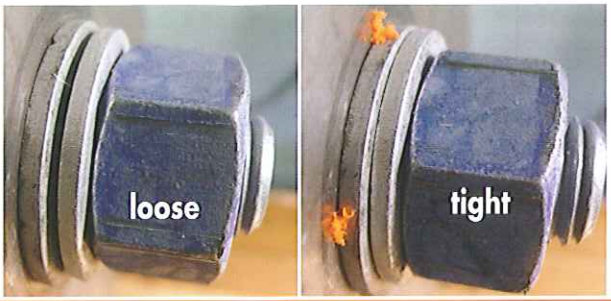
**Squirter® DTIs**
**How much squirt is tight?**

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# SQUIRTER® CALIBRATION AND INSTALLATION INSTRUCTIONS

## 3 Easy Steps: 1. Calibrate in a Skidmore 2. Snug the array of bolts 3. Drive it Till it Squirts

## 1. Calibrate Squirters® as follows:

Before starting installation, Squirter® DTIs MUST be calibrated in a Skidmore or in solid steel by checking the DTI gap with a feeler gage.

In a Skidmore -- Insert a bolt, nut, flat washer, and Squirter® DTI. Tighten the assembly to about 10% to 20% over the minimum required tension, just as the bolt would be tightened in the steel work (see Note 1 below). For example, tighten a 7/8" A325 bolt to about 45,000 lb. Make sure your wrench can tighten the assembly in less than 10 seconds. Once tightened, note the appearance, flow volume, and number of squirts emanating from under the DTI at that tension. The number of squirts should be AT LEAST equal to the number of bumps on the DTI less one: for instance, a five bump DTI should squirt in at least four places. Repeat this test a few times and get a visual impression of how much squirt is necessary. To be a Squirter "Pro", cover the dial of the Skidmore and see how close you can get to the calibration tension.

In solid steel -- Duplicate the above test in a solid connection, tightening the bolt assembly until the DTI has been sufficiently compressed so that a feeler gage of the correct thickness (.005" if the DTI is on the nut end or coated assy., or .015" if the DTI is under the head) WILL NOT enter HALF of the available places right into the bolt shank. If it does, tighten the bolt a little more and note the silicone squirt volume and appearance. Repeat this test a few times and get a visual impression of how much squirt is necessary.

**Note 1**: For ASTM A325 and A490 bolts, as determined by the RCSC, minimum tension is 70% of minimum tensile strength. See **http://www.appliedbolting.com/faq/3.html#1**. Other bolt grades may require different minimum tension.

## 2. Snug the Array

Always snug an array of bolts to bring the plies into firm contact before final tightening. Make sure you don't fully compress the DTI on the snug (first) pass. On the final pass, compress the DTIs from the most rigid point outward.

## 3. Drive it Till it Squirts

TIGHTEN THE BOLT UNTIL AFTER THE ORANGE SILICONE APPEARS IN VOLUME FROM MOST OF THE DTI'S SQUIRT LOCATIONS.* DON'T STOP TIGHTENING UNTIL THE SQUIRT VOLUME AND APPEARANCE IS JUST LIKE IT WAS IN THE CALIBRATION EXERCISE. THEN STOP TIGHTENING.

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**Caution:** For installation of **Squirter® DTIs** in old or reconditioned steelwork, it may be necessary to place a hardened flat washer against the steel surface and under the **Squirter® DTIs** so that its squirt feature works reliably.

**Squirter® DTIs** are normally used over standard sized holes; If **Squirter® DTIs** must be used with oversized holes, the best solution is to put the **oversized hole** in the steelwork ONLY in the inner ply or plies, leaving a standard sized hole under the **Squirter® DTIs** so the squirt feature works correctly.

**Squirter® DTIs** can be used directly over oversized holes by using a special large OD flat washer under the Squirter® DTI. These special flat washers are available from Applied Bolting.

* Each DTI has one squirt location for every bump. The number of squirts should be AT LEAST equal to the number of bumps on the DTI less one. For instance, a five bump DTI should squirt out in at least four places.

Applied Bolting has patented the product (US Patent No.5,931,618)
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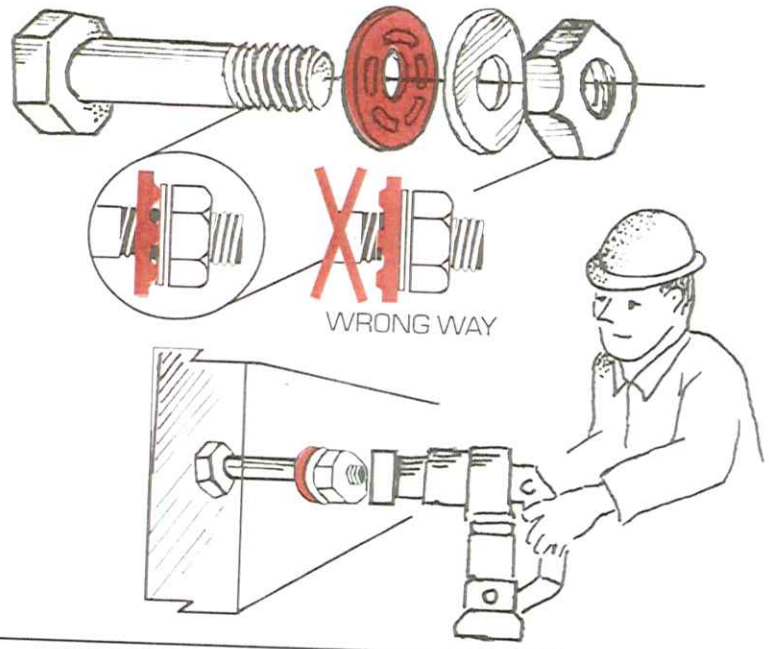
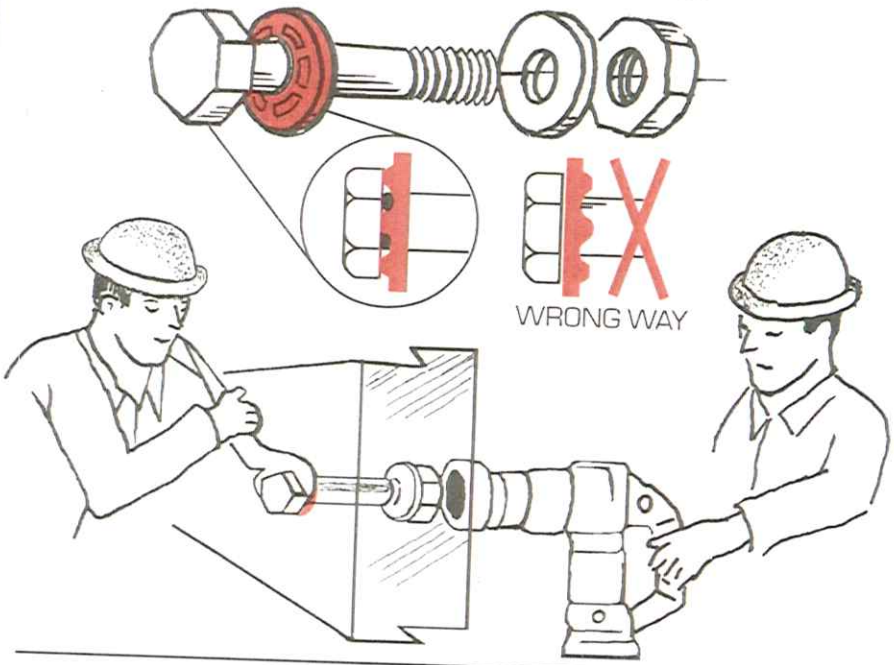
SHORT FORM

# DTI INSTALLATION & INSPECTION SHEET

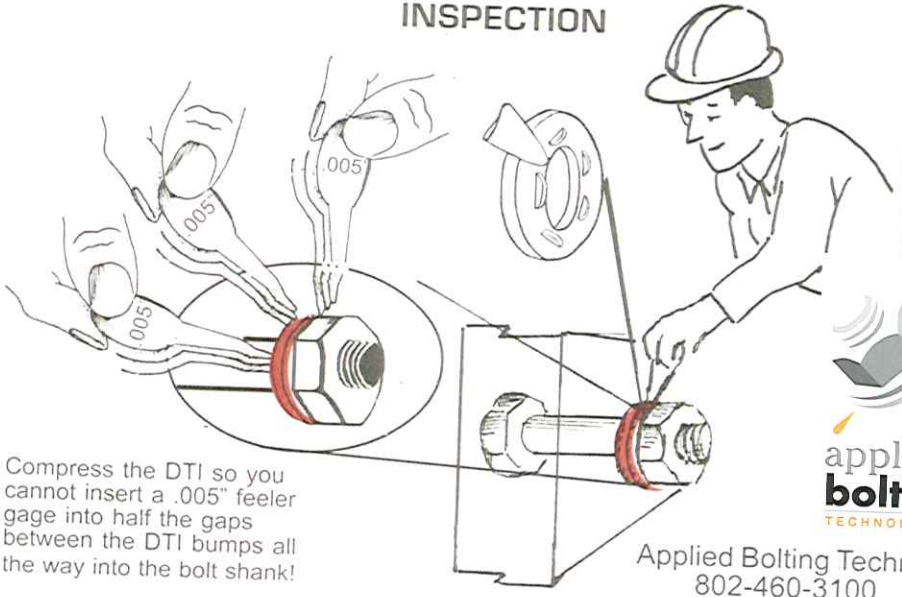
## ONE MAN DTI INSTALLATION




## TWO MAN DTI INSTALLATION

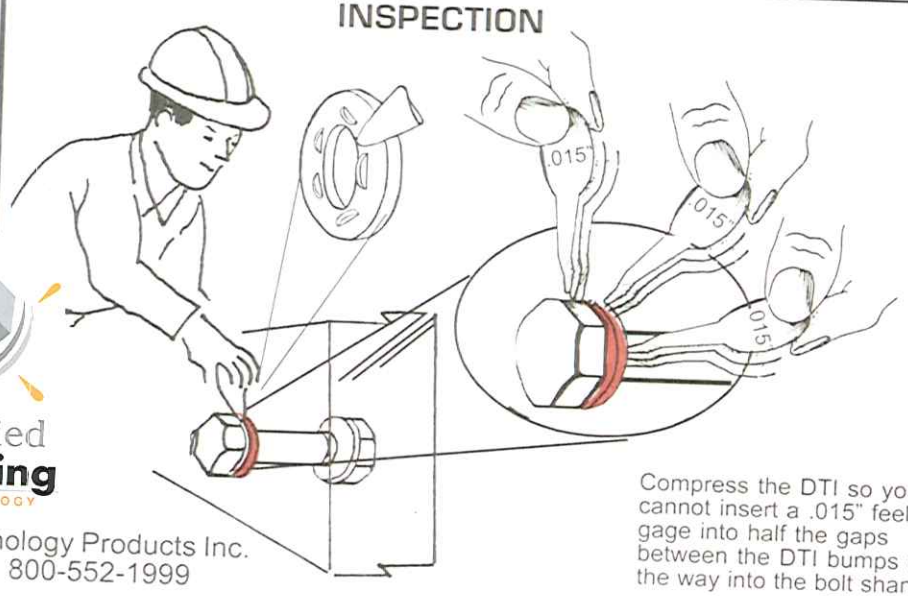



## INSPECTION




Compress the DTI so you cannot insert a .005" feeler gage into half the gaps between the DTI bumps all the way into the bolt shank!

## INSPECTION




Compress the DTI so you cannot insert a .015" feeler gage into half the gaps between the DTI bumps all the way into the bolt shank!

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The instructions above are simplified and may have to be modified for galvanized bolts and DTI's. Consult our detailed installation sheet packed in every keg of DTI's or which is available on our website at **http://www.appliedbolting.com/fine_print.html** and at **http://www.appliedbolting.com/pdf/inst_orig.pdf**