The Woodings Centrifugal Clutch Replacement

by Michael P. Ford

The words "We don't make that any more" can strike fear in a motor car owner, especially those of us who own a Woodings motor car. I was faced with this situation when my secondary (driven unit) began to fail during an excursion in the Upper Peninsula of Michigan during the summer of 1998. I want to share my learning experience, so when others face a similar situation, they can get the needed parts and assistance quickly.

Background

Woodings motor cars are driven by a two–piece system consisting of the drive unit (called the clutch) and a driven unit (called the secondary, or torque converter). The speed is "infinitively variable" because in theory, you can adjust the engine RPM's (via the throttle) to obtain the exact speed you desire. The distance of travel of the clutch's moveable face can literally be .00001 inch (or smaller) causing a corresponding incrementally small increase/decrease in speed. The clutch is mounted on the engine output shaft, while the secondary is mounted on the transmission. The two pieces are connected by a drive belt and operate on a very simple principle—centrifugal force. As the engine RPM's increase, the moveable face on the clutch (farthest from the engine) moves forward (toward the engine). The moveable face is loaded with weight "pucks" and pushes up against a center spring. The inward movement of the moveable face causes the belt to ride over a greater circumference. At the same time, the secondary begins to open (the moveable face moves toward the front of the car), and the belt rides lower in the secondary over a smaller diameter. Similarly, as you decrease the engine RPM's, the clutch "opens" as the spring forces the moveable face outward, and the secondary begins to close. As this happens, the belt is riding over a smaller circumference on the clutch, and a large circumference on the secondary. The combination of the clutch and the secondary allows for better pick–up at slow speeds and delivers more power at higher speeds—the same principle used for a 10–speed (or greater) bicycle. There are numerous combinations of weight and spring tension that are used to make the system perform to the user's needs. This two–piece system is identical to the systems used to power snowmobiles.

The Original System

The original system on my Woodings was built by Securitstat International, located in Drummondville, Quebec, Canada, under the brand name "Powerbloc." The company is now called IBC Powerbloc but no longer supports the secondary unit. When my secondary broke, I had to look for a substitute, and I decided I would replace both the drive and secondary units to be sure my system components were right for each other. I was also hoping to find newer, lighter, more improved and up–to–date technology.

The New System

After several weeks of checking around and asking lots of questions, I located a manufacturing company of centrifugal clutch systems in Richmond, Indiana. The company is Hoffco/Comet, and they make a wide variety of centrifugal clutches and secondaries. The learning process was not easy, and it took several iterations of purchasing and returning parts to retailers before eventually getting the correct ones for my application. Then, it was a matter of working with various spring tensions and weight (puck) combinations to get the system to perform adequately.

There are several pieces of information one needs to know to determine the components of a new system:

- Is the engine shaft straight or tapered? What is the diameter? Does it have a keyway?
- What is the width of the drive belt?
- What is the diameter of the input shaft (on which the secondary mounts) on the transmission. Does it have a keyway?

With these specifications, one can purchase the correct items from almost any snowmobile or recreational vehicle retailer. I purchased mine via mail order from Recreational Leisure, in Farmington Hills, Michigan. The clutch and secondary cost between $125 and $150 each. (cont. p. 11)

Gary Greenwood's Woodings Railcar suffered a frozen transmission during the July 26-29, 1999, excursion on the Algoma Central. As the rear axle was locked up, the car was loaded on a push car by the railroad and hauled back to Sault St. Marie. STAN CONYER PHOTO

Clutch Replacement (cont. from p. 8)

What Worked for Me

My car is powered by a 16–hp Tecumseh engine, with a 30–mm, 1:10" tapered shaft, no keyway. The transmission has a 1" diameter shaft with a keyway. I run a Gates 3085 belt which is 1.25" wide. (Note: The belt needed is a function of the distance between the clutch and secondary and might vary between machines.) With that information, here are the parts I have installed:

- Clutch: Comet Duster 94C, part number 206094, for 30–mm, 1:10" tapered shaft
- Secondary: Comet Driven Unit, part number 212292A, for a 1.25" wide belt, 1" bore.
- Activator Pucks (Weights): Comet, part num ber 206515A, 56.9 grams each, Qty of 9
- Spring: comet, part number 205819A, (green in color)

Summary

I have found the Comet system to be a suitable replacement for Powerbloc. There was a very long learning curve, mostly done through trial and error. While Comet has lots of information and technical help on centrifugal systems for snowmobiles and other industrial applications, they had never worked with a Woodings motor car before. They were extremely helpful, however, and worked with me through every step of the trial and error process.

I have run this system on several long excursions during the summer of 1999, including the 945–mile "Loop Tour" and 700 miles on the Algoma Central and have not had any problems. I can easily maintain a speed of 25-30 mph and have run as fast as 44 mph.

If you would like further information regarding Comet products, they can be reached at:

Hoffco/Comet, Inc.
350 Northwest "F" Street
Richmond, Indiana 47374–2297
(800) 999-8161 – Contact: Don Jackson
www.hoffcocomet.com

Changing out the clutch and secondary is a relatively straightforward process, as is changing out the weights or springs in the clutch itself. Spring tensions are determined by the color of the spring; there are no adjustments to be made. The hardest part in removing the clutch is having to remove the exhaust pipe so the clutch can slip off the engine output shaft.

I would be happy to pass along any insights or knowledge I have gained regarding the removal of the clutch, changing the springs, weights, etc. I can be reached at:

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