

SERVICE

SHOP DOPE

No. 332

April 23, 1952

K MODEL FITTING SPECIFICATIONS

ENGINE SPECIFICATIONS

BORE AND STROKE --- Standard bore 2.745"--Stroke 3 13/16"

PISTON DISPLACEMENT --- 45.12 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.

PISTON RING GAP AND GROOVE CLEARANCE --- Compression rings (two used-chrome top ring) .010" to .020" gap --- .0025" to .004" side clearance in grooves.

U-FLEX OIL CONTROL RING --- (One used) Ring end should overlap about $\frac{1}{4}$ " when 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. When installing cylinder over piston using U-FLEX ring, a ring compressor must be used, otherwise U-FLEX ring will be damaged. 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.

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FLYWHEEL ASSEMBLY --- All flywheel shafts are press fitted in flywheels. In order to disassemble and reassemble flywheels use flywheel tool Part No. 96120-52. The end of shafts that enter flywheels should have about .030" radius. If a shaft end with a sharp edge is pressed in a flywheel, metal will be sheared from the shaft hole in flywheel, damaging the hole and reducing the press fit. If necessary, polish the press fit ends of shafts until they are well rounded and have about .030" radius, before pressing shafts into flywheels. Except on the threaded end of crank pin, all shafts are press fitted into flywheels .0035" to .0045" tight. A minimum of 5000 pounds should be required to press shafts into flywheels. Apply a light coat of engine oil to shaft ends and flywheel holes before pressing shafts into flywheel. Pinion gear shaft must be pressed into flywheel to correct depth. Using tool Part No. 96120-52 assures correct depth. Using tool Part No. 96120-52, flywheel assembly will be close to true when completed, but must be checked for trueness with truing device Part No. 96650-30. Sprocket and pinion 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 ASSEMBLY --- 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 29/64" --- 120 to 130 pounds compressed to 1 7/8".

TAPPET RUNNING CLEARANCE --- Intake .004", exhaust .010" --- engine cold.

TIMING SPECIFICATIONS

INTAKE VALVE ---

OPENS when piston is $11/64$ " before top dead center)
 CLOSES when piston is $1\ 17/64$ " after bottom dead center) .004" Tappet clearance

EXHAUST VALVE ---

OPENS when piston is $23/64$ " before bottom dead center) .006" Tappet clearance
 CLOSES when piston is $49/64$ " after top dead center) (See running clearance)

BREATHER VALVE ---

OPENS when front piston is $1\ 17/32$ " to $1\ 7/8$ " after top dead center.
 CLOSES when front piston is $13/16$ " to $1\ 3/32$ " 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 aligned with front edge of timing hole. See Figure 12 in "Rider's Handbook". With flywheel mark in this position the piston is $15/64$ " 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.

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 countershaft 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.

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FRAME REAR FORKFRAME 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 weight 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 K 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.

BRAKES

Brake shoes are aluminum and expand more than iron shoes when hot, therefore, it is important that brake controls be adjusted with the full amount of free motion, before brake takes effect, as specified in "Rider's Handbook". After controls are correctly adjusted spin wheels to be sure there is no drag due to shoes being incorrectly centered.

If brake controls are adjusted too tight or shoes are not centered the heat generated when brakes are applied may expand the shoes enough to develop a continuous drag resulting in burned out brake linings.

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