

Delmhorst Instrument Co.

Model G-6/56-E
Operating Instructions

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BEFORE YOU BEGIN

- 1. Select the dial for the product to be tested. Place it on the panel meter.
- 2. Check meter adjustment as follows: Set range switch at ADJ. Press the "READ" button. The meter should read "100" on the 0-100 scale, or on the "ADJ" line of the interchangeable dials. Turn the adjust knob until it reads 100, if necessary. Check adjustment occasionally when making a number of tests.
- 3. Fill the sample cup with a single layer of grain or seed and place it on the pressure plate. Place electrode upper plate in position. Set the range switch at one of the 3 ranges which will cover the expected moisture content. Turn the electrode screw until some resistance to turning is felt. Then turn it an additional one and a half turns. Press the "READ" button and read the moisture content on the meter dial. If necessary turn the range switch until the meter pointer rests within the numbered part of the scale.
- 4. Measure grain temperature by inserting the thermometer in a one-quart sample of grain. Allow at least 3 minutes for the thermometer to reach equilibrium. If the temperature is other than 80° F use the temperature slide

rule to obtain the correction necessary to determine the actual moisture content.

5. Turn the electrode counter clockwise, empty the cup and clean it for next test.
6. The G-6 is calibrated for direct reading of moisture content on rough rice. When testing milled rice, use the rough rice dial and add the following corrections to the dial readings.

| | | | | | | | | | |
|---------------------|----|----|-----|-----|-----|-----|-----|-----|-----|
| Rough Rice Reading | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Add for Milled Rice | .8 | .9 | 1.0 | 1.3 | 1.4 | 1.5 | 1.7 | 1.8 | 2.2 |

Example: A dial reading 11.0 indicates actual moisture content of 12.0, since the correction factor of 1.0 is to be added.

TESTING GRAIN AND SEED IN BAGS

Screw the #832 long pin prod into the H-3 handle and connect the electrode cable to the moisture detector.

Place appropriate dial for the grain being tested on the meter.

Check the meter adjustment. (see step 2 above)

Push the #832 prod into the seed bag by pressing the pressure button of the H-3 handle until the screw touches the palm of the hand. Make several tests on various parts of the bag. Push the prod into the lower portion of the bag being tested, or into one of the bags on the bottom of the pile. The operator may stand on a bag and apply the electrode between his feet.

More accurate tests are made with the double disc electrode. However the long pin prod is useful in making a large number of tests prior to drying or storing of bagged grain.

NOTE: When using the long pin prod the following correction should be added to dial readings:

Oats—Corn—Wheat 1.0
Rye—Sorghum—Soybeans 2.0
Barley 1.5
Rice (rough)—Coffee 2.5

TESTING FESCUE AND OTHER GRASS SEEDS

1. Use the H3 Handle with the #832 Long Pin Prod and place HAY dial on the meter.
2. Push the #832 Prod into the seed by pressing on the pressure button of the H3 Handle until the screw (which holds the button) touches the palm of your hand.
3. Take a reading on the dial. A reading of 12 normally indicates that the seed is at a safe level of moisture content. A reading of 14 indicates a borderline condition of moisture content. In this case, additional readings are recommended.

TESTING HAY

Equipment Required: H-3 Handle
 #830-2 10" Prod – for Baled Hay
 #831 Short Pin Prod – for Hay
 Chopped or in Windrow
 Place Hay dial on Meter
 Check the meter adjustment (step 2 in Before you
 Begin section)

BALED HAY

Screw 10" Prod (830-2) into H3 Handle and connect cable to the instrument. Push prod into the bale, and read the moisture content on the meter dial. The position of the RANGE SWITCH indicates the range in which meter readings should be taken.

The Hay Prod is insulated, except at the contacts near the end, to eliminate the effect of surface moisture on the bale. The moisture content measured by the moisture detector is adjacent to the contacts at the point of the prod. Partially cured hay will have a wide variation in moisture content throughout the bale; therefore, readings should be taken in several different parts of the bale and averaged. This method of using the Moisture Detector is expected to be accurate within 2% when the moisture content is lower than 25% and is especially useful for asserting when the hay is dry enough (between 18% and 22%) for safe storage without danger of mildew or spontaneous combustion. Densely packed bales should be dried to a lower moisture content than slack bales which will dry to some extent while in storage.

HAY IN MOWS OR STACKS

Follow the same procedure as stated above for testing Baled Hay, substituting the 18" (830-3) or 36" (830-4) Hay Prods in place of the 10" Prod.

The pressure between the hay stems and the electrode should approximate that found in a normally packed bale. Greater pressure will cause the readings to be slightly higher than normal and low pressures will cause the meter to indicate lower than the actual moisture content.

HAY IN WINDROWS

1. Screw SHORT PIN PROD (831) into ELECTRODE HANDLE (H-3) and connect cable to instrument.
2. Apply the electrode to the hay. Push just hard enough to feel the screw at the end of the handle touch the palm of the hand and read the moisture content directly on the dial. The position of the RANGE SWITCH indicates which scale should be read. Rotate the RANGE SWITCH, if necessary, so that the meter pointer is within the numbered portion of one of the ranges. Be sure the pins only make contact with the hay – they must not touch ground.

CHOPPED HAY

1. Screw SHORT PIN PROD (831) into ELECTRODE HANDLE (H-3) and connect cable to instrument.
2. Fill sample can or plastic bag with chopped hay. Apply the electrode to the hay. Push just hard enough to feel the screw in the handle touching the palm of the hand. Press the "READ" Switch and read the moisture content on the dial. The position of the RANGE SWITCH indicates which scale should be read. If the material tends to compress as the pressure is applied, the quantity in the cup must be sufficient so that the contact pins do not touch the bottom of the cup.

HAY CUBES

Break up a number of hay cubes, mix, and test as "Chopped Hay" above.

TESTING FLOUR OR GROUND GRAIN

The G-6/56-E Moisture Detector can be operated for testing flour, corn meal, or any ground grain by using an Electrode Assembly fitted with Smooth Discs #314ELE-0004/313CUP-0006.

INSTRUCTIONS

1. Fill the sample cup (#313CUP-0006), tap two or three times on a hard surface, and using a straight edge, scrape off the excess flour, so that the sample is level with the rim of the cup.
2. Turn the electrode screw until contact is made with the product in the sample cup. Then turn an additional one and one half turns approximately and read the meter.

NOTE: To test Corn Meal use:

- Smooth Discs Electrode #314ELE-0004/313CUP-0006 and insert the corn dial on the meter.
- Read the moisture content directly on the dial.
- For other products use the appropriate dial or conversion table.

For assistance contact your dealer or directly:

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TRANSISTORIZED GRAIN MOISTURE DETECTOR MODEL G-6

The Delmhorst Crop Moisture Detector Model G-6 is a portable, transistorized instrument, designed primarily for the determination of moisture in grains and seeds. The instrument consists of two parts; the electronic unit and the electrode for making contact with the grain. It incorporates a fully transistorized circuit that features a virtually trouble-free performance, stable calibration and long battery life.

The electrode is of the double disc, pressure type. The lower disc forms the base of a shallow cup in which the sample grain is placed. The cup rests on a pressure plate which is in turn mounted on a pretensioned calibrated spring, to insure uniformity of pressure – from one test to another – for better repeatability of readings.

The upper and lower electrode discs have sharp points that penetrate the seed coat and therefore make contact with the interior of the grain.

The G-6 Moisture Detector is calibrated for direct reading of moisture content on the following grains by use of interchangeable dials: Corn, Oats, Barley, Sorghums, Wheat, Rye, Rice, Soybeans, Coffee & Hay.

When testing materials other than those for which calibrated dials are supplied, calibrated charts must be used. Write to Delmhorst Instrument Co., for further information.

ACCURACY: The Model G-6 has been calibrated against well conditioned samples whose moisture content was determined by the air-oven method set forth by the United States Department of Agriculture. In these laboratory tests it was found that the readings are on the average within $\pm 0.5\%$ in the range 9 to 17 and $\pm 1.0\%$ in the range 17 to 23. In many grains the average variation was found to be even less than indicated.

*Under field conditions the possible error may be greater, which may be due to:

- Wide difference between the grain temperature and that of the instrument. Under such conditions, the temperature of the samples may change so that it becomes difficult to measure it accurately.
- Uneven distribution of moisture in the lot of grain. This condition prevails when grain is drying, especially when using heat or rapid circulation of air. Differences in moisture content are also found in different parts of the same field because some parts may mature at different times. Actual differences in moisture content can also be found in a single ear of corn – moisture usually being greater near the stalk.

The G-6 tests small sample and therefore its reading is directly related to the moisture content of the grain from where the sample was selected. If the initial two or three tests indicate uniform moisture content, there is no need to make additional tests on other samples. On the other hand, if the initial tests indicate considerable variations in moisture content among the various samples, it is advisable to increase the number of samples tested in order to have a more accurate determination of the average moisture content, and the range of moisture present.

When the moisture detector is used to check the operation of a drier, samples of grain from different locations should be selected to determine how well the drier is performing since the drying rate may not be uniform throughout the grain. Also, in checking the moisture content of grain in a bin, it is necessary to select various samples from different parts of the bin and test them individually. In such cases it is very important to ascertain that there is no grain – in any part of the bin – with a moisture content too high for safe storage.

The knowledge of the range and distribution of moisture in stored grain is more important than the determination of the average moisture content, since an average may not reveal the presence of high moisture pockets.

It should be noted that because of moisture migration, an accumulation of moisture can be found in the top layers of the grain. It is necessary, therefore, that at least one sample be taken from this area when the moisture content of grain in a bin is being checked. Proper use of a moisture detector will show when to ventilate a bin and when fans can be shut down. These tests can be made in a very short time, as a test takes less than one-half minute.

Several samples, coming from different parts of a load, should also be individually tested if the average moisture content of a truck or carload of grain is to be measured. The average is obtained by averaging the readings on the various samples. The more samples tested, the more accurate will be the determination of average moisture content.

If you want to make a comparison between your moisture meter and the one at the local elevator, make an average of at least three tests with the G-6 on the sample that was tested in the elevator meter. If you accept the elevator moisture meter as a standard and you have found that there is a discrepancy between the meter at the elevator and yours, note such difference and add or subtract it from readings obtained on your meter in subsequent tests.

CARE OF YOUR METER

To keep your meter in good working order:

1. Store your meter in a clean, dry place. The protective carrying case provided is an ideal storage place when the meter is not in use.
2. Change the 9-Volt battery as needed. Continued use with a low battery may cause the meter to go out of calibration.
3. Clean the meter and discs/prods with any biodegradable cleaner. Use the cleaner sparingly and on external parts only. Keep cleaner out of the external connector.
4. Remove the battery if the meter will not be used for one month or longer.

SERVICE FOR YOUR METER

1. Pack your meter securely. Enclose a purchase order or letter with a brief description of the problem.

2. There is no need to call us for a return authorization number if you are within the U.S. Customers outside the U.S. must contact us for more specific instructions prior to returning a meter.
3. Include your name, address, daytime phone and fax numbers or e-mail Address. If you believe the meter is under warranty, please provide the original sales slip or invoice.
4. Ship via UPS, Express Mail, Priority Mail or any overnight courier who provides prompt service. Do not use standard parcel post.
5. Insure your instrument for its full value and ship prepaid. We are not responsible for damage in transit.
6. We do not accept COD shipments or cover any incoming freight or duty charges on returned merchandise.
7. Turnaround time on repairs is approximately two weeks.
8. We will call you with an estimate if you specifically request one, or if we determine that the meter may be too costly to repair.
9. Non-warranty repairs will be returned via UPS/COD unless you have already established other payment terms. There is no COD service outside the U.S. To pay by credit card, include the card number and expiration date with your repair. We accept Visa/Mastercard, American Express, and Discover.
10. Warranty repairs will be returned at no charge if shipped within the U.S. via UPS Ground Service. Freight charges for expedited services (i.e., Federal Express, UPS/2Day, UPS/1 Day, etc.) are the customer's responsibility and will be charged as per the above terms.

WARRANTY

Delmhorst Instrument Co., Inc., referred to hereafter as Delmhorst, guarantees its G-6/56-E meter for one year from date of purchase and any optional electrodes against defects in material or workmanship for 90 days. If, within the warranty period of the G-6/56-E, you find any defect in material or workmanship return the meter following the instructions in the "**Service for Your Meter**" section. This limited warranty does not cover abuse, alteration, misuse, damage during shipment, improper service, unauthorized or unreasonable use of the meter or electrodes. This warranty does not cover batteries, pin retainers, or pins. If the meter or any optional electrodes have been tampered with, the warranty shall be void. At our option we may replace or repair the meter.

Delmhorst shall not be liable for incidental or consequential damages for the breach of any express or implied warranty with respect to this product or its calibration. With proper care and maintenance the meter should stay in calibration; follow the instructions in the “**Care of Your Meter**” section.

Under no circumstances shall Delmhorst be liable for any incidental, indirect, special, or consequential damages of any type whatsoever, including, but not limited to, lost profits or downtime arising out of or related in any respect to its meters or electrodes and no other warranty, written, oral or implied applies. Delmhorst shall in no event be liable for any breach of warranty or defect in this product that exceeds the amount of purchase of this product.

The express warranty set forth above constitutes the entire warranty with respect to Delmhorst meters and electrodes and no other warranty, written, oral, or implied applies. This warranty is personal to the customer purchasing the product and is not transferable.

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