



BETTER, FASTER, SMARTER



# Winding Solutions

Shafts, Chucks, and Accessories for Web Handling

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# About Maxcess Winding Solutions

## The Tidland Advantage

At Tidland, we understand that our customers' competitive advantage depends on ever-increasing productivity. For over 65 years, equipment manufacturers and end users in the web handling industry have trusted Tidland to deliver innovative solutions that keep them on the leading edge. Whether you're working with films or foils, papers or non-wovens, Tidland offers the broadest portfolio of slitting and winding products and accessories designed to meet your specific requirements.



## Worldwide Service and Support

As part of the Maxcess team, Tidland personnel can offer the most comprehensive array of accessories and complementary equipment in the industry, thanks to our partner brands of RotoMetrics (Rotary Dies and Support Tooling), Fife (Web Guiding & Inspection), MAGPOWR (Tension Control), Webex (Precision Rolls), Valley Roller (Rubber Coverings), and Componex (Precision Rolls). Maxcess also provides a global reach, with operations in the Americas, Asia, Europe, and Australia.

## Unparalleled Customer Support

Others may claim to offer comprehensive support, but Tidland knows your operation requires more. Experienced in various disciplines, including applications analysis, design and engineering, Tidland's service team is dedicated to understanding your application and providing the best solution. Our service technicians, who can be deployed globally at a moment's notice, aren't just factory-trained, they're industry experts.





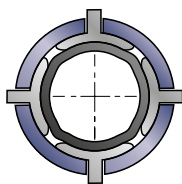
**Key Benefits**

- Custom journal design: Fits existing equipment
- Available in many sizes: Accommodates most application requirements
- Durable construction: Long life, low maintenance
- Modular air systems: Reusable hardware/lower repair costs
- Steel, alloy, aluminum construction: Optimal material selected based upon application needs

# Core Shafts

## Lug Shafts

Offered as air-expanding or mechanical-expanding, Lug Shafts deliver superior performance for most converting applications. The serrated steel lug-style design prevents roll slippage through fast acceleration and deceleration, and minimizes vibration at high web speeds.

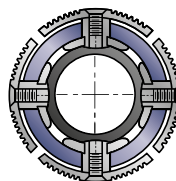


**Series 500 Lug Shaft (Air)**  
Light- to Heavy-Duty  
50 to 152 mm (2 to 6 inch) ID Cores

**Series 550 Lug Shaft (Mechanical)**  
Standard- to Heavy-Duty  
76 mm (3 inch) ID Cores

## Leaf Shafts

Durable and reliable, Tidland Leaf Shafts are designed to handle a wide range of converting applications, and are best at preventing thin wall core deformation.



**Series 650 Leaf Shaft - Medium to Wide Web**  
38 to 152 mm (1.5 to 6 inch) ID Cores/Coreless



**Lug Shaft**

Feature	Benefit
Serrated steel, lug-style design	Prevents slippage during acceleration and e-stops
Non-metallic springs	Long bladder life
Mechanical lug activation	Superior torque for your most demanding applications
Global standard component design	Regional and consistent service and after sales support

Feature	Benefit
Full-length leaf-style design	More winding surface, eliminating thin wall core deformation, provides positive grip on multiple cores with inside diameter variation
360° radial expanding grip	Can wind single or multiple rolls, with or without cores
Global standard component design	Regional and consistent service and after sales support

## Cyclone™ Series High-Speed Centering Shafts

Tidland's new high-speed centering shaft dramatically increases throughput by minimizing roll loping and machine vibration. Enabling faster production through its ability to center and grip cores concentrically about the shaft, the Tidland Cyclone Series is available in 3" to over 20" diameters.

## External Element Air Shafts

Advanced technology. Remarkable performance. With our innovative two-piece expanding elements, these shafts deliver the optimum combination of balance and torque.

### G890E

Available in 3" and 6" core inner diameter  
Shaft core made of extruded aluminium

### Series 800 External Element Shafts Standard- to Heavy-Duty

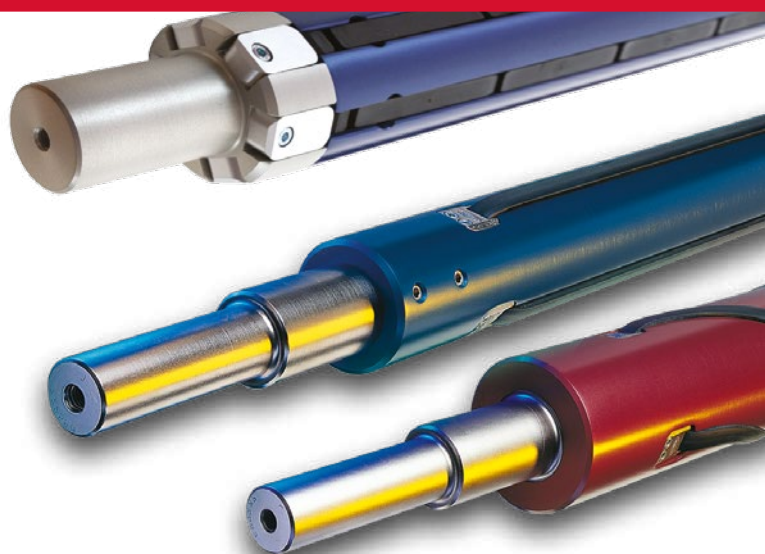
25 to 305 mm (1 to 12 inch) ID Cores

Tidland's Series 800 Shafts are narrow to wide web air shafts. They feature straight external bladders that activate expanding elements to grip the core with high torque. The air systems feature a proven robust design that is easy to maintain. These shafts are available in steel for durability and load capacity or lighter weight aluminum for easier handling.

### Series 850 Spiral External Element Shaft Standard- to Heavy-Duty

76 to 406 mm (3 to 16 inch) ID Cores

The unique patented spiral design of Tidland's Series 850 shafts provide 360° of radial grip and intrinsically equalized load distribution.



### Key Benefits

Core Centering reduces vibration, which:

- Increases quality of wound rolls
- Increases run speed, resulting in faster throughput
- Increases life of mounted equipment
- Increases quality of data from sensitive sensors (especially optical sensors)

These benefits are assuming that the previous run speed limit was due to vibration from running eccentric rolls



### Feature

### Benefit

Two-piece element design	Easily changed without removing from machine
Rubber/aluminum external elements	Positive core grip for a variety of application demands
Patented spiral element (850 only)	Eliminates vibration against surface rolls
Global standard component design	Regional and consistent service and after sales support

# Ergonomic Shaft Solutions

## Applications

This super-lightweight line of Tidland shafts matches the weight that can reasonably be lifted by a single person, without sacrificing quality or performance. Ergonomically speaking, that's pretty smart.

### GX Ultra-Lightweight External Element Shafts Light- to Standard-Duty

76 and 152 mm (3 and 6 inch) ID Cores

These are the lightest shafts we make, delivering ergonomic benefits as well as high performance. With their combination of lightweight, affordability and innovative two-piece external element design, these versatile shafts are ideal for use in many applications.

Feature	Benefit
Lightweight construction	Reduces risk of operator injury
Two-piece element design	Easily changed without removing from machine
Rubber/Aluminum gripping element	Positive core grip for a variety of application demands
Global standard component design	Regional and consistent service and after sales support

### Ultrashaft™ Lightweight Carbon Fiber Shafts

#### Light- to Heavy-Duty

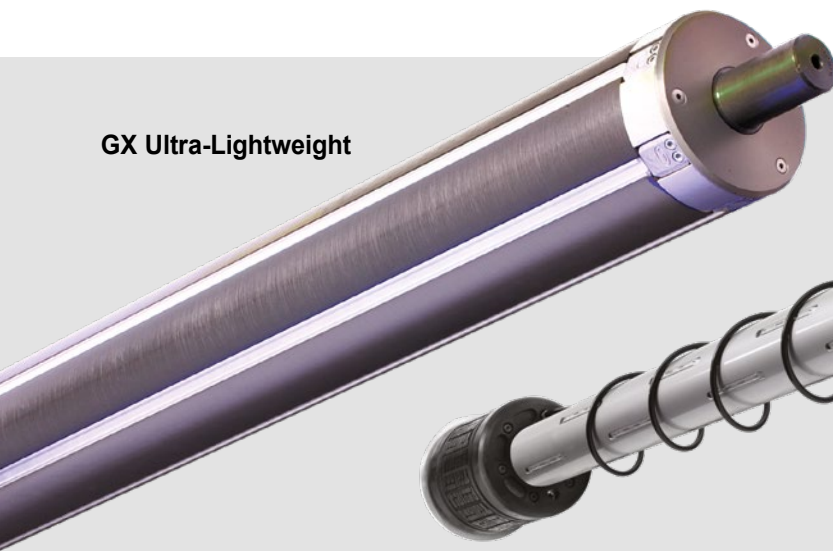
76 to 152 mm (3 to 6 inch) ID Cores

The Ultrashaft combines the ability required to carry heavy loads and the reduced deflection required to operate at higher speeds without vibration in a lightweight, ergonomic carbon fiber winding solution. These shafts are constructed with precision wound, high-strength carbon filaments to provide a section modulus with a weight-to-strength ratio optimized for a wide variety of applications. The Ultrashaft™ is available in the following designs:

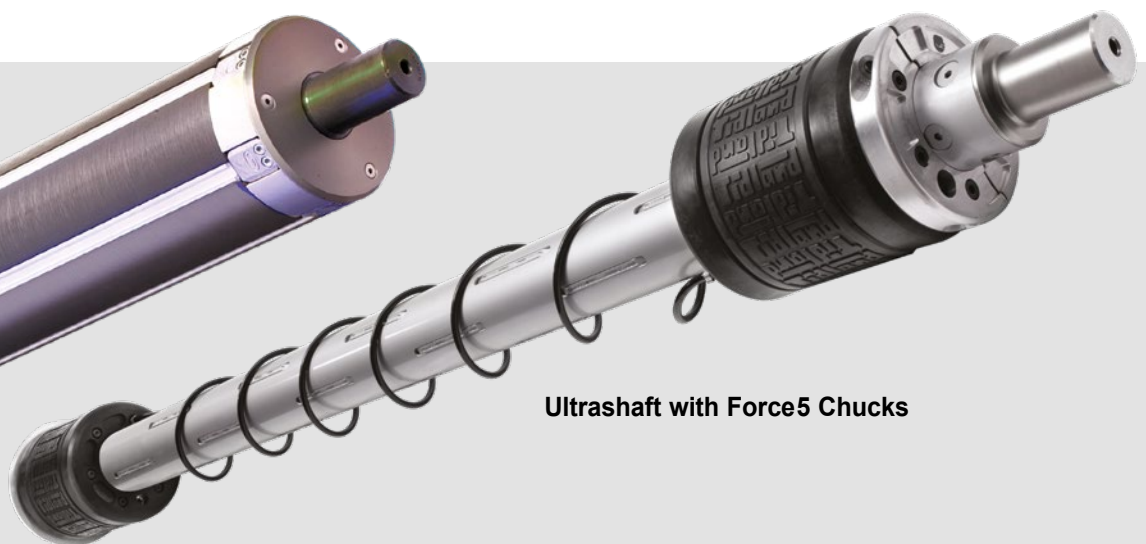
- **B Lug-Type Air Shaft**
- **Lug-Type Air Shaft (Air and Mechanical)**
- **Tubular Mandrel**

Feature	Benefit
Lightweight construction	Reduces risk of operator injury
High-strength carbon fiber design	Permits higher speeds, higher loads and minimal deflection

GX Ultra-Lightweight



Ultrashaft with Force5 Chucks



# Specialty Shafts

## Great Expansion Shafts

Reduce vibration and operate at higher speeds with the new 560PM Great Expansion shaft from Tidland. Featuring a large expansion range, mechanical core centering through pneumatic actuation and improved strength, the 560PM greatly reduces vibration while allowing it to run at speeds greater than 2,000 feet per minute.

In addition, the large expansion range of 22.2 mm (0.875 inches) allows for a range of core ID's to be used with easier loading. Greatly reduce maintenance needs with the use of low-friction materials and externally accessible wear components

## Mill-Duty Air Shafts

These heavy-duty air shafts are designed for maximum reliability and performance in demanding mill environments, reducing the cost and storage of expensive reel spool mandrels.

### Reel Spool - Non-Expanding Mandrel

178 to 610 mm (7 to 24 inch) ID Cores

### Reel Spool - Spiral External Element

Up to 610 mm (24 inch) ID Cores

### Series 750 Leaf Shaft

178 to 610 mm (7 to 24 inch) ID Cores and Over/Coreless



## Narrow Web Shafts and Core Holders

76 mm (3 inch) ID Cores

Narrow web shafts and chucks deliver quality and reliability to narrow web applications such as label presses. Options include:

### External Element Adapter Shaft

Designed for bar mounting. It is interchangeable to hold other core sizes.

### AL Automatic Lug Chuck

For economical die cut and trim removal in narrow web applications.

Feature	Benefit
Lightweight construction	Reduces risk of operator injury
Two-piece element design	Easily changed without removing from machine
Rubber/Aluminum gripping element	Positive core grip for a variety of application demands
Global standard component design	Regional and consistent service and after sales support

# Differential Shafts

Tidland's breakthrough Differential Air Shafts are designed to deliver multiple roll tension equalization to slit rolls winding on the same shaft for duplex center or surface winders – engineered for tension ranges down to 0.2 pli.



The advanced features of these shafts hold rolls straight and true, reduce roll loping and offer positive mechanical locking to prevent lateral roll movement, providing improved finished roll quality, reduced scrap and fast, easy setups.

## D6X Core-Slip Differential Shafts

Optimal control over roll quality and setup time  
76.2 to 508 mm (3 to 20 inch) ID Cores

Feature	Benefit
Removable core stop trays	Ability to easily store slit roll recipes
Pre-assembled tension strips	Fast and easy maintenance

## D490B Core-Lock Differential Shaft

High quality roll structure with no dust  
76 and 152 mm (3 and 6 inch) ID Cores (other sizes also available)

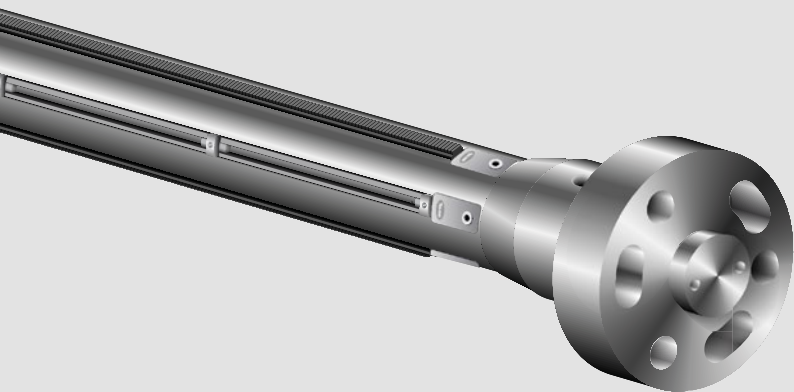
Feature	Benefit
Positive core-locking cartridge design	Eliminates dust
Two-row, 12-ball, torque activated design	Concentric roll support and superior roll build quality

## D490S Core-Lock Differential Shaft

Heavy gauge wire spring expands to lock core  
76 mm to 152 mm (3 to 6 inch) ID Cores

Feature	Benefit
Custom diameters available	Made specifically unique to equipment
Requires no lubrication	Time and cost saving

NEW D6X Differential Shaft



D490S Core-Lock

D490B Core-Lock

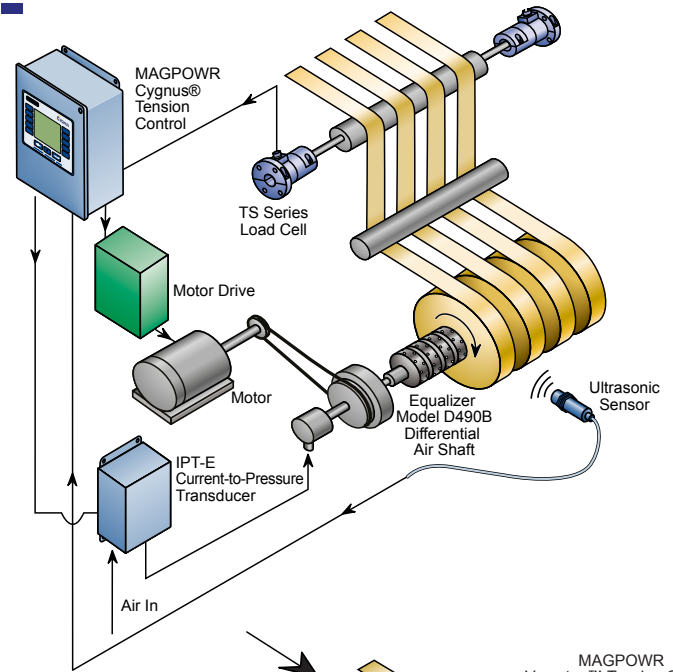




# Differential Shafts - Winding Controls

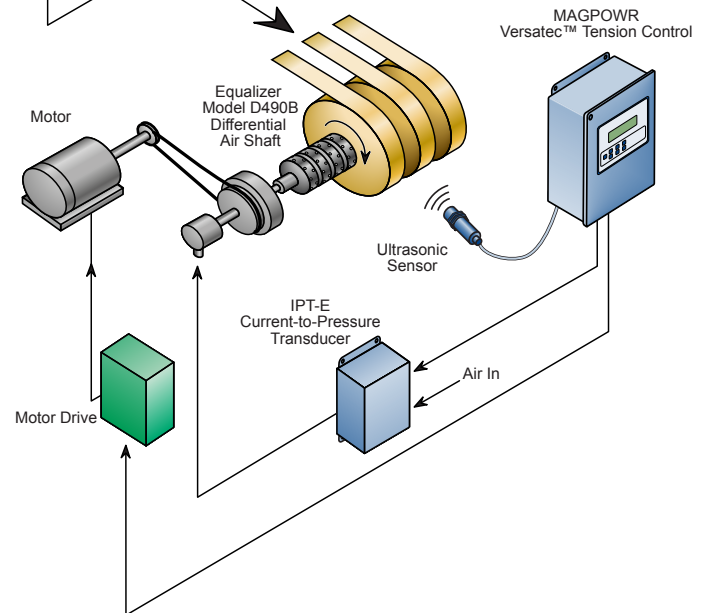
## Closed-loop Tension Control with Ultrasonic Sensor for Speed Control

For tension control, load cell measurement of the actual web tension is sent to the controller. The controller sends an output to a current-to-pressure transducer to control pressure to the differential shaft based on the desired tension in the web. For speed control, an ultrasonic sensor senses the roll diameter and sends a signal to the controller. The controller uses inverse diameter function to output 10-0V signal to the drive to control the rotational speed of the motor.

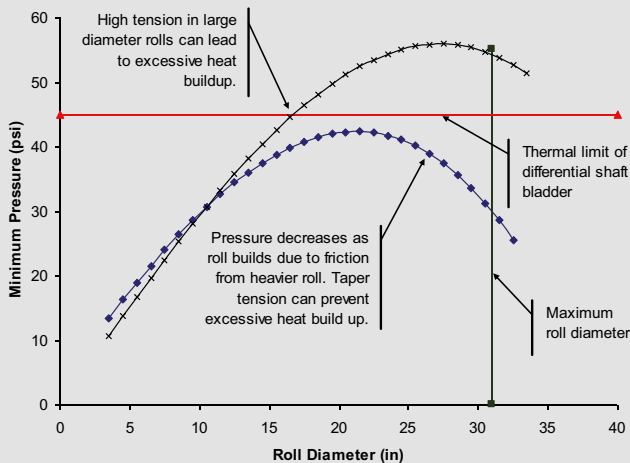


## Open-loop Tension Control and Speed Control with Ultrasonic Sensor

For tension control, an ultrasonic sensor diameter output correlates to the required tension for a given roll diameter. The controller receives the sensor input and sends an output to a current-to-pressure transducer to control pressure to the differential shaft. For speed control, use the same ultrasonic sensor diameter output to the controller. The controller receives the sensor input and uses an inverse diameter function to output 10-0V signal to drive to control rotational speed of the motor.



Differential shaft pressure as a function of roll diameter, roll weight and taper tension.



## Differential Air Shafts

Air pressure controls tension in a pneumatic differential shaft. However, to successfully and safely wind a roll, pressure must be controlled relative to the speed of the shaft. The greater the difference in speed between the shaft and the roll, the greater the risk of generating excessive heat (and dust) during the wind-up.

# Air Chucks

## Standard Air Chucks

76 to 508 mm (3 to 20 inch) ID Cores and over

Rugged, high-torque and air-operated, Tidland's Air Chucks are economical and lightweight, designed for winding and unwinding, and can be used to convert smaller shafts to suit larger cores for an ergonomic, trouble-free solution for a wide variety of applications. These Air Chucks have established a reputation in the industry for a reliable, non-slip grip that affords maximum roll control and permits the running of machines at maximum speed.

Feature	Benefit
Designed to work with or without shafts	Maximum rotational control in Unwind/Rewind applications
Gripping force spread over a wide area	Prevents slippage and increases core life
Easy to use	Maximizes productivity
Simplicity of design	Trouble-free operation

## Force5 Air Chucks

150 mm or 152 mm (5.91 inch or 6 inch) ID Cores

The Force5 Air Chuck offers a lightweight alternative to aluminum chucks, providing unmistakable ergonomic benefits to operators. The specially-engineered polymer expanding element is not only designed for high durability in extreme conditions, but retains its shape over time for ease of insertion and removal.

Feature	Benefit
Lightest weight	Easier handling
Wide area gripping force	More holding power on the core
Highest durability	Long-lasting, dependable
Easiest core insertion and removal	Faster setups and core changes

Standard Air Chucks



Force5 Lightweight Chucks



# Shaftless Chucks

## Raptor Series

Whether you're running air powered or torque actuated chucks, the key to preventing core damage is a firm, tight grip. The Air Powered Lug and Torque Chucks feature wide footprint lugs to provide a consistent grip on the core, without damaging the inside. This means no more tugging, pulling or pounding to remove the chucks at the end of a run. The chucks are also designed for on-machine maintenance and toolless adapter changes, reducing downtime and risk of injury to the operator. Switch core sizes with two easy steps, in less than 5 seconds. Faster speed, stronger grip - no wonder they're called Raptors.

Feature	Benefit
Wide footprint lug	Eliminates core damage/sticking rolls/wasted product
Durable construction	Long life, low maintenance
Toolless adapter allows users to switch core sizes	Reduces downtime and additional component costs
Absolute core centering	Ensures web stability into process for maximum productivity
On machine maintenance capability	Reduces downtime and risk of ergonomic lifting hazard

## Torque Chucks

76 to 305 mm (3 to 12 inch) ID Cores

Raptor Series Torque Chucks are engineered for continuous-duty shaftless applications. The Torque Chucks deliver substantial torque output and are ideal for corrugating, sheeting, paper finishing or laminating.

## Air Powered Lug Chuck

76 to 305 mm (3 to 12 inch) ID Cores

Raptor Series Air Powered Lug Chucks are easy to use and maintain and help eliminate the core damage usually associated with shaftless applications. The Lug Chuck is ideal for high speed printing, laminating, sheeting applications on unwind flying or zero speed splicers.

## Core Size Adapter

The Raptor Series Core Size Adapter works with Air Powered Lug Chucks and Torque Chucks. It is available in a wide variety of sizes and allows toolless core-size changes without removing the chuck from the machine, reducing downtime and risk of injury to the operator.



## PM Chucks

76 to 305 mm (3 to 12 inch) ID Cores

Rugged construction and reliable pneumomechanical operation make the PM chuck ideal for the most demanding environments. Optional quick-mount adapters are available for the 76 mm (3 inch) base model to accommodate core sizes up to 305 mm (12 inches).

## Mechanical Chucks

76 to 152 mm (3 and 6 inch) ID Cores

Torque Chuck



Air Powered Lug Chuck and Adapter



PM Chucks

# PressureMax

## Air Shaft Pressure Monitoring System

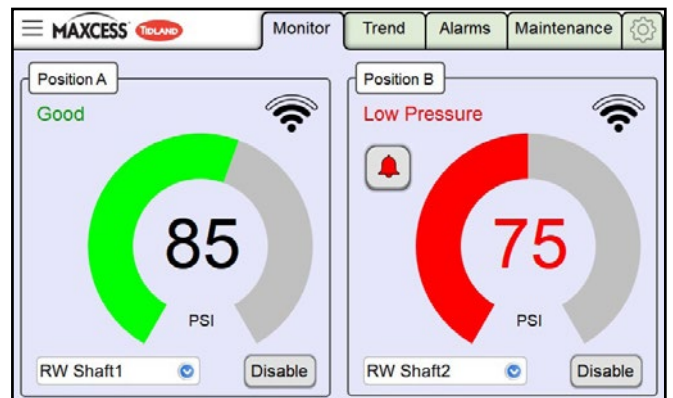
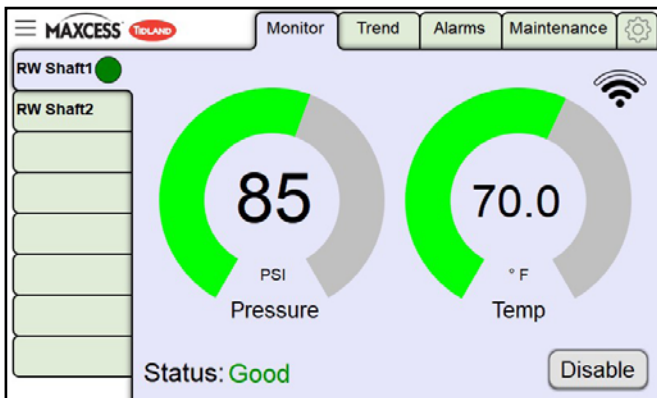
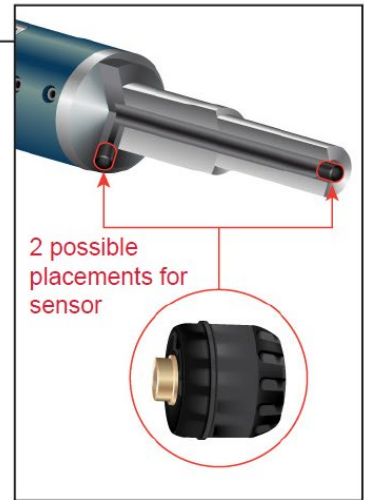
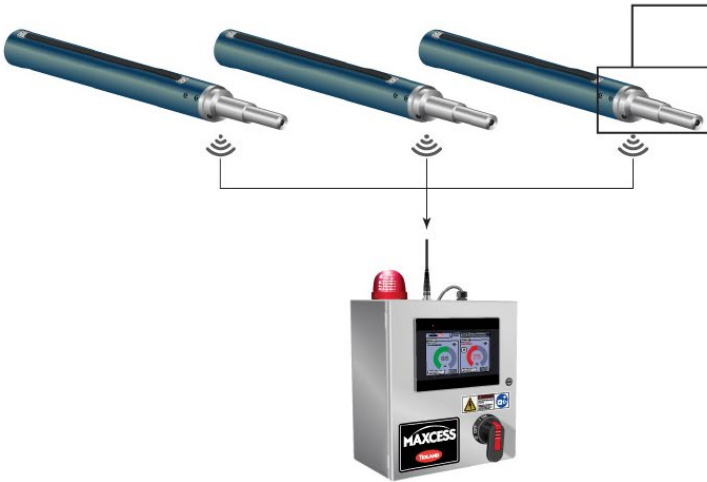
The PressureMax system reduces operating costs by minimizing unplanned downtime and scrap while improving safety during unwind and rewind processes. Internal air bladders of winding shafts and chucks require correct inflation and regular maintenance to ensure adequate torque is transferred to the roll. Tidland's Industry 4.0 solution provides real-time condition monitoring, alerts and analytics to machine operators, helping to maintain correct inflation levels and to detect air bladder leaks before failures occur. PressureMax air monitoring can eliminate core slippage that would otherwise result in safety risks, web breaks, material scrap and unplanned downtime.

Easily integrate PressureMax into new equipment builds or retrofit the system for existing process lines. Dramatically improve safety and data management.



### System Features

- Secure one-way RF receiver, providing a secure connection to sensors
- Real-time air leak detection and alerts
- Wireless collection and display of pressure and temperature data, ensuring proper inflation and deflation
- Configurable display modes on HMI for simplex and multi-shaft turrets
- Saved trend, alarm, and warning history



# Crushed Core Restorers

## Mark I and Mark II Roll Savers

Mark I: 76, 102, 127, 152 and 171.45 mm  
( 3, 4, 5, 6, and 6.75 inch) ID Cores

Mark II: 76 mm (3 inch) ID Cores

Available to reopen crushed cores, enabling you to convert scrap rolls into usable materials. These durable Roll Savers are easy to operate, feature hydraulic power up to four tons, and work virtually anywhere.

**Mark I Hydraulic Unit**



**Mark I Roll Saver**



**Mark II Roll Saver**



# Brakes and Safety Chucks



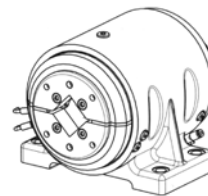
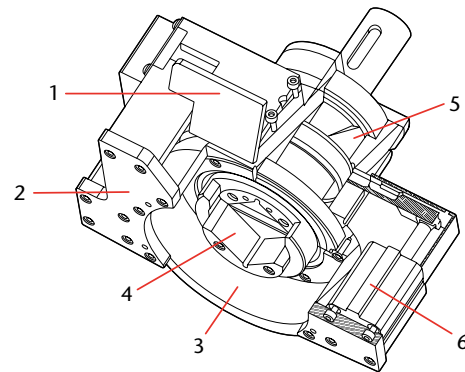
## Safety Chucks

Tidland System Boschert Safety Chucks are designed as a pre-engineered solution for roll support and torque transfer. These affordable Safety Chucks are available in a wide range of sizes and options and are very effective in light- to standard-duty, and some heavy-duty applications. Available for flange or pedestal mounting.

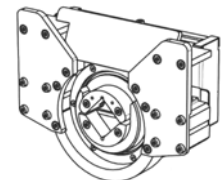
Feature	Benefit
Replaceable hardened inserts	Long life, reduced cost
Unique self-closing handwheel and optional pneumatic designs	Increased safety
Available in many sizes	Suitable for almost any application
Durable construction	Long life, low maintenance
Square or triangular saddles	Maximum torque transfer, ease of loading

## A Series Automatic Safety Chuck

1. Axial alignment shaft guide
2. Lateral alignment shaft guide
3. Fail-safe design prevents roll shaft from falling out of Safety Chuck
4. Replaceable inserts (upper and lower)
5. Redundant mechanical lock in case of electrical or pneumatic failure
6. Twin pneumatic cylinder system

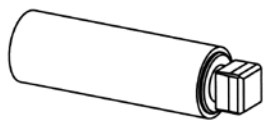


P40 Automatic Chuck

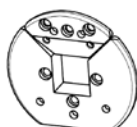


A40 Automatic Chuck

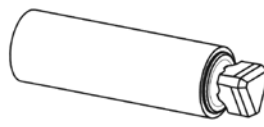
## Common inserts and mating shaft journals



VT-1



VT-6



VT-7

## Pneumatic Brakes

Tidland's original Pneumatic Brakes are still available as a simple solution for light-to standard-duty applications. These

popular pneumatic brakes provide the design specifications and operating sensitivity required to fully integrate tension control components.

# Factory Repair

When you send a Tidland shaft in for repair, only Tidland can give you a true shaft condition and function assessment performed by a team familiar with the original shaft manufacturing process. With convenient locations on the East coast, Midwest and West coast, as well as locations worldwide, we can provide quick turnaround to help get your system up and running as fast as possible. All repairs come with a six-month warranty.

## Shaft Parts

We stock a wide range of shaft and chuck accessories like inflation tools, drive couplings, collars, element punch kits, journal impact pullers, air valves, springs, button and lugs for quick shipping.

## Body/Journals

After a full inspection of your shaft, our experienced team provides a detailed assessment, quote and timeline for recommended repairs. Upon your approval and option selections (such as body or journal replacement) we perform the work needed as quickly as possible, confirm repairs with a second thorough inspection and return a shaft that's ready to be placed back into your operation.

## Air System

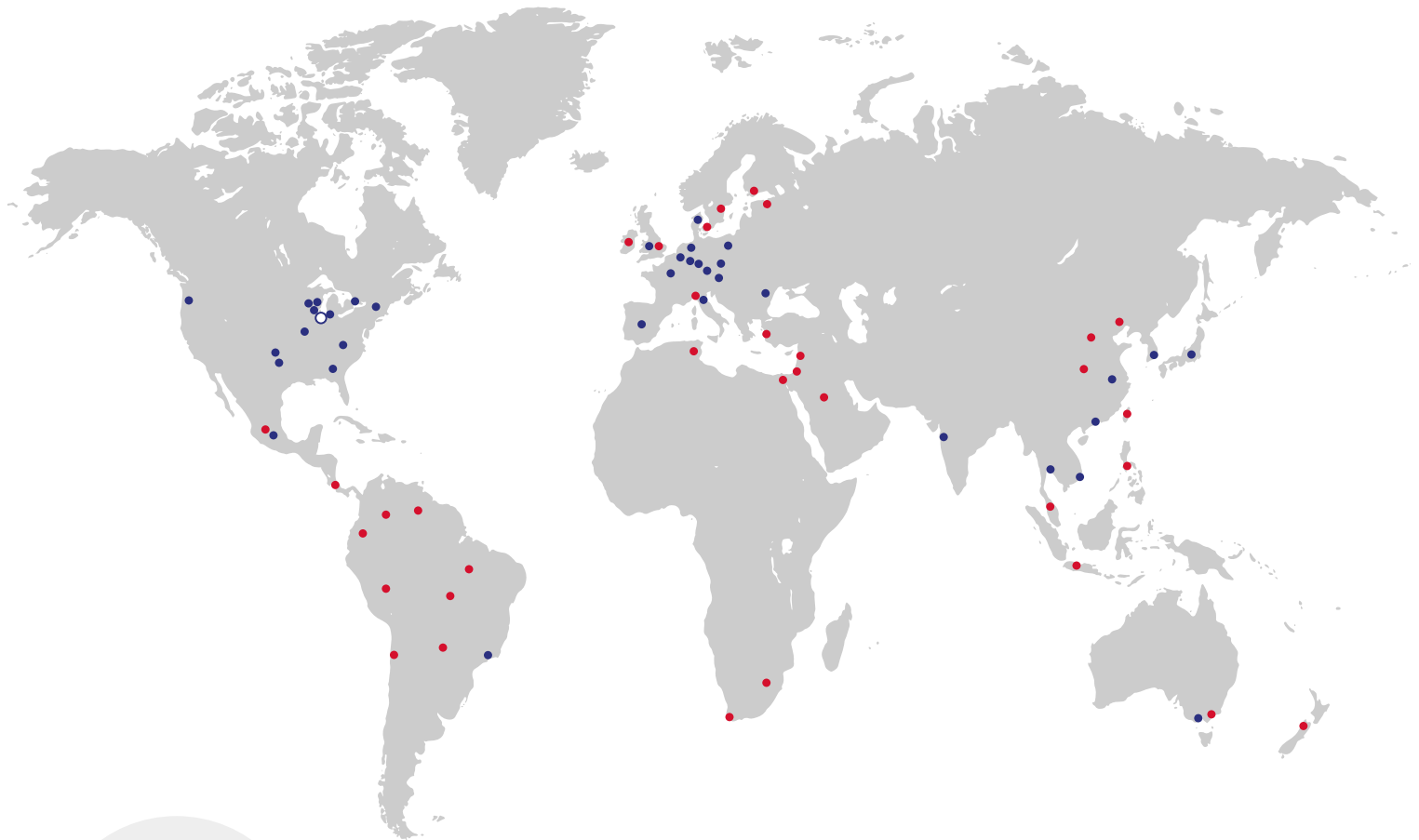
During the inspection, we may find that your shaft's air system may need to be replaced. We can also provide a replacement air system based upon the original drawings, for installation by your maintenance department.

# Spare Parts

Tidland offers a complete line of accessories to keep your winding products running at peak efficiency, including technical literature with tips on use and care of our products. And because we stock what we sell, we're able to ship your order immediately.



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