Power Transmission Solutions for Pump Applications
ALTRA INDUSTRIAL MOTION
PROVIDES POWER TRANSMISSION SOLUTIONS FOR PUMP APPLICATIONS

As industry leaders in electromechanical power transmission products, the companies of Altra Industrial Motion provide full drive train solutions for the pump market, with a comprehensive offering of couplings, backstops, overrunning clutches, speed reducers, gear motors, torque-limiting devices, and belted drives to meet the specific requirements of pump applications.

Designed to prevent corrosion and damage from temperature and humidity, Altra products withstand the harsh environment where pumps are applied while providing exceptional personnel safety and equipment protection.

The companies of Altra Industrial Motion offer advanced technologies together with exceptional engineering capability. We analyze every application in order to optimize the best solutions for our customers. This approach allows us to provide multiple options to solve the same application challenge, with either high quality solutions or cost-conscious choices.

To help customers control inventories, Altra teams work hard to achieve short lead times and on-time deliveries. Our products are designed to reduce downtime by meeting the requirements for long service intervals, easy maintenance and fast interchanges.

For more information about application-specific power transmission solutions for the pump market from Altra Industrial Motion, including case studies and literature, visit:

www.AltraPumps.com
ALTRA OFFERS A FULL DRIVETRAIN SOLUTION TO KEEP PUMPS RUNNING EFFICIENTLY...WORLDWIDE.

**Couplings**
For over 150 years, the industry-leading brands of Altra Couplings have been providing innovative solutions to meet the varied requirements for pump applications. Highly engineered Altra coupling products represent the latest in coupling technology, featuring superior design and exceptional quality to ensure long-lasting performance. Altra couplings are currently the standard specified couplings for many of the world’s largest multinational pump manufacturers.

*ALTRA COUPLINGS: Ameridrives • TB Wood’s • Bibby Turboflex*

**Overrunning Clutches & Backstops**
Altra brands offer a broad range of both sprag and ramp and roller overrunning clutches and backstops utilized in pump applications. CECON overrunning clutches are often used when a pump is driven by two power sources. Backstopping clutches are used to prevent pump impellers from rotating backwards (backflow) when the pump motor is off and back pressure is present.

*Formsprag Clutch • Marland Clutch • Stieber*

**Belted Drives**
TB Wood’s has provided an extensive offering of fixed & adjustable speed V-belt drives and synchronous drives (including MTO) in pump applications for years. Throughout the years, TB Wood’s has continued to innovate its products and services in order to add increased value to pump manufacturers.

*TB Wood’s*

**Gearing and Geared Motors**
As the leading innovator of worm and helical gear and geared motor technologies, Altra continues to improve product performance by developing innovative features, designs and custom engineered energy saving solutions to meet the demands of the pump market.

*Boston Gear • Bauer Gear Motor*
Sure-Flex Plus® Couplings for Pump Applications

NEW Sure-Flex Plus Improved EPDM and Neoprene Sleeves

- 30% Higher Torque Rating
- Lasts over 3X longer than competitors
- Many common applications can now use a smaller size coupling
- Quick and easy installation
- Spacer, bushed hub, and clamping hub designs in stock
- Flexible design accommodates misalignment and protects equipment
- 7° to 21° torsional wind-up
- Up to 8,20 kNm; 72,480 in.lbs. with Hytrel sleeve
- Needs no lubrication, no maintenance

MANY OPTIONS ENSURE THE RIGHT COUPLING FOR YOUR APPLICATION

Multiple flange/hub options make shaft connection fast and easy

The Sure-Flex Plus® coupling is available in a variety of flange configurations:
- Type S cast iron
- Type SC spacer flanges
- Type J economical sintered metal
- Type B bushed
- Type C clamping

No other coupling has a wider range of standard shaft mounting options. We offer numerous inch and metric stock bores, plus made-to-order hubs for any configuration. Ease of selection and installation saves you time and money.

SLEEVE OPTIONS AVAILABLE

EPDM
The general purpose material most commonly used with Sure-Flex Plus®. Wide temperature range and excellent flexibility. “VFD Friendly”

Neoprene
Same misalignment and torque rating as EPDM, excellent flexibility. Superior oil resistance. Self-extinguishing. Identified by green dot. “VFD Friendly”

Hytrel
The tough one. 4x the torque capacity of the EPDM / Neoprene sleeves. Allows a smaller coupling size. Higher stiffness. Not recommended for variable torque applications.

J and H Style
Economical one-piece sleeve. Excellent choice for reversing applications and high peak torque loads.

JS and HS Style
Split versions of the J and H styles. Allows easy installation in applications with close shaft spacing. No need to move connected equipment.

E / N Style
Easy installation on close coupled applications.

Note: EPDM/Neoprene and Hytrel Sleeves are not direct replacements for each other. Sleeve configuration (1pc, split, 2 pcs w/ring) does not affect the torque rating of the same sleeve size and material.
TB WOOD’S SURE-FLEX PLUS® FLEXIBLE COUPLING IS THE TRUSTED, ECONOMICAL CHOICE FOR ANSI AND GENERAL PURPOSE PUMP APPLICATIONS.

Sure-Flex Plus® has been the coupling of choice for many global pump OEMs for more than 50 years.

Modern Elastomer Compounds
As pump applications have changed, so has Sure-Flex Plus®. Improved EPDM and Neoprene compounds offer improved performance on variable speed centrifugal pumps and other variable torque applications.
Sure-Flex Plus® is a great choice for many general purpose pumping applications, including centrifugal pumps used with variable frequency drives.
This is why industry leading pump companies like ITT, Xylem, Flowserve, and many others continue to specify Sure-Flex Plus® on a large number of installations.

Why do customers choose Sure-Flex Plus® over any other flex coupling?
• TB Wood’s original Sure-Flex design has over 50 years of proven performance.
• Our coupling design has been copied by others but never equaled.
• Highly flexible element = long equipment life & low vibration.
• Superior rubber compounds provide unequaled performance.
• No lubrication = low maintenance.
• Quick & easy installation. No bolts, gaskets, covers, or seals.
• Widest selection of sizes and styles on the market.
• Standard AGMA clearance fits and keyways.

ATEX Compliant
Sure-Flex Plus® is approved for ATEX certified pumps for use in certain explosive atmospheres. Specific details can be found at www.tbwoods.com.

PROVEN OVER DECADES OF EXPERIENCE, SURE-FLEX PLUS® HAS KEPT PACE WITH THE CHANGING REQUIREMENTS OF THE PUMP INDUSTRY

Online Tools Make Selection Quick and Easy
Coupling selection program, downloadable 3-D CAD models, e-catalog, and interchange guide make selecting the right coupling simple.
www.tbwoods.com/select

Our application engineering team is here to help with difficult or unusual applications.
Dura-Flex® Couplings for Pump Applications

Dura-Flex® couplings “split-in-half” element design allows for easy element installation/replacement without moving connected equipment or disturbing the shaft connection.

Spacer design can accommodate a large range of shaft spacing with few parts. Patented design minimizes bond stress for long coupling life. Highly flexible and able to accommodate shaft misalignment while minimizing vibration and preventing damage to connected equipment.

- Easy to assemble/replace
- High misalignment ratings, up to 4 degree angular and 1/8” (3.2mm) parallel
- No maintenance/lubrication
- Part-for-part interchangeable with industry standard design
- In-stock versatile spacer design can accommodate many configurations with few parts
- Good chemical resistance
- Better environmental field performance than competitors
- Better resistance to hydrolysis effects and humidity

Lowered weight of the element and optimized stiffness by removing material where less stress is present.

Polyether Urethane has a better resistance to hydrolysis effects. Humidity, which is present in every manufacturing environment and pump installation, will eventually degrade inferior couplings.

Step profile in shoe, lowers stress which can cause failure at the bonding point.

The TB Wood’s Dura-Flex® Elastomer Coupling provides longer life than competitive products, reducing the total cost of ownership, while minimizing misalignment loads on connected equipment.

Superior Design = Longer Coupling and Connected Equipment Life!

Dura-Flex® Design Advantages

- Profile designed using Finite Element Analysis
- Designed to optimize torque transmission while minimizing parallel, angular and axial stiffness
- More consistent performance in many real life environments than competitors
- Features a superior bonding process

Better environmental field performance than competitors.

Dura-Flex® has a superior bonding process.
Why do customers choose Dura-Flex®?

- **Premium Material**: Polyether material provides longer life in hot humid environments compared to competitors polyester material.
- **Shelf Life**: Greater than 5 years.
- **Bond**: 15 years proven field performance. Patented design.
- **Inventory**: Versatile spacer design limits the amount of parts required for multiple DBSE options.
- **Cost**: Lower cost and better performance than the competitors coupling with the green-colored material option.
- **Quality**: High quality grade 8 (or metric equivalent) flange-head fasteners used on all coupling sizes.
- **Performance**: Lower flex element weight and stiffness with modern FEA-optimized element profile.
- **Easy Installation**: 2-piece element design enables replacement without moving hubs or connected equipment.
- **Versatility**: Part-for-part interchange with industry standard design.
- **Options**: Bore-to-size (BTS), Sure-Grip bushed (QD), Taper-Lock hubs and full metric coupling sizes available.
Torsiflex-i Disc Couplings for API610 Pump Applications

The Ameridrives Torsiflex-i disc coupling has been specifically designed to provide increased performance for process pump applications.

- More power and performance than the competition.
- Lower weight, longer bearing life lowers cost per application.

### Torsiflex-i Disc Couplings

Torsiflex-i couplings consist of 2 hubs and a factory assembled transmission unit. Installation involves fitting the hubs to the machinery shaft ends, introducing the transmission unit, then securing with the attachment screws.

- **Peak Torque** of 1.75 and **Momentary Torque** of 2.7 times the stated ratings are accepted.

- **Spark Free** overload protection is provided as a standard feature on all Torsiflex-i couplings, making them suitable for GAS ZONE environments.

- **Standard Couplings** are designed for general purpose applications and are suitable for the majority of process pump, fan, and compressor applications.

- **Special Coupling** versions available include:
  - Torque overload protection
  - Limited end float
  - Electrical insulation
  - Bolted adapters suitable for high cyclic torques

### Standard NEMA Frames

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### ATEX Compliant

Torsiflex-i is approved for ATEX certified pumps for use in certain explosive atmospheres.
The Torsi-Lock® Advantage

THE EASE OF A SLIP FIT WITH THE POWER OF A SHRINK FIT.

Altra has responded to industry demand for a cold-install hub that provides the secure torque transmission and balance repeatability of an interference fit. We’ve combined shaft locking devices with Torsiflex-i to provide a pre-engineered solution that meets the balance requirements of API 610.

- Cold-install means NO HOT WORK PERMITS, providing added safety and productivity in hazardous environments
- Easy, repeatable removal and installation
- Eliminates fretting of hub to shaft
- Compensates for variances in shaft spacing – slip on and fix in the needed location
- May be used with keyed or keyless shafts (half key recommended with keyed shafts)
- Fully pre-engineered solution
- Correct material selection to prevent permanent shrink of hub to shaft
- Lightest weight locking device/hub combination selected
- Hub and locking device balanced to meet API 610 requirements

Why do customers choose Torsiflex-i?

- Standard coupling is fully compliant with the requirements of API 610 / ISO 14691.
- Compliance with API 671 / ISO 10441 is available.
- Plug-in spacer design allows installation and removal without disturbing the hubs.
- Max bores matched to NEMA motor shafts, resulting in up to 60% weight savings per application.
- Robust disc pack design allows for greater torque load in a smaller coupling, resulting in lower weight.
- Smaller diameter and lower weight per HP/kW provide better inherent balance.
- More power dense than the competition = lower weight = longer bearing life = lower cost per application.
- Large bolts for high clamp load, increasing frictional torque load, and reduced bolt bending stress.
- Built-in anti-flail feature.
- Inch series hub attachment screws (metric available upon request).
JAW, DISC AND GRID COUPLINGS

ALTRA PROVIDES A FULL COMPLEMENT OF ADDITIONAL COUPLING MODELS TO MEET YOUR PUMP APPLICATION REQUIREMENTS.

TB Wood’s
L-Jaw

The Jaw-type elastomeric coupling is an economical, proven solution for general purpose applications.

Four different flexible insert types are available: Buna-N rubber, Urethane, Hytrel™ and Bronze.

The hubs are made in the USA to TB Wood’s specifications (not a generic copy cat design).

- Up to 0.70 kNm; 6,228 in.lbs.
- No maintenance or lubrication
- Easy to install
- Part-for-part interchangeable with industry standard design
- Fail-safe design – equipment will continue to drive if elastomer fails
- Wide range of in-stock inch and metric bore sizes

TB Wood’s
Form-Flex

Form-Flex metal disc couplings consist of two hubs, a spacer and two high strength carbon or stainless steel flexible discs. Modified and special designs are commonly supplied to meet specific application conditions.

Available in carbon steel, stainless steel or with corrosion resistant coatings.

- No maintenance
- Zero backlash
- Close couple, spacer and floating shaft designs available
- Easy interchangeability

TB Wood’s
G-Flex

State-of-the-art designed all-metal coupling that provides positive protection against the damaging effects of shock loads and vibration.

Tapered grid couplings are an excellent choice where torsional flexibility/vibration damping are primary concerns.

- Aluminum horizontal cover (T10), and all-steel vertical cover (T20) designs are available
- Up to 169 kNm; 1,500,000 in.lbs.
- Easy to assemble/replace
- Part-for-part interchangeable with industry standard tapered grid coupling designs
- Coupling sizes 1020 through 1140 in-stock in a range of standard bore sizes
- Shot-peened tapered grid flex element for long life
GEAR DRIVES AND GEAR MOTOR PRODUCTS, FROM BOSTON GEAR AND BAUER GEAR MOTOR, OFFER HIGH EFFICIENT ENERGY SAVING SOLUTIONS THAT PROVIDE RELIABLE TORQUE AT CONTINUOUS SPEEDS NECESSARY FOR PUMP APPLICATIONS.

**Boston Gear**
**2000 Series Helical Gear Drives & Gear Motors**

Series 2000 gear drives feature enhanced performance, design flexibility, fast and easy installation and low maintenance. Units are dimensional drop-in replacements for SEW Eurodrive® KA and R Series products.

- Gear drives: Output torque to 40,000 in.lbs.
- C-Face mount for quick and easy motor install
- Low ratios for reliable torque at continuous operating speeds
  - Output speeds of 500 rpm to 300 rpm typical for pump market
- Internal features that ensure long product life and low maintenance
  - Automatic entrapment of wear debris
  - Synthetic lubrication
- Multiple mounting options
  - Base mounts for positive displacement pumps
  - Flange mounts for progressive cavity pumps
  - Over-sized and extended output shafts available
- Robust and durable cast iron housing exterior
- Wash-down options and stainless steel models available
- Gear motors: Input power of 0.33 to 15 HP

**Bauer Gear Motor**
**BG Series Helical Gear Motors**

Compact and high efficient inline helical-gearred motors designed for long life under arduous conditions.

- Compact footprint for small space requirements
- Flexible attachment possibilities with low design height
- High efficiency through 2-stage base design
- High efficient asynchronous motor technology complete with encoder options
- Super premium efficient permanent magnet synchronous motor technology for the highest energy saving in pump applications
- Enclosure is IP 65 as standard
- Motor power from 0.04 HP to 100 HP (0.03 kW to 75 kW)
- 13 gearbox sizes for torques 177 in.lbf to 163,738 in.lbf (20 Nm. to 18,500 Nm.)
ALTRA OFFERS THE WIDEST RANGE OF MODELS FOR BOTH SPRAG AND RAMP AND ROLLER OVERRUNNING CLUTCHES AND BACKSTOPS UTILIZED IN PUMP APPLICATIONS.

CECON overrunning clutches are often used when a pump is driven by two power sources. The simplest way to engage the second drive system is to use an overrunning clutch. Marland provides a very rugged and robust design with a complete disconnect feature meeting OSHA requirements for “lock out / tag out”.

**Formsprag Clutch**
**FSO Pump Backstop**
- 11 Models
- Torque Range: 275 to 27,000 lb. ft.
- Bore Range: 0.5 to 7.0 in.
- Speed Range: 0 to 3,600 RPM
- Temperature Range: -40°F to +150°F

**Special Features:**
- Truly rebuildable to reduce long term operating cost

**Formsprag Clutch**
**SB Pump Backstop**
- 7 Models
- Torque Range: 875 to 22,300 lb. ft.
- Bore Range: 0.75 to 7.0 in.
- Speed Range: 0 to 3,000 RPM
- Temperature Range: -40°F to +150°F

**Special Features:**
- Can simplify a retrofit backstopping application with less movement of equipment

**Formsprag Clutch**
**High Speed HSB Pump Backstop**
- 8 Models
- Torque Range: 300 to 27,000 lb. ft.
- Bore Range: 0.5 to 7.0 in.
- Speed Range: 0 to 2,900 RPM
- Temperature Range: -40°F to +150°F

**Special Features:**
- Truly rebuildable to reduce long term operating cost
Backstopping clutches are used to prevent pump impellers from rotating backwards (backflow) when the pump motor is off and back pressure is present from other pumps on a common manifold. These backstops provide high torque density and automatic backstopping with no adjustments or controls. Backstops can be rebuilt, offering a 30% savings over purchasing a new unit.

**Formsprag Clutch**  
*FRB Pump Backstop*  
- 9 Models  
  - Torque Range: 89 to 14,000 lb. ft.  
  - Bore Range: 0.4 to 7.0 in.  
  - Speed Range: must be above the lift off speed  
  - Temperature Range: -40° F to +150° F  
  
  **Special Features:**  
  - Centrifugal throughout sprags  
  - No wear, less drag  
  - Horizontal or vertical mounting  
  - Design can reduce operating cost with a 3 year maintenance interval

**Stieber**  
*RCSI Pump Backstop*  
- 35 Models  
  - Torque Range: 156 to 115,128 lb. ft.  
  - Bore Range: 0.79 to 11.8 in.  
  - Speed Range: 0 to 14,500 RPM  
  - Lubrication can work with EP  
  
  **Special Features:**  
  - Centrifugal throughout sprags  
  - State of the art technology as they run cooler, less drag and the bearings are the only thing that is wearing resulting in longer backstop life when operating above the lift off speed  
  - Normally mounted to the side wall of the gear reducer

**Marland Clutch**  
*Cecon Pump Overrunning Clutch*  
- 9 Models  
  - Torque Range: 500 to 60,000 lb. ft.  
  - Shaft Size Range: 1.5 to 7.0 in.  
  - Speed Range: 0 to 6,000 RPM  
  - Temperature Range: -20° F to +150° F  

  **Special Features:**  
  - Completely enclosed for continuous operation  
  - Internal oil filtering for less maintenance frequency  
  - All maintenance can be preformed without stopping the application  
  - Foot mounted  
  - Internal brake to prevent the unused driving equipment from rotating from clutch drag torque  
  - Complete disconnect feature meeting OSHA requirements for “lock out/tag out”
TB WOOD’S HAS CONTINUED TO INNOVATE ITS PRODUCTS AND SERVICES TO ADD VALUE TO PUMP MANUFACTURERS, AND MOST RECENTLY LAUNCHED A “NEW” ONLINE DRIVE SELECTION PROGRAM.

This program provides a simple interface for any user to select a stock belt drive suitable for the demands of a given pump application.

TB Wood’s

V-Belt and Synchronous Drive Selection for All Pump Applications

BeltDriveSelector.TBWoods.com

- Sort the solution set by various criteria including driven RPM or price.
- Override default settings, like driven RPM or center distance tolerances, to refine your solution set.
- Detailed data sheet includes bill of material, application detail and installation information.
- Easy recall of favorite solutions.
- Can be used on almost any device with a web browser.

TB Wood’s belted products are engineered to assure maximum performance over the life of the pump drive.

- Products utilize the proven Sure-Grip QD type bushings.
- Stock products are manufactured to the current MPTA specifications.
- Available in standard and metric belt cross sections.
  - Ultra-V
  - Conventional
  - Premium (High Capacity)
  - FHP (QD & bored-to-size)
  - Poly-V (QD & bored-to-size)
  - Timing
  - Synchronous (standard)
  - QTPC II Carbon (High Capacity)
TB Wood’s has provided an extensive offering of fixed & adjustable speed V-belt drives and synchronous drives (including MTO) in pump applications.

The integrated foundry and machine process provide superior response time on both stock and made-to-order products, with manufacturing facilities in Chambersburg, PA and Mexico.

**TB Wood’s**

*Adjustable and Variable Speed Drive Systems for Slurry/Wastewater type Pump Applications*

Adjustable Speed - Ideal for use where the pump speed needs to be changed as the system requirements increase or decrease over time.

- Design around standard NEMA motor specifications for applications of less than 1 to several hundred horsepower.
- Engineered for use with standard and high capacity V-belts per RMA specifications.

Variable Speed - Ideal for use where the pump speed needs to change as the pump requirements increase or decrease throughout the pumping process.

- Design around standard NEMA motor specifications for applications of less than 1 to 120 horsepower.
- Engineered for use with wide range variable speed belts per RMA specifications.

**TB Wood’s**

*Premium V-Belts Triplex & Mud Pumps*

Premium V-belts transmit 1.4 to 2.2 times more horsepower than the equivalent size standard V-belts.

- Drives will use less belts, results in less overhung load on bearings.
- Aramid tensile cords give extraordinary strength and durability.
- Virtually zero stretch eliminates the need for constant belt re-tensioning.
- Cost savings, less down time and more efficient drive.
- Provides superb oil and heat resistance.
- Extra tough cover withstands slip and shear forces at peak loads without generating excessive heat.

**TB Wood’s**

*MTO Drive Components for Mud Pumps or any Special Pump Requirements*

The products are manufactured to the customer’s needs and specifications.

- High tensile strength materials.
- Ductile iron (10,000 FPM).
- Dynamic balance capabilities for reduced vibration.
- Pump sheaves can be manufactured with extended hubs for mud pumps and special mounting for GE 752, or other locking devices.
- Our engineering department will work with the customer’s requirements to design the most efficient and cost effective pump drive.