

# THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



Absolutely. The Most Motor For Your Money! *Guaranteed*

## Lets put our heads together.

Now that we have all of the machine work done on our heads, it's time to check our head components for compatibility. First all of the valves get installed in our new or reconditioned valve guides along with the spring retainers and springs and we measure every spring's installed height. This measurement is taken from the base of the spring seat to the underside of the spring retainer. With the spring retainers in place we also check retainer to guide clearance, this clearance is very critical and is often overlooked; failure to check this can result in retainer to guide bind and camshaft failure. The retainer to guide distance must be no less than .080" greater than the valve lift, keeping in mind to add the seal surface distance. To correct inadequate clearance the guide can be machined down until we achieve the proper clearance. Next we check actual spring pressures. For this installed spring height is used to set up our spring tester. Advertised spring pressures can vary from actual spring pressures by 15 to 40 pounds so it's important that every spring is checked. We check and record the pressures at two heights for each spring, full open and when the valve is on the seat. While the springs are on the tester, we also check for coil bind in the full open position. If there is coil bind it must be addressed or cam failure is a given.

If the seat pressure is too low we use spring shims to increase the pressure. If the spring pressure is too high we machine the spring seat to increase the installed height or use a taller spring retainer for an installed height increase, valve tip height is also checked and adjusted at this time. Some cylinder heads don't have adjustable rocker arms so this measurement is critical on those engines.

Our heads are now ready for assembly washing. This is a real good scrub down with brushes and a hot, high-pressure, water hose similar to what's in a car wash. Once we are satisfied the valve guides, head surfaces, passages and ports have had all the machining debris and oils removed they get a final rinse and are blown dry. Next the valve stems get micro polished on our valve stem polishing machine to get rid of any small imperfections. If this step is skipped premature valve guide failure will be the result. Next the guides get lubed with our special valve guide lubricant and the valves get installed. Valve stem seals are installed next and then the springs, retainers and locks along with any shims that are needed. The valves all get a little 'seat tap' to seat the keepers to the retainers and the intake and exhaust ports all get vacuum tested to insure the valves are seated at 100%.

The assembled heads are now prepped for painting. Each head gets primed and painted to our customer's color specs. Cylinder head assembly can be done quickly or it can be done right. Sehr Performance does it the right way so our customers can go quick and get "The Extra Mile".

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