SERVICE SHOP DOPE

No. 369 January 3, 1956

165 MODEL FITTING SPECIFICATIONS

PISTON CLEARANCE -- New piston fitted in cylinder .0025" to .0035" clearance, measuring piston at extreme bottom of skirt front to rear and cylinder ½" from top of bore, front to rear. Before installing cylinder, locate piston rings so ends register with retaining pins in ring grooves.

PISTON PIN IN PISTON -- .0001" tight at room temperature. Apply a thin coat of engine oil on piston pin. Heat piston just enough so pin can be pushed into piston bosses by hand and install piston with arrow stamped on piston head pointing to front.

PISTON PIN IN UPPER END OF CONNECTING ROD -- (Needle rollers) No fitting necessary. If bearing shows appreciable wear, replace it and use standard size piston pin -- oversize pin cannot be used.

PISTON RING GAP AND GROOVE CLEARANCE -- .012" to .020" gap, ½" from top of cylinder. Rings should have .004" side clearance in grooves.

LOWER CONNECTING ROD BEARING -- .0008" to .001" loose. Apply a thin coat of engine oil on rollers.

CONNECTING ROD -- .011" to .017" sideplay between flywheels.

FLYWHEEL ASSEMBLY -- Bearing fit on sprocket shaft and armature shaft--(Early engines)-- size to size to light press fit; (Later engines)-- size to size to .0005" loose. In order to disassemble and reassemble flywheels a set of "Flywheel and Connecting Rod Assembly Tools," Part Nos. 96125-49 and 96124-55 are necessary. Sprocket shaft, armature shaft and crank pin are a press fit in flywheels. Apply a thin coat of engine oil to ends of shafts and crank pin before pressing them into wheels. The sprocket shaft and armature shaft must be pressed into wheels to correct depth, and armature shaft must be located in flywheel so keyway in shaft is in correct relation to crank pin for ignition timing after armature and circuit breaker cam have been installed. The above tools serve these purposes and also maintain close alignment of shafts when reassembling wheels. See Shop Dope Sheets Nos. 295 and 295A which describe use of these tools and also covers additional illustrated flywheel-crankcase assembly details. Sprocket shaft and armature shaft must run true within .001" with flywheel assembly installed in flywheel truing device.

CRANKCASE ASSEMBLY -- Bearing fit in crankcase .0005" tight to .0005" loose. Good crankcase compression is essential to proper functioning of the 165 model engine, therefore, scrape all gasket cement or sealer from crankcase joint faces, clean the faces, and then before installing flywheels in crankcase apply a thin coat of gasket cement or sealer to crankcase joint faces--also apply a thin coat of engine oil to all bearings. DO NOT POUR ANY OIL INTO FLYWHEEL COMPARTMENT. Apply a thin coat of gasket cement or sealer to all gasketed surfaces.

GENERATOR ARMATURE AND CIRCUIT BREAKER CAM -- After armature has been installed and tightened, commutator run-out must not exceed .002". Circuit breaker cam run-out must not exceed .003" checking at concentric section of cam next to commutator. Check with dial indicator.

CIRCUIT BREAKER POINT GAP -- .020". If circuit breaker point gap is too wide or circuit breaker cam has too much run-out, engine may run backward.

SPARK PLUG GAP -- .025" to .030".

IGNITION -- Occurs when piston is 13/64" before top dead center.

TRANSMISSION BEARINGS -- Bearing fit on mainshaft - size to size to light press fit. Bearing fit in transmission case size to size to light press fit. Countershaft in countershaft bushings .0005" to .0015" loose. Before reassembling, apply a thin coat of engine oil to all bearings, gears and shafts. After engine and transmission have been completely reassembled pour 20 oz. of "Medium Heavy" oil into clutch compartment before putting into service.