ASPHALT OR HARDENED CONCRETE SITE

NOTE
These directions also apply to taking a backscatter measurement on soil.

Locate a smooth site on the asphalt. Fill the voids on open mixes with sand or cement, ensuring that the total area filled does not exceed approximately 10 percent of the bottom area of the gauge. The gauge base must rest on the asphalt, not the fill material! Ensure that the gauge does not rock. To ensure accurate readings, the gauge base must be completely in contact with the test material. If the gauge rocks, find a more suitable test site. If taking a measurement around a core, the gauge may be moved a few inches from the core to level it.

OFFSET FUNCTION

The gauge can be adjusted using an offset. The gauge applies the offset to measurements until the offset is disabled or the gauge is turned off. The gauge provides three offsets: density, moisture, and trench.

Press [OFFSET] to access the Offset menu.

DENSITY OFFSET

To use a density offset, press [1] from the Offset menu. The Density Offset menu shows the current density offset on the second line. Press [1] to enable the displayed density offset or [2] to disable it. To enter a new density offset, press [3]. The gauge prompts for the density offset. Select the offset sign (positive or negative), enter the density offset, and press [ENTER].

MOISTURE OFFSET

To use a moisture offset, press [2] from the Offset menu. The Moisture Offset menu shows the four stored offset values (if any) and the New and Disable options. To select a stored offset value, press the number key that matches the displayed value.

To enter a new offset value, press [5]. At the Select Offset Source prompt, press [1] to enter a moisture offset manually, or [2] to allow the gauge to derive the offset value. Follow the gauge prompts to enter or derive the offset value. Upon completion, the gauge displays the prompt Save This Value for Later Use? Press [NO] to enable and use the offset without storing it, or [YES] to enable the value and store it in memory. The gauge can store the value in one of four memory cells. Storing a new value in a cell will erase the old value. At the Select memory cell prompt, use the number keys to store the value.

To disable the moisture offset, press [6] from the Offset menu.

TRENCH OFFSET

To use a trench offset, press [3] from the Offset menu. The Trench Offset menu shows the current offset values on the second line. To enable the displayed trench offset, press [1]. To disable the trench offset, press [2]. To enter a new trench offset, press [3]. As prompted by the gauge, select a position inside the trench and the same distance from the wall as the test measurements. Place the gauge on the standard block in this position, set the source rod to the SAFE position, and press [ENTER/START]. The gauge performs a trench count, calculates the trench moisture and density offset values, enables the trench offset, and returns to the Ready screen.

The trench offset is active for moisture measurements at all source rod positions, and for density measurements in backscatter position and direct transmission positions of less than 4 inches.

TESTING AND MEASUREMENT

Before taking any measurement, set the measurement mode by pressing [MODE], then press the number key that matches the desired mode. Check the count time. Enter a target value, if desired. Prepare the test site.

To begin a reading, lower the source rod and press [ENTER/START]. In the Automatic depth mode (Model 3440 Plus only), the gauge determines the source rod depth automatically. In the Manual mode, the operator must enter the source rod depth manually.

After taking readings, lift the gauge from the test site by the gauge handle. This returns the source rod to the SAFE position. When not taking readings, always keep the source rod in the SAFE position.

After the measurement, the gauge displays the measurement results. To store the reading, press [STORE] (see below).

For soil (direct transmission) measurements, the density depth of measurement is the depth at which the source rod is placed (except for backscatter mode, which is approximately 4 in.). The moisture depth of measurement is determined by the moisture (or hydrogen) content of the material being tested. The following equations can be used to determine the approximate depth of measurement.

\[
Depth (\text{inches}) = 11 - (0.17 \times M), \text{ where: } M = \text{moisture in pcf}
\]

\[
Depth (\text{mm}) = 280 - (0.27 \times M), \text{ where: } M = \text{moisture in kg/m}^3
\]

STORAGE FUNCTION

Assign a project number before storing readings by pressing [PROJ]. Select the desired option from the displayed menu. To store readings, press [STORE]. Follow the gauge prompts to enter any additional project information.
After taking a 240-sec standard count, the gauge displays the density and moisture standards (DS and MS). The gauge also displays P or F to show if the results fall within acceptable limits. The DS should be within 1% and the MS should be within 2% of the previous four standard counts. Troxler recommends that the operator keep a daily log of the standard count results, using Appendix D of the Model 3430 and 3440 Plus Manual of Operation and Instruction (user manual).

SITE PREPARATION

To ensure measurement accuracy, properly prepare the test site before taking gauge measurements.

SOIL SITE

CAUTION

Safety glasses and a radiation dosimeter must be worn during this procedure.

NOTE

As shown at left, put the drill rod through the extraction tool and then through one of the guides on the scraper plate. Place the drill rod assembly on the test site. Step on the scraper plate. Hammer the drill rod at least 50 mm (2 in.) deeper than the desired test depth. The drill rod increments include the additional depth.

Mark the test area.

Remove the drill rod by pulling straight up on the drill rod extraction tool. Do not loosen the drill rod by moving it from side-to-side.

Place the gauge on the smooth surface. Insert the source rod into the hole. Release the trigger in the gauge handle and lower the source rod to the correct depth. A click should be heard when the source rod is locked into position. Gently slide the gauge toward the keypad so the source rod touches the side of the hole.