

# who's using orange

ALSTOM POWER  
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 BECHTEL POWER  
 BECHTEL NATIONAL  
 CALPINE POWER  
 ARB, INC.  
 CIANBRO CORPORATION  
 DUNCAN ERECTORS  
 DICK CONSTRUCTION  
 DUKE/FLUOR DANIEL  
 FOSTER WHEELER ENERGY  
 FLUOR DANIEL  
 HOLLAND NEWAY/FREIGHTLINER  
 TEXAS GENCO/RELIANT ENERGY  
 BABCOCK & WILCOX  
 US ARMY CORPS OF ENGINEERS  
 SOUTHERN COMPANY  
 MIDATLANTIC ERECTORS  
 THE INDUSTRIAL COMPANY (TIC)  
 STONE & WEBSTER  
 YORKE STRUCTURES  
 US STATE BRIDGE DEPARTMENTS  
 PARSONS ENERGY  
 KELLOGG BROWN & ROOT

using  
**SQUIRTER™ DTI's**



applied  
**bolting**  
 TECHNOLOGY

the best way to bolt!

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# good!

**SQUIRTER™ DTI's**  
 the best way to bolt!



# Get orange and you've got it right!

## THE BIGGEST MYTH IN BOLTING....

### If it's torqued, it's tight!

Torque is the twisting force it takes to spin a nut along the threads of a bolt. You can build up plenty of torque while installing a bolt and never actually tighten it successfully. This torque build-up can be caused by many different factors common to jobsites; dirt, dust, heat, rust, rain, condensation, poor storage, damaged threads, and poor lubrication. Or a wrench not being able to deliver enough torquing power. You may think that driving bolts to a certain torque may be the best way to bolt... What you'll find.....a lot of loose bolts.

## TENSION is the Holy Grail of Bolting

Tension is produced by stretching the bolt. You want tension because bolt stretch draws up the plies, clamping them together... **Tension is the goal of bolting.** It's the tension in the bolt that clamps the steel plies together.

With tension in mind...Direct Tension Indicators were created. This type of flat washer is manufactured with bumps on the top. Whether you use it under the head or on the nut end, the goal is to crush the bumps. The bumps will not crush unless the bolt has been TENSIONED, no matter how much torque is applied. Once the bumps have been TENSIONED, inspection is with a feeler gage. When using SQUIRTER™ DTI's, once calibrated, bump compression can be gaged by the volume of squirt without a feeler gage.

## The best way to bolt.

### Here's why people USE and LIKE standard DTI's:

"We try to use DTI's on every job. It saves an inspector telling us that the torque or tension isn't right. DTI labor is less expensive than turn-of-nut and with all the issues being raised about twist-offs, DTI's are the preferred method."

*Tom Slovick, Industrial Steel, Inc.*

"one thing, please: Tell the contractors that the torque wrench is less assurance than even the snug-tight or quarter-turn method!"

Everyone should understand that the most accurate and reassuring way to install high strength bolts to the correct TENSION is with DTI's. Engineers design bolted connections for shear or tension. TORQUE doesn't mean a thing, so throw away that torque wrench and those twist-off bolts. One grain of sand or dust in the threads makes them worthless!"

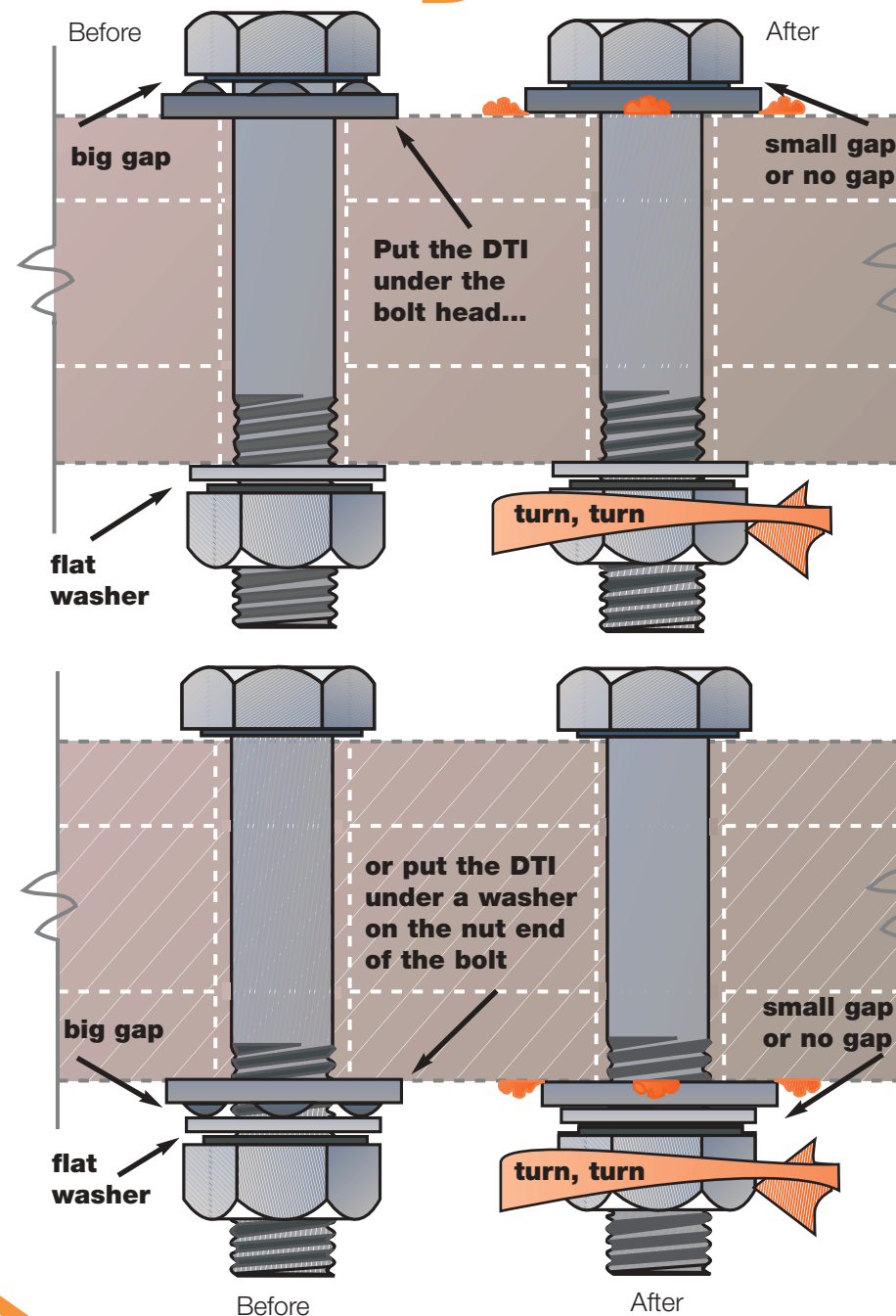
*Robert Crossno P.E., Crossno Engineering, Albuquerque, NM*

"...Most of our contractors have no idea how to properly do turn-of-nut. When we try to enforce it, they quickly realize that DTI's save them money...Since we went to DTI's, most of our bolting problems went away."

*Eric Mesenheimer, North Carolina DOT, Raleigh, NC*



**This is a Direct Tension Indicator or DTI**



## The best way to bolt is now ... SQUIRTER™ DTI's !

This is a SQUIRTER™ DTI. It has all of the same specifications as a regular DTI. In addition, under each bump is cured orange silicone with a channel leading to the outer diameter. When the bumps are compressed, the silicone squirts out through the channel. **Check out the bolts on the cover. Just by looking, you can tell which bolts are tight, which ones are not, and why. It's that simple!**



A SQUIRTER™ DTI is the very same thing as a standard DTI, and it has an easier installation and inspection capability. It Squirts! No more feeler gages! Just drive it till it squirts! SQUIRTER™ DTI's are made in accordance with ASTM F959 and can be installed to the latest edition of the Research Council on Structural Connections.

## HERE'S WHAT THE PRO'S THINK ABOUT SQUIRTER™ DTI's

"We were very pleased with the way the squirter washers performed on our project. The contractor indicated that they made the job go faster and I know that they made inspection quicker and more accurate. We will certainly use them on any future major construction projects."

*Charles Little - Inspection Specialists  
CenterPoint Energy/TexasGenco*

"...Let me tell you. Squirters are light years ahead of any other tightening method. We'd rather use a SQUIRTER™ DTI's than any other method. On this job, we've got an owner's inspector out here that goes around and checks EVERY DTI with a feeler gage, and 99% of the time he doesn't find anything wrong. ....Without squirters, you have to tighten the bolt, call for inspection, maybe retighten, then go on. With squirters, its fast. You just snug the joint, make them squirt enough and then get out of there.....Squirters are an inspector's dream. I'm 57 years old, in this business for 30 years, and the older I get the easier I forget. With Squirters, I don't have to get way out there on the end of a beam to see if everything's done. I just look for the orange squirt to know where we've been."

*Richard Oliver, a 30 year veteran Babcock & Wilcox Construction employee, speaking from Reliant Energy W.A. Kerr SCR project near Houston*

"We're using calibrated wrench here, and what a nightmare. Skidmore calibration every day, every lot, and then what have you got? With SQUIRTER™ DTI's, like we were using on the big SCR steelwork at Belews Creek, there's a pretty big saving when you start to look at it. NO equipment tied up, not much labor. And the workers can do their own quality control. They know when they see the squirt that they've done it right. I heartily endorse SQUIRTER™ DTI's. I'd like to see them on every job."

*Danny Sechler, Manager Quality Control, Carolina Power & Light, Rowan NC Combined Cycle Power Plant*

