

Making head shims - Russ Green

(February 2006 *TorqueRoll*)

I am getting excited about the coming racing season. Things seem to be getting off to a good start with Cabin Fever back on the schedule. Check out the contest schedule and make plans to do a lot of racing this year.

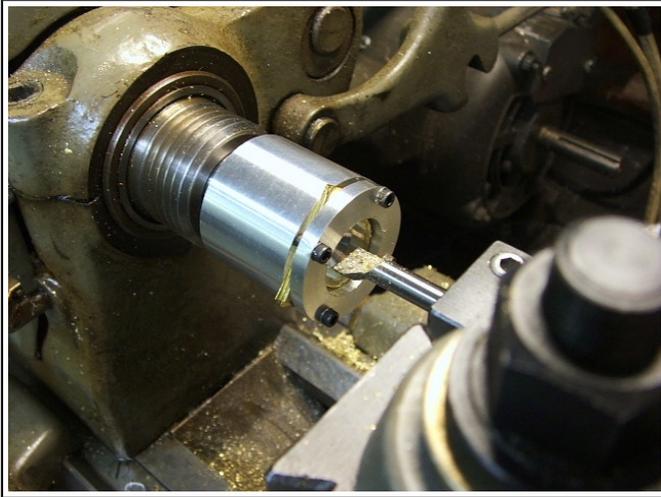
This quarter I have included a description and pictures of the process I use to make head shims. The fixtures and shims shown are for my K&B 40 quickie rat engines. I have not included fixture dimensions because you should be able to come up with them on your own after studying this description and the photos. After you think about it, you may even come up with some ideas that make things better or easier.



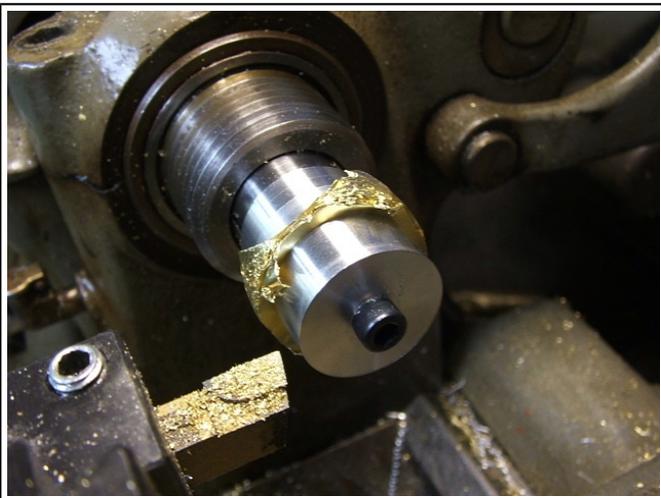
The above photo shows the two fixtures needed to make the shims. The one on the right is used to cut the ID and the one on the left is used to cut the OD. Anyone with a lathe should be able to make these fixtures and then use them to make head shims. I did not have a mill when I made them. So, I measured and marked the four bolt holes in the ID fixture manually then drilled locating holes before parting off the end clamp. Match mark the end cap so the bolt holes line up. You should be able to use the fixtures multiple times, more times than you will probably ever need.



First, squares of shim material are cut to fit the ID fixture. I used a cheap paper cutter to cut .003" and .005" shim stock for these shims. Next I loaded the shim material squares in the ID fixture, placing the thicker .005" shim material on the outsides of the stack to reduce the chance of tearing the outside pieces. Tighten the four screws to compress the shim material stack so that slipping does not occur.



The third photo shows the shim material loaded in the ID fixture with the fixture mounted in the lathe. I drill a hole in the center of the stack then use a boring bar to cut the ID of the shim stack as shown in the above photo. The ID of the fixture is the same size as the shim ID. Remove the shim stack from the ID fixture and load them on the OD fixture. Make sure the stack is compressed well when tightening the end cap screw.



The fourth photo shows the OD fixture while cutting the OD to size. The shim stack will look like a mess when you start cutting, but don't worry. Everything will end up looking fine (above photo) if you don't get in a hurry and cause the stack to slip. The last photo shows the completed shims as they are removed from the OD fixture.

