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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 small block Ford Windsor cylinder heads are designed for street / race performance engines to give the ultimate in flow at a budget price. Made from A356 aluminium castings the 185cc cylinder heads are ideal for operating in the idle to 6500 rpm range. The bare heads allow a larger than stock 1.32" diameter dual valve spring to handle up to 0.600" maximum lift. Suits flat tappet and hydraulic camshaft.

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	0.050	64.000	Exhaust	0.100	0.063	55.500
Intake	0.200	0.099	127.200	Exhaust	0.200	0.125	102.600
Intake	0.300	0.149	184.500	Exhaust	0.300	0.188	142.500
Intake	0.400	0.198	230.500	Exhaust	0.400	0.250	166.200
Intake	0.500	0.248	264.200	Exhaust	0.500	0.313	177.900
Intake	0.600	0.297	281.900	Exhaust	0.600	0.375	185.500
Intake	0.700	0.347	279.200	Exhaust	0.700	0.438	188.600

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SPECIFICATIONS	
Material	A356 Aluminum
Combustion Chamber CC	58cc
Intake Port Volume CC	185cc
Intake Port Dimension	2.10" x 1.25"
Exhaust Port Volume CC	63cc
Exhaust Port Dimension	1.35"H x 1.35"W
Spark Plug Location	OEM
Intake Valve Diameter	2.02"
Exhaust Valve Diameter	1.60"
Valve Stem Diameter	8mm
Valve Spring Pocket I.D.	1.55"
Valve Guide Material	Manganese Bronze
Valve Guide O.D.	0.500" (.560" at base)
Rocker Stud Thread Size	7/16"-14
Valve Angle	20 Degree
Deck Thickness	0.750"

Hydraulic Roller Cam (up to .600" lift) (Check Cam Manufacturer Recommendation)		
Installed Components	Sizes	Part No
Intake Valves	2 .02" x 4.90" x 8mm	
Exhaust Valves	1.60" x 4.95" x 8mm	
Valve Springs	1.32" Dual Springs	
Valve Retainers	10-degree 8mm	
Valve Locks	10 degree 8mm	
Valve Seals	8mm x .502" Viton	
Rocker Arm Studs	7/16"-14 x 7/16"-24	AF59-3026
Push Rod Guide Plates	5/16" Flat	AF59-3027

Suggested Components	
Head Gasket	Fel-Pro 1011-1
Intake Gasket (2.10 x 1.25 port size gasket)	Fel-Pro 1262
Exhaust Gasket (1.35 x 1.35 square port gasket)	Fel-Pro 1415
Head Bolts	ARP 154-3605 (7/16") ARP 154-3603 (1/2")
Head Studs	ARP 154-4003
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. 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
- 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
- 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.

- 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 heads are designed to use 1/2" head bolts. On 289-302 engines with 7/16" head bolts, you must use a aftermarket head bolt bushings kit (ED9680) with stock sized 7/16" head bolts. Engines with 1/2" diameter head bolts (351W and 302 SVO) use ARP 200-8533. **NOTE:** It is recommended that 289-302 engines producing 380 or more horsepower (or with any power adder) be converted to accept 1/2" diameter head bolts by a qualified machine shop to ensure maximum head gasket durability.
- 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".

Check the upper deck to see if you have an early or late model block (not needed with 351W). Late model 289-302 engine blocks have water passage holes located next to the head bolt location on the deck of the block (This block will not require drilling). On early 289-302 blocks it may have the water passages located directly over the cylinder upper deck area and will require drilling of 1/8" steam holes.

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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