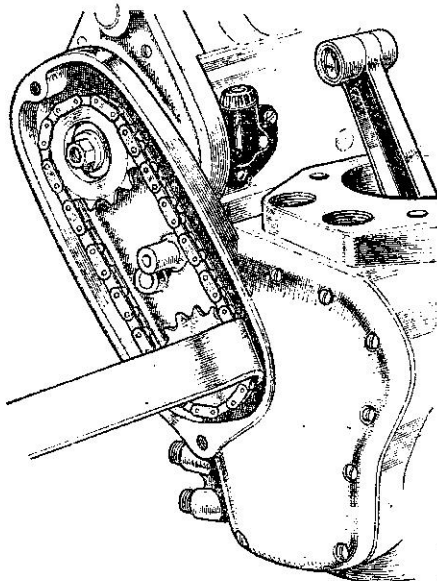


SERVICE SERIES

not of the type marked for valve timing, difficulty will be encountered at the reassembly stage. Observe, too, the fibre washer used to seal the joint between the oil pump delivery orifice and the distribution oilways in the outer panel. It is also likely that the spring-loaded big-end feed jet will drop out and be lost unless the outer panel is carefully withdrawn.

Record the meshing of the timing pinions if they are not already marked, and note also the setting of the three-positional engine-shaft pinion before dismantling further. The combined engine-shaft nut/oil-pump worm drive component has a left-hand thread.

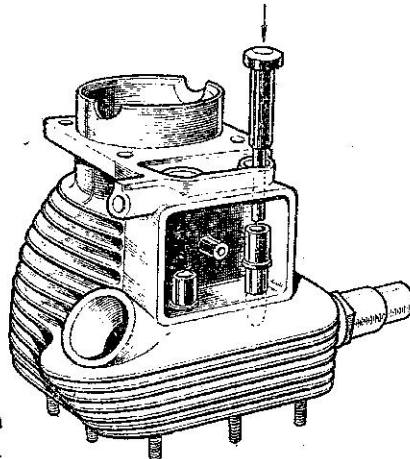
So far most of these crankcase components are common to the four power units, but there are some exceptions. First, the oil tell-tale button, familiar to Army people, will be found only on W.D. 16Hs. If there is an oil leak here, cut a leather washer to fit closely into the bottom of the housing and screw the unit home on to this seal.



timing side and two on the drive-side, and they measure 2 1/2 in. O/D by 1-in. bore and 3/8 in. wide.

The two "Big Fours" and standard 16H have roller journals each side of the flywheels, with an outrigger ball journal on the drive-side, while the W.D. 16H uses bearings all of the double-row, self-centring pattern, disposed similarly. Spacers go between the two drive-side races.

The camshaft spindles are supported by bushes in the outer timing panel and the timing-side crankcase casting. Nortons prefer to rebush these parts at the factory,

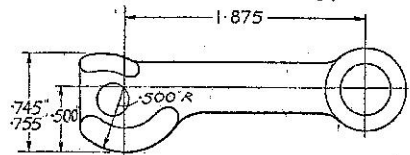


Knocking in new valve guides with a double-diameter drift is a job which can be confidently undertaken by the owner.

(Left) A tyre lever serves to prise the Magdyno drive-sprocket off the camshaft spindle taper. Note that this sprocket is located by a Woodruff key.

because it is not an easy task. If you are working on your own, you must drive out the plug in the outer panel in order to extract the exhaust pinion bush. The remaining three bushes can be pressed out and replaced fairly simply. The crankcase and outer panel must then be bolted up and pilot-reamed with a 3/4-in. tool. Although the four bushes all have a 5/8-in. I/D, the two used in the crankcase have a smaller head thickness. When this job is complete, the timing panel plug must be driven back and the outer surface buffed to restore good appearance.

Complete, rather than piece-meal, big-end replacement is recommended. One reason is that roller wear seldom occurs without corresponding track deterioration. Moreover, two types of big-end assemblies used to be employed by Norton; original crank pins carry the markings R. and M. or Hoffmann, and the size and number of rollers required varies accordingly. The



Essential dimensions of the cam follower profile used for the 16H and big four models.

The cam-followers will have flat bases unless your machine is a W.D. 16H, in which case, the part in contact with the cams will be radiused. Both types are in short supply, but they can be renovated by the Stellite process, details of which can be obtained from Deloro Stellite, Ltd., Shirley, Birmingham. After having been treated in this manner the flat-type followers should be ground level and the W.D. components finished in accordance with the accompanying profile drawing.

When splitting the crankcase remember that the W.D. "Big Four" and the standard 16H have an additional through-screw in the crankcase sump, making a tight seal at a point where oil leakage might be likely to occur. There is no paper washer between the butting crankcase faces.

Wash out thoroughly and inspect the main bearings, flywheels and big-end assembly. With very minor exceptions, everything save the flywheels, which provide for the alternative 100- or 120-mm. stroke dimensions, is interchangeable. Basically, three journal-type main bearings are used, one on the

Continued from page 718

outer big-end bush, a press fit in the con-rod eye, also should be replaced if complementary parts are renewed.

All such components, of course, should be immaculately cleaned before reassembly, and it is wise also to probe the small breather passage in the drive-side shaft. This orifice keys with an outlet in the lower bearing boss housing which should be cleaned.

After a long period of use, wear in the gear-type oil pump, standard on all Norton side-valve models, may be revealed by lubricant seeping down into the crankcase, causing flooding and, in bad cases, spilling out via the breather. A cure is to lap the end plates of the pump housing so as to bring them flush with the sides of the gear wheels. For this job use a surface plate or slab of plate-glass with fine emery cloth as the lapping medium.

Oil is delivered through the fibre-ringed joint into the timing panel and distributed to the pressure release-valve assembly, whence it is conveyed via a spring-loaded jet to the mainshaft and big-end. It is exuded adjacent to the big-end rollers and flung into the bearing centrifugally and not by means of a crank-pin oil way.

A second direct feed is from a junction in the timing-cover panel, across to the crankcase, past the cylinder-flange joint and up to the rear cylinder wall.

Indirect feeds are from the pressure release valve, where lubricant overflows on to the pinions, and from the timing chamber where the hollow stud permits oil to be blown up into the tappet chest.

The pressure release mechanism consists of a grub screw, spring and ball. The ball should be well seated and the device is set by screwing the adjuster right home and then turning it back one-and-a-half revolutions.

Reassembly

End-float in the big-end and crankshaft assembly should be between .005 in. and .008 in. and it is controlled by shims. Adjustment should be made after the connecting rod has first been shimmed to centre in the built-up crankcase.

Assemble the timing pinions, cam followers and oil-pump and offer up the outer panel, seeing that the fibre washer on the oil-pump delivery nipple initially prevents the edges of the panel and crankcase housing meeting by at least 1/32 in. This ensures that when the two parts are finally drawn together the washer will be really tightly compressed.

If the valve timing has been lost, resetting is easy, for all these engines employ an equally split overlap. Thus, a T.D.C. piston position, with both valves equally open, will be T.D.C. at the end of the exhaust stroke.

Finally, replace the cylinder-head gasket and head, tightening down the nine nuts by a single turn at a time, first on one side of the head and then on the other. That, perhaps, is one of the oldest tips; yet by not observing it, the novice still encounters the same trouble that his father did before him and new cylinder heads are more expensive today than they were then!

Next week's article in this series will continue with details of the gearbox, cycle and wheel parts and frame data applicable to the pre-war side-valve Norton range.

(To be continued)