

Boston Gear

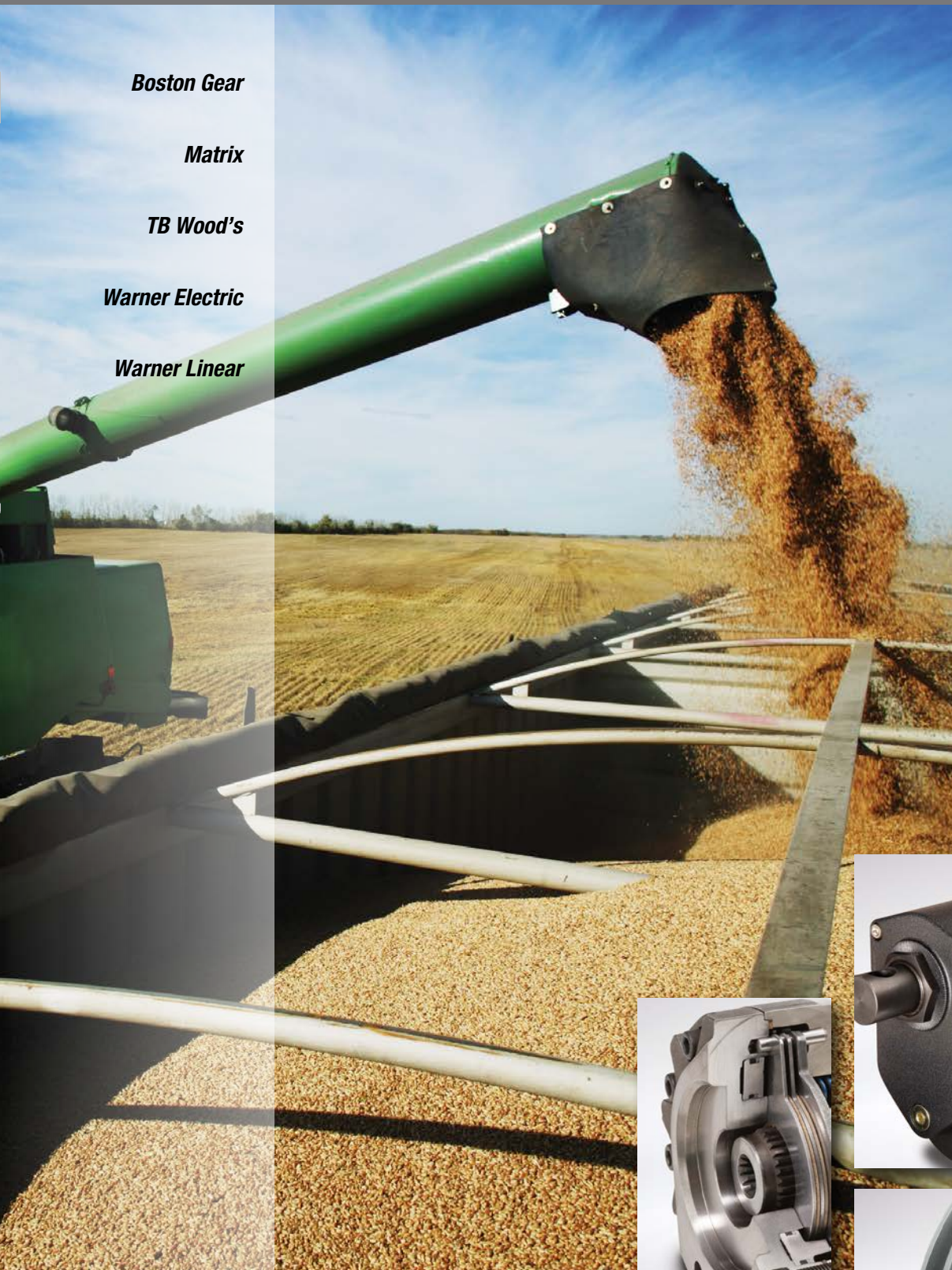
Matrix

TB Wood's

Warner Electric

Warner Linear

Power Transmission Solutions for the Farm and Agriculture Market



Power Transmission Solutions for the Farm and Agriculture Market

ALTRA INDUSTRIAL MOTION OFFERS A WIDE ARRAY OF POWER TRANSMISSION PRODUCTS FOR THE FARM & AGRICULTURE MARKET

As the costs for crops continue to rise, the equipment necessary to harvest and cultivate them will come under increasing pressure to perform. As industry leaders in electromechanical power transmission products, the companies of Altra Industrial Motion are uniquely positioned to leverage their products' reputations, reliability and technologies to help farm equipment manufacturers achieve the necessary productivity and efficiency that farmers require.

As a leading multinational designer, producer and marketer of a wide range of power transmission products, Altra offers many critical products utilized in farming applications where reliability and accuracy are necessary to avoid costly downtime and enhance operations and efficiency.



The companies of Altra Industrial Motion are industry leaders in braking, engaging, overrunning, gearing, and load transmitting products. Whether a speed reducer is required or a highly engineered clutch or linear actuator is needed, Altra Industrial Motion has the expertise and the knowledge to design and manufacture reliable products with the lowest cost of ownership.

Customer Service

Our extensive application knowledge enables us to assist in the selection of the correct type of product design for your equipment. With sales and technical support teams located worldwide, Altra is able to provide an unrivaled level of responsive customer service.

www.AltraFarmandAg.com



ALTRA INDUSTRIAL MOTION PROVIDES LEADERSHIP THROUGH INNOVATION

Altra Application Engineers have vast experience in providing the right product to meet the exact needs of farm and agriculture applications. From a pump clutch for a hay baler to an electric linear actuator for a sprayer, Altra has the expertise to perfectly match one of the thousands of our standard products to meet your requirements.

If a standard product comes close but just won't do, we will modify it or design a completely custom product to meet your needs precisely.

Altra products can be found hard at work in farm and agriculture applications worldwide including...

- Combines & Harvesters
- Sprayers & Spreaders
- Seeders
- Hay Baling Equipment
- Grain Handling Equipment and Grain Augers
- Tillage Equipment
- Manure Handling Equipment
- Cotton Pickers
- Corn Detasslers
- Choppers
- Mowers
- Pumps and Hydraulic Systems
- Conveyors

For detailed information about application specific power transmission solutions from Altra Industrial Motion including case studies and literature, visit:

www.AltraFarmandAg.com

For over a century, the most important breakthroughs in engineered power transmission products have been driven by our family of companies working together to lead the market forward. Developing innovative technologies is the core principal of Altra Industrial Motion.

With a full complement of mechanical and electrical solutions for every type of application, Altra Industrial Motion stands alone as the industry's most fully committed supplier of power transmission solutions.

- World-class engineering
- Rapid deployment of prototypes
- Superior customer service and application support... worldwide
- A common driving force: the Altra Business System
- Extensive training programs
- Global manufacturing to support local customer needs

Whether you need individual components or engineered packaged systems, choose the brands known throughout the world for quality, innovation and service.

Power Transmission Solutions for the Farm and Agriculture Market

CLUTCHES AND BRAKES



Power Take-Off Clutches *Warner Electric*

Warner Electric Power-Take-Off clutches (PTO) and clutch/brakes provide a means for the operator of agricultural equipment to remotely control the operation of tractor powered implements or other mechanical systems. Grain Augers, for example, incorporate Warner Electric PTO clutches to provide a means to transmit or remove mechanical power from an internal combustion engine to the auger. In addition to this start/stop function many Warner Electric PTO clutches also incorporate a brake to hasten the stopping of rotating elements to increase safety.

- 60 lb.-ft. to 300 lb.-ft. of static clutch torque capacity
- 1", 1 1/8", and 1 7/16" bore sizes standard
- Numerous pulley and flange output options available

Typical Applications

- Mowers
- Fan Drives
- Grain Handling Equipment
- Hydroseeders
- Spreaders



Farm-Line Clutches *Warner Electric*

Warner Electric Farm-Line clutches are heavy-duty, high capacity electromagnetic clutches that allow the operator to remotely control the operation of mechanical systems in agricultural equipment. Self-propelled combines, for example, incorporate Warner Electric Farm-Line clutches to control such systems as grain heads, feed house conveyors, main separator drives, unload augers, debris choppers, etc.

- Sizes range from 8" to 15" diameter
- 250 ft. lbs. to 1800 ft. lbs. of static torque
- Available for rotating shaft mount (PC-Primary Clutch), or stationary mount (SF-Stationary Field Clutch)

The PC design consists of a magnet and armature assembly and requires a brush-holder (available from Warner Electric) to carry current from the power source to the rotating magnet.

The SF design consists of a bearing mounted magnet assembly, or field, a rotor assembly, and an armature assembly. The bearing mounted field does not rotate which eliminates the need for a brush-holder.

Armature assemblies are available in clockwise or counterclockwise rotation, and with either a hub or flat leaf springs for mounting the output device. Hardware to mount the clutch to the shaft, including bearings, may be customer supplied, or Warner Electric will be pleased to work with your engineers to supply a complete, ready-to-mount packaged solution.

Typical Applications

- Combines
- Harvesters
- Hay Balers



Pump Clutches for Hydraulic Systems *Warner Electric*

Warner Electric pump clutches are used to control a variety of accessories driven directly from an engine. Mounting a Warner Electric clutch on a hydraulic pump allows the operator or a control system to engage and disengage the hydraulic system on demand. Allowing the pump to be "off" when not needed increases the life of the pump and increases fuel efficiency.

- 50 lb.-ft. to 200 lb.-ft. static torque capacity
- Various pulley configurations available

Typical Applications

- Pumps
- Grass Seeders
- Spreaders
- Under Hood Hydraulics

LINEAR ACTUATORS



Wrap Spring Clutches Warner Electric

Warner Electric offers a complete line of wrap spring clutches and clutch/brakes, which are particularly well suited for performing indexing, positioning and backstopping functions for agriculture machinery. Fast, repeatable and positive action provides identical cycling over a long life.

For precision farming applications, wrap spring clutches can be designed to meet the requirements for the application with modifications such as:

- Special housings to protect from environment
- Low current draw: 12 volt if multiple clutches on one planter
- Integral gearing or sprockets

Typical Applications

- Seeders
- Planters
- Spreaders



Brakes Matrix

SAE Series Hydraulic Brakes are the perfect choice for mobile equipment wheel drives, track drives, winch drives and other hydraulic and motor driven equipment where power off braking is required. SAE brakes are widely used in these mobile equipment applications where failsafe brake operation is essential for parking in the event of a power loss.

These brakes are designed as wet or dry parking brakes. Typically mounted between a hydraulic motor and a reducer, these brakes are designed to release as hydrostatic transmission pump pressure changes.

The SAE brakes with industry standard SAE A, B, C and D input and output flanges enable these brakes to be 'bolted on' to a wide variety of applications. Fully enclosed brakes are suitable for harsh working environments and are available in wet and dry versions with static torque ranging from 50 to 1600 Nm (500 to 14,000 in. lbs.).

- Robust brake construction with high grade castings enables the brake to continuously hold 4,000 psi peak pressures
- Bearing supported shaft ensures alignment for easy assembly
- Close dynamic/static performance for smooth deceleration and E-stop when required
- Once installed, the brakes are fully sealed to keep contaminants out, enabling them to withstand tough environments

Typical Applications

- Agriculture Vehicles
- Mobile Off-Highway Vehicles
- Utility Vehicles



Electric Linear Actuators Warner Linear

Completely sealed, designed for tough, high load applications. B-Track linear actuators incorporate high strength, high quality components and are designed to provide years of trouble-free performance in harsh environments. Models feature a ball nut screw drive with integral load holding brake and overload clutch. Efficient power use, compact package size, excellent corrosion protection, rugged spur gearing, synthetic lubricants and high performance motors provide maximum capability and value.

Models available with 2 to 24 inch stroke lengths, up to 2200 lb. load capacity, and up to 2.7 in./sec travel speeds.

- Patented In-line bearing support improves unit efficiency
- Use of o-rings rather than gaskets increases contamination resistance
- Patented In-line design transfers loads to the end fitting via ball bearing screw pivot. Efficient load transfer reduces noise and current draw

Typical Applications

- Sprayers
- Seeders & Spreaders
- Combines & Harvesters
- Cotton Pickers
- Bale Handling Equipment
- Corn Detasslers
- Straw Choppers

GEARING



Open Gearing & Shaft Accessories

Boston Gear

A complete line of spur, helical, miter, bevel, worms and worm gears can meet virtually any gearing need with superior results.

- Thousands of gears are available for immediate shipment so you get what you need when you need it
- For specialized applications, custom gears can be designed and manufactured
- For increased versatility, we can rebores and modify the keyway of any stock gear in just 24 hours
- All gears are manufactured to the strictest standards for the highest quality product available
- Custom gears designed to meet application requirements

Bearings

- Mounted self-aligning pillow blocks and flange blocks
- Set screw or eccentric mounting
- Lip sealed for moisture prevention with steel flingers
- Bronze friction type bearings
- Rod Ends
- Naked ball bearings

Universal Joints

- Cast/forged steel
- Pin and Block, steel and stainless steel
- Available in round, hex, square bores, and solid versions

Typical Applications

- Combines & Harvesters
- Grain Handling Equipment
- Planting Equipment
- Hay Balers



Enclosed Gearing

Boston Gear

Boston Gear offers a wide range of enclosed gear drives to meet the demands of agriculture applications.

- Available in worm gearboxes and bevel gearboxes
- Versions available in aluminum, cast iron and stainless steel housings
- Available in various ratios and shaft configurations
- Sealed from external contamination with options to combat the elements such as temperature extremes, humidity, dirt, and dust
- Hardened gearing provides high torque capacity, long life and compact size with high power density
- Economical and precision products available in round or splined shaft versions
- Standard product available for immediate delivery
- Custom gearboxes designed to meet application requirements

Typical Applications

- Harvesters
- Planting Machinery
- Tree Shakers
- Grain Handling & Drying Equipment
- Irrigation Systems
- Bulk Seed Tenders



Centric Torque Limiting & Centrifugal Clutches

Boston Gear

Trig-O-Matic ORC or HOR series improve machine productivity and limit the transmitted torque during jamming loads

- Available in Automatic/Manual/Semi Auto reset
- Single position detent design
- Torque range: 35-50,000 lb. in.
- Bore sizes: 1/2" to 3-15/16"
- 3 shaft attachment styles
- Sealed from external contamination
- Standard products available for immediate delivery
- Custom clutches designed to meet application requirements
- Centrifugal Clutches provide soft start and soft stopping power during excessive torque loading
- Automatic engagement minimizes operator intervention
- Clutch "soft start" extends acceleration times for heavy inertia loads
- 100% efficient at rated speed
- Provides torque limiting feature for jamming loads
- 50 to 3,000 HP rating
- Available as clutch couplings or in Power Take Off configurations
- Available as round or splined bore configurations
- Custom clutches designed to meet application requirements

Typical Applications

- Sprayers
- Spreaders
- Harvesters
- Planting Machinery
- Hay Balers

BELTED DRIVES

CASTINGS



V-Belt and Synchronous TB Wood's

TB Wood's has been a leading innovator in belted drives products including a wide variety of successful product ranges for V-Belt and Synchronous drives.

V-Belt Drives

- FHP Sheaves
- Integral Sheaves
- Premium V-Belt Drives
- MTO Sheaves
- Variable Speed Sheaves

Synchronous Drives

- Timing Drives
- Synchronous Plus – Replacement for chain drives
- QTPCII – Replacement for chain drives

Typical Applications

- Combines & Harvesters
- Hay Balers
- Spreaders
- Grain Dryers & Grain Handling Equipment
- Choppers
- Cleaner Drives
- Conveyors



Made-to-Order (MTO Sheaves) TB Wood's

Recognized in the industry as "Large Sheave" experts with a maximum capacity of 108-inch diameter.

Experienced Application Engineers provide optimum designs and specific application selections.

Integrated foundry with machining enables superior response time for made-to-order products.

Special Made-to-Order capabilities include:

- Specific, special diameters to achieve optimum speeds
- Special hub designs
- High-grade of iron (ductile) for high speeds
- Private-branded sheaves with OEM brands/part numbers

Typical Applications

- Combines & Harvesters
- Choppers
- Hay Balers
- Grain Dryers & Grain Handling Equipment
- Spreaders



Commercial Castings TB Wood's

For generations, TB Wood's has developed the technical expertise to design, mold, and machine gray and ductile iron castings that have held up in some of the most demanding environments. TB Wood's ISO 9001:2008 registered foundry operations are capable of producing parts up to 10,000 pounds per cast part. Complete to print capabilities and quality control procedures (including CMM, gage calibration, and solidification modeling), enable us to satisfy casting requirements quickly and efficiently, on-time and on-budget.

Machining

CNC turning (up to 108")
Milling (up to 64" X 40")
Drilling & Tapping
Broaching & Balancing
Painting & Assembly

Molding – Green Sand

Roberts Sinto Automatic

- 20" x 24" mold size, 8"/8" cope/drag mold height
- 100 lb. maximum Herman Automatic
- 34" x 34" flask size, 10"/10" cope/drag mold height
- 350 lb. maximum

Molding – No Bake (Furan) Sand

MD4 Semi-automatic

- 60" x 96" mold size
- 24"/24" cope/drag mold height
- 2,000 lb. maximum Floor Molding
- 12' x 10' mold size
- 40" x 40" cope/drag mold height
- 10,000 lb. maximum

Process Controls

Hartley Sand Controls – Green Sand
SPC of Iron Chemistries and Sand Characteristics

Typical Applications

- Cast parts for various farm and agriculture equipment

A Global Footprint to Support Customers Around the World

- ★ Altra Headquarters
- Altra Manufacturing Facilities
- Light Manufacturing, Assembly, Regional Warehouse
- ▲ Altra Shared Services and ECB Technology Center

The Brands of Altra Industrial Motion

Couplings

Ameridrives
www.ameridrives.com

Bibby Turboflex
www.bibbyturboflex.com

Guardian Couplings
www.guardiancouplings.com

Huco
www.huco.com

Lamiflex Couplings
www.lamiflexcouplings.com

Stromag
www.stromag.com

TB Wood's
www.tbwoods.com

Geared Cam Limit Switches

Stromag
www.stromag.com

Electric Clutches & Brakes

Inertia Dynamics
www.idicb.com

Matrix
www.matrix-international.com

Stromag
www.stromag.com

Warner Electric
www.warnerelectric.com

Linear Products

Warner Linear
www.warnerlinear.com

Engineered Bearing Assemblies

Kilian
www.kilianbearings.com

Heavy Duty Clutches & Brakes

Industrial Clutch
www.indclutch.com

Twiflex
www.twiflex.com

Stromag
www.stromag.com

Svendborg Brakes
www.svendborg-brakes.com

Wichita Clutch
www.wichitaclutch.com

Belted Drives

TB Wood's
www.tbwoods.com

Gearing

Bauer Gear Motor
www.bauergears.com

Boston Gear
www.bostongear.com

Delroyd Worm Gear
www.delroyd.com

Nuttall Gear
www.nuttallgear.com

Overrunning Clutches

Formsprag Clutch
www.formsprag.com

Marland Clutch
www.marland.com

Stieber
www.stieberclutch.com



www.altramotion.com