PUMPED UP

Physical fitness for the Harley oil pump.

BY JOHN WYCKOFF

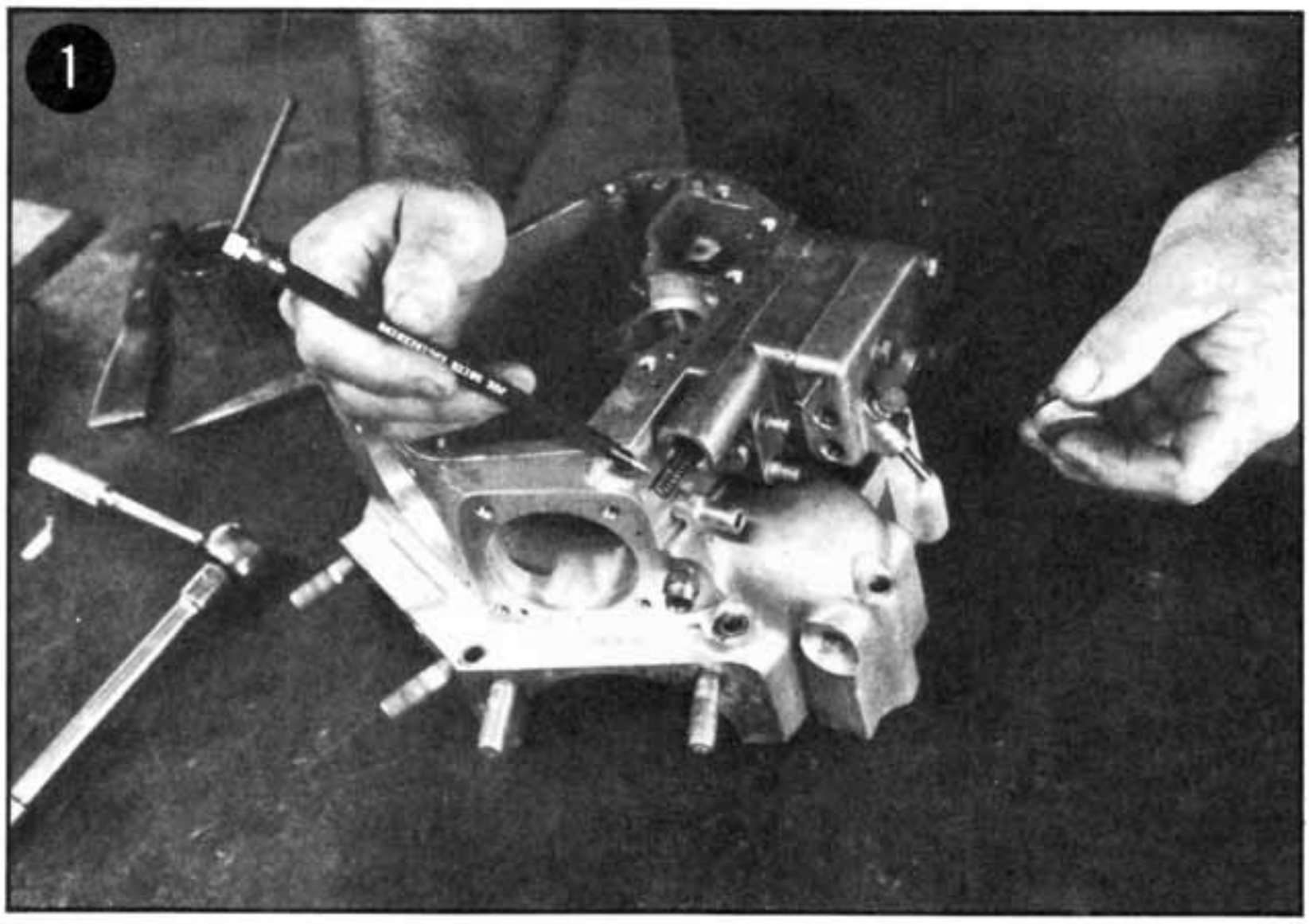
Joe Smith, one of the best known drag racers in the world, is also one of the most qualified Harley-Davidson mechanics in the U.S. Joe is constantly looking for better ways to do things, like make the motorcycle run faster and last longer. For the past year, working closely with Milmeyer Mfg. Co. of Fullerton, California, Joe has been testing high performance gaskets that have the reputation for quality. Once he was convinced, he endorsed them. Neither Joe nor the gasket manufacturer, Milmeyer was particularly happy with the gaskets available for overhauling that most precision of parts in the engine, the oil pump. Tolerances o .0005", are common in this ultra precision but simple part. If the tolerances are not adheard to, one of three condition will result. 1) The pump will leak oil. 2) Oil pressure will be too low. 3) The pump will sieze and ruin your engine. The last, has happened all too often.

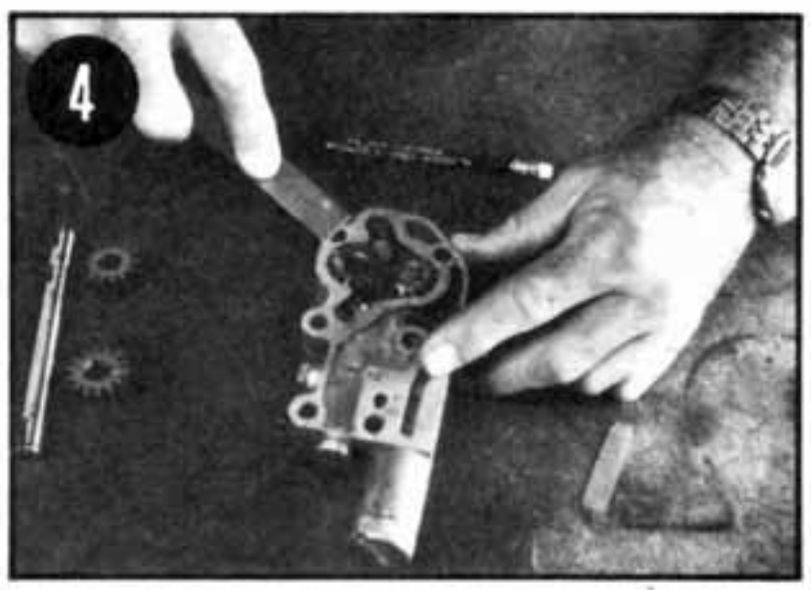
Unlike most of the Japaneese motorcycle oil pumps, the Harley pump can be overhauled very easily. While it is not necessary on low milage motorcycles, it is often done on high milage bikes or on those where the owner didn't change the oil or filter often enough. The accumulation of metal, fiber or plastic particle clogs the oil passageways or collects inside the pump reducing it capacity to work.

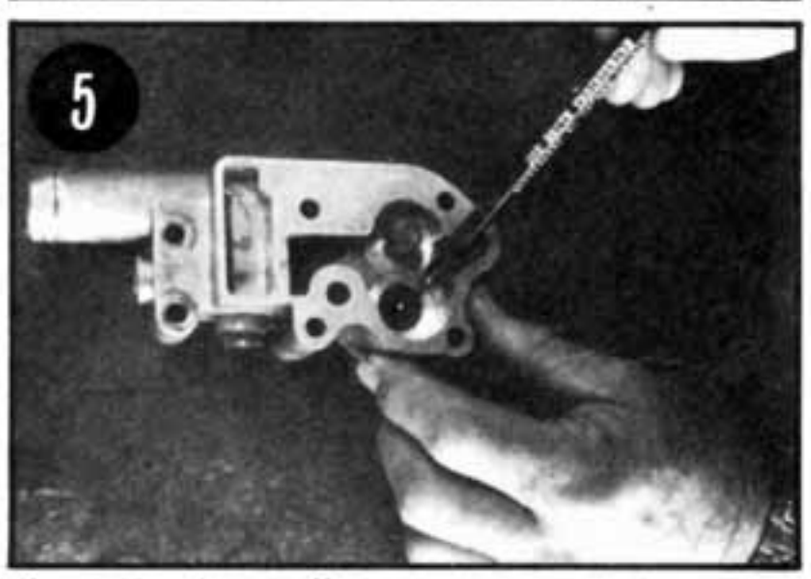
Most oil pump gaskets, supplied by accessory companies, are paper. Harley-Davidson supplies acetate gaskets, because of the requirement for a thickness of .005" to .007", depending on model. The Harley gaskets work fine as long as the pump has never been removed. With some of the older bikes with questionable histories, the oil pump was either neglected altogether because the "mechanic" was afraid to get into it, if you were lucky. Or, if you were not lucky, he did get into it but messed things up.

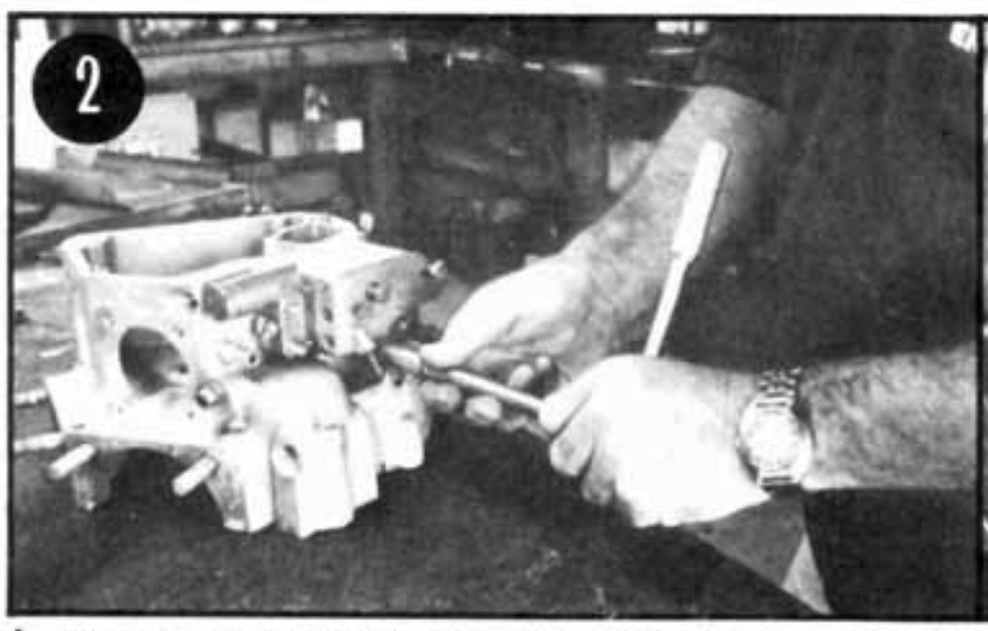
The dry sump used on Harleys, demands total reliability of the oil pump. If you want to check yours to determine if it is up to standards, then reassemble it and have it work properly.

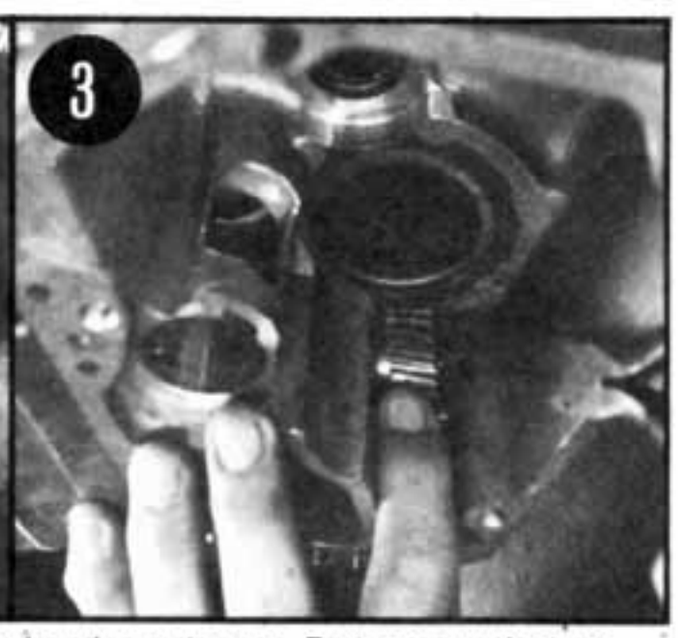
Read on . . .









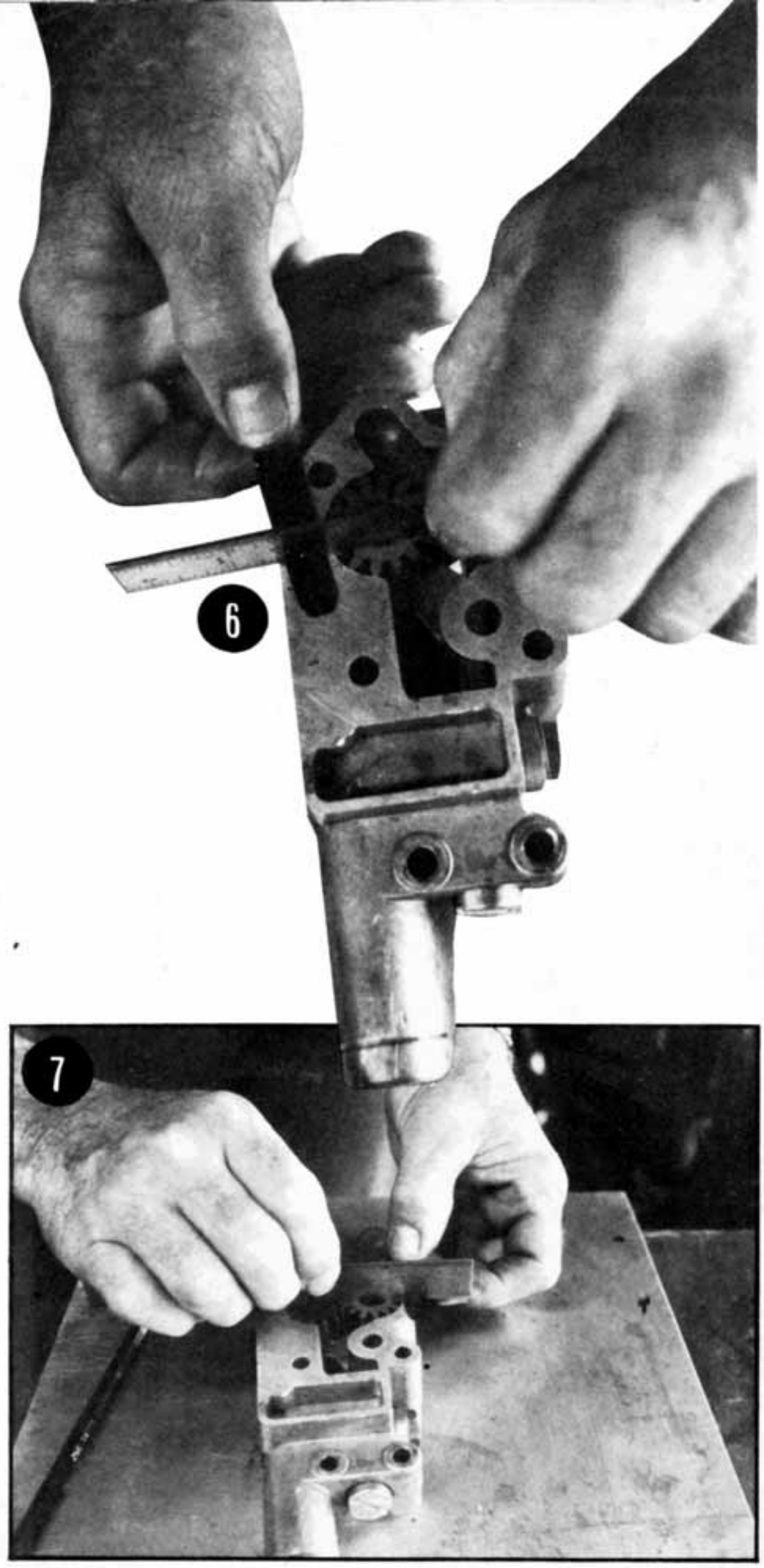


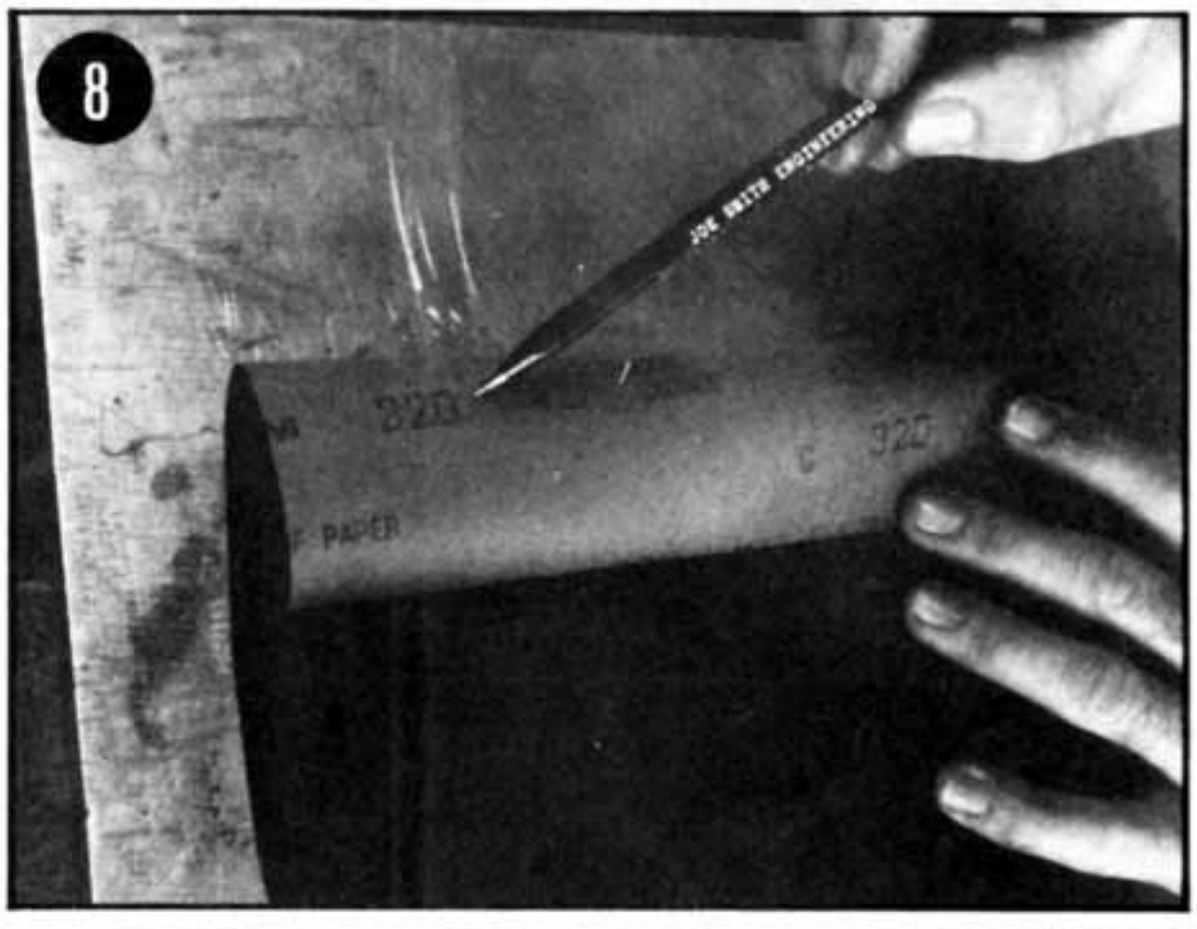
1. Before you start anything, remove the cap and make sure the ball bearing is still inside the check valve retainer. Determine that no dirt is holding the ball away from it's seat and the spring has sufficient pressure to keep the valve closed. Sometimes pumps are overhauled when the problem was a simple piece of dirt that could have been removed before the engine was disassembled.

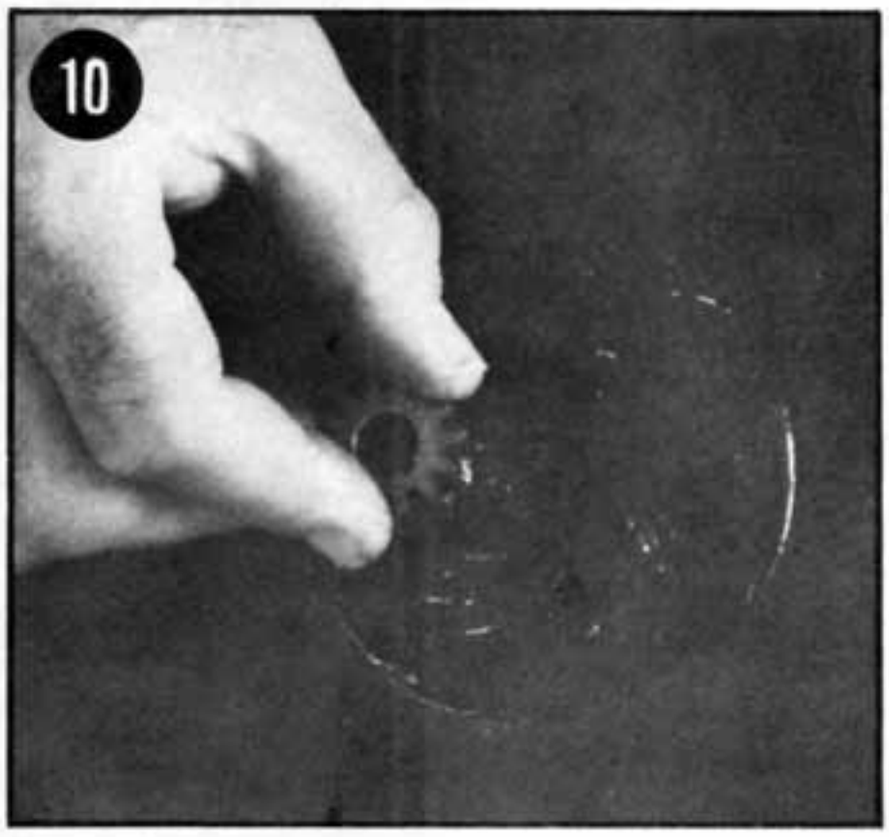
2 and 3. Remove the oil pump. This can be done without disassembling the engine. However, if you are doing an overhaul it is best to do it right. The gear inside the engine case is held in place by a C clip and rides on a small, easy to loose, woodruff key. These must be removed. Clean everything.

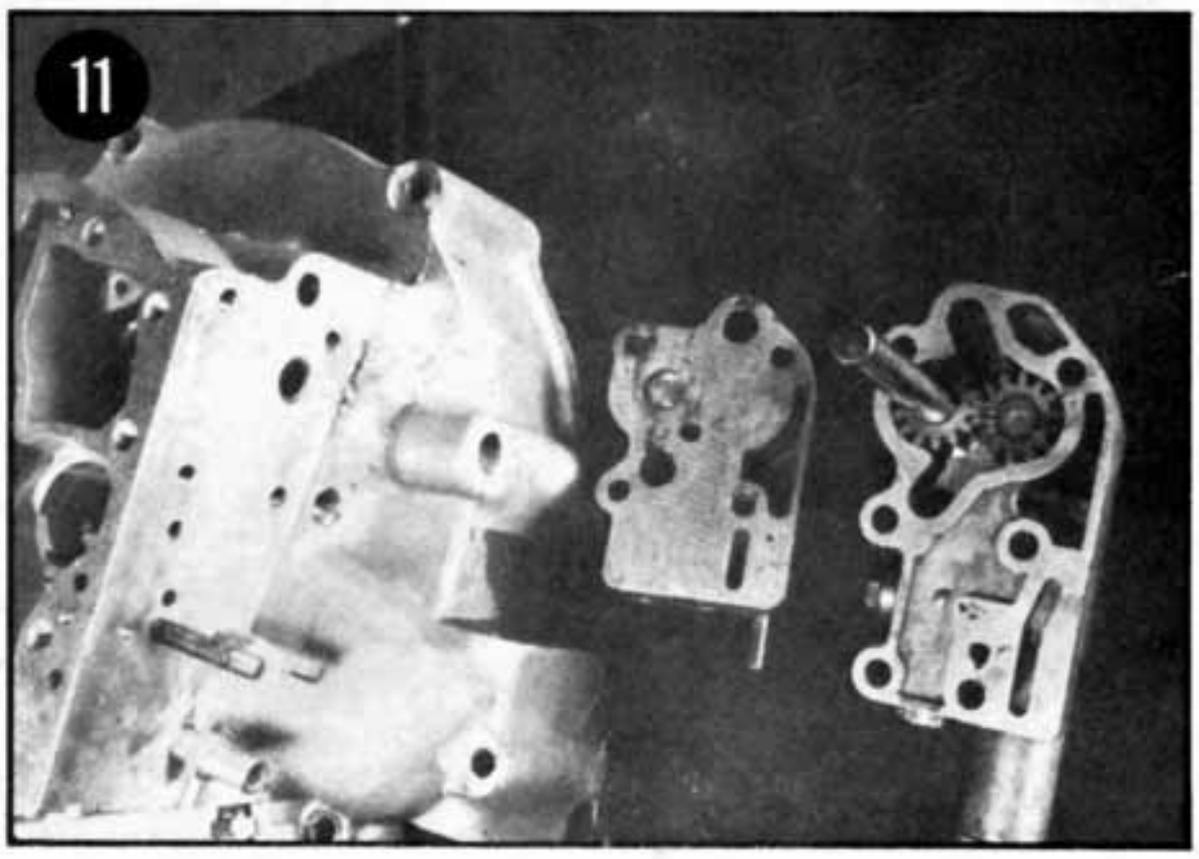
4. Use a dull edged scraper to remove the old gasket material.

5. Lift out the pump gears. Using a small screw driver or wooden dowel, remove the oil seal.





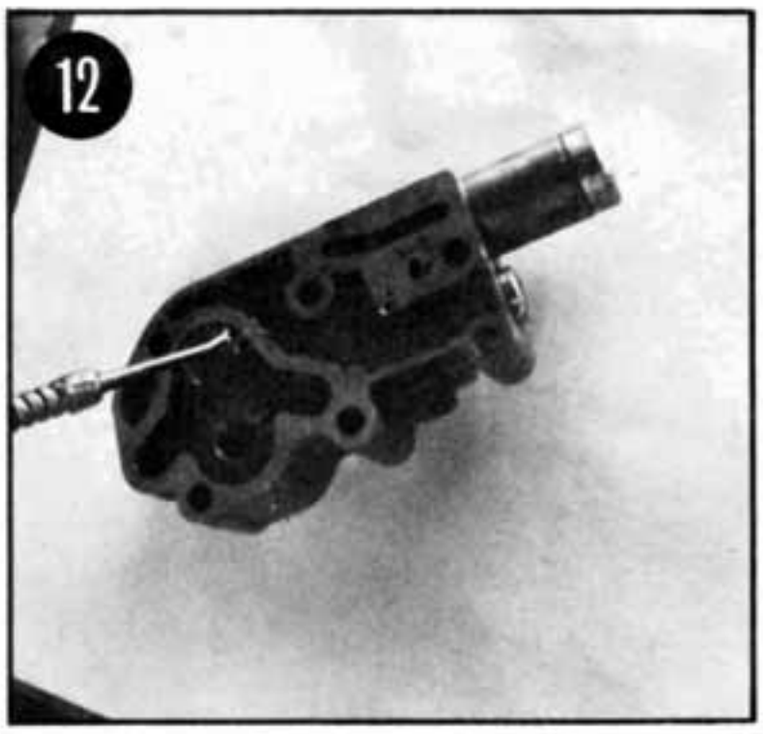


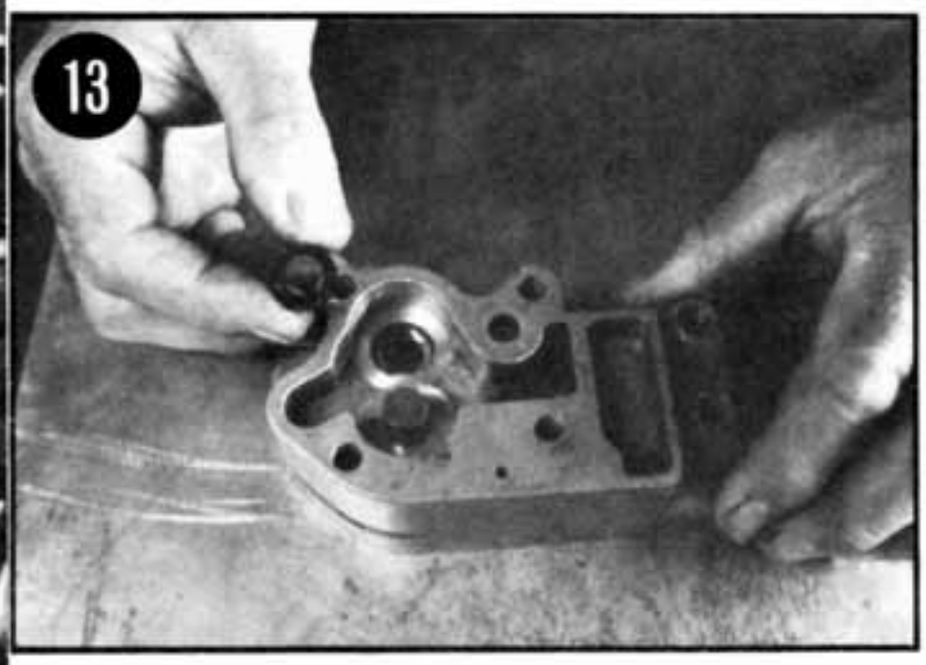


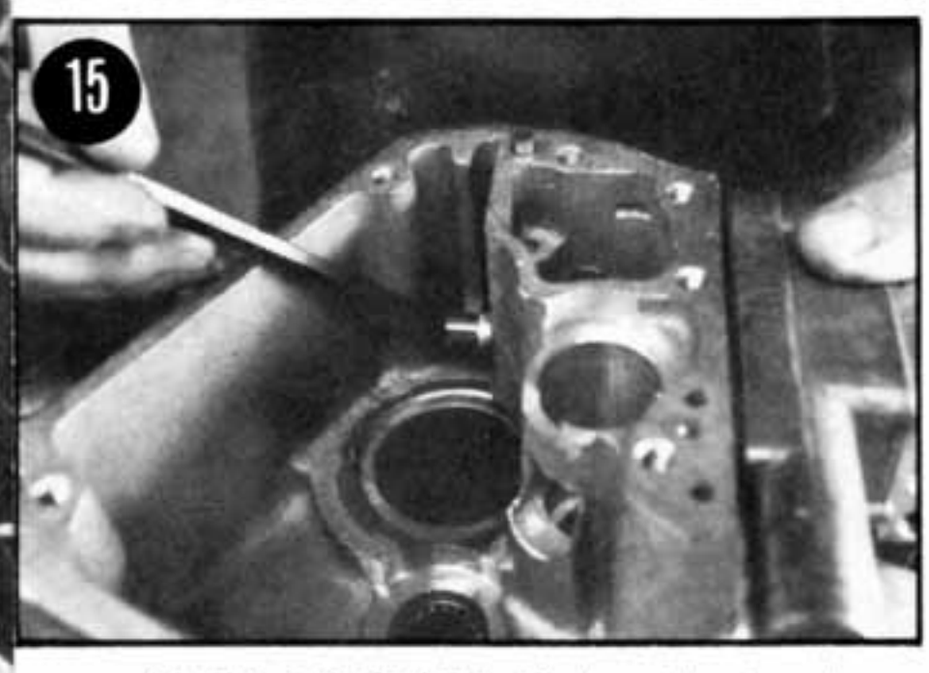
6 and 7. Set the gears back in the pump body. Lay the feeler gauge (supplied in the kit) on the pump body and place a good straight edge on top of the gears. You should be able to slide out the gauge with some resistance. If there isn't any resistance, the gears will have to be milled. If there is too much resistance (this rarely happens) the surface of the pump body will have to be sanded.

8, 9, and 10. If there was no resistance felt while sliding out the feeler gauge, the pump gears must be milled. We will assume you don't have access to a milling machine and you do have an hour or so to stand there grinding away. Use either a piece of plate glass or a smooth, very flat surface as the base for the 320 sandpaper and some grinding compound. Use an even circular motion to grind off just enough from each of the 4 gears to produce the feeler gauge drag you need for a proper side seal.

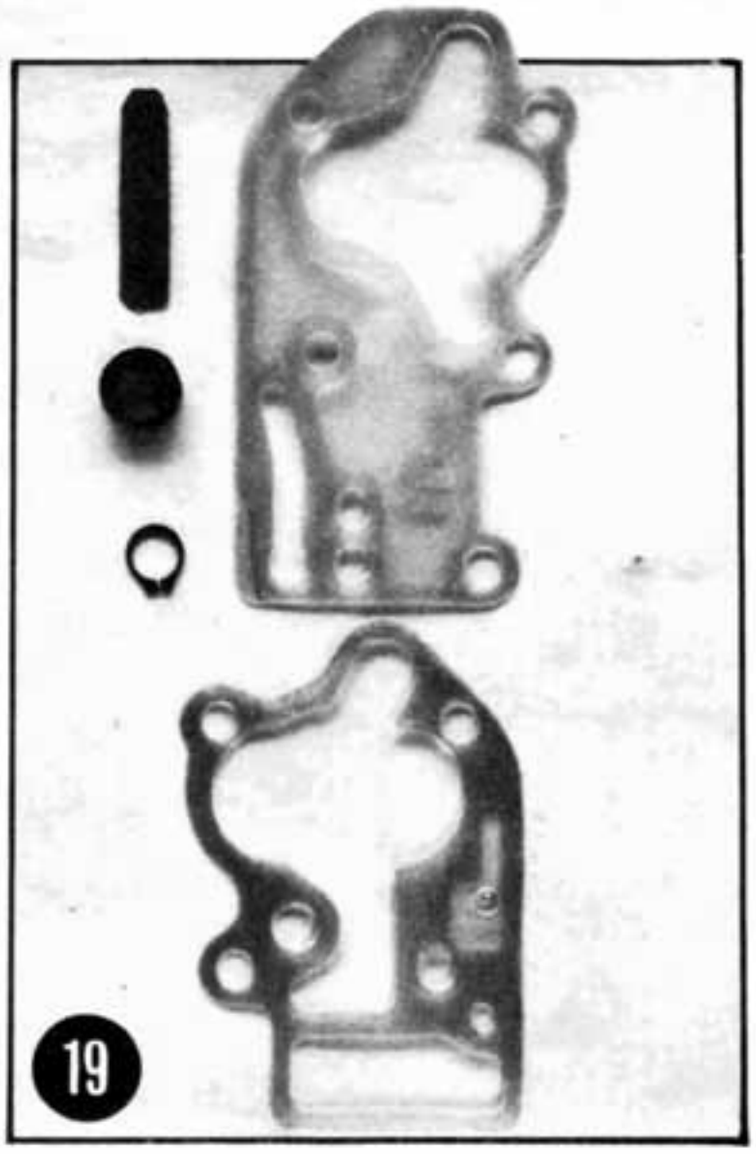
11. If there are small scratches on the surfaces of the pump body, don't worry about them. The special high temperature silicone on the gaskets will fill in the grain and prevent oil leaks. If there are deep scratches, use the same technique for grinding down the gears and mill the surfaces. Remember the aluminum is easy to mill but for every .0001" you take off the body, you will probably have to take off .0001" from 4 super hard steel gears. Check your work, use the feeler gauge often.

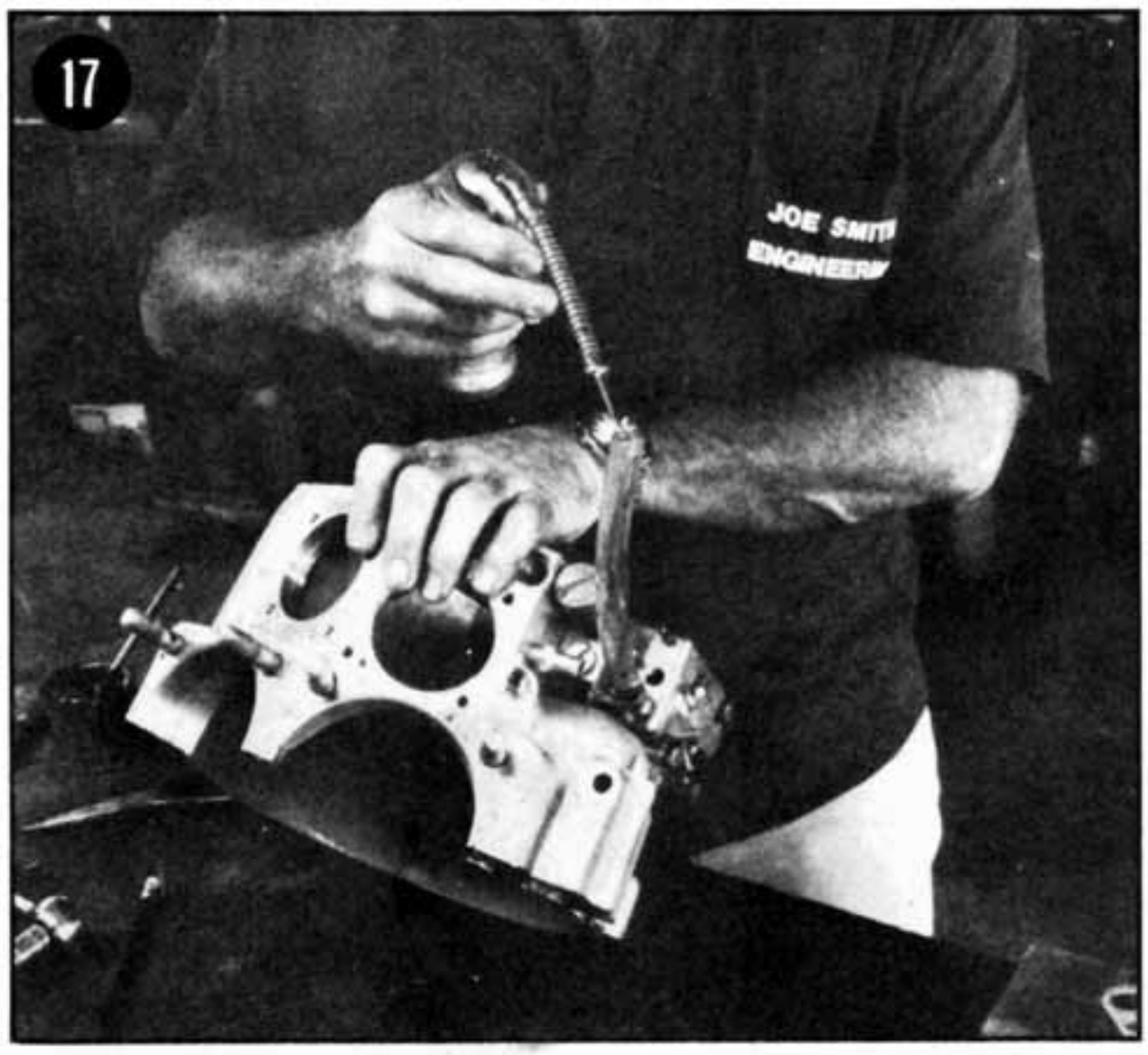






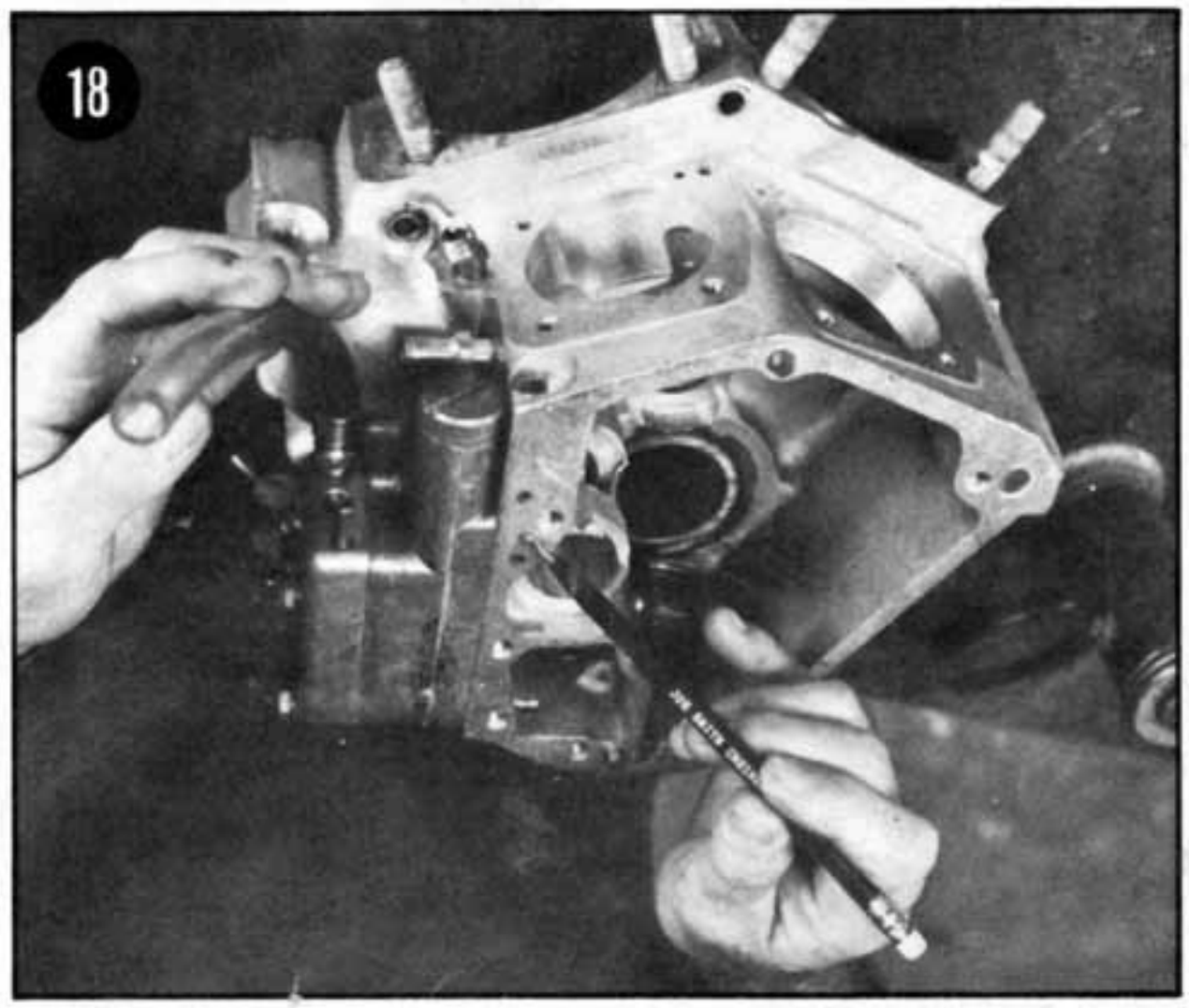
12, 13, 14 and 15. Replace the oil seal, (with the new one from the kit) gears and shaft. Put a few drops of oil on each of the gears. Put the new gaskets in place without any sealer and replace the pump making sure the shaft keyway is accessable. Re-install the pump drive gear, woodruff key and new C clip. Putting on the C clip requires patience and swear words.





16. As you tighten things down keep turning the pump drive gear to make sure it doesn't bind. Tighten all bolts evenly. It is best to use the X method by which you first tighten the upper right, lower left, upper left then lower right.

17 and 18. Before you button everything up it might be a good idea to see if the pump works. Use a piece of plastic fuel line connected to the pump nipple. Fill it half way up with oil and rotate the drive gear to prime the pump. The oil should come out the small hole shown in photo #18.



19. The complete Joe Smith overhaul kit is manufactured by Milmeyer. The kit consists of two mylar gaskets coated with a special high temperature silicone of uniform thickness, (a process for which Milmeyer has made a patent application) the oil seal, C clip and feeler gauge. Kits are available for all Harley Sportster's and 74s'.