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MINI GAC® 2500

GRAIN MOISTURE ANALYZER

Operator's Manual

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SAFETY NOTICES

Safety notices are one of the primary ways to call attention to potential hazards. An absence of specific alerts does not mean that there are no safety risks involved.

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.

DISCLAIMER

DICKEY-john reserves the right to make engineering refinements or procedural changes that may not be reflected in this manual. Material included in this manual is for informational purposes and is subject to change without notice.

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FCC COMPLIANCE STATEMENT

(Bluetooth® Equipped models only)

FCC ID: QOQBLE112

IC: 5123A-BGTBLE112

Model 46789

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference that may be received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

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LIABILITY

DICKEY-john designed the mini GAC® 2500 to measure oilseed and grain moisture content. We rigorously test and calibrate each instrument before it leaves the factory. Use of the instrument in the field, however, is subject to environmental and operating conditions beyond our control. **DICKEY-john disclaims all liability for damages resulting from environmental and operating conditions beyond our control and for any damages that might follow incorrect results due to those environmental or operational conditions.**

Therefore, we expect the operator to take responsibility to assure that the results of the testing is as accurate as possible by following approved maintenance procedures on a regular basis, by cleaning the instrument and its sensors on a regular and as-needed basis depending on the amount of dust, dirt, and debris encountered in the instrument's use, by monitoring performance using daily check samples, and by adhering to the check procedures set forth in the manual. As with any kind of sophisticated equipment, optimal results depend in part on proper cleaning and maintenance.

For questions concerning these issues, refer to the product warranty, or call your DICKEY-john representative.

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INTRODUCTION

The mini GAC® 2500 grain testers are portable units that quickly test grain and automatically calculate moisture content and test weight/bulk density of the sample. The unit operates using four function keys coupled with a menu-driven operating system.

The mini GAC® 2500 portable tester offers:

- Moisture readings
- Test weight readings

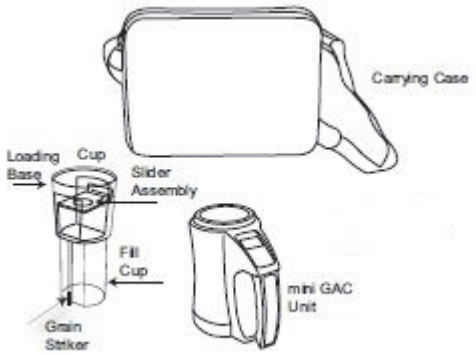
FEATURES

- Plastic loading cup (Loader)
- 9V lithium battery (included in select models only)
- LCD digital display
- Bluetooth communication (select models only)
- Multiple languages
- Backlit display
- Memory for up to 20 product (grain) tests per language
- English/Metric units
- Carrying case
- USB port for calibration loading
- No screw cap or sample preparation required

NOTE: Refer to the Normal Operation section for additional information on the screen displays of Selecting and Testing Grain.

Figure 1

mini GAC® 2500 and accessories



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SPECIFICATIONS

Operating Temperature Range: 40 - 113 degrees F, (5 - 45 degrees C)

Validated Grain Temperature Range: 40 - 113 degrees F (5 - 45 degrees C)

Operating Grain Temperature Range: 32 - 122 degrees F (0 - 50 degrees C)

Recommended Maximum Temperature Difference (between analyzer and grain): 36 degrees F (20 degrees C)

Humidity: 5-95%, noncondensing

Weight: 2 lbs 7 oz (1.1 Kg)

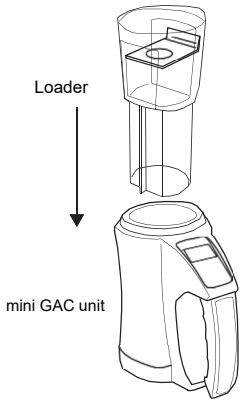
Power Source: A 9V lithium battery is included in select models only. A low battery indicator on the display identifies when a replacement is necessary. Lithium battery replacements are recommended when required.

STORAGE

The Loader should be turned upside down and placed inside the unit for storage.

Figure 2

Loader/Unit Storage



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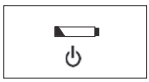
BATTERY

A 9V lithium battery is included in select models only. A **low battery voltage** menu will appear when battery life has almost reached capacity. The unit is still capable of making accurate measurements, but the battery should be replaced soon.

IMPORTANT: Leaving Bluetooth in the "Always On" mode has the potential to drain the battery (select models only)



A **dead battery warning** displays when the battery has reached its end of life and is no longer capable of making accurate measurements. The unit will no longer perform any functions other than to power off the device. If a dead battery warning displays prior to saving some settings, the information could potentially be lost.

Battery life is prolonged by reducing the **Power Down** setting of inactivity. The power down setting range is selectable from 10 to 90 seconds. The default setting is **30** seconds. Lithium battery replacements are recommended when required.

IMPORTANT: Follow your local government regulations on disposal and recycling of lithium batteries.

SWITCHPAD FUNCTIONS

ON/OFF/HOME

The **On/Off/Home** button is pressed momentarily to power the unit On and held for 2 seconds to power the unit Off.

Pressing the **Home** button on any page will discard any changes and return to the Home menu.

ENTER

The **Enter** button is pressed to start a measurement from the Home menu. The Enter button is also used to make a menu selection, and if applicable, save the selection and return to the Home menu.
In addition, pressing the **Enter** button from the Home menu and holding for 4 seconds activates the Bluetooth communication function and begins searching for a paired device (select models only).

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UP AND DOWN ARROW BUTTONS

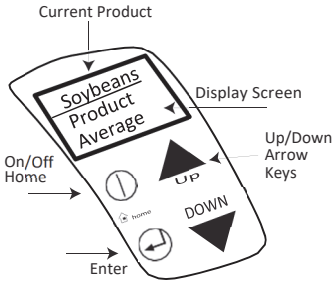
UP
DOWN

The **Up and Down Arrow** buttons are used to scroll through the items on the menu.

(Figure 3) illustrates the Switchpad area.

Figure 3

Switchpad



CAUTION

Use care when handling the mini GAC 2500 unit. Any misuse, such as tossing, dropping, or throwing, can potentially damage the internal measuring device. The unit should be stored in the case when not in use.

CURSOR SELECTION TOOL

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A **Cursor Selection Tool** in front of a heading name on the display is used as a navigation tool that, when the **Enter** button is pressed, the selected item's menu will display.

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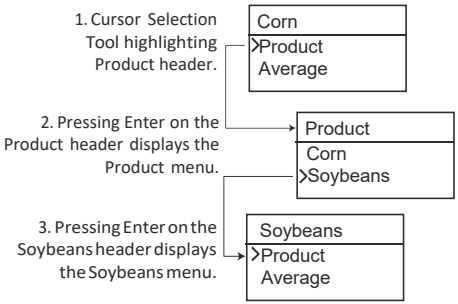
Figure 4

Cursor Selection Tool



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QUICK START GUIDE

IMPORTANT: The cell must be empty and the loading cup removed before turning the unit ON and during all testing (progress bar indicates when testing).

SELECTING GRAIN

1. Press the **On/Off/Home** button to power on the unit.
2. To select a grain type, press the **Down Arrow** button to position cursor at the **Product** heading and press **Enter**.
3. Select a product (grain) using the **Up or Down Arrow button** and press **Enter**.
   – The selected grain appears at the top of the display.

GRAIN SAMPLE TESTING

1. **Remove Loader cup from the top of unit.**
2. With the product name selected at top of display, press the **Enter** button.
3. The cell must be empty, upright, and still to perform an empty cell test. When the Empty Cell menu displays, press the **Enter** button.

IMPORTANT: The empty cell reference measurement is used for all product testing until the unit is powered off. It is critical that the cell be clean and completely empty when the unit is on. Keep the measurement cell opening clear of hands or other objects during this period.

4. After the empty cell test completes, the **Fill Cell** menu displays.
5. With the slide closed, scoop or pour grain into the Loader over the minimum fill line (Label on loader identifies minimum fill line) (Figure 5).
6. Place the loader cup on top of the unit.
7. When secured, pull loading cup slide out to dispense grain into the unit.
8. **Remove the loading cup and use the level edge to strike any excess grain from the unit.**

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9. Press **Enter** to begin the test. The unit displays sample testing icons.

IMPORTANT: A slight tilt when holding and testing grain is acceptable. If tilt is more than 10 degrees, an error warning is possible.

10. When grain test completes, press **Enter** to store the results.
    – Press **Enter** again to see the average of all samples and press the **Up or Down Arrows** to scroll through all previous readings.
11. Press the **Home** button to return to the Home menu.

IMPORTANT: Refer to the Error Codes and Troubleshooting section if an error displays after a grain test.

Figure 5

Scoop, Pull Slide, Strike Grain

1. Scoop 2. Pull Slide 3. Strike Grain

CAUTION

Use care when handling the mini GAC 2500 unit. Any misuse of the unit, such as tossing, dropping, or throwing can potentially damage the internal measuring device. The unit should be stored in the case when not in use.

BLUETOOTH COMMUNICATION

Bluetooth is turned on by pressing the **Enter** button for four seconds at the Home screen, if desired. Bluetooth turns off after a power cycle (select models only).

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BLUETOOTH

NOTE: Bluetooth is not available in all countries. Section (Page 13-16) may not apply

A Bluetooth connection between the mini GAC 2500 and a mobile device is possible by downloading a DICKEY-john app, pairing the devices, and adjusting the mini GAC 2500 Bluetooth settings.

The Bluetooth screen allows changing Bluetooth default settings to user-defined preferences.

TIP: Bluetooth can be turned on by pressing the Enter button for four seconds at the Home screen. Bluetooth turns off after a power cycle.

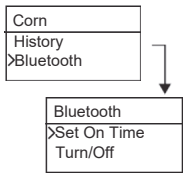
SETTINGS

To View Bluetooth Settings:

1. From the Home menu, press the **Down Arrow** button and scroll to "Bluetooth".
2. Press the **Enter** button to display Bluetooth settings options.

Figure 6

Bluetooth Settings



ADJUSTING THE TIMEOUT SETTING

The "On" timer starts when the mini GAC 2500 tries to connect to a mobile device. "On" time defines how long the device stays active before forcing the Bluetooth to go into sleep mode. Sleep mode disconnects from any remote connection or stops advertising if a connection is not established.

On Time Options:

- 1 minute
- 5 minutes
- 10 minutes
- Always on **(factory default)**

Using Bluetooth has the potential to affect the battery life of the device. Setting a time limit that Bluetooth is active and communicating improves battery longevity.

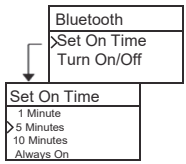
To Adjust Bluetooth On Time Setting:

1. From the Home menu, press the **Down Arrow** button.
2. Scroll to "Bluetooth" and press **Enter**.
3. Select "Set On Time" and press **Enter**.
4. Scroll to place the cursor on the desired setting.
5. Press the **Enter** button to select.

For specific Bluetooth, smartphone, tablet functionality, refer to the Help menu in the desired mobile app.

Figure 7

Set On Time Screen



TURN ON/OFF

Manually turns Bluetooth on and off from this screen.

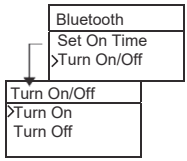
TIP: Pressing the Enter key for 4 seconds at the Home screen eliminates the need to manually step through Bluetooth Setup screens to turn on.

To Turn On/Off Bluetooth:

1. From the Home menu, press the **Down Arrow** button.
2. Scroll to "Bluetooth" and press **Enter**.
3. Select "Turn On/Off" and press **Enter**.
4. Scroll to place the cursor on the desired setting.
5. Press the **Enter** button to select.

Figure 8

Turn On/Off Screen



PAIRING THE MINI GAC® 2500 TO A MOBILE DEVICE

The pairing process does vary between different models and devices. The below instructions provide general guidelines.

Pairing Steps:

1. Verify that the Bluetooth function is activated on the smartphone / tablet.
2. Power on the mini GAC 2500.
3. Open the mini GAC 2500 mobile app on the smartphone / tablet.
4. Activate Bluetooth on the mini GAC 2500 by pressing the Enter key for 4 seconds. The Bluetooth logo will display on the screen along with a "Connecting" message.
5. Select **Connect** in the mini GAC 2500 mobile app.
6. The serial number of the mini GAC 2500 to be connected with will be displayed in a Grey-colored box. Press the box.
7. The connection process will begin. When it is successful, the box will change color to Green. The display on the mini GAC 2500 will also display "Connected".

To View/Verify Connection:

1. From the Home menu, press the **Down Arrow** button and scroll to "Bluetooth".
2. Press the **Enter** button.
3. Scroll to "Status" and press **Enter**.
4. The mini GAC 2500 shows one of the following:
   – Connected
   – Disconnected

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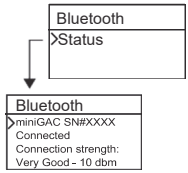
STATUS

The Status screen identifies connectivity status (connected, disconnected, or advertising) and connection strength as:

- Very good
- Good
- Okay
- Poor
- Very Poor
- Unusable

Figure 9

Status Screen



CONNECTION EVENT SCREENS

Current state of the Bluetooth connection displays with:

- Bluetooth Connected
- Bluetooth Connecting (only after holding Enter hotkey to start connection)
- Bluetooth Disconnected

Connection event screens appear when the specific event occurs no matter what screen is displayed.

Figure 10

Connection Event Screen

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SETTINGS

The mini GAC 2500 can be customized to user preferences by changing the following control settings from the Setup menu:

- Languages
- Results - test weight and temperature
- Display
- Average buffer size
- Backlighting
- Contrast
- Units of measurement
- Automatic power down

LANGUAGES

Up to 8 languages can be supported in each version of the mini GAC 2500 with each language conforming to its own set of calibrations.

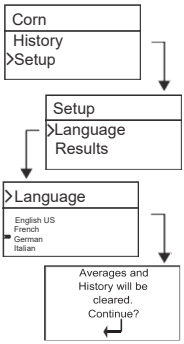
Languages	
English	Italian
French	Spanish
Germany	Portuguese

To change the Language setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Press **Enter** to select the Language menu.
3. Press the **Up or Down Arrow** button to scroll through languages.
4. Press **Enter** to accept the desired language.
5. Any **Averages** and **History** stored will be cleared when the language setting is changed. Press the **Enter** button to acknowledge or the **On/Off/Home** button to escape and retain averages and history.

Figure 11

Modifying Language Settings



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RESULTS

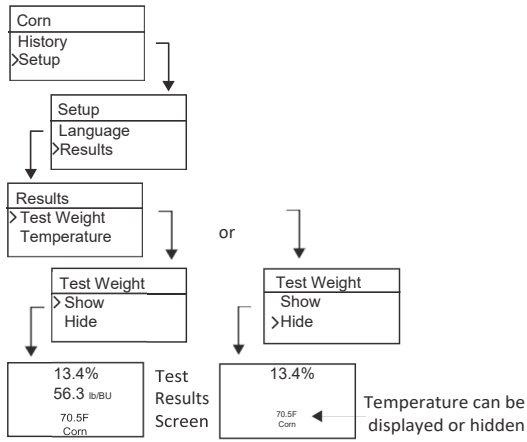
The Results menu controls the appearance of test weight and product temperature results for each measurement on the Test Results menu. The default is set to **Show** results.

To change the Results setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Scroll and press **Enter** to select the **Results** menu.
3. Select either **Test Weight** or **Temperature**.
4. Select either **Show** (to display results) or **Hide** (to disable results).
5. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 12

Modifying Results Setting



AVERAGE

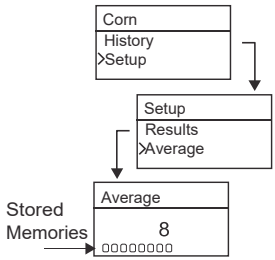
Averages for up to 20 products are stored in the unit. Individual results correlate with a specific product, moisture result, product temperature and/or test weight. The number of stored memories that appear on the test results menu can be altered to show a minimum of 2 up to a maximum of 10 memory readings. The factory default setting is 3 stored memories, refer to (Figure 13).

To change the Memory Storage setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Scroll and press **Enter** to select the **Average** menu.
3. Press the **Up or Down Arrow** button to increase or decrease the number of buffers to appear on the menu.
4. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 13

Modifying the Average Buffers Setting



BACKLIGHTING

Backlighting can be turned on or off. The factory default setting is backlighting is of. Turning on the backlighting can compensate for low lit areas or can make the text appear sharper. Unnecessary use of backlighting decreases battery life.

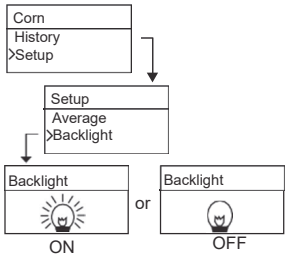
To change the Backlight setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Scroll and press **Enter** to select the **Backlight** menu.
3. Press the **Up or Down Arrow** button to turn backlighting on or off.

4. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 14

Modifying Backlight Setting



CONTRAST

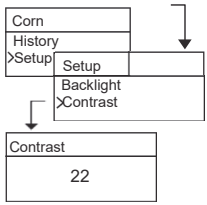
The display menu contrast is adjustable on a scale from 10 to 36; 36 being the most intense.

To change the Contrast setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Scroll and press **Enter** to select the **Contrast** menu.
3. Press the **Up or Down Arrow** button to change the contrast of the display. The display reflects the changes as the number is altered.
4. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 15

Modifying Display Contrast



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UNITS

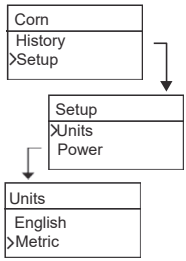
Units of Measurement options are English (Lbs/Bu) or Metric (Kg/ HL).

To change the Units setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Scroll and press **Enter** to select the **Units** menu.
3. Press the **Up or Down Arrow** button to select English or Metric.
4. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 16

Modifying Units Setting



POWER

The **Power** setting offers several power off durations that shuts down the unit after so many seconds of inactivity. The default factory setting is **30** seconds.

IMPORTANT: When unit shuts down, results on the display are erased.

Power off durations available:

- 10 seconds
- 15 seconds
- 20 seconds
- 30 seconds
- 45 seconds
- 60 seconds
- 90 seconds
- Infinite (manual shut off)

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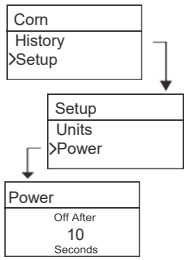
To change the Power setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Setup** and press **Enter**.
2. Scroll and press **Enter** to select the **Power** menu.
3. Press the **Up or Down Arrow** button to select a power down time.
4. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 17

Modifying the Power Down Settings



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NORMAL OPERATION

The Home menu appears immediately after all startup self-tests successfully complete. All menus are accessed via the Home menu.

MEASURING MOISTURE

In preparation for testing grain, the following conditions should be observed.

1. The cell MUST be empty and clean prior to testing for accurate, consistent measurements.
2. The Loader MUST be removed before turning the unit On and during all testing (hour bar indicates when testing), refer to (Figure 20).

IMPORTANT: The Loader should only be in or on the unit during storage and when grain is loaded.

The Home menu displays the active grain at the top of the Home screen.

SELECTING GRAIN

To Select a New Grain:

1. Press the **Down Arrow** button to position the cursor at the Product heading and press **Enter**.
2. Select a product (grain) using the **Up or Down Arrow** button (to check a grain's calibration constant, remain on a selected grain for approximately 3 seconds and the calibration constant menu displays.
   – Pressing the **Down Arrow** button scrolls to the next Constant menu and the Bias menu or immediately press the **Enter** or **Home** button to save and change the selection.

After grain selection, the new product (grain) displays at the top of the Home menu. The grain list on the grain selection menu is saved in a "last used" order.

IMPORTANT: Regular updates of the calibration constants are recommended. Reference the Calibration Grain Values section for additional information.

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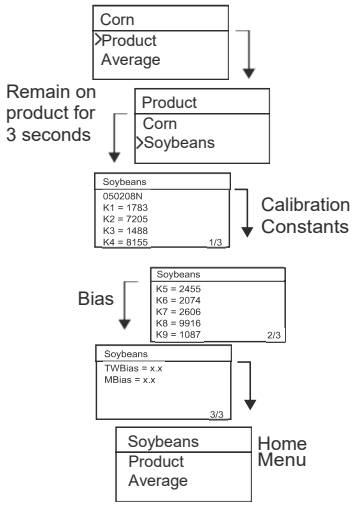
Figure 18

Grain Selection Menus



*TIP: Pressing the **Enter** button from the Home screen and holding for 4 seconds activates the Bluetooth communication function and searches for a paired device (select models only).*

GRAIN SAMPLE TESTING

To begin Grain Test:

1. **Remove Loader cup from the top of unit**.
2. With the product name selected at the top of the display, press the **Enter** button.
3. The cell must be empty, upright, and still to perform an empty cell test. When the Empty Cell menu displays, press the **Enter** button.

IMPORTANT: The empty cell reference measurement is used for all product testing until the unit is powered off. It is critical that the cell be clean and completely empty when the unit is on. Keep the measurement cell opening clear of hands or other objects during this period.

4. After the empty cell test completes, the **Fill Cell** menu displays.

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5. With the slide closed, scoop or pour grain into the Loader over the minimum fill line as shown in (Figure 19).
6. Place the Loader on top of the unit.
7. When secured, pull Loader slide out to dispense grain into the unit.
8. **Remove the Loader and use the level edge to strike any excess grain from the unit.**
9. Press **Enter** to begin the test.

IMPORTANT: A slight tilt when holding and testing grain is acceptable. If tilt is more than 10 degrees, an error warning is possible.

10. When grain test completes, press **Enter** to store the results.
    – Press **Enter** again to see the average of all samples and press the **Up or Down Arrows** to scroll through all previous readings.
11. Press the **Home** button to return to the Home menu.

IMPORTANT: Refer to the Error Codes and Troubleshooting section if an error displays after a grain test.

Figure 19

Scoop, Pull Slide, Strike Grain

1. Scoop 2. Pull Slide 3. Strike Grain

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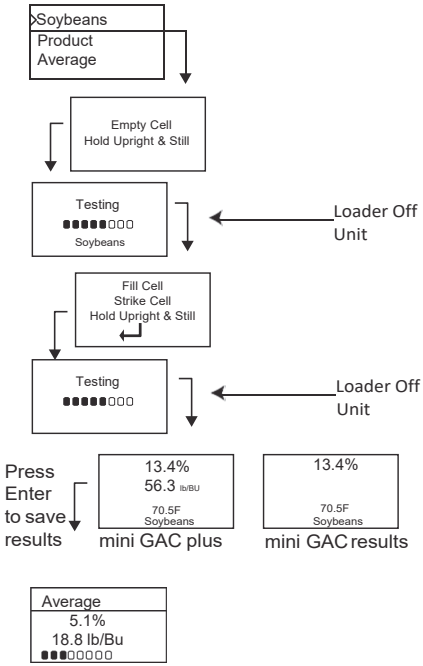
Figure 20

Testing Grain



IMPORTANT: Refer to the Accuracy section for improving grain test results.

AVERAGE

Grain Test Results

The Average menu allows test results to be added, read, or cleared from the unit. Up to 10 values can be stored for each grain. If all memory indicators are full when adding new test results, the test results in location 1 is replaced with the new test results. The factory default setting is 3 values (refer to (Figure 21).

IMPORTANT: Changing the language resets the memory and all saved grain tests results are cleared.

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To view the Average menu:

1. From the Home menu, press the **Down Arrow** button and scroll to **Average** and press **Enter**.
2. Scroll and select desired function and press **Enter** to display menu.

Add To

The **Add To** function manually enters the last test result to memory.

New

Selecting the **New** function will clear all previous test results for the product selected and place the new test result in the first position of the new group of readings.

Read

The **Read** function displays the saved test results for the active grain.

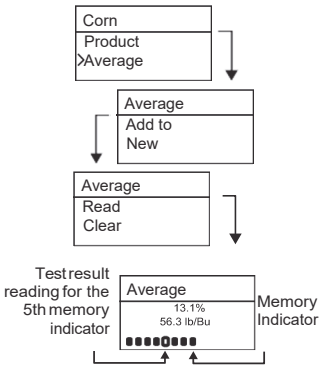
– Pressing the **Up or Down Arrow** button cycles through the saved test results.

Clear

The **Clear** function removes all test results for the active grain.

Figure 21

Averages Menu



BIAS

The mini GAC 2500 uses the same grain constants as the DICKEY-john federal standard GAC 2500 UGMA and is calibrated to USDA certification.

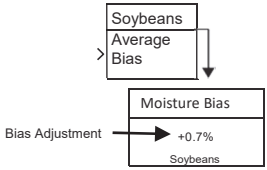
In situations where moisture or test weight differences occur with a local elevator, the Bias function allows entering of a correction factor in moisture and test weight to compensate for those differences.

To change the Moisture or Test Weight Bias Setting:

1. From the Home menu, press the **Down Arrow** button and scroll to **Bias** and press **Enter**.
2. Press the **Up or Down Arrow** button to select either Moisture or Test Weight.
3. Press the **Up or Down Arrow** to increase/decrease the bias percentage.
4. Press the **Enter** button to save the changed setting or the **On/Off/Home** button to escape and retain the previous setting.

Figure 22

Modifying Moisture or Test Weight Bias

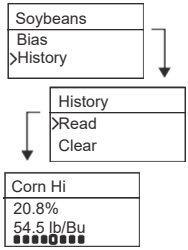


HISTORY

The History menu displays the last 10 test grain result readings from the unit regardless of the products selected.

Figure 23

History



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GRAIN CALIBRATIONS

Grain calibration constants are typically updated on an annual basis. By using DICKEY-john's PC Application Software tool, current grain calibration constants can be entered into the PC Application Tool and then transferred to the mini GAC® 2500 unit by connecting the computer and mini GAC 2500 with a USB cable.

The PC Application Software tool, installation instructions, and Moisture Meter Calibration Constants document can be found at the DICKEY-john website.

To download the PC Application software tool:

1. Go to website www.dickey-john.com
2. Under the Agriculture or Analytical heading, click on the Moisture Tester link.
3. At the Moisture Tester page, select mini GAC® 2500.
4. At the mini GAC 2500 product page, scroll down to the Downloads heading and click on mini GAC 2500 PC Application Software Installation Instruction.
5. Save the Installation Instruction (pdf) to the computer and print for reference when beginning to install the software.
6. Return to the Downloads heading and click on mini GAC 2500 PC Application software.
7. Reference the mini GAC 2500 PC Application Software Installation Instructions to begin downloading the PC Application Software tool.

Grain calibration constants can also be found under the Downloads heading titled **mini GAC 2500 grain calibration constants.**

IMPORTANT: Grain calibration constants vary based on region. Regions outside of North America should obtain calibrations from a local distributor.

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ACCURACY

Various factors can result in inaccurate grain readings. The following techniques provide possible solutions to ensure the most accurate readings.

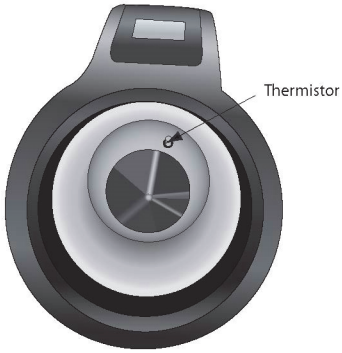
CONDENSING SAMPLES (CORN DRYING)

When testing wet grain, moisture condensation can cling and build up on the cell causing inconsistent and inaccurate readings.

In between every measurement, use a soft cloth to wipe out the cell using extreme care not to damage the thermistor at the bottom of the cell.

Figure 24

Thermistor Position in Cell



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HIGH MOISTURE GRAINS

High moisture grains can get stuck when pouring into the cell.

NOTE: The mini GAC 2500 loader hole size is designed to meet the US Federal Standard Quart Kettle Test Weight method.

To release grain:

1. Jiggle the slider back and forth to loosen the grain.
2. Poke the grain with a small object, such as a pencil to release grain into the cell.
3. Directly pour the grain into the cell using the fill cup, not using the loading base/slider. When using this technique, try to pour the grain in dead center.
4. Pour the grain smoothly and complete the pour in approximately 5 seconds.

IMPROVING GRAIN TEST RESULTS

For accurate test results, place the mini GAC® 2500 on a level surface. Use the loader/striker and take a minimum of 3 separate test readings. Use the average of the results for greatest accuracy. The difference between the grain temperature and analyzer should not exceed 36 degrees F (20 degrees C).

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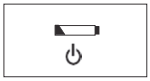
ERROR CODES

Error codes display when an abnormal event occurs. An error can be acknowledged by pressing the **Enter** button to return to normal operation.

IMPORTANT: Contact DICKEY-john Technical Support or a distributor for any Error Codes that display and are not listed here.

LOW BATTERY VOLTAGE

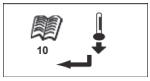
Low Battery voltage displays when the battery voltage is low. The unit is still capable of making accurate measurements, but the battery should be replaced soon. Several warnings will display before the dead battery screen appears.



DEAD BATTERY WARNING

Displays when the battery voltage falls too low to make accurate measurements. The unit will no longer operate other than to power off.

ERROR 10



Probable Cause

The measured temperature is below minimum. The unit temperature is measured on start-up and displays if the temperature is below 32 degrees F (0 degrees C).

Corrective Action

1. If unit temperature is still below the minimum, wait to test until the temperature is greater than 32 degrees F (0 degrees C).

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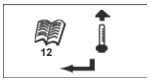

ERROR 12

Probable Cause

Error 20 displays if the measured product moisture is below the lower limit of the production calibration. NOTE: Results may not be accurate. Sample could be too dry to be measured accurately.

Corrective Action

1. Pressing the **Enter** button causes the cell temperature measurement to repeat and operation will proceed if the cell temperature is below the maximum, otherwise Error 12 displays again.
2. If cell temperature is still above maximum, wait to test until unit temperature is less than 158 degrees F (70 degrees C).

ERROR 20

Probable Cause

Measured product moisture is below the lower limit of the production calibration. NOTE: Results may not be accurate. Sample could be too dry to be measured accurately.

Corrective Action

1. Press **Enter** to show measured results.

ERROR 22

Probable Cause

Error 22 displays if the measured product moisture is above the upper limit of the product calibration. NOTE: Results may not be accurate. Sample could be too wet to be measured accurately.

Corrective Action

1. Press **Enter** to show measured results.

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ERROR 23

Probable Cause

Error 23 displays if communications with the Bluetooth radio could not be established.

Corrective Action

1. Press Enter to return to the Main Menu. The Bluetooth radio will not be functional, but the device can be used for measurements. If the problem persists through reboots, the unit is not operational and should be returned to DICKEY-john for service.

ERROR 30

Probable Cause

Error 30 displays if the cell board synthesizers (1 or 2) did not lock as expected.

Corrective Action

1. Press Enter to return to the Main Menu. The measurement did not complete.

ERROR 40

Probable Cause

Error 40 displays if communications with the Cell Board could not be established. The flex cable between the cell board and the digital board could be misaligned or disconnected. The Cell Board must be functional for a moisture and mass estimate.

Corrective Action

1. Power off device. Unit is not operational and should be returned to DICKEY-john for service.

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ERROR 50

Probable Cause

Error 50 displays if the weight measurement during the Empty Cell test indicates a mass that exceeds 35 grams.

Corrective Action

1. Ensure the Loader cup is removed and not on top of tester.
2. Verify the cell is empty.
3. Press the **Enter** button and perform a new test.

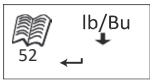
ERROR 51

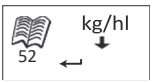
Probable Cause

Load cell output used to measure the grain weight sample is too close to the upper or lower limits of the strain gauge. The unit is not capable of making accurate measurements and will no longer operate other than to turn off.

Corrective Action

1. Unit is not operational. Return to DICKEY-john for service.





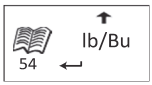
ERROR 52

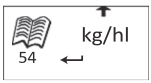
Probable Cause

Error 52 displays when the calculated Test Weight of the sample is less than the lower Test Weight Limit stored in the Product File.

Corrective Action

1. Ensure the Loader cup is removed and not on top of the tester during the empty cell test. Press the **Enter** button and perform a new test.





ERROR 54

Probable Cause

Error 54 displays when the calculated Test Weight of the sample is greater than the upper Test Weight Limit stored in the Product File.

Corrective Action

1. Ensure the Loader cup is removed and not on top of the tester during the full cell test. Press the **Enter** button and perform a new test.

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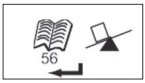

ERROR 56

Probable Cause

The measured average tilt angle exceeds 10 degrees after an empty cell and/or a full cell test phase.

Corrective Action

1. Hold mini GAC 2500 level while performing test or
2. Place on level surface to perform test.
3. Press the **Enter** button and perform a new test.

ERROR 58

Probable Cause

Error 58 displays when communication times out between the Main Board and Cell Board during an Empty or Full Cell Measurement.

Corrective Action

1. Press Enter to return to the Main Menu and then re-run the test. The measurement did not complete.

ERROR 59

Probable Cause

Error 59 occurs during a Product switch when either communication times out between the Main Board and Cell Board or the Cell Board fails multiple NVM checks. Error 59 can also occur after selecting a new language as this forces a Product switch.

Corrective Action

1. Cycle power and wait for the product calibration to upload during boot-up. Instrument will then be ready to conduct grain measurement.

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ERROR 60

Probable Cause

Language files are not found in device and can only be loaded by a DICKEY-john technician.

Corrective Action

1. Power off device. Unit is not operational and should be returned to DICKEY-john for service.

ERROR 62

Probable Cause

The language selected is not loaded on the instrument and the first language is automatically selected.

Corrective Action

1. Press the **Enter** key to return to the Main Menu. Select an available language, if desired.
2. Return instrument to DICKEY-john to load a specific language, if desired.

ERROR 78

Probable Cause

A normalization file required for proper operation is missing.

Corrective Action

1. Cycle power to see if error returns. If the error appears again, return the instrument to DICKEY-john for service.

ERROR 79

Probable Cause

Error 79 displays when a file transfer from the Main Board to the Cell Board fails.

Corrective Action

1. Cycle power, retry steps that caused error, and see if error returns. If the error appears again, return the instrument to DICKEY-john for service.

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ERROR 90

Probable Cause

Typically occurs when the device is powered on the first time relating to a nonvolatile memory issue.

Corrective Action

1. Press the **Enter** key to return to the Main Menu. Check to see if device is operating properly.
2. If pressing the **Enter** key does not restore functionality, device should be returned to DICKEY-john for service.

ERROR 91

Probable Cause

Typically occurs when the battery is removed while the unit is on.

Corrective Action

1. Cycle power to restore to normal operation.
2. If the problem persists, the device is not operational and should be returned to DICKEY-john for service.

ERROR 92

Probable Cause

Occurs when non-volatile memory has failed.

Corrective Action

1. Press the **Enter** key to return to the Main menu. The device is still usable but new product calibrations, user settings, averages, etc. cannot be stored to memory.
2. To repair NOVRAM memory issue, return the device to DICKEY-john for servicing.

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ERROR 93-97

Probable Cause

Error 93-97 displays when a Cell Board NVM partition has been reset to defaults. Error codes 93-97 are used to specify which partition failed.

Corrective Action

1. Power off device. Unit will likely take poor measurements as a result of default settings. Though unit may run normally, measurements may yield poor results and the device should be returned to DICKEY-john for service.

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DIAGNOSTICS

INFORMATION SCREEN

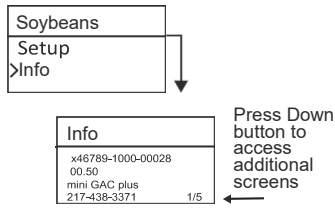
The Information menu provides system details that could be helpful to technicians during service calls.

Details included on the Information menu:

- Software version
- Unit name
- Technical Service phone number
- Battery voltage
- Part Number

Figure 25

Information Menu



For troubleshooting assistance, please contact DICKEY-john technical support at 1-800-637-3302 in the U.S., a local distributor, or our Europe office at +33 1 41 19 21 81.

MINI GAC® 2500
GRAIN MOISTURE ANALYZER

Operator's Manual

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