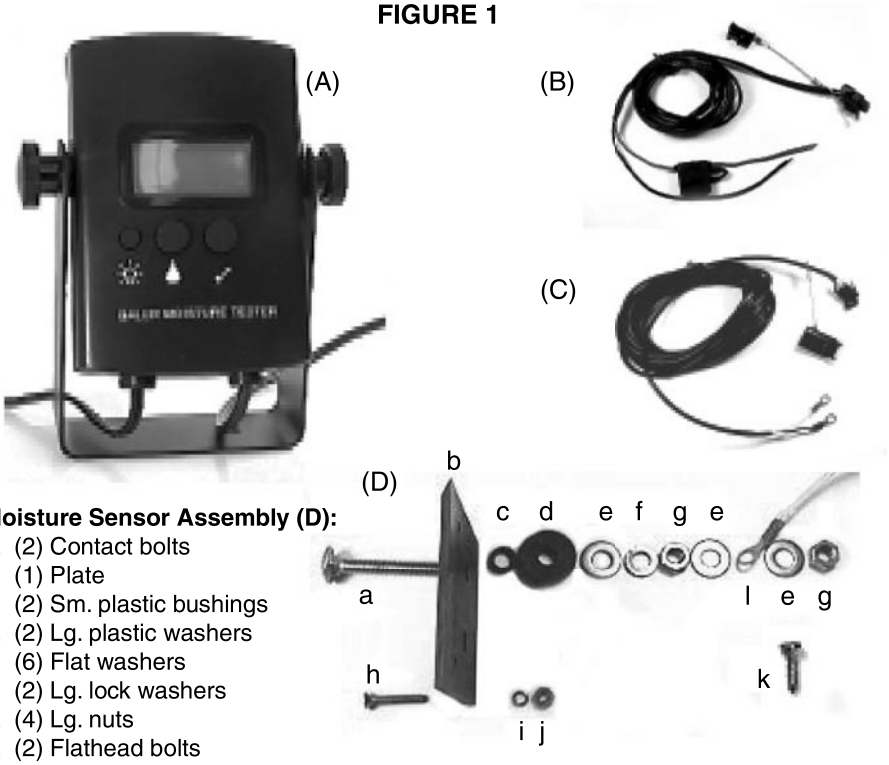
Operators Manual
BHT-1
Baler-Mounted
Hay Moisture Tester

Unpacking

1. The BHT-1 is comprised of a display module (A) with mounting bracket and 2 knobs, a 10 ft. power cable (B) with fuse, a 25 ft. shielded sensor cable (C), and a moisture sensor assembly (D) with mounting hardware and drilling template. The 2 sheet metal screws (j) for mounting the display module bracket are packed with the moisture sensor assembly. Identify all parts illustrated below in Figure 1 before beginning to install.

FIGURE 1



Moisture Sensor Assembly (D):

a. (2) Contact bolts
b. (1) Plate
c. (2) Sm. plastic bushings
d. (2) Lg. plastic washers
e. (6) Flat washers
f. (2) Lg. lock washers
g. (4) Lg. nuts
h. (2) Flathead bolts
i. (2) Sm. lock washers
j. (2) Sm. nuts
k. (2) Sheet metal screws for bracket
l. Sensor cable

Installation

On a Conventional Square Baler:

1. Locate a flat spot between 12” to 24” from the rear of the chamber, about halfway up the side, on the **UNCUT SIDE** of the chamber.

   NOTE: Readings from the cut side of the bale will result in greater variations of readings and overall higher readings.

2. Tape the drilling template onto the *flat* location and drill all holes, using the drill sizes indicated on the template. File any burrs from the holes.

   NOTE: The beveled (leading) edge of the sensor plate must face the plunger (opposite direction of bale movement).

   NOTE: The sensor plate must mount flat and tight to the bale chamber wall!

3. Mount the sensor assembly using hardware provided. Follow diagram in Figure 2.

   NOTE: Make sure that two (2) electrode contacts (carriage bolts) are not touching any part of the metal bale chamber, by using the insulating bushings and washers. Secure tightly with one big nut on each bolt.

   NOTE: Make sure that the beveled (leading) edge of the sensor plate is fastened flat and tight to the chamber wall. Secure tightly with two (2) flat head bolts. (If the leading edge is not secured flat and tight to the wall, hay passing under extreme pressure will pry up the sensor plate.)

4. Assemble a ring terminal on the sensor cable to each contact bolt. Place ring terminal between two (2) metal washers and secure tightly with the last two nuts (see Figure 3).

5. Route the sensor cable to the hitch area of the baler so that it does not interfere with any moving parts. Secure the cable with nylon ties or tape.

   NOTE: Use attached plug cover tethered to connector to keep out dirt and moisture!

On a Large Square Baler:

1. Use the same instructions as above, except we recommend that you add a 1/4” thick piece of strap iron in front of the sensor plate’s beveled (leading) edge. This will provide additional protection to the sensor plate.

On a Round Baler:

1. Locate a flat spot on the sidewall or tailgate, as low as possible to the bottom, on either side of the baler. Use the same instructions as above.

   NOTE: The beveled (leading) edge of the sensor plate must face the pickup.

   NOTE: Hay will begin to pass over the sensor as soon as approximately 1/4 of the bale is formed.

FIGURE 2

FIGURE 3

Installation of the Display Module

1. Select a location (a flat surface) in the cab where the display can be viewed while baling.
2. Using the mounting bracket as a template, mark and drill 3/32” pilot holes, and secure the bracket with the two (2) sheet metal screws.
3. Mount Display Module to bracket with adjusting knobs.
4. Locate a positive (+) 12-volt power wire or terminal that is controlled by the tractor’s ignition switch and attach the RED wire of the power supply cable to it.
5. Attach the other wire of the power supply cable to ground (frame).
6. Plug the power cable connector into the Display Module’s 2-pin connector.
7. Plug the sensor cable connector into the module’s 3-pin connector.

Operating Instructions – Button Functions (See Figure 4)

1. **Moisture:** Press Moisture button to turn meter on. The BHT-1 displays continuous moisture readings when turned on. The unit should display 00.0 if the bale chamber is empty. The BHT-1 reads moisture between 8% and 40%. Readings below 8% are displayed as 00.0. Readings above 40% are displayed a 99.9.

   NOTE: The BHT-1 takes several readings before displaying their average every two seconds.

2. **Backlighting:** When the unit is on, press the Light button to turn backlighting of the display on or off. When the module is turned off and later turned on, it will remember the backlighting mode of when it was last operating.

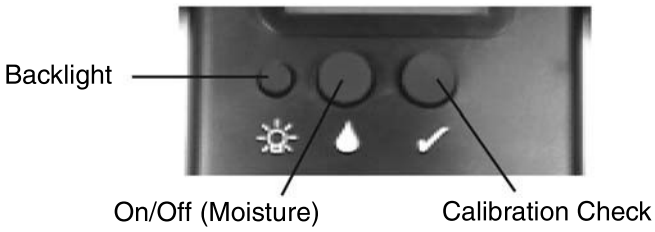
3. **Calibration Check and Reset:** When the unit is on, press the Check button to recalibrate the moisture circuit to the current conditions of the sensor and its environment. The BHT-1 will automatically adjust to dirty sensor contacts and the relative humidity inside the chamber. We suggest that it be common practice to recalibrate the meter every time the unit is turned on.

   If the bale chamber is empty, the unit will display approximately 12.0 after recalibration, signifying correct calibration.

   If there is an obstruction, such as a bale, in the chamber or if the sensor electrodes are very dirty, the unit will display 99.9. If the bale is removed, and the meter still reads 99.9, the electrodes must be cleaned. (See Care and Maintenance). If the meter must be used before the electrodes can be cleaned, the unit will still operate using its last calibration points.

4. **To Turn Off:** Press Moisture button.

FIGURE 4



Testing Procedure and Information

1. While a bale is being formed in the bale chamber, the BHT-1 reads and averages several tests and displays these results every two seconds. Typically, moisture readings will vary several percentage points in a single bale. Windrows are never the same moisture from top to bottom. Usually, they will be wetter at the top, because of dew, or drier, because of sun and wind. Usually, hay that is ready to bale varies less than hay that is not yet ready.
2. Continuous readings from the BHT-1 and other manufacturers' meters will usually be higher than reading from handheld, portable or probe testers. The BHT-1 will probably read about 2-3 percentage points higher on average, and even higher for large, square bales, depending on conditions.
3. Do not be concerned that these differences exist. Rather, develop a feel for an acceptable range of moisture for baling, based on your meter's readings. Establish an appropriate range by spot checking new bales with a portable probe tester, such as a HT-PRO or DHT-1.
4. Hay moisture can vary considerably from one part of a field to another. (See Testing Information.) If the moisture range displayed by the BHT-1 increases above your acceptable limits, stop baling and analyze the field conditions to determine why. You may not want to continue baling in this area of the field.

Variables Affecting Moisture Readings

Understanding the many variables that affect the readings of your BHT-1 will help you get the most from your meter.

1. Field conditions: soil moisture, high or low areas, swales and shady areas all affect hay moisture within the same field.
2. Hay varieties, leaf-to-stem ratios, crop maturity and different cuttings contribute to widely varying moisture distribution in hay plants.
3. Harvesting variables: bale density, windrow size and shape, time of day, hay temperature and overall climatic conditions affect moisture readings. High humidity with cloud cover contributes to more variations in moisture readings than a dry, sunny day with a slight breeze.
4. Some preservatives increase conductivity initially. Until the preservative is absorbed, usually in 1-2 days, it may cause readings to be 2-4 points above the same hay which is untreated.

IMPORTANT: Because of the numerous variables which affect your BHT-1's readings, the indicated moisture content should not be used as an absolute, quantitative measurement. Your tester's readings are, however, very useful guidelines for safely baling and storing hay.

Care and Maintenance

1. After each use (and especially after the harvest season), always remove the Display Module (if it is not inside a dry cab) and store in a clean and dry place.
2. Always use plug cover on sensor cable connector to keep out dirt and moisture!
3. The stainless contacts of the moisture sensor should be kept clean for best results. Clean with fine steel wool and/or mineral spirits or alcohol. **Dirty sensor contacts can cause lower readings.**
4. **Check all nuts and bolts on sensor plate assembly and tighten, if necessary. Make sure that the leading edge is secured flat and tight to the chamber wall.**

Troubleshooting and Warranty Procedure

1. If the unit will not turn on, it is not getting power. Check power cord installation and connectors. Check 2 amp fuse on power cable and replace, if necessary.
2. If the meter displays 00.0 at all times (while baling), there is an open circuit between the display module and the sensor. Check that the cable is not damaged and that the connector is plugged securely. The connector may be corroded and need replacing. Also check that the sensor cable ring terminals are fastened tightly to the electrode posts. (The meter should still read about 12.0 when recalibrated, even if there is an open circuit to the sensor.)
3. If the meter displays 99.9 at all times (while baling), there is a short in the sensor cable or at the electrodes. (The meter will not read 12.0 when recalibration is attempted, but will always display 99.9). Check for cable damage.
4. If the meter displays 8.0 when the bale chamber is empty, electrodes are dirty and need cleaning. (The meter will also read 99.9 when recalibration is attempted, if electrodes are dirty.) Clean and recalibrate.
5. **If all else fails, please read this manual again! *Carefully.***

Warranty

The Agratronix BHT-1 Hay Moisture Tester is guaranteed to be free from defects in materials and workmanship for one year from date of retail purchase. This warranty does not cover the battery or damage resulting from misuse, neglect, accident or improper installation or maintenance. This warranty does not apply to any product which has been repaired or altered outside the factory.

The foregoing warranty is exclusive and in lieu of all other warranties of merchantability, fitness for purpose and any other type, whether expressed or implied. Agratronix neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with its product and will not be liable for consequential damages.

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MODELS AVAILABLE FOR GRAIN, HAY OR SILAGE

WINDROW Hay Moisture Tester

- Test Hay Moisture Content Right in the Windrow
- 13% to 70% Measuring Range
- Quickly Measures Loose Hay and Forage from a Windrow

HT-PRO Hay Moisture Tester

- Calibration Clip Included That Calibrates Electronics and the Probe Sensor
- 8% to 44% Moisture Range
- LED Backlit Display for Low Light Operation

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Agratronix Moisture Testers
are formerly known as Farmex Moisture Testers