

Ameridrives

Bauer Gear Motor

Bibby Turboflex

Delroyd Worm Gear

Formsprag Clutch

Marland Clutch

Nuttall Gear

Stieber

Stromag

TB Wood's

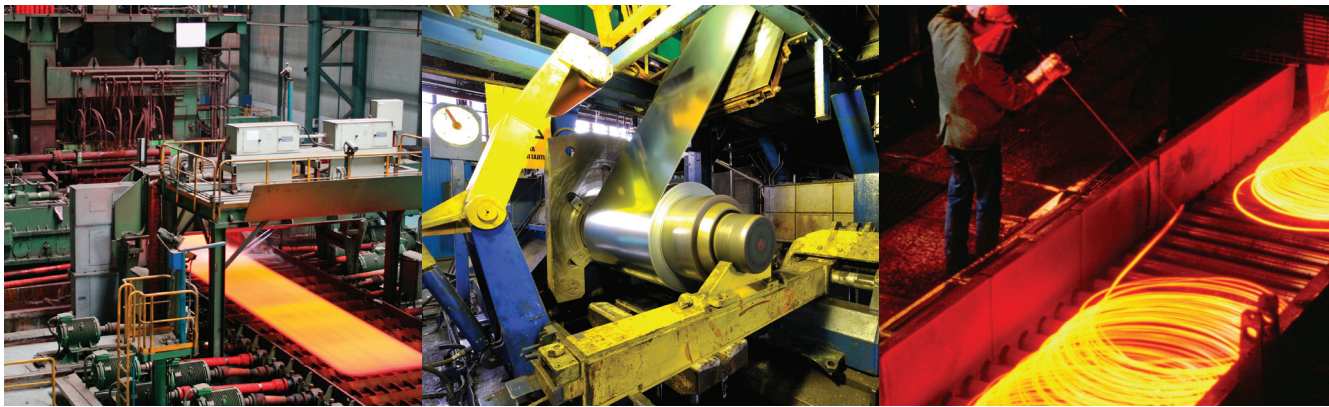
Twiflex

Power Transmission Solutions for the Metal Producers Market



ALTRA INDUSTRIAL MOTION PROVIDES POWER TRANSMISSION SOLUTIONS FOR METAL PRODUCERS

As industry leaders in electromechanical power transmission products, the companies of Altra Industrial Motion have been helping metal mill equipment manufacturers and metal producers worldwide achieve great success by increasing their efficiency while at the same time reducing their costs and downtime. Altra engineered power transmission products are installed in a wide array of mill applications including blast furnaces, continuous casters, roughing mills, finishing mills, cold mills and coilers.



Altra companies provide a comprehensive offering of mill spindles, couplings, U-joints, gear motors, speed reducers, brakes, torque-limiting devices and backstopping clutches to meet the specific needs of the metal mill industry. Altra products are designed to withstand harsh mill environments including dirt, dust and high temperatures, while providing exceptional personnel safety and equipment protection.

The companies of Altra Industrial Motion offer advanced technologies together with unparalleled engineering capability. Our experienced mill application engineers analyze every application challenge in order to provide the optimal power transmission solutions for our customers.

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

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

www.AltraMetalProducers.com

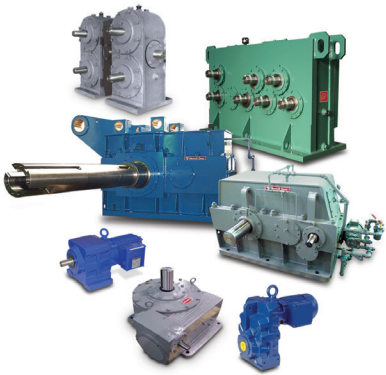
ALTRA OFFERS A FULL DRIVETRAIN SOLUTION TO KEEP METAL MILLS RUNNING EFFICIENTLY... WORLDWIDE.



Couplings and Shaft Locking Devices

Slab and strip quality and thickness control can be influenced by the performance of a mill's universal joints and mill drive gear spindles. Major mills rely on Altra's innovative mill spindle advanced gearing technology and operating efficiency to keep their mills running smoothly. Altra U-joints feature swing diameters up to 1200 mm to provide exceptional endurance and reduced vibration on metal shredders, continuous casters and roughing, finishing, cold and pipe mills worldwide. Durable shaft locking devices and gear couplings are used on a variety of mill equipment. Altra elastomeric couplings are often found on roller table applications due to their superior environmental performance. Stromag Top Torque Shaft Couplings have a longer lifetime, higher torque and higher speeds than competitors in the metals industry.

Ameridrives • Bibby Turboflex • Stromag • TB Wood's



Gear Motors and Enclosed Gearing

As the leading innovator of worm and helical gear technologies, Altra continues to improve product performance by developing features, designs and custom-engineered solutions to meet the demands of the metal mills market. Altra offers a full range of geared motor solutions for various applications throughout metal mills including a model specifically designed for use on roller tables. Altra custom-designed speed reducers and gear motors are built for rugged duty on all types of mill stands, recoilers, straighteners, levelers, flatteners, slitters, shears and scrap choppers.

Bauer Gear Motor • Delroyd Worm Gear • Nuttall Gear



Clutches and Brakes

Twiflex caliper brakes are typically found on cranes and hoists, processing lines, coke barrel reclaimers, and various rail car applications. Altra backstops and CECON overrunning clutches are utilized to prevent backward rotation during power-off situations on iron ore, coal coke and scrap conveyors. Heavy-duty water-cooled brakes from Wichita are designed for continuous slip tension applications such as coilers and recoilers, and their clutches are frequently used on presses and shear drives. Stromag fail-safe brakes offer reliability, long life and safe operation while enabling a simple and fast setting of the braking force.

Formsprag Clutch • Marland Clutch • Stromag • Twiflex • Wichita Clutch



Belted Drives and Torque Limiters

Rugged TB Wood's sheaves and V-belts are utilized on certain types of large metal shredders as well as cranes and conveyors. TB Wood's also provides unmatched made-to-order capabilities accommodating special drive requirements. TB Wood's variable speed sheaves incorporate a proven lubrication system that eliminates fretting, corrosion, freezing, and sticking. Exclusive cam followers exert side wall pressure on the belt in proportion to the torque required to carry the load. Bibby Torque Limiters, with up to 95% torque setting accuracy, are also found in many metals applications including divide shears, torque limiter with brake discs, plate turnover devices, crop shear drives, mill drive shears, tube mill drives and high speed rod mill drives.

Bibby Turboflex • TB Wood's

Ovens & Furnaces



Iron Ore, Coal, Coke and Scrap Conveyors

Marland backstops and CECON clutches are found on horizontal and incline conveyors that feed coal to coke ovens and iron ore and coke to blast furnaces. Backstops are also utilized on conveyors that feed metal scrap from shredders to electric arc furnaces.

Marland Clutch BCMA backstops and CECON clutches

Nuttall Gear Helical speed reducers

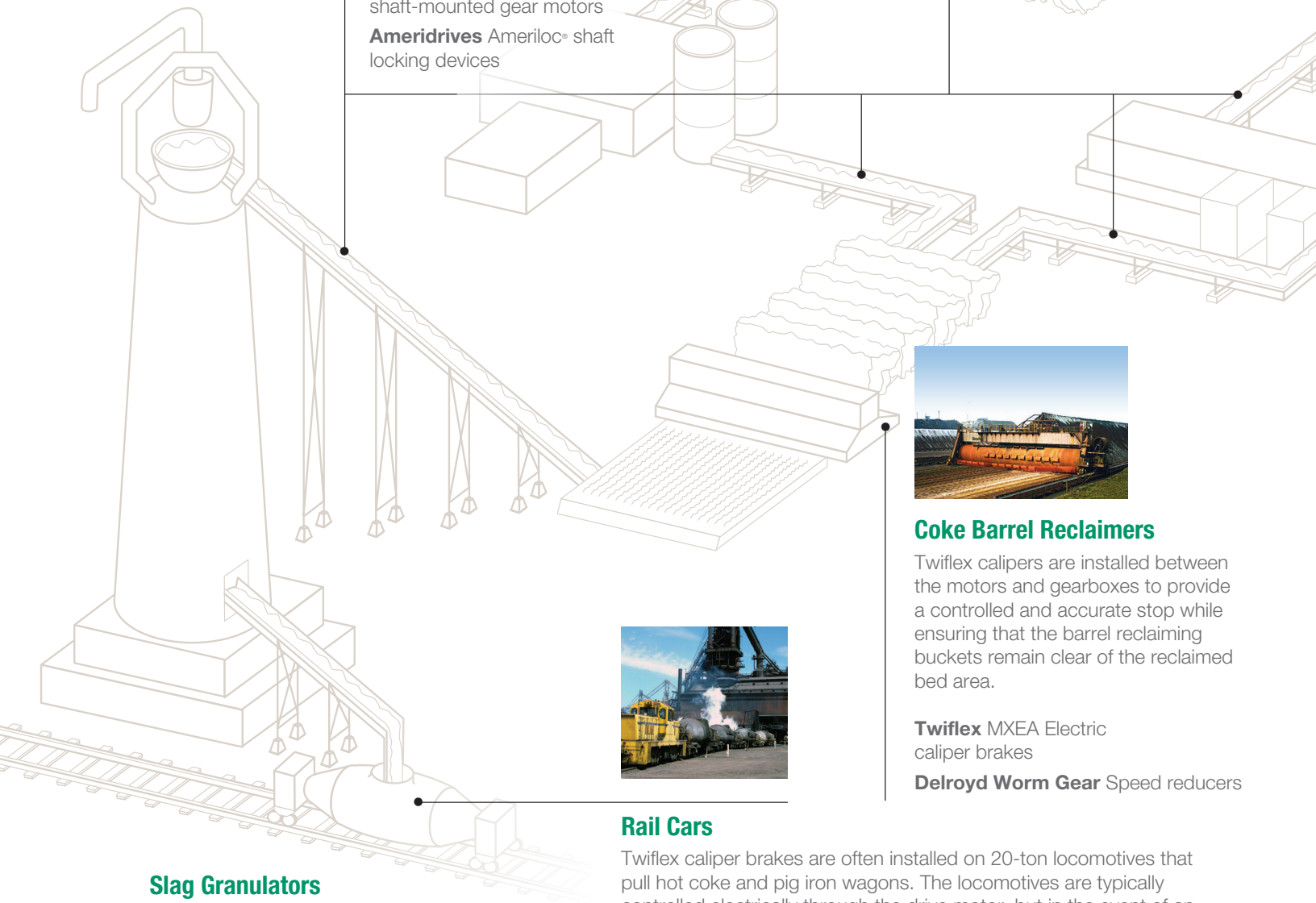
Ameridrives Amerigear® couplings (AGMA)

Bibby Turboflex Series III couplings and modular torque limiters

Bauer Gear Motor BF Series shaft-mounted gear motors

Ameridrives Ameriloc® shaft locking devices

Stromag Thruster drum and disc brakes, flexible couplings



Slag Granulators

Custom-designed, heavy-duty Nuttall Gear reducers are often installed on slag granulator system creep drives.

Nuttall Gear Slag granulator drives



Rail Cars

Twiflex caliper brakes are often installed on 20-ton locomotives that pull hot coke and pig iron wagons. The locomotives are typically controlled electrically through the drive motor, but in the event of an emergency or power failure, the brake calipers are applied to safely stop the wagon.

Twiflex Hydraulic brake calipers

Nuttall Gear Helical speed reducers

Delroyd Worm Gear Speed reducers

Ameridrives Americardan 5000 & 3000 universal joints

Bauer Gear Motor BF Series shaft-mounted gear motors and BG Series helical in-line gear motors



Coke Barrel Reclaimers

Twiflex calipers are installed between the motors and gearboxes to provide a controlled and accurate stop while ensuring that the barrel reclaiming buckets remain clear of the reclaimed bed area.

Twiflex MXEA Electric caliper brakes

Delroyd Worm Gear Speed reducers

Shredders, Shears and Choppers



Shredders

Ameridrives provides state-of-the-art universal joint technologies including innovative torque overload designs and integrated shaft locking devices used on rotary metal shredder applications. TB Wood's V-belts and sheaves combined with Wichita clutches featuring high energy, high temperature friction linings are often found on natural gas powered shredders.

Ameridrives Americardan 5000 & 3000 Series universal joints

Wichita Clutch Standard vent clutch

TB Wood's Classical & narrow V-belt sheaves, QT Power Chain® II belt drive system

Ameridrives Amerigear® couplings (AGMA)

Stromag 2-in-1 Clutch/Coupling combinations

Bibby Turboflex Series III couplings and modular torque limiters

Ameridrives Ameriloc® shaft locking devices



Stackers/Reclaimers

Demanding applications like stacker/reclaimers require highly reliable brakes, high torque couplings and U-joints, torque limiters, and specialized enclosed gearing solutions. The bucket wheel is driven by an electric motor connected to a helical gear reducer via a high speed coupling. Large cooling fan system drives utilize enclosed helical gearing. Formsprag backstops are included to prevent reverse rotation of conveyors.

Ameridrives Amerigear® couplings (AGMA)

Delroyd Worm Gear Speed reducers

Formsprag Clutch LLH holdbacks

Marland Clutch BCMA holdbacks

Nuttall Gear Helical speed reducers

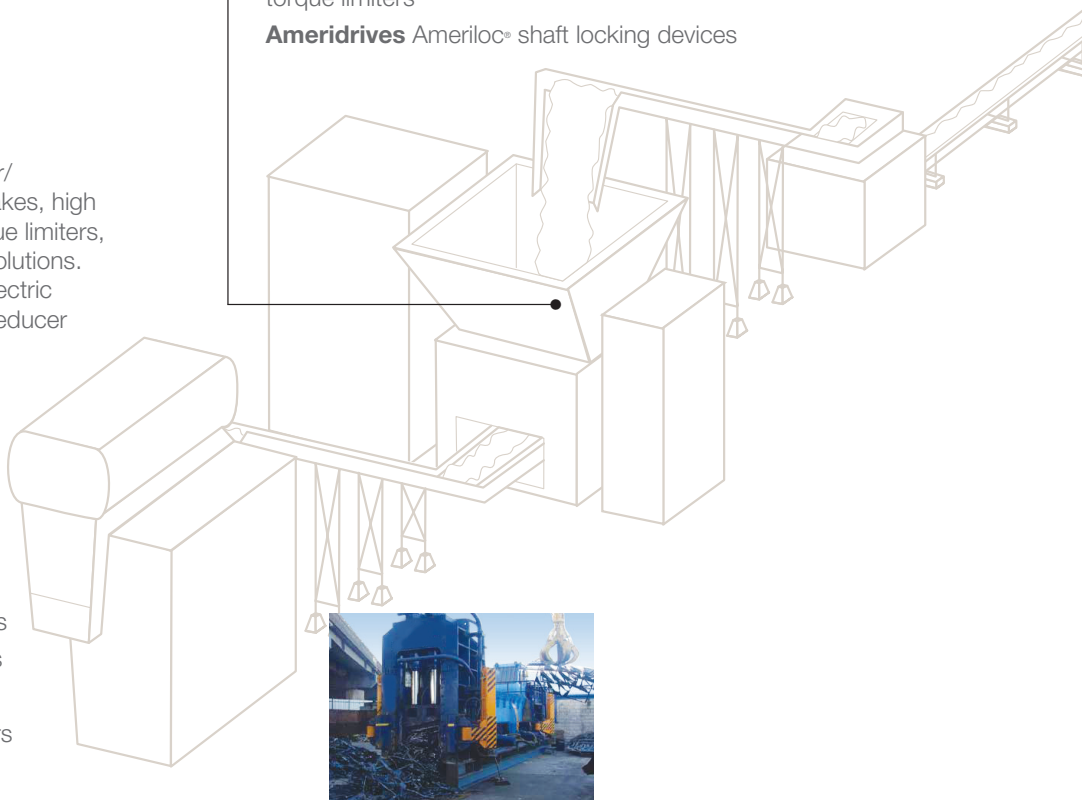
Twiflex GMR-SD spring applied, air released caliper brakes

Bauer Gear Motor BF Series shaft-mounted gear motors and BG Series helical in-line gear motors

TB Wood's G-Flex grid couplings

Industrial Clutch LKB spring set, air released brakes

Stromag Thruster drum and disc brakes



Scrap Shears and Choppers

Nuttall Gear provides reducers in engineered package assemblies specifically for use on scrap shears and chopper drives and conveyors.

Nuttall Gear "Zero" or "Limited" backlash drives and TDS/HPD parallel shaft and Moduline® concentric shaft reducers

Bibby Turboflex Series III couplings and modular torque limiters

Ameridrives Amerigear® couplings (AGMA)

Cranes, Hoists and Winches



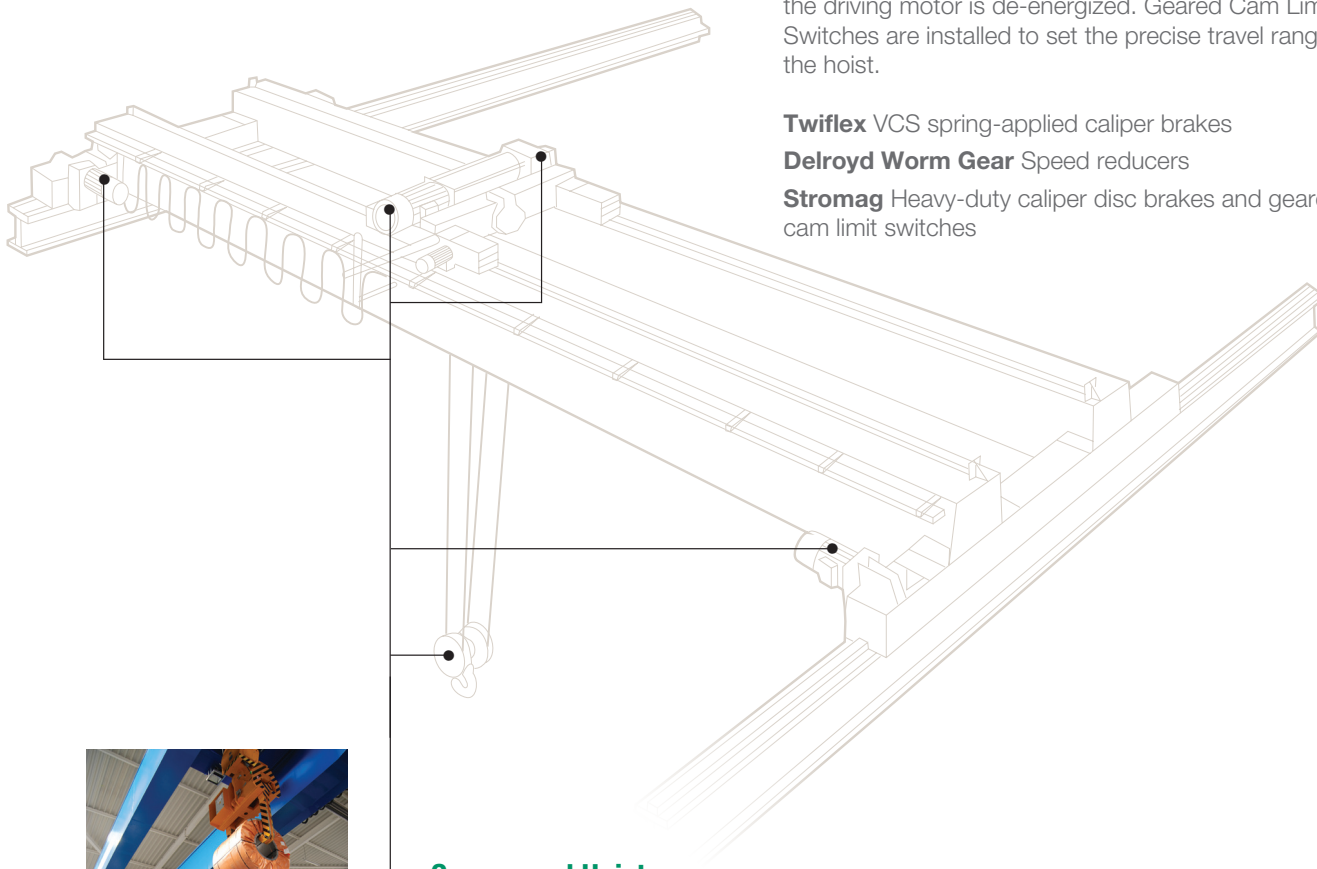
Ladle Hood Winches

Heavy-duty calipers, released by hydraulic pressure, are often utilized to provide control when raising and lowering ladle hoods. The units are installed on the winch barrel to primarily serve as emergency brakes. The calipers also lock and hold the winch drum when the driving motor is de-energized. Geared Cam Limit Switches are installed to set the precise travel range of the hoist.

Twiflex VCS spring-applied caliper brakes

Delroyd Worm Gear Speed reducers

Stromag Heavy-duty caliper disc brakes and geared cam limit switches



Cranes and Hoists

Bauer Gear Motors and Ameridrives Amerigear couplings are often used on overhead traveling bridge crane drives with torque capacity <18,500 Nm. Warner Electric ERD brakes are typically utilized for parking and emergency stopping on travel drives and holding on main hoist drives with torque capacity <10,000 Nm (7,325 ft.lbs.), 250-500 kW. Twiflex and Stromag brakes perform the same functions on overhead bridge cranes, including ladle hood winches, with capacity >10 tons. TB Wood's sheaves are used in upper and lower blocks. Stromag geared cam limit switches and hydraulic buffers are often installed on these cranes.

Bauer Gear Motor BF Series shaft-mounted gear motors

Ameridrives Amerigear® couplings (AGMA)

Bibby Turboflex Series III couplings

Twiflex Spring-applied Type VCS caliper brakes, MXEA Electric caliper brakes

Warner Electric ERD/ERDD VAR and ERD/ERDD Gen2 spring-operated, electromagnetically released brakes

Delroyd Worm Gear Speed reducers

TB Wood's V-belt sheaves

Ameridrives Americardan C Series wing bearing universal joints

Stromag Thruster drum and disc brakes, electromagnetic & hydraulic service and emergency brakes, brake disc with couplings, motor brakes, hydraulic buffers, geared cam limit switches

Continuous Casters

Ameridrives universal joints are known throughout the industry for their reliable performance in continuous caster applications. A new integral key or face pad design for the drive end of the universal joints provides a more secure connection which prevents shifting and premature wear on segment rollers and bearings. In continuous casters, the inclined conveyor that is providing the raw material must not stop once the process is started so usually a dual drive is used to power the conveyor to assure uninterrupted flow of material into the caster.

Formsprag and Marland overrunning clutches are used to connect the dual drives to the conveyor and Formsprag and Marland backstops are used to prevent the conveyor from running backwards when stopped.

Ameridrives Americardan 5000 & 3000 Series universal joints

Ameridrives Amerigear SF & SL Series mill spindles

Bauer Gear Motor BG Series helical geared motors and BF Series shaft-mounted geared motors

Delroyd Worm Gear Speed reducers

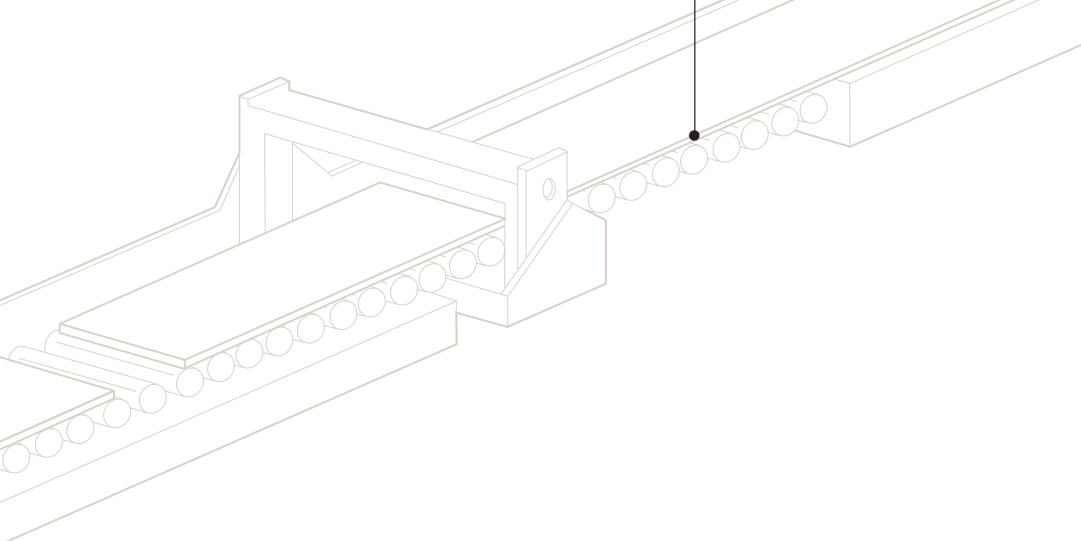
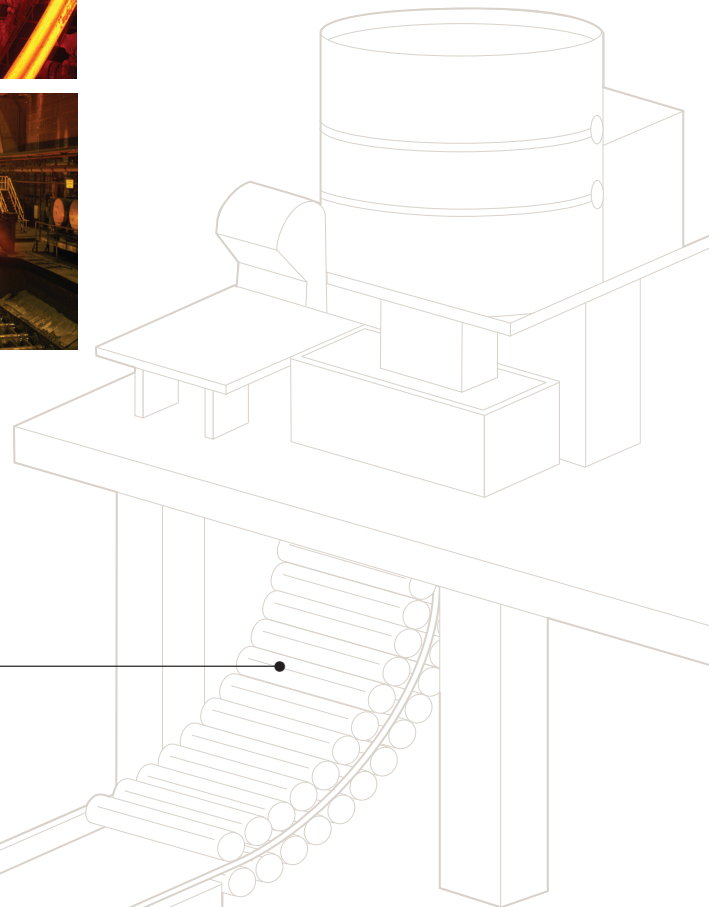
TB Wood's Dura-Flex® couplings

Marland Clutch BCMA holdbacks

Formsprag Clutch LLH holdbacks and overrunning clutches

Bibby Turboflex Modular torque limiters

Ameridrives Ameriloc® shaft locking devices

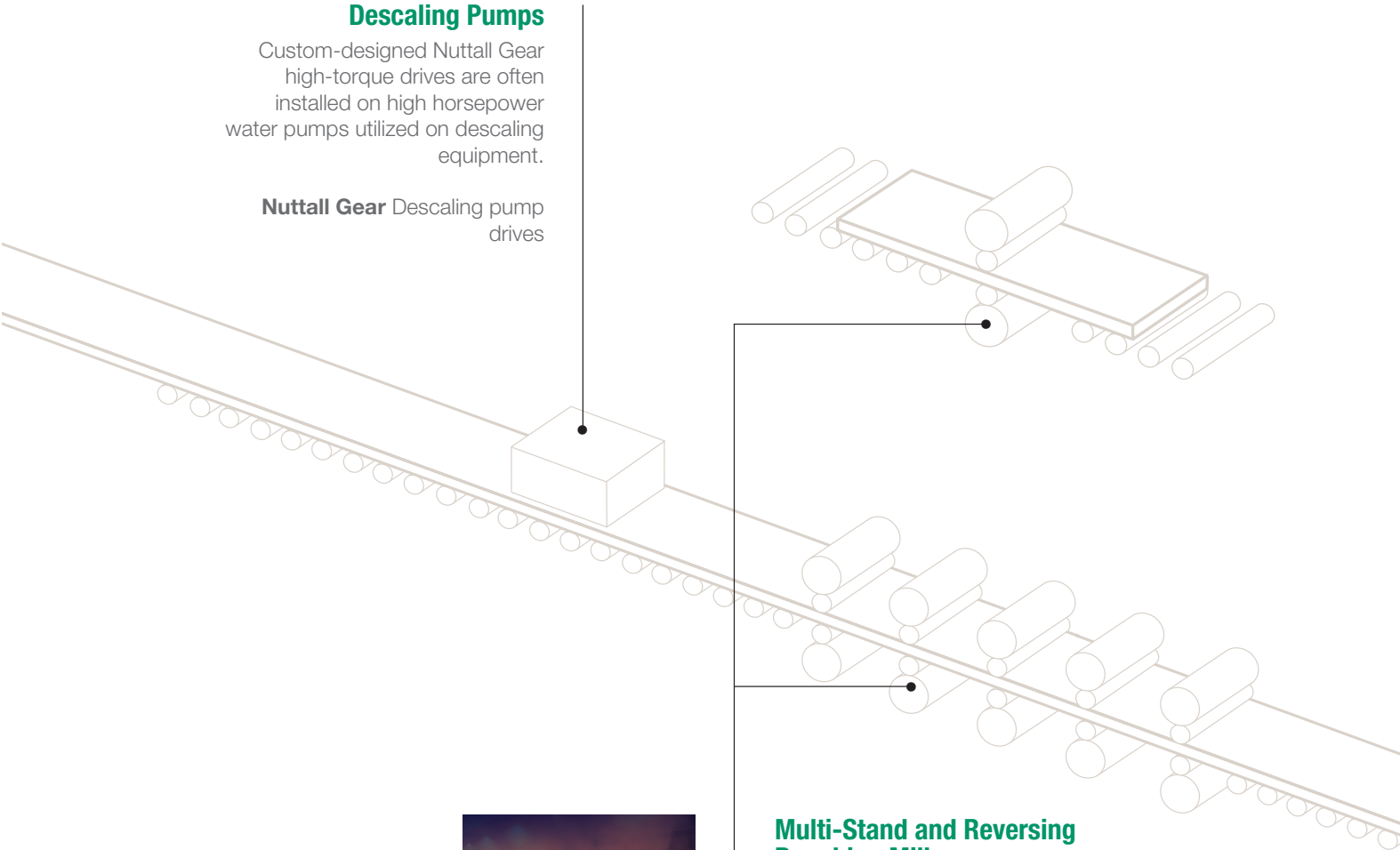


Hot Rolling Mills

Descaling Pumps

Custom-designed Nuttall Gear high-torque drives are often installed on high horsepower water pumps utilized on descaling equipment.

Nuttall Gear Descaling pump drives



Multi-Stand and Reversing Roughing Mills

High torque capacity Ameridrives SM Series mill spindles and robust Nuttall Gear pinion mill stand drives are designed to provide long-lasting service in tough mill environments. Ameridrives universal joints and Ameriloc shaft locking devices are also utilized.

Ameridrives Amerigear® couplings (AGMA) and Amerigear SM Series mill spindles

Ameridrives Americardan 5000 & 3000 Series universal joints

Nuttall Gear Pinion and twin pinion mill stand drives

Bibby Turboflex Series III couplings and modular torque limiters

Delroyd Worm Gear Mill stand screwdowns and adjustment drives

Ameridrives Ameriloc® shaft locking devices

Stromag Flexible Couplings

Roller Tables

Bauer offers a geared motor that is specifically designed for the heavy shock loads of mill roller table applications. The units feature grey cast iron gearbox and motor housings, a reinforced fan, high temperature seals, a heavy duty fan cover, and a motor design with circular fins as an option. TB Wood's Dura-Flex elastomeric couplings are often mounted between the drive motors and table rollers. The couplings provide superior fatigue resistance in tough steel mill environments. Mill tables often utilize two drives, one motor for production speeds and another for creeping speeds required for servicing. A CECON clutch provides a smooth transfer of power from one motor to the other without stopping the mill. These clutches are also used on mill cooling fan drives.

Bauer Gear Motor BF Series shaft-mounted gear motors

Nuttall Gear TDS/HPD parallel shaft and Moduline® concentric shaft reducers

Bibby Turboflex Series III couplings and modular torque limiters

Marland Clutch CECON clutches

TB Wood's Dura-Flex® couplings (AGMA)

Ameridrives Amerigear® couplings

Delroyd Worm Gear Speed reducer

Stromag Flexible Couplings



Finishing Mills

Ameridrives universal joints and Ameridrives SM Series mill spindles are designed for long-lasting performance in heavy-load, continuous-duty rolling mill applications. The spindles feature Ameridrives fully-crowned advanced gear tooth design. Units can accommodate high misalignment angles due to the constant change in material thickness, roll size and roll change requirements. Caliper brakes and pinion mill stand drives are also used.

Ameridrives Americardan 5000 & 3000 Series universal joints

Ameridrives Amerigear® couplings (AGMA) and Amerigear SM Series mill spindles

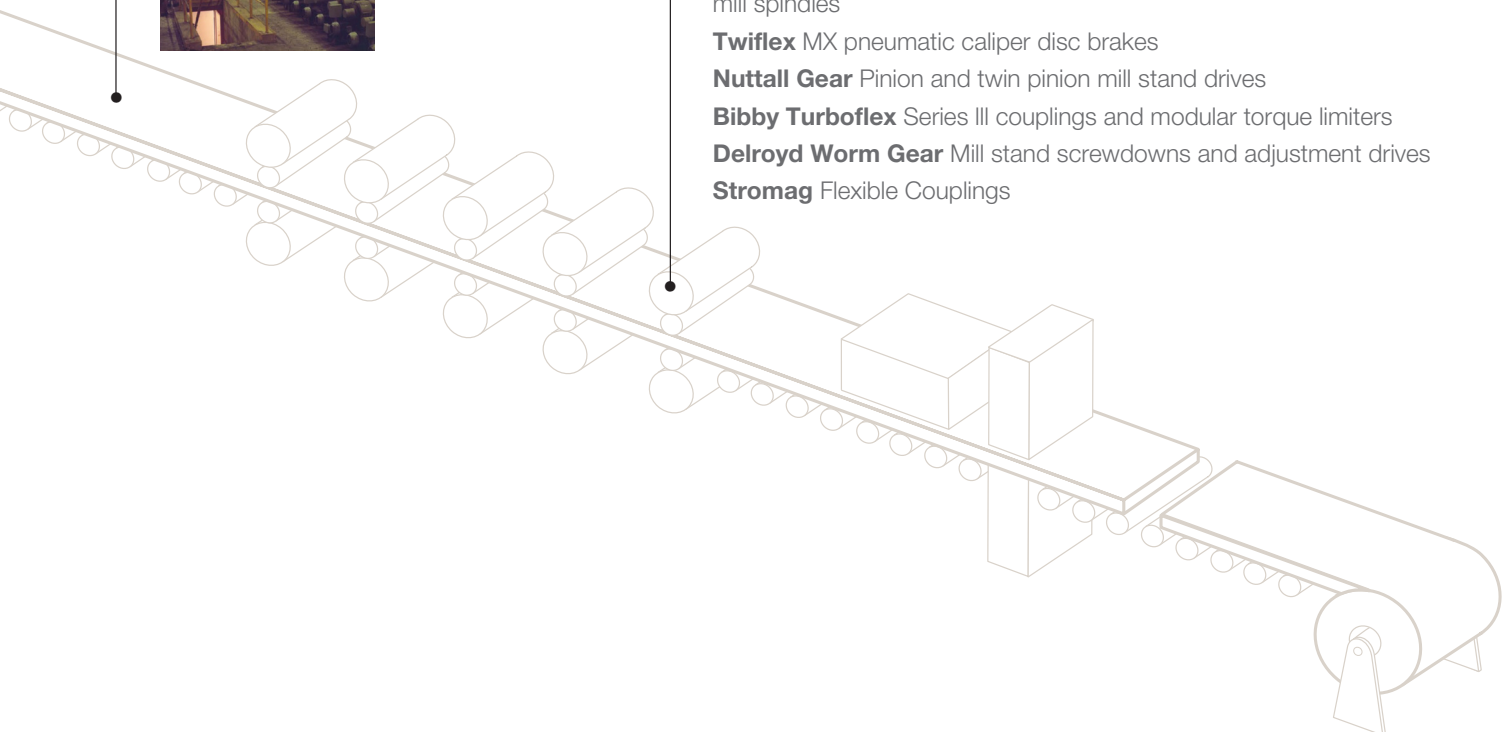
Twiflex MX pneumatic caliper disc brakes

Nuttall Gear Pinion and twin pinion mill stand drives

Bibby Turboflex Series III couplings and modular torque limiters

Delroyd Worm Gear Mill stand screwdowns and adjustment drives

Stromag Flexible Couplings





Multi-Stand Roughing Mills

High torque capacity Ameridrives SM Series mill spindles and robust Nuttall Gear pinion mill stand drives are designed to provide long-lasting service in tough mill environments. Ameridrives universal joints and Ameriloc shaft locking devices are also utilized.

Ameridrives Amerigear® couplings (AGMA) and SM Series mill spindles

Ameridrives Americardan 5000 & 3000 Series universal joints

Nuttall Gear Pinion and twin pinion mill stand drives

Bibby Turboflex Series III couplings and modular torque limiters

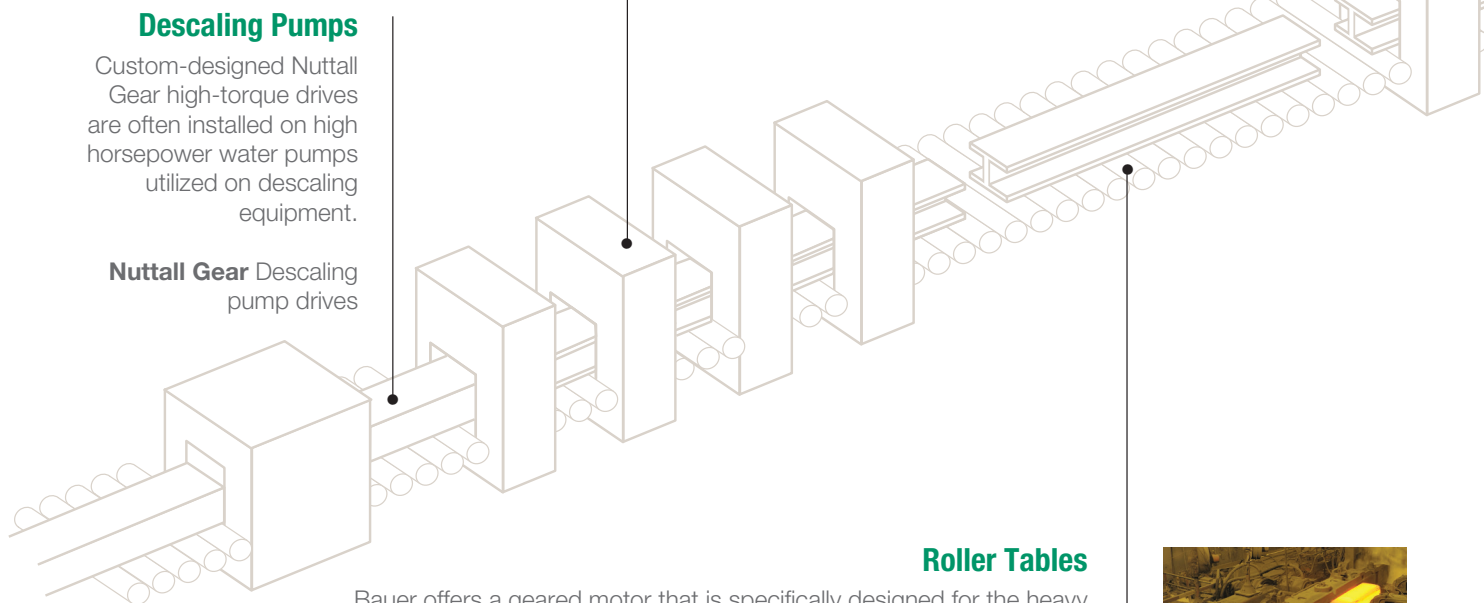
Delroyd Worm Gear Mill stand screwdowns and adjustment drives

Ameridrives Ameriloc® shaft locking devices

Descaling Pumps

Custom-designed Nuttall Gear high-torque drives are often installed on high horsepower water pumps utilized on descaling equipment.

Nuttall Gear Descaling pump drives



Roller Tables

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These clutches are also used on mill cooling fan drives.



Bauer Gear Motor BF Series shaft-mounted gear motors

TB Wood's Dura-Flex® couplings

Stromag Flexible Couplings

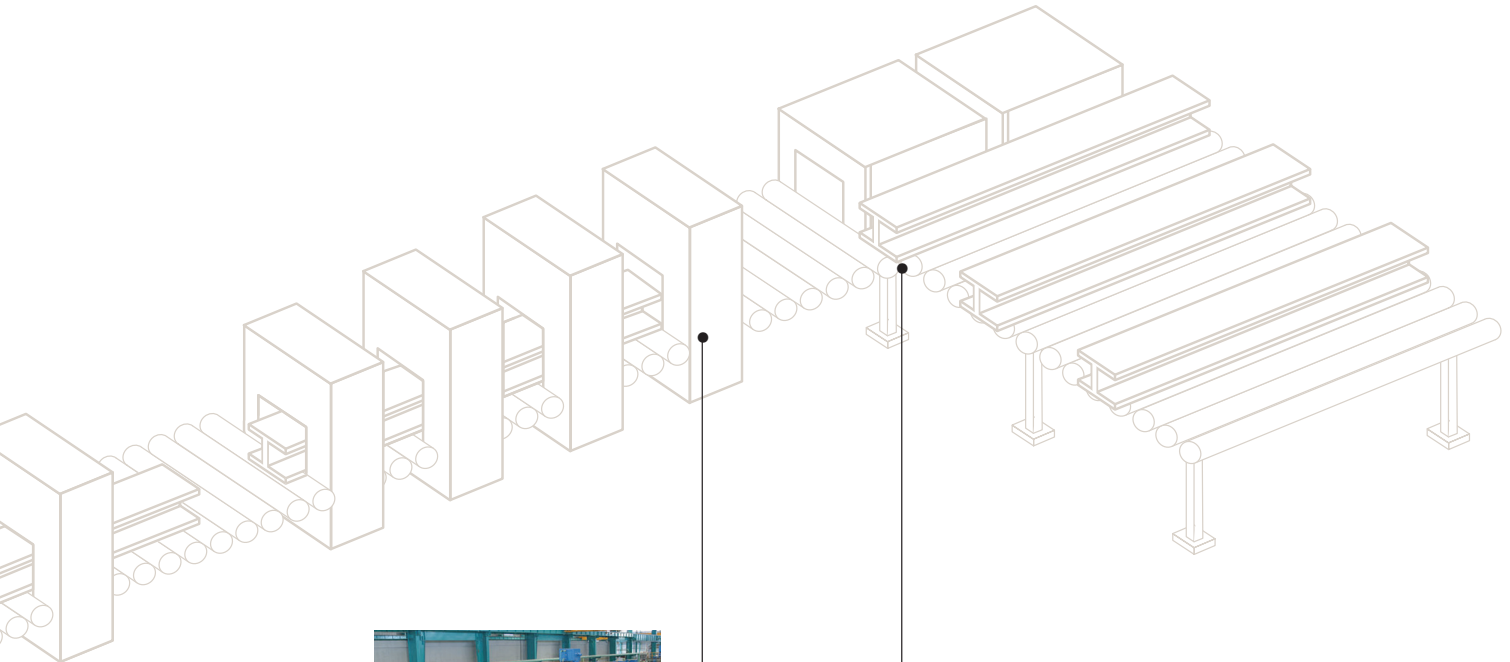
Ameridrives Amerigear® couplings (AGMA)

Marland Clutch CECON clutches

Delroyd Worm Gear Speed reducers

Nuttall Gear TDS/HPD parallel shaft and Moduline® concentric shaft reducers

Bibby Turboflex Series III couplings and modular torque limiters



Finishing Mills

Ameridrives universal joints and Ameridrives SM Series mill spindles are designed for heavy-load, continuous-duty bar mill applications. The spindles feature Ameridrives fully-crowned advanced gear tooth design. Units can accommodate high misalignment angles due to the constant change in material thickness, roll size and roll change requirements. Caliper brakes and pinion mill stand drives are also used.

Ameridrives Americardan 5000 & 3000 Series universal joints

Ameridrives Amerigear® couplings (AGMA) and SM Series mill spindles

Twiflex MX pneumatic caliper disc brakes

Nuttall Gear Pinion and twin pinion mill stand drives

Bibby Turboflex Series III couplings and modular torque limiters

Delroyd Worm Gear Mill stand adjustment drives



Transfer Tables/Conveyors

TB Wood's QT Power chain II belt drive system features a synchronous belt, sprockets, bushings and idlers all designed to work together for maximum value in high torque drive applications including mill chain conveyors. Bauer gear motors and Bibby torque limiters are also utilized on chain driven conveyor systems throughout the mill.

TB Wood's Dura-Flex® couplings and QT Power Chain® II belt drive system

Bauer Gear Motor BF Series shaft-mounted gear motors and BG Series helical in-line gear motors

Ameridrives Amerigear® couplings (AGMA)

Twiflex MX pneumatic caliper disc brakes

Bibby Turboflex Series III couplings and Bibbigard torque limiters

Wichita Clutch AquaMaKs™ clutches and brake

Marland Clutch CECON clutches

Stromag Flexible Couplings

Temper and Pipe Mills



Temper Mills

Ameridrives SM Series mill spindles are designed for long lasting performance in heavy-load, temper mill applications. The spindles feature Ameridrives fully-crowned advanced gear tooth design. Units can accommodate high misalignment angles due to the constant change in material thickness, roll size and roll change requirements. Caliper brakes and pinion mill stand drives are also used.

Ameridrives Americardan 5000 & 3000 Series universal joints

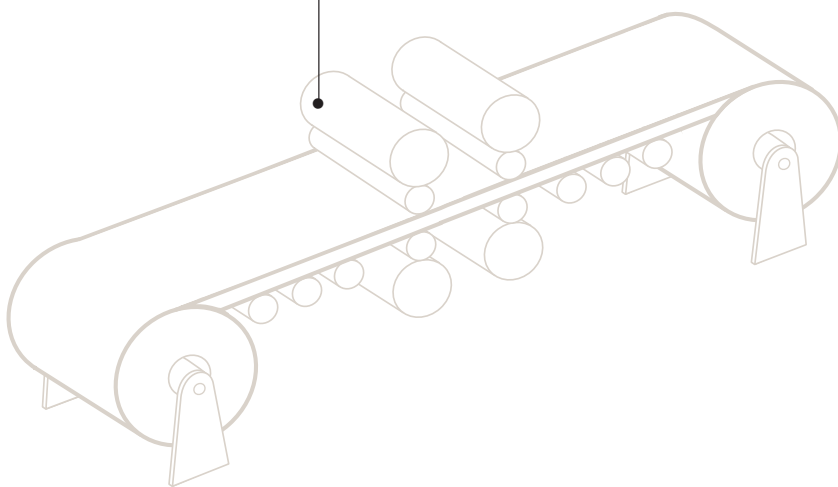
Ameridrives Amerigear® couplings (AGMA) and SM Series mill spindles

Bibby Turboflex Series III couplings

Twiflex MX pneumatic caliper disc brakes

Nuttall Gear Pinion and twin pinion mill stand drives

Delroyd Worm Gear Mill stand screwdowns and adjustment drives



Piercing Pipe Mills

Ameridrives universal joints are installed between the drive motors and rollers on the piercing mill. Bauer Gear Motors and Bibby Turboflex couplings can be used on mill rollout tables.

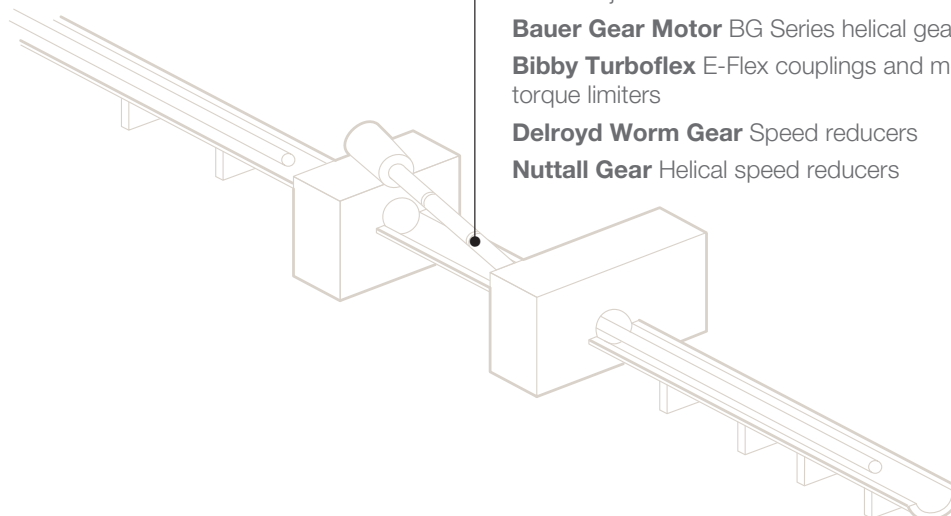
Ameridrives Americardan 5000 & 3000 Series universal joints

Bauer Gear Motor BG Series helical gear motors

Bibby Turboflex E-Flex couplings and modular torque limiters

Delroyd Worm Gear Speed reducers

Nuttall Gear Helical speed reducers



Cold Mills

Due to superior engineering and mill expertise, Ameridrives universal joints often replace gear mill spindles on cold mill applications. Amerigear® gear couplings are often mounted between the drive motors and gear boxes. The couplings provide superior performance in tough steel mill environments. Nuttall Gear helical drives and Delroyd Worm Gear speed reducers are widely used on cold mill applications.

Ameridrives Americardan 5000 & 3000 Series universal joints

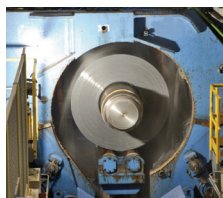
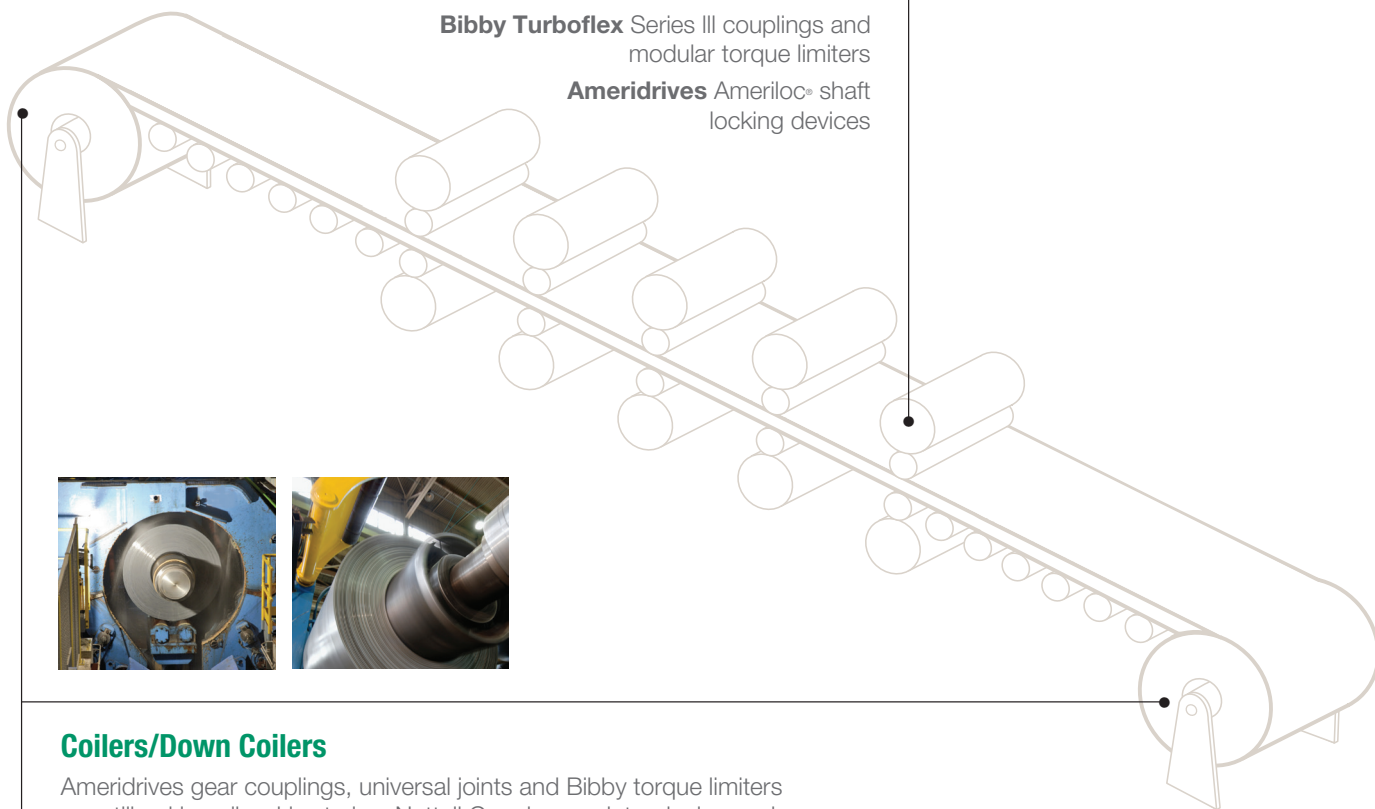
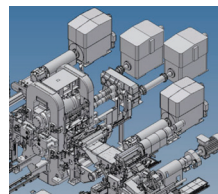
Ameridrives Amerigear® couplings (AGMA)

Delroyd Worm Gear Speed reducers

Nuttall Gear TDS/HPD parallel shaft and Moduline® concentric shaft reducers

Bibby Turboflex Series III couplings and modular torque limiters

Ameridrives Ameriloc® shaft locking devices



Coilers/Down Coilers

Ameridrives gear couplings, universal joints and Bibby torque limiters are utilized in coiler drive trains. Nuttall Gear heavy-duty, dual-speed drives are custom-designed with customer-specified mandrel shafts for optimum performance in down coiler applications.

Ameridrives Americardan 5000 & 3000 Series universal joints

Ameridrives Amerigear® couplings (AGMA)

Nuttall Gear Two-speed recoiler drive

Bibby Turboflex Series III couplings and modular torque limiters

Wichita Clutch AquaMaKKs™ clutches and brakes

Delroyd Worm Gear Speed reducers

Twiflex MXEA electric caliper brakes and MX pneumatic caliper disc brakes

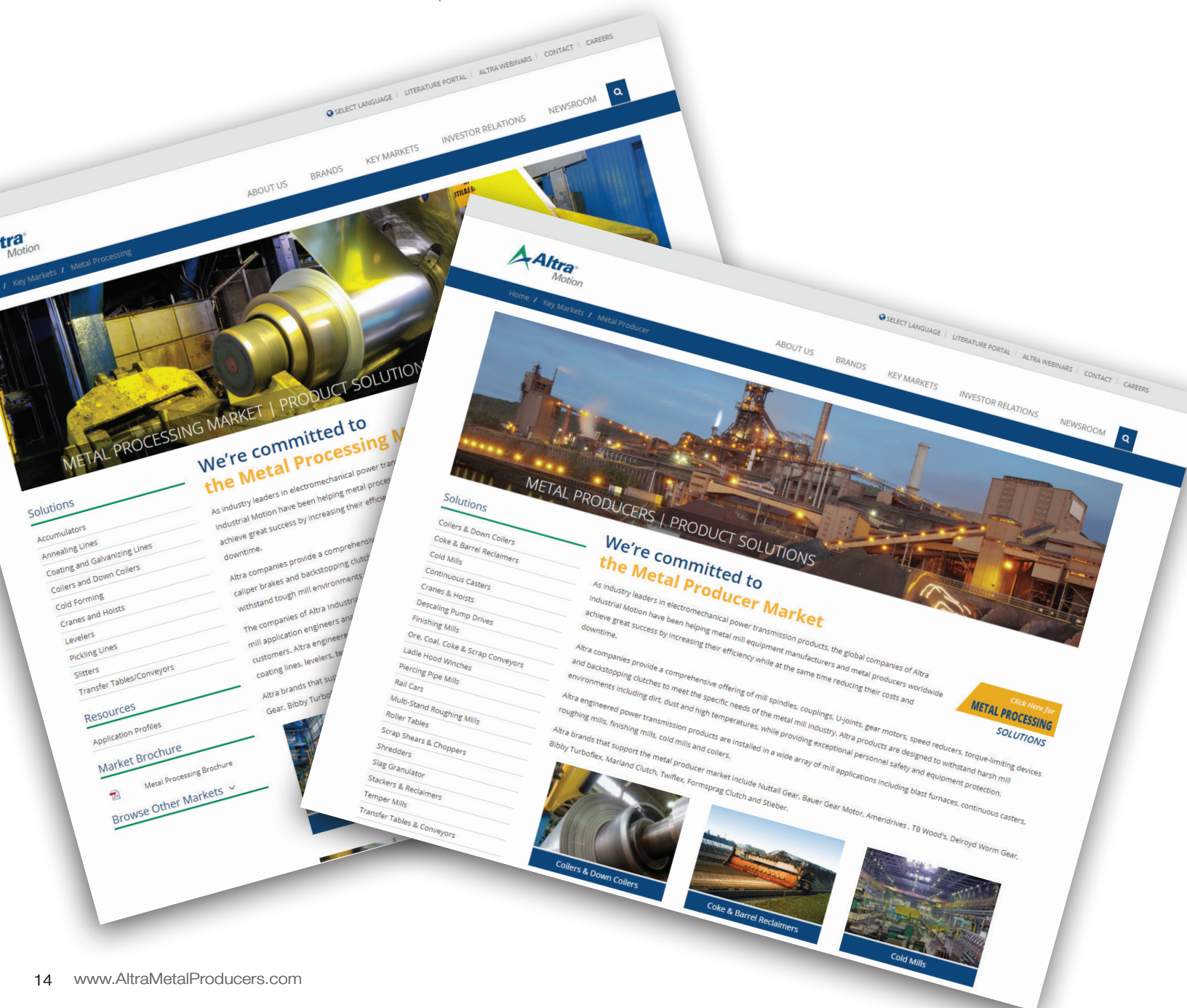
CHECK OUT

www.AltraMetalProducers.com and 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

Request P-8634-C at
www.AltraLiterature.com



Turf and Garden

www.AltraTurfandGarden.com

Request P-1698-WE at
www.AltraLiterature.com



Mobile Off-Highway

www.AltraMobileOffHighway.com

Request Literature at
www.AltraLiterature.com



Oil and Gas

www.AltraOilandGas.com

Request P-8453-C at
www.AltraLiterature.com



Mining and Aggregate

www.AltraMining.com

Request P-1763-C at
www.AltraLiterature.com



Aerospace and Defense

www.Altra-Aerospace-Defense.com

Request P-1717-C at
www.AltraLiterature.com



Wind

www.AltraWind.com

Request P-1960-C at
www.AltraLiterature.com



Food and Beverage

www.AltraFoodandBeverage.com

Request P-7665-BBG at
www.AltraLiterature.com



Tidal

www.AltraTidal.com

Request P-7013-C at
www.AltraLiterature.com



Elevators

www.AltraElevators.com

Request P-1733-C at
www.AltraLiterature.com



Packaging Machinery

www.Altra-Packaging.com

Request Literature at
www.AltraLiterature.com



Energy

www.AltraEnergyOilandGas.com

Request P-1908-C at
www.AltraLiterature.com



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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

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