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# INSTALLATION MANUAL

## AEROFLOW PERFORMANCE

### ALUMINIUM 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 big block Chrysler cylinder heads are designed for street performance engines to give the ultimate in flow at a budget price. Made from A356 aluminium castings the 220cc cylinder heads are ideal for operating in the idle to 6500 rpm range. The complete heads include larger than stock 1.55" ( 39.4mm ) diameter dual valve spring to handle up to 0.550" (13.97mm) maximum lift.

**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	0.047	70.500	Exhaust	0.100	0.055	56.500
Intake	0.200	0.093	146.400	Exhaust	0.200	0.110	114.600
Intake	0.300	0.140	200.200	Exhaust	0.300	0.160	156.500
Intake	0.400	0.187	237.700	Exhaust	0.400	0.221	186.300
Intake	0.500	0.234	255.400	Exhaust	0.500	0.276	209.700
Intake	0.600	0.280	272.800	Exhaust	0.600	0.331	224.300
Intake	0.700	0.327	272.800	Exhaust	0.700	0.387	233.800

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## SPECIFICATIONS

Material	A356 Aluminum
Combustion Chamber CC	82cc
Intake Port Volume CC	220cc
Intake Port Dimension	2.30" x 1.18"
Exhaust Port Volume CC	74cc
Exhaust Port Dimension	1.715"H x 1.25"W
Spark Plug Location	OEM
Intake Valve Diameter	2.14"
Exhaust Valve Diameter	1.81"
Valve Stem Diameter	11/32" (.343")
Valve Spring Pocket I.D.	1.705"
Valve Guide Material	Manganese Bronze
Valve Guide O.D.	0.530"
Rocker Shaft Design	OE Stock
Valve Angle	15 Degree
Deck Thickness	0.625"

Hydraulic Flat Tappet (up to .550")  
(Check Cam Manufacturer Recommendation)

Installed Components	Sizes	Part Number
Intake Valves	2.14" x 4.873" x 11/32"	AF59-4401
Exhaust Valves	1.81" x 4.908" x 11/32"	AF59-4402
Valve Springs	1.550" Dual Spring	AF59-4403
Valve Retainers	10-Degree	AF59-4404
Valve Locks	10-Degree 11/32"	AF59-4405
Valve Seals	11/31" x .530"	

## Suggested Components

Head Gasket	Fel-Pro 1009
Intake Gasket ( 383-400ci )	Fel-Pro 1214
Intake Gasket ( 413-440ci )	Fel-Pro 1215
Exhaust Gasket	Fel-Pro 1414
Head Bolts	ARP 145-3606
Head Studs	ARP 145-4006
Spark Plugs ( 14mm x 3/4" reach with flat gasket seat )	Champion RC9YC



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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.

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
- Intake manifold gaskets
- Exhaust gaskets
- Valve Cover gaskets
- Head bolt or Head Stud kit
- 14mm x 3/4" reach x 5/8" hex, gasket spark plugs (heat range to be determined by specific application)
- Adjustable rocker arm assembly (These heads are designed to accommodate stock stamped steel rocker arm assemblies, and OEM style aftermarket rocker arm assemblies. Some aftermarket rocker arms may require special modifications.
- Pushrods compatible with adjustable rocker arm assembly (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, etc.), we highly recommend that premium quality hardware be replaced with your new heads.

- 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.

When using factory rocker shaft bolts check to ensure the bolts do not bottom out in the cylinder heads and that the bolt is long enough to engage with the entire length of the Heli-coil thread insert in the cylinder heads. When installing the rocker shaft assembly, tighten the bolts evenly as the rocker shaft assembly is being pulled down into position against the pressure of the valve springs. Use engine oil on the bolt threads and bolt head. Tighten bolts to 40-45 Ft-lbs.

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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