

# THE EXTRA MILE

Engine Building and Power Techniques

BY SCOTT SEHR



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

Checking for straightness

## BE PREPARED

This may seem obvious but before we can even get started we need to get things cleaned up. Assuming that your engine has been disassembled, the components need to be thoroughly cleaned so they can be visually checked for cracks and defects and perhaps magnafluxed. This is much more than can be done by dragging it to the car wash and hosing it off so you don't get oil on you garage floor. We bake all parts for several hours at 600 degrees to help get rid of the oil and grime that has accumulated over the years. It will also remove the paint that is underneath it and cook out impurities in the castings. This particular step also aids in seasoning the parts, which makes machining easier and much more precise. If your parts are aluminum this step is skipped.

Next in line comes a shower in our wash cabinet with degreasing chemicals added and the water heated to 185 degrees. We are doing other things while this is going on. From here it's a short hop to our hand held, heated, high pressure, wash. We use a wand like you find in a car wash to get into all the passages and holes to get out the last bits of crud. To aid in cleaning the oil and water passages, we use long 'passage brushes' to get through all the passages. During this process we have found several oil and water passages that don't go all the way through as they should and have averted problems by drilling out these passages when possible or using a different casting when drilling wasn't an option. Everything gets a good blow dry next so we have clean dry surfaces to inspect. If the parts in question are to be magnafluxed that's where they are headed next. All of this is to guarantee that you and we are starting with parts we know are good.

During the inspection process we are looking for any casting flaws on the heads, block, crankshaft and rods. Whether they are dings, casting flash or voids, any of these flaws become stress points that can lead to a failure. The engine block decks, pan- rails, front cover and manifold surfaces are checked for straightness. All threads are chased with a tap and checked for damage and repaired as needed, any broken bolts or studs are also repaired now. We also check for core shift, main bore alignment; deck heights and cylinder bore thrust surface wear and cylinder taper at this time. Core shift not only affects the cam bore, it involves cylinder wall and water jacket thickness.

Crankshafts journals are checked for wear and straightness is checked on the mains, snout and seal surfaces.

Connecting rods are checked for housing bore size and roundness, bend, twist and length and reconditioned where possible or replaced.

This may seem like a lot of washing, scrubbing and checking and it is. Not everybody does it this way. We feel that in order for you to get the most performance and the longest life out of your engine build we have to make sure there is nothing there that shouldn't be.

If there is something that you would like us to address in upcoming segments let us know and we will do our best to cover it for you.

