

*Ameridrives*

*Bauer Gear Motor*

*Bibby Turboflex*

*Nuttall Gear*

*Stromag*

*Twiflex*

*Wichita Clutch*

# **Power Transmission Solutions for Seamless Tube Piercing Mills**

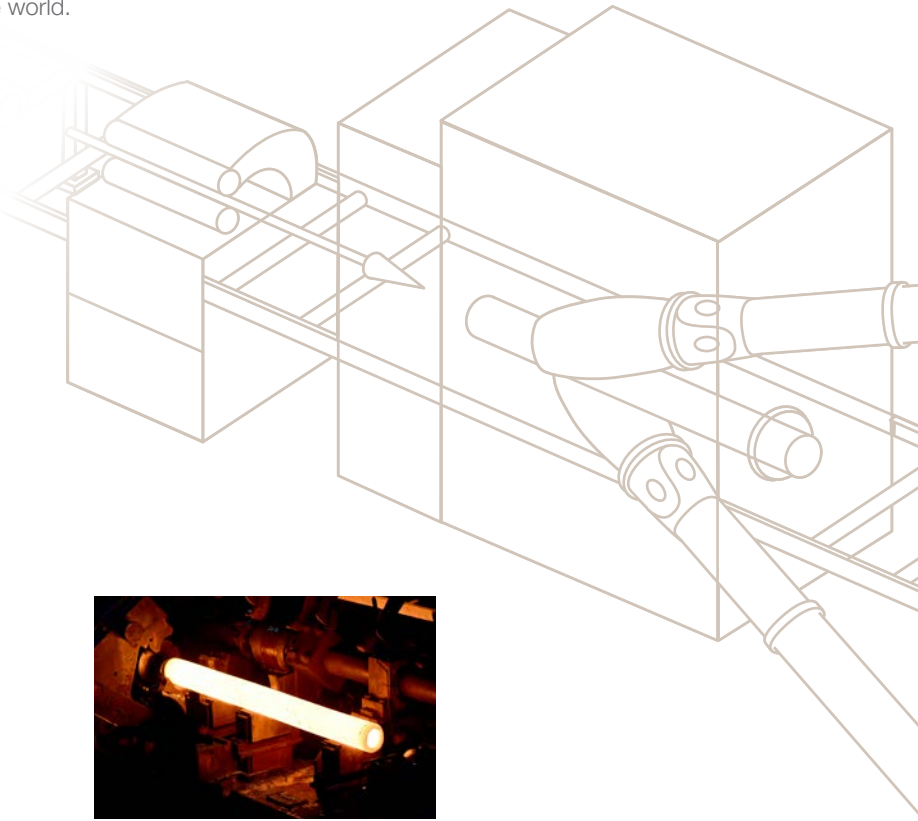


# Seamless Tube Piercing Mills

## ALTRA INDUSTRIAL MOTION PROVIDES POWER TRANSMISSION SOLUTIONS FOR USE IN SEAMLESS TUBE PIERCING MILL PLANTS

Altra brands supply a wide range of products used on all types of seamless tube piercing plant machinery including piercing mills, sizing/reducing mills, straightening mills, cooling beds and transport systems.

All Altra power transmission components, including universal joints, couplings, spindles, speed reducers, geared motors, clutches, brakes, and torque limiters are designed to provide years of dependable service in harsh mill conditions. Rugged Altra products can be found hard at work in seamless tube piercing mills across the US and around the world.



### Piercing Mills

State-of-the-art Ameridrives Americardan 3000 & 5000 series universal joints up to 1300 mm in diameter, are used to drive the cross-roll mill's large piercing rollers. The rollers are positioned at a slightly skewed angle and rotate in the same direction to force the red hot steel billets (rounds) through the mill as the long cone-shaped piercing mandrel is driven through the center of the billet.

Innovative torque overload and shaft locking devices and gear couplings from Bibby and Ameridrives, along with Delroyd speed reducers are also utilized on rotary seamless tube piercing mill applications. All Altra components are designed to withstand the violent motion as the pipe and mandrel rotate at up to 2000 rpm.

**Ameridrives** Americardan 3000 & 5000 series universal joints, Amerigear® couplings, Ameriloc® shaft locking devices and overload devices

## AMERICARDAN 3000 & 5000 SERIES UNIVERSAL JOINTS ARE IDEAL FOR USE IN SEAMLESS TUBE PIERCING MILL APPLICATIONS



Ameridrives engineers have worked closely with OEM's and piercing mills in the design, installation, and repair of heavy-duty driveshaft assemblies.

Ameridrives heavy-duty driveshaft assemblies are widely used throughout the industry to connect the gearbox and the piercing rolls. They are also used to drive elongator, sizer and straightner rolls. Electric motor power ranges are 2,000-10,000 horsepower (1490 – 7460 kW) operating at 20 to 1650 rpm. These heavy-duty driveshafts are excellent choices for piercing mill applications for a number of reasons:

- Driveshafts allow for larger misalignment angles than other types of couplings
- Axial travel section compensates for movement of the piercing rolls and variations within the installation
- Units provide high torque capacity versus rotational diameter
- Universal driveshafts are easier to maintain
- Units provide long service life 7-10 years (when properly selected)

### **Ameridrives manufactures and repairs U-Joints in diameters from 350mm to 1300mm**

**Ameridrives is the only manufacturer/repair  
source located in the US for 800mm to 1300mm  
U-Joints used in piercing mill applications**

*Save time and money... buy, rebuild, and repair locally*

Ameridrives is positioned to provide customers in North, Central, and South America with responsive delivery and service. Our ability to service, repair, and rebuild universal joints manufactured by all overseas competitors significantly reduces turnaround times and shipping costs.

### **Additional Ameridrives Advantages**

- Proven designs and decades of experience in heavy steel tube piercing mill applications
- High torque capacity
- High operating angle capacity
- One piece yoke eliminates the number of extra bolted connections and serrations to wear and maintain
- Heat treated alloy steel components
- Nitrided splined travel sections available upon request for improved durability
- Ideal loading across entire bearing surface as a result of FEA analysis insuring balanced deflection between the yoke and cross
- Modular bearing assemblies with inner races allows for repeated reuse of the cross body saving on repair costs (sizes 3440 and greater)

*See page 6 for more information about the  
Ameridrives Rebuild Service Department.*

# Seamless Tube Piercing Mills

## Elongation Mills

Ameridrives universal joints and Nuttall gearboxes are utilized to drive multiple rollers positioned on in-line powered roll stands that stretch the pipe to the desired diameter and wall thickness. Bauer geared motors are also used on these mills.

**Ameridrives** Americardan 3000 & 5000 series universal joints, Amerigear® couplings, and overload devices

**Bibby Turboflex** Modular torque limiters

**Nuttall Gear** Speed reducers

**Bauer Gear Motor** BG series helical geared motors

**Stromag** Couplings

## Billet Mills

Ameridrives universal joints are known throughout the industry for their reliable performance in the metals industry including billet mill drive applications. Bauer geared motors along with Amerigear and Stromag couplings are utilized on the mill's roller conveyors. Heavy-duty Wichita clutches and Nuttall reducers are also often installed

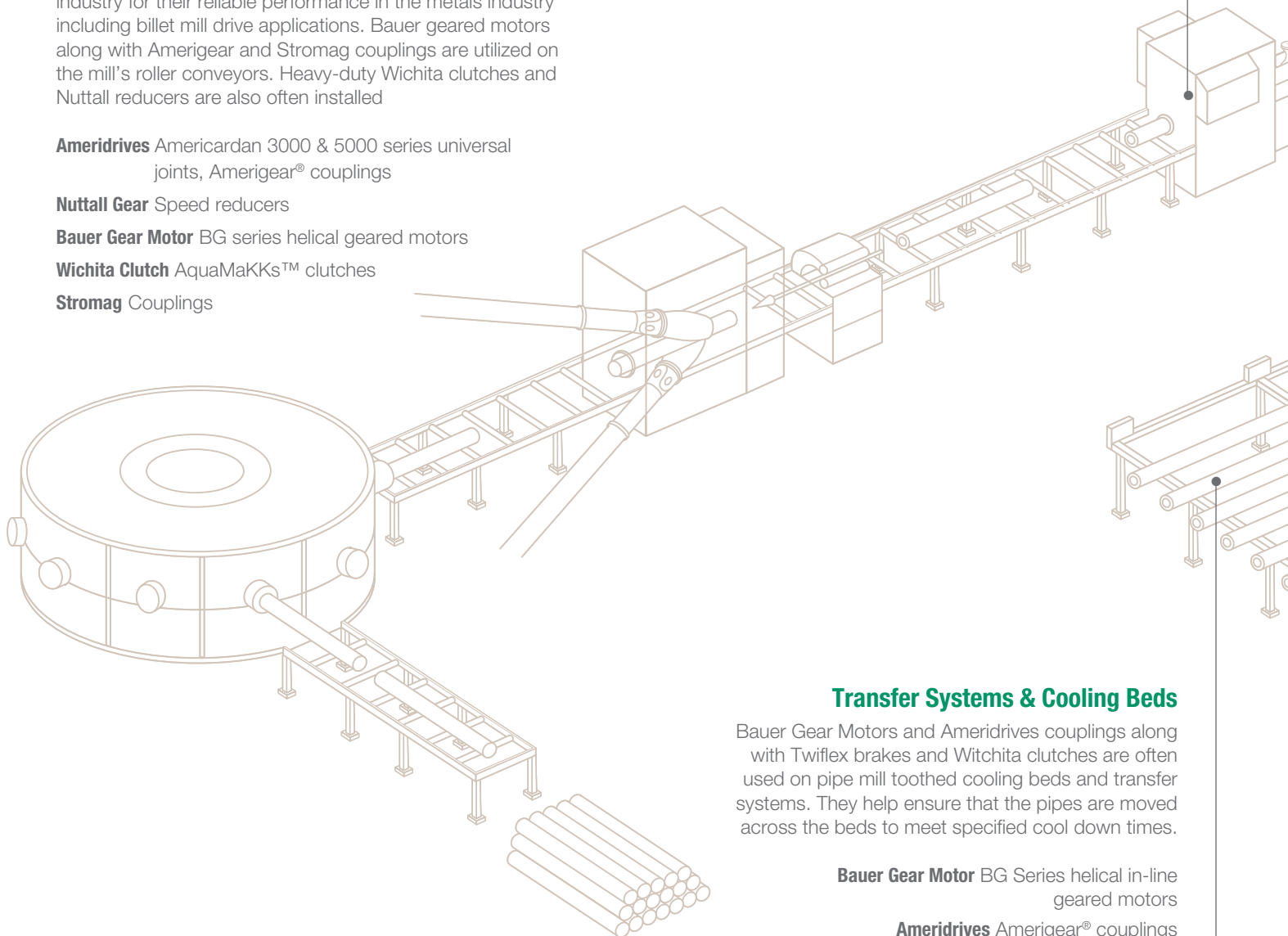
**Ameridrives** Americardan 3000 & 5000 series universal joints, Amerigear® couplings

**Nuttall Gear** Speed reducers

**Bauer Gear Motor** BG series helical geared motors

**Wichita Clutch** AquaMaKKs™ clutches

**Stromag** Couplings



## Transfer Systems & Cooling Beds

Bauer Gear Motors and Ameridrives couplings along with Twiflex brakes and Wichita clutches are often used on pipe mill toothed cooling beds and transfer systems. They help ensure that the pipes are moved across the beds to meet specified cool down times.

**Bauer Gear Motor** BG Series helical in-line geared motors

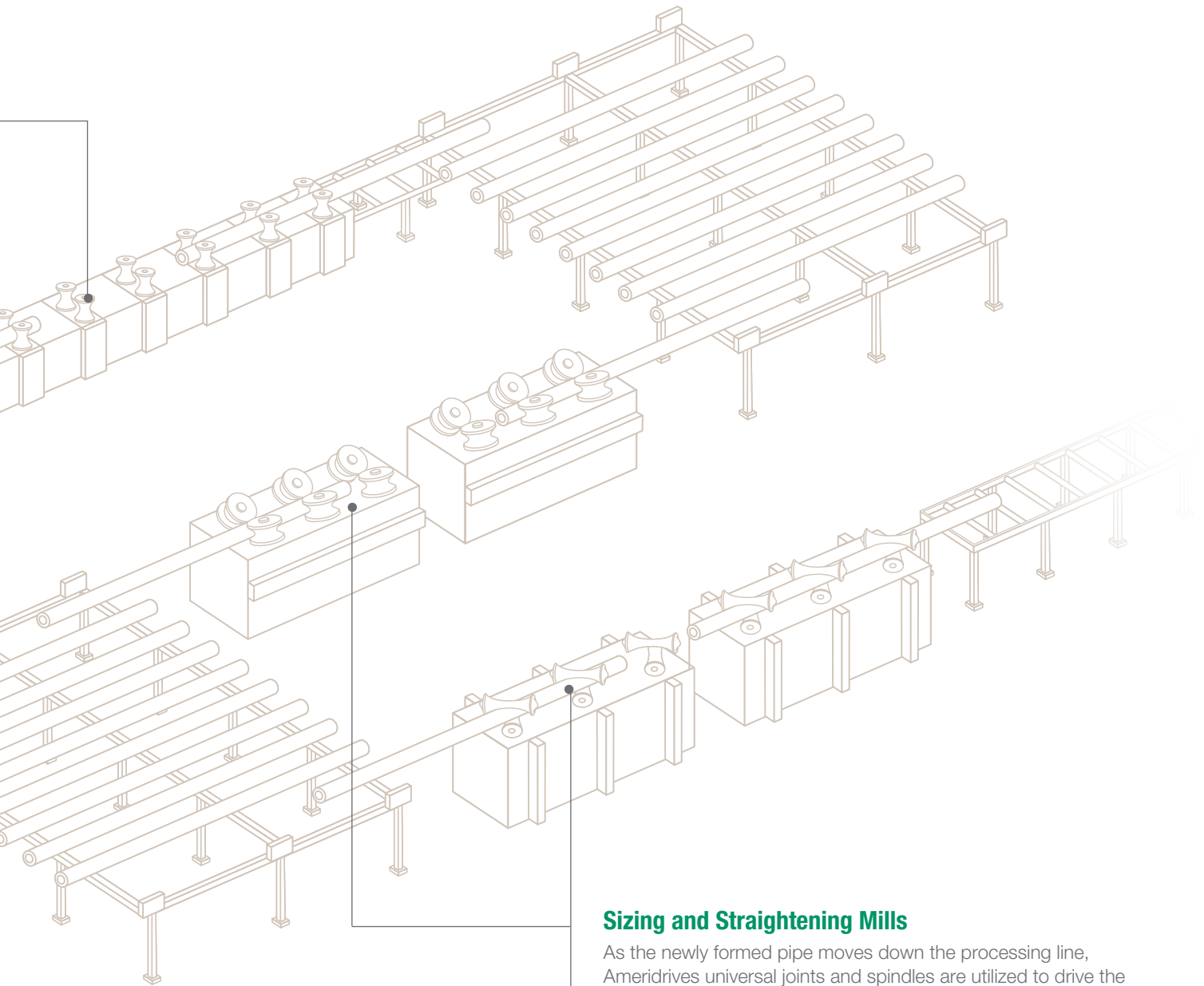
**Ameridrives** Amerigear® couplings

**Twiflex** MX pneumatic caliper disc brakes

**Bibby Turboflex** Bibbigard torque limiters

**Wichita Clutch** AquaMaKKs™ clutches and brakes

**Stromag** Couplings



### Sizing and Straightening Mills

As the newly formed pipe moves down the processing line, Ameridrives universal joints and spindles are utilized to drive the series of paired sizing and straightening rolls which establish the tube's precise OD and correct any shape irregularities. Bibby torque limiters and gear couplings are also utilized on these mills.

**Ameridrives** Americardan 3000 & 5000 series universal joints, Amerigear® couplings and spindles

**Bibby Turboflex** Modular torque limiters



## Universal Joints

### Ameridrives

#### Americardan 3000 & 5000 Series

Designed for operation at high misalignment angles up to 15°. Bearing and seal design resists lubrication loss and contamination. Ideal for use in severe atmospheric conditions. Superior materials and tight tolerances have proven to reduce vibration levels.

3000 Series are rated for high misalignment angles and are available in catalog sizes from 55 mm to 860 mm swing diameters and peak torque capacities up to 3153 kNm. Higher torque, custom designs are available in excess of 1000 mm swing diameter. Sizes 3440 and larger incorporate a unique inner race design within the bearing package to reduce routine repair costs by approximately 50%.

5000 Series are high torque designs ideal for applications with diameter restrictions. Catalog sizes range from 225 mm to 860 mm swing diameters and peak torque capacities up to 5647 kNm. Higher torque, custom designs are available in excess of 1200 mm swing diameter.

- One-piece yoke delivers a high degree of strength with minimum distortion under load.
- One-piece bearing housing reduces the number of bolted connections improving reliability.
- Zero clearance bearing housing retention provides extended service life.
- Multiple rows of precision roller bearings reduce bearing end loading extending service life.



*Ameridrives universal joints installed at a Tianjin Pipe Corporation (TPCO) facility in China.*

#### **FT Models with telescoping shafts are a popular choice for piercing mill applications**

The Ameridrives FT design universal joints feature a telescoping shaft that provides installation flexibility to mill operators. These keyless units are easy to remove and separate. The FT design is available on selected 3000 Series and all 5000 Series models.



### Universal Joint Selection

Selection of the heavy-duty cardan shaft is done with consideration of multiple application specifics and customer requirements. B10 life is defined as the minimum bearing life expectancy for 90% probability of survival. Precision machining and superior grades of steel typically extend the average actual operating life of the bearings by five times the calculated B10 life.

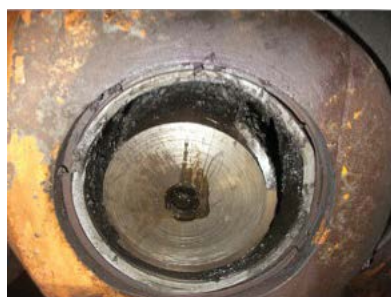
The second key part in proper shaft selection is assuring that the shaft does not see a sudden failure from normal torque loads and/or excessive shock loads. A review of the normal torque expected, adjusted by the proper service factors, assures shaft integrity through the bearing lifespan and beyond.

One final aspect of selection is the potential for torsional vibration as a result of system harmonics. System data from the application should be analyzed to ensure that the system's natural frequency does not coincide with the rotational speed of the universal joint.

#### **Fast product availability combined with comprehensive engineering support**

Ameridrives components are manufactured in the US which allows us to offer quick service on complete assemblies and spare parts. Ameridrives application engineers can work directly with your engineering and design personnel to develop a final design that can be supplied usually within standard lead times. When retrofitting or replacement of existing drivelines is required, complete design control allows Ameridrives to offer other major manufacturers connection types to ensure interchangeability.

## Rebuild Service



***The difference is not just cosmetic.***



### REMANUFACTURED UNIVERSAL JOINTS LOOK LIKE NEW, WARRANTIED LIKE NEW.

- *Rebuilt universal joints expedited within 2 weeks*
- *Complete universal joint rebuilds in 6-8 weeks*  
(Standard bearing assembly or cross and bearing replacement)

Ameridrives Rebuild Service Department can refurbish your universal joints. We take your worn, scaled, seized, scored, or rough running U-joints and make them like new...for substantially less than the replacement cost.

As a major manufacturer of universal joints, we have the people, facilities, and experience to rebuild and replace all components as needed. The same standards of excellence that exist in the manufacture of original equipment U-joints are closely adhered to in the overhaul procedure of every rebuilt universal joint.

The Rebuild Service Department will inspect, refurbish or replace your universal joint to original specifications with a new warranty.



U3055 - U3390 / U5225 - U5800

U3440 - U3800

### Consider these advantages:

- Price – A savings of approximately 30% (compared to list price for a new unit)
- Speed – Universal joints are received, inspected and rebuilt in the shortest possible time frame
- Warranty – 1 Year on labor and materials, same as new universal joints
- Emergency Breakdown Program – All products that are expedited into the Ameridrives plant are processed immediately and, in many cases, are able to be rebuilt within a 24-hour period.

Contact your Altra representative for details  
on our cost-saving program.

## Overload Devices

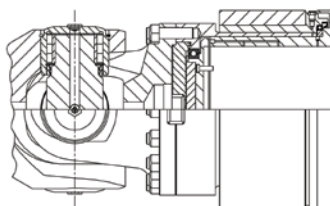
Bibby Turboflex and Ameridrives overload devices are preset to release at a specified torque value in order to protect drive systems from expensive damage and lost production. Units have been successfully utilized in a wide variety of different industries where, subject to space availability, the release torque capacity is virtually unlimited. Altra overload devices can save you money – their initial cost is frequently more than covered by the saving in downtime... even on the first overload.



### **Bibby Turboflex** **Torque Limiters**

Torque limiters from Bibby Turboflex provide economical overload protection on all types of piercing mills.

- Accurate release torque repeatability
- Simple, fast manual re-engagement, no replacement parts required
- Low-cost maintenance
- Versatile mounting capability



### **Ameridrives** **SafeSet Device**

SafeSet Torque-limiting Safety Coupling features a hollow steel sleeve which is expanded by oil under pressure producing a friction connection between a shaft and a hub. At overload the coupling instantaneously releases the oil pressure and interrupts the drive.

- Fast reset; no replacement parts required
- Fully adjustable release torque
- Selected release torque remains constant
- Back-lash free power transmission
- Compact, low weight design
- Low moment of inertia

## Gearing



### **Bauer Gear Motor** **BG Series Helical Geared Motor**

Power-dense, helical geared motors ensure the highest reliability. An inverter friendly design provides for easy integration now and a truly future proof solution.

- Torque range from 20 to 18,500 Nm
- Output Speeds 0.3 ... 450 min<sup>-1</sup>
- Completely enclosed, sealed against dust and water spray



### **Nuttall Gear** **Custom Parallel Shaft Speed Reducers**

- Torque ratings up to 6,000,000 in.lbs.
- Gear ratios up to 1500:1
- Incorporate precise gearing in single, double, triple, quadruple and quintuple reductions
- Custom fabricated steel housings or specialized housing materials
- Right angle, vertical shaft and hollow shaft configurations
- Custom ratios and torque ratings
- Special seals, bearings, custom shafting
- Couplings and auxiliary products
- Lube systems, cooling systems and heating systems
- Monitoring systems and sensors for vibration, temperature and oil analysis and other condition monitoring



## Brakes & Clutches



### **Stromag** **Multi-Disc Clutches KMK**

Hydraulically actuated Multi-Disc Clutches KMK operate with the medium oil and so can transmit higher torques than magnetic clutches in the same mounting space.

- Torque 120-60,000 Nm (higher on request)
- Wet or dry running possible with suitable friction disc combination



### **Twiflex** **MXEA Electric Caliper Brakes**

The EA actuator is a spring applied, electrically released unit designed for use with the Twiflex MX range of disc brake calipers.

- 6 kN Braking Force
- Reliable, easy maintenance



### **Wichita Clutch** **AquaMakks Clutches**

AquaMaKKs water cooled clutches and brakes are designed to provide accurate torque control for heavy-duty applications.

- Durable air tube design
- Long-lasting friction material with minimal wear on mating copper

## Couplings



### **Ameridrives** **Amerigear Mill Spindles**

SL Series (Leveler type) and SF Series (Flange type) spindles are designed for medium torque mill applications and auxiliary equipment where high misalignment capacity is required and where equipment must be disconnected quickly and/or frequently.

Typical applications include drives for auxiliary equipment such as levelers, uncoilers, side trimmers, tension, runout tables, pinch rolls, brush rolls, bridles, flatteners, and scale breakers. SL Spindles can also be used on applications where shaft center-to-center spacing is minimal and where diameters are limited.

- Torque capacity up to 564 kNm; 5,000,000 in.lbs.
- Units can operate at high misalignment angles
- Fully crowned hub gear teeth
- One-piece, molded lip-type seals
- Advanced gear design increases torque capacity for a given diameter



### **Ameridrives** **Amerigear Gear Couplings**

Fully-crowned gear teeth provide operational benefits including maximum load-carrying capacity with minimum size, maximum reliability and long life.

- Both "O" ring and metal seal models are available
- Strong, rigid floating sleeve
- Precision-machined identical hubs
- Positive dust-tight seals
- Conforms to AGMA standards
- 3/4° to 1-1/2° operating angle

# Product Solutions

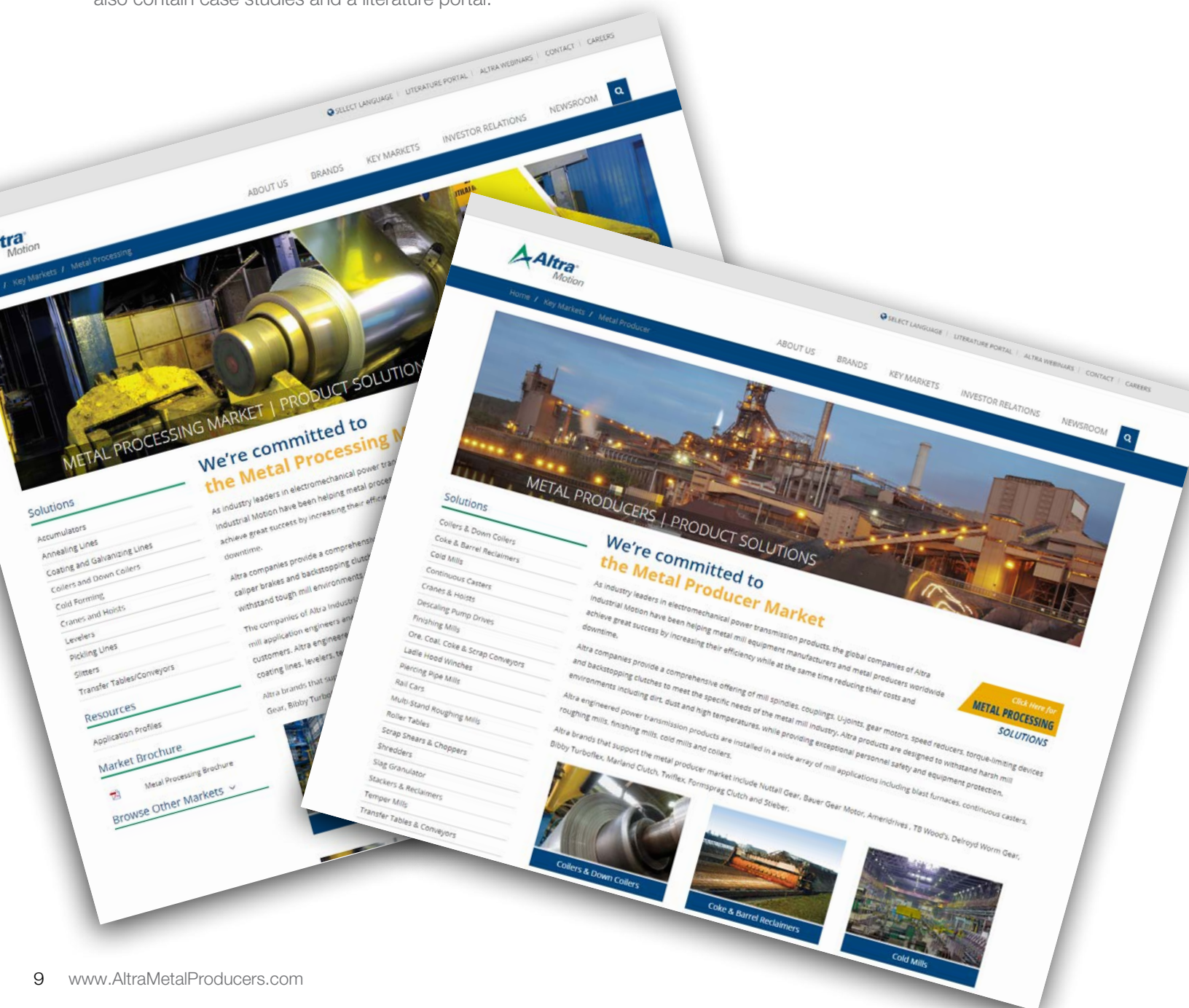
CHECK OUT

[www.AltraMetalProducers.com](http://www.AltraMetalProducers.com) and [www.AltraMetalProcessing.com](http://www.AltraMetalProcessing.com)

The websites offer the global metals industries convenient, 24-hour access to the Altra brands, products and applications critical to virtually every operation in metal mills and metal processing facilities.

The websites are organized by application categories ranging from continuous casters and hot roughing mills to cold mills and pickling, coating and annealing lines.

Within these categories are the features and benefits of each Altra product solution that can be applied to improve efficiency, productivity and safety in the metal mill or processing operation. Each product contains a web link to one of the 11 Altra brands that support the Metals industry where engineers can access detailed product specifications. The websites also contain case studies and a literature portal.



## ALTRA MARKET WEBSITES

See how the brands of Altra Motion are dedicated to providing better ways to solve power transmission applications.

### Forklifts

[www.AltraForklifts.com](http://www.AltraForklifts.com)

Request P-8634-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Turf and Garden

[www.AltraTurfandGarden.com](http://www.AltraTurfandGarden.com)

Request P-1698-WE at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Mobile Off-Highway

[www.AltraMobileOffHighway.com](http://www.AltraMobileOffHighway.com)

Request Literature at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Oil and Gas

[www.AltraOilandGas.com](http://www.AltraOilandGas.com)

Request P-8453-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Mining and Aggregate

[www.AltraMining.com](http://www.AltraMining.com)

Request P-1763-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Aerospace and Defense

[www.Altra-Aerospace-Defense.com](http://www.Altra-Aerospace-Defense.com)

Request P-1717-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Wind

[www.AltraWind.com](http://www.AltraWind.com)

Request P-1960-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Food and Beverage

[www.AltraFoodandBeverage.com](http://www.AltraFoodandBeverage.com)

Request P-7665-BBG at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Tidal

[www.AltraTidal.com](http://www.AltraTidal.com)

Request P-7013-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Elevators

[www.AltraElevators.com](http://www.AltraElevators.com)

Request P-1733-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Packaging Machinery

[www.Altra-Packaging.com](http://www.Altra-Packaging.com)

Request Literature at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)



### Energy

[www.AltraEnergyOilandGas.com](http://www.AltraEnergyOilandGas.com)

Request P-1908-C at  
[www.AltraLiterature.com](http://www.AltraLiterature.com)





## A Global Footprint to Support Customers Around the World

★ Altra Headquarters

● Altra Engineering & Service Centers

● Altra Manufacturing Facilities

## The Brands of Altra 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

### Linear Systems

**Thomson**  
www.thomsonlinear.com

### Geared Cam Limit Switches

**Stromag**  
www.stromag.com

### Engineered Bearing Assemblies

**Kilian**  
www.kilianbearings.com

### Electric Clutches & Brakes

**Matrix**  
www.matrix-international.com

**Stromag**  
www.stromag.com

**Warner Electric**  
www.warnerelectric.com

### Belted Drives

**TB Wood's**  
www.tbwoods.com

### Heavy Duty Clutches & Brakes

**Twiflex**  
www.twiflex.com

**Stromag**  
www.stromag.com

**Svendborg Brakes**  
www.svendborg-brakes.com

**Wichita Clutch**  
www.wichitaclutch.com

### Gearing & Specialty Components

**Bauer Gear Motor**  
www.bauergears.com

**Boston Gear**  
www.bostongear.com

**Delevan**  
www.delevan.com

**Delroyd Worm Gear**  
www.delroyd.com

**Nuttall Gear**  
www.nuttallgear.com

### Engine Braking Systems

**Jacobs Vehicle Systems**  
www.jacobsvehiclesystems.com

### Precision Motors & Automation

**Kollmorgen**  
www.kollmorgen.com

### Miniature Motors

**Portescap**  
www.portescap.com

### Overrunning Clutches

**Formsprag Clutch**  
www.formsprag.com

**Marland Clutch**  
www.marland.com

**Stieber**  
www.stieberclutch.com



www.altramotion.com

P-8479-C 7/20