



**SAWYER MFG. COMPANY**

*Manufacturers of Pipeline Equipment*

**Model 273-50**

**Hydraulic Coupon Bender  
and Tensile Testing Machine**



**SAWYER MFG. COMPANY**  
*Manufacturers of Pipeline Equipment*

## PRODUCT WARRANTY

All products manufactured by or for Sawyer Manufacturing Company are guaranteed against defects due to faulty workmanship or materials for twelve months from the date of purchase.

This guarantee is limited to the repair or replacement of any parts found to be defective, and no other liability, expressed, implied or contingent is assumed.

Sawyer Manufacturing Company  
1031 North Columbia Place  
Tulsa, Oklahoma 74110

Thomas G. Sawyer, President



## **Operating Instructions**

### **Model 273-50 Tensile Testing Machine**

#### **I. Set Up:**

- a. Lay machine horizontally with the serial plate facing up, on a flat, level and substantial surface.
- b. Connect the hydraulic hose from the pump to the cylinder on the machine. Take care to clean connections and make sure connection is hand tight.
- c. Valve on pump (manual or power) will determine pressure or release of machine. To apply pressure to the machine:
  1. Manual Pump: turn screw valve clockwise until snug.
  2. To release, turn screw valve counter clockwise two or three turns to release pressure.

#### **II. Guided Bend Test:**

- a. Open needle valve and retract machine.
- b. Close needle valve.
- c. Hold coupon. Do not put hand or fingers between coupon or die and plunger.
- d. Actuate pump, pressurize until desired bend is achieved.
- e. Open valve to retract.

**Note:** It is possible bending coupon may jam die and plunger. To release, open valve, then pry die and plunger apart.

#### **III. Tensile Pull Test:**

- a. Open needle valve and retract machine.
- b. Swing jaw retaining bar away so coupon may be inserted.
- c. Remove jaws from traveling head.
- d. Release "L" bolt located on bending die.



**SAWYER MFG. COMPANY**

Manufacturers of Pipeline Equipment

- e. Push coupon against jaws in stationary head until spring plunger is compressed, then tighten "L" bolt.

**Model 273-50 Tensile Testing Machine**

**Con't:**

- f. Spread the jaws in the stationary head and insert the coupon to be tested. When coupon is in place, release "L" bolt – spring plunger will cause the jaws to grip the coupon.
- g. Place the two jaws into the traveling head on either side of the coupon.
- h. Swing jaw retainer bar into place.
- i. Set high level indicator to zero (red needle on guage).
- j. Put "Jaw Tensioner" beside the "Jaw Retainer" with the gap straddling the coupon so pressure can be put on the jaws. The purpose of the "Jaw Tensioner" is to cause the jaws to grip the coupon. It may either be tapped lightly with a hammer or just pushed with hand pressure.
- k. Pump hydraulic pressure to start the pulling process, be sure the jaws are gripping the coupon.
- l. Continue pressuring unit until coupon breaks.
- m. High level indicator (red needle) will show highest pressure attained before coupon breaks. Use formula shown on conversion chart to determine actual pressure attained and the tensile strength of the coupon.
- n. Jaws may become tightly wedged in the testing process a hammer may be required to dislodge the coupon and jaws. Take care not to damage the machine when removing coupon.
- o. Retract cylinder by opening valve on pump.
- p. Sample Calculation:
  - Coupon is  $3/8" \times 1-1/2" \times 9"$
  - Area of coupon is  $3/8" \times 1-1/2" = .5625$  Sq. in.
  - Pressure indicated on gauge is 6000 psi
  - Pressure converted to actual pressure (see conversion chart on barrel of power unit) – 39060 Lbs
  - Actual pressure of 30960 divided by area of coupon .5625 Sq. inch equals 55040 psi. (Tensile strength of coupon).

When using this equipment be sure that it is positioned securely and that the operator is wearing protective clothing, goggles and gloves. DO NOT place



fingers or hands around working parts of the machine while operating. **Exercise Caution.**