Three step tightening procedure using the stretch method

Step 1
After cleaning and visual inspection of all components. Lubricate the bolt threads and under the head using the recommended lubricant.

Step 2
Bring the caps into alignment and tap into place, before installing bolts Do *NOT* use the bolts to pull caps into position.

Step 3
Seat the pointed ends of the stretch gauge into the bolt dimples. Adjust the gauge so it has approximately .050" preload. Align the needle to "0". With shims installed tighten until prescribed stretch is achieved.

Rod Bearing Preparation

Step 1
Remove connecting rod from the sealed pouch.

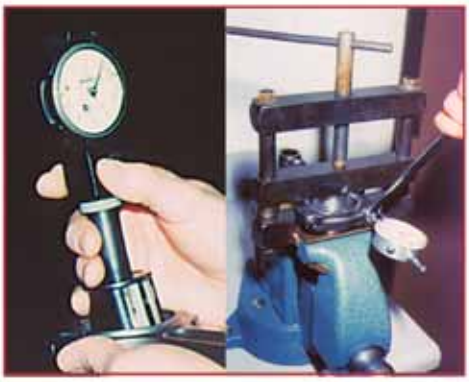
Step 2
Thoroughly clean the rods to remove the rust preventative.

Step 3
Apply machinist dye to side of the rod. Lightly mark 1 to 8 with a metal scribe.

Step 4
Thoroughly clean bearing. Use a micrometer with a ball end attachment to measure the shell thickness. Select shells that will provide appropriate clearance. Install shells into connecting rods. Using care to align the hollow dowels with the mating counter bore, tap the rod cap into position with an appropriate hammer.

DO NOT USE THE BOLTS TO PULL THE CAP INTO POSITION

Step 5
Apply the recommended lubricant on the threads and under the bolt head.



Step 6
Use the stretch or torque angle method. Using a dial bore gauge, measure inside of the bearing to verify the oil clearance will be correct. You are now ready to install the pistons.

Tightening procedure using the torque & angle method

Step 1
Install rod and piston assembly into engine block. Using great care, be sure hollow dowels are aligned with the mating rod counter bores. Attach rod cap and tap into place with an appropriate hammer.

DO NOT USE THE BOLTS TO PULL CAP INTO POSITION

Step 2
Place shim stock between the rod and crankshaft thrust faces. This will help support the rod cap and prevent distortion in the rod housing bore during the tightening process. Seat the threads and snug up the lash by torquing the bolts to 30 ft/lbs.

Step 3
Install the appropriate size socket wrench to the male side of the Torque/Angle gauge. Attach a breaker bar on the female side of the gauge. Now engage a rod bolt with the gauge assembly and rotate the stop arm of the Torque/Angle gauge clockwise until it makes contact with the side of the rod (or any other solid place on the engine. Rotate the outside ring of the gauge clockwise until the pointer aligns at zero. Tighten bolt until pointer aligns at the degree mark specified in the instruction.

Step 4
After completing this process on all 16 rod bolts, set a quality torque wrench to 50 ft/lbs. Check torque all rod bolts to verify that no bolts will turn. If you find any that turn, even slightly, the angle portion of the tightening process was not successful and the bolt is still at 30 ft/lbs.

YOU MUST COMPLETELY LOOSEN THIS BOLT. RETIGHTEN TO 30 ft/lbs AND REPEAT THE TORQUE/ANGLE PROCEDURE .