

# INNOVATION

**SPOTLIGHT** from the brands of Altra Industrial Motion Corp.



## WARNER ELECTRIC PARTNERS WITH MOST MAJOR MOWER OEMs TO PROVIDE INDUSTRY-LEADING CLUTCH/BRAKE SOLUTIONS

With more than 40 years experience, Warner Electric has become the recognized leader of clutch/brake technology for commercial and residential power lawn mowers and garden tractors.

The most significant increase in market demand has been for commercial mowing equipment used by mowing service contractors (due to the aging U.S. population). At the same time, sales of residential mowers continues to be strong.

Since their introduction more than 20 years ago, ZTR (Zero Turning Radius) mowers, with increasing deck and engine sizes, have continued to grow in popularity for both commercial and residential use.

Over the years the industry has continued to tighten the standards for mower blade stop times. Today, the ANSI commercial riding mower blade stop standard is 7 sec. (5 sec. for residential riding mowers). Federal law currently requires a 3 sec. blade stop on all walk-behind mowers.

Commercial customers are asking for faster ground speeds with enhanced suspensions for operator comfort due to tough terrain. Since their livelihood depends on their equipment, contractors also want better reliability and improved uptime productivity. These trends challenge OEMs to design mowers with extremely reliable clutch/brakes that can maintain required blade stopping performance over years of service in harsh outdoor conditions.

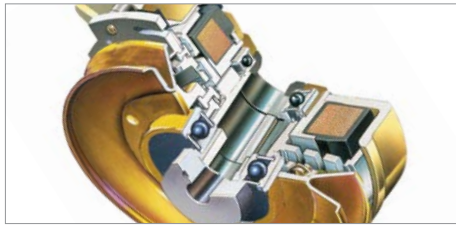


# INNOVATION

**SPOTLIGHT** from the brands of Altra Industrial Motion Corp.

## INNOVATIVE WARNER ELECTRIC CMS SERIES CLUTCH/BRAKES SET THE INDUSTRY STANDARD FOR DURABILITY

While new commercial mowers had been tested for blade stop time compliance, there were no initial standards set for durability. The development of Warner Electric's Commercial MagStop (CMS) clutch/brake represents the latest innovation in permanent magnet braking technology.



CMS 250 Series Commercial MagStop clutch/brakes are designed for heavy-duty mowers with up to 96" decks and engines up to 37 HP. Units feature rugged construction for continuous-duty and long life. Other unique features include:

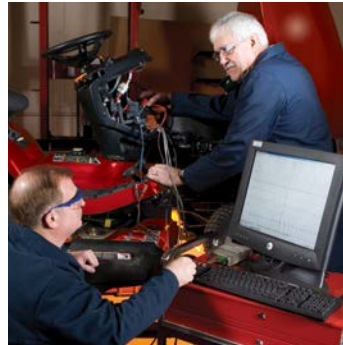
- Patented, modular, permanent magnet brakes for more consistent torque over the life of the clutch
- Large 6208 armature bearing pressed into machined bearing cup
- Patented D-drive mounting adapter locks crank shaft to aid in securing and removing mounting bolt
- Large 6008 field bearing with high-temperature poly acrylic seal and high-temperature Krytox® grease
- Larger pulley sizes to extend belt life

## U.S. MANUFACTURING AND IN-HOUSE TESTING CAPABILITY SUPPORT FLEXIBLE OEM DELIVERY REQUIREMENTS

Ever-changing OEM production schedules often require flexible delivery options from component suppliers. Rolling changes in product designs need to be tested quickly to ensure performance expectations are met.

Located in Columbia City, Indiana, Warner Electric's manufacturing facility is positioned near most of the world's leading mower OEMs. This close proximity allows customers to quickly access Warner's application engineering expertise and testing support.

With a focus on lean manufacturing, the state-of-the-art plant is configured to ship product quickly in response to rapid OEM design changes while other clutch/brake manufacturers often require 6-month lead times.



Based on long-term relationships, most major mower OEMs now view the Warner engineering team as an extension of their internal engineering departments. OEMs routinely ship prototype mowers to Warner's test facility so Warner engineers can develop a custom clutch/brake solution for the specific mower application and then define and perform all appropriate testing protocols in-house.

Warner in-house testing capabilities include ANSI stop times, cycle tests, blade spindle bearing temperature and other mower performance parameters. Three large environmental test chambers can each house an entire mowing machine. These chambers allow for 24/7/365 unattended tests that simulate a variety of high-temperature conditions combined with load cells that simulate different grass mowing conditions.



*In-house inertia test stands feature belt-driven motors that allow zero-hour prototype brake and clutch torque testing.*