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MANUAL PREVIEW

Hercules

Operator's Manual

GX & HX

Series

Operator's Manual

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HE-O-GX,HX+



HERCULES

Operator's Handbook

For

GX and HX Series

GXA	4 $\frac{3}{4}$ " x 5 $\frac{3}{4}$ "	HXA	4 $\frac{3}{4}$ " x 6"
GXB	5" x 5 $\frac{3}{4}$ "	HXB	5" x 6"
GXC	5 $\frac{1}{4}$ " x 5 $\frac{3}{4}$ "	HXC	5 $\frac{1}{4}$ " x 6"
GXD	5 $\frac{1}{2}$ " x 5 $\frac{3}{4}$ "	HXD	5 $\frac{1}{2}$ " x 6"
GXE	5 $\frac{3}{4}$ " x 5 $\frac{3}{4}$ "	HXE	5 $\frac{3}{4}$ " x 6"

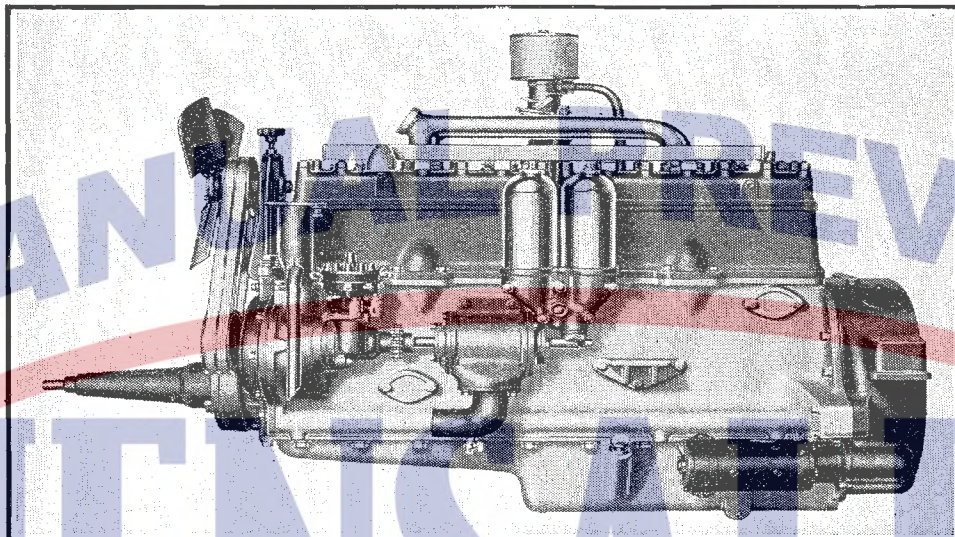
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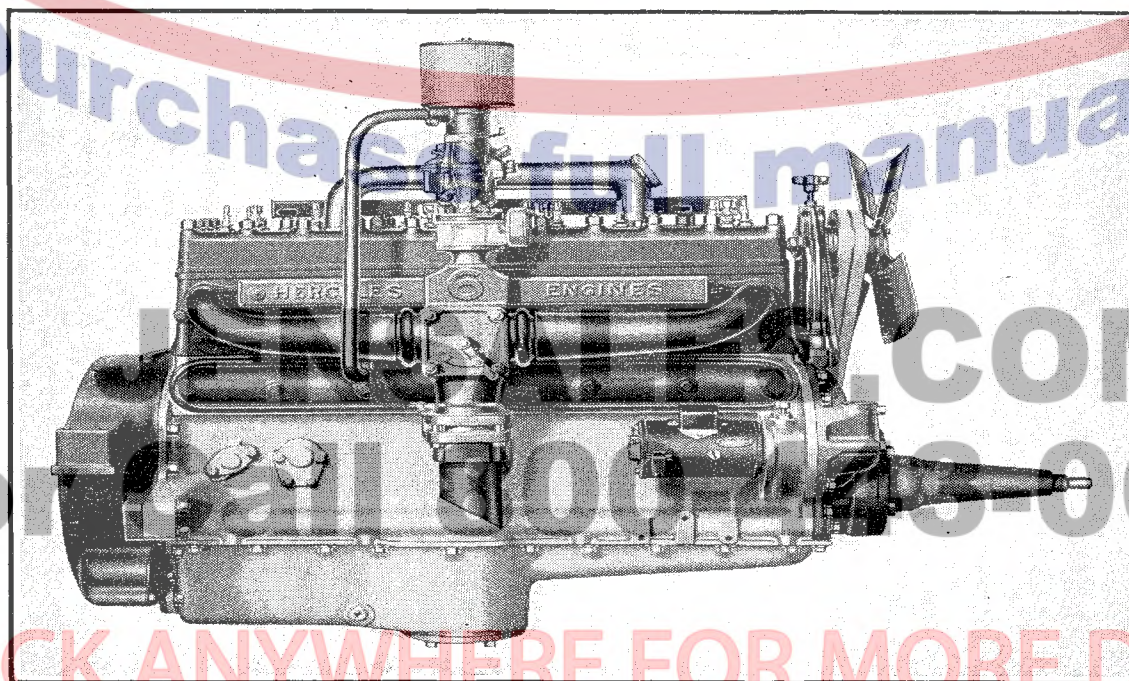
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HX Series Water Pump Side



HX Series Manifold Side

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GENERAL DESCRIPTION AND FEATURES OF DESIGN

piston pin oscillates. Cast iron pistons are not intended for high speed work and it is essential that engines so equipped should not be overspeeded.

The piston pins are made of special heat treated and hardened steel alloy accurately ground for maximum wearing qualities. These pins oscillate in the piston but are rigidly clamped in the upper end of the connecting rod, see Illustration Number 2 for details of this construction.

There are four piston rings on each piston, all above the piston pin, three compression rings $\frac{5}{32}$ " wide and one oil regulating ring $\frac{1}{4}$ " wide.

Connecting Rod. The connecting rod is composed of two forgings, the connecting rod proper and the cap. In order to prevent the weakening of the main parts of the connecting rod which results from holes being drilled in it for connecting rod bolts and the milling of the surfaces to support the heads of these bolts, the two cap bolts of this connecting rod are integral parts of the rod forging.

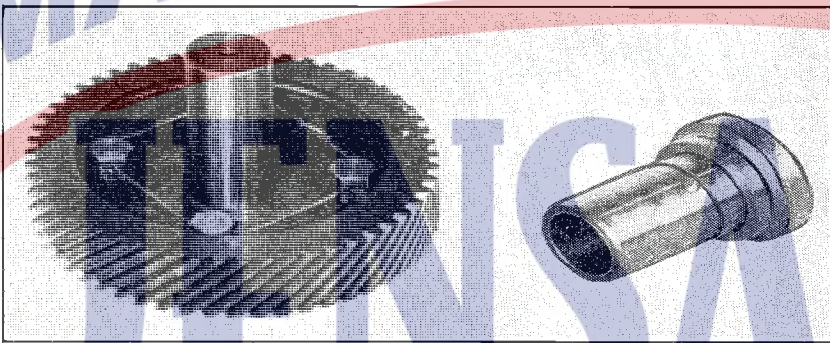


Illustration No. 3

is spun in on a centrifugal machine. The bearing surface is finished by fly-cutting with a single point tool which generates a true circle and the finished bearing bore is held accurately to size for a correct fit on the shaft journal. This facilitates assembly and eliminates hand scraping. Shims are provided to allow adjustment of excessive clearance due to normal wear. See Illustration No. 2. The connecting rods of a later design have removable babbitt lined shells. In this type an excessively worn connecting rod bearing can be renewed by replacing the shells without replacing the entire rod. The upper and lower shells in the connecting rods are interchangeable and an ear or a lug at the edge of the shell prevents rotation in the rod. A set of rods of this type together with bearing shells is interchangeable with a set of babbitted type rods.

Camshaft and Idler Shaft. The camshaft is supported on seven bearings in the crankcase, these bearings are removable and can be renewed. The idler gear is supported on a shaft which in turn is supported on a bushing

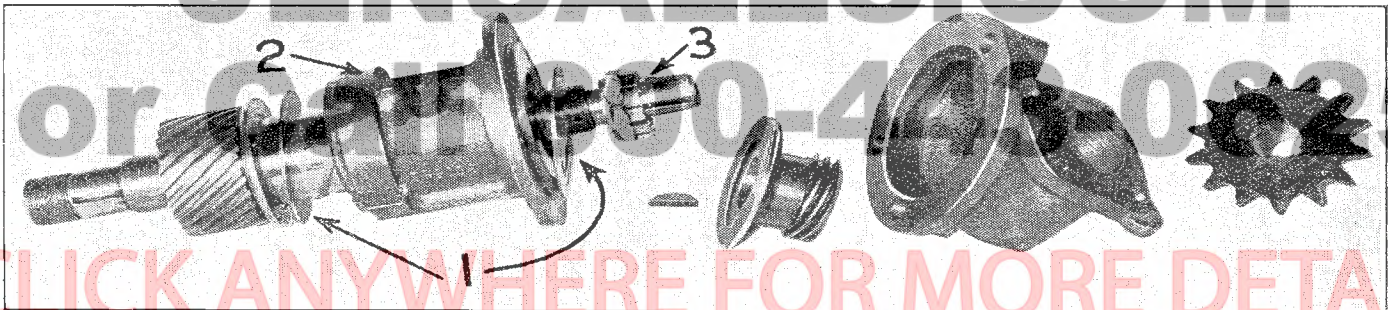


Illustration No. 4

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pressed into the crankcase. This bushing is removable and can be renewed. The idler gear, shaft and bushing are shown in Illustration No. 3.

Accessory Drive. The accessory drive is located on the side of the engine opposite the camshaft side. The accessory drive shaft is supported in a removable sleeve casting. This permits easy removal for service operations. See Illustration No. 4.

Valves. The valve guides are removable bushings pressed into the cylinder blocks. The valves are forged from special alloy steel and the exhaust valves in particular are of high heat resisting material. Valve tappets are of the mushroom type and each is provided with suitable screw and lock nut to allow adjustment of valve stem clearance. The valve tappets are guided in removable clusters bolted to the crankcase.

Oiling System. The oiling system on these engines has several unusual features of design. The oil pump has incorporated in it two auxiliary pumps for scavenging any oil which will flow to the front or rear of the pan when the engine is tipped to an extreme angle. The auxiliary pumps are located in the upper housing shown as No. 4 in Illustrations No. 5 and No. 6. The pressure pump is located in the lower housing shown as No. 6 in Illustrations No. 5 and No. 6. The scavenging pumps return the oil through tubes 1 and 4 in Illustration No. 1 to the main sump where it can be picked up by the pressure pump. Thus loss of oil out the front or rear is prevented and the pressure pump is never without sufficient supply of oil as long as a normal supply of oil remains in the crankcase. The oil pump is located



Illustration No. 5



Illustration No. 7

Quantity of Oil. When changing oil (in engine having standard pan) approximately four gallons are required for the sump and one additional gallon for the filters and oil passages through the engine. Each time the oil is changed the filters should be serviced. Drain the sludge and foreign substances from filter by removing plug shown at 4 in Illustration No. 7. To clean the elements remove the shell retaining nuts shown at 1 in Illustration No. 7 and remove shells. The elements can then be removed for cleaning.

When the oil filters have been drained the oil level in the crankcase

should be rechecked after the engine has run long enough to refill the filters. The amount of oil required to fill the filters may lower the oil level slightly and make it necessary to add an additional quart or two of oil to bring the level up to 4/4 mark on the gauge. When checking the oil level (in standard automotive type pan) leave the dip stick out for a minute or two so the oil will seek a common level in the two compartments. The plug on the end of the dip stick closes a passage, between the two compartments. This arrangement allows full sump capacity and yet prevents too rapid accumulation of oil at the rear of the pan. With this arrangement the intake to the rear scavenging line is at a lower level and this gives better protection against oil loss around the rear of the pan. Do not check oil level while engine is running.

Oil Pressure. The oil pressure is automatically controlled or regulated by a compression spring which controls a relief or by-pass valve. This device is incorporated in the oil filter. The oil pressure should not be changed or judged to be too high or too low until it is known that the proper weight of oil is being used and the engine is warmed up to normal operating temperature. As the bearings become worn more oil will escape around the bearings and this will lower the pressure slightly. It is not advisable to try to correct this slight loss of pressure by an adjustment of the pressure regulator because the extra amount of oil being thrown off by the worn bearings is already over oiling the cylinder walls.

The oil pressure should be 35 pounds, as shown on the gauge, when the