

SERVICE BULLETIN

M-927

June 17, 1986



FLYWHEELS AND CRANK PIN BEARINGS-XLH MODELS

General

Beginning with the following crankcase numbers, a new crank pin bearing set and revised flywheels are being installed in Sportster V² engines.

CRANKCASE NO.	XLH MODEL
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1786 083 003	883cc
1886 090 012	1100cc

Summary of Changes

The new crank pin bearing set consists of three bearings in a package. Early production engines were assembled without thrust washers. Current production flywheels have thrust washers staked into a counterbore in the flywheels. The new crank pin bearing set will retrofit earlier 1986 models. There are new crank pin bearing clearances.

Crank Pin Bearing Set

See Figure 1. The new crank pin bearing set packages are color coded with either a red or a blue identification. This color coding is used by the bearing manufacturer only. The color coding DOES NOT indicate size selection for crank pin bearing replacement.

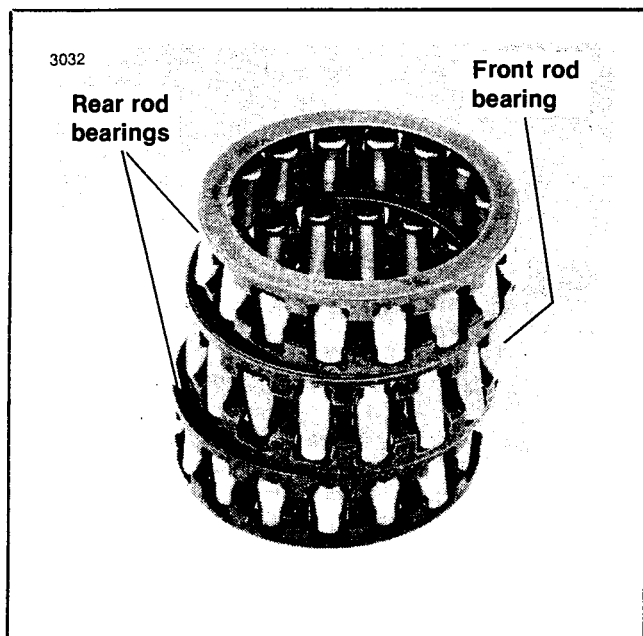


Figure 1. Crank Pin Bearing Set

CAUTION

Either a red or a blue coded bearing set may be used. DO NOT intermix bearings from a red and a blue bearing set as this may cause excessive loading on one bearing resulting in premature bearing failure.

The bearings consist of rollers retained in steel cages. The wide bearing (male/front rod) retains the rollers both internally and externally. The two narrow bearings (female/rear rod) only retain the rollers internally so care must be taken so that the rollers do not drop out of the cage when the bearing set is removed from the plastic sleeve.

Only one size replacement bearing set (standard, either red or blue coding) will be sold. Oversize bearings are not available. Bearing clearance or fit is controlled by the connecting rod race inside diameters and the crank pin diameter. Two oversize crank pins will be available.

Flywheels

See Figure 2. The new flywheels have thrust washers staked into a counterbore in the flywheels with the step-side of washer towards connecting rod. A relief or undercut has been provided in the flywheel to allow checking connecting rod end play.

NOTE

Measure end play between connecting rod and thrust washer, not between crank pin bearing cage and thrust washer.

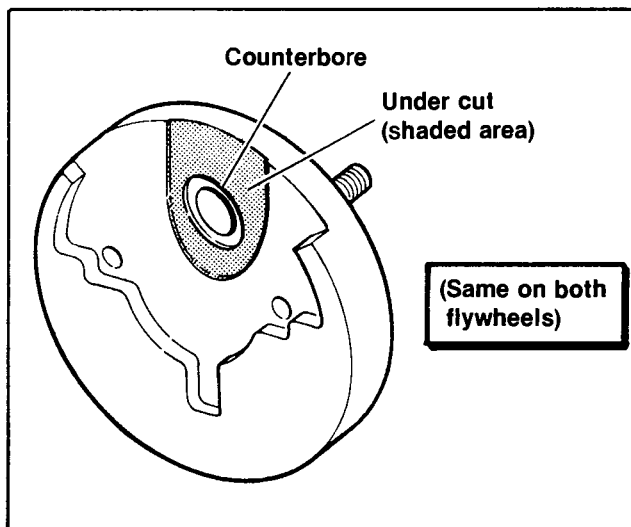


Figure 2. Flywheel Changes

ROUTING:	SERVICE MANAGER	SALES MANAGER	PARTS MANAGER	CHIEF MECHANIC	MECHANIC NO. 1	MECHANIC NO. 2	MECHANIC NO. 3	MECHANIC NO. 4	RETURN THIS TO:
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Part Numbers of New Components

PART NO.	DESCRIPTION
6508	Thrust washer
24354-87	Crank pin bearing set
23960-80A	Crank pin (std)
23948-87	Crank pin (0.0010 in. oversize)
23949-87	Crank pin (0.0020 in. oversize)
24275-86	Connecting rod set includes rods, bearing, crank pin and nuts
23905-86A	Flywheel assembly-883cc
23900-86A	Flywheel assembly-1100cc

Retrofit

The new crankpin bearing set can be used in all sportster models from 1957 to present. Retrofitting the new bearing will require the installation of special flywheel thrust washers due to increased bearing width.

Specifications

The new crank pin bearing clearance specification is listed below. Other specifications have not changed; but, are listed for reference.

ITEM	SPECIFICATION
Connecting rod bearing (loose):	0.0003-0.0017 in.
Connecting rod side play:	0.005-0.025 in.
Crankshaft end play:	0.001-0.007 in.
Crank pin nut torque:	150-185 ft-lbs

Service Procedures

ADJUSTMENT/TESTING

Before disassembling crankcase, check flywheel end play as outlined in 1986 XLH Service Manual.

DISASSEMBLY

Disassemble the crankcase and remove the flywheels as outlined in the 1986 XLH Service Manual.

CLEANING AND INSPECTION

Follow 1986 XLH Service Manual procedures.

LAPPING CONNECTING ROD RACES

Connecting rod lower races that are likely to clean up within range of oversize crank pins and are otherwise in serviceable condition, should be trued and sized with CONNECTING ROD LAPPING ARBOR, Part No. HD-96740-36.

1. Clean lap before using.
2. Clamp lap into lathe chuck, carefully load lap with #220 grit grinding compound, mixed with oil. Adjust lathe to turn at approximately 150-200 rpm.
3. Carefully slide connecting rod over lap. Adjust lap to a dragging but free fit in rod race.

NOTE

A loose lap will BELL MOUTH bearing races, so lap must be kept adjusted at all times.

4. Start lathe and work rod back and forth, over full length of lap. Hold rod as near race end as possible.
5. Check rod frequently. When rod is lapped true and all traces of pit marks or grooves are cleaned up, wash and blow rod dry.
6. Repeat lapping procedure for other rod race.
7. Bearing races should have a soft velvety appearance and be free of shiny spots.

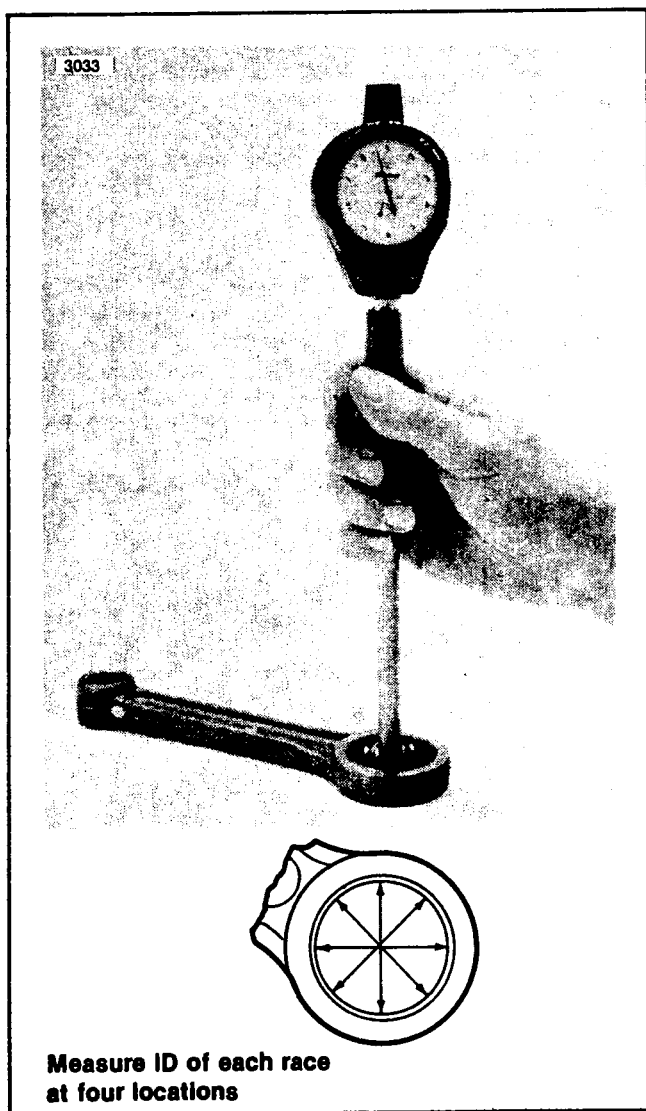


Figure 3. Measuring Connecting Rod Race Inside Diameters

8. See Figure 3. Measure inside diameter (ID) of lapped connecting rod races with a dial bore gauge that has 0.0001 in. graduations. Measure the ID at four places as shown. Record the four measurements. If any race ID exceeds Service Wear Limit of 1.6270 in., replace races or connecting rod set. If race ID measurements are less than 1.6270 in., continue procedure as follows:

Establishing Proper Bearing Clearance

Oversized crank pins are used in the rod bearing to establish connecting rod clearance on crank pin.

See Figure 4. Oversize (OS) crank pins are available in two oversizes: 0.0010 and 0.0020 in. OS crank pins will have a '1' or a '2' stamped on their ends. One (1) indicates 0.0010 in. OS, two (2) indicates 0.0020 in. OS. Standard size crankpins will not be marked.

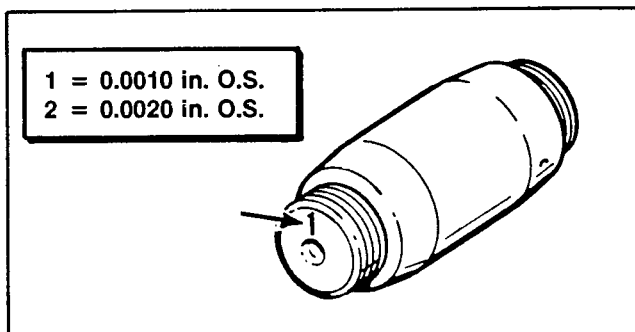


Figure 4. Oversize Crank Pin Identification

1. Compare the measurements recorded in Step 8 with the ranges given in Table I. If the four measurements taken in each race differ, use the smallest measurement.

TABLE I
RACE DIAMETER AND CRANK PIN SIZE

CONNECTING ROD RACE ID REQUIRED	CRANK PIN REQUIRED
1.6245 - 1.6250	Standard
1.6255 - 1.6260	0.0010 in. oversize
1.6265 - 1.6270	0.0020 in. oversize
Greater than 1.6270	Service wear limit exceeded. Replace races or rods.

NOTE

Front and rear rod race ID must be within the same tolerance range given in Table I. The following example will illustrate the procedure necessary if the lapped connecting rod races on both rods do not fall in the same range.

2. As an example, assign the following values to the measurements taken in Step 8:

Front connecting rod race diameter: 1.6255 in.

Rear connecting rod race diameter: 1.6250 in.

For the above example measurements, Table I specifies that the front connecting rod would require a 0.0010 in. oversize crank pin, while the rear connecting rod could use the standard sized crank pin. The rear connecting rod races must be lapped so they have the same ID (within 0.0002 in.) as the front rod.

3. Before assembling the flywheel assembly, with a new crank pin bearing set and 0.0010 in. oversize crank pin, recheck connecting rods as follows:

CAUTION

After the appropriate connecting rod race ID range specified in Table I has been achieved, verify that the following specifications are also met:

CON. ROD SPECIFICATION

Rear	Difference in ID of two races must not exceed 0.0001 in.
Front and rear	Difference in ID of races in front and rear connecting rods must not exceed 0.0002 in.
Front and rear	Races must be round within 0.00025 in. (Difference between largest and smallest ID measurement in any race must not exceed 0.00025 in.)

4. Assemble the flywheel assembly following 1986 XLH Service Manual procedures.

NOTE

Always use new bearings and crank pin after resizing (lapping) connecting rods to insure proper running clearance.

CAUTION

Fitting components tighter than recommended may result in seizing and bearing damage when heat expands parts.

SERVICE MANUAL NOTE

Please put a note referencing this Service Bulletin number in the Engine Section, CRANKCASE of your dealership Service Manuals.