What Causes Cam Gear Noise?

Whenever a roller lifter in a Sportster engine passes maximum cam lift, the forces on the cam gear teeth change direction. If there is more than .002 backlash, the change of force and direction will result in an audible “click” as the backlash moves from one side of the tooth to the other. Gear noise will always occur at idle and lower engine RPM.

Stock EV Sportster cams are made with different gear sizes. They are color-coded by size and selectively fitted to engines at the factory to a minimum backlash in order to result in reduced gear noise during engine operation.

Andrews Products cam gears for EV Sportsters are made with gears in the middle of the size ranges so there is only a small chance of cam gears fitting too tightly. Cam gears which have excess backlash may rattle or “click” during operation. The “clicking” can sound like lifter noise. Unlike whining gears, rattling gears will not cause gear tooth failure or engine damage. If you don’t mind the noise, it won’t cause any engine problems.

Gears which are operating without enough backlash (fitted too tightly) will whine during operation. This condition is serious and can cause localized gear tooth overheating, gear tooth surface failure, and engine damage. Cam gears which fit too tight must be corrected with smaller size cam gears.

To correctly fit Andrews Products cams in your EV Sportster engine, the following procedure may be helpful

Measuring Cam Gears For Proper Fit

1. Install all four cam gears in cover (see photo at right) for a trial fit.
2. Manually turn all four gears and verify that they roll freely. If there is no tightness, proceed to step 6.
3. If there is any tightness, remove #4 cam, then #1, then #3, in that order so that the tight-fitting parts can be identified.

4. Measure each new cam gear with a micrometer using .108” dia. pins. Do the same with the stock cam gears. Note any differences in size.
5. Andrews Products makes undersize and oversize cam gears for all three production EV cam grinds. Unused parts may be returned and exchanged for under or oversized cam gears.
6. Install the cover onto the engine with no pushrods and only the #2 cam gear. Verify that the engine now freely turns. If so, the cam gear backlash is correct and you can continue to reassemble the engine.
7. If the #2 cam drive gear is tight, a smaller H/D pinion gear must be used. See page 19 for a procedure to determine the correct size of new pinion (this procedure applies to Sportsters too).
8. Any two adjacent cam gears (1-2), (2-3), (3-4) can be installed in the cover to check for proper backlash by comparing the stock parts (two at a time) to the new ones.
9. Any significant differences in sizes between the stock cam gears and new cam gears should be investigated and understood before proceeding.

Custom Fitting Sportster Cam Gears

If the procedure for checking Sportster cams, shown above, clearly identifies individual cam gears that will not turn freely because of tight-fitting gear teeth, the teeth can be honed to a smaller size for a correct fit. It is very unlikely that you will ever need to do this but, if there is a problem, Andrews Products can custom fit Sportster cam gears to eliminate tight-fitting gear teeth.

Tooth sizing is performed on a National Broach GHH gear hone machine set up to adjust H/D Sportster cam gear teeth. Please call us for a Return Merchandise Authorization (RMA) before sending any parts back.