REGAN SCIENTIFIC INSTRUMENTS

BOT-3000E DIGITAL TRIBOMETER

OPERATING MANUAL

PLEASE READ BEFORE OPERATING THE DEVICE!

Ver. 1.52 (for use with device firmware revision 3.00.08)

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INTRODUCTION

The Regan Scientific Instruments BOT-3000E is the third generation design of the most recognized, advanced, and portable digital tribometer in the world today. It has been carefully designed to avoid the use of springs, actuators, dials, heavy weights, or other components that can lead to premature wear or mechanical fatigue. It can also export collected test results within a secure pdf file format that includes a numerical input traceability mechanism.

The tribometer can accurately measure static coefficient of friction (SCOF) and dynamic coefficient of friction (DCOF), wet or dry. The device is designed primarily for use on common hard-surfaced interior space flooring however it has also been used to determine the slip-resistance of other materials such as paints, waxes, and other coatings on flat metal, plastic, wood, laminate, concrete and stone surfaces.

GETTING STARTED

We strongly encourage you to first read, print, and fully comprehend the contents of this manual before attempting to use this instrument. The tribometer is often used as one of many tools utilized within an overall floor safety program. Decisions and conclusions reached regarding the safety of employees or the general public must be made with a high degree of care and diligence.

Wherever **STANDARD TEST METHODS** exist and are applicable, they should be regarded as the primary source of test methodology and test result analysis. Various publications and walkway safety training classes exist, which often focus upon the complex causes of slip and fall incidents and their prevention.

SAFETY AND CARE

Personal Protective Equipment (PPE)

- Latex or nitrile gloves should be worn to protect hands from repeated exposure to surfactant solution.
- A dust filter mask should be worn when sanding sensor materials.

The following precautions, coupled with prudence and general common sense, will help avoid damage to the device as well as potential injury to you or others in the general vicinity:

- Keep the tribometer clean, calibrated, and properly maintained. Never open the tribometer or the battery case.
- Use cones, flags or distinct barriers to prevent people from walking into your test area and possibly slipping or tripping on test equipment and testing items.
- Immediately wipe up any wet testing spots once testing has been completed in that area. Never leave a wet testing spot or spill unattended!
- Do not operate the device in the immediate vicinity of motorized vehicles such as forklifts or other motor vehicles.
- Do not allow the device to run into objects or people.
- Do not operate near flammable gasses or liquids.
- Keep hands and feet clear of the unit once a test run has been initiated.
- Do not allow liquids or dust contamination to enter the bottom opening of the unit.
- Battery pack charging should take place in an open area free from excessive dust or flammable gasses or liquids.
- Battery packs should never be stored where metallic objects or liquids could come in contact with the connection interface or they could potentially short circuit and catch fire.
- The tribometer or any of the included accessories must not be modified except by Regan Scientific Instruments Inc. (the manufacturer.)

- The LCD display is made of thin glass covered by a protective layer of polycarbonate. Excessive force or pressure may crack the display and void the product warranty. The protective plastic may become scratched if not carefully cleaned with a soft damp cloth only.
- When the tribometer is being packed inside the transport case, be careful not to place anything on top of it. If the lid is closed with an object resting atop the unit, it could damage the display or control switches.
- Always ship the device in the approved transport case with batteries stowed in their foam slot only. Shipping or transporting the device in any other container will void the factory warranty.
- Each unit contains an internal shock monitoring device which indicates if the unit has been dropped or subjected to an extreme sudden force. Activation of this monitor will void the factory warranty.

THE MULTI-LEVEL OPERATING MENU

The BOT-3000E menu system (Fig.1) has been designed to be intuitive for the new operator. This type of man-machine interface tends to greatly reduce the “learning curve” while providing a more efficient data collection experience for all users. Standard Test Methods such as ANSI A326.3 can be selected within the menu and the device will help automate the entire testing procedure, performing the necessary calculations and formatting the results into an easy to understand summary or report. This saves time and reduces the possibility of operator errors. As new test methods are developed and introduced, they can be easily integrated into the menu system via the firmware update process. These updates may performed by simply loading a file provided by Regan Scientific Instruments into the unit using a common USB flash drive.
When the tribometer is first powered on, the main screen will be visible. From here you can make various selections by simply pressing the switch adjacent to the desired menu item. Within the

various sublevel menus, you can make adjustments, print or download test results, perform a system verification*, etc. Once changes to settings are made (e.g. time and date), be certain to store or save them as required.

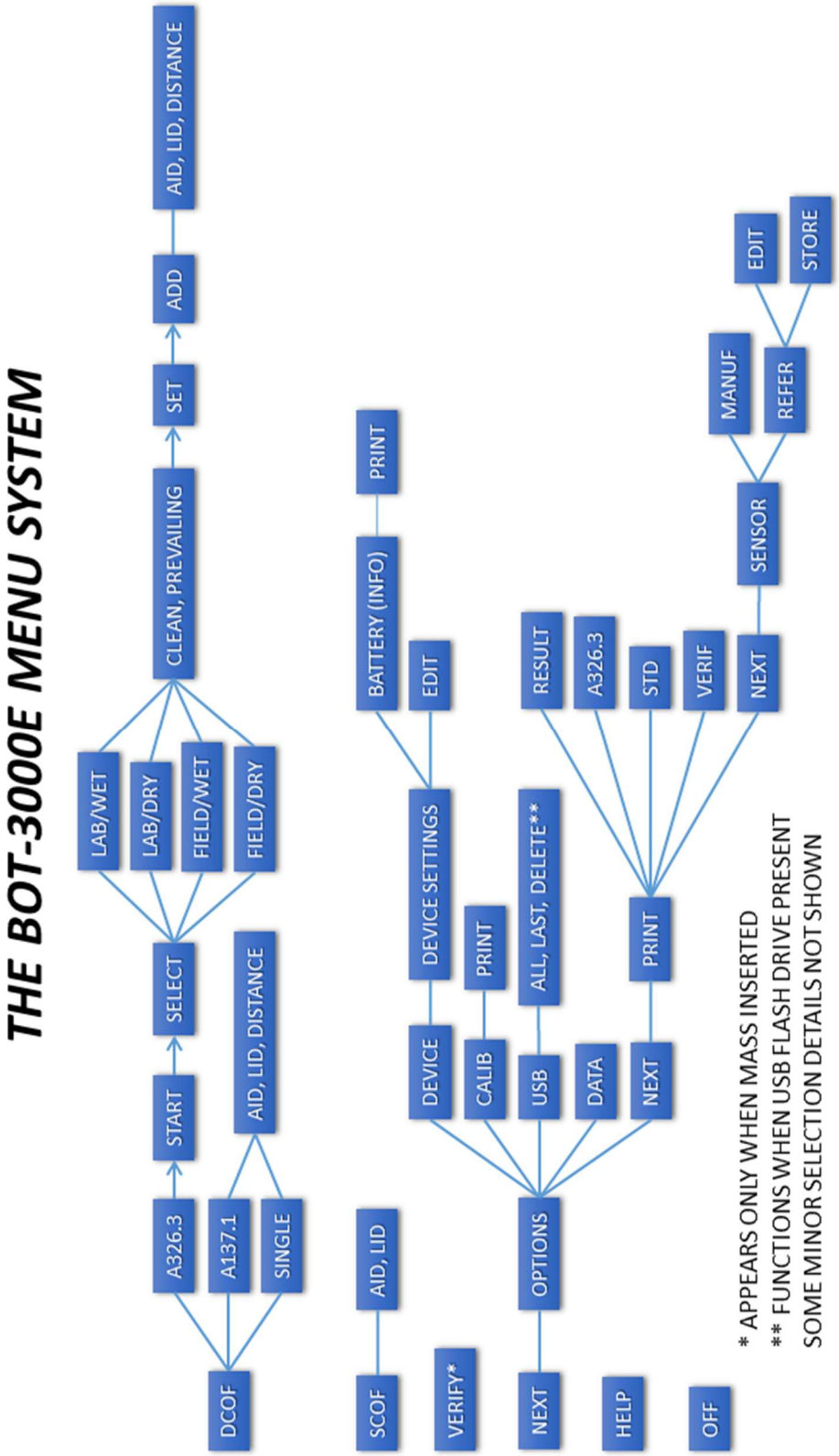


Figure 1

THE DEVICE VERIFICATION PROCEDURE

The verification operation is intended to determine if the internal force measurement system is within specification. It is NOT a calibration procedure.

1. Allow the tribometer to acclimate to the ambient temperature of the test area.
2. Press any one of the six panel switches momentarily to power up the device.
3. Place the device onto a very stable and level surface.
4. Stand the device on the aft (printer) end, and then carefully insert the verification mass into the sensor port.
5. The VERIFY option indicator will appear (Fig.2, lower left screen).
6. Press the switch adjacent to “VERIFY”. **NOTE:** Near the screen bottom, there are two tilt indicators. These should indicate 90 +/- 2 degrees and 0 +/- 2 degrees in order for the device to verify accurately, otherwise a more level surface must be found.
7. Press the “START” switch; the device will now begin the verification process. Be certain that the device remains level and stable during this process, otherwise the device may fail. Once the device has completed the verification process, it will indicate a “PASS” or a “FAIL” status. You may press the “PRINT” or “DONE” switch at this time. If the device fails, the procedure may be repeated after re-checking the level or moving to a more level location. The mass may require removing and replacing or be checked for free movement. If the device passes verification, the force measurement system is within factory specifications.
8. Wait several seconds before removing the verification mass so the device can reset.
9. If the device cannot be verified because of an internal fault, it must be returned to Regan Scientific Instruments for service.

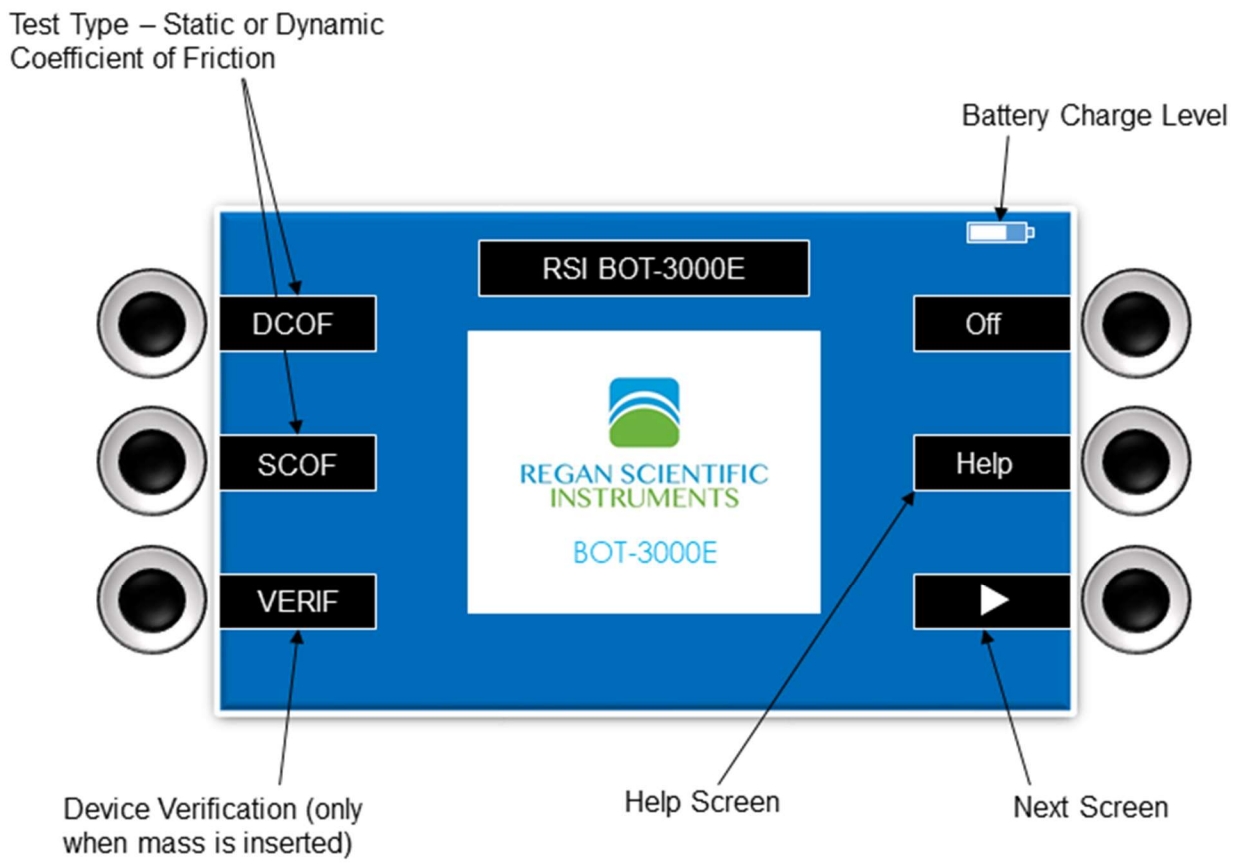


Figure 2

BASIC OPERATION

1. Insert a fully charged battery pack into the battery compartment located at the front of the device. The latch should engage to secure the battery pack to the device.
2. Tip the device onto either side or back panel and fully insert the desired sensor (slider) into the receiver located in the bottom of the device. Return the device to its operating position (wheels down).
3. Center the device directly over the test area, noting the approximate location of the sensor (side arrow labels). When performing wet tests, be certain the sensor touches down onto the applied liquid film. Avoid getting the wheels wet, which could induce a wheel slip condition. Press any switch momentarily to power up the device. There will be a slight delay before the display illuminates.

4. Press the DCOF or SCOF switch according to the desired test type (Fig. 2).
5. In DCOF mode, you may select “SINGLE” to perform one test, otherwise select one of the Standard Test Methods (Fig. 3).

***USER TIP**; It is often helpful to first perform a single pre-test run which will help acclimate the sensor material to the surface being tested.*

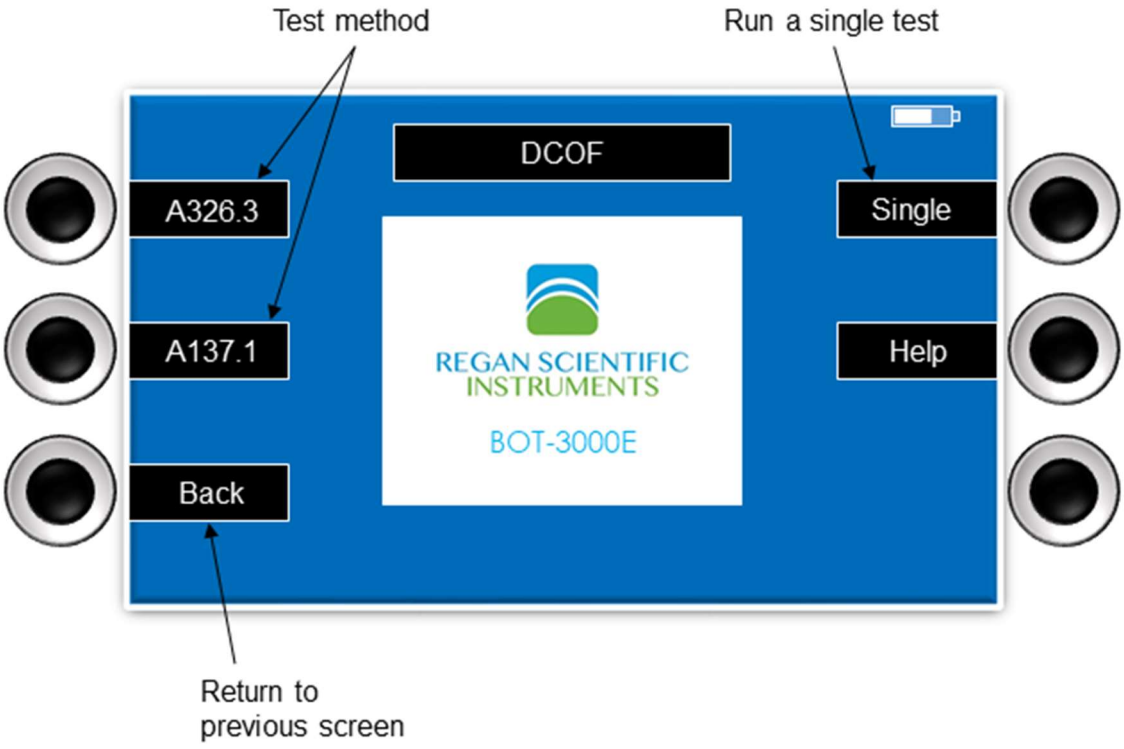


Figure 3

6. Use the navigation switches (arrows, + and -) to adjust the test run distance (DCOF ONLY), area, and location codes.
7. Press the “GO” switch to begin testing (Fig 4). The unit will emit a beep alert, lower the sensor, and then move forward. **CAUTION:** To protect the internal mechanism, do not lift or move the instrument from the test surface until the beep alert stops!

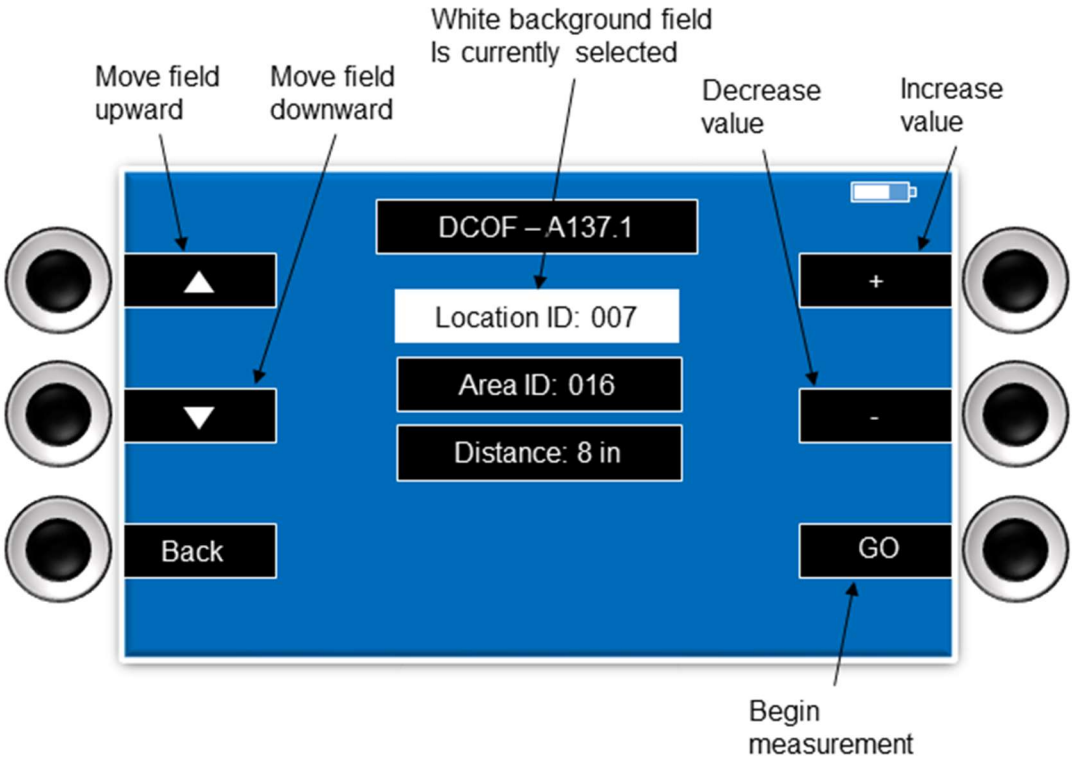


Figure 4

8. After each individual test run, a visual graph may be displayed by pressing the “GRAPH” switch. Press the switch again to return to the previous screen. **NOTE**: A graph for each test run will be included in the pdf test result file. These may be printed in hardcopy form from any PC or MAC computer with a pdf (portable document file) reader application.
9. Orient the device to each test starting position and direction, then press the “GO” switch again. Repeat until all fields are completed and the final result is indicated.
10. Press the “PRINT” switch to create a test result hardcopy (data only).
11. The internally stored test data (with graphs and photos) may be transferred to a USB flash drive by navigating to “OPTIONS/USB”. To save download time, you may elect to transfer only the test data collected since the LAST download, or ALL of the stored test data. This may require several minutes if there is a large amount of data stored. You may also elect to DELETE all internally stored records

if desired. **CAUTION:** Do not remove the flash drive until all data is transferred and a “DONE” message is indicated!

12. The maximum USB flash drive permitted is 8 GB. **NOTE:** USB flash drives that do not conform to the strict USB technical specifications may not be properly recognized by the device.
13. The device may be powered down by pressing the “OFF” switch located in the main menu screen.

ADDITIONAL TESTING FEATURES:

TEST TRACEABILITY CODES

Before testing, it is often useful to enter unique location identification codes within an area that correspond to particular test locations. These numerically coded identifiers can help provide traceability to previously site-mapped areas, and will appear on test results and reports.

- *Area Identification* (AID) codes are used to help identify physical buildings, facilities, or work sites, etc.
- *Location Identification* (LID) codes are used to identify test locations *within* each AID.

NOTE: You should change the AID or LID numbers periodically so the system can properly store the maximum number of test results (500 pdf reports). Internal memory should be deleted periodically to maintain peak operating efficiency.

The fictitious “site map” example in Fig. 5 illustrates a simple diagram of a small commercial kitchen area containing multiple areas that are regularly tested. These test locations are identified on the site map with text labels. Before running each test, the screen will display the last AID and LID entered. These can be easily adjusted using the up/down and +/- keys. There can be up to 999 Area IDs, and 999 Location IDs within each AID.

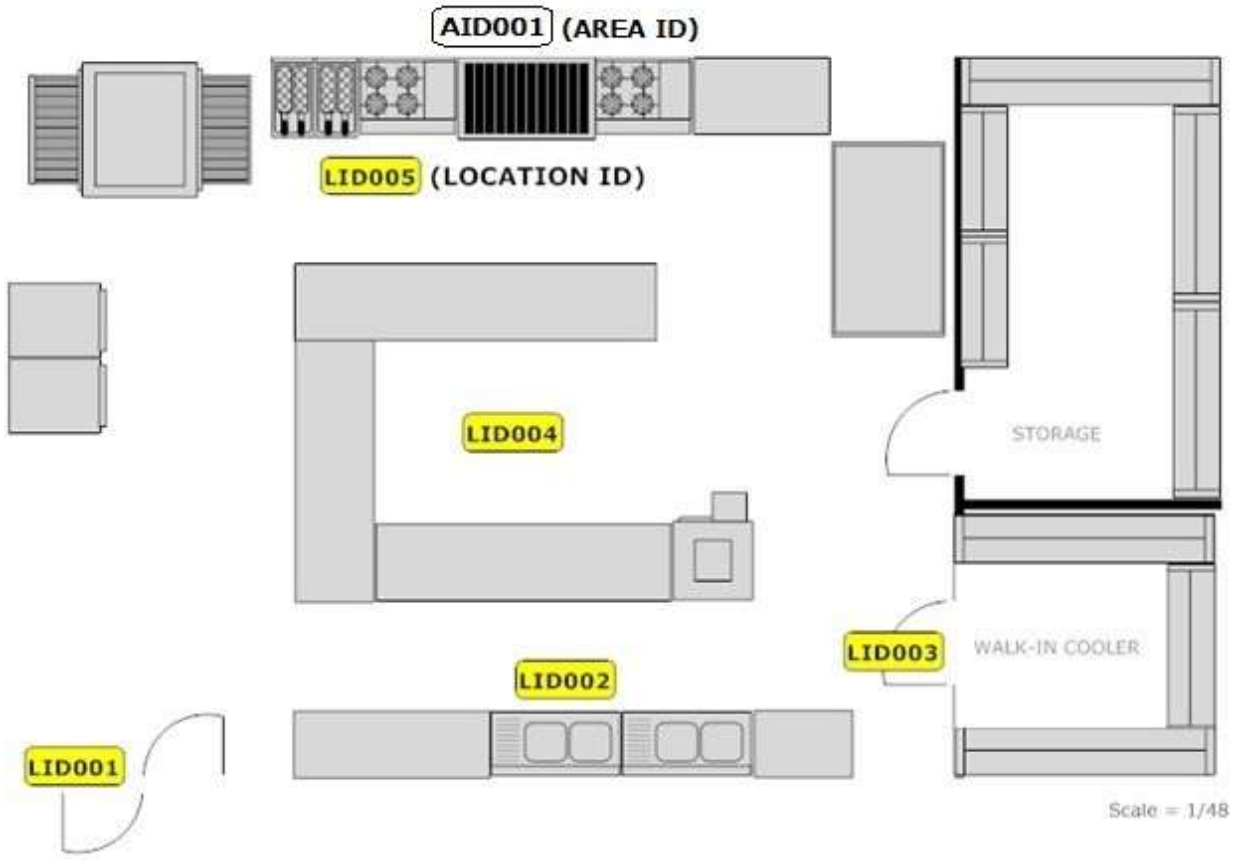


Figure 5

Assigning unique AIDs and LIDs can be quite helpful in the organization and monitoring of test results. Trends may be tracked and potential remediations applied as needed. Site maps can be sketched onto graph paper by hand or easy-to-use CAD drawing programs such as Smart Draw™ can be used to create impressive reports.

TEST LOCATION PHOTOGRAPHS

- Photographic evidence of test location presence can be provided within each saved test result file.
- By default, a forward-facing photograph is taken in each 90 degree orientation when using a programmed test method.
- Single run tests will have only one photo documented.
- The camera may be disabled in the Device Settings menu.

SENSORS

The sensor, sometimes called a slider, is a key component of the friction measurement system and must be maintained properly to provide reliable test results.

- Sensors must be kept clean, properly conditioned, and free of damage. Flat spots and deep scratches in the lining material must be avoided. A sensor reconditioning (sanding) tool is available from Regan Scientific Instruments. This tool helps maintain the radius of the sensor while removing scratches and surface contamination. **NOTE:** Before using new sensors, they must be sanded and checked until the reference surface target value is reached. See Sensor Checking Procedure below.

- Leather sensor material should always be kept dry, as moisture may cause the leather to swell and become ruined.
- Sensors can be relined with new material by Regan Scientific Instruments for a nominal fee if ruined or when worn to less than 2mm in thickness.

STANDARD SENSOR TYPES AND COLORS

- LEATHER – RED COLORED BODY
- SBR RUBBER – BLACK COLORED BODY
- NEOLITE – YELLOW OR GOLD COLORED BODY
- CUSTOM – BLUE OR GRAY COLORED BODY*

*Custom sensors can be fabricated by Regan Scientific Instruments for a nominal fee. The material provided must be at least 28mm X 28mm in size and between 2mm and 5mm in thickness.

SENSOR SANDING PROCEDURE

1. Use fresh sandpaper with each new test location. Thoroughly brush the sandpaper to remove any loose sand particles from the paper.

2. Insert the sensor and sand until any noticeable wear pattern or flat spot has been removed.

3. Remove sensor and wipe off debris with a clean, lint free, oil free paper towel or clean brush.

4. Thoroughly brush all the debris from the sand paper.

5. Re-insert the sensor and sand for 10 more revolutions.

SENSOR CHECKING PROCEDURE

1. Tip the device onto either side or back panel and fully insert a freshly sanded and cleaned sensor into the sensor receiver located in the bottom opening of the device. **NOTE:** When sanding or reconditioning the sensor material, it is highly recommended to wear a filtered mask to avoid breathing in any fine dust or particles generated during the process.

2. Using a small clean paint brush, apply a continuous film of the appropriate lubricant completely down the center of the reference surface approximately 3 inches wide. The reference surface label (bottom) should indicate the type of lubricant (e.g. distilled water) for each sensor as well as the expected result.
   NOTE: The optional leather sensor should never become dampened or wet. It should be run only on completely dry surfaces or they may become permanently ruined.

3. Return the device to its operating position (wheels down) centered over the reference surface, with the rear edge approximately even with back edge of the tile as shown below (Fig.6). Arrows on the sides of the device indicate the approximate front-to-back location of the sensor. **NOTE:** This operation should be conducted on a hard, level, flat surface and never over carpet.

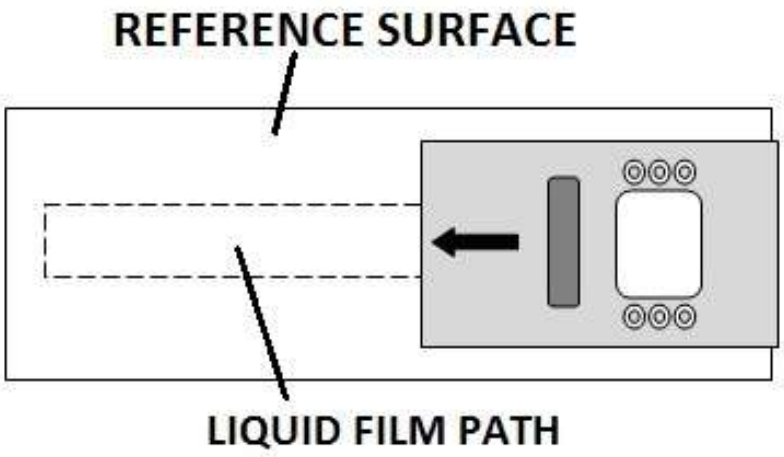


Figure 6

4. Adjust the test run distance to 8 inches (20 cm), run two DCOF tests in opposing directions, then average both results. Compare the averaged result to the reference surface label target value. If the value falls within the stated tolerance band, the sensor is conditioned and ready to perform testing.

5. If the resulting averaged value falls outside the stated tolerance band, the reference surface may require additional cleaning, or the sensor may require further reconditioning with new sandpaper. The reference surface should be polished periodically with 12 micron lapping film to remove invisible contamination buildup.

6. As an optional feature, a sensor may be programmed to incorporate a limited positive or negative offset value to compensate for minute differences in the sensor material, determined by a known reference surface value. The default setting for this feature is disabled. **NOTE:** If an offset value is used, the value will be included in the test result data printout.

PRINTING

- Hardcopies of the most recent test results, calibrations, and verifications may be obtained from the “PRINT” screen, or immediately following a test run (Fig.7).
- When the thermal paper roll becomes depleted, it may be easily replaced by gently squeezing the plastic tabs located on each side of the access cover, and then gently pulling the hinged cover open. Be sure to remove the plastic core from the depleted paper roll. A new roll may be dropped in with the loose end facing up and outward. Allow a small amount of paper to protrude from the printer while gently closing the access cover until it snaps closed.
- Extra thermal paper may be obtained from Regan Scientific Instruments, online retailers, or from various office supply stores. The paper roll must be 2 ¼” wide, and less than 50 ft. in total length to fit the printer. Larger diameters rolls may damage the printer! **NOTE:** Most thermal printer paper printouts will fade or darken over time.
-

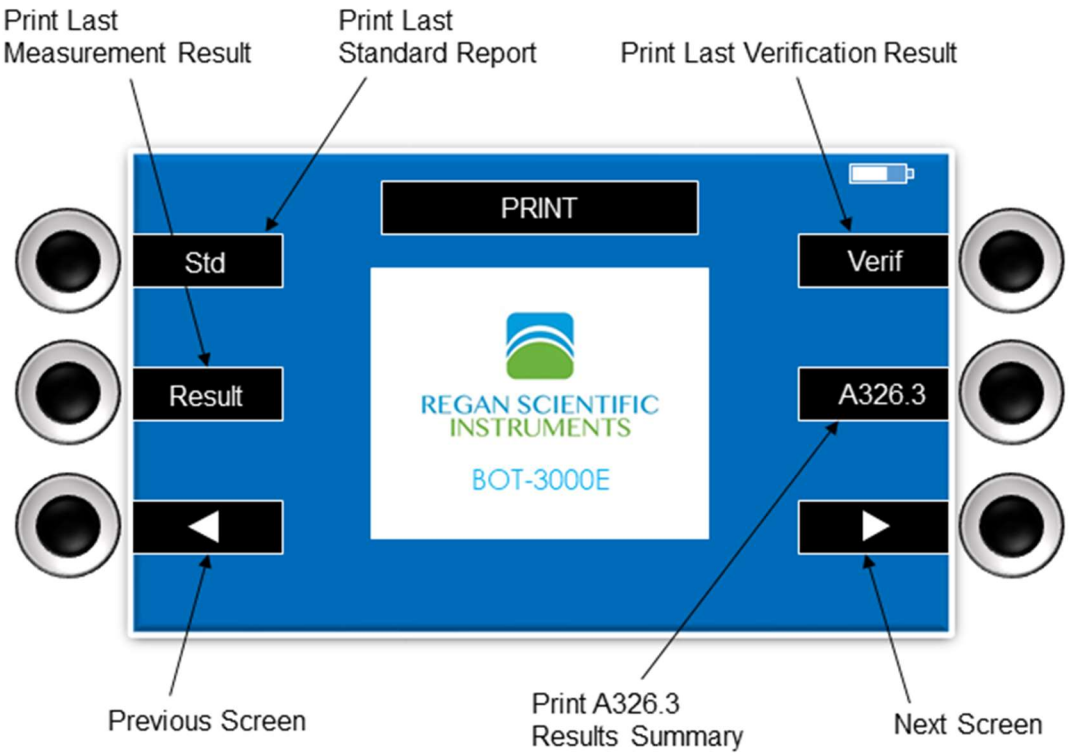


Figure 7

DEVICE MAINTENANCE

The BOT-3000E requires a minimum amount of maintenance as a function of design, however there are several items that should be noted:

BATTERIES:

- Battery packs should never be transported or stored where metallic objects or liquids may contact the connection interface or it could arc and ignite any surrounding material.
- Leaving a battery pack inside the device or the charger when not in use will drain the pack to an unusable state.
- Battery packs should be maintained on a rotating charging schedule to prevent premature failure.
- Battery pack charging should take place in an open area free from excessive heat, dust, and flammable gasses or liquids.
- Batteries may become quite warm during charging, and must be allowed to cool completely before using.

WHEELS:

- Wheels may be removed for cleaning by pushing the hub inward and turning 90 degrees. The wheel should now be easily separated from the axle. The wheels should be cleaned with isopropyl alcohol, using a toothbrush, followed by a clean water rinse. Dry wheels completely before reinstallation.

CALIBRATION:

- The user may not calibrate the device; it MUST be returned to Regan Scientific Instruments to receive an authorized factory calibration on a specially designed calibration fixture.
- The device will indicate the last calibration date with the printed test results. The calibration cycle is on an annual basis, regardless of the usage amount. Please make note of

the last calibration date, as it will become due exactly one year from that date.

GENERAL NOTES

- Each switch press may be followed by a short delay before the desired action is initiated.
- When the device is inactive for a certain time period, the display will dim. A press of any switch will awaken the device. After an extended period of inactivity the device will beep several times, then power down to conserve battery pack life. Previous test results will be saved.
- It is recommended that one dedicated flash drive be used per each BOT device, to avoid the possibility of overwriting files created by another device.
- The battery pack charger indicator illuminates red during the charging cycle, and will change to green once the battery pack is fully charged. The charger may fault if a battery pack becomes overheated. In this situation, remove the battery pack from the charger and allow it to cool down completely before charging again.
- Many types of textured or profiled floors can be tested without problems; however there may be occasional surfaces that can be quite challenging. These may be in the form of grates, embossed metal plates, mosaic tiles, random or patterned textured surfaces often found near pools, spas, patios, ramps, etc. See Fig. 8 for examples of limitations.
- Reconditioning the sensor material manually is not generally recommended. Using the Regan Scientific Instruments sensor reconditioning tool may greatly reduce irregular sanding patterns or techniques.

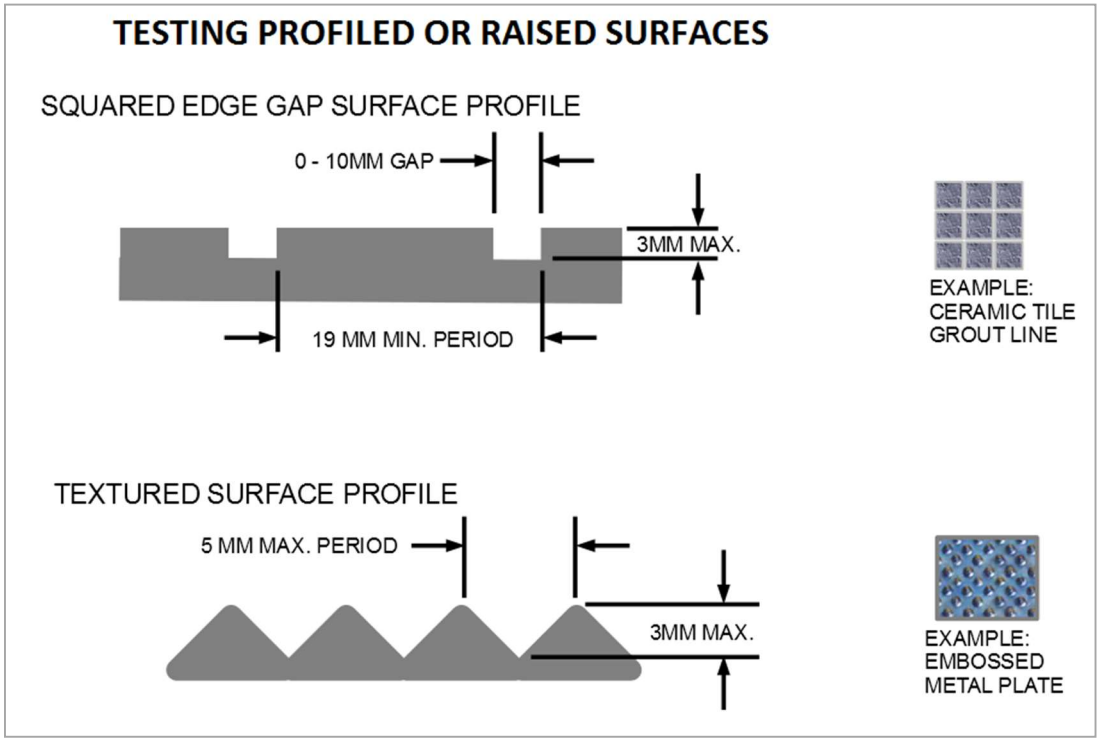


Figure 8

NOTE: If a third party reference surface was provided for use with a specific standard test method, then the procedure from the provider should be followed.

- Whenever squared edge type surfaces (e.g. mosaic tiles), are to be tested, a best practice is to orient the device to traverse the edges at or near 45 degrees. This will make the transition between tiles smoother.
- The supplied reference surface can eventually become worn or soiled with sensor material, minute particles, dried SLS, or fingerprints. It is advisable to clean it occasionally with Bona™ Stone, Tile and Laminate floor cleaner, which is available from many retail stores. Dry the surface with plain white paper towels ONLY, as some paper towel products are treated with lint reduction agents, and could affect the measurement results of the surface. The reference surface should be polished periodically with 12 micron lapping film to remove invisible contamination buildup.

TEST RESULTS REPORTING

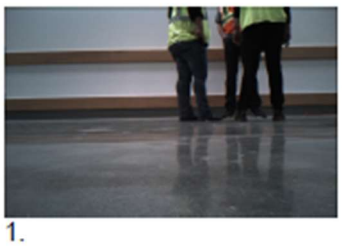
Fig. 9 (next page) illustrates a typical device-generated report for the ANSI A326.3 Standard Test Method (field/dry, sheet one of three only). The report lists the four required measurements (per the test method.) The photos are often helpful for positive identification of particular test areas (e.g. in front of a doorway or staircase). Each graph represents one measurement of the set. Graphs can be useful in determining the degree of surface variation for a given area. The average DCOF value for each measurement is the recorded result. The median of the four averages is the final test result. Single SCOF or DCOF tests will display one measurement per report. Other test method reports may be formatted differently than the illustrated example. Test report folders are created first by the device serial number, the test date, and then the area ID. The pdf files are arranged by Date/AID/LID/test sequence. The DATA.LOG test data files are stored in a folder created under the test date/area ID. These data files may be renamed to DATA.TXT or DATA.CSV for importing into various spreadsheet programs.

ANSI A326.3 Report (sample 1 of 3)

Regan Scientific Instruments

08/21/2017, 8:32AM

Method:	DCOF
Area	001
Location	002
Result:	0.35
Distance:	04 in.
Temp/Hum:	73 F, 54%
Type:	Field/Dry
Condition:	Prevailing



1.

2.

3.

4.

1. Avg = 0.35, Min = 0.33, Max = 0.37

2. Avg = 0.35, Min = 0.33, Max = 0.37

3. Avg = 0.35, Min = 0.33, Max = 0.39

4. Avg = 0.33, Min = 0.32, Max = 0.35

Device:	BOT-3000E (v3.00.07)	Sensor:	03178
Serial No:	00382	Type:	Rubber
Calibration:	08/09/2017	Manuf. date:	07/18/2015
Verification:	08/09/2017, 5:15PM PASS	Ref. offset:	----
Meter:	2.1 hrs		

39925C6C7039140A496DE3893CAFD04F5525 2A2DCAC94BFAC3CC513C76F4A21A

Figure 9

NOTE: The camera may be disabled in DEVICE SETTINGS if photos are not desired in the report, however the graphs will always remain visible as part of the test results report.

MORE ABOUT DATA.LOG FILES

Stored data files (not pdf files) contain test information in text format which can be imported into spreadsheets or other text input programs. This can be useful for tracking events or analyzing trends. The structure of the logged data is demonstrated below:

08/21/17, 8:34AM,001,002, ,DCOF ,,,0.35,,,,,

08/17/17, 2:52PM,004,001,3,A326.3,Field/Wet,Prevailing,0.38,0.36,0.42,0.34,0.41

08/17/17, 2:48PM,003,001, ,A137.1,,,0.42,0.43,0.44,0.40,0.41

The DATA.LOG file structure is as follows:

Date, Time, Area, Location, [Sample no.], Standard / Test method, Test type, Condition, Average, Meas.1, [Meas. 2], [Meas. 3], [Meas. 4], PDF filename

NOTE: Items in brackets above are not included with single DCOF or SCOF tests.

The PDF file naming convention is MMDDCCCC.pdf where MM is the month, DD is the day of the month, and CCCC is the counter.

The various data log files may be viewed directly on the device data screen, or be transferred to a USB flash drive and then loaded into a PC for archiving or analysis. **NOTE:** A limited number of data log files may reside in the device memory after the pdf test files have been transferred or deleted.

BOT3000E On-Screen Messages

- "ABORTED BY USER" - Measurement stopped by user.
- "ARCHIVE DELETED" - Deleting of archive complete.
- "ARCHIVE xxx of yyy" - Archiving files that have been transfered to USB.
- "BLUETOOTH TRANSFER" - Transfering data or files via bluetooth.
- "CALIB. DUE IN xxx DAYS" - Calibration expiration approaching.
- "CALIB. PAST DUE xxx DAYS" - Calibration past due.
- "CAMERA COMM FAILURE" - Unable to communicate with camera.
  - Return to factory for repair
- "COMMAND FAILED" - Couldn't communicate with slider crypto chip.
- "CREATING REPORT" - Creating A326.3 PDF report.
- "DEAD BATTERY" - Battery is essentially dead. Unit will turn itself off.
- "DELETING ARCHIVE" - Deleting files from archive.
- "DELETING xxx of yyy" - Deleting files from archive.
- "DETACHING USB" - Un-installing USB stick after removal.
- "DO NOT REMOVE USB" - USB in use, do not remove.
- "ERROR: DELTA > 0.06" - Slider offset out of range.
- "FILE ERROR" - Unable to create the PDF.
- "INCOMPLETE xxx of yyy" - Error in the transfering of files to USB.
- "INSERT SLIDER" - Tried to take a measurement without a sensor inserted.
- "INSTALLING USB" - USB was detected and is being initialized.
- "INVALID SLIDER" - Wrong sensor type for selected standard.
  - Insert the correct sensor for the desired test method
- "LOADING DATA" - Loading previously saved A326.3 data.
- "LOW BATTERY" - Battery is low but will still take a measurement.
- "MAIN DETECT ERROR" - Unable to communicate with crypto on main board.
- "MEAS. TIMEOUT" - Measurement did not complete in time (likely because unit did not drive forward)
- "NO DATA TO PRINT" - No measurements have been taken to print.
- "NO FILE SYSTEM" - Unable to detect internal file system.
- "NO USB STICK" - No USB stick inserted.
- "OUT OF PAPER" - Printer out of paper.
- "PRINTER ERROR" - Unable to communicate with printer.

- "PRINTING" - Printer is currently printing.
- "RE-INSERT SLIDER" - Unit detects slider but cannot read crypto chip.
  - Remove sensor and clean contacts, cycle power off/ on. Replace sensor if needed
- "RECHARGE BATTERY" - Battery is too low to take a measurement or print
- "REMOVE MASS" - Alert to remove verification mass
- "ROTATE 90 DEGREES" - Instruction during standard testing
- "RTC CLOCK FAILURE" - Real time clock is malfunctioning
  - Cycle power off and on; Return to factory if condition does not resolve itself
- "SERVICE NEEDED" - Lift sensor malfunctioned
- "SET DATE/TIME" - Clock is set to date prior to software compile date
  - Set time / date in “Device Settings”
- "SHUTTING DOWN" - Warning that the unit is about to turn itself off
- "SYSTEM NOT READY" - System is busy and cannot currently process user request
  - Pause for 1 second before switching functions
- "TURNING OFF" - Off button pressed, unit about to turn off
- "TXFRING xxx of yyy" - Transfering files to USB
- "UNIT NOT LEVEL" - Unit not level during verification
  - Move device to level surface
- "USB INSTALL FAILED" - Could not initialize USB stick
  - Replace USB flash drive
- "WARNING xxx mm/s" - Measured speed out of range
  - Test surface too steep
- "WHEELSPIN" – Wheel spin detected during measurement
  - Remove, clean, and dry wheels / tires – check orientation on hub
  - Surface friction too high to overcome

TECHNICAL DATA

Device dimensions: 29 x 20 x 17cm

Weight: 6.8 Kg

Measurement velocity (DCOF): 20cm/s ± 5%

Measurement range: 0.01 to 1.00 DCOF

Measurement normal force: 22.4N ± 2%

Contact patch: approx. 3mm X 28mm

Measurement system tolerance: 3%

DCOF measurement distance: 10 to 50cm, incremental by 5cm (displays 4” to 20”)

Ramp angle: 9.6 degrees maximum (declination)

Verification Mass: 1.36 Kg

Operating/Storage Temp: 5 - 40 deg. C

Operating/Storage Humidity: 5 - 90% RH (non-condensing)

Internal Memory: 1000+ measurements

Display: 480 x 272 LCD TFT display with 262K colors, LED backlit

Test data storage/transfer: USB flash drive, 8MB max.

Transferred file formats: PDF, TXT/CSV (.LOG files)

Printer: Thermal, 48 mm wide, 8 dots/mm

Processor type: ARM Cortex M4 32 bit processor, 120 MHz

Sampling rate: 1000 samples / sec

Protection class: IP20

Power source: RSI battery pack (NiMH battery, 12V nominal, 3.8Ah)

Battery pack charger: 120-240VAC 50/60 Hz input, UL listed

WARNING: There are no user serviceable components inside the tribometer, battery pack, or charging unit, and they should NEVER be opened for any reason, except by Regan Scientific Instruments or an authorized agent.

FREQUENTLY ASKED QUESTIONS

Q – Why does the device require annual calibration when we hardly use it?
A – Any laboratory-grade measurement instrument should be calibrated on a regular period determined by the instrument manufacturer. ISO 9001:2008 promotes this policy. Most manufacturers of this type of measurement instrument require calibration on a frequency of at least once per year, regardless of the usage amount.

Q – Why can't the device be shipped with a battery pack installed?
A – Air Transportation agencies have ruled that electronic devices should have the batteries removed so they cannot activate during shipment and potentially cause interference with navigation or communication equipment. Also, when a battery pack is installed in a device or a charger, a small amount of energy is constantly drained. This can eventually lead to a dead battery pack.

Q – Why is my reference surface reading too low?
A – This may be caused by using worn sandpaper, or a reference surface that has accumulated surfactant levels (SLS build-up) over time. Replace the sandpaper often and clean the reference surface properly.

Q – Can you replace worn or damaged sensors?

A – Yes, we can replace the sensor material for approximately half the cost of a new sensor. Please visit our website (see cover) for pricing, availability, shipping, and other information.

Q – What does “Wheel Slip Error” on the display indicate?
A – The wheels should be kept dry during operation to provide adequate traction. They may need to be removed and cleaned if they have picked up contamination.

Q – Can the device run across tile grout joints during a DCOF test?
A – Most properly installed tile floors will have grouted joints between flat level tiles, and are traversable, as long as the device crosses the joints at an angle of approximately 45 degrees. The test run distance may be adjusted to fit within most single tiles. Avoid running across uneven, raised tile edges that protrude above the normal surface plane, as the sensor could catch on the raised edge.

Q – Why should I utilize a Standard Test Method?
A – Different testing methodologies often produce quite different results due to the number and degree of variables. Standard Test Methods are designed to apply controls and limits, therefore allowing test results to be used within a context or framework of acceptable and unacceptable levels of risk.

The current time and date, along with other device settings, may be edited by navigating to OPTIONS/DEVICE/ DEVICE SETTINGS. The “SAVE” switch must be pressed when completed.

Product Warranty and Disclaimer

One year parts and labor, excluding normal wear and tear parts such as sensors, batteries, tires or any physical damage. Any warranty exclusion is solely determined by Regan Scientific Instruments, Inc. Defective products or materials may be repaired or replaced at our discretion. We reserve the right to make changes to product designs and specifications without providing notice.

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