Field Check
PLUS

INSTRUCTION MANUAL and USER GUIDE

Distributed exclusively by

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Introduction

The *Field Check PLUS* moisture meter is a ground grain meter which provides quick and simple moisture readings while the processes of harvesting and drying are taking place. It is an accurate instrument that gives consistent repeat readings when several samples are taken.

Preparing to take a measurement

1. Inspect the two parts of the grinder cell and lid to make sure they are clean and empty.
2. To turn on the meter press ON/TEST (by holding ON/TEST the backlight in the display will switch on).
3. If the temperature of the grain sample differs a great deal from that of the meter, e.g. when taking measurements directly from the dryer, it is recommended to preheat the meter as follows:
   a. Fill the test cell with the desired crop, grind it and wait approx. 1-2 minutes.
   b. Proceed with the normal testing procedure as detailed below.

To select the crop to be tested

1. After pressing ON/TEST the display will show the software version, followed by the level of the battery and lastly the word **MEASURE** (choice of crop).
2. Press ON/TEST again and select the crop to be tested by using the arrow keys ⇧ or ⇩. To select a different crop press the ESC/OFF button to return to **MEASURE** and use arrow keys⇧ or ⇩ to cycle through the options.

To take a reading

1. Using the built-in measuring cups (9ml and 11ml) in the upper part of the grinder, measure the quantity required of the crop to be tested. This is shown in the display alongside the crop name.
2. Screw on the upper part of the grinder and rotate it clockwise until the two stop pins meet. It is important to rotate to this point to obtain the correct test result.

   Important: Never screw together the upper and lower part of the grinder when the measuring chamber is empty as serious damage can be done to the fine grooves of the grinding discs.
3. Press ON/TEST immediately. A series of asterisks will appear across the screen, followed by the moisture reading. The left side of the display

will show the actual moisture content of the sample e.g. 14.5%. The right side of the display will show the average of the last 4 measurements e.g. %14.8%.

4. A new reading can be made by emptying and cleaning the test cell and filling it with a new sample. Do not re-test the sample without emptying and refilling.

   Note 1: To ensure accurate repeat measurements, clean both grinder discs thoroughly with the supplied wire cleaning brush after each measurement. Remnants of sticky or moist material can be removed by grinding a dry grain sample.

   *Note 2: When grinding crops with high water content there may be a risk of the two grinder discs touching one another so that the display reads **Hi**. If this happens, carry out a new measurement with an increased sample size. Try with approx. 2-3 ml more than the quantity specified in the display. In particular, when measuring maize with more than 20 % moisture (and some grass types), 18ml (2x9 ml) must be measured out for grinding, as stated in the display.*

Using the averaging facility

1. Due to the changing nature of grain when being harvested or dried, it is recommended to take several readings. These will automatically be used to create an average reading.
2. It is recommended to take 3-5 measurements from the same batch of grain and use the average as the true moisture content of the grain.
3. Remember to empty, clean and refill the test cell between each reading.

To clear the stored average value

1. Turn on the meter by pressing ON/TEST.
2. When **MEASURE** appears in the display use the arrow keys ⇧ or ⇩ until **CLEAR AVERAGE** is displayed.
3. Accept this choice by pressing ON/TEST. **OK** will appear in the display followed by an automatic return to **MEASURE**.

To turn off the meter

Press the ESC/OFF button and hold it down until the meter has turned off. The meter will automatically turn off after 90 seconds if no button has been pressed.

To adjust the calibration of the meter

Field Check PLUS is factory calibrated for every crop using the official methods of measuring moisture content as compiled by ISTA (International Seed Testing Association). The calibration scales are compiled using samples of crops grown in normal conditions. Differing growth factors between years and between varieties can have an effect on the electrical characteristics of the crop and it can therefore be necessary to recalibrate the meter. To avoid disputes, it is strongly recommended that *Field Check PLUS* is checked against the meter being used by the buyer of the grain (using grain from the same sample in both cases), and adjusted as required.

Each crop calibration in the meter can, if necessary, be adjusted individually up or down by up to 3.9% in increments of 0.1%. This is achieved as follows:

1. Turn on the meter by pressing ON/TEST.
2. When **MEASURE** appears in the display use the arrow keys ⇧ or ⇩ until **CALIBRATION** is displayed.
3. Accept this choice by pressing ON/TEST.
4. Use the arrow keys ⇧ or ⇩ to select the crop that is in need of calibration adjustment.
5. Accept this choice by pressing ON/TEST. The numeric value +0.0 is shown in the display (factory calibration).
6. Use the arrow keys ⇧ or ⇩ until the desired calibration adjustment value is displayed. Adjustments can be made in the range from -3.9% to +3.9%.
7. Accept the selected calibration adjustment value by pressing ON/TEST.
8. An asterisk (*) will appear at the end of the name of the crop if adjustments have been made compared to the factory calibration.

Battery

1. The meter is supplied with a 9 volt alkaline battery. This should be installed in the compartment in the underside of the meter.
2. When the battery is in need of replacement the message **Change battery** will appear in the display. Only replace it with a high quality 9 volt alkaline battery. Removing the battery has no effect on the information stored in the meter.
3. To check the level of the battery while in use:
   a. Turn on the meter by pressing ON/TEST.

b. When **MEASURE** appears in the display use the arrow keys ⇧ or ⇩ until **BATTERY** is displayed. Four bars indicates a full battery condition, 1 bar indicates a low battery. It is advisable to have an additional battery close at hand when 1 bar is showing.

How to make your own grain calibration

If you need to make a calibration scale for a particular crop that is not included in the meter, this can be done as follows:

1. Turn on the meter by pressing ON/TEST.
2. When MEASURE appears press ON/TEST again.
3. Use the arrow keys ⇧ or ⇩ to scroll through the crop options until **Bit** is displayed.
4. Fill the test cell with a sample of the desired crop for which you know the moisture content, grind the sample and perform the test as described earlier.
5. Note down the value which appears in the display, eg. 03.65, and the temperature, eg. 19C, together with the moisture content in the crop. Perform this process repeatedly using samples with different levels of known moisture content until the calibration scale meets the range and requirements needed. The more samples that are used the more accurate the calibration will be. Try always to use samples at the same temperature.
6. Plot the values on a graph, either manually or using Excel, with moisture content on the y-axis and Bit on the x-axis and draw a line or curve that best fits the points. The calibration is now completed and moisture contents can now be read off the y-axis for any Bit value measured using subsequent samples of the same crop in the meter.

Storage and general use advice

1. It is recommended that you store the meter at all times in the carry case provided, that the instrument is not exposed to large temperature fluctuations and that it is kept free of moisture.
2. If the instrument is taken into a warmer environment from a cold storage location, it is recommended that you allow the unit to acclimatize so that condensation does not affect the results of the measurement.
3. At the end of the season, wipe all surfaces with a well-wrung damp cloth and remove the battery from the meter. Clean all parts of the grinder mechanism and lubricate the spindle with a thin layer of oil.

Quick Guide to Display Messages

Symbol:	***Definition:***
*	*Calibration has been adjusted from the factory setting for the crop being displayed.*
Temperature++	*Grain temperature is above upper operating limit (50°C).*
Temperature--	*Grain temperature is below lower operating limit (0°C).*
Hi	*Grain moisture content is above upper limit (varies with crop).*
Lo	*Grain moisture content is below lower limit (varies with crop).*
Change battery	*Battery needs replacing.*

Technical data

Measurements

- 15 crop calibrations included:
  Wheat, Barley, Oats, Rye, Maize, Oil seed rape, Peas, Beans, Triticale, Red fescue, Rye grass, Linseed, Sunflower, Blue grass, Mustard
- Self-calibration facility
- Measurement range 5-50% depending on crop
- Automatic calculation of mean value (average)
- Automatic temperature compensation
- Accuracy +/- 0.5% or better by using averaging and self-calibration
- Resolution to one decimal point

Manufacture

- Grinder parts manufactured in hardened galvanized steel
- Grinder with integrated measuring cups
- Outer shell manufactured in non-shock ABS plastic
- Supplied in shockproof carry case
- Backlight display

Dimensions

- Meter: 13 x 21 x 8 cm
- Case: 32 x 29 x 12cm
- Weight including case: 1.8 kg

Power

- 9 volt alkaline battery

Other

- 2 year guarantee

Technical support, service and calibration checks

Field Check PLUS is manufactured in Denmark by *Supertech Agroline* and distributed exclusively by Martin Lishman Ltd. For technical support and annual servicing contact us as below:

Martin Lishman Ltd
Unit 2B Roman Bank, Bourne, Lincs PE10 9LQ
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For a quick calibration check and a certificate suitable for quality assurance schemes, why not attend one of our grain clinics held each Spring at machinery dealers across the country. See our website *www.martinlishman.com* for details of dates and places.

Warranty

As the instrument is for guidance purposes only, the manufacturer accepts no liability for damages arising from any consequential losses in connection with its use, including incorrect display in connection with settlement of grain. The guarantee covers defects in materials and manufacturing.

The manufacturer reserves the right to change product specification without notice.

Full terms and conditions of sale can be supplied on request or viewed on our website.