

## **Why Use Cable Tie Hand Tools?**

### **Safety**

Hand tools improve the safety of cable tie installation techniques and wire bundles. These tools apply specified tension to looped cable ties and cut off excess tie strap without leaving sharp edges. If excess tie strap is cut off by other means, such as a box cutter or snips, jagged edges can result. These edges can injure installers and end users, and they can abrade surrounding materials. Hand tools are also an efficient and easy way to install cable ties.

### **Installation consistency**

Hand tools also help ensure installation consistency. In addition to cutting, most tools can be adjusted to specific tension settings to match the requirements of each application.

For example, delicate wiring or soft wire insulation require a lower tension setting. If a cable tie is overtightened, it could damage insulation and conductors. If the tie is too loose, it may slide and chafe the wire insulation, and it will not properly serve its intended purpose. Each application should be assessed for proper tension settings, so installers can apply the necessary amount of tension consistently.

### **How are hand tools generally used?**

Manual application tools require the cable tie to be initially mounted and tensioned around the bundle by hand. Then, the tie's strap is routed into the hand tool's nose piece. As the tool's trigger is pulled, the nose piece presses against the head of the tie wrapped around the bundle, which tightens the tie. When the selected tension is reached, an internal blade cuts off the excess tail strap.

## What is the difference between rated Loop Tensile Strength and Tool Tension?

The mechanical performance rating for cable ties is expressed in terms of “minimum loop tensile strength.” The loop tensile strength test on cable ties exerts the force from the inside out applying stress to the locking mechanism (See Figure 1).

Hand tools exert force on the cable tie strap to tighten the cable tie around the bundle before cutting off the excess strap (See Figure 2). This force is called “tool tension” and is different from the loop tensile strength. Hand tool manufacturers may have different test methods for measuring tool tension, and one example can be seen in Figure 3.

### Tool Tension Settings

Each tool setting is related to an output force (tool tension) of the hand tool. Generally, the higher the tool setting, the higher the tool tension force. Recommended tension settings are typically provided by the manufacturers, though some external compliance agencies may impose their specific hand tool requirements. It is best to verify that the proper settings are used for each application and industry. Typically, recommended tool settings can be found on cable tie packaging.

Figure 1: Loop Tensile Strength Test

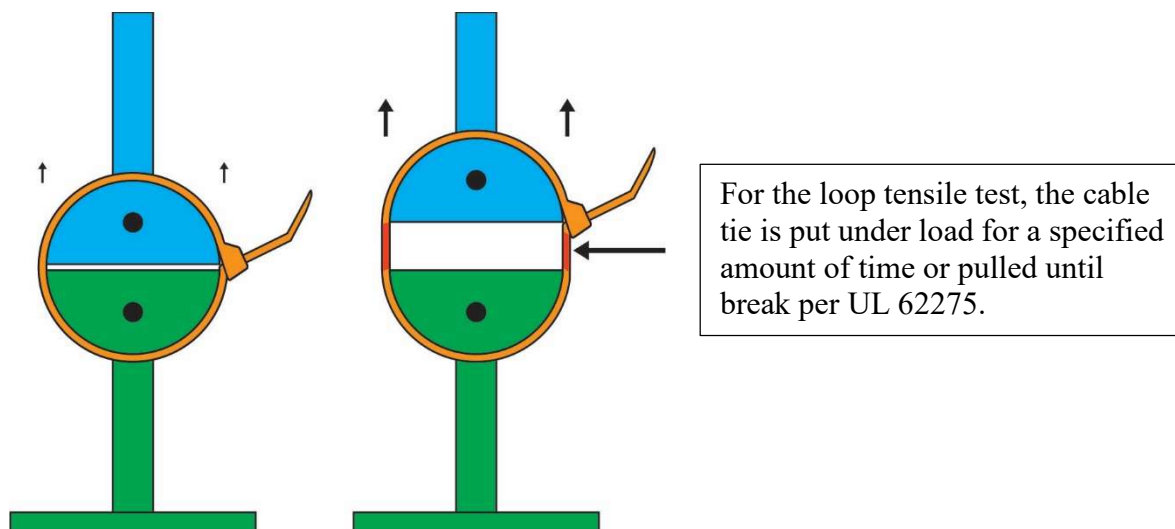


Figure 2: Hand Tool Force on Cable Tie

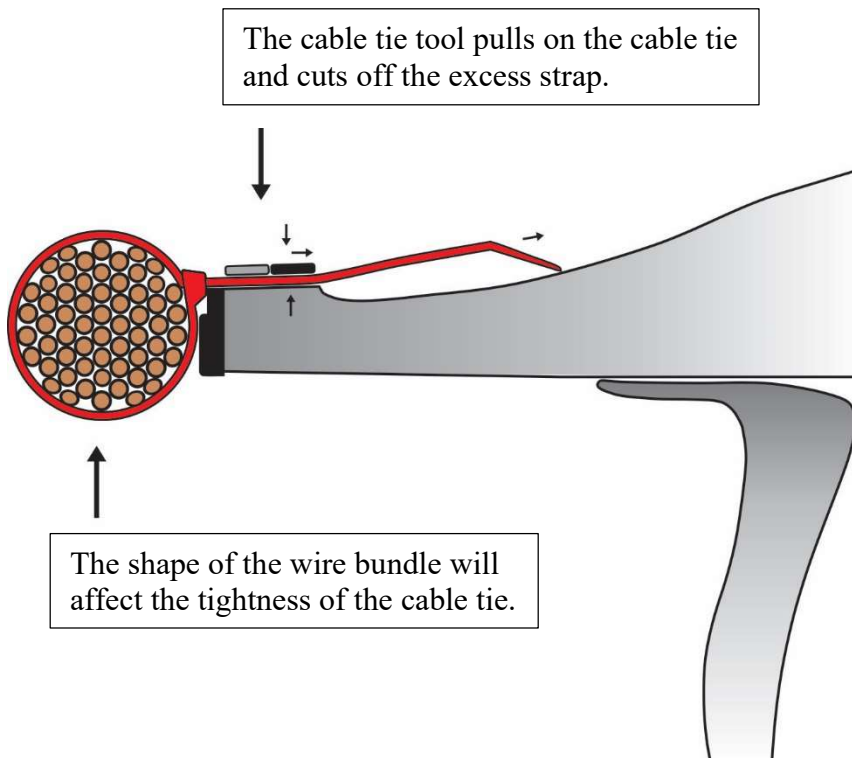
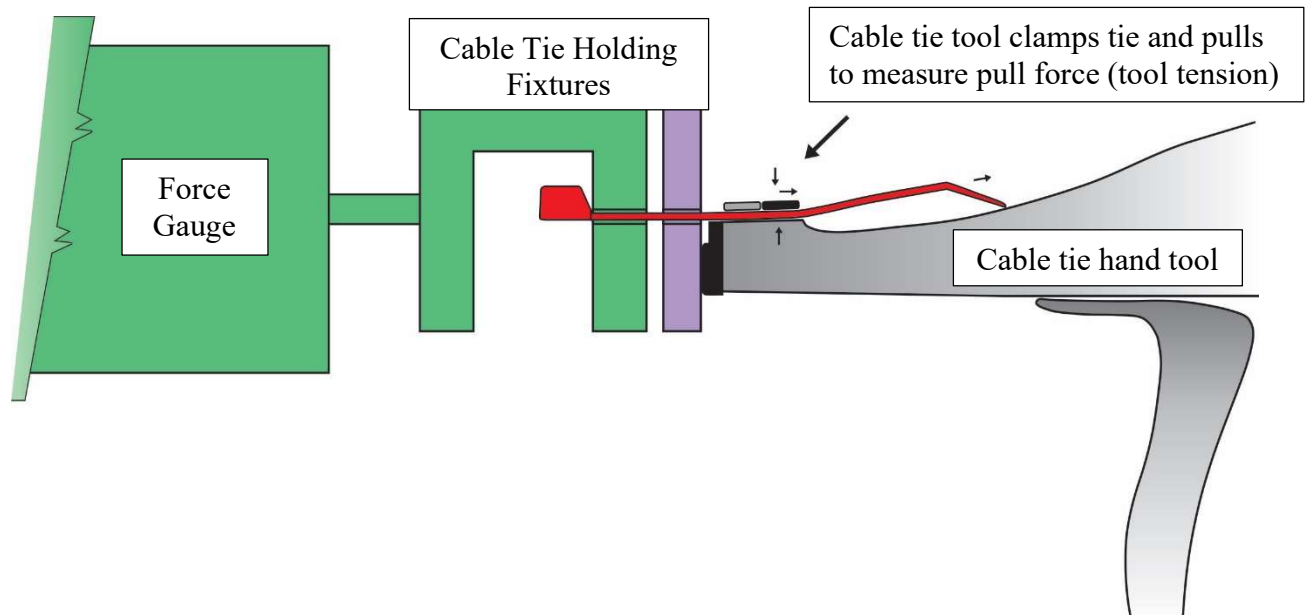


Figure 3: Example of Tool Tension Testing



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