Ireland Engineering Motorsports -

M10 Cylinder Head Rebuild Introduction

So you want to rebuild your M10 cylinder head and not quite sure on how to proceed? There are many ways to tackle this, however **this guide is focused on a proper street-hotrod rebuild as done by a respected shop or handy DIY enthusiast with the aid of a good machine shop.** We are not responsible for any mistakes you make due to reading this.

Step 1: Pull the cylinder head using the factory manual

Step 2: Strip all of the parts off of the head. Follow the factory manual procedure. There are some neat tools to help with this. The most common mistake we see is people forgetting to remove the rocker retainer clips (which hides under the thrust ring) prior to attempting to remove the rocker shafts.

Step 3: Grab a new file folder and record the following information.
Cylinder head type: This is found on the intake side of the head, it will be either an E12, E21, 121, 1.8i
Casting date: This is found between the 3rd and 4th intake port
Cylinder head thickness (as measured with a set of calipers)
Intake Valve diameter
Exhaust Valve diameter
Identify early or late valve guides

Step 4: Find a good machinist.

TIPS

This does not mean he (or she) has to be the untouchable race-engine machinist, but neither should he be the "I build Chevys all day" variety. Finding and ultimately feeling comfortable with your machinist's capabilities (NOT necessarily his personality) will either make or break your cylinder head project.

Very important to note, some good machinists can be very stuck in their ways. If you plan on using them, plan on following their advice. Do not expect a good result if you try and outguess them or insist on doing things "your way".

A DIY enthusiast is not their average customer so they don't initially know what you are after. For the sake of this rebuild we are assuming you want to handle most everything you can. In this light ask for the following ….

Step 5: Ask the machinist to clean, inspect, possibly remove the guides (see below) and pressure check the head. If you are porting you will need to ask for the head back after this.

PORTING: if you are planning on porting the cylinder head ask them to knock out the valve guides at this time. Without going into it a great deal the M10 cylinder heads can benefit from a simple gasket-match port job and bowel clean up. Do not fully polish the intake tract if you plan on retaining carburetor(s).

OLD Style Valve Guides: If you have old-style valve guides, have the machinist knock them out.

If neither of those applies, have the machinist simply check out the existing guides and replace as needed.

Step 6: Get all of your parts together (see the "street hot-rod m10 head" checklist here ….).

Step 7: Take the cylinder head and new valves back to the machinist (assuming you did some port work). Have your machinist put in the new guides (if applicable), resurface the cylinder head, and do a valve job on the new valves. Your head should now be ready for reassembly. You can do this, or your machinist (upon request).

Step 8: Reassemble your cylinder head as per the factory manual.

Couple quick tips:

-Note that when the machinist cuts the new valves, they will be specific to that valve seat, do NOT mix and match.

-Do not set the cylinder head directly on any hard surface; there is a very real possibility of bending a valve. Use cylinder head stands.

-Use a paint marker dot to mark your steps lest you forget.

-Set the valve lash before and AFTER the cylinder head is completely torqued to the block.

-If using rocker locks, there needs to a distance of .01" between the rocker and its lock.

M10 Cylinder Head Resurfacing and Its Effect on Cam Timing

The published standard head thickness is 5.075". For every .035" removed from the standard head thickness the cam timing is retarded by 1°.