

OVERHAUL (Continued)

Honing is recommended for refinishing cylinder walls only when no cross-hatch pattern is visible on cylinder walls, or for fitting pistons to the specified clearance. The grade of hone to be used is determined by the amount of metal to be removed. Follow the instructions of the hone manufacturer. If coarse stones are used to start the honing operation, leave enough material so that all hone marks can be removed with the finishing hone which is used to obtain the proper piston clearance. After honing, thoroughly clean cylinder bores with a detergent and water solution.

NOTE: Only experienced personnel should be allowed to perform this work.

NOTE: Before any cylinder is refinished, all main bearing caps must be in place and tightened to the proper torque so that the crankshaft bearing bores will not become distorted from the refinishing operation.

Cylinder walls that are severely marred and/or worn beyond the specified limits should be refinished. Refinish only the cylinder or cylinders that require it. All pistons are the same weight, both standard and oversize; therefore, various sizes of pistons can be used without upsetting engine balance. Refinish the cylinder with the most wear first to determine the maximum oversize. If the cylinder will not clean up when refinished for the maximum oversize piston recommended, replace the block.

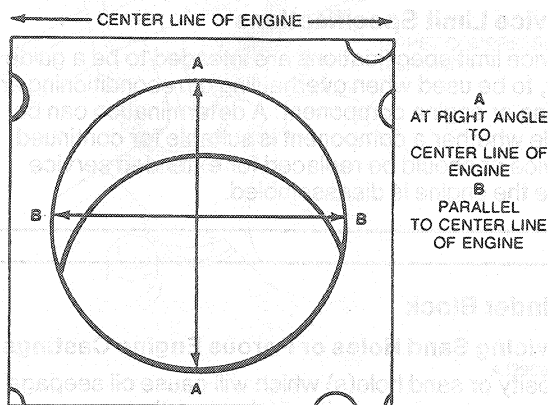
Refinish the cylinder to within approximately 0.038mm (0.0015 inch) of the required oversize diameter. This will allow enough stock for the final step of honing so that the correct surface finish and pattern are obtained. For the proper use of the refinishing equipment, follow the instructions of the manufacturer.

Use a motor-driven, spring pressure-type Engine Cylinder Hone Set T73L-6011-A, hone at a speed of 300-500 rpm. Hones of grit sizes 180-220 will normally provide the desired bore surface finish of 0.20-0.60 $m\mu$ (millimicron) per cylinder in production and 0.30-0.51 $m\mu$ (millimicron) average for all cylinders.

CAUTION: After the final operation in either of the two refinishing methods described and prior to checking the piston fit, thoroughly clean with a detergent and water solution and oil the cylinder walls.

When honing the cylinder bores, use a lubricant mixture of equal parts of kerosene and XO-10W30-QSP (ESE-M2C 153-E) or equivalent engine oil. Operate the hone in such a way as to produce a cross-hatch finish on the cylinder bore. The cross-hatch pattern should be at an angle of approximately 30 degrees to the cylinder bore. Mark the pistons to correspond to the cylinders in which they are to be installed. When the refinishing of all cylinders that require it has been completed and all pistons are fitted, thoroughly clean the entire block and oil the cylinder walls.

Refinish cylinders that are deeply scored, out-of-round, and/or taper exceeds the specification. If the cylinder walls have minor surface imperfections, but the out-of-round and taper are within limits, it may be possible to remove the imperfections by honing the cylinder walls and installing new service piston rings, providing the piston clearance is within specification. For Specifications, refer to Section 03-01A (3.0L), 03-01B (3.0L/3.2L SHO) or 03-01C (3.8L).



1. OUT-OF-ROUND = DIFFERENCE BETWEEN A AND B
2. TAPER = DIFFERENCE BETWEEN THE A MEASUREMENT AT TOP OF CYLINDER BORE AND THE A MEASUREMENT AT BOTTOM OF CYLINDER BORE.

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Cleaning

CAUTION: If these procedures are not followed, rusting of the cylinder bore(s) may occur.

After any cylinder bore service operation, such as honing or deglazing, clean the bore(s) with soap or detergent and water. Then, thoroughly rinse the bore(s) with clean water to remove the soap or detergent, and wipe the bore(s) dry with a clean, lint-free cloth. Finally, wipe the bore(s) with a clean cloth dipped in XO-10W30-QSP (ESE-M2C 153-E) or equivalent engine oil.

If the engine is disassembled, thoroughly clean the block with solvent. Remove old gasket material from all machined surfaces. Remove all pipe plugs that seal oil passages, then clean out all the passages. Blow out all passages, then bolt holes, etc., with compressed air. Ensure threads in the cylinder head bolt holes are clean. Dirt in the threads may cause binding and result in a false torque reading. Use a tap to true-up threads and to remove all deposits. Thoroughly clean the grooves in the crankshaft bearings and bearing retainers.

Inspection

After the block has been thoroughly cleaned, check it for cracks. Tiny cracks not visible to the naked eye may be detected by coating the suspected area with a mixture of 25 percent kerosene and 75 percent light engine oil. Wipe the part dry and immediately apply a coating of zinc oxide dissolved in wood alcohol. If cracks are present, the coating will become discolored at the defective area. Replace the block if it is cracked.