

# Bus Transmission Shifter

## Enhancing Product Performance and Functionality

### The Challenge

The OEM required a high performance, unique design gearmotor assembly for its heavy automotive (bus) shifter. Their vision was a motor with a “back up” winding inside the armature that could be engaged in the event of a primary winding failure.

### The Solution

PM 6034 Right Angle Gearmotor Assembly

- Redundant motor winding for emergency backup
- Unique dual-commutator design
- IP 66 rating for harsh environment
- Custom design aluminum die-cast gear housing to bolt directly on to the transmission
- Rigorous 25,000 cycle performance testing

**“This OEM knew what they wanted – a backup. When they asked why they couldn’t have a “two-commutator” gearmotor we said we’d never done it before, and we’d never seen it done.... but we figured it out - and we did it!”**

**Loren Kamstra, Product Manager – Groschopp**

This OEM is a leader in the design, development, and manufacture of a wide range of electronic transmission and drive train control components and systems. These controls and systems are designed for use in a variety of vehicles with applications that include drive train controls for medium and heavy-duty vehicles.

Just like their customers depend on them to enhance the performance and functionality of their products, they trusted Groschopp to enhance the performance and reliability of their transmission product. They wanted a motor with a back-up winding inside the armature, so that if the primary winding failed – which could ultimately cause the bus to be stuck in one gear (including Park and Reverse) – the secondary winding would engage.

This project started a design cycle that resulted in the prototyping of Groschopp’s first 2-commutator armature, and ultimately a proprietary process for creating it. This including engineering the manufacturing processes to still meet cost objectives even with this unique design.

“There was a domino effect to this design,” said Kamstra. “It required 2 sets of brushes, and the control had to be modified for this redundancy. We also had to engineer a way to mount a strong, non-conductive brush card on to the gear housing. The resulting design was exactly what they were looking for, and because it was designed to bolt directly on to the transmission, no design modifications were required on their end.”

