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## CYLINDER SLEEVE INSTALLATION PROCEDURE

- Step 1.** The cylinder must be stripped of all removable parts: studs, nuts, bolts, manifolds, etc.
- Step 2.** The cylinder is bored out to accept the sleeve. When the sleeve is installed into an all aluminum cylinder, the interference fit is .004. When the sleeve is being installed into a cast iron cylinder bore, the interference fit is .002 to .003.  
The interference fit is determined by measuring the outside diameter of the sleeve, then boring the cylinder diameter smaller than the sleeve.  
The interference fit is a critical aspect of sleeve installation because this step insures that the sleeve does not move when in the cylinder. Also, proper interference fit is important for cylinder cooling purposes.
- Step 3.** The cylinder is then heated in an oven between 400°, up to 450° for an hour or more.  
Do not use a torch or hot plate for this procedure. It is important that the cylinder heats uniformly.
- Step 4.** The cylinder is then removed from the oven and the sleeve will drop easily into the cylinder. Turning the sleeve by hand to line up the ports is a common practice, or you can use a needle nose type device to align the ports.  
You will have between five and ten seconds before the sleeve and cylinder lock up.
- Step 5.** The cylinder must then be put under a hydraulic press to keep the sleeve from rising while the cylinder is cooling.
- Step 6.** The ports of the sleeve must then be blended with the cylinder by using an assortment of hand grinding porting tools. Mismatched ports will cause some power loss to the engine.
- Step 7.** After the ports have been matched, the cylinder (sleeve) must be bored out and honed to insure proper piston clearance.  
Measure your piston at the skirt to properly bore the sleeved cylinder to the correct bore size. Chamfer the edges of all the ports to prevent the rings from catching on a sharp edge.  
Next, hone your cylinder to the correct piston clearance.  
Properly sleeved cylinders can use the O.E.M. recommended piston clearance. If you have a doubt, add a half thousandth (.0005) to the clearance.
- Step 8.** As an added finishing touch, surface decking the top of the cylinder is recommended in order to make sure that the head gasket will sit flat on the cylinder to create a good sealing surface.  
Make sure you only take the minimum cut off the top of the cylinder.