TROXLER MODEL 6760 MOISTURE PROBE

The Troxler Model 6760 Moisture Probe, supplied with the Troxler Model 4590 EGauge, uses dielectric measurement technology to indicate the moisture content of the soil being measured. Using the probe moisture content measurement and the wet density measurement performed with the EGauge, the moisture content (M), percent moisture (%M) and Dry Density (DD) are given. With a proctor target value entered to the gauge, the EGauge can also provide % Proctor.

The probe is approx. 5.5 inches (14 cm) long and the moisture measurement depth is at approx. 3.5 inches (9 cm) to the end of the probe.

The probe is inserted in the same predrilled hole that the EGauge uses for the density measurements. It may be best to perform the density measurement first because the removal of the probe after a moisture measurement could damage the hole.

Three generic soil moisture profiles, or factory calibrations, for the probe are preprogrammed in EGauge: General, Clay and Cr. Aggregate. General is best used when measuring granular and non-clay type materials, Clay is used on materials classified as clay and the Crushed Aggregate profile is used for aggregate subbase material.

NOTE: A profile is for an average soil of its kind and will only provide a base-line moisture value for the specific soil in the test site. For accurate moisture measurement, probe requires an offset or adjustment to the selected profile.

1. SET UP THE GAUGE & PROBE

1.1 SITE PREPARATION

Locate a level site free of any holes, cracks, or debris and smooth the surface with scraper plate in a back and forth motion.

Use the accessories supplied with the EGauge to prepare the access hole.

NOTE: The access hole depth should be at least 6 inches (150 mm) to accommodate the probe length. Refer the EGauge Operator's manual for more instructions.

NOTE: Always use the drill rod and the scraper plate that are provided with the EGauge for preparing the measurement hole. The diameter of the drill rod must be the correct size to provide good contact of the probe to the wall of the access hole.

1.2 PLACING THE PROBE IN SOIL

It is important that the probe be inserted in the predrilled hole carefully as it requires a tight fit in order to achieve a reliable reading. The base plate must contact the soil surface when probe is lowered fully.

1.3 MOISTURE INPUT METHOD

To use the probe as the moisture sensor for the EGauge, press <SETUP> key, and from the Options menu select 2. Select option 1 for External sensor. The other options are manual input and none. Manual Input allows the keying in of the percent moisture (%M) resulting from another test such as an oven dry analysis. Choosing None tells the gauge that no moisture value will be entered, only a Wet Density measurement is to be performed.

1.4 MEASUREMENT ORDER

The operator can determine what order to perform the density and moisture measurements. Press <SETUP> key, and from the Options menu select 3. Option 1 selects Moisture first and option 2 selects Density first. The default selection is Density first.

1.5 SELECT A PROFILE OR CALIBRATION

The gauge is preprogrammed with three profiles or calibrations. The gauge also stores user determined profiles and partial calibrations. Partial calibrations will be noted by an asterisk, these are probe calibrations that have been started (field measurements performed and stored but require the true moisture (lab moisture) data to be entered in order to be completed). Press <SETUP> key and enter 8 for moisture probe menu. At the Moisture probe menu, Press 2. Cal Profile for the list of stored,

default and partial probe calibrations.

1.6 ESTABLISH COMMUNICATION

The probe communicates with the EGauge using Bluetooth technology. Press the <POWER> button (the green light will illuminate when it is on). The blue light on the probe will remain solid when the Bluetooth connection is made.

Press <ENTER/START> to perform the moisture reading

1.7 CREATE A NEW CAL PROFILE

A factory moisture profile for the soil with an offset applied provides sufficient accuracy for most of the construction grade soils. For special soil types, see the EGauge Operator's Manual for a more detailed description of the calibration profile creation process.

2. PERFORM A COMPARISON MEASUREMENT

When using the probe on a new soil, the probe moisture measurement should be compared to an accepted method, such as oven-drying, to check for accuracy. If accuracy is not adequate, the same set of measurements can be used for determining an offset.

Before the check, set the EGauge connections to probe (section 1 provides the details)
a. Set the moisture input method (refer section 1.3)
b. Set the measurement order (refer section 1.4)
c. Set the calibration profile (refer section 1.5)
d. Set moisture offset to zero, press <OFFSET> key, enter 3 for *Moisture Offset* value, and press 2 to Disable.

Procedure
1. Select three or more locations with different moisture contents if possible.
2. At each test location, prepare the test site (refer to section 1.1)
3. At each location, take a density measurement (refer EGauge Operator's Manual)
4. Place the probe in the access hole and take a moisture measurement (refer sections 1.2 – 1.3).
5. Record the WD, M, and %M values.

6. At each location, take a soil sample and determine the moisture (%M) by an acceptable method such as oven-dry.
7. After all data is collected, check the difference between probe %M and %M from the other method. If differences are unacceptable, the probe needs an adjustment or offset to the selected profile.

3. DETERMINE MOISTURE OFFSET

A factory profile with an offset applied gives the best results for most of the construction grade soils.

An offset should be used when the moisture content of a laboratory sample differs from the reading provided by the probe using a factory calibration profile (General, Clay and Cr. Aggregate).

It is best if performed using 3 or more known samples (oven dry for example) with a range of moisture contents which represent those in the field. To change the *Moisture Offset* value, press <OFFSET> key, enter 3 for *Moisture Offset* value, and press 3 to Change Offset.
1. Enter the average probe Moisture value (M) in lb/ft^3 or kg/m^3. Press <ENTER/START>
2. Enter the average Wet Density value from the initial measurement sites. Press <ENTER/START>
3. Enter the average True Moisture percent (%M) resulting from the lab moisture analysis (oven dry or Speedy for example) on the soil taken from the initial sites.

Press <ENTER/START>
The gauge then displays the new moisture offset value and returns to the Offset menu.

4. PERFORM A MOISTURE MEASUREMENT

Prepare the test site as described in section 1.1.

When prompted by the EGauge, insert probe into the hole until the base plate contacts soil surface. It is important to have a tight fit. If the hole has expanded or is damaged prepare a new hole nearby to get an acceptable moisture measurement result.

Recommended procedure:
Remove hands from the probe. Observe the moisture measurement (M) on the display. Then turn the probe carefully clockwise 45–90 degrees, move your hands away and wait a few seconds. If the observed moisture result (M) changed more than 0.5 lb/ft^3 between the two readings, the contact with the soil may not be consistent and a new test hole may be required.

1. Press <ENTER/START> to accept the moisture result if the result is consistent between the readings.

2. Record the results in your data sheet or store in the gauge memory for later viewing, printing, or downloading if a project is active. Refer to EGauge Operator's Manual for setting up the PROJECT features.

3. Carefully remove the probe and set aside in a safe place until the next measurement.

If a 'stand alone" measurement is needed for moisture content M, the gauge can display the moisture data on the screen of the EGauge without taking a density measurement. Press <SETUP> key and enter 8 for Moisture probe menu. Then select option 1 and take measurement. Press ESC to end the moisture measurement.

> **NOTE:** A density measurement is required to measure percent moisture (%M).

The Moisture Probe must be charged periodically. The probe will operate approx. 35 hours per charge. The red LED (3rd light from left) illuminates when low, indicating approx. 4 hours of use remaining. Charge the probe with the charger supplied with the Troxler EGauge. The yellow LED illuminates during charging. The probe fully charges in approx. 4 hours (max).

MORE INFORMATION

Please visit www.TroxlerLabs.com for more technical documents explaining the use of the EGauge and moisture probe.

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QUICK REFERENCE GUIDE

TROXLER®
The Leader in Construction Testing Equipment

Troxler Electronic Laboratories, Inc.
3008 E. Cornwallis Rd. • P.O. Box 12057
Research Triangle Park, NC 27709
Phone: 1.877.TROXLER
Outside the USA: +1.919.549.8661
Fax: +1.919.549.0761
www.troxlerlabs.com

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