Guide Material	Manganese Bronze
Valve Guide O.D.	0.502" (.560" at base)
Rocker Design	LS3 Rails required
Valve Angle	15 Degree
Deck Thickness	0.625"

(Check Cam Manufacturer Recommendation)	
Installed Components	Sizes
Intake Valves	2 .165" x 4.89"
Exhaust Valves	1.59" x 4.91"
Valve Springs	
Valve Retainers	
Valve Locks	8mm
Spark Plugs	Champion RC12YC
Rocker Design	15 degree LS3
Push Rod Guide Plates	3/8" Raised (OE style)



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Installation Guideline

For a complete installation of these Aeroflow Performance cylinder heads you will require some extra components other than the original parts that must be purchased separately. Being a bare cylinder head, they will require all internal components such as valves, valve springs, rocker assembly to be installed and purchased separately. Bronze guides are preinstalled into the cylinder head. We recommend a cylinder head / machinist specialist to install these components.

Installation is the same as for original equipment cylinder heads. Consult the factory service manual for specific procedures, if necessary.

Once the heads have been installed and torqued to specs, install your pushrods, rocker arms, and rocker arm adjusting nuts.

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

- Head gaskets (aftermarket or factory LS3 type)
- Intake manifold O-rings (LS3 GM19256623)
- Exhaust gaskets
- Valve Cover gaskets
- Head bolt or Head Stud kit
- 14mm x 17.5mm (.708") reach, tapered seat, resistor-type spark plugs (heat range to be determined by specific application)
- Adjustable rocker arm assembly
- Pushrods (length to be determined by specific application once all rocker assembly is installed)

Although these cylinder heads will accept OEM components (rocker arms, valve covers, intake manifold, head bolts, etc.), we highly recommend that premium quality hardware be replaced with your new heads. These cylinder heads are designed to use stock LS3 intake rocker arms or aftermarket replacement rocker arms designed for Gen IV engines.

- Check with the camshaft manufacturer for recommended valve spring with correct pressures and maximum valve lift. If valve springs are changed to achieve more spring pressures it will be necessary to also change rocker studs, rocker arms and pushrods. All valve springs should be checked for compatibility to your camshaft. Severe wear of valve train components and severe engine damage could result from failure to do this. Check spring requirements before heads are installed on the engine.
- High quality head studs or head bolts with hardened washers must be used to prevent galling of the aluminium bolt bosses. Bolt threads, underside of bolt heads, and washers should be lubricated with an oil/moly mix prior to installation and torquing.
- These cylinder heads accept 14mm x 3/4" reach gasket seat spark plugs. Heat range may vary by application. Use anti-seize on the plug threads to prevent galling in the cylinder head, and torque to 13Nm.

It is highly recommended that valve-to-piston clearances are checked and corrected to minimum specs, if necessary. Minimum intake valve clearance should be .100". Minimum exhaust valve clearance should be .110".

It is highly recommended that piston-to-head clearances are checked and corrected to minimum specs. Especially when using a dome piston. Recommended minimum piston-to-head clearance is .050".

Rocker geometry should be checked, making sure that the contact point of the roller (or pad on a stock rocker arm) remains properly on the valve tip and does not roll off the edge. Visual inspection of the rockers, valve springs, retainers, and pushrods should be made to ensure that none of these components come into improper contact with each other. If problems with valve train geometry occur, changes such as pushrod length may have to be made.

We recommend all pushrod guide plates and rocker studs are checked for proper valve train alignment and pushrod clearance before operating the engine. Ensure the stud holes have enough clearance to adjust the guide plates for optimum alignment of your valve train components. Once the cylinder heads have been installed ensure to check the pushrod-to-cylinder head clearance. The clearance between the pushrods and the cylinder heads must be .005" min. If adequate clearance exists between pushrod and head, slowly turn the engine over through at least two full revolutions while inspecting pushrods and rocker arm components. Make sure that pushrod and/or rocker arm components do not rub on the head either at full lift or when the valve is seated closed. If any pushrod rubs on the cylinder head, remove rocker arms, loosen the rocker studs and move the guide plates as needed to provide clearance. After checking all pushrods for proper clearance, ensure that the tip of the rocker arm is making adequate contact with the top of the valve stem. Carefully re-torque to 60Nm any rocker studs that were loosened. Check alignment again to be sure that the guide plates did not move while torquing the studs.

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