

MODEL DH TESTER

INSTRUCTIONS

UNPACKING

The Tester should be handled as a delicate instrument - carelessness in handling may mean a factory overhaul to restore the Tester to operating condition. Follow the instructions below - step by step - and the Tester will operate smoothly and accurately.

CAUTION: DO NOT REMOVE ANY TWINE BINDINGS UNTIL AFTER THE TESTER IS MOUNTED SECURELY ON THE WALL.

1. Prepare for mounting. The Model DH Tester requires a space 80" high by 39" wide. The Tester will project 12" from the wall. An allowance of 3' by 4' must be made for the operator in front of the machine. Thus, a total clear space of 4' in width by 4' out from the wall must be allowed.

The wall on which the Tester is to be mounted must be free of all vibration and must be able to hold a load of at least 300 pounds.

Holes should be drilled for four $\frac{3}{8}$ " steel holding screws or bolts, as indicated in Figure 1, for mounting the Tester directly on the wall. Alternately, the Tester may be mounted on a 2" plank, 80" long by 12" wide, with the plank then attached vertically to the wall with the lower end of the plank resting on the floor.

2. Unpack loose parts. The board to which these instructions were stapled acts as a cover for the space between the Tester dial and the end of the packing box. All loose parts for the Tester are individually wrapped and packed in this space. Remove the board by prying loose the nailed cleats inside the box and taking out the screws in the sides of the box that hold the board in place. Unpack the loose parts - open every piece of paper to make sure that no small pieces are overlooked and thrown away.

3. Remove screws from sides of packing box. The Tester is held in the packing box by four hold-down bolts and several small boards. The boards are secured with screws through the sides of the box. Some of the boards are reinforced with lightly-nailed cleats inside the packing box. Remove all wood screws and pry loose the cleats.

4. Remove boards. Lift out the boards EXCEPT the lower board near the dial between the frame and the permanent weight (9) - DO NOT REMOVE THIS BOARD UNTIL AFTER THE TESTER IS MOUNTED ON THE WALL.

CAUTION: DO NOT REMOVE ANY TWINE BINDINGS UNTIL AFTER THE TESTER IS MOUNTED SECURELY ON THE WALL.

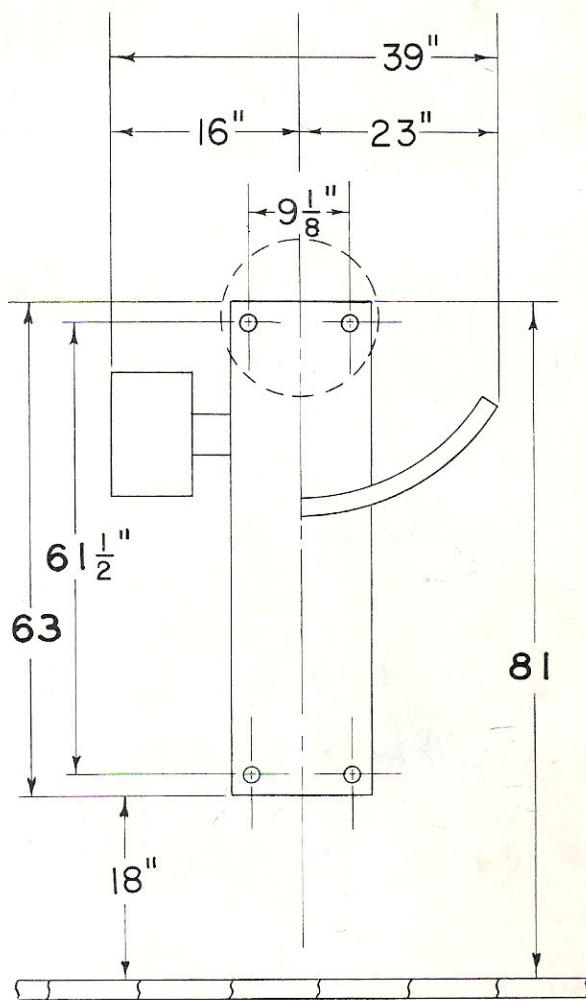


Fig. 1 - Installation Diagram

INSTALLATION

Note: Numbers in parentheses after part names indicate parts shown in Figure 2.

1. Lift the Tester out of the packing box. Two men can easily lift the Tester out of the box. The dial end should be lifted clear of the box before lifting the other end.

LIFT THE TESTER BY ITS MOUNTING FRAME (2) - DO NOT ATTEMPT TO LIFT IT BY ANY OTHER PART - LIFTING BY PARTS OTHER THAN THE FRAME WILL DAMAGE THE TESTER.

2. Attach Tester to wall. Attach the Tester with steel $\frac{3}{8}$ " screws or bolts directly to the wall. (Or attach it to a 2" plank and secure the plank to the wall - see UNPACKING, Step 1.)

3. Level the Tester. Pull the vertical starting lever (11) forward until it latches in - it may be necessary to turn the gear box pulley (15) by hand to accomplish this. After the starting lever (11) has latched in, turn the pulley (15) by hand to lower the main screw draw bar (3) about three inches. Hold a spirit level against the main screw draw bar (3) and plumb the Tester in both directions. Take up hard on the mounting screws and recheck to make sure the main screw draw bar is truly plumb. This check should again be made after the Tester has been in use a few weeks to make sure no "settling" has occurred.

Note: It is very important to level the main screw draw bar rather than the frame or other part of the Tester because the alignment of the entire machine is made with reference to the draw bar.

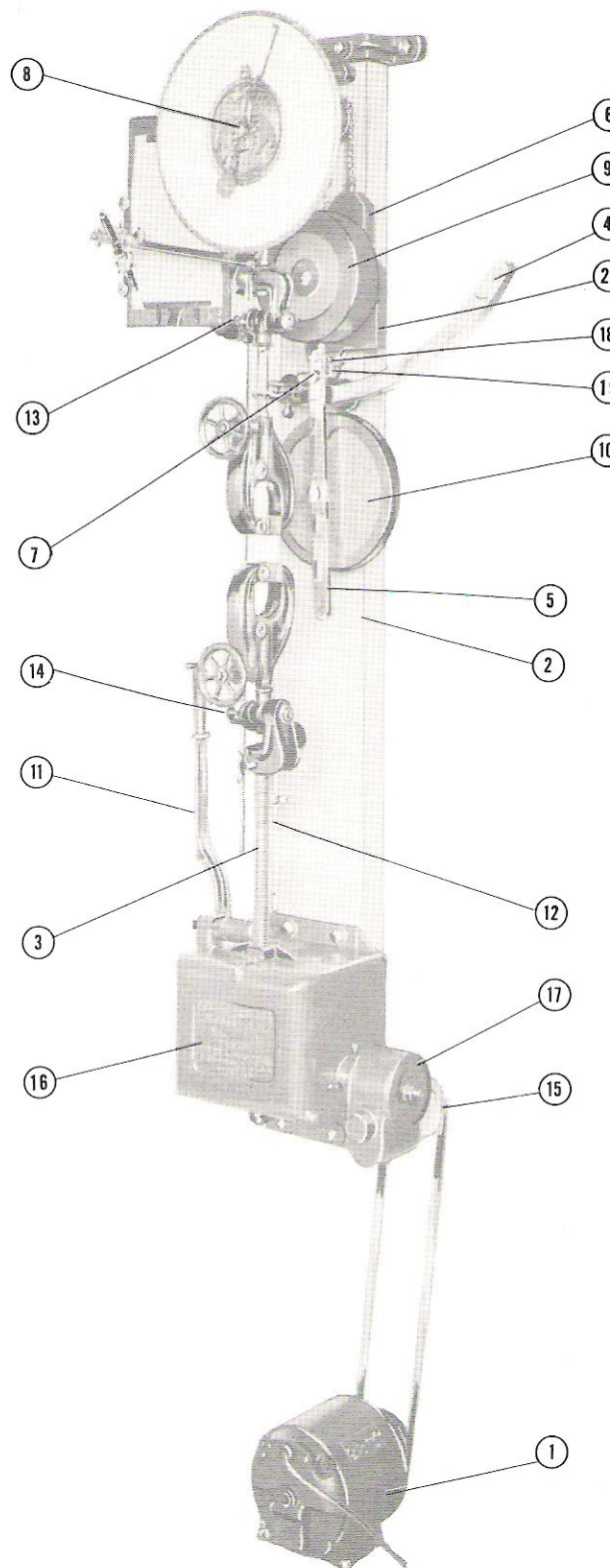
4. Cut binding twine and remove board. All binding twine and the board between the frame and the permanent weight (9) may now be removed.

5. Fasten quadrant in place. Swing the quadrant (4) up to the right and fasten lightly in place with the two nickel-plated screws furnished. Press upward on the outer (right-hand) end of the quadrant and tighten the securing screws.

6. Install additional counterweight. Permanent counterweight (6) is attached to a small chain behind the dial. This counterweight just balances the Tester fixtures to which clamps or other testing devices are attached. Another counterweight (22) is included with the loose parts to balance each additional type of testing device shipped with the Tester. Each of these counterweights is marked to indicate the clamp or testing device it balances.

The permanent counterweight (6) has a hollow tube in the bottom into which the stud on top of the additional counterweight (22) fits. Select the proper counterweight for the testing device to be used; place the stud of this counterweight into the hollow tube in the bottom of the permanent counterweight (6) and pin the two together.

7. Install testing devices. Remove the knurled head screw on upper anchor (13) and lower anchor (14) and attach adaptors to the anchors.



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|-----------------------------|-------------------------------|
| 1 - Electric Motor | 11 - Starting Lever |
| 2 - Mounting Frame | 12 - Reverse Lever |
| 3 - Main Screw Draw Bar | 13 - Upper Anchor |
| 4 - Quadrant | 14 - Lower Anchor |
| 5 - Pendulum | 15 - Pulley |
| 6 - Permanent Counterweight | 16 - Gear Box |
| 7 - Pawl Locking Knob | 17 - Gear Reduction Box |
| 8 - Knurled Knob | 18 - Pawl Release |
| 9 - Permanent Weight | 19 - Pawls |
| 10 - Additional Weight | 22 - Additional Counterweight |

Fig. 2 - Nomenclature

8. Zero the pendulum. Disengage the pawls (19) from the teeth of the quadrant (4) and keep them temporarily out of engagement by turning the pawl locking knob (7). Adjust the dial pointer by hand until it reads zero with the pendulum hanging free -- lock the pointer with the knurled knob at the center of the dial. Turn the pawl locking knob (7) back so that the pawls will again engage the teeth of the quadrant.

Note: When making tensile strength tests, never let the pendulum move freely - that is, with the pawls disengaged - except when zeroing the pointer.

9. Lubricate gear box. Open gear box (16) and lubricate with SAE-30 machine oil through the oil holes provided. The bright steel conical machine face, visible on the cross shaft in this box (directly behind the main screw draw bar) should be lubricated very lightly. Excessive lubrication of this part will cause the Tester to operate improperly.

10. Install electric motor. Line up the pulley (15) on gear reduction box (17) with the pulley of the electric motor. Place the motor (1) so that the V-belt has some slack and screw the motor to the floor. A good check as to the correct slack in the V-belt may be made by squeezing the belt together by hand midway between the two pulleys. This should bring the sides of the belt almost-but not quite-into contact with each other.

IMPORTANT: The motor must be installed and connected so that the direction of rotation of the V-belt corresponds to the red arrow on the gear reduction box (17).

Connect the motor to the power supply called for on the motor name plate.

11. Start the electric motor. Pull the vertical starting lever (11) forward. This will start the main screw draw bar (3) downward. The draw bar will continue downward until the bracket at the top of the main screw draw bar (3) contacts the lower collar on the reverse lever (12). At this point the machine automatically reverses itself and the draw bar will start upward. It will continue upwards and come to a stop at a point determined by the position of the upper collar on the reverse lever (12).

12. Set test distance. The distance between the upper and lower testing devices is determined by the setting of the upper collar on the reverse lever (12). Adjust the position of this collar until the desired test distance is obtained.

13. Set travel. Adjust the position of the lower collar on the reverse lever (12) to get the desired downward travel of the lower testing device.

OPERATION

Installed as describes in the preceding paragraphs, the Tester is ready to test samples up to the capacity of the inner dial readings. If greater capacity is required, the additional weight (10) included with the loose parts should be attached to the lower part of the pendulum with the wing nut provided. **THE PERMANENT WEIGHT (9) SHOULD NEVER BE MOVED.** The additional weight has the word "TOP" stamped in the slot that goes next to the pendulum - it is important that the weight be attached so that this word is upward.

Place the sample to be tested in the testing devices, making sure that instructions for the particular devices in use are followed carefully. Pull the vertical starting lever (11) forward; the main screw draw bar will move downward, pulling on the sample. The tensile strength of the sample will be indicated by the reading of the inner or outer dial (depending upon whether the additional weight is used or not).

Should the main screw draw bar (3) fail to return all the way to the correct position for starting a test, there is too much oil on the conical machine face in the gear box (16). (See INSTALLATION, paragraph 9.) To correct this condition, open the gear box and remove the excess oil.

The motor should be left running during any series of tests; the starting lever (11) and reverse lever (12) control the operation of the Tester.

Before inserting the next sample to be tested, release the pendulum by pushing down on the pawl release (18).

LUBRICATION

The gear box should be lubricated every three months as specified under INSTALLATION. The gear reduction box should be packed with a light, non-fibrous grease every six months. All other wearing parts should be kept clean and lightly oiled with a good grade of light machine oil.

REPLACEMENT PARTS

Replacement parts are carried in stock for immediate delivery.

RECORDER FOR MODEL DH TESTER

INSTALLATION

The Recorder should be mounted as shown in Figure 2 of the Instructions for the Model DH Tester. (Numbers in parentheses refer to that figure; letters in parentheses refer to the illustration on this sheet.) The bracket (A) at the right of the Recorder has two dowel pins and two holes for the mounting bolts furnished. Corresponding holes in the front left side of the mounting frame (2) are provided.

1. Slide the lower end of rod (K) through the hole in bracket (N). Dowel the Recorder bracket in position on the mounting frame (2) of the Tester and secure in place with the mounting bolts.

2. Cut the binding twine on the Recorder parts. A pitman rod (B) with a ball on one end is packed with the loose parts. Screw the threaded end of this rod into the threaded ball joint in the pen carriage (C) until the rod projects about an inch out of the left side of the ball joint. Force the ball on the other end of rod (B) into the socket on the permanent weight (9).

3. Insert a tensilgram chart under the upper and lower clips (D) on the Recorder and set the chart against the pins at the bottom and left of the Recorder platen (E).

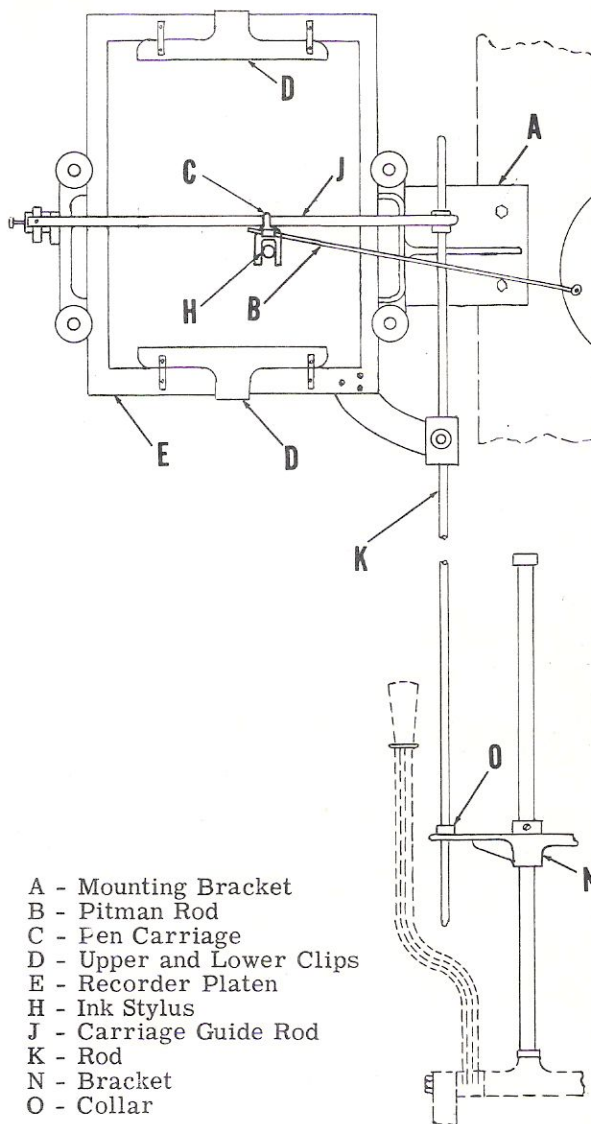
4. Place the ink stylus (H) in the pen carriage (C) after filling the stylus with ink. The stylus is filled in the same manner as any sac-type fountain pen and should be cleaned frequently with plain water. Clamp the stylus (H) in place at about the same angle with the paper as a fountain pen is usually held. Move the platen (E) up and down by hand and adjust the position of the stylus so that a clear even line is drawn on the chart.

5. With the Tester at zero, position the stylus point on the vertical zero line of the chart by turning the pitman rod (B).

6. Loosen the set screw in collar (O) and move the platen up or down by hand to position the stylus point on the horizontal zero line; re-tighten the set screw.

OPERATION

Installed in the manner outlined above, the Recorder is ready for use. As the main screw draw bar of the Tester moves down, the platen of the recorder moves down; as the pendulum swings to the right, the stylus moves to the right. The line traced by the stylus on the chart shows the distortion of the sample against tensile pull in pounds up to and including the instant of rupture. A new chart should be inserted in the Recorder for each group of samples tested.



MAINTENANCE

All parts of the recorder should be kept clean. The carriage guide rod should be wiped daily with a clean cloth.

REPLACEMENT PARTS

Replacement parts are carried in stock for immediate delivery.