

**47 EN****Replacing Piston Pin Bushings**

**Special Tools:** P 15 Press for extracting and installing piston pin bushings

**Replacing piston pin bushings with connecting rods removed from engine.**

If piston pin clearance is excessive in the connecting rod, a new bushing must be installed observing the following points:

1. Remove old bushing using a standard press or press P 15.
2. Install new bushing and ream to correct size.
3. In no case should worn out bushings be bored out and oversize piston pins be used.  
When ordering new or exchange connecting rods, it is important to indicate the weight of the old connecting rods.

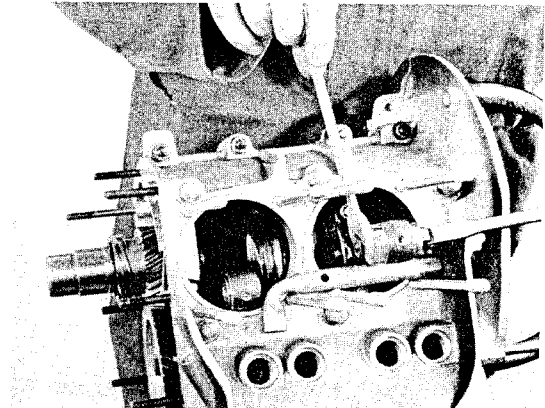


Fig. 232

**Replacing piston pin bushings with connecting rods in engine.**

**Note:**

The piston pin bushings should be precision reamed. However, if it becomes necessary to replace the bushing while the connecting rod is installed, a hand reamer may be used with extreme care. Remove old bushing as shown in Fig. 232 and install new bushing as in Fig. 233.

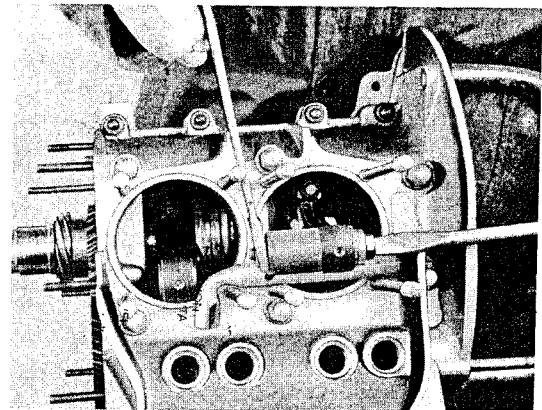


Fig. 233

**48 EN****Measuring and Aligning Connecting Rods**

**Special Tools:** P 14 Connecting rod gauge

**Measuring**

1. Disassemble the engine and remove connecting rods from the crankshaft. Mark connecting rods and caps with their respective locations for proper installation.
2. Remove bearing inserts.
3. Mount connecting rods on gauge P 14.

4. Insert measuring pin in the connecting rod and check angular and lateral alignment.

**Aligning**

Use standard aligning tools to straighten connecting rods.