


SmartBolts®

Direct Tension Indicating Fasteners



THE SMARTER WAY TO BOLT

Stress Indicators Inc

T/ 240-631-7246
F/301-320-3303
6307 Wiscasset Road
Bethesda, MD 20816
www.smartbolts.com

WHY USE A DIRECT TENSION INDICATOR?

Most fasteners are tightened using methods such as manual torque wrenching, pneumatic impact wrenching, or automatic torque cutoff tools. This is done simply because measuring torque is easy. However, for a given torque there can be large variations in the actual tension produced by these techniques.

About 90% of the torque force applied to a fastener is used to overcome friction. The friction factor varies with the amount of scale on the fastener and nut, type of plating, lubrication, presence of rust, the number of times the joint has been tightened and so on. Hence, the

amount of torque needed to produce a desired tension is very hard to predict without extensive laboratory tests under highly specific conditions. The friction factor also makes it difficult, if not impossible, to gauge whether a joint is properly tensioned for a given application of torque.

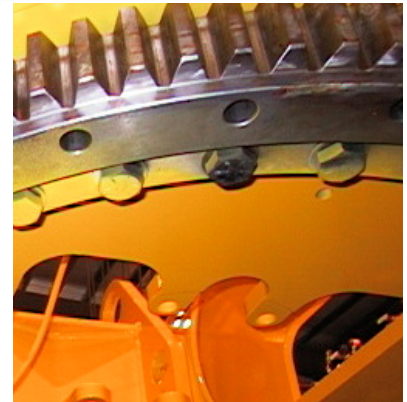
Direct tension indicators on the other hand respond to fastener tension ONLY, ignoring torque inputs, providing a true measure of joint tightness. Tension is the critical factor in ensuring joint tightness. The best direct tension-indicating methods are based on measuring strain in the fastener shank using the elongation when tensioned.

DTI SmartBolts

DTI SmartBolts are specialty fasteners that indicate whether a joint is loose or tight with a clear visible indicator.

The indicator gradually darkens from bright red when loose to near black as the fastener is tightened.

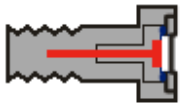
DTI SmartBolts are simple. No wires, instruments or complex procedures. The indicator works on the most accurate principle for tension measurement - actual fastener elongation under load.



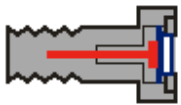
HOW SMARTBOLTS WORK

DTI SmartBolt

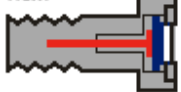
LOOSE



MID-TENSION



TIGHT



The indication is based on the deflection of an internal pin when the fastener is tensioned.

This minuscule relative movement is transformed by proprietary DTI optical "micro-indicators" into a dramatic and completely reversible color change.

SmartBolts are customizable to indicate at specific tensions (subject to proof load limits).

TALK TO A SALESPERSON ABOUT POTENTIAL APPLICATIONS. VISIT OUR WEBSITE FOR CASE STUDIES AT WWW.SMARTBOLTS.COM.

Easy to use – visual indication speeds inspection

Measures tension, a more exact gauge of joint tightness than torque

Accurate to +/- 10% of design tension

Completely re-usable

No special tools or training required for installation or maintenance

Long service life - 20+ years, if used properly

Entirely customizable fastener sizes and indicating tension

THE SMARTBOLTS ADVANTAGE

SAFETY

SmartBolts take the guesswork out of safety, giving you peace of mind because you know your bolts are doing their job, at installation and while in service.

ACCURACY

SmartBolts technology is based on the most accurate principle used to measure fastener tension - actual fastener elongation under load. DTI SmartBolts are accurate to within 10% of design tension.

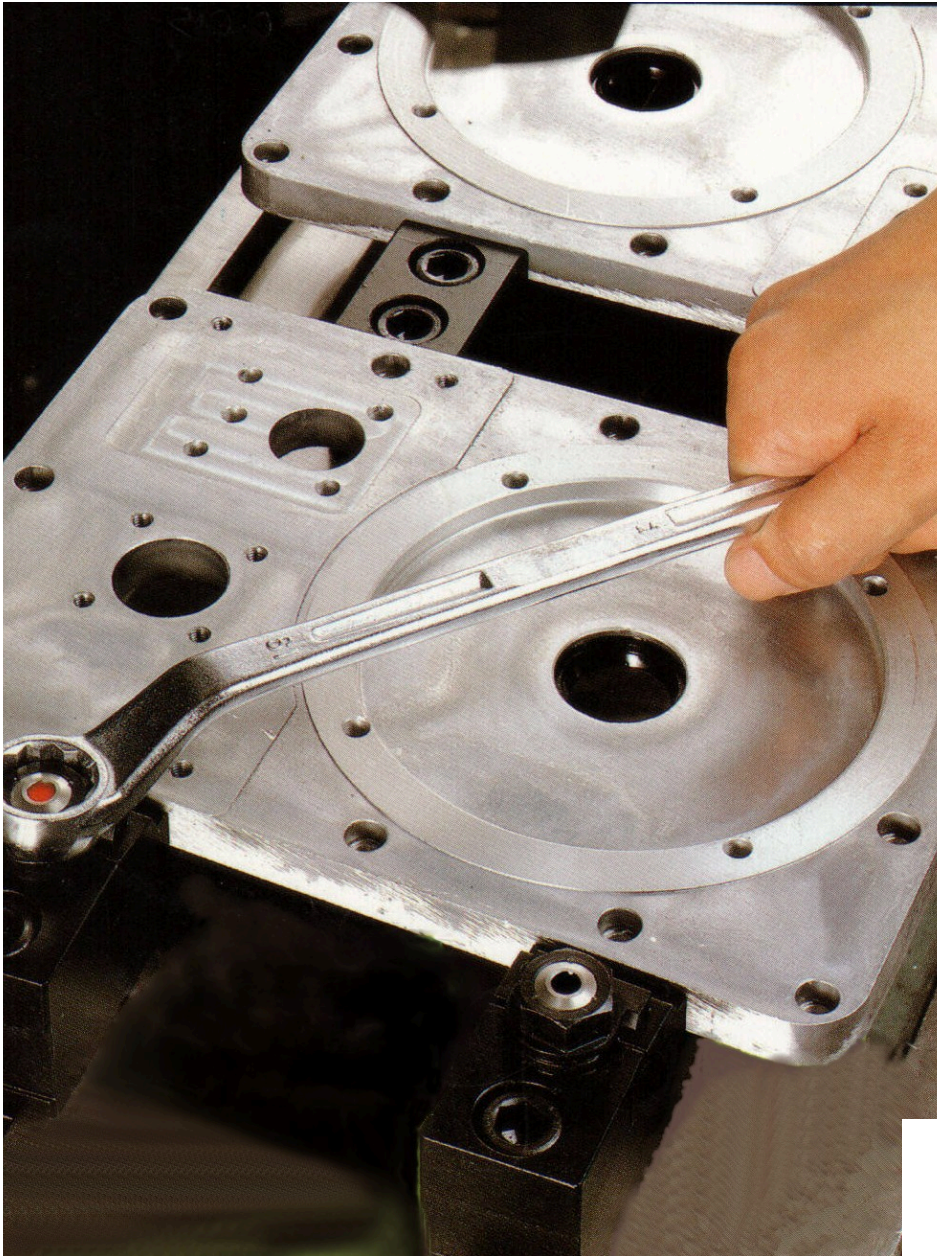
RELIABILITY

Bolts fitted with our indicators can be used and re-used time and again for a reliable reading of joint clamping force. If used properly, SmartBolts can have a useful life of 20+ years.

ECONOMY

The cost of DTI SmartBolts is a fraction of that of strain-gaged bolts or other products performing an equivalent function. Costly instruments such as strain-gage bridges or readouts are not required.

DTI SmartBolts



SAVINGS AT EVERY STAGE OF YOUR BUSINESS

Save on Design

Incorporating SmartBolts into product design may mean less of everything: number of fasteners, strength of fasteners and diameters of drilled openings, saving you and your customer time and money.

Save on Installation

SmartBolts unique design eliminates the need for special tools or wiring during installation. Simply tighten the bolt till the indicator turns the proper color and move to the next one. SmartBolts can lower fastener installation times by up to 80% versus traditional methods.

Save on Maintenance

Visual indication is safer and it saves time and money. Maintenance personnel can simply look at bolts from several feet away for inspection, focusing on the loose bolts ONLY. In a typical two week maintenance cycle on an installation of 1000 fasteners, SmartBolts can reduce maintenance time by 80% and costs by as much as 50%.

Learn more at www.smartbolts.com

100% QUALITY TESTED

Every DTI SmartBolt is tested to assure indication at the proper tension before it leaves the assembly plant.

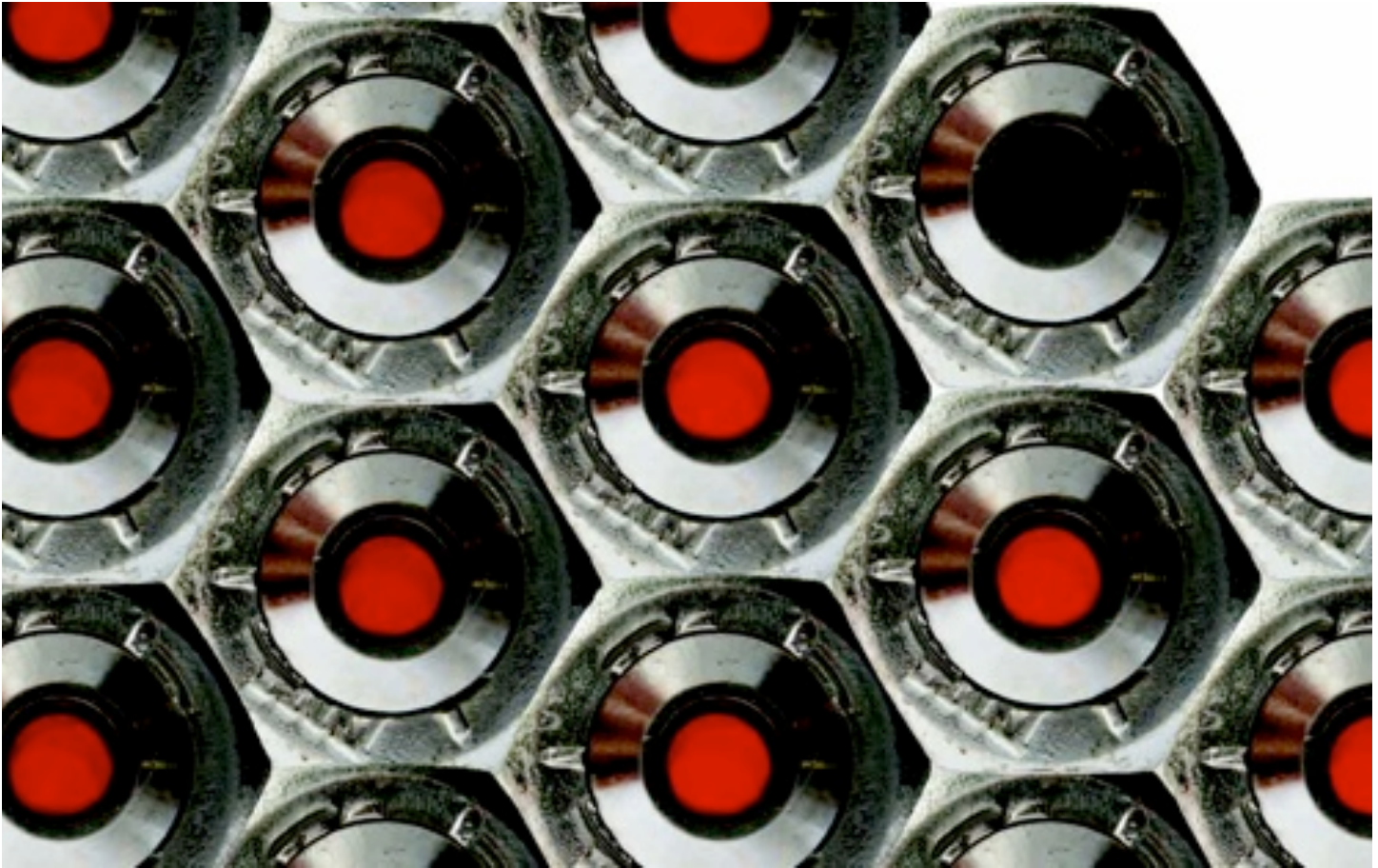
CERTIFIED

Each batch of DTI SmartBolts comes with a certificate of conformance and statistical results from our stringent quality tests.

MEET THE TOUGHEST STANDARDS

Our fasteners have passed the highest scrutiny including tests by

- ✓ US Army
- ✓ UL for busway application
- ✓ Independent bolting experts



THE SMARTER WAY TO BOLT

ABOUT OUR COMPANY

Stress Indicators Inc. is a privately owned company based in Bethesda, Maryland, and has been providing customers with effective, safe, bolting solutions for eighteen years.

Our products can be used on load-indicating bolts, studs and custom fasteners. The engineering department custom designs each Smartbolts DTI fastener to your specifications. Our sales team and engineering group work with you to assess potential applications, select the appropriate fastener, quantify the indicating tension, provide testing samples and follow-up after installation to assure that you are completely satisfied with our products.

STRESS INDICATORS INC.

T/ 240-631-7246 F/301-320-3303
6307 Wiscasset Road, Bethesda, MD 20816
www.smartbolts.com

CONTACT US:

Main Telephone: 240-631-7246
General Inquiries: inquiries@smartbolts.com
Sales: sales@smartbolts.com