Nuclear Gauge Testing Manual

Section 4

Operating Instructions

Testing - Asphalt

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OPERATING INSTRUCTION N301

TEST PARAMETERS (ASPHALT) TROXLER 3440

1 SET UP

- Press [ON] and allow the nuclear gauge to complete the self-test routine.

2 UNITS

When **<READY>** is displayed:

- Press [SHIFT / X]
- Press [SPECIAL / 9] and the following is displayed:

  SPECIAL FUNCTION
  YES - Next menu
  1 - STAT TEST
  2 - DRIFT TEST

- Press [YES / EXIT] repeatedly until the following is displayed:

  YES – Next menu
  9 – SET UNITS
  10 – BAND RATE
  11 – COMM PROTOCOL

- Press [SPECIAL / 9] and the following is displayed:

  UNITS in XXX
  Press 1 – PCF
  2 – METRIC
  ENTER – No change

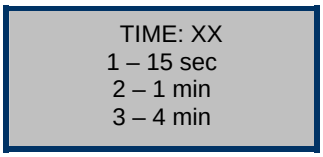
- Press [DEPTH / 2] and the following is displayed:

  UNITS IN METRIC

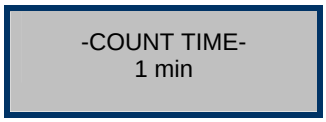
The display will return to **<READY>**.

3 COUNT TIME

- Press [TIME / -] and the following is displayed:



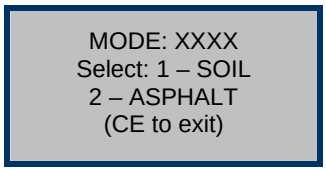
- Press [DEPTH / 2] and the following will be displayed:



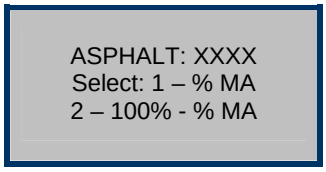
The display will return to **<READY>**.

4 ASPHALT MODE

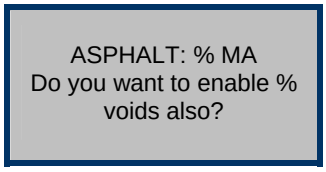
- Press [SHIFT / X]
- Press [MODE / 8] and the following is displayed:



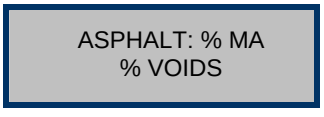
- Press [DEPTH / 2] and the following is displayed:



- Press [COUNT / 1] and the following is displayed:

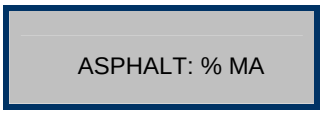


- Press [YES / EXIT] and the following is displayed:



OR

[NO/CE / C/CE] and the following is displayed:



The display will return to <**READY**>.

- Press [SHIFT / X]

- Press [MODE / 8] and the following is displayed:

  MODE: XXXX
  Select: 1 – SOIL
  2 – ASPHALT
  (CE to exit)

- Press [DEPTH / 2] and the following is displayed:

  ASPHALT: XXXX
  Select: 1 – % MA
  2 – 100% - % MA

- Press [DEPTH / 2] and the following is displayed:

  ASPHALT: 100% MA
  Do you want to enable % voids?

- Press [YES / EXIT] and the following is displayed:

  ASPHALT: 100% MA
  % VOIDS

OR

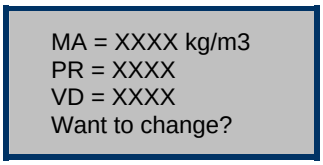
[NO/CE / C/CE] and the following is displayed:

ASPHALT: 100% MA

The display will return to <**READY**>.

5 MAXIMUM DENSITY

▶ Press [PROCTOR/ MARSHALL +] and the following is displayed:



To retain value, go to 5.1.

To change value, go to 5.2.

5.1 Retain the Value

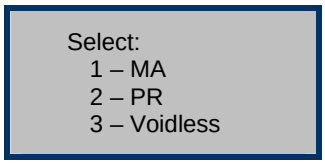
▶ Press [NO/CE C/CE] to retain the displayed value of MA.

The display will return to <**READY**>. Go to 6.

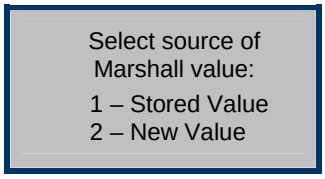
5.2 Change the Value

▶ Press [YES EXIT] to change the displayed value of MA.

And the following will be displayed:



▶ Press [COUNT 1] and the following is displayed:



To enter a new value, go to 5.3.

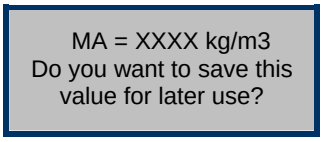
To select a stored value, go to 5.4.

5.3 Enter a New Value

- Press DEPTH / 2 and the following is displayed:

- Use the numbered keys to enter the required value to the nearest 1kg/m^3.

- Press START/ ENTER / = and the following is displayed:

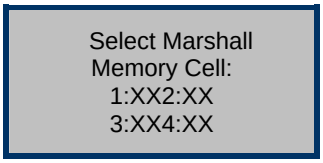


If the value is not to be saved:

- Press NO/CE / C/CE and the display will return to <**READY**>. Go to 6.

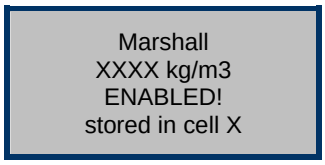
To save the displayed value:

- Press YES / EXIT and the following is displayed:



- Press the numbered key (1, 2, 3 or 4) to select a memory cell in which to store the value.

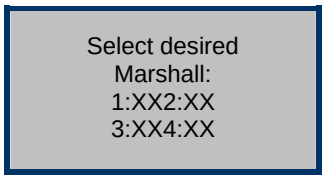
And the following will be displayed:



The display will return to <**READY**>. Go to 6.

5.4 Select a Stored Value

- Press [COUNTS / 1] and the following is displayed:



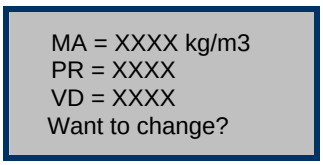
- Press the numbered key (1, 2, 3 or 4) to select the required value:

And the following will be displayed:

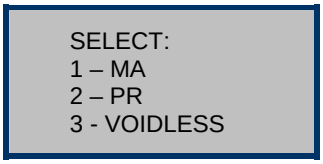
The display will return to **<READY>**.

6 VOIDLESS DENSITY

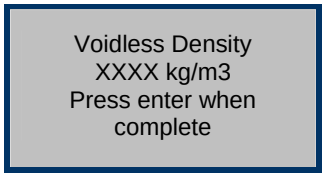
- Press [PROCTOR/ MARSHALL / +] and the following is displayed:



- Press [YES / EXIT] and the following is displayed:



- Press [CALC / 3] and the following is displayed:



- Use the numbered keys to enter the required value to the nearest 1kg/m^3.

- Press [START/]

ENTER
=

And the display will return to <**READY**>.

7 MATERIAL WET DENSITY BIAS

▶ Press OFFSET MR and following is displayed:

-OFFSET- Select:
1 – Dens. –ZZZ-
2 – Moist –ZZZ-
3 – Trench –ZZZ-

▶ Press COUNTS 1

The following will be displayed:

Density Offset
DISABLED
Do you want to
ENABLE?

OR

Density Offset
ENABLED
Do you want to
DISABLE?

To disable the material wet density bias, go to 7.1.

To enable the material wet density bias, go to 7.2.

7.1 Disable Material Wet Density Bias

▶ Press NO/CE C/CE to confirm that the density offset is to remain disabled **OR** YES EXIT to disable the density offset.

And the following will be displayed briefly:

Density Offset
DISABLED

The display will return to <**READY**>.

7.2 Enable Material Wet Density Bias

- Press [YES / EXIT] to enable the density offset **OR** [NO/CE / C/CE] to confirm that the density offset is to remain enabled.

The following will be displayed:

```
-Wet Density-
Offset
XXXX kg/m3
Want to change?
```

To retain the value, go to 7.2.1.

To change the value, go to 7.2.2.

7.2.1 Retain the Value

- Press [NO/CE / C/CE] to retain the displayed value of Wet Density Offset.

The following will be displayed briefly:

```
Density Offset
ENABLED!
```

The display will return to <**READY**>.

7.2.2 Change the Value

- Press [YES / EXIT] and the following is displayed:

```
- WD Offset -
Select: + or -
1 = +
2 = -
```

- Press [COUNT / 1] OR [DEPTH / 2] and the following is displayed:

```
WD Offset

Press enter when
completed
```

- Use the numbered keys to enter the required value to the nearest 1kg/m^3.

- Press START/ ENTER =

The following will be displayed:

Density Offset ENABLED!

The display will return to **<READY>**.

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OPERATING INSTRUCTION N302

MEASUREMENT (ASPHALT) TROXLER 3440

1 SET UP

- Press [ON] and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When **<READY>** is displayed:

- Press [START/ ENTER =]

The following will be displayed:

Depth: 0 mm MA: XXX kg/m3 Time: XX sec.	**OR**	Depth: 0 mm MA: XXX kg/m3 (WD Offset) Time: XX sec.
(asphalt density bias disabled)		(asphalt density bias enabled)

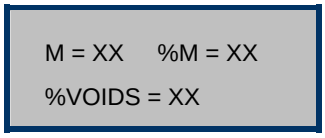
At the end of the counting period, the following will be displayed:

% MA = XX.X % WD = XXXX kg/m3 M = X.X % M = X.X % VOIDS = XXX %	**OR**	% MA = XX.X % WD = XXXX kg/m3 (WD Offset) ENTER – More Info
(asphalt density bias disabled)		(asphalt density bias enabled)

If more information is required:

- Press [START/ ENTER =]

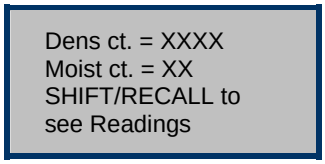
And following will be displayed:



Record WD as the **wet density**.

- Press [SHIFT X] [COUNTS 1]

And following will be displayed:



Record Dens Ct as the **density count**.

- Press [NO/CE C/CE] and the display will return to <**READY**>.
- Press [OFF] if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N303

TEST PARAMETERS (ASPHALT) TROXLER 3430

1 SET UP

- Press [ON / YES] and allow the nuclear gauge to complete the self-test routine.

2 UNITS

When <**READY**> is displayed

- Press [SPECIAL] and the following is displayed:

  - RECALL -
  (↑↓ or ENTER)

- Press [↓] repeatedly until the following is displayed:

  - SET UNITS -
  (↑↓ or ENTER)

- Press [START / ENTER] and the following is displayed:

  - UNITS -
  (↑↓ or ENTER)

- Press [↓] to set the desired unit

- Press [ON / YES] and the display will return to <**READY**>.

3 COUNT TIME

- Press [TIME] and the following is displayed:

  TIME: X min
  (↑↓ or ENTER)

- Press [↓] to set the desired count time

- Press [ON / YES] and the display will return to <**READY**>.

4 DEPTH

- Press [DEPTH] and the following is displayed:

  Depth: XX mm
  (↑↓ or change)

- Press [↓] repeatedly until the required test depth is displayed:

- Press [ON / YES] and the display will return to <**READY**>.

5 ASPHALT MODE AND MAXIMUM DENSITY

- Press [MA / PR] and the following is displayed:

  ZZ: XXXX (↑↓)
  Change ZZ value?

- Press [↓] until **"MA"** is displayed.

  MA: XXXX (↑↓)
  Change MA value?

To retain the displayed value go to 5.1

To change the displayed value go to 5.2.

5.1 Retain the value

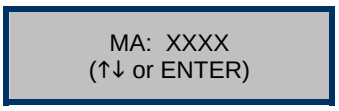
- Press [OFF / NO] to retain the displayed value.

The display will return to <**READY**>. Go to 6.

5.2 Change the value

- Press [ON / YES] to change the display value of MA

The following will be displayed:



For each digit:

- Press [↓] repeatedly until the required number is displayed.
- Press [START ENTER] to confirm each number.

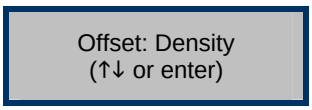
The display will return to <**READY**>.

6 ASPHALT DENSITY BIAS

- Press [SPECIAL] and the following is displayed:

- Press [↓] repeatedly until the following is displayed:

- Press [START ENTER] and the following is displayed:



- Press [START ENTER]

The following will be displayed:

To disable the asphalt density bias, go to 6.1.

To enable the asphalt density bias, go to 6.2.

6.1 Disable Asphalt Density Bias

▶ Press [OFF / NO] to confirm that the density offset is to remain disabled **OR** [ON / YES] to disable the density offset.

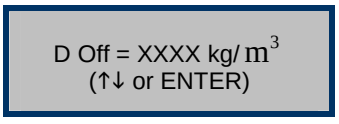
The following will be displayed briefly:

The display will return to <**READY**>. Go to 7.

6.2 Enable Asphalt Density Bias

▶ Press [ON / YES] to disable the density offset. **OR** [OFF / NO] to confirm that the density offset is to remain disabled.

And the following will be displayed:



To retain the display go to 6.2.1.

To change the display go to 6.2.2.

6.2.1 Retain the Value

- Press [START ENTER]

The following will be displayed:

The display will return to <**READY**>. Go to 7.

6.2.2 Change the Value

- Press [↑] to enter a positive asphalt density bias OR [↓] to enter a negative asphalt density bias.

For each digit:

- Press [↓] until the required number is displayed.
- Press [START / ENTER] to confirm each number.

The following will be displayed briefly:

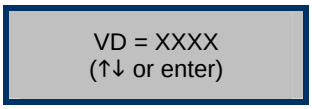
The display will return to <**READY**>.

7 ASPHALT VOIDLESS DENSITY

- Press [SPECIAL] and the following is displayed:

- Press [↓] repeatedly until the following is displayed:

- Press START ENTER and the following is displayed:



For each digit:

- Press ↓ until the required number is displayed.
- Press START/ENTER to confirm each number.

The display will return to <**READY**>.

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OPERATING INSTRUCTION N304

MEASUREMENT (ASPHALT) TROXLER 3430

1 SET UP

- Press [ON / YES] and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When **<READY>** is displayed

- Press [START / ENTER] and the following is displayed:

Depth: XX mm Time: XX sec

At the end of the counting period:

- Press [↓] repeatedly until the required values are displayed.

Record the following values as appropriate:

- WD as the **wet density** to the nearest 0.001 t/m^3.
- D as the **density count**.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

- Press [ON / YES] and the display will return to **<READY>**.
- Press [OFF / NO] if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N305 — TEST PARAMETERS (ASPHALT) TROXLER 3411B

1. Start-up

- Turn the PWR/TIME switch to **"NORM"**.

2. Depth

- Set the DEPTH switch to the **"BS"** position.

3. Maximum Wet Density

- Press SHIFT + SET/M simultaneously.
- Set the +/- switch to **–** (i.e. set to decrease the displayed value).
- Hold or press SET/M repeatedly until the required value is obtained to the nearest 1 kg/m^3.

(To convert from t/m^3 to kg/m^3, multiply the maximum dry density by 1000.)

The display will return to normal mode after a few seconds if no key is pressed.

4. Material Moisture Bias

- Set the MOISTURE CORRECTION switches to **"0"**.
- Turn the PWR/TIME switch to **"OFF"** if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N306 — MEASUREMENT (ASPHALT) TROXLER 3411B

1. Start-up

- Turn the PWR/TIME switch to **"NORM"** and allow the nuclear gauge to stabilise for at least 20 minutes before commencing the test.

2. Measurement

- Press STD / MEA

At the end of the counting period, the following will be displayed: XXXX

Record the displayed value as the **density count**.

- Press %MAR / WD and record the **wet density** to the nearest 0.001 t/m^3.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

- Turn the PWR/TIME switch to **"OFF"** if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N307 — TEST PARAMETERS TROXLER 4640B

1. Start-up

▶ Press [ON] and allow the nuclear gauge to complete the self-test routine.

2. Measurement Units

▶ Press [SHIFT x] [SPECIAL 9] and the following will be displayed:

```
SPECIAL FUNCTION
YES - next menu
1 - Surface Voids
2 - Recover Erase
```

▶ Press [STATUS 7] and the following will be displayed:

```
Units in ZZZ
Press: 1 - US
       2 - METRIC
ENTER - no change
```

▶ Press [OFFSET 2] and the following will be displayed:

```
Density in kg/m3
Select: 1 - kg/m3
        2 - g/cm3
Enter - no change
```

▶ Press [OFFSET 2] and the following will be displayed:

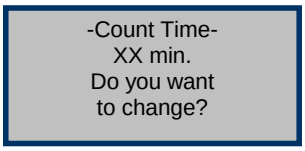
```
UNITS - METRIC
Density in g/cm3
```

(Units of g/cm^3 are equivalent to t/m^3.)

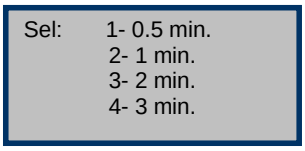
The display will return to **<READY>**.

3. Count Time

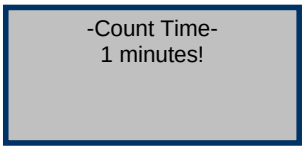
▶ Press TIME – and the following will be displayed:



▶ Press YES EXIT and the following will be displayed:



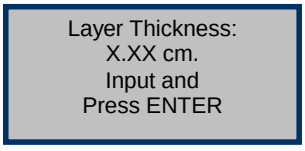
▶ Press OFFSET 2 and the following will be displayed:



The display will return to <**READY**>.

4. Layer Thickness

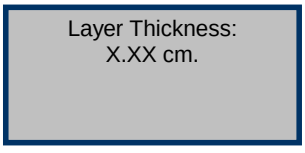
▶ Press THICK MR and the following will be displayed:



▶ Use the numbered keys to enter the layer thickness to the nearest 0.1 cm

(The minimum value that can be set is 2.54 cm).

▶ Press START/ ENTER = and the following will be displayed briefly:



The display will return to <**READY**>.

5. Marshall and Maximum (Voidless) Density

▶ Press [MA/ VOIDLESS] and the following will be displayed:

```
MA:  X.XXX      g/cm3
VD:  X.XXX      g/cm3
     Do you want
      to change?
```

If MA and VD values of **"0.000 g/cm^3"** are displayed:

▶ Press [NO/CE C/CE]

If values other than **"0.000 g/cm^3"** are displayed:

▶ Press [YES EXIT] and the following will be displayed:

```
MARSHALL
X.XXX g/cm3
Input and
Press ENTER
```

▶ Press [RECALL 0]

▶ Press [START/ ENTER =] and the following will be displayed:

```
VOIDLESS DENSITY
X.XXX g/cm3
Input and
Press ENTER
```

▶ Press [RECALL 0]

▶ Press [START/ ENTER =] and the display will return to <**READY**>.

6. Asphalt Density Bias

▶ Press SHIFT x then OFFSET 2

The following will be displayed:

```
Offset:  DISABLED
XX g/cm3
1 - Enable/Change
2 - Disable
```

OR

```
Offset:  ENABLED
XX g/cm3
1 - Enable/Change
2 - Disable
```

To disable the asphalt density bias, go to Step 6.1.

To enable the asphalt density bias, go to Step 6.2.

6.1 Disable Asphalt Density Bias

▶ Press OFFSET 2 and the following will be displayed briefly:

```
Offset  DISABLED!
```

The display will return to **<READY>**.

6.2 Enable Asphalt Density Bias

▶ Press SP. CAL. 1 and the following will be displayed:

```
Offset:  ENABLED
XX g/cm3
Want to change
offset value?
```

To retain the displayed value, go to Step 6.2.1.

To change the displayed value, go to Step 6.2.2.

6.2.1 Retain the Value

▶ Press NO/CE C/CE

The display will return to **<READY>**.

6.2.2 Change the Value

▶ Press YES EXIT and the following will be displayed:

```
Select source
of Offset
1 - keyboard
2 - stored value
```

To enter a new value, go to Step 6.2.2.1.

To select a stored value, go to Step 6.2.2.2.

6.2.2.1 Enter a New Value

▶ Press SP. CAL. 1 and the following will be displayed:

```
Offset value:
---- g/cm3
Select    1 = +
          2 = -
```

▶ Press SP. CAL. 1 to enter a positive bias **OR** OFFSET 2 to enter a negative bias.

The following will be displayed:

```
Offset value:
x ---- g/cm3
Input and
press ENTER
```

▶ Use the numbered keys to enter the asphalt density bias to the nearest 0.001 g/cm^3.

▶ Press START/ ENTER = and the following will be displayed:

Offset: ENABLED
XXXXg/cm3
Do you want to
save this value?

Note: It is not necessary to save the displayed value to enable it.

If the value is not to be saved:

▶ Press NO/CE C/CE and the display will return to <**READY**>.

To save the displayed value:

▶ Press YES EXIT and the following will be displayed:

Enter permanent
Memory location
to save Offset:
(1 – 12)? - -

▶ Use the numbered keys to enter the memory location.

Note: Record the memory location and bias to facilitate subsequent retrieval of saved values.

▶ Press START/ ENTER = and the following will be displayed briefly:

Offset: ENABLED
x XX g/cm3
Saved in memory
location X

The display will return to **<READY>.**

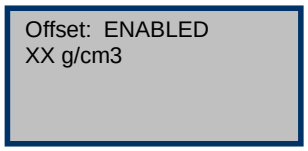
6.2.2.2 Select a Stored Value

▶ Press OFFSET 2 and the following will be displayed:

Offset: # X -
XX g/cm3
1 – to select
2 – for next

- Press OFFSET / 2 repeatedly until the required memory location and value is displayed.

- Press SP. CAL. / 1 and the following will be displayed briefly:



The display will return to **<READY>.**

- Press OFF if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N308 — MEASUREMENT (ASPHALT) TROXLER 4640B

1. Start-up

▶ Press [ON] and allow the nuclear gauge to complete the self-test routine.

2. Measurement

When **<READY>** is displayed:

▶ Press [START/ ENTER =]

The following will be displayed:

```
MA:     XXXX g/cm3
Thick:  XX.XX cm
Avg:    XX
Time:   XX secs
```

(asphalt density bias disabled)

OR

```
MA:     XXXX g/cm3
Thick:  XX.XX cm
Avg:    XX, Offset
Time:   XX secs.
```

(asphalt density bias enabled)

At the end of the counting period, the following will be displayed:

```
Dens:      XXXX kg/m3
%MA:       XX.XX%
100-%MA: XXX.XX%
%VOID:     X.XX%
```

Record Dens as the **wet density** to the nearest 0.001 t/m^3.

▶ Press [SHIFT x] [RECALL 0] and the following will be displayed:

```
Dens:    XXX.X kg/m3
%MA:     XX.XX%
%VOID:   X.XX%
Cnts     XXXX  XXXX
```

Record Cnts as the **density count** values for System 1 and System 2.

- Press NO/CE C/CE and the display will return to **<READY>**.
- Press OFF if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N309 — TEST PARAMETERS (ASPHALT) CPN MC3

1. Measurement Units

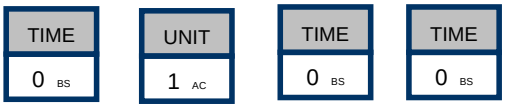
Pre- March 1998 Nuclear Gauge:

- Press [STEP] [UNIT / 1 AC] simultaneously until the density and moisture display is obtained.
- Press [UNIT / 1 AC] until **"gcc"** is displayed.

Post-March 1998 Nuclear Gauge:

- Press [STEP] [UNIT / 1 AC] simultaneously.
- Press [ENTER] until **"gcc"** is displayed.
- Press [STEP]
- Press [ENTER] until **"Density"** is displayed.
- Press [CLEAR]

2. Count Time

▶ Press 

▶ Press 

3. Maximum Density

▶ Press 

until **"Md"** is displayed.

▶ Press 

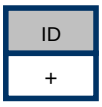
and use the numbered keys to enter **"0.0"**

▶ Press 

4. Asphalt Density Bias

▶ Press 

To enter a positive bias:

▶ Press 

and use the numbered keys to enter the asphalt density bias to the nearest 0.001 t/m^3.

- Press ENTER

To enter a negative bias:

- Press ID / - and use the numbered keys to enter the asphalt density bias to the nearest 0.001 t/m^3.

- Press ENTER

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OPERATING INSTRUCTION N310 — MEASUREMENT (ASPHALT) CPN MC3

1. Measurement

▶ Press [START]

At the end of the counting period, the following will be displayed:

RXXX	XXX	XXX	XXXX
DaXX		ETOX:XX	T0X:XX
gcc	wet	h2o	dry
Dn	XXXX	XXXX	XXXX
Pr	XXXX	XXXX	XXXX
%		XXXX	XXXX
Md			XXXX
Bi	XXX	XXX	

Record Dn wet as the **wet density** to the nearest 0.001 t/m^3.

Pre-March 1988 Nuclear Gauge:

▶ Press [STEP] [UNIT / 1 AC] simultaneously.

Record Ct wet as the **density count**.

▶ Press [STEP] [UNIT / 1 AC] simultaneously to return to the density display.

Post-March 1988 Nuclear Gauge:

- Press STEP + UNIT / 1 AC simultaneously.
- Press STEP
- Press ENTER repeatedly until **"Counts"** is displayed.
- Press CLEAR

Record Ct wet as the **density count**.

- Press STEP + UNIT / 1 AC simultaneously to return to the density display.
- Press STEP
- Press ENTER repeatedly until **"Density"** is displayed.
- Press CLEAR

OPERATING INSTRUCTION N311 — TEST PARAMETERS (ASPHALT) CPN MC1DR; MC1DR-P

* ***The MC1DR has no keypad facility to set parameters***

1. Asphalt Mode

- Press [MAX / ENTER]
- Press [STEP ▼] repeatedly until the following is displayed:

  Marshall Test?
- Press [MAX / ENTER]
- Press [STEP ▼] repeatedly until a value less than **"1.000 g/cm^3"** is displayed (a value of **"0.0 g/cm^3"** is preferred).
- Press [START / EXIT]

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OPERATING INSTRUCTION N312 — MEASUREMENT (ASPHALT) CPN MC1DR; MC1DR-P

1. Measurement

▶ Press [START]

At the end of the counting period, the following will be displayed:

MC-1DR

Wet Den	X.XX
Moi Den	X.XX

MC-1DR-P

TotDen	X.XX
TotWater	X.XX

Record Wet Den or TotDen as the **wet density** to the nearest 0.001 t/m³.

▶ Press [STEP] repeatedly until the following is displayed:

Dcount	XXXXX
Mcount	XXXX

Record Dcount as the **density count**.

After 30 seconds, the display will turn off.

▶ Press [STEP] to restore the display.

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OPERATING INSTRUCTION N313 — TEST PARAMETERS (ASPHALT) HUMBOLDT 5001EZ

1. Start-up

▶ Press [PWR] and allow the nuclear gauge to complete the initialising routine.

The following will be displayed:

```
*DATA      XX/XX/XX
*SETUP     XX:XX:XX
*ENGINEERING
                    DEPTH=SAF
```

▶ Press [F2] and the following will be displayed:

```
*SET UP 2
*SET MEASUREMENT MODES
*SET TRNCH COR.
*SET TARGETS
```

2. Measurement Units

▶ Press [F1] and the following will be displayed:

```
*SET DATE
*SET TIME
*UNITS = PCF/SI
```

▶ Press [F3] repeatedly until **"SI"** flashes.

▶ Press [MAIN MENU] and the display will return to the main menu.

3. Count Time

▶ Press F2 F2

The following will be displayed:

```
MEAS    =FAST/NORM/SLOW
STD     =4MIN/16MIN
TYPE    =ASPH/SOIL/THIN
DEPTH   =AUTO/MANUAL
```

▶ Press F1 repeatedly until **"NORM"** flashes.

4. Asphalt Mode

▶ Press F3 repeatedly until **"ASPH"** flashes.

5. Depth

▶ Press F4 repeatedly until **"AUTO"** flashes.

▶ Press MAIN MENU and the display will return to the main menu.

6. Maximum Density

▶ Press MAX "D" and the following will be displayed:

```
MAXD =                XXXX

*INCREASE
*DECREASE
```

- Press F4 to decrease the displayed value until a value of 900 kg/m^3 is obtained.
- Press MAIN MENU and the display will return to the main menu.

7. Asphalt Density Bias

There is no facility to set an asphalt density bias using the keypad.

8. Material Moisture Bias

- Press F2 and the following will be displayed:

```
*SET UP 2
*SET MEASURE MODES
*SET TRENCH COR.
*SET TARGETS
```

- Press F4 and the following will be displayed:

```
MAXD   = XXXX      LWD= XXXX
KVAL   = X.XXX     SPG=X.XXX
*INCREASE
*DECREASE
```

- Press F2 repeatedly until the **KVAL** value flashes.
- Press F4 repeatedly until a displayed value of **"0.0"** is obtained.
- Press MAIN MENU and the display will return to the main menu.
- Press PWR if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N314 — MEASUREMENT (ASPHALT) HUMBOLDT 5001EZ

1. Start-up

▶ Press [PWR] and allow the nuclear gauge to complete the initialising routine.

2. Measurement

▶ Press [MEAS] and the following will be displayed:

```
TAKING MEASUREMENT
TIME REMAINING      X:XX
DC = X
MC = X              DEPTH=BAC
```

At the end of the counting period, the following will be displayed:

```
MEASURE ASPH RESULTS
WD = XXXX.X%      %MA  = XXX.X
AC  = X.X          MAXD = XXXX
*NEXTM            DEPTH=BAC
```

Record WD as the **wet density** to the nearest 0.001 t/m^3.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

▶ Press [F4] and the following will be displayed:

```
DC  = XXXX.X      DS  = XXXX.X
MC  = XX.X        MS  = XXX.X
VR  = XX.XX       %AV = X.XX
*LAST             MDEPTH=BAC
```

Record DC as the **density count**.

▶ Press [MAIN MENU] and the display will return to the main menu.

▶ Press [PWR] if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N315 — TEST PARAMETERS (ASPHALT) HUMBOLDT 5001C

1. Start-up

▶ Press [ON] and allow the nuclear gauge to complete the initialising routine.

▶ Press [CLEAR / ENTER] [SHIFT] simultaneously until the following is displayed:

SAF
0:0

2. Asphalt Mode

▶ Press [1 / S/A] repeatedly until **"ASPH"** is displayed.

▶ Press [CLEAR / ENTER]

3. Maximum Density

▶ Press [LWR D / MAX D] and the following will be displayed:

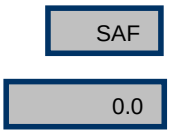
dE
XXXX.X

If a value of **"0.0"** is displayed:

▶ Press [CLEAR / ENTER] to retain the displayed value.

If a value other than **"0.0"** is displayed:

- Press and hold SHIFT and use the numbered keys to enter a value of **"0.0"**.
- Press CLEAR / ENTER repeatedly until the following is displayed:



4. Asphalt Density Bias

There is no facility to enter an asphalt density bias using the keypad.

- Press OFF if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N316 — MEASUREMENT (ASPHALT) HUMBOLDT 5001C

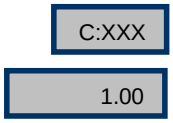
1. Start-up

▶ Press [ON] and allow the nuclear gauge to complete the initialising routine.

2. Measurement

▶ Press [CLEAR / ENTER] [SHIFT] simultaneously until the following is displayed:

▶ Press [TRENCH / NORM] and the following will be displayed:



At the end of the counting period, the following will be displayed:

Record the displayed value as the **wet density** to the nearest 0.001 t/m^3.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

▶ Press [7 / DC] and record the displayed value as the **density count**.

▶ Press [SHIFT] [CLEAR / ENTER] simultaneously until the following is displayed:

▶ Press [OFF] if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N317 — TEST PARAMETERS (ASPHALT) HUMBOLDT 5001P

1. Start-up

▶ Press [ON] and allow the nuclear gauge to complete the initialising routine.

2. Depth

▶ Press [UP] **OR** [DOWN] repeatedly until the required measurement depth is displayed.

3. Maximum Density

▶ Press [SET / RD D]

If a value of **“0.0”** is displayed:

▶ Press [SHIFT] [SET / RD D] to retain the displayed value.

If a value other than **"0.0"** is displayed:

▶ Press and hold [SHIFT] and use the numbered keys to enter a value of **"0.0"**.

▶ Press [SHIFT] [SET / RD D] to retain the displayed value.

4. Asphalt Density Bias

There is no facility to enter the asphalt density bias using the keypad.

5. Material Moisture Bias

- Press 

If a value of **"0.0"** is displayed:

- Press 

to retain the displayed value.

If a value other than **"0.0"** is displayed:

- Press and hold 

and use the numbered keys to enter a value of **"0.0"**.

- Press 

to store the value.

- Press 

if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N318 — MEASUREMENT (ASPHALT) HUMBOLDT 5001P

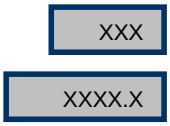
1. Start-up

▶ Press [ON] and allow the nuclear gauge to stabilise for at least ten minutes before commencing the test.

2. Measurement

▶ Press [NORM] and the following will be displayed:

At the end of the counting period, the following will be displayed:



Record the displayed value as the **density count**.

▶ Press [0 / WD] and record the displayed value as the **wet density** to the nearest 0.01 t/m^3.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

▶ Press [OFF] if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N319

TEST PARAMETERS (ASPHALT) INSTROTEK XPLORER 3500

1 START UP

- Press [ON / YES] and allow the nuclear gauge to complete the self-test routine.

2 UNITS

When <**READY**> is displayed

- Press [MENU] and the following is displayed:

  - RECALL -
    UP/DOWN or ENTER

- Press [DOWN] repeatedly until the following is displayed:

  - SET UNITS -
    UP/DOWN or ENTER

- Press [START / ENTER] and the following is displayed:

  Units: kg/m3
  UP/DOWN or ENTER

- Press [DOWN] to set the desired unit.

- Press [ON / YES] and the display will return to <**READY**>.

3 COUNT TIME

- Press [TIME] and the following is displayed:

  Cnt Time: X min
  UP/DOWN or ENTER

- Press [DOWN] to set the desired count time.

  Cnt Time: 1 min
  UP/DOWN or ENTER

- Press [ON / YES] and the display will return to <**READY**>.

4 DEPTH

- Press [DEPTH] the following is displayed:

  DEPTH: XX mm
  UP/DOWN or ENTER

- Press [DOWN] repeatedly until the required test depth is displayed.
- Press [ON / YES] and the display will return to <**READY**>.

5 ASPHALT MODE AND MAXIMUM DENSITY

- Press [MA / PR] and the following is displayed:

  ENTER selects PR
  DOWN selects MA

- Press [DOWN] and the following is displayed:

  MA: XXXXX
  Change value?

To retain the displayed value, go to 5.1.
To change the displayed value, go to 5.2.

5.1 Retain Value

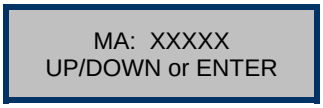
- Press [OFF / NO] to retain the displayed value.

The display will return to <**READY**>. Go to 6.

5.2 Change the Value

- Press [ON / YES] to change the displayed value of MA.

The following is displayed:



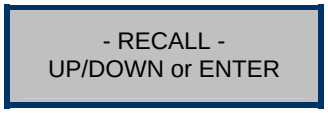
For each digit:

- Press [DOWN] repeatedly until the required number is displayed.
- Press [START / ENTER] to confirm each number.

The display will return to <**READY**>.

6 MATERIAL WET DENSITY BIAS

- Press [MENU] and the following is displayed:



- Press [DOWN] and the following is displayed:

- Press [START / ENTER] and the following is displayed:

- Press [START / ENTER] and the following is displayed:

OR

To disable the material wet density bias, go to 6.1.

To enable the material wet density bias, got to 6.2.

6.1 Disable Material Wet Density Bias

- Press [ON / YES] to disable the density offset.

OR

- Press [OFF / NO] to confirm that the density offset is to remain disabled.

The following will be displayed:

Density Offset Disabled

The display will return to <**READY**>.

6.2 Enable Material Wet Density Bias

- Press [ON / YES] to enable the density offset.

OR

- Press [OFF / NO] to confirm that the density offset is to remain enabled.

The following will be displayed:

D Off = XXXX kg/m^3 UP/DOWN or ENTER

To retain the displayed value, go to 6.2.1.

To change the displayed value, go to 6.2.2.

6.2.1 Retain the Value

- Press [ON / YES] and the following will be displayed:

Density Offset Enabled

The display will return to <**READY**>.

6.2.2 Change the Value

- Press [UP] for a positive value.

OR

- Press DOWN for a negative value.

For each digit:

- Press DOWN until the required number is displayed.

- Press START / ENTER to confirm each number.

The following will be displayed briefly:

Density Offset
Enabled

The display will return to <**READY**>.

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OPERATING INSTRUCTION N320

MEASUREMENT (ASPHALT) INSTROTEK XPLORER 3500

1 START UP

▶ Press [ON / YES] and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When <**READY**> is displayed

▶ Press [START / ENTER] and the following is displayed:

Time = XX sec Depth: XX mm

At the end of the counting period:

▶ Press [DOWN] repeatedly until the required values are displayed.

Record the following values as appropriate:

- WD as the **wet density** to the nearest 0.001 t/m^3.
- D Count as the **density count**.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

▶ Press [ON / YES] and the display will return to <**READY**>.

▶ Press [OFF / NO] if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N321

TEST PARAMATERS (ASPHALT) TROXLER 3440P

1 START UP

- Turn the power switch on and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT UNITS

When **<READY>** is displayed

- Press [SETUP]

- Press [2]

The following will be displayed:

```
- Units -
1. pcf
2. kg/m3
3. g/cm3
```

- Press [2]

The following will be briefly displayed:

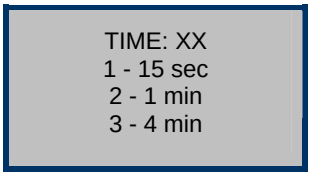
```
Metric Units
Kg/m3
ENABLED
```

The display will return to **<SETUP>.**

3 COUNT TIME

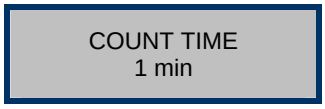
- Press [SETUP]

- Press [1] and the following is displayed:



- Press [2]

The following will be briefly displayed:

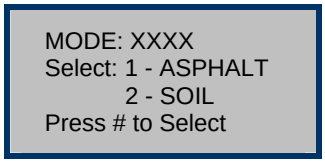


The display will return to <**READY**>.

4 ASPHALT MODE

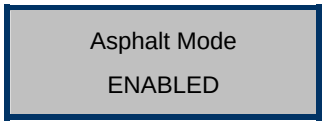
- Press [MODE]

The following will be displayed:



- Press [1]

The following will be displayed briefly:



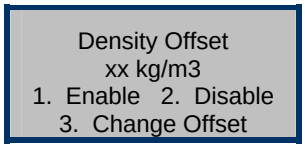
The display will return to <**READY**>.

5 MATERIAL WET DENSITY BIAS

- Press [OFFSET] the following is displayed:

- Press [1]

The following will be displayed:



To disable the material wet density bias, go to Step 6.1.

To enable the material wet density bias, go to Step 6.2.

To change the material wet density bias, go to Step 6.3.

5.1 Disable Material Wet Density Bias

- Press [2]

The following will be displayed briefly:

The display will return to <**READY**>. Go to 7.

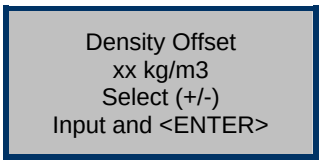
5.2 Enable Material Wet Density Bias

- Press [1]

The following will be displayed:

5.3 Change Material Wet Density Bias

- Press [3] the following is displayed:



- Use the numbered keys to enter the required value to the nearest 1 kg/m^3.

  (To convert from t/m^3 to kg/m^3, multiply the material wet density bias by 1000.)

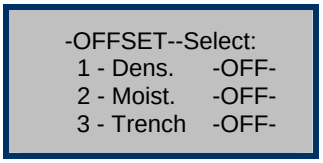
- Press [ENTER START]

The following will be displayed briefly:

The display will return to **<READY>**.

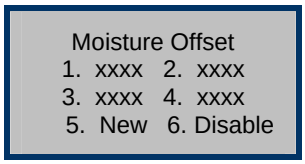
6 MATERIAL MOISTURE BIAS

- Press [OFFSET] the following is displayed:



- Press [2]

The following will be displayed:



6.1 Disable Material Moisture Bias

- Press [6]

The following will be displayed:

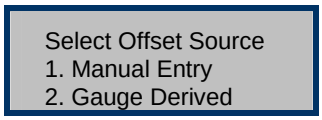
The display will return to <**READY**>. Go to Step 8.

6.2 Enable the Material Moisture Bias

- Press the number corresponding to any of the stored values.

6.3 Change a Material Moisture Bias Value

- Press [5] the following is displayed:

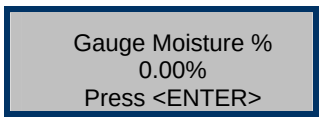


For manual entry:

- Press [1] the following is displayed:

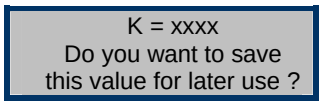
Use the numbered keys to enter the average oven dry moisture content to the nearest 0.01%.

- Press [ENTER / START] the following is displayed:



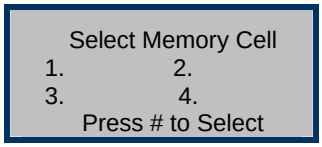
Use the numbered keys to enter the average standard blocks moisture content to the nearest 0.01%.

- Press [ENTER START] the following is displayed:



To save the displayed value:

- Press [YES] the following is displayed:



- Press a numbered key (1, 2, 3 or 4) to select a memory location in which to save the value.

The following will be displayed briefly:

If the value is not to be displayed:

- Press [NO]

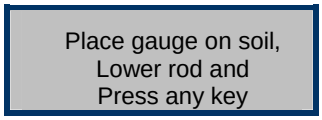
The display will return to **<READY>**.

For gauge derived:

- Press [2] the following is displayed:

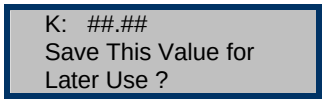
Use the numbered keys to enter the true moisture content to the nearest 0.01%.

- Press [ENTER START] the following is displayed:



Place the gauge on the measurement site and press any key.

At the completion of the counting period the following will be displayed:



To save the value:

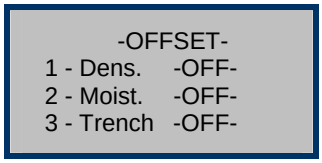
- Press YES

To enable the value without storing:

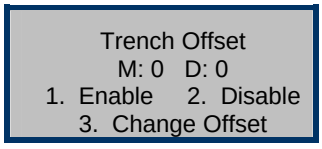
- Press NO

7 TRENCH OFFSET

- Press OFFSET the following is displayed:



- Press 3 the following is displayed:



To enable the trench offset:

- Press 1

The following is displayed:

To disable the trench offset:

- Press [2]

The following is displayed:

Trench Offset DISABLED

To change the trench offset:

- Press [3]

The following is displayed:

Place Gauge in trench on Std. Block in SAFE Pos. Press <START>

- Press [ENTER / START]

At the end of the counting period the display will return to <READY>.

- Turn the power switch off if the nuclear gauge is not required for further use.

Queensland Government

OPERATING INSTRUCTION N322

MEASUREMENT (ASPHALT) TROXLER 3440P

1 START UP

- Turn the power switch on and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When **<READY>** is displayed

- Press ENTER START the following is displayed:

Depth: XX mm PR: XXXX kg/m3 Time: XX sec.

In the manual depth mode the gauge will prompt for the source rod depth. In automatic mode the gauge software reads the depth strip on the source rod to determine the depth.

At the end of the counting period, the following will be displayed:

WD = xxxx M = x %M = X.X

Record WD as the **wet density**:

- Press ESC
- Press RECALL
- Press ↓

The following will be displayed:

DC = xxxx MC = xx

Record the following values as appropriate:

- DC as the **density count**.
- MC as the **moisture count**.

▶ Press ESC and the display will return to <**READY**>.

▶ Turn the power switch off if the nuclear gauge is not required for further use.

Queensland Government

OPERATING INSTRUCTION N323

TEST PARAMATERS (ASPHALT) TROXLER 3430P

1 START UP

- Turn the power switch on and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT UNITS

When **<READY>** is displayed

- Press [SETUP]

- Press [2]

The following will be displayed:

```
- Units -
1. pcf
2. kg/m3
3. g/cm3
```

- Press [2]

The following will be briefly displayed:

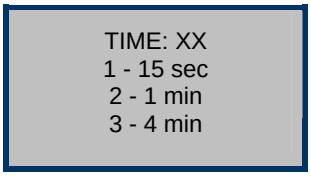
```
Metric Units
Kg/m3
ENABLED
```

The display will return to **<SETUP>.**

3 COUNT TIME

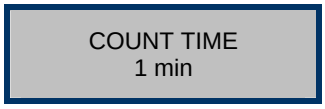
- Press [SETUP]

- Press [1] and the following is displayed:



- Press [2]

The following will be briefly displayed:

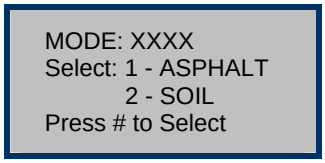


The display will return to <**READY**>.

4 ASPHALT MODE

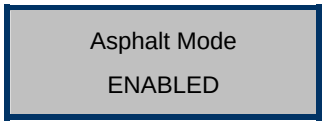
- Press [MODE]

The following will be displayed:



- Press [1]

The following will be displayed briefly:



The display will return to <**READY**>.

5 MATERIAL WET DENSITY BIAS

- Press [OFFSET] the following is displayed:

```
-OFFSET-
1 - Dens. -OFF-
2 - Moist -OFF-
3 - Trench -OFF-
```

- Press [1]

The following will be displayed:

```
Density Offset
xx kg/m3
1. Enable  2. Disable
3. Change Offset
```

To disable the material wet density bias, go to Step 6.1.

To enable the material wet density bias, go to Step 6.2.

To change the material wet density bias, go to Step 6.3.

5.1 Disable Material Wet Density Bias

- Press [2]

The following will be displayed briefly:

```
Density Offset
DISABLED
```

The display will return to <**READY**>. Go to 7.

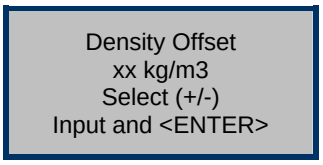
5.2 Enable Material Wet Density Bias

- Press [1]

The following will be displayed:

5.3 Change Material Wet Density Bias

- Press [3] the following is displayed:



- Use the numbered keys to enter the required value to the nearest 1 kg/m^3.

  (To convert from t/m^3 to kg/m^3, multiply the material wet density bias by 1000.)

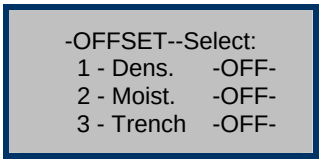
- Press [ENTER START]

The following will be displayed briefly:

The display will return to **<READY>**.

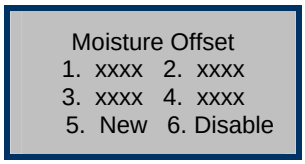
6 MATERIAL MOISTURE BIAS

- Press [OFFSET] the following is displayed:



- Press [2]

The following will be displayed:



6.1 Disable Material Moisture Bias

- Press [6]

The following will be displayed:

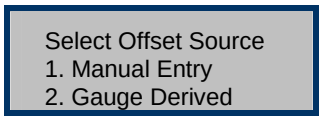
The display will return to <**READY**>. Go to Step 8.

6.2 Enable the Material Moisture Bias

- Press the number corresponding to any of the stored values.

6.3 Change a Material Moisture Bias Value

- Press [5] the following is displayed:

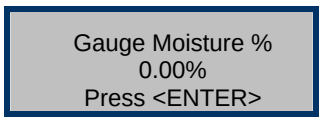


For manual entry:

- Press [1] the following is displayed:

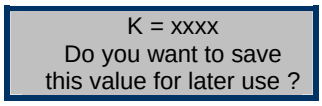
Use the numbered keys to enter the average oven dry moisture content to the nearest 0.01%.

- Press [ENTER / START] the following is displayed:



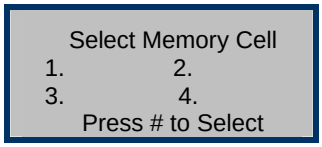
Use the numbered keys to enter the average standard blocks moisture content to the nearest 0.01%.

- Press [ENTER START] the following is displayed:



To save the displayed value:

- Press [YES] the following is displayed:



- Press a numbered key (1, 2, 3 or 4) to select a memory location in which to save the value.

The following will be displayed briefly:

If the value is not to be displayed:

- Press [NO]

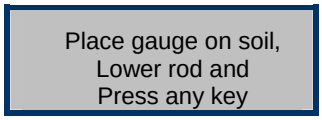
The display will return to **<READY>**.

For gauge derived:

- Press [2] the following is displayed:

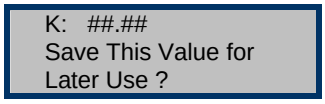
Use the numbered keys to enter the true moisture content to the nearest 0.01%.

- Press [ENTER START] the following is displayed:



Place the gauge on the measurement site and press any key.

At the completion of the counting period the following will be displayed:



To save the value:

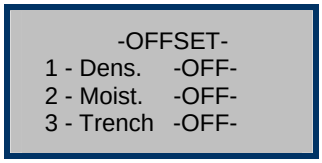
- Press YES

To enable the value without storing:

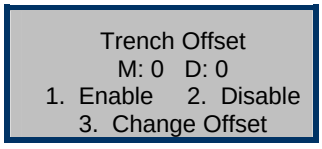
- Press NO

7 TRENCH OFFSET

- Press OFFSET the following is displayed:



- Press 3 the following is displayed:



To enable the trench offset:

- Press 1

The following is displayed:

To disable the trench offset:

- Press [2]

The following is displayed:

Trench Offset DISABLED

To change the trench offset:

- Press [3]

The following is displayed:

Place Gauge in trench on Std. Block in SAFE Pos. Press <START>

- Press [ENTER / START]

At the end of the counting period the display will return to <READY>.

- Turn the power switch off if the nuclear gauge is not required for further use.

Queensland Government

OPERATING INSTRUCTION N324 — MEASUREMENT (ASPHALT) TROXLER 3430P

1 START UP

- Turn the power switch on and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When **<READY>** is displayed

- Press [ENTER START] the following is displayed:

```
Depth:  XX mm
PR:  XXXX kg/m3
Time:  XX sec.
```

In the manual depth mode the gauge will prompt for the source rod depth. In automatic mode the gauge software reads the depth strip on the source rod to determine the depth.

At the end of the counting period, the following will be displayed:

```
WD = xxxx
M =     x       %M = X.X
```

Record WD as the **wet density**:

- Press [ESC]
- Press [RECALL]
- Press [↓]

The following will be displayed:

```
DC = xxxx
MC = xx
```

Record the following values as appropriate:

- DC as the **density count**.
- MC as the **moisture count**.

▶ Press ESC and the display will return to <**READY**>.

▶ Turn the power switch off if the nuclear gauge is not required for further use.

Queensland Government

OPERATING INSTRUCTION N325

TEST PARAMETERS (ASPHALT) TROXLER 3450

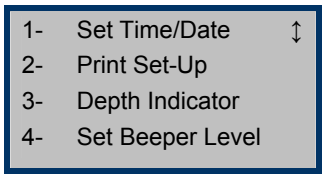
1 SET UP

- Press [ON] and allow the nuclear gauge to complete the self-test routine.

2 UNITS

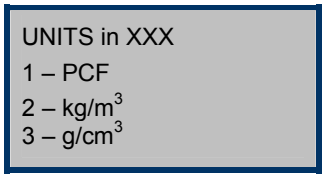
When **<READY>** is displayed:

- Press [SPECIAL]
- Press [4] To access the Gauge Setup menu.



Scroll through the menu using the arrow keys.

- Press [8] and the following is displayed:

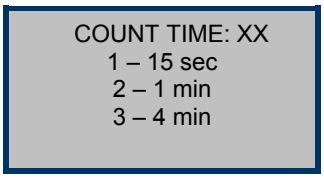


- Press [2] and the following is displayed:

The display will return to the Gauge Setup menu.

3 COUNT TIME

- Press [TIME] and the following is displayed:

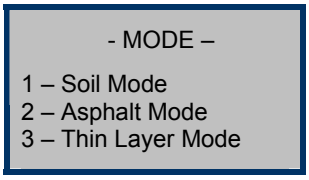


- Press [2] and the following is displayed:

The display will return to <**READY**>.

4 ASPHALT MODE

- Press [MODE] and the following is displayed:



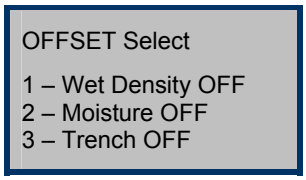
- Press [2]

And the following will be displayed briefly:

The display will return to <**READY**>.

5 MATERIAL WET DENSITY BIAS

- Press [OFFSET] and the following is displayed:



- Press [1]

The following will be displayed:

Wet Density Offset:
xxxx kg/m^3
1 – Enable 2 – Disable
3 – Change Offset

To disable the material wet density bias:

- Press [2] and following is displayed:

Wet Density Offset
DISABLED

To enable the material wet density bias:

- Press [1] and following is displayed:

Wet Density Offset
ENABLED

5.1.1 Change the Value

- Press [3] and the following is displayed:

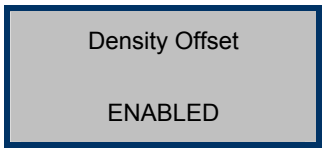
Wet Density Offset
xxxx kg/m^3
Select (+/-)

- Press [+ ↑] OR [- ↓]

- Use the numbered keys to enter the required value to the nearest 1kg/m^3.

- Press [ENTER]

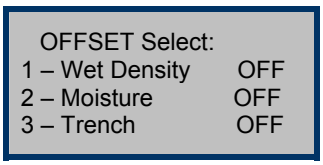
The following will be displayed:



The display will return to <**READY**>.

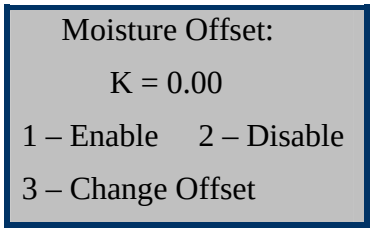
6 MATERIAL MOISTURE BIAS

- Press [OFFSET] and following is displayed:



- Press [2]

The following will be displayed:



To disable the moisture offset:

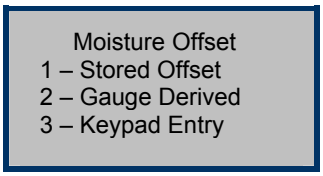
- Press [2] and following is displayed:

To enable the moisture offset:

- Press [1] and following is displayed:

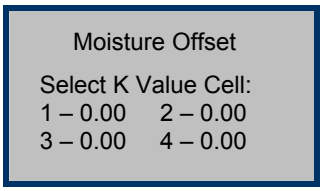
6.1.1 Change the Value

- Press [3] and the following is displayed:



To select a stored offset:

- Press [1] and the following is displayed:



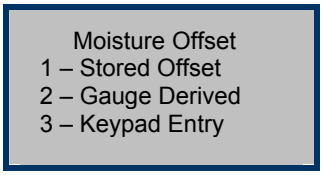
- Use the numbered keys to enter the required value to the nearest 0.01%.

The display will return to **<READY>**.

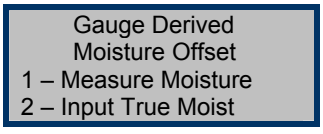
6.1.2 Change to a Gauge-Derived Value

To change the moisture bias to a gauge-derived value:

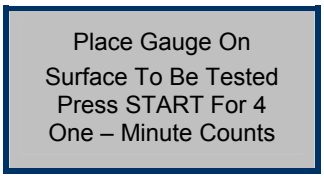
- Press [3] and the following is displayed:



- Press [2] and the following is displayed:



- Press [1] and the following is displayed:



- Press START

The gauge displays the progress of the measurements. After each reading the gauge displays the results. To continue to the next measurement:

- Press START

After the last measurement:

- Press ENTER and the following is displayed:

Moisture Offset
1 – Stored Partial Moisture Offset
2 – Input True Moist

To enter the true moisture later:

- Press 1

To overwrite the partial offset:

- Press YES

To use the stored partial offset:

- Press NO

To enter the true moisture now:

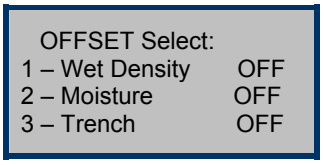
- Press 2 and the following is displayed:

Input True Moisture
xxxxx %

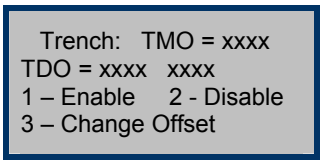
ENTER When Done

7 TRENCH OFFSET

▶ Press [OFFSET] and following is displayed:



▶ Press [3] and following is displayed:



To disable the trench offset:

▶ Press [2] and following is displayed:

To enable the trench offset:

▶ Press [1] and following is displayed:

To create a new trench offset:

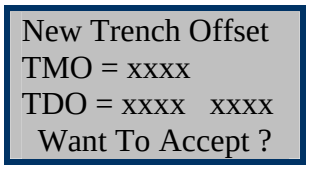
▶ Press [3] and following is displayed:

Position the gauge inside the trench and:

▶ Press [START]

The gauge will display the progress of the standard count operation.

After the standard count the gauge displays:



To enable the new trench offset:

- Press YES

To create another trench offset:

- Press NO

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OPERATING INSTRUCTION N326

MEASUREMENT (ASPHALT) TROXLER 3450

1 SET UP

- Press [ON] and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When **<READY>** is displayed:

- Press [START]

In the manual depth mode the gauge will prompt for the source rod depth.

In the automatic depth mode the gauge software reads the depth strip on the source rod to determine the source rod depth.

At the end of the counting period, the following will be displayed:

```
%MA = xxxx  %
 WD = xxxx kg/m3
 %VOIDS = xxxx
```

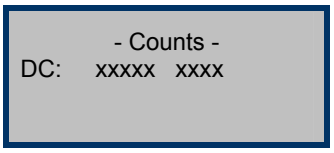
Record the following values:

- % MA as the **percent Marshall** to the nearest 0.1%.
- WD as the **wet density** to the nearest 0.001 t/m^3.
- %VOIDS = 100 x 1-WD/VOIDLESS (when enabled).

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

- Press [↓]

And the following will be displayed:



Record the following values as appropriate:

- DC for system 2 (upper right reading) as the **density count**.

▶ Press ESC and the display will return to <**READY**>.

▶ Press OFF if the nuclear gauge is not required for further use.

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OPERATING INSTRUCTION N327

TEST PARAMETERS (ASPHALT) CPN MC1 AND MC3 ELITE

1 SET UP

- Press [ON / YES] and allow the nuclear gauge to complete the self-test routine.

2 UNITS

- Press [MENU] the first screen will be:

```
1. Recall
2. Set depth
UP/DOWN for next
Select #, ESC exit
```

- Press [DOWN] the following is displayed:

```
11. Auto scroll
12. Set units
UP/DOWN for next
Select #, ESC exit
```

- Press [12] (button **1** then **2**)

```
1. PCF
2. kg/m3
3. GCC
Select #, ESC exit
```

- After selecting the unit of measurement the gauge returns to the menu screen

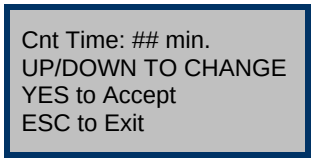
```
11. Auto scroll
12. Set units
UP/DOWN for next
Select #, ESC exit
```

- Press [ESC] returns to ready screen

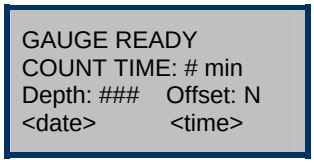
```
GAUGE READY
COUNT TIME: # min
Depth: ###    Offset: N
<date>          <time>
```

3 COUNT TIME

- Press [TIME] and the following is displayed:



- Press UP and DOWN to set the desired count time.
- Press [YES] returns to ready screen



4 DEPTH

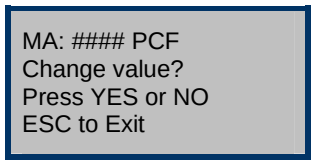
The Elite gauge is equipped with an automatic non-magnetic depth indicator. The depth is automatically read as you lower the source into the measure position and the appropriate constants are selected to calculate the density.

The gauge can be placed into manual depth mode by disabling the Automatic depth mode from the MENU functions.

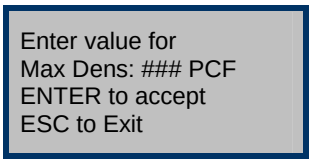
5 ASPHALT MODE AND MAXIMUM DENSITY

- Press [MA/PR] and the following is displayed:

- Press [2] For Max Dens.



- Press YES



Use the number buttons to change the value. Once you have entered the PR value the gauge will return to ready screen.

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OPERATING INSTRUCTION N328

MEASUREMENT (ASPHALT) CPN MC1 AND MC3 ELITE

1 SET UP

- Press [ON / YES] and allow the nuclear gauge to complete the self-test routine.

2 MEASUREMENT

When the ready screen is displayed:

- Press [START / ENTER] and the following is displayed:

```
Depth:  XX  mm

Time:  XX  sec
```

At the end of the counting period the gauge will display:

-
```
M Count: ###
D Count: ###
MCR: ###    DCR: ###
Press UP/DOWN
```

-
```
WD: #### kg/m3
%MA: ####
%VOIDS: ####
Press UP/DOWN
```

-
```
Moist: #### kg/m3
DD: #### kg/m3
% Mois: #.#   %PR: #.#
Press UP/DOWN
```

Record the following values:

- WD as the **wet density** to the nearest 0.001 t/m^3.
- D Count as the **density count**.

(To convert from kg/m^3 to t/m^3, divide the displayed value by 1000.)

▶ Press [ON / YES] and the display will return to the ready screen

▶ Press [OFF / NO] if the nuclear gauge is not required for further use.

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