



Troxler Electronic Laboratories, Inc.

PO Box 12057 • 3008 Cornwallis Rd. • Research Triangle Park, NC 27709
Tel: (919) 549-8661 • Fax: (919) 549-0761 • web: www.troxlerlabs.com

Troxler Application Brief **An Instruction Guide for the** **Trench Correction Procedure for Troxler 3400 Series Gauges**

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In order to perform moisture and density tests in a trench or against a large solid object it is necessary to perform a trench offset to adjust the gauge. The gauge will often read a falsely high moisture content if this is not done. Moisture present in the walls can thermalize neutrons which return to the gauge and are read as moisture by the He³ detector in the gauge. If the trench wall is at least 0.6 meters (24 inches) from each side of the gauge, the trench effect will not be significant. If the trench is at least 0.6 meter (24 inches) wide and the gauge is used in direct transmission mode (at a 10 cm (4 inch) depth or greater) the density error will be insignificant. Use the following procedure to avoid erroneous readings.

1. Models 3411 and 3401:

It is necessary to determine the increase in the moisture count due to the hydrogen bearing material in the trench walls. This difference will be subtracted from the moisture measurement counts before the moisture ratio is determined. Perform the daily standard count outside of the trench or away from the large vertical object on the reference standard block as usual.

- a.) Place the gauge in the trench or near the vertical object and take a count with the gauge set on the reference standard at the desired test site. (3411 operators – do not take a standard count, take a measurement; pressing the shift key will erase the daily standard count) The distance from the wall must be the same as the area to be tested. Set the PWR/TIME switch at NORM for this count.
- b.) Subtract the moisture standard count from the moisture count taken in the trench.
- c.) 3401 – this moisture offset value will be subtracted from the moisture measurement count before you divide by the daily moisture standard count.
- e.) 3411 – this moisture offset value should be set on the moisture correction switches. This value is preset as a negative number by depressing and holding the SHIFT key and depressing MC. The value set on the moisture correction switches should now appear on the display. This offset can be removed by setting the switches back to “00” and entering this value.

Be sure to return the moisture correction switches to “00” (or the correct factor if a moisture offset is necessary) after entering the trench correction.

2. 3430:

It is necessary to determine the increase in the moisture count due to the hydrogen bearing material in the trench walls or the “echo” effect from a vertical object. Take the daily standard count (outside the trench) and record the moisture and density count values. (DS & MS)

- a.) Place the gauge on the reference block in the trench the same distance from the wall as the anticipated readings. Set the count time to 4 minutes. Press <ENTER> to start the count. Record these values (DC_{trench} and MC_{trench}).
- b.) Subtract the daily standard counts from the trench counts.

$$\text{Dens. offset} = (\text{DC}_{\text{trench}}) - \text{DS}$$

$$\text{Moist. offset} = (\text{MC}_{\text{trench}}) - \text{MS}$$

c.) Choose trench from the Offset options under the Special functions. The gauge will request the Density const and Moist const; enter the above calculated values ignoring the +/- sign on the display.

3. 3440 and 3450

a.) Perform a daily standard count on the reference standard block as usual.

b.) Press the OFFSET key to access the proper menu.
Choose the trench option from the menu.

c.) When enabled, the most current trench offset values will be displayed. If this is the offset desired, then do not change or create a new one. If the environment (trench) has changed a new offset must be performed.

d.) Position the gauge on the reference standard block in the trench at the same position as the anticipated measurements. The display prompts you to now press the START key to begin the 1 minute count.
3450 – accept the values if the count was performed properly.

e.) Disable trench offset when not in use.