

# Voith Turbo

PROVIDES TORQUE LIMITER TECHNOLOGIES FOR THE MODERN WORLD  
 TODD LEHMAN, VOITH TURBO, PRODUCT SALES MANAGER

In today's world, the attitude of doing more with less extends to all areas of business. When considering machine productivity, doing more with less isn't a good idea. Working a machine past its designed factor of safety will limit the longevity of the machine and will single out the weakest link in its drive chain. In every case, a machine pushed past its design limits will fail when least expected (even though failure should be expected). Likewise, a machine whose drive chain design doesn't fully account for high amplitude torque spikes caused by sudden machine jams or electrical supply faults will expose the weak link either during the occurrence of the torque spike or sometime later when the fatigued link finally breaks unexpectedly.

There are several methods currently in use that attempt to maximize a machine's productivity without exceeding its design capacity. One method partially achieves the objective by monitoring the supply amperage relative to the motor nameplate amperage. While this method keeps the machine from operating past its design point based on the motor feedback, it does little to protect the drive chain from torque overloads caused by sudden machine jams or electrical supply faults.

Another method is to purposefully

design the drive chain with a weak link such as a flexible connection coupling. Some level of perceived protection may be achieved through this method, but it must be considered that a failed flexible connection coupling will require some level of parts replacement and could cause damage to the surrounding drive components and guards as well as requiring added downtime, parts, and labor. The idea of a weak link in the drive chain is a good one, but that weak link needs to provide torque accuracy to maximize machine productivity, be easy to reset and not require a lot of parts or manpower to do it. The solution for the problem of maximizing machine productivity without exceeding machine capacity is the use of a torque limiter.

Torque limiters have been in use for years and are available in many configurations and types.

Shear pin couplings are fatigue based limiters that use specifically sized pins to transmit a set amount of torque and require replacement after an overload or after they have experienced too much fatigue. Adjustment of the torque limiter capacity requires resizing of the shear pins.

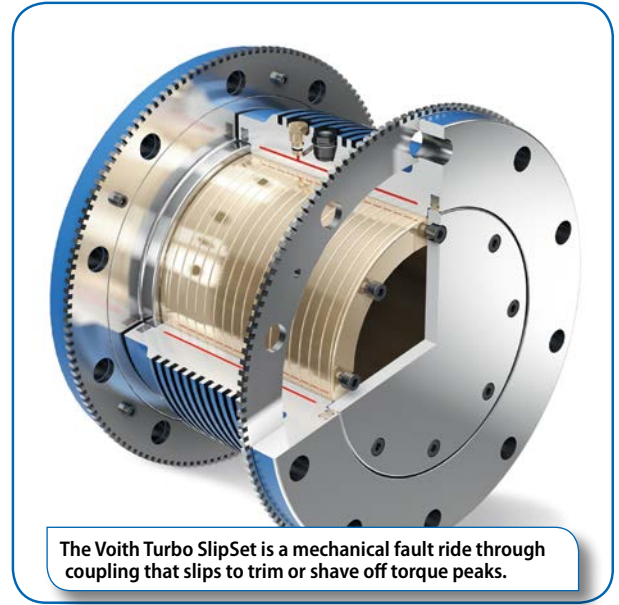
Ball in detent couplings are spring loaded limiters that can be reset through counter rotation of the mounted parts or by re-engagement of the balls via taps of a mallet. Over a period of time, the detents wear and the spring's tension decreases. Adjustment of the torque limiter capacity can typically be done through adjustment of the springs that apply pressure to the balls.

Hydraulically pressur-

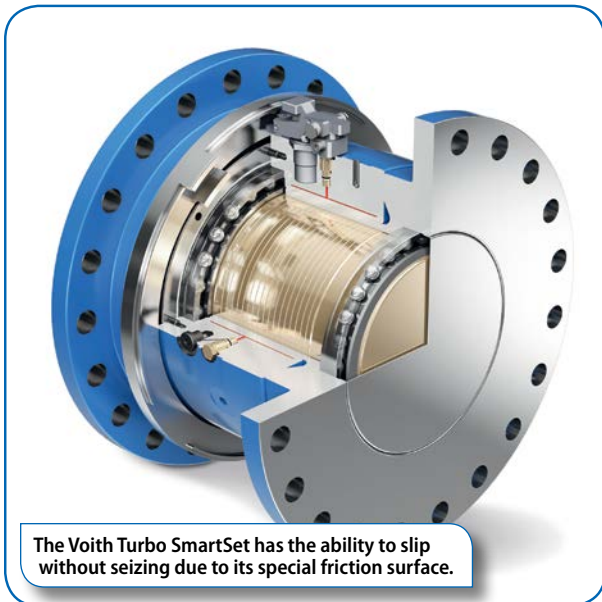
ized, friction based couplings are backlash free torque limiters which utilize shear tubes and a shear ring for release of the hydraulic pressure during a torque overload event. As soon as the pressure is released the coupling freely spins without contact of the friction surfaces. The shear tubes are replaced and hydraulic pressure is re-applied based on the desired torque limitation to reengage the unit. Adjustment of the torque limiter capacity can easily be accomplished by referencing the pressure-vs-torque calibration diagram that is supplied with the unit.

Having addressed the issue of maximizing machine productivity without exceeding its capacity, the next issue often occurs after the release of the torque limiter. It's true that the torque limiter has done its job to protect the drive chain of the machine but it does not automatically reset to allow a machine start. This has been a dilemma faced by operators for years. The question becomes: Should they push the machine and risk failure, or not push the machine and reset a torque limiter?

The answer to that question could be a torque limiter with the ability to slip during overloads. Rather than immediately releasing on overload, these solutions will either slip for a number of degrees before releasing or never re-



The Voith Turbo SlipSet is a mechanical fault ride through coupling that slips to trim or shave off torque peaks.



The Voith Turbo SmartSet has the ability to slip without seizing due to its special friction surface.

lease at all unless an external trigger is used or the machine monitoring controls forces a shutdown. These torque limiters are based on the hydraulically pressurized, friction based design but use specially selected friction surfaces to allow for extended periods of slip. To help understand these limiters, it's important to know more about their construction.

The basic hydraulically pressurized, friction based torque limiting coupling, such as a Voith SafeSet, is made up of an inner and outer sleeve that are assembled and welded at the ends. This assembly forms a twin-walled hollow sleeve which can be oil pressurized up to 1,000 bar/14,500 psi after the machining of the necessary pressurization and shear tube ports have been completed. The design of the shear tube and mating seat provides a reliably sealed system, while the size of the torque limiting coupling determines the size and quantity of shear tubes that are to be used. The friction surface is specially treated to prevent wear during the slip phase of the coupling release. Once the SafeSet coupling has released it rotates on bearings preventing wear on those friction surfaces.

During normal operation the bearings remain static. The bearings only rotate following a release due to torque overload, which makes bearing life a minor factor when considering the operational dependability of the coupling. The bearings and friction surfaces are separated from the pressurized sleeve and require lubrication oil. The lubrication oil is used for two things: Bearing lubrication during a release condition, and to maintain a predictable friction coefficient across the friction surfaces which results in a precise release torque relative to the applied pressure.

As noted earlier, hydraulically pressurized, friction based torque limiting couplings have no backlash and are not subject to material fatigue because the transmitted torque is through a friction surface. The applied hydraulic pressure generates a defined frictional force between the pressure sleeve and the shaft. The applied pressure

determines the release torque of the coupling. Therefore, an increase or decrease of applied pressure, working within the torque limiters adjustment range, will result in an increase or decrease of the release torque.

If the operating torque exceeds the pressure-based release torque setting, the driving shaft will rotate relative to the pressure sleeve which is connected to the driven load. This results in an immediate reduction in applied

torque when the friction force changes state from static to dynamic. The shear ring that is fixed to the driving shaft rotates relative to the pressure sleeve and breaks off the top of the shear tubes. Upon contact, the oil pressure in the coupling drops and the applied frictional force in the coupling is reduced releasing the torque limiting coupling and providing full separation of the driving and driven components of the drive chain.

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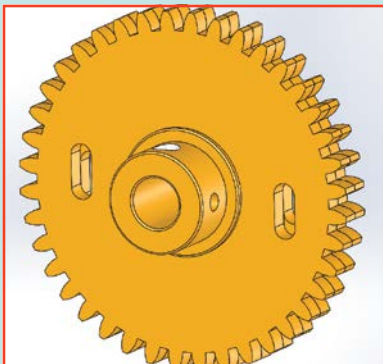


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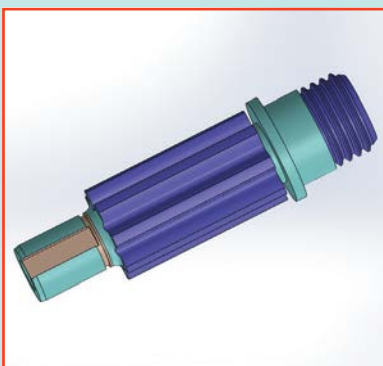
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Following a release, re-setting of the coupling is simple. First the shear ring is aligned to allow removal of the shear tubes. Next the shear tubes are replaced and torqued to specification. Finally, the coupling is re-pressurized according to the calibration curve of the unit and following a simple pressurization procedure.

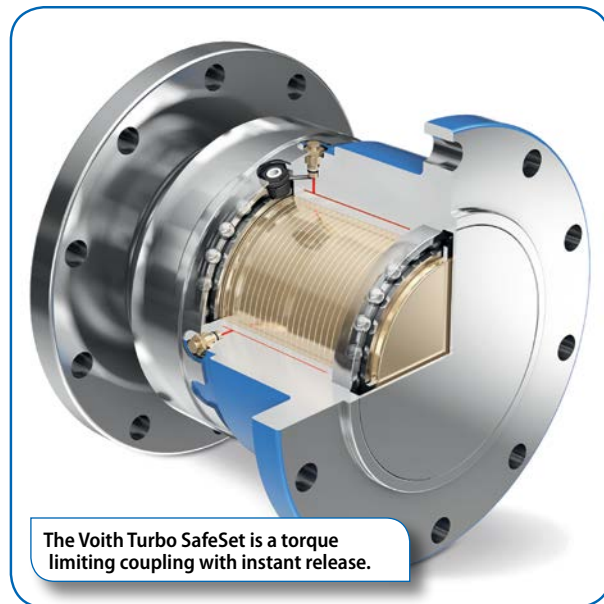
With the basics of hydraulically pressurized, friction-based torque limiting couplings in mind, it is also important to understand the more advanced

versions including: couplings that have the ability to slip as well as mechanical stops to prevent damage from excessive slip due to machine overloads; and permanently slipping torque limiting couplings which can only be influenced through external monitoring.

The Voith SmartSet torque limiter is a mechanical fault ride through coupling that slips to trim or shave off torque peaks caused by short duration overloads to protect the drive chain components. The SmartSet was originally designed as a start-up coupling for synchronous motors which generate transient torques of plus or minus ten times the motor nominal torque during acceleration and prior to grid synchronization. The SmartSet will also fully release in situations of extended over torques to protect the links of the drive chain and itself. The SmartSet technology and construction is based on the previously discussed design of the SafeSet torque limiting coupling. However, there are differences that make the SmartSet unique:

- The SmartSet has the ability to slip without seizing due to its special friction surface.
- The SmartSet device is centrifugally engaged by the shaft rotation of the application.
- The SmartSet design allows for a minimum slip before release of 30 degrees and a maximum of 120 degrees per start.

The slip angle before release is reset with each shut down of the machine



The Voith Turbo SafeSet is a torque limiting coupling with instant release.

and the full 30 to 120 degree slip angle becomes available once more. With this type of torque limiter the need for a machine shut down is limited to instances of multiple short duration overloads or a continuous overload. After a trip, the limiter must be reset and re-pressurized for the appropriate torque unless an active slip monitor like the Voith CMS 310 is used to provide feedback to the machine PLC to either stop the process or reduce the load before the SmartSet is mechanically forced to trip.

Much like the Voith SmartSet, the Voith SlipSet torque limiting coupling is a mechanical fault ride through coupling that slips to trim or shave off torque peaks caused by short or extended duration overloads to protect the drive chain components. The SlipSet will not release and therefore no re-setting of the SlipSet is required. Once more, active monitoring of the slip with the CMS 310 or other active monitor is important. While the SlipSet is designed to slip, it is not designed for permanent slip. Slip makes heat and is an indicator that the machine is being pushed past its design parameters. The active monitor looks at the torque limiter slip and provides the machine PLC with feedback to make appropriate decisions such as feed reduction, feed stop, or machine shut down.

With trends moving toward more remote machine visibility and monitoring, several devices have been devel-

oped for use with any of the previously discussed hydraulically pressurized, friction based torque limiters. The Voith series of remote monitoring and control technologies provides an added level of safety and control to the machine and its torque limiter.

The CMS 310, Coupling Monitoring System, is a new generation of Voith Coupling Monitoring System, built on a PLC based platform. By continuous monitoring, the operator can get important information about the status of a coupling and driveline. The operator is able to supervise and monitor a torque limiting coupling over a web interface or HMI panel. This is possible because the system uses the Profinet communication standard for an easy integration to existing industrial process monitoring systems. The slip angle is continuously measured and calculated to determine how much the coupling has slipped. The status information can then be used to quickly identify any need for action.

The active monitoring system fits well within Industry 4.0 thinking by providing increased uptime, integration with existing process monitoring systems, potential driveline performance optimization, maintenance benefits and visual and audio warning indicators.

The active monitoring system works through calculation of the torque limiting coupling input and output rotational positions. The measurements are made by inductive sensors mounted on each side of the torque limiting coupling. If the coupling slips, there will be a pulse difference between the sensors, and the control system will inform the operator of the current situation via a web interface or optional HMI panel. Depending on the customer's preference, the machine PLC or the machine operator can then adapt the power input to reduce the load, or shut down the drive line depending on the information from the CMS 310 system. The CMS 310 also monitors the maintenance of the torque limiting coupling, since it will monitor the number and duration of releases and slips. When the limit defined for the installed torque limiter is reached, the

CMS 310 will indicate that a service is needed by showing a service indicator light on the screen.

Demands on operators and machines continue to increase, as companies are focused intently on production and efficiency. As we've discussed in this article, these demands can lead to over-taxing machines, pushing them past their safe limits and tolerances — a practice that can lead to outcomes contrary to efficient production.

Fortunately, we have also discussed vital systems — torque limiting technology — designed to help operators maximize their machine's productivity without exceeding design capacity or jeopardizing safety and efficiency.

**For more information:**

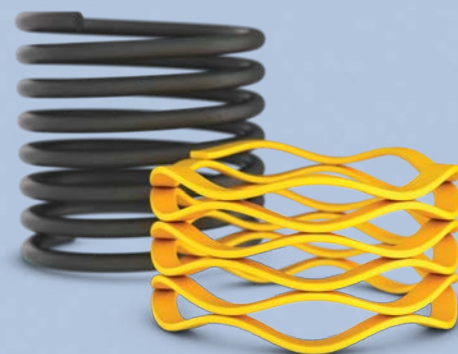
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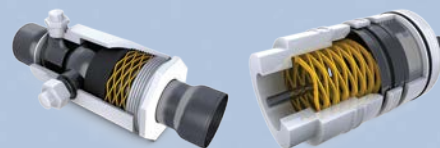
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# Svendborg

BRAKING CONTROL SYSTEM GOES MOBILE

SOBO iQ controls are now accessible from both Android and IOS mobile devices. This new level of convenient accessibility is significant since most SOBO iQ controls are installed in tough, hard-to-reach, isolated areas such as underground or overland mining conveyors.

Users can remotely access and monitor their Svendborg Brakes SOBO iQ

controls by simply downloading the CERHOST app for Android mobile phones or tablets, available from Microsoft on GooglePlay. The iCERHOST app for use with iPhones and iPads is available via the iTunes App Store. Once downloaded, the app can be easily accessed using the "Remote Display" tool on any computer.



The SOBO iQ main menu allows users to access all control functions including startup, brake ramps, parking, hpU and diagnostics. The state-of-the-art SOBO iQ combines various cutting-edge technologies to provide significant flexibility, safety and durability on mine conveyors and other heavy-duty industrial applications.

The SOBO iQ features three-state digital modulation and a dual-loop PI control (pressure/speed). The pressure control is based not only on speed but also on deceleration. SOBO iQ controls braking torque by comparing a pre-set speed ramp with actual conveyor speed feedback. The unit can provide different braking profiles for different operational scenarios. Advanced functions including independent over-speed monitoring, rollback, gearbox and out-of-band monitoring are included.

The SOBO iQ provides only the torque needed for a safe, controlled stop. The controller can be used with a combination of brake types, mounted on both the high and low speed sides of the conveyor drive. Up to four hpUs can be connected to each controller.

**For more information:**

Svendborg Brakes (Altra Industrial Motion)  
 Phone: (303) 285-1271  
[www.svendborg-brakes.com](http://www.svendborg-brakes.com)

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## AutomationDirect

FORK SENSORS DESIGNED FOR EASY INSTALLATION

AutomationDirect's new PS series fork sensors, also referred to as "slot" or "U" sensors, are offered in visible red light and laser models. Available in PNP and NPN styles, and designed for easy installation, the rugged metal one-piece construction assures constant alignment. The high-resolution PS-series fork sensors feature glass optics, selectable light on/dark on operation, adjustable sensitivity potentiometers, high switching frequencies, and are fitted with M8 connectors with 360-degree viewable LED indicators. Starting at \$86.00, the visible red light fork sensors feature easy setup and have a sensing range from 5mm to 220mm, depending on model. Starting at \$137.00, the laser fork sensors feature a Class 1 laser to detect small objects



and have a sensing range of 30 mm to 120mm, depending on model; certain models are available for transparent objects. All PS-series fork sensors are IP67-rated, have cULus approval and are CE, RoHs and REACH compliant.

### For more information:

AutomationDirect  
Phone: (800) 633-0405  
[www.automationdirect.com](http://www.automationdirect.com)

## MINExpo Preview

DAVID BROWN SANTASALO

David Brown Santasalo will showcase its AMF Series at the upcoming MINExpo International exhibition in Las Vegas, Nevada. The launch of the AMF series in February of this year attracted the interest of many equipment manufacturers and end users with applications for agitation, mixing and flotation. The AMF vertical gear unit provides high thermal

capacity and eliminates the need for external cooling in extreme ambient conditions.

These two or three-stage vertically mounted helical gear units feature a power range of up to 750 kW and nominal output torque of up to 200 kNm, as well as a reversible operational direction. Their robust design ensures they're easy to transport

# NSK

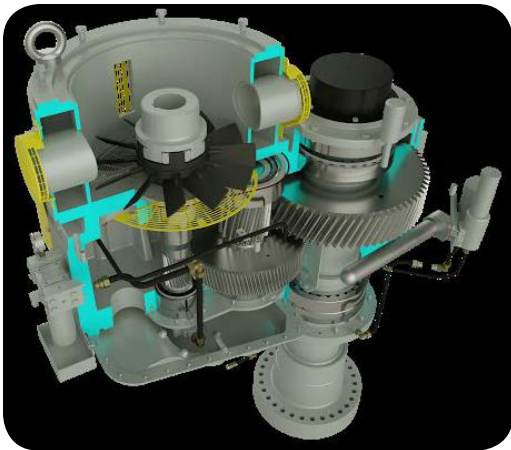


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and install without risk of damages. More on the AMF features can be seen on the product animation at the website below.

Joe Sitta, director of sales for David Brown Santasalo's Americas business comments: "The AMF is the result of bringing the latest in gearing technology together with the unique features and benefits of our application proven designs into the most modern and highly adaptable product on the market today.

The AMF is built rugged for long worry free operation in the most demanding applications."

To learn more about the AMF, visit David Brown Santasalo at MINExpo International: **Stand 27513**, South Hall 2, Las Vegas Convention Center, Las Vegas, Nevada.

**For more information:**

David Brown Santasalo  
<http://santasalo.com/products/flotation-drive/>



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**Stafford Manufacturing**

DEVELOPS COLLARS AND COUPLINGS FOR MAINTENANCE, REPAIR AND RETROFIT

A new group of shaft collars, couplings, thrust assemblies and repair kits especially developed for maintenance applications is being introduced by Stafford Manufacturing Corp.

The Stafford Maintenance Group features eight families of products born from special repair and retrofit requirements to add capabilities such



# MINExpo Preview

STIEBEL-GETRIEBEBAU GMBH

Stiebel-Getriebbau has developed advanced pump drives which combine an improved energy balance, greater flexibility and performance. Visitors to this year's MINExpo will be able to discover these technologies at the Stiebel-Getriebbau exhibition **Stand 28900** in the South Hall.

For mid-size mining excavators and above (from around 300 t), the Stiebel

Type 4462 pump drive provides the driving force. The drive is connected to the engine (800 kW) via an SAE 0 bell housing adapter. The available range of transmission ratios varies between  $i_1=0.9$  and 2. The integrated oil pump and the oil distribution system used by Stiebel ensure optimum lubrication and cooling of the pump drive. This means that sloping positions—of up

to 30° in all directions—are possible during operation. Overall, a maximum of six pumps can be fitted on both sides which actuate the swivel and reach operation together with the other hydraulic functions. Furthermore, the hydraulic pump attachments also provide a separate oil chamber to ensure operating reliability for the hydraulic unit system.

as wrenching flats to collars for applying torque, conversion couplings and adapters for joining dissimilar shafts, and the Stafford Prototype and Repair Collar System (SPARC) that lets users create their own working models of special-purposed shaft collars and components within a few hours.

Developed to reduce downtime and costs, the Stafford Maintenance Group of shaft collars also includes weldable and paintable shaft collars, along with collars and couplings that are available in kits. Conversion couplings allow for the joining of inch-metric and different size shafts and thrust collar assemblies, including micro-adjustable end stops and axial thrust designs for releasing frozen shaft components are also offered.

Stafford Products for maintenance, repair, and retrofit are priced according to configuration and quantity. Price quotations are available upon request.

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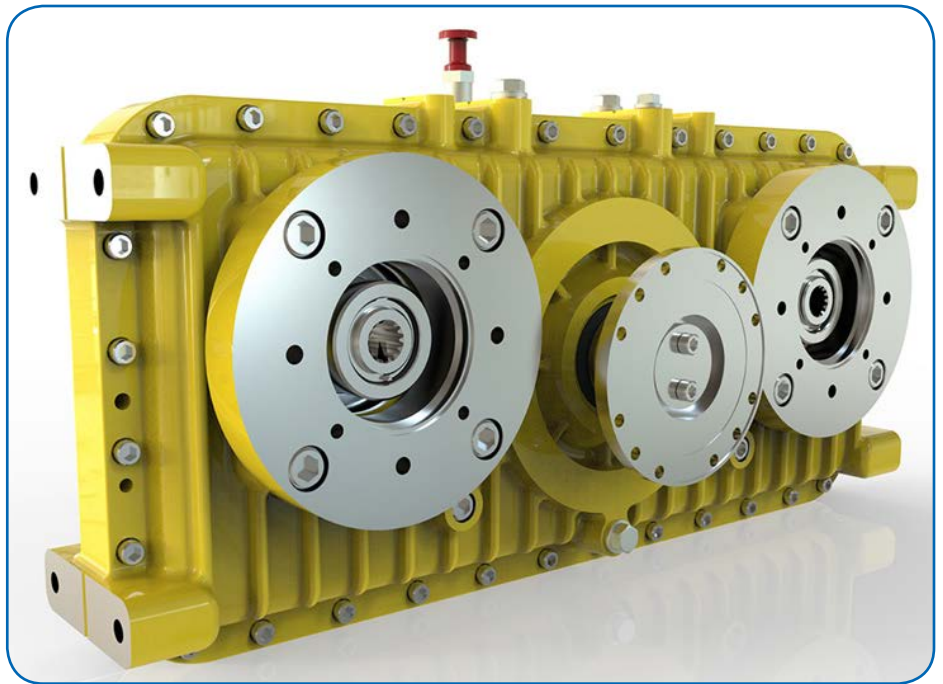
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With the Type 4382 single-stage pump drive from the P2000 range, Stiebel-Getriebebau has created a special solution for a wide range of mobile hydraulic applications. The robust, torsionally-stiff drive employs the proven modular system to offer a comprehensive range of attachment variants. The unit is connected using an SAE bell housing or cardan flange. Three pump connections at the take-off with freely selectable SAE connector are available. The maximum torque per take-off is 1,500 Nm and a maximum speed of up to 3,000 min<sup>-1</sup> is possible. At an engine power of 530 kW the pump drive is available with a transmission ratio of  $i=0.6572$  to 1.5217. The design — with a weight of 200 kg and block casing — is particularly compact, allowing space-saving integration. Thanks to a special lubrication system, which utilizes customized internal ribbing and oil pockets, the lubrication of all necessary components is ensured.

With its high degree of adaptability, the Stiebel Type 4652 pump drive provides an ideal drive solution — in particular for mobile tracked drilling rigs. This is because its particularly compact



design allows easy underfloor installation. The geometric offset of the drive/take-off, the large oil volume and solid ribbing of the casing result in an outstanding energy balance for the pump drive. This means that an additional oil cooler is not usually necessary. The drive therefore ensures economi-

cal and sustainable operation with  $P_{max} = 700$  kW,  $T_{2max} = 3,300$  Nm and a maximum speed of  $N_{max} = 2,500$  min<sup>-1</sup>.

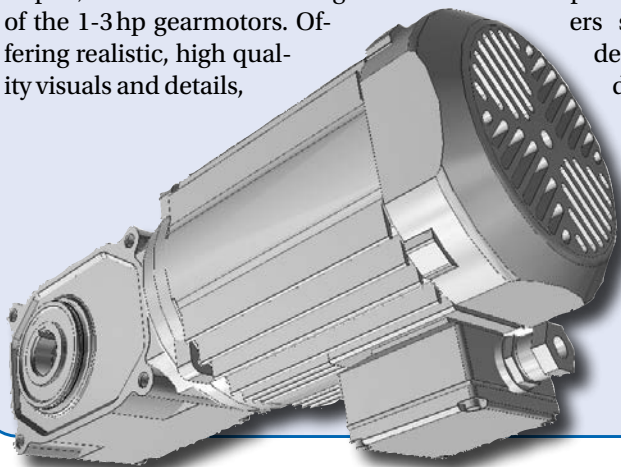
**For more information:**

Stiebel-Getriebebau GmbH  
Phone: +49 1802 78 43 235  
[www.stiebel.de](http://www.stiebel.de)

## Brother Gearmotors

OFFERS 3D CAD DRAWINGS FOR 1-3 HP MOTORS

Brother Gearmotors now offers 3D Computer-aided Design (CAD) drawings of its 1-3 hp gearmotors on the company's website. With the new online tool, customers can easily access and search Brother Gearmotors' product catalog, using 3D technology to pan, zoom and rotate images of the 1-3 hp gearmotors. Offering realistic, high quality visuals and details,



the panoramic images can be manipulated in a variety of ways to provide a comprehensive view of the products from various angles.

Site visitors can fully configure and download products in 150+ CAD and graphics formats. Additionally, a dropdown menu offers customers spec sheets containing detailed motor and brake dimensions.

All Brother Gearmotors in the 1-3 hp range are compliant with the new government (DOE) mandate for small electric motors that took effect June 1, 2016.

"Our 3D modeling technology offers customers the ability to more accurately see what a particular gearmotor will look like when it is placed in its intended application," said Matthew Roberson, senior director of Brother Gearmotors. "Brother is pleased to provide a way to enhance user education and simplify the overall selection process using this easy navigation tool."

**For more information:**

Brother Gearmotors  
Phone: (866) 523-6283  
[www.brother-usa.com/gearmotors](http://www.brother-usa.com/gearmotors)

# Festo

SEMI-ROTARY VANE DRIVE DESIGNED FOR LONG LIFE AND FAST INSTALLATION

Festo has introduced a new pneumatic semi-rotary vane drive and matched contactless position sensor that transforms a relatively simple and low cost drive into a solution that lowers engineering and inventory overhead, is fast and easy to install, and delivers long service life due to its sealed housing.

Standard swivel angles for the DRVS semi-rotary drive are 90, 180, and 270 degrees. Custom swivel angles are possible with a stop bracket accessory. At six bar pressure, the seven different sizes in the DRVS line deliver a torque range of .15Nm to 20Nm. Festo sizing software makes ordering the optimum unit for the application fast and accurate. The company guarantees overnight shipping for standard DRVS drives, which lowers inventory requirements for OEMs and assures end use customers fast delivery of replacement parts.

The SRBS, a compact, contactless magnetic position sensor, attaches to the DRVS via a single cable and three screws. During installation, personnel simply move the vane to the drive's two positions and with a few clicks of the SRBS push button both positions are located for the position sensing unit. Repetition accuracy is <.0039 inches (.1 mm). Through its push button, the SRBS position sensor can be designated PNP or NPN and NO or NC, which means that one part number covers all the different combinations.

"Festo is fundamentally reshaping its product lines to engineer end-to-end productivity for customers," said Mike Guelker, Festo product manager. "Customers are going to like the fast, accurate ordering, delivery, and installation of the DRVS and the flexibility, ease of use, and accuracy of the SRBS."

## For more information:

Festo Corporation  
Phone: (631) 231-9215  
[www.festo.com/us](http://www.festo.com/us)



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

**Circle Gear and Machine**

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# Portescap

EXPANDS ATHLONIX DCT MOTOR SERIES

Portescap expands the newly launched DCT range of Athlonix Brush DC motors with the introduction of the 17DCT brush DC mini motor. The 17DCT motor features Portescap's energy efficient coreless design with an optimized self-supporting coil and magnetic circuit which enables higher performance in a compact 17 mm diameter size.

With high torque carrying capabilities reaching up to 6.14 mNm, the 17DCT provides suitable performance with efficiency reaching up to 85 percent while providing a long lifetime. Due to the inherent design of the 17DCT motor, it can deliver higher torque per ampere resulting in better battery life. This makes it ideal for demanding applications such as medical and industrial pumps, drug delivery systems, miniature industrial power tools, tattoo machines, mesotherapy guns, dental tools, watch winders and more. Other applications, including lab automation, security and access and humanoid robots, can benefit



from the features of the 17DCT Athlonix motor.

Athlonix 17DCT miniature DC motors are available in two variations, precious metal commutation and graphite commutation with a neodymium magnet inside. The unique constant force spring design for carbon brush provides consistent performance. An REE (Restriction of Electro Erosion) coil is an available option, which prolongs the life of the motor and provides an environment of intrinsic safety especially at high speed conditions.

"Athlonix motors are powered by a proprietary self-supporting coil resulting in maximized magnetic flux and ampere-turns for a given diameter,"

said Sunil Kumar, brush DC product line manager at Portescap. "In contrast, typical self-supporting coils have inherent ampere-turns limitations that affect the magnetic flux density in the magnetic circuit, which further limits power output and endurance of the motor."

Component standardization and design modularity allow quick customization capability for samples across various applications.

"Due to a lower motor regulation factor compared to comparable motors available in the market, our new 17DCT has a higher load carrying capacity at minimum reduction in speed leading to more uniform power," said Kumar.

Athlonix motors are available with encoders and gearheads of various sizes and ratios. They are manufactured in an ISO certified facility and are RoHS compliant.

**For more information:**

Portescap  
Phone: (610) 235-5499  
[www.portescap.com](http://www.portescap.com)

# R+W

RELEASES NEWS MODELS AND SIZES FOR ST SAFETY COUPLINGS

High capacity torque limiters from R+W now have more customization and sizing options. After years of development, the ST line has added five sizes across the product line as well as four new models to better meet requirements in all industries.

The newly available sizes will broaden the range from 2 KNm to 250 KNm and remove the need to oversize a torque limiter in many applications. A smaller size will not only reduce costs, but also allow customers to downsize their machines and take advantage of lower moments of inertia.

Additional connection methods such as flange-to-flange, bellows, elastomer and disc pack will give people more variety to find the optimal solution for their overload protection. Custom combination style torque limiters will also be available for special applications.

**For more information:**

R+W  
Phone: (630) 521-9911  
[www.rw-america.com](http://www.rw-america.com)



# Lenze

## LAUNCHES ENHANCED VERSION OF THE I500 FREQUENCY INVERTER SERIES

Lenze has launched an enhanced version of its i500 frequency inverter series, equipped with a WLAN diagnostic module for easy parameter setting when commissioning and diagnosing motor inverters for a range of machine applications, including pumps and fans, conveyors, formers, winders, traveling drives, tool and hoist drives.

A keypad, USB interface, and the new WLAN module are now standard on the entire Lenze i500 frequency inverter se-

ries. Featuring a Lenze Easy Starter PC tool and WLAN diagnostics over a smart keypad app, the i500 frequency inverter optimizes programming control. The WLAN module communicates wirelessly with a PC or Lenze smart keypad app. The Android smart keypad app is available for free download over Google Playstore. A fully-fledged alternative to the functions of a hardware keypad, the smart keypad app offers numerous benefits, including intuitive user operation and display, and wireless communications.

A parameterization solution, the easy-to-use Lenze smart keypad app allows for i500 frequency inverter parameter settings to be conveniently downloaded, stored, and emailed for analysis. Adjustments can be performed from a safe distance during operation, even on a traveling drive or remote machine equipment. Parameter settings are able to be diagnosed remotely and returned electronically for easy upload.

The Lenze space-saving i500 frequency inverter series enables communication over EtherCAT, EtherNET/IP and PROFINET, in addition to compatibility with standard field buses. Modules are available in the 0.33 to 100 hp (0.25 to 75 kW) power range for scalable functionality. The wide-ranging modular system allows for various product configurations depending on machine requirements.

### For more information:

Lenze Americas  
Phone: (508) 278-9100  
[www.lenze.com](http://www.lenze.com)

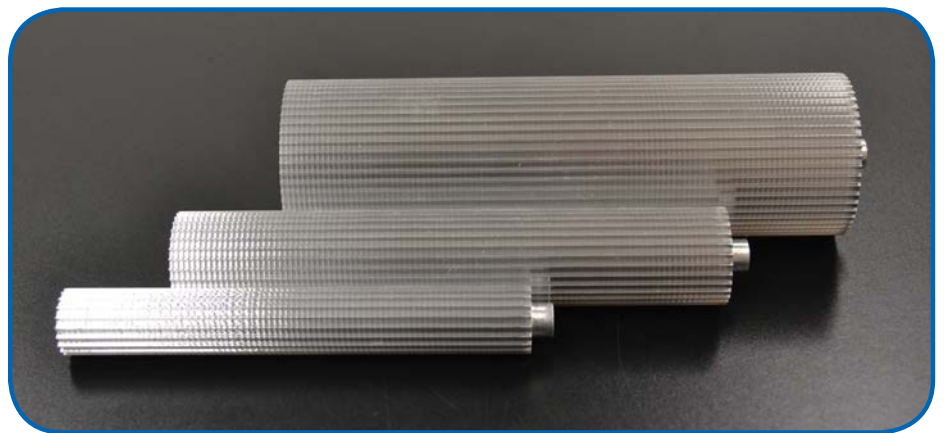


# Custom Machine & Tool

## EXPANDS CAPABILITIES WITH NEW TOOTH PROFILES

Custom Machine & Tool Co., Inc., recently announced it will be adding another metric profile to the company's line of pulleys and pulley stock. Joining the 72-hour guaranteed delivery on pulley stock program is the AT-3 Metric Profile. The AT-3 compliments this timing pulley stock program which also includes the AT-5 and AT-10 profiles.

CMT is also adding the 3 mm, 5 mm, 8 mm Goodyear Super Torque Pd Profiles. Goodyear enthusiastically promotes the Super Torque Pd as "the next evolution in synchronous drive belt development from Goodyear." The Super Torque Pd belts have a unique modified round tooth design that minimizes tooth shear and operates quieter than traditional trapezoidal tooth profiles.



"We are thrilled to continue investing in manufacturing capital equipment which allows us to expand and showcase our products in the power transmission and motion control product industry," said Owner and

President of Custom Machine & Tool Co., Inc., Robert Bennett.

### For more information:

Custom Machine & Tool  
Phone: (781) 924-1003  
[www.cmtco.com](http://www.cmtco.com)