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REF: Service Procedures 24

Measuring Pinion Shaft Runout

Check to see if your crank is out of true. The idea is to measure how much the end of the pinion shaft wobbles. ¹⁾

Up to .005"-.006" out there at the end of the shaft doesn't propose a huge problem. Most motors you measure will show this much.

But above that is not good. Crank spread is a reality of racing these bikes. The flywheels want to spread apart on the side opposite the crankpin.

When they do, the pinion shaft wobbles. You get real bad wear on the oil pump drive gear (this is why Buell went to a bronze drive gear).

Harley never put it in the XL's because they're lower powered and it's less of an issue. But still sometimes they grenade and make a mess.

Pinion shaft wobble also causes teeth to break off the pinion gear, and the pinion bushing to wear, and cam bushings to wear.

To confirm pinion shaft runout dims, make the measurement as in below.

Attach a scrap piece of metal to the outside of the gearcase and position a gauge holder on it so it won't move while turning over the engine. ²⁾



Install a dial gauge on the holder with the pointer on the pinion shaft. Find the lowest spot while turning the engine over and 'zero' the indicator. ³⁾

This setup is made with a piece of angle iron for the magnetic base to stand on ⁴⁾



This gauge post is threaded into a cover mount hole. ⁵⁾



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- 1)
aswrcing of the XLFORUM
<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-bottom-end/145445-cam-bushing-wear?t=1578649>
- 2)
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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-motor-engine/sportster-motorcycle-bottom-end/160037-bottom-end-rebuild#post3404527>
- 3)
photo by Grind of the XLFORUM
- 4)
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Last update: **2024/01/22 21:29**

