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SAFETY NOTICES

Safety notices are one of the primary ways to call attention to potential hazards.



This Safety Alert Symbol identifies important safety messages in this manual. When you see this symbol, carefully read the message that follows. Be alert to the possibility of personal injury or death.

WARNING

Use of the word **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Use of the word **CAUTION** with the Safety Alert Symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

Use of the word **CAUTION** without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in equipment damage.

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INTRODUCTION

Proper moisture control at baling is key to reducing mold development, preserving leaves, color and feed value. These factors are critical to the hay producer's main goal – to produce better quality hay and minimize economic losses.

FEATURES

The Dj F-2000 offers the following features:

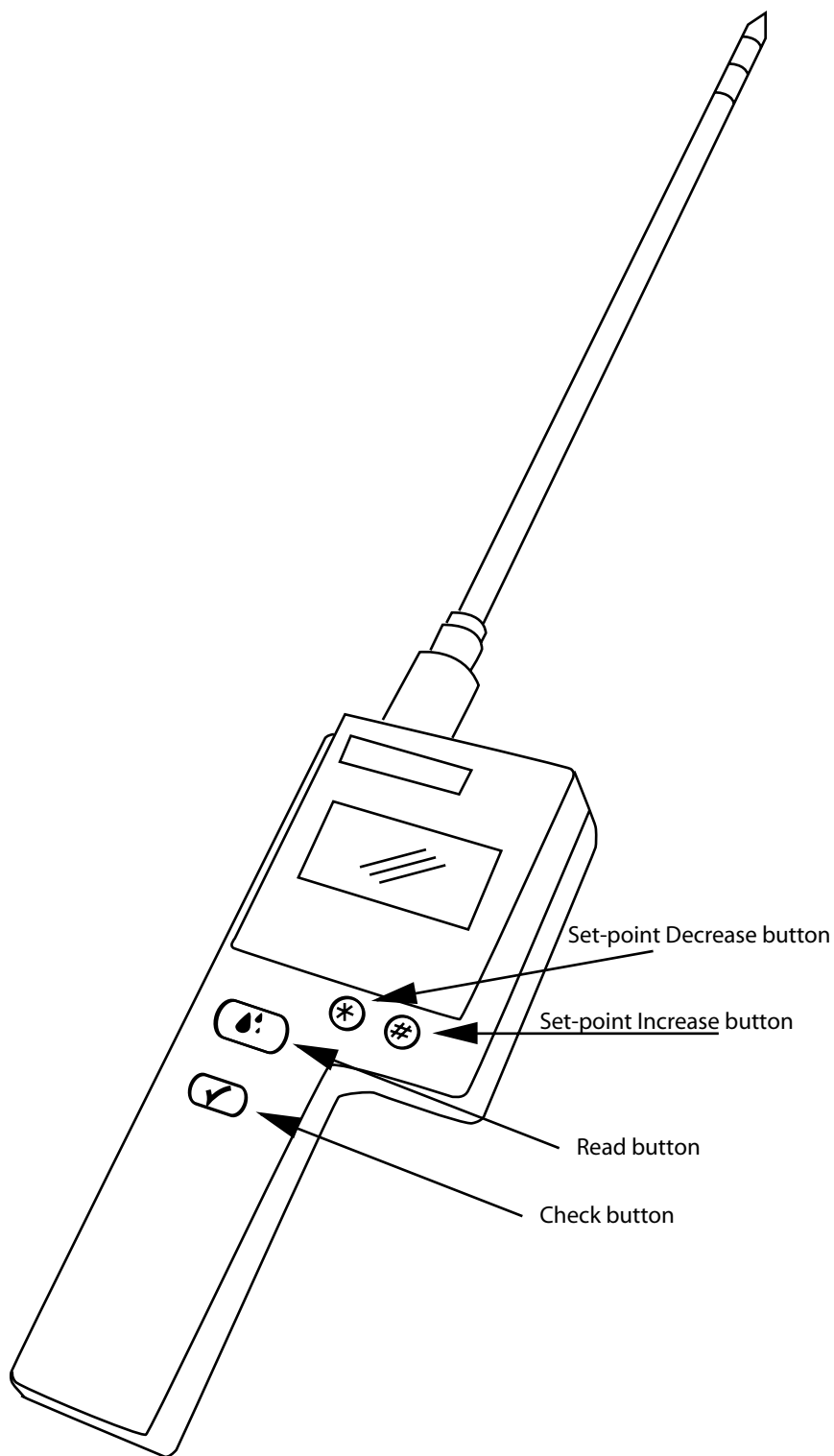
- 6-40% moisture range for alfalfa hay.
- Digital readout.
- Built-in calibration check.
- Temperature stable circuit.
- Ergonomic case design.
- Includes (1) 9-volt battery.
- One year warranty.

The Dj F-2000 measures moisture content over the range of 6-40%.

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Figure 1
Dj F-2000 Hay Moisture Meter



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OPERATION

CHANGING SET-POINT



Set-point Increase button



Set-point Decrease button

To change the set-point value, press the **Set-Point Increase** button. The meter will display the current set-point. To scroll forward to a higher value, hold the **Set-Point Increase** button while the current value is displayed and scroll to the set-point value desired.

To scroll backward through the set-point values, press and release the **Set-Point Increase** button. Within one second, press and hold the **Set-Point Decrease** button. Continue to hold the **Set-Point Decrease** button and the set-point will decrease.

When scrolling in either direction, release the button to stop at the desired set-point. If the meter reads a %MC (percent moisture content value) higher than that of the set-point, a buzzer will sound.

CHECKING ACCUMULATED READINGS

This feature allows the user to view the total number of all accumulated readings, the average of those readings, and the highest stored reading.

To add a reading to the sum of all previously stored readings, press and release the **Read** button within 2 seconds. Pressing and holding the **Read** button will repeat the read cycle but will not add a new reading to the storage until the button is released.

To view the readings, press and release the **Check** button. The meter will display the number of accumulated readings for one second, then the average of those readings for two seconds. It will then display the highest stored reading for two seconds. The total cycle time is five seconds.

To erase all accumulated readings, hold the **Check** button for more than five seconds until the meter displays "0".

To keep the accumulated readings in memory, release the **Check** button before the total cycle time is complete. The meter will accumulate up to 100 readings. After all 100 readings are stored, the meter will not add new readings until the memory has been cleared. It will also continue to display the average of all 100 readings as a reminder that the memory is full.

Readings below 6% will be displayed as ".0". Those above 40% will be displayed as "99.9". Neither will be added to the accumulated readings or used in the calculation of average or highest reading.

CHECKING CALIBRATION

Remove the probe from the top of the meter. Press and hold the **Read** button and **Check** button simultaneously. The meter is in calibration if it displays "12.0" (+/- 0.2) on the scale.



Read button



Check button

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If the calibration is checked and the display does not read "12.0" (+/- 0.2), it is likely an indication of a low battery. If this occurs, change the battery immediately. **Continued use with a low battery may cause the meter to go out of calibration.** If a fresh battery is installed and the meter still does not indicate an acceptable calibration, contact the DICKEY-john Service Department.



Check button



Set-point Decrease button



Read button

RESETTING THE METER

Press and release the **Check** button. Within one second, press and hold the **Set Point Decrease** button. The meter will reset itself and display "119". This indicates that the meter has been reset to the default set-point 19%. It will also clear all of the readings stored in memory.

TESTING BALED HAY

Connect the probe to the external connector on the top of the meter. Insert the probe into the bale. Press the **Read** button. The meter will display the %MC (percent moisture content value) for two seconds.

The hay prod is electrically insulated, except at the metal points near the tip. The moisture content measured represents the hay in contact with the tip of the prod only.

Partially cured hay may have wide variations in moisture content throughout the bale. Readings should be taken in several different parts of the bale and the highest readings used as a guideline. The arrangement and compaction of hay fibers in a bale may have an effect on meter readings.

When testing high density bales, it is recommended that you use the 467912120 handle with the 467912070 10" prod, 467912080 18" prod, or the 467912100 36" prod. Using the handle/prod combination eliminates excess stress on the instrument case that may occur when trying to insert the prod into a high density or large bale.

When using the 36" prod, be sure to guide the prod into the bale with one hand while pushing with the 467912120 handle.

TESTING IN THE WINDROW

When testing in the windrow, push down on the pressure button until the palm of your hand touches the screw that holds the button in place. The pressure button depresses a calibrated spring inside the handle. When the screw touches the palm of your hand, the pressure applied on the sample is 27-30 lbs, which closely simulates the pressure in a standard bale of hay.

There are three ways to test moisture content in the windrow.

METHOD A

Attach the 467912110 short pin prod to the 467912120 handle and connect the handle to the external connector on top of the meter. Prepare a representative sample by collecting hay from various parts of the windrow.

Place the hay in a non-conductive container (such as a 5 to 10 gallon plastic pail) and apply the short pin prod to the hay.

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Read button

Press down on the electrode until the head of the screw, which holds the pressure button, touches the palm of your hand. Press the **Read** button and take a reading. Mix the sample once again and take at least two more readings. Use the highest readings.

Whenever pressure is being applied on the electrode, be sure that the points of the electrode are touching nothing but the hay. Repeat the previous steps if considerable variations are found in the meter readings. To reduce these variations, chop the hay, mix it thoroughly, and take several more readings by following this procedure. This will make the moisture distribution in the sample more uniform.

METHOD B

Attach the 467912110 short pin prod to the 467912120 handle and connect the handle to the external connector on top of the meter. Apply the prod to the hay in the windrow and press down on the electrode handle until the head of the screw touches the palm of your hand. Press the **Read** button and take a reading.

Perform several tests on the hay exposed to the sun. Then turn the windrow over and perform an equal number of tests on the hay that had been closer to the ground. Use the highest readings.

Make sure that the points of the electrode are not touching the ground. The electrode points should make contact with the hay only.

METHOD C

Select up to five large, slower-drying stems from a section of the windrow. Place them, one at a time, across two adjacent points on the 467912110 short pin prod. The average of these stem readings should be about two to five points higher than the actual moisture content.

Repeat this process in different parts of the field and pay special attention to the areas where the hay is the heaviest. The amount of variation found among windrow readings as well as the average stem moisture should be taken into consideration before the decision is made to start baling.

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FACTORS AFFECTING READINGS

Due to the many variables that affect the electrical meter readings, the indicated moisture constant should not be used as an absolute quantitative measurement. Meter readings are very useful guidelines for safe storability of hay.

Meter readings become more significant when they are considered in regard to the density of the bales, anticipated handling of storage, and prevailing climate conditions.

CURING

Before proper curing has taken place, wide variations in moisture content should be expected in both recently-baled hay and hay in the windrow. These variations will be exposed by meter readings taken on different parts of the windrow or bale. The higher the moisture range, the wider the variations will be. The more curing that has been allowed to take place, the greater uniformity in moisture distribution can be expected.

The validity of the meter readings is closely related to the care spent in sampling the hay to be tested. Whether hay in the windrow or baled hay is tested, the number of tests made should be increased whenever the initial readings show considerable variations.

DENSITY

The calibration of the moisture meters applies to bales of normal "average" density. Generally:

- Denser bales may yield readings 1-2% points higher.
- Looser bales tend to yield 1-2% points lower.
- Tests in stacks usually yield readings 2-3% lower.
- Tests on grass hay may yield readings about 3% lower.

When testing baled hay, drive the prod across the slices of the bale, not between them. This will ensure firmer and more uniform contact.

When using the short pin prod, uniformity of pressure from one sample to the other is achieved by applying pressure to the "pressure button" at the end of the 467912040 handle as described in TESTING IN THE WINDROW.

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HAY TEMPERATURE

The Dj F-2000 has been calibrated at 80°F on various samples of different types of hay (mainly alfalfa) and on different cuttings and mixtures. The higher the temperature of the sample, the higher the meter readings will be. Temperatures lower than 80°F cause lower meter readings. The correction is approximately 1% point for every 20°F difference.

Hay Temperature	Add To Reading	Subtract From Reading
20°F/-7°C	3	--
40°F/5°C	2	--
60°F/15°C	1	--
80°F/30°C	0	0
100°F/40°C	--	1
120°F/50°C	--	2
140°F/60°C	--	3

Example:

Meter Reading: 22%
 Temperature: 40°F/5°C
 Moisture Content: 24% (22 + 2)

RANGE OF MOISTURE CONTENT

The Dj F-2000 is designed to test moisture in hay over a range of 6-40%. Readings over 30% should be used only as a qualitative indication of high moisture content. DICKEY-john moisture meters use the relationship existing between electrical conductivity and moisture content in hay. As moisture content increases, so does the conductivity.

Tests on hay at high moisture content, over 25%, are less accurate. This is primarily due to the variability in moisture distribution. The reduced level of accuracy in the high range does not significantly affect the usefulness of the meter, as a high reading indicates that some action be taken to dry the hay to avoid spoilage or even self-combustion.

While it is important to note the average of several readings, it is even more important to note the high readings and the frequency at which they occur.

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SAMPLE SIZE

When testing baled hay, it is essential to take readings at several different points in the bale. Hay moisture may vary a great deal in the same bale. For example, at one point bale moisture may be 20% and at another over 35%.

Additional tests must be made whenever the variations among readings are great. If there is a possibility of high moisture areas, samples from these locations should be taken. Areas of high moisture content will spoil, resulting in loss.

IMPORTANT: It is extremely important to note the high readings and the frequency at which they occur.

USE OF PRESERVATIVES

Hay preservatives or stabilizers may also have an affect on meter readings. Normally a bale of hay treated with preservatives will read higher than a bale of the same hay that has not been treated. The readings typically increase by 2-4% points, and 24-48 hours after treatment, the readings between the bales tend to equalize.

Occasional higher readings may occur if, in addition to the effect of the increased conductivity due to the stabilizer, the bales tested also show an increase in temperature and "sweating". As the stabilizer becomes more thoroughly absorbed and the sweating subsides, the meter readings recede to the initial level and will continue to decrease, assuming that the bale becomes progressively dryer.

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METER CARE

To keep your new moisture meter in good working order, it is recommended that you:

- Store your meter in a clean, dry place. The optional protective carrying case in an ideal storage place when the meter is not in use.
- Change the 9-volt battery as needed. **Continued use with a low battery may cause the meter to go out of calibration.**
- Clean the meter and probe with any biodegradable cleaner. Use the cleaner sparingly and on external parts only.

CAUTION

Do not immerse the meter or any prod in water.

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Dealers have the responsibility of calling to the attention of their customers the following warranty prior to acceptance of an order from their customer for any DICKY-john product.

DICKY-john[®] WARRANTY

DICKY-john warrants to the original purchaser for use that, if any part of the product proves to be defective in material or workmanship within one year from date of original installation, and is returned to DICKY-john within 30 days after such defect is discovered, DICKY-john will (at our option) either replace or repair said part. This warranty does not apply to damage resulting from misuse, neglect, accident, or improper installation or maintenance. Said part will not be considered defective if it substantially fulfills the performance expectations. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE, AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. DICKY-john neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with said part and will not be liable for consequential damages. Purchaser accepts these terms and warranty limitations unless the product is returned within fifteen days for full refund of purchase price.

**For DICKY-john Service Department,
call 1-800-637-3302 in either the U.S.A. or Canada**



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