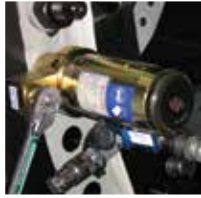


hydratight[®]

Wind Power Solutions



Because ensuring a leak-free solution is critical. It has to be Hydratight.

For more than 100 years, Hydratight has provided world-class bolted joint solutions, assessing and managing joints to ensure leak-free start-ups. Today, we continue to set international standards in joint integrity—but we're so much more than just a bolting and on-site machining company.

Because even the tiniest leak can be costly and time consuming to repair, we manage every joint on a project for leak-free start-ups and production, which in turn removes the threat of environmental impact caused by unsafe joints. Safety continues to be the most important aspect of our business. We are a global organisation making a real difference to the industries and communities we work in, committed to improving safety, operational efficiency and uptime.

Because you require the support of an innovative partner committed to your success, we not only offer unrivalled service on a global scale, including customer training and software development; but also design and manufacture quality tools and equipment for bolted joint solutions to the highest standards. Our certified teams are dedicated to working closely with you, assessing and managing every joint on your project to prevent leaks from ever occurring, year in, year out.

Because you value safety and reliability, we work to ISO 9001, ISO 14001 and OHSAS 18001 standards in everything we produce, from manufacturing torque and tension bolting equipment to mechanical connectors, from on-site service to creating custom solutions in line with client specifications.

It means that whenever you need a complete joint integrity solution, whichever industry sector you're in, you can rely on us to get it 100% right first time, every time. **This is why it has to be Hydratight.**



Engineering Driven Safety Focused Solutions



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Hydratight plays a leading role within the complex and changing world of wind power generation; providing innovative engineering solutions and unique services to improve the cost effectiveness in the competitive wind industry. The core of our business is designing fast and highly accurate bolting solutions.

Wind Power Bolting Solutions

Taking inspiration from global trends in power generation, Hydratight has consistently introduced engineered solutions for supporting the bolted joint needs of the onshore and offshore wind power industry. Over the last 20 years, the Hydratight range of torque and tension bolting solutions has provided customers with unrivalled performance and integrity through technology, experience and expertise.

Hydratight manufactures and supplies quality products, specifically designed to meet the requirements of the wind power market. These products assist wind turbine manufacturers and contractors to meet delivery demands by reducing bolting times and achieving accurate bolt loads every time.

(A) Nacelle Bolting Solutions

Hydratight can provide an array of torque and tensioning tools for the safe assembly of blade and bearing bolted applications.

(B) Tower Bolting Solutions

Hydratight has a vast range of torque and tension solutions for the onsite assembly of tower structures.

(C) Foundation Bolting Solutions

Hydratight's range of safe and reliable foundation bolt tensioners will secure any type of bolt to any type of onshore or offshore surface.

Custom-Engineered Solutions

New bolting applications demand unique solutions that require a team of highly specialised engineers. Working with the latest CAD-CAM software, Hydratight's engineers have developed custom-engineered tools to solve some of the most demanding bolting and field machining applications in the world.

When an off-the-shelf tool doesn't do the job, trust Hydratight to create a customized solution that saves time in a safe and controlled way.



RSL Torque Wrenches

From the early inception of Sweeney Hydraulic Torque Wrenches to our new global family of RSL Torque Wrenches, Hydratight's history with developing bolting solutions began over 100 years ago. Manufactured in Antigo, WI USA with all stainless-steel housing and hefty yet simple interior components, our newest RSL tool is the strongest yet.

Hydratight has a strong reputation for our range of hydraulic RSL torque wrenches. Comprised of just three moving parts, this simple intelligent design supports long term use and minimizes refurbishment, resulting in a low total cost of ownership over the life of the tool. It is also backed by a 3 year warranty.

The Hydratight RSL tool system consists of a series of hydraulic power tools, which can provide even, uniform and controlled torque over a range of 150 to 30,000 foot-pounds. These tools are available as a powerhead, square drive head, or low clearance hex heads.

The innovative design completely encloses all moving parts and eliminates pinch points, and they provide 30–35° of operating stroke which provides added productivity while avoiding “tool lock on” which is common with some torque wrench designs.

Versatile

- Interchangeable head design
- Power head / square drive combination for flexible use with standard impact quality sockets
- Power head / hex head combination for limited height in line solutions
- Wide range of hex sizes available for all applications
- 360° movement of reaction arm with simple dial lock for rapid change

Compact

- Designed to give optimum strength to weight and torque to weight ratios
- Minimum nose radius for low clearance tool fit

Durable & Dependable

- Simple robust design
- Proven to perform even in the harshest environments
- Just three moving parts for reduced maintenance and a three year warranty



Model Number	Wrench Head	Part Number	Max. Torque Output		Hex Sizes Available
			lb-ft	Nm	Across the Flats
RSL2	3/4" Sq Drive	A0102B0012AA-SK	1,408	1,909	22 mm to 60 mm
RSL4	1" Sq Drive	A0202B0100AA-SK	3,080	4,176	32 mm to 74 mm
RSL6	1.5" Sq Drive	A0302A0108AA-SK	5,303	7,190	50 mm to 80 mm
RSL8	1.5" Sq Drive	A0402B0108AA-SK	7,862	10,659	55 mm to 80 mm
RSL14	1.5" Sq Drive	A0502B0108AA-SK	11,154	15,123	65 mm to 117 mm
RSL20	2.5" Sq Drive	A0602B0208AA-SK	18,843	25,548	79 mm to 117 mm
RSL30	2.5" Sq Drive	A0702B0208AA-SK	28,002	37,965	89 mm to 155 mm

Direct-Fit Hydraulic Tensioners

With decades of design and manufacturing experience of wind-specific tensioners, Hydratight Hydraulic Tensioners provide safe, reliable and repeatable bolt stretching. Wide-range tools include standard, OEM direct-fit, and custom tensioner solutions; we are confident and capable in all types of tensioning.

Elliptical Base Bolt Tensioner

This revolutionary new foundation bolt tensioner is perfect for all OEM tower base bolting. The tool has a 20% reduction in width, which allows fit on all applications including the limited clearance inner bolts. Hydratight's pioneering design enables the tool to work on both number 10 and 11 sized rebar. Safety and performance enhancements include asymmetric rams, spring-loaded sockets, spring retraction and a positive stop to prevent damage by misuse in the field.

- Asymmetric ram
- Spring retraction
- Spring loaded socket
- Fits number 10 or 11 Williams or Dyson base bolt
- Suits all applications including limited clearance inner bolts within tower
- Fits all OEM towers
- Utilization of a positive stop eliminates damage risk to piston
- Compact size

Rock Anchor Tensioner

The Rock Anchor Tensioner is specially designed for work on smaller concrete wind turbine bases. Based on the standard foundation bolt tensioner, the Rock Anchor is custom-designed to fit the 2.5" diameter, 150-grade all-thread bar, used to anchor concrete wind turbine pads or bases to the ground.



Electric Torque and Tension Pumps

To power our world-class hydraulic bolting tools, Hydratight offers specifically designed wind pumps. Our robust design provides options like heat exchangers to keep temperatures low and oil-flow high from a compact, lightweight design.

Electric Torque Wrench Pump

Designed specifically for bolting applications, Hydratight's Electric Torque Wrench Pump can be used with virtually any hydraulic torque wrench. The high-efficiency design needs less maintenance than comparable pumps and the LCD readout not only shows pressure and torque readings but also provides invaluable diagnostic information. With higher flow rates and bypass pressure this pump will increase productivity, while cooler running makes it both more reliable and longer-lasting.

Features and benefits:

- Auto cycle feature for continuous cycle operation
- 110V and 230V options
- Powerful 1.7 hp electric motor with high power-to-weight ratio
- Excellent low-voltage operation
- Operating pressure up to 700 bar—important with long hose runs and high-pressure drop circuits
- Reduced power consumption with 18% lower current draw
- Low voltage pendant improves operator safety
- Advanced valve technology improves reliability by lowering oil operating temperature and resisting contaminants
- Unique brush design lasts 4 times longer
- Easy access speeds up brush changes
- 'Auto stop' shunt prevents commutator damage
- High-strength casing provides component protection and easy carrying
- Complete pump system IP55 rated



Electric Pump for Tensioning

This high pressure electric pump has been specifically designed for tensioning applications. Hydratight incorporates the latest technology to produce a pump with features and benefits which far surpass all other electric tensioner pumps available on the market today. This electric tensioner pump will stay on the job longer and requires less maintenance, both of which will reduce service costs.

Features and benefits:

- Adjustable relief valve
- Tensioning up to 22,000 psi/1,500 bar
- Bypass sequence valve
- Automatic ram retraction
- Two button pendant with kill switch
- Designed for constant filtration and de-aeration
- Heavy duty electrical and pendant cords with restraints
- Compact design with durable, steel frame
- Ensures operators achieve target pressure every time
- Wide range of tensioning capabilities
- Reduces operator time to tension each bolt due to quicker pressurization
- Improves performance and reduces downtime



Popular Direct Fit Tools

Hydratight leads the way with innovation, engineering, and service in standard and custom tooling for bolted flange joints. Our range of products, local support, and excellent customer service make Hydratight your complete supplier for wind turbine bolting solutions.

Reference the chart below for a sampling of our most popular direct-fit tools. Other configurations and adaptations are available; contact your local Hydratight representative or visit hydratight.com/wind.

Tension Tools

Description	Application
M20 Micro Tensioner	Tension M20 Studs
M24 Micro Tensioner	Tension M24 Studs
M27 X 3 Micro Tensioner	Tension M27 Studs
M30 Blade Tensioner	Tension M30 Studs
M30 Blade Tensioner	Tension M30 Studs
M36 Nacelle Tensioner	Tension M36 Studs
M36X4 Micro Tensioner	Tension M36X4 Blade Hub to Bearing
M36X4 Micro Tensioner	Tension M36X4 Bearing Housing to Base
M42X4.5 Micro Tensioner	Tension M42X4.5 Gear Box To Base
M42 Compact Tensioner	Tension M42 Hub to Tower
M45 Micro Tensioner	Tension M45 Studs
M52 Tensioner	Tension M52 Studs
M56 Tensioner	Tension M56 Studs
M60 Tensioner	Tension M60 Studs
M64 Tensioner	Tension M64 Studs
M68 Tensioner	Tension M68 Studs
M72 Tensioner	Tension M72 Studs
M36 Hub Bolt Tensioner	Tension M36 Hub Bolts
M48 x 5	Tension M48 Studs
M39 Foundation Type Tensioner	Tension M39 Base Bolts

Description	Application
M30 Tensioner	Tension M30 Blade Studs
M33 Tensioner w/ Elbow Swivel	Tension M33 Studs
M36 Tensioner	Tension M36 Nacelle Studs
M36 Tensioner	Tension M36 Tower Studs
M39 Tensioner	Tension M39 Nacelle Studs
M42 Tensioner	Tension M42 Tower Studs
M48 Tensioner	Tension M48 Gearbox Torque Arm Studs
M36 Compact Tensioner w/ Spacer	Tension M36 Blade Studs
M36 Compact Tensioner	Tension M36 Bearing Studs
75 KSI Elliptical Base Bolt Tensioner	Tension 75 KSI Rebar
150 KSI Elliptical Base Bolt Tensioner	Tension 150 KSI Rebar
150 KSI Tensioner, Long Stroke	Tension 150 KSI Rebar
153 KIPS Foundation Bolt Tensioner	Tension 153 KIPS Base Bolts
M36 Foundation Type Tensioner	Tension M36 Base Bolts
M39 Foundation Type Tensioner	Tension M39 Base Bolts
Air/Hyd Tensioner pump	1500 Bar

RSL Torque Tools, Hoses and Pumps

Description	Application
RSL2 Power Head w Square Drive and Steel Foot	Torque Bolts up to 1408 ft-lbs
RSL4 Power Head w Square Drive and Steel Foot	Torque Bolts up to 3080 ft-lbs
RSL6 Power Head w Square Drive and Steel Foot	Torque Bolts up to 5325 ft-lbs
RSL8 Power Head w Square Drive and Steel Foot	Torque Bolts up to 7862 ft-lbs
RSL14 Power Head w Square Drive and Steel Foot	Torque Bolts up to 11154 ft-lbs
RSL20 Power Head w Square Drive and Steel Foot	Torque Bolts up to 18843 ft-lbs
RSL30 Power Head w Square Drive and Steel Foot	Torque Bolts up to 28002 ft-lbs
Sockets	22 mm to 80 mm
Electric ZU4 Torque Pump	115V w 25' hose and heat exchanger

Bolting Kits

Description	Application	Description	Application
Bolting Kit	2.0 MW Gamesa Turbine	Bolting Kit	1.5 MW GE Turbine
Bolting Kit	2.5 MW Gamesa Turbine	Bolting Kit	2.5 MW GE Turbine
Bolting Kit	2.3 MW Siemens Turbine	Bolting Kit	2.0 MW Vestas Turbine
Bolting Kit	2.6 MW Siemens Turbine	Bolting Kit	2.4 MW MHI Turbine

hydratight®

Our global network means that you can rely on the right people, products, and services wherever you are in the world.

Email us at: solutions@hydratight.com
Or find your local representative at:
hydratight.com/contact

Hydratight provides support through strategic service centers, and in additional locations worldwide through channel partners.

