



ATTENTION: PLEASE READ THROUGH ALL INSTRUCTIONS BEFORE ATTEMPTING CYLINDER HEAD INSTALLATION.

CAMSHAFT: If using stock rocker arms camshaft should have no more than 0.600" valve lift. Damage or wear to the valve tip and rocker arm contact pad can result otherwise. It is the customers' responsibility to verify piston to valve for all applications.

LIFTERS: If an upgraded cam is used on an engine with the cylinder deactivation system (MDS), that system should be deleted and switch to non-MDS stock lifters or aftermarket items.

PUSHRODS: Stock pushrods are 5/16" diameter. 3/8" diameter maximum can be used with the stock rocker arm. 7/16" diameter maximum can be used with the T&D rocker arm. Use of larger diameter pushrods likely will cause clearance issues.

CLEARANCE: Aftermarket valvetrain components can be used but may result in clearance issues with pushrod, valve cover, and adjusting nut.

VALVE SPRINGS: It is the customer's responsibility to check and make sure that spring pressures are correct for the cam. If the engine is equipped with variable cam timing (VCT), higher than stock valve spring forces may overwhelm the VCT actuator.

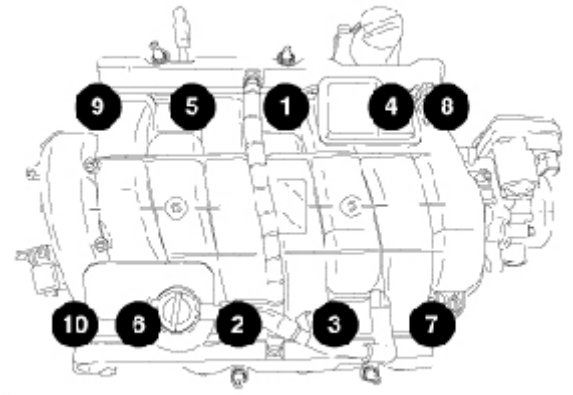
VALVE GUIDE CLEARANCE: Intake clearances are .0009"-.0019" & exhaust guide clearances are .0011"-.0021". On some severe applications with nitrous, marine, or blower usage, looser guides might be required.

SPARK PLUGS: This cylinder head is machined to accommodate either type of spark plug (gasket vs tapered seat).

VALVE COVERS: AFR designed valvetrain around 06-later gen iii hemi valve cover clearance. Use in 03-05 gen iii hemi may be possible but is not verified or supported by air flow research and additional parts may be required. You must use the 2006 and later plastic valve covers along with the appropriate ignition coils, or an equivalent aftermarket valve cover.

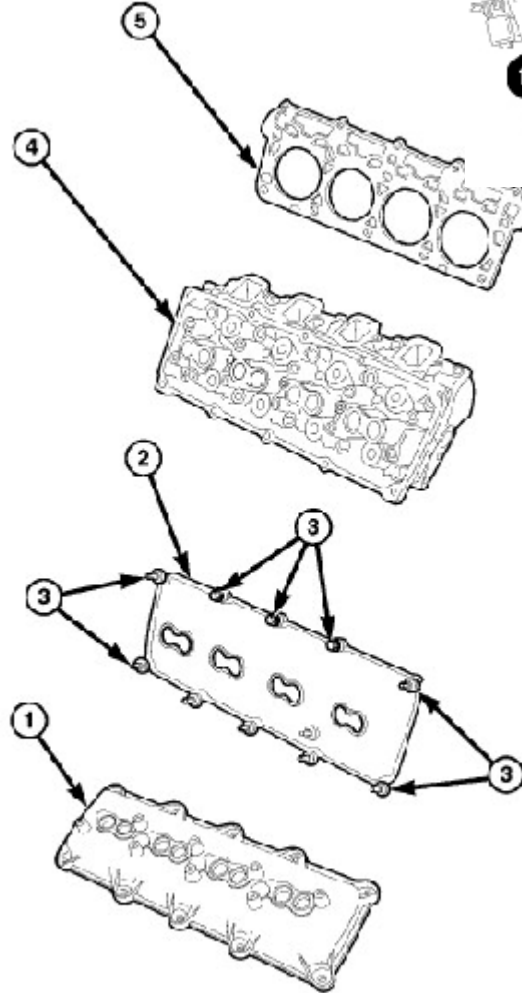
WARNING: Piston to cylinder head clearance must-be-checked prior to final assembly of engine. Piston to valve clearance also must be checked, pay special attention to the outside edge of the valve to the inside edge of the valve relief in the piston. **AFR Gen III heads have dedicated passenger and driver sides which align with oil drain holes.** If the head is placed on the incorrect side, these holes will not function as intended and could damage your engine.

Remove intake manifold



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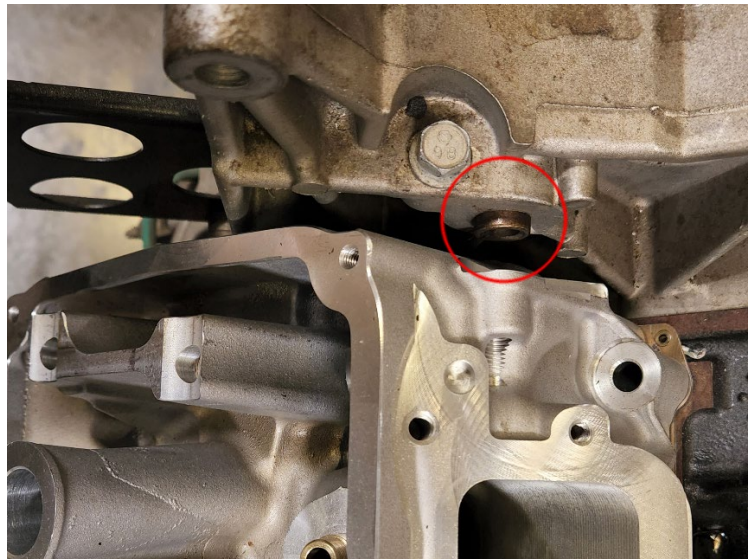
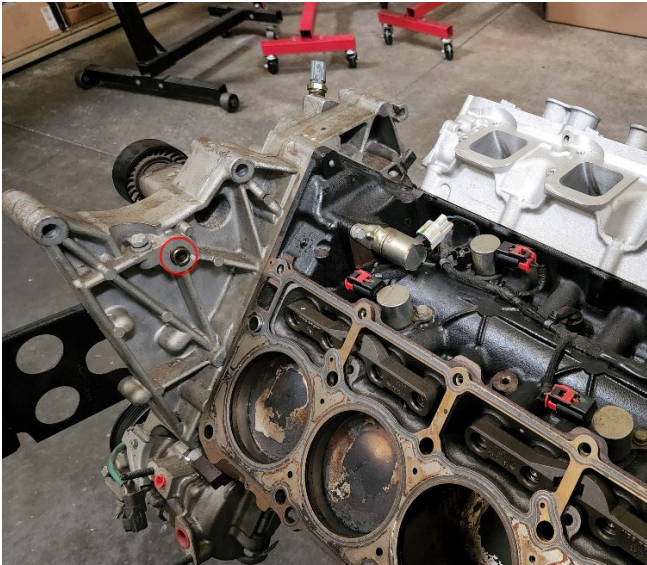
Remove cylinder head cover



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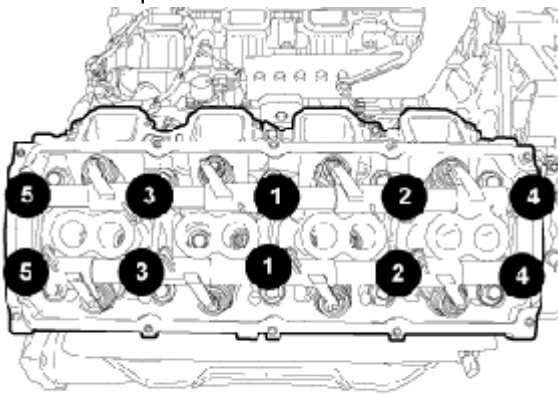
Cylinder Head Removal

Consult your shop manual for the proper cylinder head removal procedure for your vehicle. Taking notes, pictures, and even making a video of the disassembly will help you greatly when reinstalling brackets, routing hoses and electrical/sensor connections. Some engines have a sliding bushing in the front cover which can impede the cylinder head removal in the as installed position. On these versions you move the head as normal until the head is disengaged from the dowels on the block, and then move it towards the rear of the engine slightly before continuing the upward motion. If you are using head studs these must be removed before the head can be taken off. Before head reinstallation the bushing in the front cover should be tapped towards the front of the engine until it is no more than $9/32''$ (0.28"/7.1mm) proud of the back of the front cover. This bushing is typically present on truck and some SUV front covers.



Shaft bolt sequence

Cylinder head bolt sequence:



921225

88745

2) Prepping the Block

With the old cylinder heads removed, inspect the cylinder bores for scratches, ridges, and cracks. If everything appears to be OK, put some paper towels in the cylinders to catch loose debris as the old head gaskets are scraped off the engine block's deck surface. Remove all traces of the gaskets and any oil or grease that may be present by wiping the surface with brake cleaner.

Check the deck surfaces for flatness by laying a straightedge across the deck lengthwise and sticking a .003" feeler gauge under it. If the feeler gauge fits anywhere under the straightedge, the block will need to be decked or head gasket failure will result.

Once the block decks have been cleaned and checked, use the correct size tap to chase the threads in the head bolt holes. This will clean out old sealer and debris, which is extremely important for preventing leaks and torquing the heads down evenly on the block.

After cleaning the head bolt hole threads, carefully remove the paper towels from the cylinders and discard. Using new paper towels clean the cylinders and coat the cylinder walls with a thin film of engine oil to protect them from corrosion.

CLEANING: AFR thoroughly cleaned your heads prior to shipment. Your heads were washed in a water soluble chemical agitation tank and blown out with high pressure air 3 to 4 times before they were boxed. However during some machining operations chips are packed and wedged into the water jacketing and occasionally come loose in transit. Keep

in mind one chip the size of a dime breaks into hundreds of tiny chips and makes the situation appear much worse than it is in reality. It is not unusual if you blow high pressure air into the water jacketing to see additional foreign debris, or chips finding their way out. AFR recommends that you thoroughly blow out your heads prior to installation.

VALVE TIPS: Do not grind your valve tips.

HEAD BOLT TORQUE: Use fastener manufacturer specifications for head bolt torque specs.

PUSHROD LENGTH: This seems like an easily answered question but in fact there are many variables that effect the overall length. Block deck height, head milling, gasket thickness, camshaft base circles, lifter and rocker arm design just to name a few. Customer must check push rod length and clearance on their own.

3) Checking Piston-To-Valve Clearance

Once the proper pushrod length has been determined, piston-to-valve clearance must-be-checked. This is an extremely important assembly step if using aftermarket pistons and/or high performance camshafts. Engine failure may occur from the valves contacting the pistons voiding your warranty.

4) Installing the Valve train

Consult your shop manual for the proper cylinder head valve train assembly procedure for your vehicle.

Lifetime Warranty

AFR cylinder head castings are backed by a lifetime warranty. If a cylinder head casting fails to provide the original purchaser with complete satisfaction, AFR will repair or replace it free of charge — guaranteed!

Moreover, the valves, valve guides, valve seats, valve job, valve springs, valve spring retainers, valve locks, rocker arm studs, and valve stem seals included on assembled AFR cylinder heads are warranted to the original purchaser to be free from defects in materials and workmanship for a period of two years from the date of purchase.

All other AFR products are warranted to be free from defects in materials and workmanship for a period of 90 days. There are no mileage limitations. Please see website for complete details.

Extent of Warranty

Customers who believe they have a defective product should contact AFR at 661-257-8124 and follow the prompts to speak with our sales tech department. AFR will then issue a RMA number (return merchandise authorization) for the customer to return their product for inspection and evaluation. **DO NOT RETURN TO THE DEALER YOU PURCHASED THE PRODUCT FROM.** If a thorough inspection indicates defects in materials or workmanship, our sole obligation is to repair or replace the product.

This warranty is only if the product is properly installed, subjected to normal use and service, did not fail due to owner negligence or misuse, and has not been altered or modified.

Air Flow Research's warranty does not cover any installation, removal costs, or material.

Air Flow Research is not liable for consequential damages for breach of contract of any warranty in excess of the purchase price of the product sold. See website for complete details.

PROPOSITION 65 WARNING
Cancer and Reproductive Harm - www.P65Warning.ca.gov

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