NORD-LOCK GROUP

ANYTIME, ANYWHERE: MONITOR PRELOAD THE SMART WAY

SUPERBOLT LOAD-SENSING TENSIONER

SUPERBOLT™

PRELOAD MONITORING

- Verify installation
- Monitor application

SELF OPTIMIZATION

- Data gathering
- Service interval

REMOTE OPERATION

- Convenience
- Safety

LST LOAD-SENSING TENSIONNER

As the global market leader of bolting solutions, Nord-Lock Group is dedicated to improving our already state-of-the-art products – including the integration of smart technologies. The Superbolt Load-Sensing Tensioner (LST) is among the first of these Industry 4.0 innovations, measuring the preload of a multi-jackbolt tensioner with an accuracy that is better than ±5%! The LST features a wealth of benefits without the need for any modification of the bolted joint.

LST internal ring

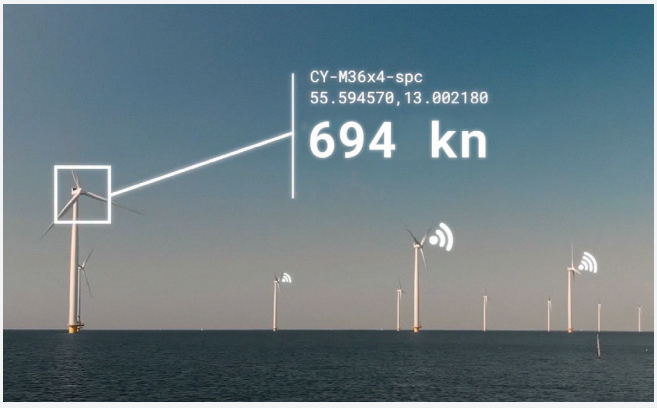
Available in either MT or CY version*
Standard sizes ranging from M36 - M100*
Machine-grooved MJT
Sensors mounted in the groove
Sensors covered by ring in Delrin® acetal homopolymer material
IP67-classed M5 connector in the nut body

* Other sizes and MJT types considered on request

LST solution with external ring is also available. This option enables the use of more readily available standard configuration multi-jackbolt tensioners (MJTs), thereby faster turn-arounds can be achieved. The external protective ring covers the externally mounted sensors and fully contains the wiring and M5 connector.

DIFFERENT LST OFFERINGS

Features/Solution	Check *via handheld display*	Local monitoring *via tablet or laptop*	Wireless remote monitoring *via Portal or API*	Wired remote monitoring *via Portal or API*
Reading	✓	✓	✓	✓
Saving (log)	–	✓	✓	✓
Wired connection (from LST)	✓	–	–	✓
Wireless connection (from LST)	–	✓	✓	–
Local (on site) monitoring	✓	✓	✓	✓
Remote (off site) monitoring	–	–	✓	✓



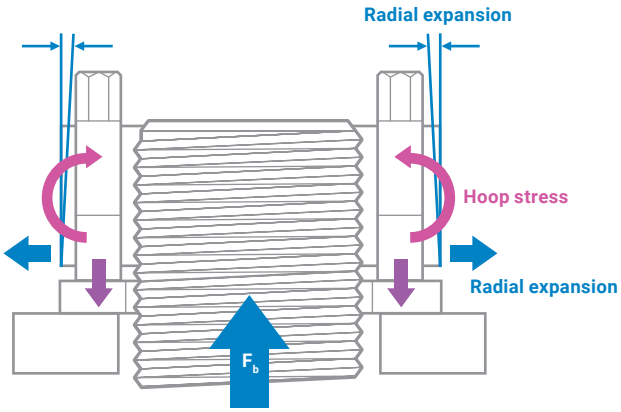
APPLICATION EXAMPLE

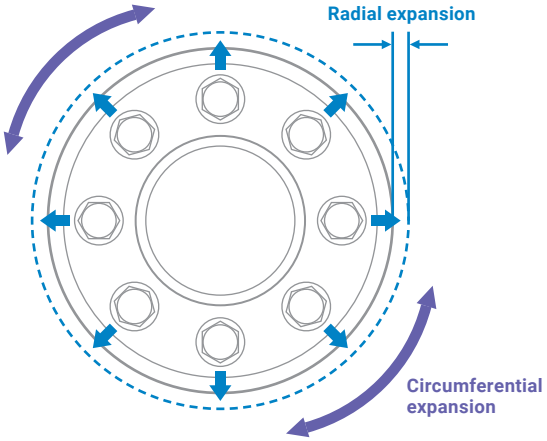
CRITICAL JOINTS ON WIND TURBINES

As with all critical joints, wind turbine connections require extremely accurate and regular preload checks. This is true both during installation — in order to verify that the achieved preload matches the design requirements — and throughout the turbine's service life.

Prior to the LST, these preload checks involved considerable effort, as well as some sort of modification to the bolted joint. But now with the Superbolt LST, preload can be monitored regularly, remotely, and without joint modification!

THE THEORY THAT INSPIRED THE SUPERBOLT LST





Under the effect of a bolt axial load, the Superbolt MJT nut body undergoes a hoop stress thereby causing **radial expansion** (flexing in at top and out at bottom).

Measuring the **expansion** with respect to the nut body circumference, however, enables a wider and more accurate response. By controlling the relationship between circumferential expansion and the axial preload, **it becomes possible to monitor preload from this unique feature**.

A TRUE INNOVATION IN THE FIELD OF PRELOAD MONITORING

For more information, visit
www.nord-lock.com/LST

- Remote preload monitoring and a live reading of data
- Facilitates more uptime during service
- Precise and repeatable preload reading
- Eliminates the need for modifications of the bolt
- Seamless to retrofit/upgrade — simply replace original nut with the LST
- Robust and reliable, IP67 classed
- Accurate preload verification without adjustment of clamped parts
- No alteration needed of the assembly (including stud or joint design or geometry)
- Removes risk of injuries for operators in hazardous areas
- Eliminates high costs on labor, additional measuring devices and periodic verification by maintenance

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