



agraTronix™

 FARMSCAN

Operators Guide 2188 Portable Hay Moisture Tester

2022 - NEW FEATURES

- Moisture and temperature are now live readings instead of one average reading per test
- Improved display with greater visibility
- Added graphical symbols for greater information readability
- Higher temperature accuracy when probing bales
- New style tip made from Stainless Steel for increase strength and durability
- Increased battery life
- Direct temperature reading F or C (user selectable)
- Improved moisture calibration

GENERAL OPERATING INSTRUCTIONS

1. **Install battery.** A 9-volt alkaline battery must be connected before the tester will work. Remove the battery door on the back of the handle and snap the leads onto the battery. **NOTE:** After installing the battery, your tester will display “44.4” briefly upon pressing any of the buttons for the first time. This is normal and indicates that the tester is initializing.

NOTE: “LOBAT” will appear in the display, if the battery is running low and needs replacing.

NOTE: The battery must be **ALKALINE**.

2. **There is no ON/OFF switch.** Press any of the buttons, except Backlighting, and the 2188 will turn itself on. **NOTE:** Upon pressing a button, there is a short delay until a reading is displayed.
3. **To test moisture,** press the button above the symbol for “Moisture %” (♣).
4. **To test temperature,** press the button above the “Thermometer” symbol. The tester will display the temperature in Fahrenheit (°F), or Celsius (°C).

NOTE: To switch from C to F or F to C press and hold the temperature button until it switches.

5. **To turn backlighting display option on or off,** press the button above the “Light Bulb” symbol at the same time something – anything – is being displayed. Your 2188 will retain its backlighting mode (on or off) until changed by the operator (even if the battery is removed).

OPERATING NOTES

1. Your 2188 will read hay moisture between 8.0% and 45%. **The tester is most accurate from 10% to 30%. Readings over 30% should only be used as a qualitative indication of very high moisture.**
2. BELOW AND ABOVE LIMIT INDICATORS. Moisture readings **below 8.0%** will be displayed as <8.0%. Readings **above 45.0%** will be displayed as >45% .
3. The 2188 will display <8.0% in open air. (If open air reading of 8.0 is displayed, the tip probably needs cleaning. Clean tip and re-calibrate tester.)
4. Temperatures can be measured from 32° to 225°F (0° to 99°C). Make sure to allow the tip of the probe to adjust to the bale temperature. This can take a minute or two.
5. The tester measures only the hay in contact with the tip of the probe. Because moisture may vary widely in different parts of the windrow, it will vary within each bale. **Take readings in at least five (5) places in the bale, and use the HIGHEST reading as a guideline.**
Consult your local agricultural extension office for recommended baling moisture. Most agree that hay should not be baled or stored over 20% moisture without preservatives or over 25% with the application of a preservative.
6. Your tester is for reading moisture in hay. Placing a probe in 100% moisture –water– will NOT result in a reading of 100%.

TESTING VARIABLES

Many variables affect the accuracy of your 2188's readings.

An understanding of them can help you get the most from your tester.

- A. Bale Density:** In general, higher density bales of the same hay moisture will read higher than lower density bales. Compaction of the hay also varies within each bale. Although each brand of baler feeds hay into its chamber differently, in general, small, rectangular bales are denser towards the bottom or “tight” side; and large, rectangular bales, such as from the Heston 4800, are the most dense (compact) in the upper corners.
- B. Natural variations within the plant before proper curing:** The higher the moisture content, the wider the variations. Greater uniformity can be expected as more curing takes place.
- C. Sweating:** Higher readings may occur during the first couple of days after baling. Immediately after baling, moisture readings may be low and then climb during the “sweating” process. As the hay cures, moisture readings should drop and continue to decline, as the hay becomes progressively drier. It is important to continue to monitor moisture for several days.
- D. Some preservatives increase conductivity initially:** Until the preservative is absorbed, usually in 1-2 days, it may cause moisture readings to be 2-4 points above the same hay which is untreated.
- E. % of grass in the hay:** Your 2188 has been calibrated on 100% alfalfa hay. The more grass in the hay, the higher the moisture reading is compared to actual.

IMPORTANT: PLEASE READ

Because of the numerous variables which affect your 2188's readings, the indicated moisture content should not be used as an absolute, quantitative measurement. Your tester's readings are, however, very useful guide-lines for safely baling and storing hay.

TESTING HINTS: IN THE BALE:

The way hay is fed into the baler's compression chamber results in more hay towards the bottom than the top. And shattered leaves, etc., will sift downward causing the bottom or "tight" side of the bale to be denser than the top or "looser" side. (An exception to this is the Heston 4800 baler, which "folds" the hay into the chamber on each side. The top 1/3 of the 1-ton bale and its upper corners are the densest areas of the bale.

Because the inside of each bale is not uniform in density or leaf-to-stem ratio, moisture readings with your 2188 will vary from one part of the bale to another. It will read highest if the probe is inserted into the "tight" side. Your meter will give higher readings in tight bales than in loose bales.

For best results: INSERT THE PROBE INTO THE "TIGHT" SIDE AT A 45° ANGLE. Take readings in at least five (5) places, and use the highest reading as a guideline. DO NOT AVERAGE RESULTS.

TESTING HINTS: IN THE WINDROW:

The 2188 has not been calibrated for use in the Windrow.

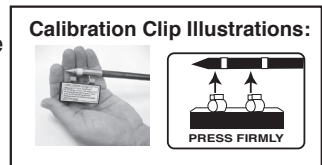
Windrow moisture will vary greatly in different parts of the field. Thick, heavy sections of the windrow will contain much higher moisture hay than thin areas. Look for "humps" in the windrows.

Check the windrows at several locations by turning the windrow up on its side and selecting a handful of hay from the bottom. Hay from the bottom should contain the most moisture, since the top of the windrow will dry out first.

Use the highest reading as a guideline for when to bale. DO NOT AVERAGE RESULTS. There are more variables to testing moisture in the windrow than in a bale. For greater accuracy, several bales should also be baled and tested before the entire field is baled.

CALIBRATION CHECK (RE-CALIBRATION)

1. Clean the probe tip. While holding the probe in the air, press the **moisture button then press and hold the check button**. The tester will begin to count down on the display **3, 2, 1** and the tester will then display.
2. Release the **check button** and **-C- will display**
3. Firmly place the calibration clip on to the probe tip as shown in the clip illustrations below and then press **check** button.
4. The tester will now display 24.8%, indicating that the unit is now calibrated.



If the tester displays **ERR anytime during the calibration process, this indicates an error has occurred. Try repeating the calibration procedure starting at Step 1.

BATTERY

1. **Battery symbol** will be displayed, if the battery is running low and needs replacing. Always use an ALKALINE 9-volt battery.
2. After the battery is replaced, always re-calibrate your tester (see above).

CARE AND MAINTENANCE

1. After each use, always store your tester in a clean, dry and handy place.
2. The metal tip of the probe should be wiped clean between each use for best results. Clean both parts of the metal tip from time to time with fine steel wool and/or mineral spirits or alcohol. **A dirty tip can cause lower readings.** Keep the tip shiny for best results.
3. Never immerse the probe in water.
4. Remove the battery, if your tester will not be used for several months.

TROUBLESHOOTING

1. **Read this manual again. Carefully.**
2. Clean probe tip and re-calibrate tester.
3. **If Battery symbol is displayed, replace the battery** with a new 9-volt ALKALINE battery. Re-calibrate the tester.



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