

REGAL REXNORD SOLUTIONS FOR WIND TURBINES















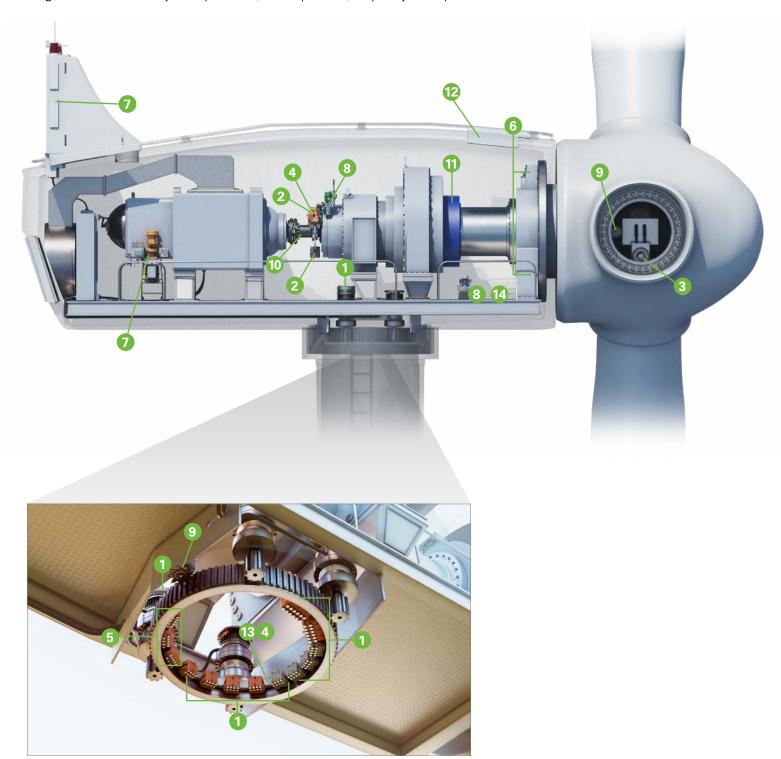
WIND TURBINES

YOUR VISION, OUR EXPERTISE

Explore how Regal Rexnord's innovative solutions help harness the power of wind energy for onshore, offshore, and small wind turbines.

Our decades of expertise, deep application knowledge, and robust testing capabilities are pivotal in supporting the wind industry, ensuring efficient, cost-effective solutions that don't compromise on safety.

Regal Rexnord is not just a provider, but a partner, in your journey towards net-zero emissions.



| Regal Rexnord [™] Products | ONSHORE WIND TURBINES | | | OFFSHORE WIND TURBINES | |
|---|-----------------------|--------------|-----------|------------------------|--------------|
| | Geared WTG | Gearless WTG | Small WTG | Geared WTG | Gearless WTG |
| 1 YAW BRAKES | | | | <u> </u> | |
| Svendborg Brakes [™] BSAB Series Hydraulic Caliper Brakes | • | • | • | • | • |
| Stromag [™] CB Series Hydraulic Caliper Brakes | • | • | • | • | • |
| | | • | | | |
| Twiflex™ T Series Hydraulic Caliper Brakes | | | • | | |
| Warner Electric™ ERX Motor Brakes | • | • | | • | • |
| 2 ROTOR BRAKES | | | • | | |
| Svendborg Brakes BSFI/H Series Hydraulic Caliper Brakes | • | | • | • | |
| Svendborg Brakes BSAB 90 Hydraulic Caliper Brakes | • | | | • | |
| Svendborg Brakes BSAK Series Hydraulic Caliper Brakes | | | | | |
| Stromag CB90R Series Hydraulic Caliper Brakes | • | • | | • | |
| Stromag Rotowell 120 Hydraulic Caliper Brakes | | • | | | • |
| Twiflex MX Hydraulic or Pneumatic Caliper Brakes | | | • | | |
| Twiflex GMR Hydraulic or Pneumatic Caliper Brakes | | | • | | |
| 3 PITCH BRAKES Warner Electric ERX Motor Brakes | • | • | | • | • |
| | • | • | | • | • |
| Stearns™ 370 Electric Motor Brakes ② BRAKE PADS & DISCS | • | | | | |
| Svendborg Brakes Custom Formulated Organic Friction Material | • | • | • | • | • |
| Svendborg Brakes Green Friction Material According to REACH | • | • | • | • | • |
| Svendborg Brakes Sinter Friction Material for High Energy | | | | | |
| and Sliding applications | • | | • | • | |
| Svendborg Brakes Steel Rotor Brake Discs | • | | • | • | |
| 5 SLIDING SYSTEMS | | | | | |
| Svendborg Brakes YSXA Passive, Active, or Hybrid Yaw Sliding Systems | • | • | | • | • |
| Stromag Passive or Hybrid Yaw Claw Sliding Systems | • | | | | |
| 6 ROTOR LOCKS | J. | ' | | | ' |
| Svendborg Brakes LSA Hydraulic Rotor Locks | • | • | | • | • |
| Svendborg Brakes LSM Manual Rotor Locks | • | • | | • | • |
| Stromag H Hydraulic Rotor Locks | • | • | | • | • |
| O COOLING SYSTEMS | | | | | ' |
| Svendborg Brakes Cooling Systems | • | | | • | |
| 3 HYDRAULIC POWER UNITS | | | | * | |
| Svendborg Brakes Hydraulic Power Units (1-, 2-, 3-Function) | • | • | • | • | • |
| 9 LIMIT SWITCHES | | | | | |
| Stromag Geared Cam Mechanical Limit Switches for Yaw or Pitch | • | • | • | • | • |
| 10 COUPLINGS | | ' | | | ' |
| Ameridrives [™] Ameridisc [™] High Speed Couplings | • | | | • | |
| CENTA™ CENTALINK™ High Speed Couplings | • | | | • | |
| Jaure [™] LamiLink High Speed Couplings | • | | | • | |
| 10 LOCKING DEVICES | J. | | | | ' |
| Tollok [™] TLK Locking Assemblies | • | | | • | |
| 12 LINEAR ACTUATORS | | | | | ' |
| Thomson Linear™ Elektrak A22 Electric Actuators | • | • | | • | • |
| Thomson Linear ActionJac Machine and Ball Screw Jacks | • | • | | • | • |
| ® SERVICE TOOLS | | | | | 1 |
| Svendborg Brakes DRT gen2 UptowerYaw Disc ResurfacingTool | • | • | | • | • |
| Svendborg Brakes LBS-90 / LSB-120 Yaw Brake Lifting Tool | • | • | | • | • |
| Svendborg Brakes Groove Tool Yaw Noise Reduction Tool | • | • | | • | • |
| Svendborg Brakes Brake Piston Extractor | • | • | • | • | • |
| © IIOT & CONDITION MONITORING | | | | | |
| Svendborg Brakes Gateways | • | • | • | • | • |
| - / · | | | | | |

YAW BRAKE SOLUTIONS

SVENDBORG BRAKES™ **HYDRAULIC CALIPER BRAKES BSAB SERIES**



The BSAB series brakes are active yaw braking solutions specifically designed for wind turbines, where applied oil pressure enables controlled braking. These robust, dual-action multi-piston brakes deliver a formidable clamping force, ensuring reliable and efficient braking and holding performance.

STROMAG™ HYDRAULIC CALIPER BRAKES CB SERIES



The CB series active hydraulic yaw brakes offers exceptional braking efficiency and maintenance simplicity. Innovatively designed with a patented central web (pockets), these brakes evenly distributes force across four to six pockets, significantly reducing stress and enabling higher braking forces. Its userfriendly features include a straightforward pad wear status check and effortless replacement of friction linings, making it a reliable and easy-to-maintain solution for wind turbine applications.

TWIFLEX™ **HYDRAULIC CALIPER BRAKES** T SERIES



The Twiflex™ T series hydraulic caliper brakes enhance the safety and efficiency of your small sized wind turbines, engineered for optimal performance in wind energy applications. These compact and versatile yaw brakes offers reliable peformance and long life.

WARNER ELECTRIC™ MOTOR BRAKES ERX SERIES



The ERX series motor brakes are highly customizable, compact, easy-to-install single and double brake setups with optional enclosure protection, Warner Electric Sensor (WES) for contactless detection, and redundancy options to suit specific project requirements. The ERX Brake is used in wind turbines to ensure controlled stopping and holding. Proprietary nonstick friction materials allow for project customization to meet energy, speed, and torque requirements.

YAW SLIDING SYSTEMS

SVENDBORG BRAKES™ ACTIVE OR HYBRID YAW **SLIDING SYSTEMS** YSAA SERIES



The Svendborg Brakes™ YSAA Active Yaw Sliding Systems are designed for wind turbine yaw control, ensuring seamless and precise alignment of the turbine with varying wind directions. Offers enhanced efficiency and reliability in turbine operation, significantly reducing mechanical stress and maintenance requirements.

BRANDS YOU KNOW, **PERFORMANCE YOU TRUST**

SVENDBORG BRAKES PASSIVE YAW SLIDING SYSTEMS YSFA SERIES



The YSFA Yaw series comprises springapplied vaw slide bearings with both axial and radial support segments serving as load-carrying components. The product series is available in both passive or hybrid models (active & passive), customized to customer needs for performance and dimensional specifications.

STROMAG™ PASSIVE OR HYBRID YAW SLIDING SYSTEMS YAW CLAW



The Stromag™ Yaw Claw, available in both passive and hybrid yaw sliding system configurations, is engineered to ensure precise and stable positioning of wind turbines in response to wind direction changes. These systems are critical for optimizing energy capture efficiency, with the flexibility of passive or hybrid operation modes catering to various operational requirements and reducing mechanical stress on the turbine structure.

ROTOR & PITCH BRAKE SOLUTIONS

SVENDBORG BRAKES™ HYDRAULIC CALIPER BRAKES BSFI SERIES | BSAB SERIES **BSAK SERIES**



Svendborg Brakes[™] rotor brake calipers are specifically designed for dynamic braking on wind turbines. These robust brakes deliver controllable clamping force, ensuring reliable and precise emergency braking and holding performance.

STROMAG™ HYDRAULIC CALIPER BRAKES CB SERIES | **ROTOWELL SERIES**



The Stromag™ CB and Rotowell series rotor brake caliper offers compact, robust solutions for efficient braking. Its weight-optimized design ensures easy maintenance and reduced caliper requirements per turbine, quaranteeing reliable performance in all wind conditions.

TWIFLEX™ **HYDRAULIC OR PNEUMATIC CALIPER BRAKES** MX SERIES | GMR SERIES

Twiflex™ caliper brakes offer reliability in controlling rotor braking. Design flexibility in positioning around the disc's periphery suits the complex structure and space envelope of small wind turbine systems, ensuring optimal performance and safety. With provisions for specific mounting angles and pneumatic operation, these calipers provide the precision and control necessary to support safe and efficient small wind turbine operation.

WARNER ELECTRIC & STEARNS™ **MOTOR BRAKES** ERX SERIES | 370 SERIES

The ERX series motor brakes are highly customizable, compact, easy-to-install single and double brake setups with optional enclosure protection, Warner Electric Sensor (WES) for contactless detection, and redundancy options to suit specific project requirements. The ERX and 370 Series brakes are used in wind turbines to ensure controlled stopping and holding. Proprietary nonstick friction materials allow for project customization to meet energy, speed, and torque requirements.

ROTOR LOCKS & LOCKING DEVICES

SVENDBORG BRAKES AND STROMAG™ **HYDRAULIC ROTOR LOCKS** LSA SERIES | H SERIES

Svendborg Brakes™ and Stromag™ Rotor Locks, including the LSA and H hydraulic driven models, are vital for ensuring safety in wind turbines, especially in high wind conditions. Mounted on the turbine's main rotor shaft, these locks engage by running the lock bolt into the lock disc, effectively handling the high output torque from turbine gearboxes and providing a secure 'locked' status.

INNOVATING **SOLUTIONS** FOR SAFER **OPERATIONS**

SVENDBORG BRAKES MANUAL ROTOR LOCKS LSM SERIES



Svendborg Brakes LSM rotor locks are an essential safety component for wind turbines, designed to securely lock the rotor shaft in place, particularly during maintenance operations or emergency stops. This rotor lock ensures robust and reliable engagement, crucial for handling the significant torque and forces encountered in wind turbine gear systems.

TOLLOK™ LOCKING **ASSEMBLIES** TLK SERIES



Rexnord™ Tollok™ locking devices feature a wide range of options from simple and compact designs to to advanced features such as corrosionresistant coatings, special bolting, and high-speed applications. The full line of locking assemblies can be tailored to fit customers' everchanging application needs, and are ideal for use in heavy-duty and specially engineered environments such as wind turbines.

COOLING SYSTEMS, HYDRAULIC POWER UNITS, & LIMIT SWITCHES

SVENDBORG BRAKES™ COOLING SYSTEMS



Svendborg Brakes[™] cooling systems are designed to enhance the performance and longevity of wind turbine systems by efficiently managing heat generation during operations. These advanced cooling solutions are crucial for maintaining optimal operating temperatures, thereby ensuring consistent performance and preventing overheating in demanding wind energy applications.

SVENDBORG BRAKES™ **HYDRAULIC POWER UNITS**



Svendborg Brakes hydraulic power units are engineered to provide reliable and efficient hydraulic energy to wind turbine braking systems. These units are crucial for ensuring smooth and precise control of braking operations, playing a key role in the safety and operational efficiency of wind turbines. Available in 1-, 2- and 3-function configurations.

STROMAG™ GEARED CAM MECHANICAL LIMIT SWITCHES



Stromag[™] geared cam limit switches are pivotal for wind turbine efficiency and precision. Designed for streamlined integration, these reliable and sophisticated switches offer exact position control for turbine blades and nacelles. Their pre-adjusted, compact design ensures swift and effortless assembly, making it easy-toinstall through simple mechanical and electrical steps. Developed in close collaboration with wind turbine manufacturers, Stromag's switches not only simplify installation, but promise tailored, high-quality solutions that enhance the safety and effectiveness of wind turbine operations.

CONTROL **OPTIMIZATION**

SERVICE TOOLS, FRICTION MATERIALS AND DISCS

SVENDBORG BRAKES™
UPTOWER YAW DISC
RESURFACING TOOL
DRT GEN2 SERIES

SVENDBORG BRAKES

YAW BRAKE

LIFTING TOOL

LSB-90 SERIES |

LBS - 120 SERIES

Svendborg Brakes[™] tools that completely recovers yaw discs uptower after years of wear and tear. Traditional replacement of the yaw brake discs is a time consuming and costly operation. The DRT minimizes service downtime and maintenance.

The LBS 90 + LBS 120 are lifting and installation tools providing new standards in the removal and installation of Svendborg Brakes and Stromag[™] yaw brake calipers - safe and fast!



SVENDBORG BRAKES PISTON EXTRACTOR



Svendborg Brakes Anti-Glazing Groove tool based on expertise related to mitigation of yaw brake noise and a solution that can be applied to a majority of installations. A fix that delivers a longlasting solution.

Safe and rapid removal of brake pistons from the Svendborg Brakes yaw brake 90- and 120-series during service and repair. Handle rotation makes threaded spindle turn and pull out piston from brake yoke.



Our range of brake pads and discs are designed to deliver optimal performance, durability, and safety for both yaw and rotor braking systems. From organic materials offering active friction capabilities to environmentally conscious and sintered options, each product is crafted to meet the specific demands of wind turbine operation. Additionally, our steel rotor brake discs are engineered for maximum longevity and effectiveness. These solutions collectively ensure smoother, safer, and more reliable wind turbine performance.



COUPLINGS AND LINEAR ACTUATORS

CENTA[™] **HIGH SPEED** COUPLINGS **CENTALINK SERIES**



The CENTALINK™ driveshafts compensate for axial, radial, and angular misalignment and consist of links designed for efficiency using flexible bushings for push and pull. This patented design results in a simple, highly flexible, and easy-to-assemble link coupling.

AMERIDRIVES™ & **JAURE™ HIGH** SPEED COUPLINGS AMERIDISC SERIES | LAMILINK SERIES



Ideal for wind turbine applications, offer exceptional misalignment capacity and are capable of handling high torque demands. These lightweight and maintenancefree couplings are designed for easy handling and longevity, for the dynamic requirements of wind energy systems.

THOMSON LINEAR™ **ELECTRIC ACTUATOR ELECTRAK A22**

Enhance the efficiency and reliability of your wind turbine with the Thomson Linear™ Electrak Actuator. This electric actuator stands out as a cleaner, more efficient alternative to traditional hydraulic and pneumatic systems. It expertly converts rotary motion into precise linear motion, enabling exceptional control in pushing, pulling, raising, lowering, rotating, and positioning applications.

THOMSON LINEAR MACHINE AND BALL **SCREW JACKS ACTIONJAC SERIES**



Designed to excel in challenging environments, Thomson ActionJac™ Screw Jacks offer the perfect blend of durability and precision. Crafted from premiumquality materials and adhering to stringent manufacturing standards, these screw jacks are designed to meet the highest demands while ensuring a long, reliable lifespan. Offering high configurability and easy integration, the ActionJac series presents a plethora of models and mounting options, facilitating the creation of state-of-the-art jack systems for wind applications.

SERVICE AND AFTERMARKET SOLUTIONS



YOUR TRUSTED PARTNER FOR WIND SERVICE AND AFTER MARKET SOLUTIONS

With over 40 years' experience delivering trailblazing products to over 200,000 wind turbines globally, Regal Rexnord provides deep domain expertise to wind farm operators and maintenance personnel. Regal Rexnord can help keep your wind turbines running and reduce your maintenance costs.

IIOT AND CONDITION MONITORING

In the advanced landscape of wind turbine technology, Svendborg Brakes™ IIoT offerings are pivotal. The Connectivity Gateways act as essential conduits, enabling robust data transmission between wind turbines and control networks. Complementing this, the UCCase/m condition monitoring system offers an advanced diagnostic approach, utilizing sensor data for predictive maintenance and operational optimization.



OPTIMIZED SERVICE TOOLS FOR WIND TURBINE MAINTENANCE

Svendborg Brakes offers a suite of specialized service tools designed for precision, efficiency, and safety. These tools are engineered to address specific maintenance needs in the wind energy sector, streamlining operations and reducing downtime. From uptower yaw disc resurfacing to noise reduction to yaw caliper installation tools, each tool provides advanced wind turbine maintenance solutions.

- Uptower Yaw Disc Resurfacing Tool
- Yaw Brake Caliper Lifting Tool
- Groove Tool Yaw Noise Reduction Tool
- **Brake Piston Extractor**

Regal Rexnord

Contact us: +45 63 255 255 800-626-2120 (US)

 $\underline{regalrexnord.com/wind\text{-}solutions} \hspace{0.1cm} | \hspace{0.1cm} \underline{svendborg\text{-}brakes.com} \hspace{0.1cm} | \hspace{0.1cm} \underline{regalrexnord.com}$

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