T. L. FAHRINGER CO.

BANDSAW TWIST TESTER

OWNER'S MANUAL

Model

T-500

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IMPORTANT:

Please read and understand this entire manual before operating this machine. Performing improper procedures may void the warranty and could cause serious injury to the operator or persons in the vicinity.

T-500 TWIST TESTER OPERATING PRINCIPLES

The Fahringer model T-500 Twist Tester is used to perform a destructive test to certify the quality of bandsaw welds. A welded blade sample is clamped in the T-500 with the weld centered between the blade holders. The blade is then twisted from one end. This applies shear and tensile stresses across the entire blade section until it breaks. The number of turns required to break the sample (Sample Strength) are counted and then compared as a percentage to the strength of the parent material (Material Strength) to arrive at the Weld Strength figure. Material Strength is determined by testing an unwelded piece of blade material with the T-500.

Sample Strength / Material Strength = Weld Strength%

If the sample breaks at the weld it does not automatically mean the weld is bad. The number of turns required to break the weld must be compared to the Material Strength. Most of the time a **Minimum Weld Strength** of 50% is acceptable. However, this is a minimum and a higher Weld Strength is preferred; 75% or better is usually attainable, but not always.

If the sample breaks outside the weld area, **Maximum Measurable Weld Strength** has been achieved, regardless of the number of turns. Not only is it not necessary to achieve a stronger weld, it is not possible to know if the welds are getting stronger without another form of testing, such as microscopic analysis of the grain structure, because the parent material will break first, giving no indication of the actual weld strength. Further, since the weld itself is stronger than the parent material, the blade should fail in a place other than the weld if it were to break.

This test is not designed to show exactly how strong a weld is, but merely if the weld strength is falling below acceptable levels. Also, the number of turns attainable for a particular blade size and type may vary greatly. Results depend on each material's hardness, composition, temperature during heat treating, and other variables. Therefore, it is important to judge each blade coil independently. The twist test is desirable in a production environment because it is faster and more accurate than bend testing, and easier to perform than other tests, like microscopic analysis, that are time consuming and require a skilled person.

INSTALLATION

1. The T-500 Twist Tester should be mounted to a rigid workbench or stand through the four mount holes in the base using 1/2" bolts.

   NOTE: The set back distance from the front of the mounting surface to the center of the front most mounting holes should be between 1" and 2.5" to allow for sufficient hand clearance while operating.

2. Insert the handle into the spindle so the groove in the center of the handle is aligned with the set screw in the front of the spindle.
3. Tighten the set screw into the handle groove.
4. Check the ratchet pawl and make sure it is secure, rotated fully clockwise and properly engaging the ratchet.

OPERATION

1. Cut the piece material to be tested (**up to 2" wide x .063" thick**) to a length of 16 inches. If the blade is welded cut 8 inches from the weld to either end.
2. Open the cover and rotate the spindle so the clamping screw is pointing up (the handle will be horizontal).
3. Insert the blade into the slots at each end of the T-500 so the blade is centered with the clamping screws, and the weld, if the blade is welded, is positioned over the groove in the base marked "Center Weld".
4. Tighten the front clamping screw.
5. Pull the blade tight toward the rear of the T-500 and tighten the rear clamping screw.

   NOTE: Be sure the clamping screws are as tight as possible, especially for larger bimetal blades, otherwise the blade may pull out completely at one end or the other before breaking. If blades pull out before breaking on a regular basis the clamping screws should be replaced with new ones.

6. CLOSE THE SHEET METAL COVER.

   CAUTION: NEVER OPERATE THE T-500 WITHOUT THE PROTECTIVE SHEET METAL COVER IN PLACE. Failure to close the protective cover could result in serious injury to people in the vicinity due to flying metal debris.

   CAUTION: Always wear eye protection when operating the T-500.

7. Check to ensure the ratchet pawl is secure and engaged properly with the ratchet.

   CAUTION: If the ratchet and pawl are not properly engaged the handle could spin backwards at very high velocity if released during operation causing serious injury to the operator or anyone obstructing the path of the handle.

8. Turn the handle in a clockwise direction, keeping count of the number of 360° revolutions to the nearest 1/4-turn, until the blade breaks.
9. Compare the result as described in the T-500 Operating Principles.