

Baker Drivetrain: Six Gears, Just Like The New Bikes

Six-speed transmissions are not new; Bert Baker designed his OD6 about 13 years ago. He developed that 6-speed overdrive transmission to cut down the engine's rpm at highway cruising speeds. At that time some people said that Harleys didn't need another gear. Over the ensuing years, other manufacturers came out with a multitude of 6-speeds.

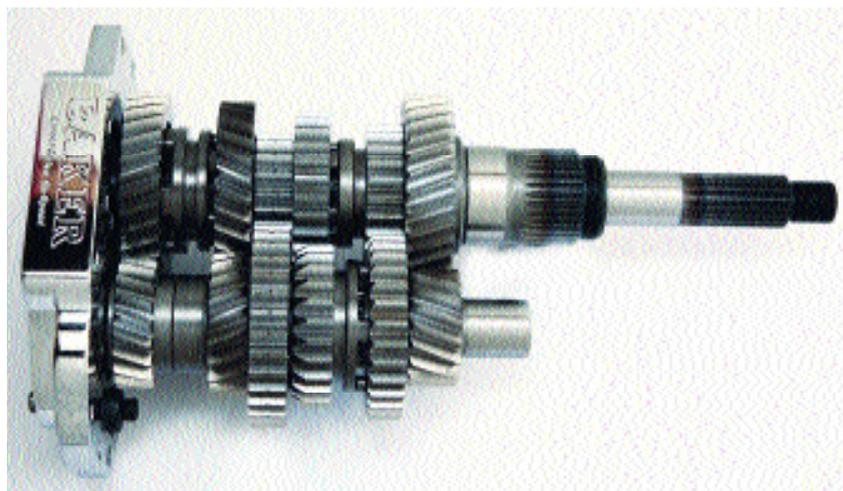
Most of these worked on the overdrive principle. That is, when in 6th gear, the motor's power has to pass through the transmission's counter shaft to get to the rear wheel. In this design, on long highway runs, the motor's power is always going through two gear sets and bearings on the counter shaft causing frictional horsepower loss and wear points in the trans bearings.

Bert, not being one to sit idly by, decided to improve his 6-speed. What he came up with was the DD6; it is a 6-speed Direct Drive model. This transmission is different in that, when shifted into 6th, it locks the transmission's input shaft to the output gear. He debuted the DD6 in 2004, which was a year before Harley launched their own 6-speed in the 2006 Dyna-Glide models. It just so happens that Harley's 6-speed also had a direct drive 6th gear.

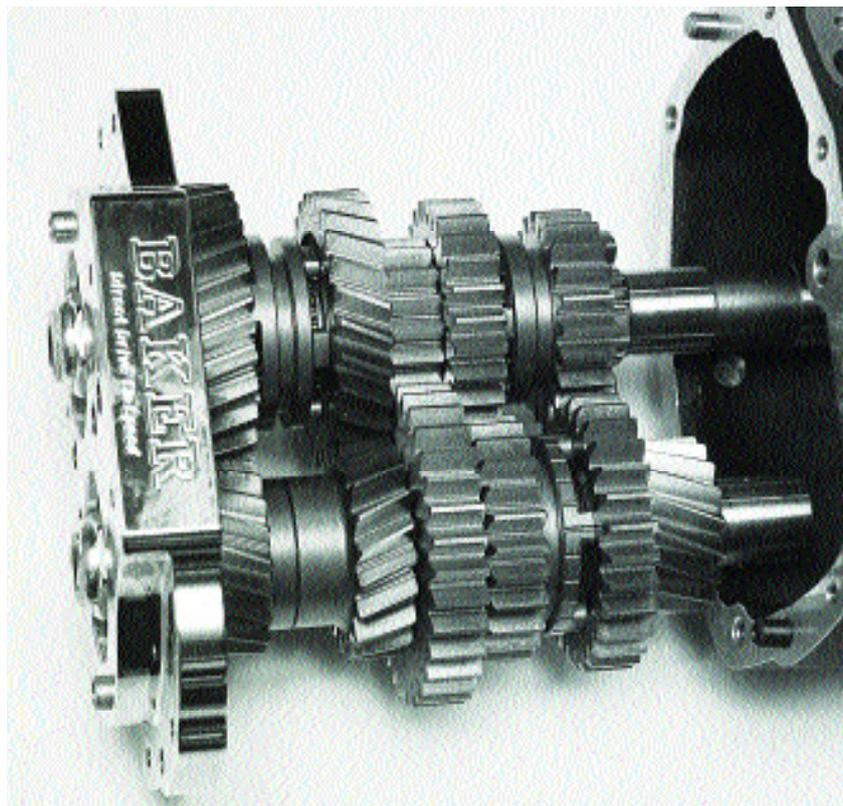
Bert's DD6 transmission changes the overall gear ratio of the motorcycle by lowering the gearing of the primary drive. He does this by changing the output sprocket on the motor. He goes from 24 teeth to 28 teeth; this gives the drive system a .86 lower final drive ratio, which moves the motor's rpm down to about 2,725 at 70 miles per hour. The DD6 builder's kit has everything you need to convert a Harley 5-speed into a direct drive 6-speed. The kit comes complete with all of the gears and shafts assembled onto a billet trap door. As one would think, the kit includes a new shift drum, shift forks and main drive bearing. Also included are the 28-tooth motor sprocket, primary chain and speedo calibration module.

We watched as RC Cycles in Danville, California, fit a DD6 into a 1999 FLH. The 6-speed came packed in a foam lined carton. It included a good instruction manual and all the needed hardware. Installing the gear set was not a difficult project. There were a number of special tools needed to disassemble the stock 5-speed and install the output shaft, but any bike shop worth its salt should have them. The whole job took a day and it went together without any modifications to the tranny case.

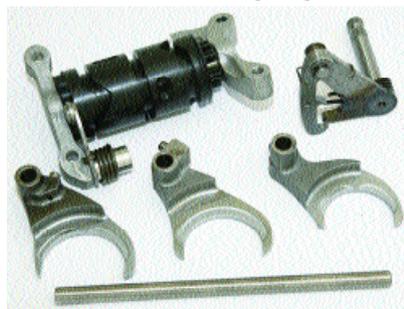
Just like the Baker boys said, the 6-speed-equipped bike ran at a little over 2,700 rpm at 70 mph. There was a side benefit to the installation; the new transmission shifted much smoother. This was



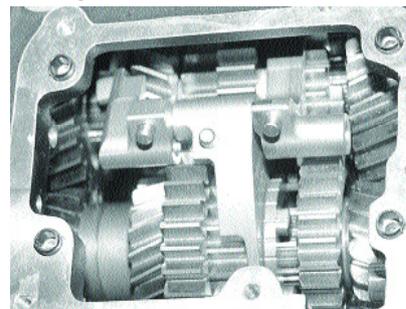
The gears and shafts come fully assembled on a heavy-duty billet trap door. Fourth, fifth and the output gears are helical cut. This is less noisy and they can handle more power.



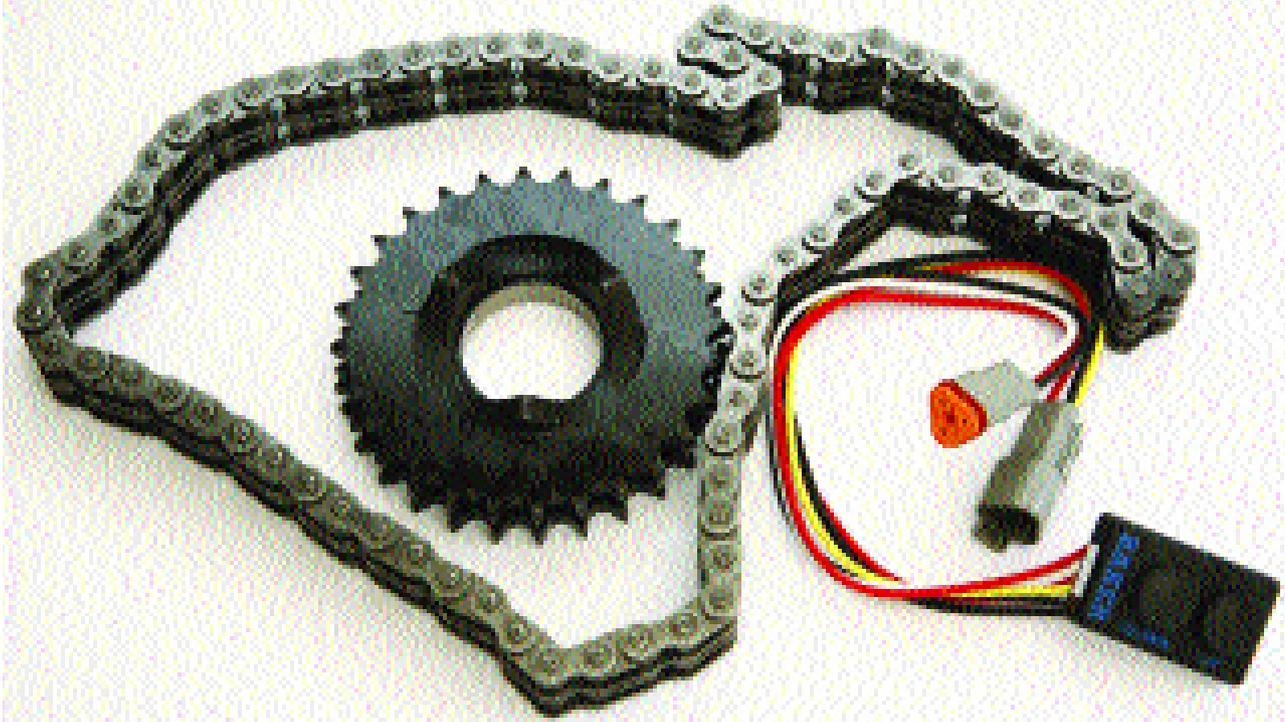
After the new final drive bearing and gear are installed, the new gear set is installed as a unit.



The kit contains all new shift parts: forks, shaft, drum and pawl assembly.



The new shift forks are installed along with their shaft.



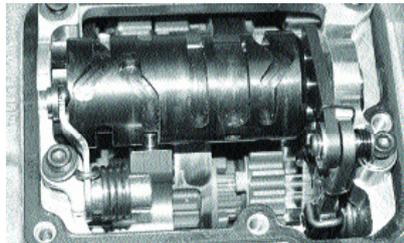
Because the kit's motor sprocket is larger, the primary chain must be longer. Since we changed the bike's final drive ratio, the electronic pick-up for the speedometer will no longer read correctly; Baker includes a speedo recalibration module to set it straight again.

due to using a roller detent on the shift drum. Also, we didn't experience any difficulty in finding neutral.

—S.E. Malone

Baker Drivetrain
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www.bakerdrivetrain.com

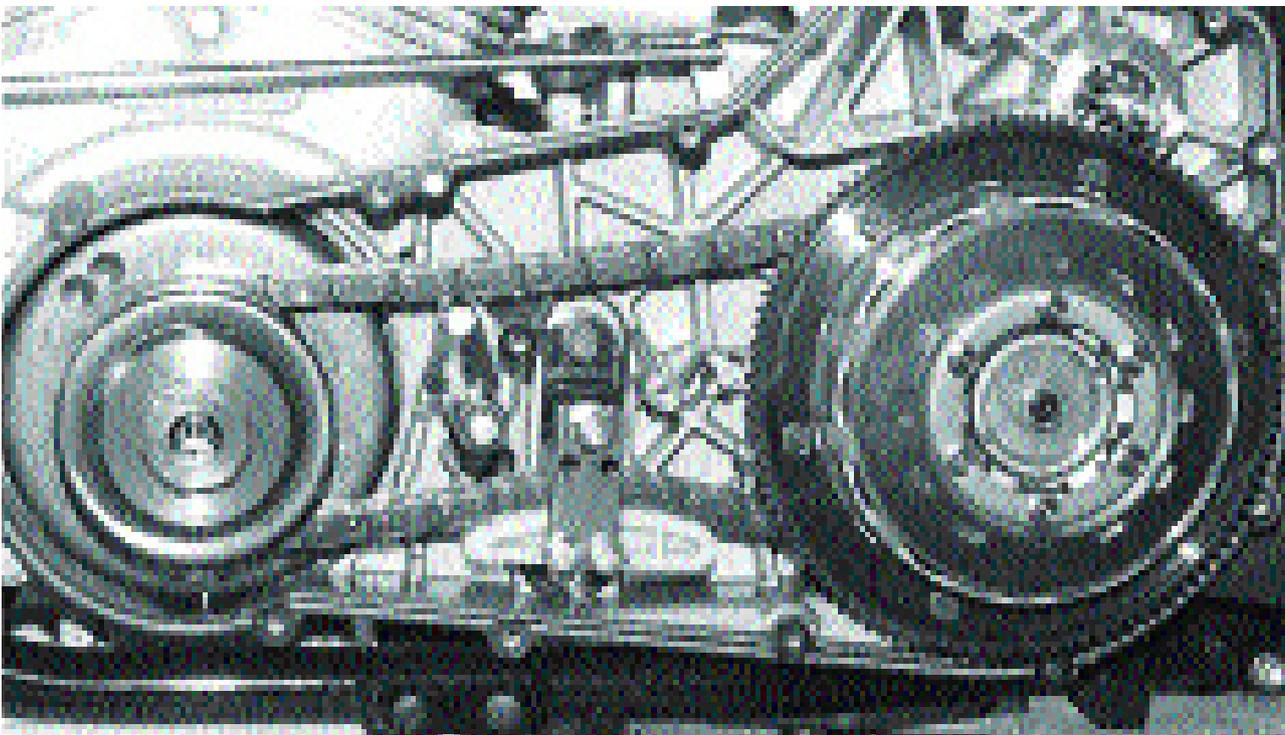
RC Cycles
925-362-8220



The new shift drum has a roller detent that shifts much smoother than the stock tranny.



The sprocket on the left is the stock 24-tooth unit and the one on the right is the new 28-tooth sprocket from Baker.



The higher ratio primary drive fits inside the stock housing.

Photos: S. E. Malone