SERVICE SHOP DOPE

No. 346 March 1, 1954

KH MODEL FITTING SPECIFICATIONS

ENGINE SPECIFICATIONS

BORE AND STROKE --- Standard bore 2.745" --- Stroke 4-9/16".

PISTON DISPLACEMENT --- 54.2 cubic inches.

HEAD GASKET --- No head gasket is used. Apply a light coat of aluminum paint (metallic) as a sealer.

PISTON CLEARANCE --- New piston fitted in cylinder with .001" to .0015" clearance. Measure piston at bottom of skirt front to rear, 90° from piston pin hole. Measure cylinder 1/2" from top of bore.

PISTON --- CYLINDER HEAD CLEARANCE --- 3/64" to 5/64".

PISTON PIN IN PISTON --- Light hand press fit at 70° F. When assembling on rod, heat piston just enough so pin can be pushed into piston bosses easily.

PISTON PIN IN UPPER END OF CONNECTING ROD --- .0008" to .001" loose.

COMPRESSION RING GAP AND GROOVE CLEARANCE --- (Two used-chrome top ring) .010" to .020" gap --- .0025" to .004" side clearance in grooves. Top compression ring (chrome ring) has a step cut at inner edge on one side - install on piston with step upward. Install lower compression ring (parkerized ring) either side upward.

U-FLEX OIL CONTROL RING --- (One used) Ring end should overlap about $\frac{1}{4}$" when new ring is inserted free in cylinder bore. When ring is worn so overlap is 5/32" or less replace ring. Ring should have .003" to .005" side clearance in groove. Ring ends must be located over solid portion of piston (not over slot) opposite the valve side. When installing cylinder over piston using U-FLEX ring, a ring compressor must be used, otherwise U-FLEX ring will be damaged. Bottom of cylinder bore (especially if cylinder has been rebored) and ends of rod clearance slots in bottom of cylinder must be well chamfered so there will be no sharp edges to catch ring. If necessary chamfer ends of slots with a file. Although the ends of a standard U-FLEX ring will overlap when ring is inserted free in an oversize cylinder, this is no indication that a standard ring will function satisfactorily in an oversize bore.

It is just as important to use correct oversize U-FLEX ring for an oversize cylinder as it is to use correct oversize compression rings. Like a compression ring, the U-FLEX ring is made for a given size bore, and will fit only that bore perfectly.

LOWER CONNECTING ROD BEARING --- .0008" to .001" loose.

CONNECTING RODS --- .006" to .010" loose between flywheels. Roller and retainer assembly should be narrower, but not more than .010" narrower than forked rod.

FLYWHEEL ASSEMBLY --- Tapered flywheel shafts are used in the "KH" Model. Sprocket and gear shafts must run true within .001".

SPROCKET SHAFT BEARING --- Timken sprocket shaft bearings are made up in matched sets. All bearing parts are marked with matching numbers. Do not use bearing parts with different numbers. If any part of bearing requires replacing, the entire bearing assembly must be replaced. A complete set of Timken sprocket shaft bearings consists of two inner races with bearings and retainers, one outer race and one spacer. Spacer determines running clearance between bearings and races.

PINION GEAR SHAFT --- .0008" to .001" loose in roller bearing --- .0005" to .0012" loose in gear case cover bushing.

FLYWHEEL SIDEPLAY --- Flywheel assembly sideplay is established by predetermined fit of Timken bearing assembly.

CAM GEARS --- .0005" to .001" loose in crankcase and gear case cover bushings --- .001" to .007" end play. Use cam gear shims when necessary to obtain recommended running clearance.

INTERMEDIATE GEAR --- .001" to .0015" loose on stud.

TAPPET GUIDES --- .0005" to .001" press fit in crankcase.

VALVE TAPPETS --- .0005" to .001" loose in tappet guides.

TAPPET ROLLERS --- .001" to .0015" loose on bearing.

EXHAUST VALVE --- .0035" to .0055" loose in guide.

INTAKE VALVE --- .0035" to .0055" loose in guide.

VALVE SPRINGS --- Free length approximately 2-15/64" --- compressed to 1-39/64" (open valve position) 135 pounds. Shim valve springs so that when valve is fully opened the valve can be moved upward from 1/32" to 3/64" before spring coils bottom.

TIMING SPECIFICATIONS

INTAKE VALVE ---
OPENS when piston is 17/32" before top dead center)
CLOSES when piston is 1-5/32" after bottom dead center) .004" Tappet clearance

EXHAUST VALVE ---
OPENS when piston is 1-5/32" before bottom dead center) .006" Tappet clearance
CLOSES when piston is 17/32" after top dead center) (See running clearance)

BREATHER VALVE ---
OPENS when front piston is 1-57/64" after top dead center.
CLOSES when front piston is 29/32" after bottom dead center.

CIRCUIT BREAKER POINTS --- .022" gap.

IGNITION TIMING --- With front piston on compression stroke, spark fully advanced, spark should occur with flywheel mark in exact center of timing hole. With flywheel mark in this position the piston is 19/64" before top dead center.

TRANSMISSION SPECIFICATIONS

TRANSMISSION MAIN SHAFT RIGHT SIDE BEARING --- .0006" to .0014" loose --- .001" preferred.

TRANSMISSION MAIN SHAFT IN CLUTCH GEAR --- .0015" to .0025" loose --- .002" preferred.

TRANSMISSION MAIN SHAFT --- .004" to .009" end play.
To obtain correct main shaft end play use variable thickness washers available under part numbers 35349-52 - .050", 35350-52 - .055", 35351-52 - .060", 35352-52 - .065", 35353-52 - .070" and 35354-52 - .075". This washer is used at end of main shaft gear assembly on right side of transmission.

CLUTCH GEAR BALL BEARING --- To be .0001" tight to .0012" loose in case. Clutch gear to be .0001" loose to .0009" tight in ball bearing.

CLUTCH SHELL AND SPROCKET ASSEMBLY --- .001" to .004" endplay when clutch sprocket and clutch hub are assembled on clutch gear and clutch hub nut is securely tightened.

When necessary to install a new starter clutch (Part No. 33380-52) or clutch sprocket hub (Part No. 37720-52) select a clutch sprocket bearing washer (Part No. 37731-52) that will give .001" to .004" endplay after parts have been securely riveted together. To check endplay before riveting, insert a feeler gauge between starter clutch and clutch sprocket bearing washer.

When checking to determine thickness of washer required pinch clutch sprocket hub, clutch hub gasket and starter clutch securely against sprocket shell. Allow .005" to .006" clearance as clutch hub gasket (Part No. 37536-52) will compress somewhat when rivets are secured.

Later clutch sprockets have clutch sprocket hub brazed to sprocket shell and no gasket is used. On such clutch sprockets allow .004" to .005" clearance before securing rivets.

CLUTCH --- Normal clutch spring tension adjustment is 13/64" to 11/64" - measured from top of spring cup to inner side of clutch spring tension adjusting plate.

TRANSMISSION COUNTERSHAFT

COUNTERSHAFT END BEARINGS --- .0005" to .002" loose on each end of countershaft. Bearings are needle roller bearings in retainers - pressed into each side of transmission case.

TRANSMISSION COUNTERSHAFT --- .004" to .009" end play. To obtain correct counter shaft end play use variable thickness washers available under part numbers 35820-52 - .050", 35821-52 - .055", 35824-52 - .060", 35825-52 - .065", 35828-52 - .070" and 35829-52 - .075". This washer is used at end of countershaft gear assembly on right side of transmission.

FRONT CHAIN --- Chain adjusting shoe is to be adjusted so that chain has 1" free movement up and down midway between sprockets - engine cold.

FRAME REAR FORK

FRAME REAR FORK TIMKEN BEARING --- This is a pre-loaded bearing. The adjustment is made on right side of frame. With bearing adjusted perfectly free, weigh extreme rear end of fork. Attach spring scale and raise fork to the horizontal position with center line of frame. Take scale reading. Tighten bearing adjusting nut a sufficient amount to provide from one to two pounds drag on the bearings. For example, if rear end of fork weighs three and one half pounds with bearings free, bearings should be adjusted tight enough to make the fork weigh four and one half to five and one half pounds.

FORKS

HYDRAULIC FORKS --- When forks are disassembled and reassembled (DRY) four and one half ounces of oil should be put into each fork side. When forks are drained, three and one half ounces of oil should be put into each fork side. The difference is due to oil cling and the fact that it is not possible to drain all oil from the forks.

GENERATOR

Generator is a two brush type with voltage regulation. Adjust voltage regulator for 7.4 volts. The KH Model motorcycle is equipped with Delco-Remy voltage regulator No. 307 - Harley-Davidson Part No. 74510-47. This regulator will hold generator to a low charge rate when battery becomes fully charged. DO NOT EXPERIMENT WITH REGULATORS DESIGNED FOR AUTOMOBILE SYSTEMS. TO DO SO WILL MOST LIKELY RESULT IN SERIOUS DAMAGE TO GENERATOR AND BATTERY.

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