DISASSEMBLY

6-18. CYLINDER. Place cylinder over the cylinder holding block (64526-1, or -2), assemble valve spring compressor (ST-25) on cylinder, and compress valve springs far enough to remove the valve retaining keys.

NOTE

If keys are stuck tight in spring seat, a light blow with a leather mallet on top of compressor will release keys.

6-19. Remove all valve spring seats and springs from rocker box, keeping parts for each valve separate. Hold valves by the stems to keep them from dropping out of the cylinder, and remove cylinder from holding block. Now reach inside of cylinder and remove valves. If difficulty is experienced in pulling the tops of the valve stems through the valve guides, push the valves back in position and clean the carbon from the stems.

CAUTION

Do not drive the valves through the guides.

6-20. Place each valve, with its springs, seats and keys in its proper compartment of the cleaning and inspection basket (64553). No further disassembly of the cylinder is necessary unless inspection warrants the replacement of valve guides, valve seats, or primer nipple.

6-21. PISTONS. Using the piston ring expander (64528 or 64713), remove the rings from all pistons. Remove the rings in order, starting with the top ring and working down. Be careful not to scratch or score piston when removing rings.

6-22. HYDRAULIC TAPPETS. (See figure 6-9.) Push spring end of hydraulic tappet plunger, turn approximately one-quarter turn in clockwise direction and pull it from the cylinder. Do not further disassemble any parts of tappet assembly.

Figure 6-7. Removing Push Rod Socket

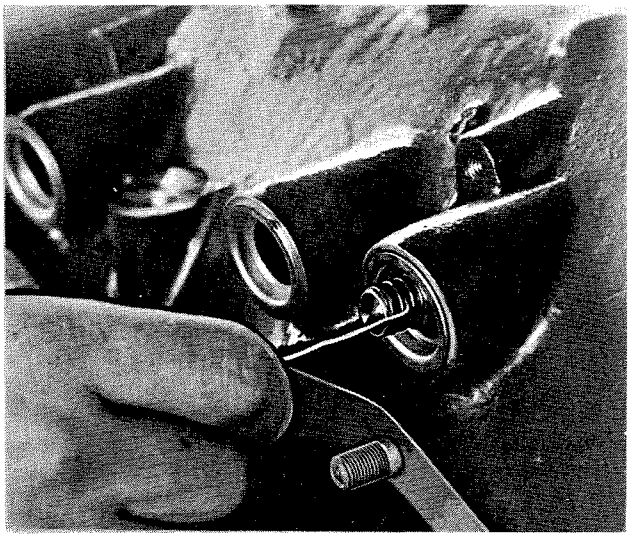


Figure 6-8. Removing Hydraulic Tappet Plunger Assembly

CAUTION

Keep plunger and cylinder of each assembly together. They are very closely and selectively fitted together during manufacture and are not interchangeable.

CLEANING

6-23. Clean all cylinder, piston and valve train parts in accordance with the general instructions described in Section III. Specific instructions follow:

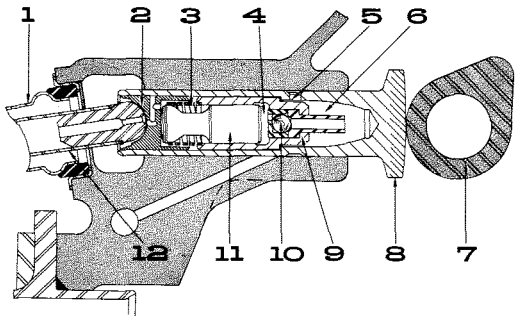
6-24. HYDRAULIC TAPPETS. Use the cleaning basket in order to keep the valve operating mechanism parts separate. Dip the basket, with all parts contained in their proper compartment, in petroleum solvent. Hold the ball check valve in each plunger cylinder off its seat by inserting a light copper wire or other relatively soft material through the tube on the cylinder and wash thoroughly so that any dirt particles that may be under the ball seat will be washed out. After washing the parts of each hydraulic tappet assembly, replace the parts in the proper compartment of the cleaning basket.

CAUTION

It is imperative that various parts of each tappet assembly be kept together during the overhaul operations, in order that all component parts may be reassembled with their original mating parts and each completed assembly inserted in its original location in the crankcase. In the event parts are intermixed, discard, and install new assemblies.

INSPECTION

6-25. Inspect all cylinder, piston and valve train parts in accordance with the general instructions described in Section III. Specific instructions will be found in the following paragraphs, possible revisions will be found later in the section.



1. Shroud Tube
2. Push rod socket
3. Plunger spring
4. Oil pressure chamber
5. Oil hole
6. Oil supply chamber
7. Camshaft
8. Tappet body
9. Cylinder
10. Ball check valve
11. Plunger
12. Push rod

Figure 6-9 Diagram of Hydraulic Tappet

6-26. CYLINDER HEAD (VISUAL INSPECTION). Examine the cylinder head thoroughly, checking for the following possible defects.

a. Loose, scored, pitted or otherwise damaged valve seats. (Mark for replacement.)

b. Loose or damaged studs. (Replace with 0.003, 0.007 or 0.012 oversize studs).

c. Loose or damaged spark plug heli-coil inserts. (Mark for replacement with oversize insert.)

d. Loose, cracked or scored valve guides. (Mark for replacement.)

e. Nicked, scored or dented mounting pads. (Intake and exhaust ports, rocker box covers.)

f. Cooling fins. The following standards shall prevail insofar as acceptance or rejection of cylinder heads are concerned.

1. Cracked fins.

(a) Fin adjacent to the exhaust port flange.

(1) Stop drilling, a 3/16 inch diameter hole through the end of the crack is permissible providing the end of the crack is at least 1/4 inch from the base of the metal.

(2) Fin removal to eliminate crack and reduce vibrating mass is permitted provided:

aa. Maximum removal is no more than one half the total fin width.

bb. Maximum removal is in accordance with figure 6-10.

cc. No burrs or sharp edges are permitted.

dd. Minimum fillet at the root of the removed portion of the fin is one quarter inch radius. Minimum corner at top of fin adjacent to the removed portion is one half inch radius.

(b) Fins other than the above may be accepted provided not more than one crack per fin and its depth is no closer than 1/4 inch from the base of the metal and a fin stabilizer is used to reduce vibration and further deepening of the crack.

2. Physically damaged, broken or bent fins.

(a) The blended area for any one fin shall not exceed 3/8 square inches, nor 3/8 inch in depth.

(b) No more than two blended areas on any one fin.

(c) No more than four blended fins on the push rod side of the head. No more than six blended fins on the anti-push rod side of the head.

(d) In addition to the above, it is recommended that a fluorescent penetrant inspection of the cylinder be made. Pay particular attention to the following areas.

(1) Between the 15th and 20th cylinder fin (counting from the top) on exhaust port side of cylinder.

(2) The area around the lower spark plug counterbore.

6-27. CYLINDER HEAD (DIMENSIONAL INSPECTION). Check the ID of each intake valve guide (it is recommended that exhaust valve guides be replaced at overhaul) with the flat plug rejection gage (ST-81). Check the diameter and out-of-roundness of the guide bore by checking with the gage at a minimum of two positions 90° apart. If the gage enters the guide at any of the positions tested, mark the guide for replacement. Check the ID of the rocker shaft bushings in the cylinder head, using the flat plug rejection gage (64613). Be sure to use the end of the gage marked "Cyl. Head". The opposite end, marked "Rocker Bushing" is 0.0015 inch larger in diameter by virtue of the greater wear limit allowed on the valve rocker bushing. As in the case of the valve guides, check for out-of-roundness by trying the gage at several different points on each diameter being checked.

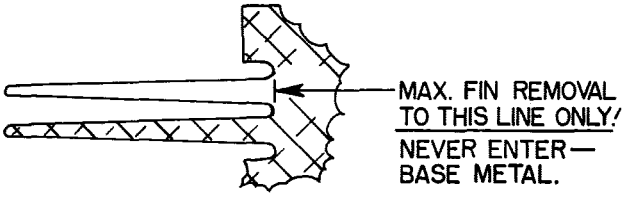


Figure 6-10. Maximum Fin Removal