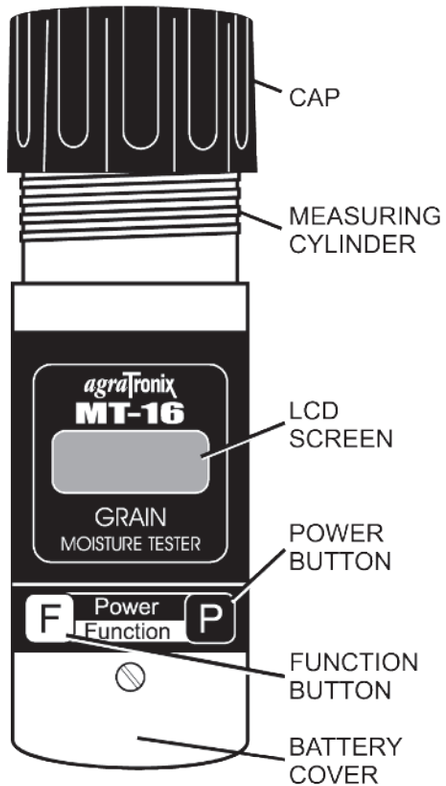
Part No. 08155

# MT-16

## OPERATING INSTRUCTIONS
## GRAIN MOISTURE TESTER




## 1.0 GENERAL

The MT-16 Moisture Tester is a multi-purpose instrument for use when harvesting, drying grain and managing grain storage.

The MT-16 has 16 scales for measuring the moisture content of whole grain kernels and seeds. It is a microprocessor-controlled instrument and provides a direct moisture read-out with no additional conversions necessary. The moisture range for corn is 5 to 40% and 5 to 35% for all others.

**The MT-16 features:**

- Measurement of 16 different grains, seeds and beans
- Automatic temperature compensation for variations of grain and tester temperatures
- Individually adjustable grain scales to match readings from an oven dryer or local grain elevator
- Automatic averaging function for up to 99 moisture results
- Automatic power switch-off

**The MT-16 is quick and simple to use:** The moisture measurement in initiated with a single push-button action after switching the tester on. When adjustments are desired, the display guides the user through the selections. On the right side of the tester there is a diagram summarizing the basic operation of the tester.

## 2.0 OPERATION

### 2.1 Quick Start

**A. Fill the Cylinder:** Fill the measuring cylinder ONE FOURTH (1/4) full. Gently shake the tester to settle the grain around



the sensors, then continue filling until grain is level with the brim.

**B. Cap Pressure:** Screw down the cap and turn until the cap's center is flush with the rest of the cap.

**C. Power ON/Grain Select:** Press the **P** button. After the three dashes disappear, a number will appear that corresponds with a grain listed on the side of the tester. Select the number of the grain you wish to test by pressing the **F** button until it appears on the screen.

**D. Testing:** After selecting the grain scale, the test "**RUN**" will appear followed by the moisture content of the sample. The tester will then automatically shut off.

### 2.2 Measurement Preparation

**2.2.1 Instructions:** If a long period of time passes between using the tester, it will be helpful to re-familiarize yourself with it. **Please re-read the instructions.**

**2.2.2 Clean the Measuring Cylinder:** Check that the measuring cylinder is clean and empty. If needed, you may clean it with a wooden pin or a small, stiff brush. Do not blow into the cylinder, because the moisture present in your breath will affect future readings.

**2.2.3 Averaging Memory:** If you are going to average new measurement results, check that no earlier readings exist in the averaging memory. To check: press and HOLD the **F**-button. While holding the **F**-button, press the **P**-button. The screen will then display an "**A**". You may release both buttons at this point. The tester will then display "**A0#**'. The digits displayed



are the number of samples being averaged. The screen will then toggle back and forth between "**A##**' and the average moisture of the measurements in memory. When the averaging memory is empty, "**A00**' will be displayed. In both cases, the tester will automatically shut off after several seconds.

**2.2.4 Clear the Average Memory:** Press and hold the F-button while the "**A##**" is displayed until you see a "**0**" on the screen.

**2.2.5 Grain Variations:** Grain moisture can vary widely. To get reliable moisture data, always take several tests from different parts/locations of your material and average the results.

For best results, take at least five (5) test samples from the total grain quantity. The average of these 5 samples is the final moisture content result of the grain quantity you checked.

**NOTE:** The moisture in different parts of your grain quantity will vary, even in the final stage of the drying process.

### 2.3 Operation in Detail:

**2.3.1 Fill the Measuring Cylinder:**
**A.** First, fill the measuring cylinder 1/4 full. Then shake gently to evenly distribute the grain. Next, continue filling until grain is level with the brim.

**B.** Start the cap on the threads and turn clockwise until the center of the cap is flush with the surface of the cap. This will insure uniform density of the material inside the cylinder.



**2.3.2 Power Up:** Start testing by pressing and releasing the power **P**-button. The display will work for 20 seconds, after which the system will automatically shut off. Three dashes will appear.


**NOTE:** Disregard any "**LoBat**" warnings that may occur with the 3 dashes. The warning is only valid WHILE a moisture result is being displayed on the screen.

**2.3.3 Grain Scale Selection**
Next, after the three dashes appear, the number of the grain scale that was last used will be displayed on the screen. Press the **F**-button as many times as necessary to scroll through the grain scales until the desired scale is displayed. On the side of the tester is a reference chart with materials and their corresponding numbers.


Number -**0**- is an arbitrary scale that can be used for other grains not listed on the side of the tester. Conversion scales for grains not listed are available upon request.

Once the grain number has been selected, the tester will keep that number in memory. The next time you turn on the tester, it will come up first.

**2.3.4 Measurement:** The tester will display "**RUN**" while measuring the sample's moisture, the measuring cylinder's temperature, and while computing the temperature compensation.

**2.3.5 The Moisture Reading and Special Functions:** After a few seconds, the test result will be displayed on the screen. This is the actual moisture content of the sample. For example:


While the moisture is being displayed, the **F**-button controls the functions of Averaging and Adjusting Grain Scale Calibration.

**2.3.6 Averaging:** While the display is showing a moisture read-out, you can add the result to the averaging memory. Depress the **F**-button once. The display will show an "**A**" on screen. After a couple of seconds, the display will show first the number of averaged results in memory (for example, **A05**). Next it will show the average of all moisture readings held in memory (for example, **13.8**). The display will toggle back and forth between these numbers of samples and the average moisture value.



To clear the averaging memory during testing, depress the **F**-button again when the average moisture is displayed until it says "**0**". "**A00**" will be displayed to indicate the memory is cleared.

**NOTE! You can only average one grain scale at a time. (For example: you cannot average Wheat tests with Oats tests.)**



**2.3.7 Adjusting Grain Scale Calibration:** Your MT-16 is very accurate when comparing it to the laboratory oven drying process. This is the industry standard and the most accurate determination of grain moisture content.

However, on occasion, it may be desirable to adjust the factory calibrated moisture reading of the MT-16 to more closely match the readings measured by your local elevator. MT-16 offers an adjustable feature by which you can adjust the moisture reading up or down +/–10% in every scale.

• **To Increase:** When the moisture content is displayed, press the **F**-button TWICE. Three dashes will appear for 5 seconds along the TOP of the screen.


Once the screen returns to the moisture value, press the **F**-button to adjust the reading upward 0.1% per each depression until you have achieved the desired reading.

• **To Decrease:** When the moisture content is displayed, press the **F**-button THREE times. Three dashes will appear for 5 seconds along the BOTTOM of the screen.


Once the screen returns to the moisture value, press the **F**-button to adjust the reading downward 0.1% per each depression until you have achieved the desired reading.



**NOTE! Adjustment of one grain scale does not affect or change any other grains programmed in the tester. Each grain has its own dedicated memory.**

**2.3.8 Adjusting Scales:** If you have made calibration adjustments to the scale you are using, the correction factor will be displayed after the text "**RUN**." If, for instance, "**–.5**" is shown in the display, your result will be automatically reduced by –0.5 percent.


**2.3.9 To Clear Adjustments:** When the moisture reading is displayed on the screen, press the **F**-button and hold for 8 seconds until the moisture reading changes. This confirms that the scale adjustment for the grain being tested has been removed. It will return to factory calibration.

**2.4 Readings Above or Below Limits:** If the measured moisture is below or above the normal operating range of the tester, the display will show **LO** or **HI**. The range for corn is 8 to 40% and for oil grains 5-35%.

**NOTE! If you get a HI or LO error message, always check that you are using the correct scale.**

## 3.0 GRAIN SAMPLES

The calibrations for different grains and seeds have been made using samples of "standard" grain. If characteristics of the grain being measured differ considerably from the characteristics of the "standard"



grain, erroneous results may occur. For instance:

**A. Foreign Material:** Excess amounts of foreign material cause errors. Remove foreign material from the sample prior to loading into the measuring cylinder.

**B. Test Weight:** A 10% difference in test weight, when compared to normal test weight, can cause an error of up to 1% in the moisture reading. Low test weight results in lower moisture readings and vice versa.

| Scale No. | Grains | Minimum Moisture | Maximum Moisture |
|---|---|---|---|
| 1 | Corn | 5% | 21% |
| 2 | Corn | 17% | 40% |
| 3 | Wheat, soft | 7% | 35% |
| 4 | Wheat, hard | 7% | 35% |
| 5 | Soybeans | 4% | 25% |
| 6 | Sorghum | 7% | 30% |
| 7 | Oats | 7% | 35% |
| 8 | Canola | 4% | 25% |
| 9 | Barley | 7% | 35% |
| 10 | Rye | 7% | 35% |
| 11 | Beans | 7% | 30% |
| 12 | Rice | 7% | 30% |
| 13 | Flax | 5% | 25% |
| 14 | Safflower | 6% | 30% |
| 15 | Sunflower, oilseed | 4% | 35% |
| 16 | Sunflower, confect | 4% | 35% |

## 4.0 CARE OF THE TESTER

**4.1 Handling:** Always handle the MT-16 with care and keep it in the carrying case when not in use. Store in a dry, dust-free environment. Remove the battery if the tester will not be used for a long period of time. Replace the battery prior to each new season.

**4.2 Replacing the Battery:** When the battery voltage drops below normal operating limits, the display will show the text "**LoBat**" WHILE THE MOISTURE VALUE IS DISPLAYED. Change the battery at once to ensure reliability. Open the lid covering the battery compartment on the bottom of the tester with a screwdriver. Remove and replace the battery and restore the lid.

**4.3 Service:** All MT-16 testers are calibrated prior to shipping. If for some reason the tester goes out of calibration, or requires any other servicing, contact Agratronix Customer Service and explain the nature of the problem.

## 5.0 WARRANTY

The MT-16 Grain Moisture Tester is guaranteed to be free from defects in materials and workmanship for a period of two (2) years from the date of retail purchase. Proof of purchase must be submitted with any warranty claim. Your MT-16 is a precision electronic instrument. Therefore, the manufacturer does not assume liability for damage resulting from changing the battery, misuse, dropping the tester, or damage resulting from unauthorized repair of the tester. The guarantee does not cover damage, which may directly, indirectly, consequently or incidentally result from the use or inability to use the tester.

agraTronix™
10375 State Route 43
Streetsboro, OH 44241
USA
(800) 821-9542
(330) 562-2222
www.agratronix.com

**MANUFACTURER:**
Farmcomp OY
*A Division of Agratronix, LCC*
Made in Finland



DOCU-M0113 11-16