Table of Contents

Go To Technical Menu

MiscRes: Magazine Articles

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"Zippers Door", Installing One of These May Fix Your Alternator Problem

TECH

TECH & HOW-TO
- ❑ NOVICE
- ❑ INTERMEDIATE
- ☑ EXPERT
- ❑ PROFESSIONAL

ZIPPER'S DOOR

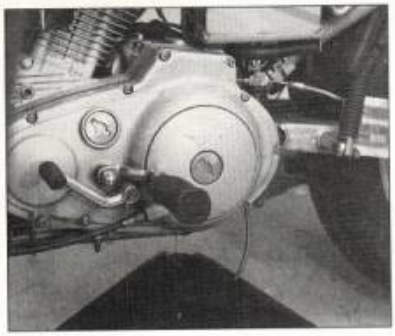
Installing One Of These May Fix Your Alternator Problem

Story and photos by Stephanie Feld

Lots of people who own them can tell you — Sportsters built from late 1984 through 1990 have serious alternator problems. There are several theories as to why some Sportsters go through $500 alternators like there was a chipper/shredder attached to the transmission door. One theory is that the rotors have defective glue holding the magnets in place. Another says that the very heavy clutch/rotor assembly is too much for the transmission door and bearings to support so the clutch/rotor wobbles as it rotates. Once the bearings and the cast aluminum trans door get worn, the rotor contacts the stator, and the alternator self-destructs in no time. Either theory may apply, depending on the bike.

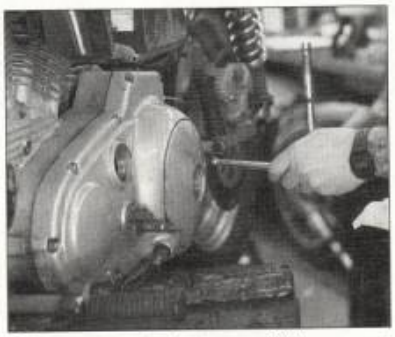
After installing my third alternator in a year, I spoke to Mike Schute at Apparition Cycle in Michigan. To achieve new-stock-like longevity from my new alternator, Mike suggested replacing the stock mainshaft bearing that's pressed into the transmission's access door. For better-than-stock alternator life, he suggested using a Zipper's billet door. This door is not only much thicker and harder than the stock cast unit, it also uses a double-row bearing for better support of the mainshaft. It sounded like a good plan to me so in February of 1997 I ordered a Zipper's door and bearing. Once the new parts came in, Rich West (one of the mechanics at Rolling Thunder Cycles in New York) agreed to do the installation as I took pictures. Follow along as Rich shows us exactly what's involved in the conversion.

After installing the primary cover, shift



1 First things first; before placing my Sportster on a lift, Rich drains the primary/transmission oil.

2 With the bike secured to his lift, Rich disconnects the battery.



3 Off comes the footpeg, shift lever, and primary cover.

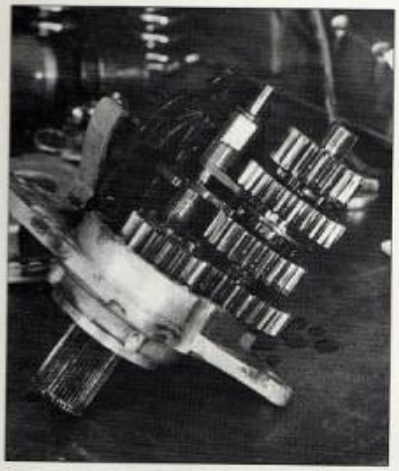
4 Rich carefully compresses the diaphragm spring with the correct tool and removes the snap ring that allows the pressure plate to be removed.

5 This is what happens if you over-tighten the spring compression tool. No wonder my clutch had been dragging! The last time I installed the clutch myself, I over-tightened the tool which broke the delicate aluminum casting of the pressure plate (see arrow).

6 After removing the engine sprocket, Rich can remove the entire primary drive and clutch at the same time.

7 For once, the rotor and stator are still intact. Remove the stator from the old transmission access door.

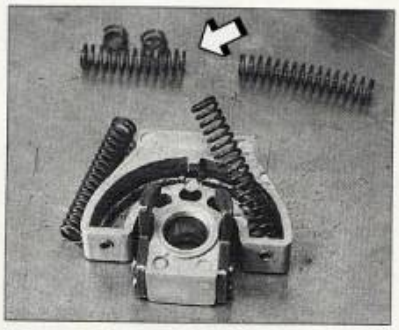
8 The transmission can then be pulled out as a unit from the primary side.



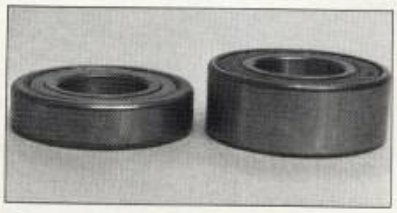
9 After inspecting the transmission, Rich decided that the countershaft third gear, which was missing a large chunk from one tooth, was overdue for replacement. We pulled a new Andrews gear from stock. That's the old pressure plate in the background.

10 Inspect the shifter cam before removing it from the old door. The thrust surfaces are pretty burred up.

11 Rich opens the lockwasher tabs to remove the shifter cam assembly.

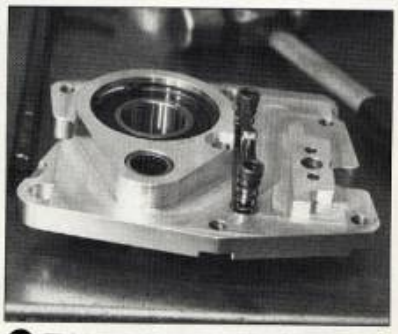


12 More broken stuff, this time a pawl carrier spring (see arrow). The new ones are sticking out of the shifter pawl. I can't believe this bike was still shifting gears!



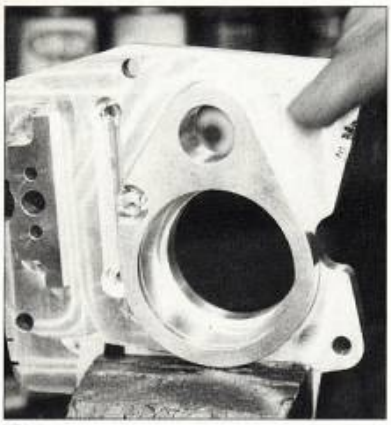
13 The bearing on the left is the stock door bearing. The bearing on the right is the double-row bearing from Zipper's.

14 This stock H-D transmission door is a cast aluminum unit as are all Sportster OEM doors. However, there is no cast iron sleeve insert for the mainshaft bearing as in the earlier models. This allows the single-row bearing to work in the door and wear away aluminum. Result: the bearing becomes loose in the door.

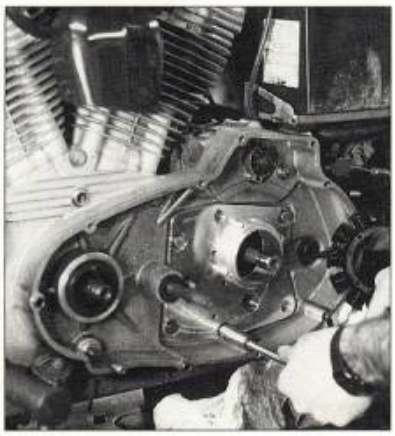


15 This is Zipper's billet aluminum door. Forged billet aluminum is much more resistant to wear than a cast aluminum one. This, combined with the larger surface area of the Zipper's double row bearing, prevents the wear common to the stock door.

16 Rich lightly hones the dowel-pin holes in the new door so it will fit snugly, without being hammered into place. The fit is correct when you can lightly tap the door onto the dowel pins.



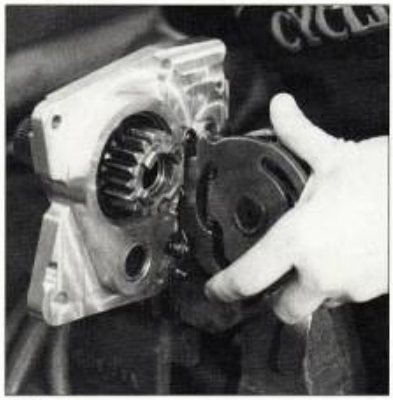
17 We also ground "removal notches" in the new door so it can be pried off just like the old stock door.



18 Before going any farther, test-fit the new door in the engine cases. A perfect fit!

19 The shifter cam had more burrs than an overgrown cow pasture. Rich carefully cleans the sliding surfaces of the shifter cam where it engages the shifter cam follower so the Sportster will have smoother shifts.

20 After gently warming the new door on a kitchen warming tray, Rich installs the double-row ball bearing, then gently presses in a new countershaft bearing. The clutch gear will then be pressed into the double-row bearing.



21 Rich installs the rebuilt shifter cam assembly on the door and makes sure the cam moves smoothly through all the detentes.

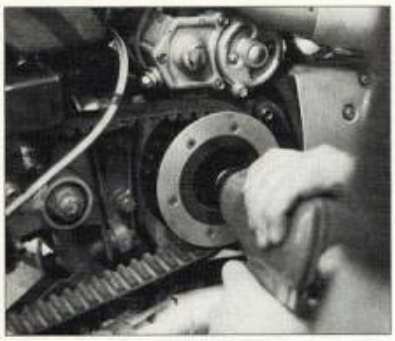
22 The rest of the transmission is then built up on the new door. Rich moves the transmission through the gears, checking clearances and shifting action. Read your service manual carefully for the correct way to check and adjust clearances.

TECH TIP

Back in 1985, somebody at the Harley-Davidson factory screwed up. The mainshaft on a four-speed Sportster transmission should have between .006" and .020" of end play when installed in the cases. Well, my Sportster's mainshaft end play was a whopping .137". In order to get it right, we needed a thrust washer — or combination of washers — between .117" and .131". Too bad the thrust washers made for the XL mainshaft only range from .0675" to .0965. No combination of those was going to help.

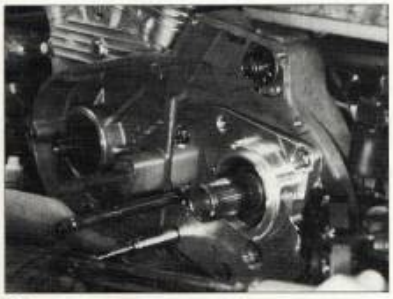
Then the Rolling Thunder parts counter staff came to the rescue! They remembered that a "45" Flathead flywheel washer (#23972-21) was very close to what we needed. They pulled one from stock and at .062" it was nearly perfect when combined with a .0675" mainshaft washer. Rich carefully ground an additional .005" off the flywheel washer to make our final end play land right in the middle of the two extremes: .0125". My transmission is now better than new and still going strong.

23 Rich installs the transmission and is checking the mainshaft's end play when disaster strikes yet again. The mainshaft has way too much end play and there are no mainshaft shims available to bring it within tolerance. So the crack team of problem solvers at Rolling Thunder went to work and soon came up with a solution. See the above Tech Tip sidebar for what they did.

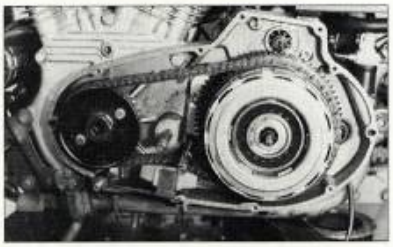


24 With the correct end play established, Rich re-installs the transmission pulley and buttons up the right side of the bike.

26 It's time to install the primary drive. Rich gives the clutch shell a hearty shake and states that the whole assembly is much tighter on the shaft than it was with the stock access door.



25 The rebuilt transmission is bolted into place, and Rich re-installs the stator with new screws and Loctite.



27 Here's the Sportster's refurbished primary drive, complete with new clutch pressure plate. The clutch shell is noticeably more solid on the mainshaft than with the stock door and bearing.

lever, footpeg, and battery cables, Rich refills the primary with Spectro 80 gear lube and goes out for a test ride. Success! The bike shifts beautifully and my voltmeter shows a steady charge rate. The Zipper's door is not a cheap piece of hardware; the suggested list price for the door is about $375. The bearing will set you back another $60. On the other hand, that's less than the price of one new alternator.

After Rich was finished, I took it out for a test ride. Not only was I happy with the prospect of keeping an alternator in the bike for more than a few tanks of gas, but a significant amount of vibration was gone, too. See the last issue of *Hot XL* for more on this subject.■

SOURCES

Zipper's Performance Products
8040 Washington Blvd., Dept. HXL
Jessup, MD 20794
(410) 799-8989

Rolling Thunder Cycles
195 Front Street, Dept. HXL
Hempstead, NY 11550
(516) 489-3689

Go To Technical Menu

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article submitted by ferretface of the XLFORUM