1. Introduction

This torque diode for seat lifters received the Automotive Component Award at the 2010 ‘Cho’ Monodzukuri Innovative Parts and Components Awards, which are sponsored by the Conference for the Promotion of Monodzukuri and the Nikkan Kogyo Shimbun (Business & Technology Daily News) with support from the Ministry of Economy, Trade and Industry and The Japan Chamber of Commerce and Industry.

The torque diode for seat lifters is used in the mechanical device for manually adjusting the height of a vehicle seat. The torque diode has the merits of quiet operation, while allowing for invariable adjustment with only a small amount of force needed to operate. It also contributes to making vehicle seats more compact and more comfortable.

2. Structure of Torque Diode for Seat Lifters

The torque diode for seat lifters is a product that was developed jointly with Shiroki Corporation as a new mechanical device that controls transmission of torque between the input and output shafts.

Beginning with a wedge-shaped clutch structure (see Fig. 1) and by combining the high-precision press operations and lubrication techniques that NTN has developed in its bearing technologies, NTN has succeeded in creating a product that meets the needs of the market.

In order to meet the price requirements of the market, the amount of cutting required was greatly reduced by adopting a new high-precision press process (see Fig. 2). In 2002, for the first time we began sales in Japan as a clutch for high-performance lever-operated manual seat lifters.

3. Conclusion

At this time, vehicle seats with manual lifters are growing at a rate of about 80% according to our estimates. So we are contributing a great deal to the popularity of the level-operated seat lifter models. For now, we will advance the development of products to achieve better performance with the goal of expanding in markets overseas.