SC

Counting Scale
User's Guide

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Mettler Toledo is recognized around the world for manufacturing and marketing high quality scales and weighing systems. With roots tracing back to 1901, the company takes pride in its long established record of employing innovation, technology, and a close working relationship with its customers to meet the diverse needs of the global marketplace. Mettler Toledo's worldwide headquarters are in Greifensee, Switzerland. Corporate offices for the North American Marketing Organization are in Worthington, Ohio.

Declaration of conformity
Konformitätserklärung
Déclaration de conformité
Declaración de Conformidad
Verklaring de overeenstemming
Dichiarazione di conformitá

We/Wir/Nous/WIJ/Noi: **Mettler-Toledo, Inc.**
1150 Dearborn Drive
Worthington, Ohio 43085
USA

declare under our sole responsibility that the product,
erklären, in alleiniger Verantwortung, daß dieses Produkt,
déclarons sous notre seule responsabilité que le produit,
declaramos, bajo nuestra sola responsabilidad, que el producto,
verklaren onder onze verantwoordelijkheid, dat het product,
dichiariamo sotto nostra unica responsabilitá, che il prodotto,

Type: Mentor (Parts Counting Scale)

Models: SCxx and BCxx **(where xx defines the capacity of the scale from 5 to 60 kg)**

to which this declaration relates is in conformity with the following standard(s) or other normative document(s).
auf das sich diese Erklärung bezieht, mitder/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.
Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).
Al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).
Waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
A cui si riferisce questa dichiarazione è conforme alla/e sequente/i norma/e o documento/i normativo/i.

CE Conformity / CE-Konformität / Conformité CE
90/384/EU Nonautomatic Balances and Scales / Nichteselbsttätige Waagen / Balances à Functionnement non automatique
EN45501:1992 Adopted European Standard / Norme Européenne Adoptée / Angenommene Europäische Norm
89/336/EU EMC Directive / EMU-Richtlinie / Directive concernant la CEM
EN55022, A 01.04.87 Emissions / Funkstörungen
EN50081-1 Immunity
73/23/EU Low Voltage / Niederspannung / basse tension
EN61010 el. Safety / el. Sicherheit / sécurité el.

Other Directives and Standards / Andere Richtlinien und Normen / Autres documents
corresponding to local requirements / entsprechend lokalen Anforderungen / correspondant aux exigences locales

UL	1950	el. Safety / el. Sicherheit / sécurité el. (if UL mark is applied)
CSA	C22.2 No. 950-M89	el. Safety / el. Sicherheit / sécurité el. (if cUL mark is applied)
FCC	Part 15, class A	Emissions / Funkstörungen (if FCC mark is applied)

Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures
Worthington, Ohio USA
January, 1995
September, 1996 (revised to include NAWI and LV Directives compliance.)

according to EN45014

Introduction

This manual is provided solely as a guide to the operation of the METTLER TOLEDO SC counting scale. Programming, service and maintenance information is presented in the SC Service Manual (PN B147515 00A).

SOFTWARE VERSION

This manual properly describes the operation and functionality of the METTLER TOLEDO SC counting scale containing software part number F144258, version 2.0. The software version and part number are displayed during the power-up sequence of the scale.

FCC NOTICE

This equipment has been tested and found to comply with the limits of the United States of America FCC rules for a Class A digital device, pursuant to Part 15 of the FCC Rules and the Radio Interference Regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

PRECAUTIONS

READ this manual BEFORE operating or this equipment.

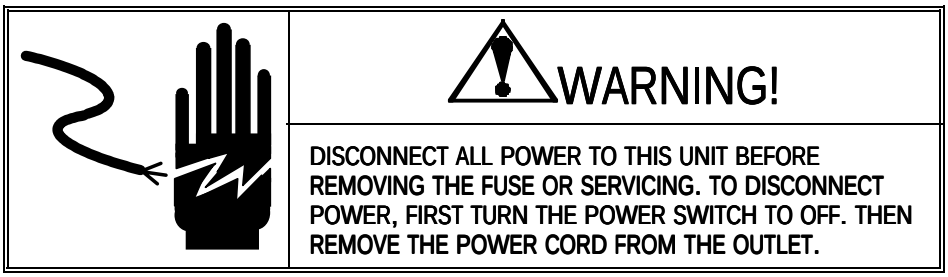
FOLLOW these instructions carefully.

SAVE this manual for future reference.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



WARNING!

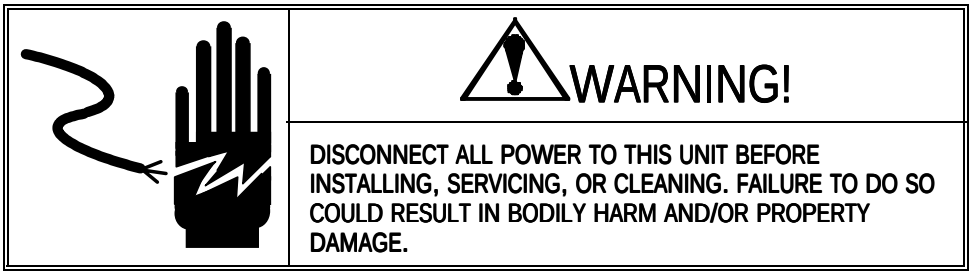
DISCONNECT ALL POWER TO THIS UNIT BEFORE REMOVING THE FUSE OR SERVICING. TO DISCONNECT POWER, FIRST TURN THE POWER SWITCH TO OFF. THEN REMOVE THE POWER CORD FROM THE OUTLET.

WARNING!

PERMIT ONLY QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY INJURY.

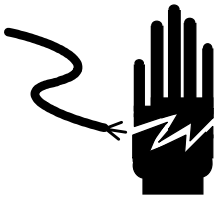
WARNING!

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.



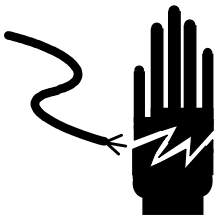
WARNING!

DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, OR CLEANING. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.



WARNING!

DO NOT OPERATE THE SC COUNTING SCALE IN WET OR HAZARDOUS ENVIRONMENTS. DOING SO MAY RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.



CAUTION!

USE ONLY THE AC POWER SUPPLY PROVIDED WITH YOUR SCALE (24V @ 250mA) AND ENSURE THAT THE VOLTAGE VALUE PRINTED ON IT MATCHES THE LOCAL LINE VOLTAGE. IF THE OPTIONAL BATTERY IS USED WITH THE SC COUNTING SCALE, A LARGER POWER SUPPLY (24V @1A) MUST BE USED. DO NOT USE THE STANDARD POWER SUPPLY WHEN THE BATTERY OPTION IS INSTALLED.

CAUTION!

USE ONLY OPTIONAL EQUIPMENT AND PERIPHERALS SUPPLIED BY METTLER TOLEDO WITH THE SC SCALE. THESE ITEMS HAVE BEEN DESIGNED AND TESTED SPECIFICALLY FOR USE WITH THE SC SCALE.

CAUTION!

THE SC SCALE HAS A RUGGED CONSTRUCTION, BUT IT IS STILL A PRECISION INSTRUMENT. HANDLE IT WITH APPROPRIATE CARE TO ENSURE THAT IT PROVIDES YEARS OF TROUBLE-FREE OPERATION.

CAUTION!

DO NOT OPEN THE SC SCALE COVERS OR DISPLAY. THEY DO NOT CONTAIN ANY PARTS WHICH CAN BE MAINTAINED, REPAIRED OR REPLACED BY THE USER. FAILURE TO OBSERVE THIS WILL VOID THE WARRANTY ON THE SC COUNTING SCALE.

CONTENTS

1 Introduction

The SC counting scale is a high performance industrial counting scale that accurately and dependably counts parts of all shapes and sizes. Designed for use in normal industrial environments, it is particularly well suited to applications that require more than a simple operator interface.

This manual provides detailed information for operating the SC counting scale. Please read it thoroughly and familiarize yourself with all safety requirements. All service procedures must be performed only by authorized personnel.

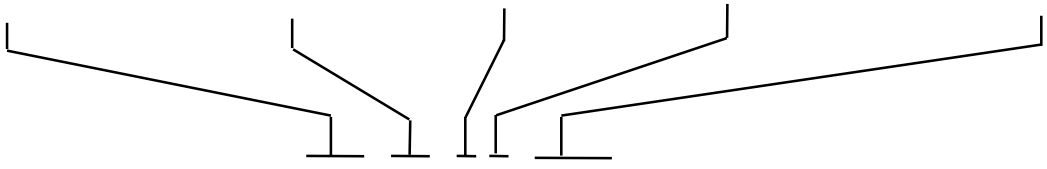
If you discover a problem with this documentation, please complete the **Publication Evaluation Form** found in the back. For information not found in this manual, please contact your authorized Mettler Toledo representative. Space is provided on the inside back cover of this manual for the name and number of the local Mettler Toledo representative.

Model Identification

The SC counting scale is available in four different capacities and is configured at the time of ordering for the market in which it will be used. Refer to the following chart to confirm the model number of the SC scale with which you are working. The example below shows an SC 30kg capacity scale with battery and an analog remote second scale option for use in the USA market.

Model Number Configuration

Scale Type	Capacity	Battery Option	Remote Scale Option	Market
SC	05 - 10 lb / 5 kg 15 - 37.5 lb / 15 kg 30 - 60 lb / 30 kg 60 - 120 lb / 60 kg	Blank - None B - Battery	Blank - None A - Analog Remote D - DigiTOL Remote	000 to 999 Market Code per Mettler Toledo Specifications



SC 30 BA 000

Using These Instructions

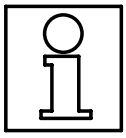
The instructions in this manual provide various types of help to facilitate your search for desired information.

- Work steps are marked by a **"•"** symbol while descriptive information is preceded by a **"--"**.
- Key designations are in bold uppercase such as **TARE** or **SAMPLE**.

[ADDING]

- Certain display messages are shown within brackets.

- This shows the current condition of the SC counting scale display.



- This symbol indicates additional information and instructions for handling the SC counting scale that contribute to proper and economical use.

- This symbol indicates safety and hazard instructions. All personnel must comply with these instructions to avoid injury to the user(s), damage to the scale and other tangible assets, and malfunctions.


- These symbols indicate electrical safety and hazard instructions and/or warnings. All personnel must comply with these instructions to avoid injury to the user(s), damage to the scale and other tangible assets, and malfunctions.

Safety Considerations

Please read ALL instructions and review the safety precautions and warnings listed in the front of this manual. Even if you are familiar with METTLER TOLEDO scales and balances, you must read the operating instructions carefully and abide by all safety precautions. Should you have any problems with the SC scale, please contact your local authorized METTLER TOLEDO representative for assistance.

2 Installation

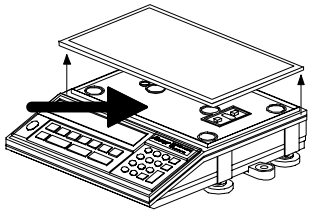
Setup for Previous SC Users

If you are familiar with the SC counting scale, just complete these six steps to prepare the scale for operation. All other users must refer to the section *Setup for New Users* that follows this section.

1

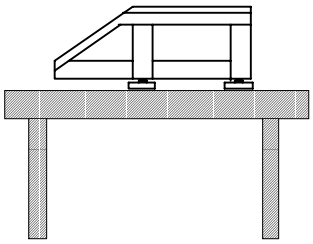
- Unpack.

2



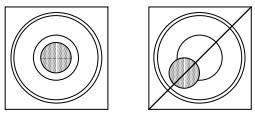
- Unlock. (Model SC05 Only)

3



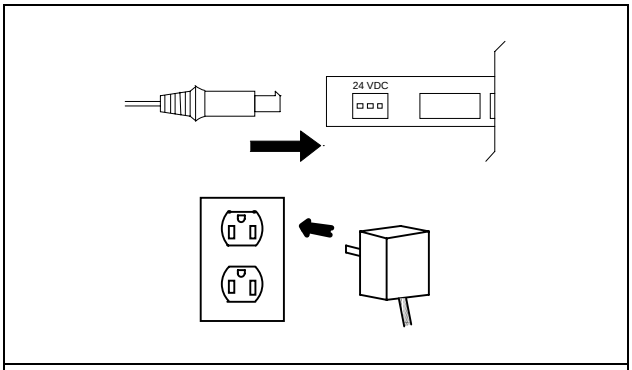
- Set into position.

4



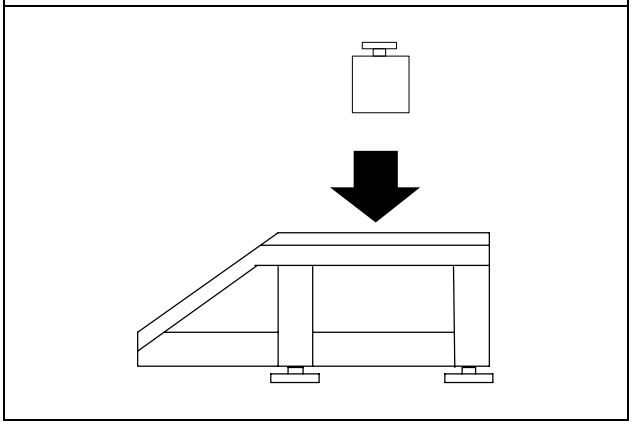
- Level.

5



- Connect power supply.

6



- Count.

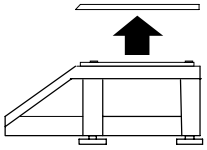
Setup for New Users

Unpacking the SC

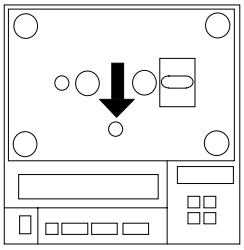
- Pull the scale out of the box. Remove the protective cushioning. Note: The SC05 and SC15 have packing material under the platter that must also be removed.
- Check that all components are present. You should have:
  - SC counting scale
  - Keyboard/display unit (SC30 and SC60 only)
  - Scale platter
  - AC power supply
  - User's Guide
  - Technical Manual
  - Operator's Quick Reference Card
  - Allen wrench (SC05 only)
  - Factory-installed options (If ordered)
- Store the packaging for future use as it provides the best possible protection for the transporting the scale.
- Notify your METTLER TOLEDO representative immediately if you discover any damage or missing parts. Do not operate the scale if you find external damage.

Unlocking the SC05

The model SC05 is shipped from the factory with a lock-down screw to secure and protect the sensitive load cell. **No other capacities require this extra protection**. You must entirely remove this lock-down screw before using your scale.



- Lift the platter from the top of the SC05 scale.



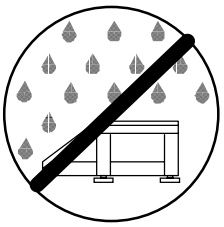
- Locate the lock-down screw near the front of the scale. Use the allen wrench provided to remove the screw. Remove it entirely. Do not just loosen it. Turn counterclockwise to remove.

- Retain the screw for future use in case you wish to transport the SC counting scale in its original packing material.

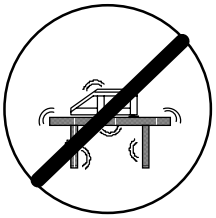
Selecting or Changing the Location

The SC counting scale is a precision instrument and performs best when placed in an optimum location.

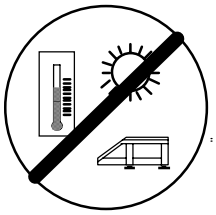
- Never operate the SC counting scale in a hazardous (explosive) environment.



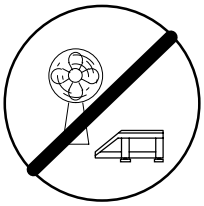
- Never use the SC counting scale in wet areas.



- Provide a firm, vibration-free, horizontal foundation capable of supporting the weight of a fully loaded scale.



- The SC counting scale can operate and be stored in a temperature range of 50° F to 104° F (10° to 40° C). Avoid sudden temperature changes. They can affect accuracy.

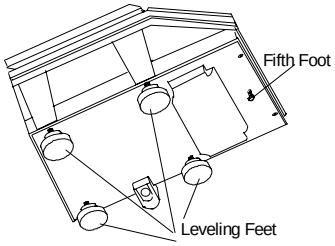


- Avoid excessive drafts (from fans or other sources)

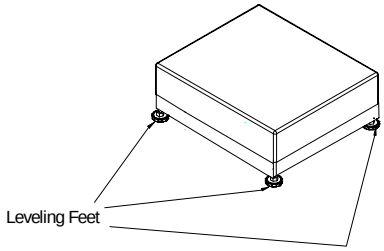
Note: If your SC counting scale is certified (legal for trade) and is moved far from the original location, please contact the local METTLER TOLEDO representative at the new destination to have the scale recalibrated.

Leveling the SC

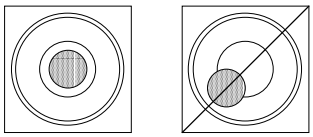
Weighing instruments work best when they are installed in a level position. To compensate for any minor unevenness at its location, the scale can be leveled as follows:



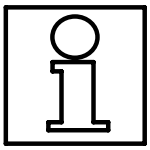
- On the SC05 and SC15, turn the four leveling feet on the bottom of the weighing platform until the scale is horizontal then adjust the fifth foot on the front to just touch the mounting surface.



- On the SC30 and SC60, turn the leveling feet on the bottom of the weighing platform until the scale is horizontal.



- The air bubble must be in the center of the level as shown here.

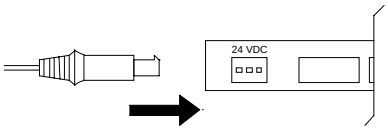


- Re-level the scale after every location change.

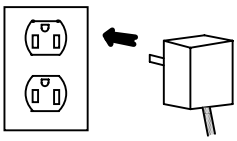
Applying Power

An AC adapter designed for your local line voltage is enclosed with your scale. There is also a battery option that allows portable operation of the SC counting scale. If the battery option is installed, the more powerful (1.0 A) AC supply is required for recharging the battery through the scale. The larger supply is also required if a remote second scale kit is used. If the battery option or remote second scale kit was installed at the factory, the larger supply is automatically included with the SC counting scale. If either the battery option or remote scale option has been added, the larger power supply must be used.

- Make sure the voltage printed on the AC adapter matches the local line voltage. **If it does not, do not connect the AC adapter to the power outlet.** Contact your local METTLER TOLEDO representative immediately!



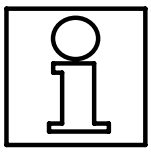
- Connect the AC adapter to the back of the SC counting scale with the ridge of the connector at the top.



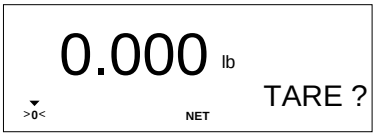
- Connect the AC adapter to your power outlet.

- Ensure that liquids never contact the AC adapter. Route the cable so that it does not become cut or damaged in the work area.

- Take care to route the AC power cable so that it does not touch the weighing platter and does not interfere with normal operation of the scale.



- When power is applied, the scale performs a self-test in which all display segments light up briefly and internal verifications are made. Information specific to the scale such as the software part number and revision level, is also displayed.



- When the power up sequence is complete, the SC counting scale is ready to use.

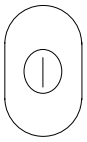
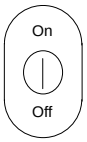
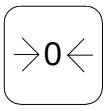
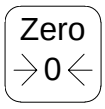
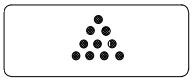
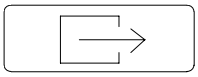
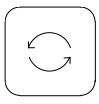
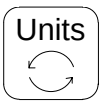
3 Operating the SC Counting Scale

This section describes common counting keyboard sequences you will need to know to operate the SC counting scale properly.

There are two versions of the SC counting scale keyboard. One contains international symbols. The other also includes English descriptions. The instructions in this manual are based on the English version keyboard. However, both sets of keys are shown with the descriptions that follow to assist you in cross referencing the two keyboards.

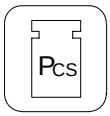
If you are interesting in switching to an English version or international version keyboard, contact your authorized Mettler Toledo representative.

Keyboard Descriptions

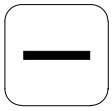
International Version	English Version	Description
		The **ON/OFF** key turns the scale on and off (sleep mode).
		The **ZERO** key zeroes the scale.
		The **TARE** key subtracts tare values and changes the SC counting scale from gross mode (no tare) to net mode.
		The **SAMPLE** key enters sample quantities.
		The **PRINT** key sends data to a printer.
		The **SCALE SELECT** key is used when a remote second scale is connected to choose various combinations of sample and gross scales.
		The **UNITS** key switches the scale from primary weight units to the alternate weight unit.

The **RECALL** key recalls various data to the display.

The **ID** key is used to enter an 8 character identification field.



The **APW** key is used for entering average piece weight values to calculate piece count.



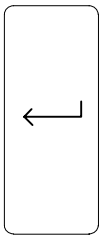
The **ACCUM-** key subtracts data from the accumulators. It also is used to select alpha characters for ID fields.

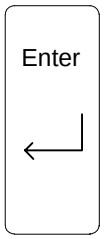
The **ACCUM+** key adds data to the accumulators. It also is used to select alphas characters for ID fields.

The alpha-numeric keys are used to enter data fields.

The **ESC** (Escape) key is used to exit recall mode or count mode or to exit other sequences.

The **CLEAR** key clears data from the display and exits the count mode.

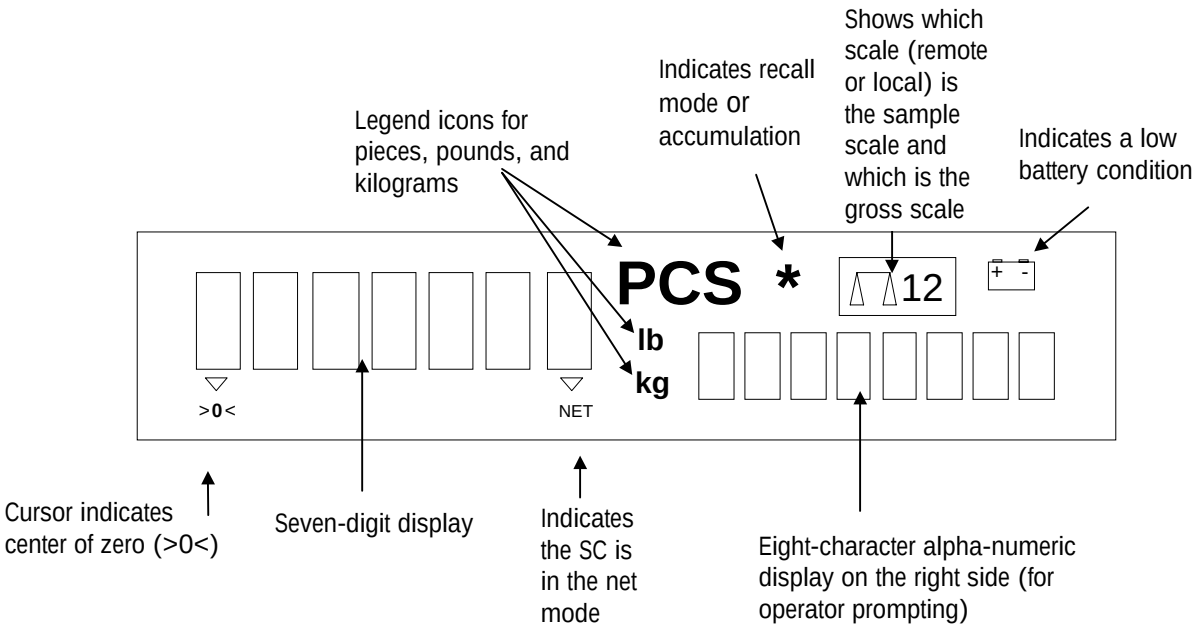




The **ENTER** key is used to terminate data entry sequences.

Display

You should also become familiar with the SC counting scale's liquid crystal display. The various areas of the display and their functions on noted below.

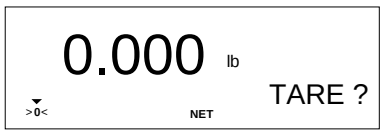


Switching On and Off

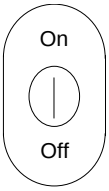
When power is applied to the SC counting scale, it automatically powers up, captures the zero point, and is ready to weigh. To turn the scale off without unplugging the power cord, just press the **ON/OFF** key at the far left of the keyboard.

When the SC counting scale is turned off with the **ON/OFF** key, the display shows [SLEEP], and the scale is “off”. To turn the scale on, press **ON/OFF** again. The SC counting scale powers up, captures zero, and is ready to operate.

During power up, the SC counting scale performs a self-test in which all display segments light up briefly and internal verifications are made. Information specific to the scale is shown, such as the software part number and revision level.

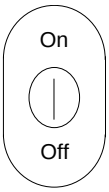


When the power up sequence is complete, the SC counting scale is ready to use.



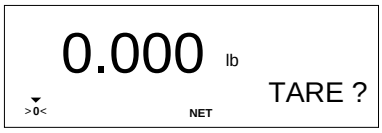
With the display on, pressing the **ON/OFF** key will turn the scale 'off'.

The display will show [SLEEP].



Pressing the **ON/OFF** key again will turn the scale on again.

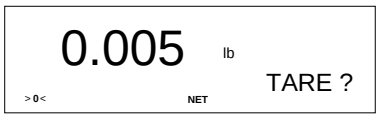
The right display will show [WAKING], while the SC counting scale exits the sleep mode.



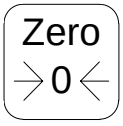
The SC counting scale then returns to normal operation.

Zeroing the Scale

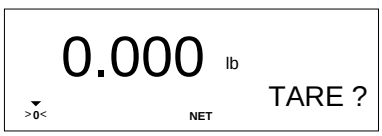
During the "warm-up" period and occasionally during normal use of the SC scale, you may notice the scale does not display zero when it is empty in the gross mode. In the count mode, the center of zero cursor may not illuminate when the scale is empty. When this occurs, you may re-zero the scale by pressing the **ZERO** key. This returns the scale display to gross zero and provides a new, accurate zero reference for counting.



The SC counting scale displays a weight value other than zero with no weight on the platter at gross zero.



Pressing the **ZERO** key will return the SC counting scale to a zero reading.

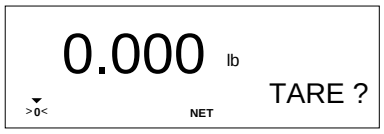


After zero has been set, the SC counting scale is ready to use. Note the cursor above the center of zero legend indicating the scale is at gross zero.

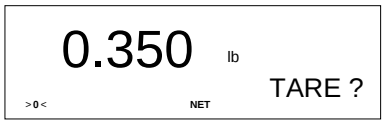
Taring the Scale

When counting parts, you may be placing parts into a box or other container on the scale. You do not want to include the weight of this container in the total count calculation since it would create an error. Pressing **TARE** with the empty container on the scale will automatically subtract the weight of the container on the scale and allow you to begin at net zero. The cursor above the 'NET' legend on the display will illuminate, indicating the scale is in the net mode.

You may also enter the numeric value of the tare if you know the weight of the container. This process is described in detail in Chapter 5, **Hand Entering Tare Values.**



The SC counting scale displays gross zero weight before a tare container is placed on the scale.



The display shows the weight of the empty container placed on the scale and prompts for a tare to be taken.

Pressing the **TARE** key with the empty container on the scale will initiate a tare action.

With the SC counting scale displaying zero weight in the net mode, a tare has been taken successfully. Additional pieces placed on the platter will display the net weight of the parts. Note the cursor above the 'NET' legend on the display indicating net weight mode.

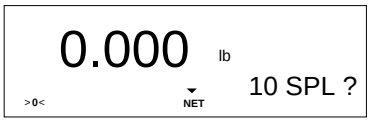
Sampling Pieces for Counting Mode

To count with the SC counting scale, it is necessary to sample a small quantity of parts so the scale can determine how much each piece weighs. The SC counting scale then uses this average piece weight (APW) to determine how many pieces are on the platter. To initiate a count, you place the specified number of sample pieces on the scale when prompted and press **SAMPLE**.

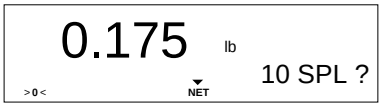
TIP: The purpose of the sampling step in piece counting is to determine a correct average piece weight (APW) of the parts. Ideally, if every piece weighed exactly the same, only one piece would be necessary to calculate an accurate APW. In the normal counting environment

however, the APW of each piece varies. Generally, the larger the variance in the individual piece weights, the larger the sample size required. Refer to the section titled **Variable Sample Counting** for additional information on selecting different sample sizes.

A different sample quantity may be entered using the numeric keys of the SC counting scale. This process is described in detail later in Chapter 5 **Numeric Entry of the Sample Quantity.**

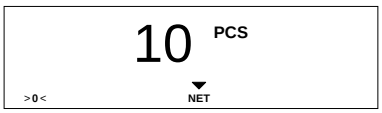


The SC scale displays net zero weight (with empty tare container on the scale) before a sample quantity is placed on the scale.



As the sample pieces are placed on the scale, the display shows the total weight of the sample in the container as it prompts for a sample to be taken.

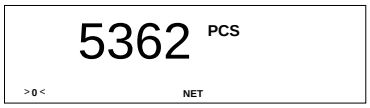
Pressing the **SAMPLE** key with the sample pieces on the scale will initiate an APW calculation.



The SC counting scale will now display the sample count. Additional parts placed on the platter will display the new total count of the parts. (PCS = pieces)

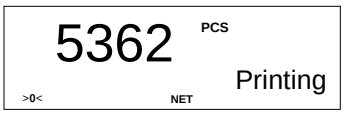
Printing the Results

When a transaction is complete, you may send the results to a printer or other device attached to the serial port of the SC counting scale. Pressing the **PRINT** key initiates the data transmission.



The SC counting scale displays the results of a counting sequence.

Press the **PRINT** key to initiate a data transmission.

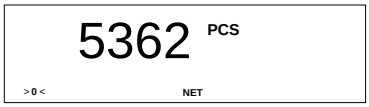


The SC scale displays the message [Printing] on the right side of the display then returns to the normal count display when finished.

Clearing Out of Counting Mode

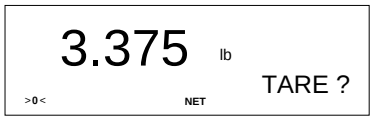
After a count is taken, the pieces on the scale may be removed. The scale remains in the count mode, ready for the next empty tare container

(same weight as previous one) and pieces to be added. You do not need to sample for each count. When you do change pieces or switch to a different tare container, you must exit the count mode and begin the counting process again. To exit from the count mode, press **CLEAR**.



The SC counting scale displays count from current transaction.

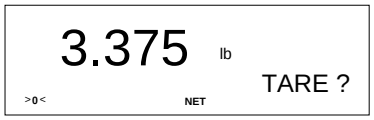
Pressing the **CLEAR** key will initiate the exit process.



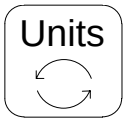
After exiting the piece count mode, the SC counting scale will return to the gross weight mode. Any weight placed on the weighing surface (platter) will appear on the display. The SC counting scale is now ready for another counting sequence.

Switching Weighing Units

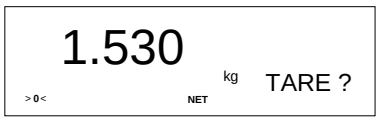
The SC counting scale can switch between two weight units from the keyboard. It arrives programmed for pounds with kilograms switching. Unit switching is permitted in the weight and count modes. When switching units in the count mode, the display will change from pieces to the newly selected weight unit. Pressing **CLEAR** will return the display to piece count. This feature allows you to count parts or weigh in two different weight units.



The SC scale displays a gross weight value in the pounds mode.



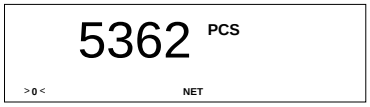
Pressing the **UNITS** key will switch the SC counting scale from the current weight unit to the alternate weight unit.



After pressing **UNITS**, the SC counting scale displays the equivalent weight value in the second unit and the unit symbol is illuminated. Units available are pounds (lb), kilograms (kg) and grams (g).

Accumulating Weight and Count

The SC counting scale has three data accumulators available for tracking totals of gross weight, net weight, and piece count. To initiate an accumulation, press **ACCUM+**. If the scale is in the weighing mode, only weight fields will be accumulated. If the SC counting scale is displaying count, all fields will be accumulated.



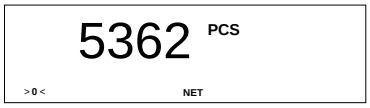
The SC scale displays the results of a counting sequence.

Pressing the **ACCUM+** key will initiate the accumulation of data.

The SC counting scale will display the message [Adding] on the right side of the display then return to the normal count display when finished.

Recalling Weight and Count Information

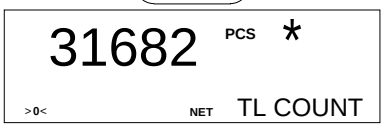
The SC counting scale uses different types of data throughout the counting process that can be recalled. These fields are: Percent Accuracy, Total Piece Count, Total Net Weight, Total Gross Weight, Gross Weight, Net Weight, Count, Sample Quantity, APW (average piece weight), Tare Weight, and ID. Pressing the **RECALL** key will display each item in sequence. Data may be recalled any time during the weighing or counting process.



The SC counting scale displays the results of a counting sequence.

Pressing the **RECALL** key retrieves data from memory.

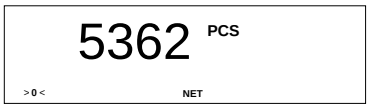
The first field recalled will be percent accuracy. The left side of the display will show [ACCurCy]" The right side will show the value of the percent accuracy if enabled (if not enabled, it will be blank). Note the asterisk on the display indicating that you are in the recall mode.



Pressing the **RECALL** key again will retrieve the next data field from memory. Each time the **RECALL** key is pressed, the next field in sequence will be recalled.

The second field recalled will be the accumulated piece count. The right side of the display will show [TL COUNT] and the left side will show the total of the accumulated pieces.

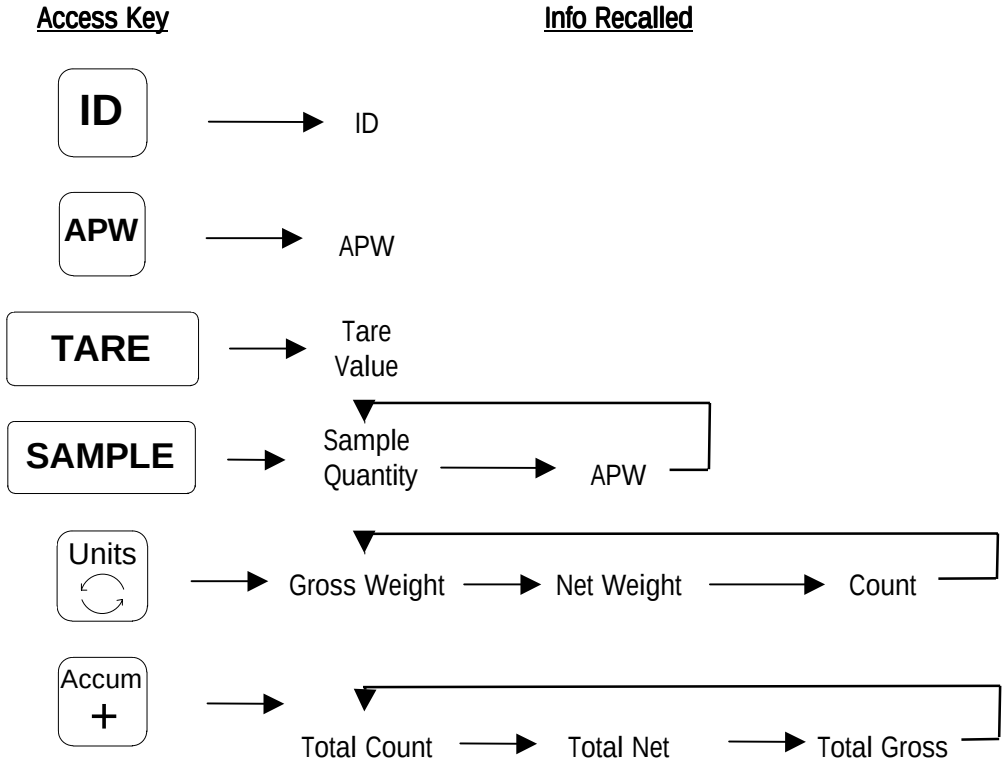
Pressing **CLEAR** at any time will exit the recall mode.



After exiting the recall mode, the SC counting scale returns to its original mode.

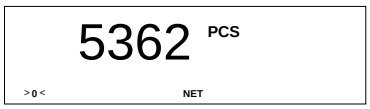
Quick Access to Recall Data

Several fields or "groups" of data fields can be recalled directly without proceeding through the complete recall sequence. Repeatedly pressing the specific "group" key after pressing **RECALL** will continue to recall the associated data fields in a loop so all fields can be viewed. The fields and "groups" which have direct access are defined below.



To recall any of these fields or “groups,” press the **RECALL** key then the access key shown in the chart above. The display will show the field in the first column on the display. For keys which contain data in either the second or third recall column, repeated pressing of the access key will toggle the display through each of these fields.

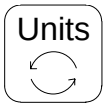
The following example shows how to quickly recall the gross weight:



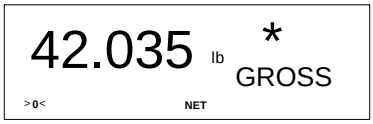
The SC scale displaying the results of a counting sequence.

Pressing the **RECALL** key will retrieve data from memory.

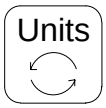
The first field recalled will be percent accuracy. The left side of the display will show [ACCurCy] and the right side will show the value of the calculated percent accuracy. Note the asterisk on the display indicating that you are in the recall mode.



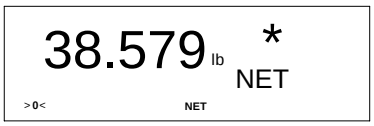
Pressing the **UNITS** key will retrieve the gross weight data field from memory.



The gross weight will be recalled.



Press the **UNITS** key again.



Each time the **UNITS** key is pressed, the next field in sequence will be recalled - net weight then count.

Pressing **CLEAR** at any time will exit the recall mode .

The SC counting scale returns to its original mode.

4 Counting and Sampling Modes

During the initial setup of the SC counting scale, different modes of operation may be selected. Although you may not have reason to use these different modes and functions, you should understand how they affect the operation of your scale. During installation, your METTLER TOLEDO representative will configure the SC counting scale to suit your exact needs.

To change the mode of operation of the SC counting scale, settings are modified in the Master Mode of programming. These procedures are fully described in the SC Counting Scale Technical Manual. To modify the setup, contact your local METTLER TOLEDO representative for assistance.

Dependent Mode of Operation

There are two modes of operation available in the SC counting scale: **dependent** and **independent**.

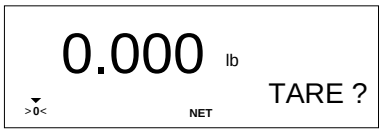
The **dependent** mode is the default mode of the scale. It provides a prompting display for a pre-selected sequence of operation. The display will prompt the operator through a complete counting sequence using the eight-character alphanumeric display. The operator follows the prompts and responds to the display. In dependent mode, there are two possible sequences of operation.

In the first sequence, [Tare ?] is followed by [10 Spl ?]. The operator is asked to initiate a tare then to place a quantity of sample pieces on the scale. This is the default configuration.

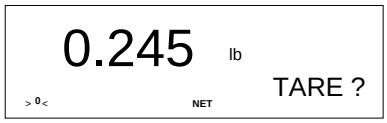
In the second sequence, [Tare ?] is followed by [APW ?]. The operator is asked to initiate a tare, then prompted to manually enter the previously determined average piece weight of the pieces to be counted.

When either sequence is completed, the SC counting scale will indicate the total piece count of additional pieces placed on the platter. The entry of APW is discussed in Chapter 5, **Entering an APW**. An example of Tare/Sample follows. Note: In dependent mode, the **ENTER** key can perform the function of the **TARE**, SAMPLE or **ID** keys when the specific prompt is displayed.

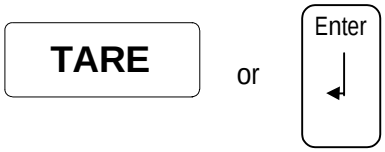
Example - Dependent Mode - Tare and Sample



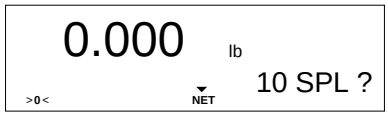
The SC counting scale will prompt for a tare weight to be added.



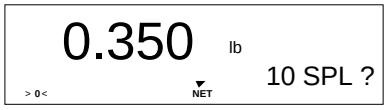
Place the empty container that will be used to hold the pieces to be counted on the platter. If a tare container will not be used, proceed to the next step.



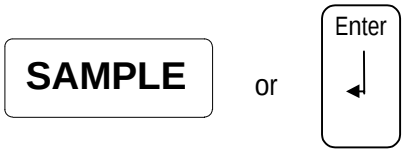
Press the **TARE** key to acknowledge entry of the tare value.



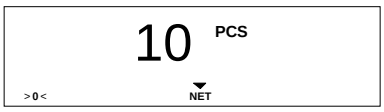
The SC counting scale will now prompt for a pre-selected sample quantity of pieces to be added to the scale. The Net cursor will not be on if no tare container was placed on the platter.



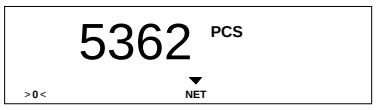
Place the correct quantity of sample pieces (10) on the scale .



Press the **SAMPLE** key to acknowledge the placement of sample pieces on the weighing surface.



The SC counting scale display will now display the sample quantity as the current count.



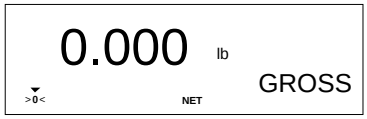
Additional pieces placed on the platter will be shown on the display. The count sequence is complete.

Independent Mode of Operation

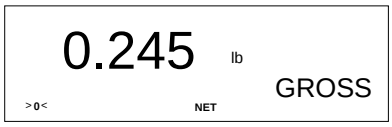
The **independent** mode allows the operator to choose which data is entered and in what order. In some cases, it can reduce the keystrokes required for a count transaction. In the previous example for dependent

mode, the operator had to press the **TARE** key to proceed to the next sampling prompt even though no tare container was used. In the independent mode, the operator simply presses **SAMPLE** after placing the sample pieces on the scale. The scale then calculates the piece count. The following example shows a complete tare and sample sequence that an operator can follow. Remember, the tare sequence can be skipped if no tare container is used. The independent mode must be enabled in the Master Mode.

Example - Independent Mode

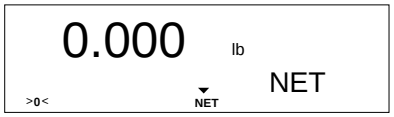


The SC counting scale indicates that it is in the gross weight mode ready to begin.

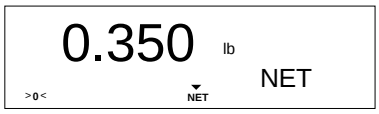


Place the empty container on the platter. If a tare container will not be used, this step and the next two steps may be skipped.

Press the **TARE** key to acknowledge entry of the tare value even if no tare container is used.

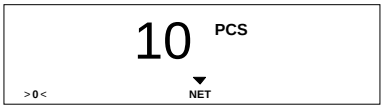


The SC counting scale will now indicate zero weight in the net mode and is ready for the next step. If no tare container was used, the SC counting scale will remain in the gross mode and the net cursor will not be lit.

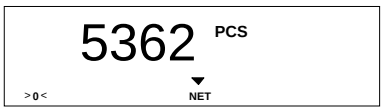


Place the correct quantity of sample pieces (10) on the scale. Note that the Net cursor and indication will be off if the tare was skipped. The operator must either know the correct sample quantity or may view it by pressing the **SAMPLE** key before placing the sample pieces on the platter.

Press the **SAMPLE** key to acknowledge the placement of sample pieces.



The SC counting scale display will now display the sample quantity as the current count.



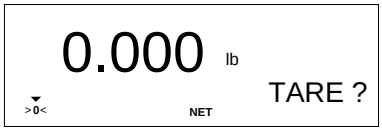
Additional pieces placed on the platter will be shown on the display. The count sequence is complete.

Count-In Sample Method

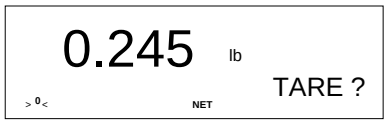
There are many methods an operator can use to obtain a piece count. Both examples used so far utilize the **count-in method**. The pieces to be sampled were added to the scale and not removed.

The count-in method may be used in either the dependent or independent mode. The SC counting scale can change between the count-in and count-out methods with no change to the Master Mode programming. The only change is the procedure that the operator follows.

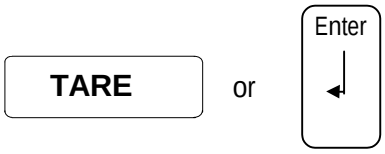
Example - Dependent Mode Using Count-In Method



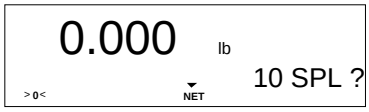
The SC counting scale will prompt for a tare weight to be added.



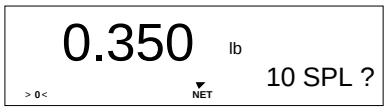
Place the empty container on the platter. If a tare container will not be used, proceed to the next step.



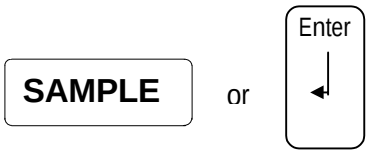
Press the **TARE** key to enter the tare value.



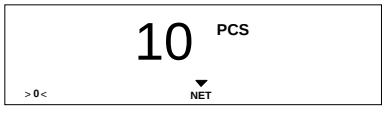
The scale will now prompt for a pre-selected sample quantity of pieces to be added to the scale.



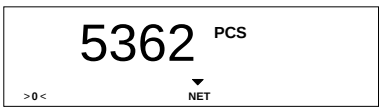
Place the correct quantity of sample pieces (10) on the scale .



Press the **SAMPLE** key to acknowledge the placement of sample pieces.



The display will now show the count of the sample quantity.



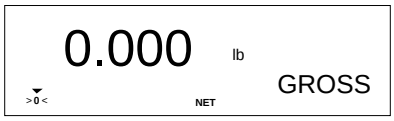
Additional pieces placed on the platter will be shown on the display. The count sequence is complete.

Count-Out Sample Method

The **count-out method** is useful for counting pieces removed from a container on the scale platter. For example, suppose you want to take a full bin of parts from the stock shelf and pack up three boxes of 500 pieces each. You could place the full bin of parts on the scale, tare it, remove the correct sample quantity from the container, and press **SAMPLE**. Additional pieces could now be removed and placed in the smaller box until the display shows [-500 pcs]. The operator could then press **TARE** again and remove the next lot of 500 pieces.

The count-out method may be used in either the dependent or independent mode. The SC counting scale can alternate between the count-in and count-out methods with no change to the Master Mode programming. The only change is the procedure that the operator follows. Note that the count sign (positive or negative) is selectable for count-in and count-out methods in the Master Mode.

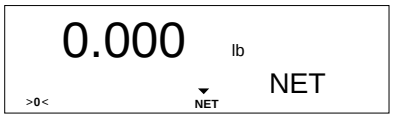
Example - Independent Mode Using Count-Out Method



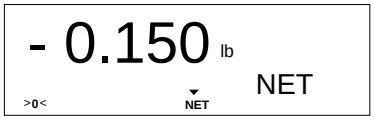
The SC counting scale indicates that it is in the gross weight mode ready to begin.

Place the full container of the parts to be counted on the platter.

Press the **TARE** key to capture the gross weight as the tare value.

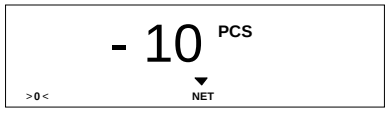


The scale now indicates a zero weight in the net mode and is ready for the next step.

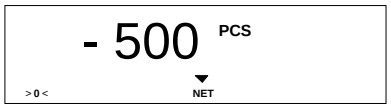


The operator must either know the correct sample quantity or may scroll through the possible choices by pressing the **SAMPLE** key before removing the sample pieces from the platter. Remove the correct quantity of sample pieces (10) from the scale.

Press the **SAMPLE** key to confirm the removal of the sample pieces.

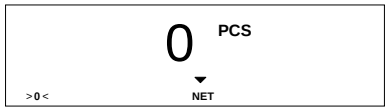


The SC counting scale now displays the count of the sample quantity as a negative number indicating pieces have been removed.



Additional pieces removed from the platter will be shown on the display. The count sequence is complete. Additional piece quantities can be removed and counted by pressing the **TARE** key between each sequence.

Additional piece quantities can be removed and counted by pressing the **TARE** key between each sequence.



This resets the display to 0 pieces and provides a new beginning point for the next count sequence. The APW is unchanged.

Variable Sample Quantity

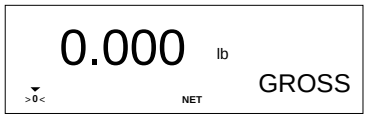
During initial set up, a default sample quantity was selected in the Master Mode. This is the quantity displayed first when sampling. The original default value is 10 pieces. When a different weight piece is counted, it may be necessary to sample a different quantity to determine an accurate APW. For instance, more sample parts would be required when counting lighter weight pieces; fewer parts if the individual pieces are heavier.

You can select from a preset list of quantities to be used when sampling if **variable sample** is enabled in the Master Mode. Select the desired quantity by pressing **SAMPLE** several times before placing sample pieces on the platter. Then place the sample pieces on the scale and press **SAMPLE** again. You can change to any sample quantity (5, 10, 20, 50, or 100) using this method. Generally, the larger the variance in individual piece weights, the larger the sample quantity must be.

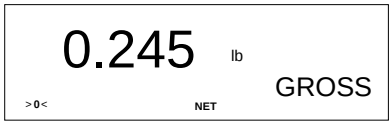
The SC counting scale also offers the ability to hand enter a different quantity of sample pieces using the numeric keys on the keyboard. The process of hand entering a sample quantity other than the preset list is described in Chapter 5, **Numeric Entry of Sample Quantity**.

Variable sample is the factory default. However, if variable sample is off in the Master Mode, the operator cannot change the sample quantity and must always use the same number of sample pieces. The variable sample feature may be used in either the dependent or independent mode of operation, and when using count-in or count-out methods.

Example - Independent Mode Using Variable Sample

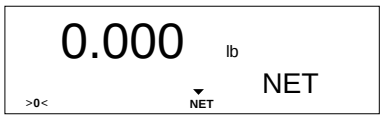


The display indicates that it is in the gross weight mode ready to begin.



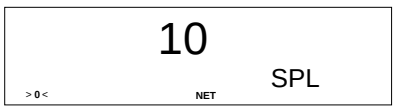
Place an empty container on the platter. If a tare container will not be used, this step and the next two steps may be skipped.

Press the **TARE** key to enter the tare value.



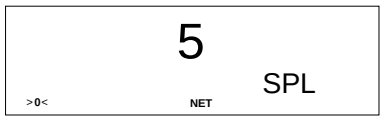
The scale will now indicate zero weight in the net mode and is ready for the next step.

With the scale showing zero net weight, press the **SAMPLE** key to view the current sample quantity.

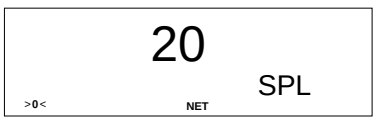


The default sample quantity is shown on the display. This is the sample quantity that would be used to calculate the APW for a count sequence. Note: The Net cursor will be off if no tare was taken.

With the default sample quantity displayed, press the **SAMPLE** key to view the next sample quantity in the list.



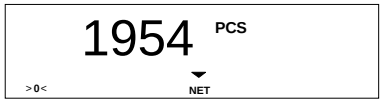
The display will show the second sample quantity of 5. The choices for variable sample always begins with 5 then proceeds through each of the other values (10, 20, 50, and 100) each time **SAMPLE** is pressed.



When the desired sample quantity is displayed, place the correct number of sample pieces on the scale.

Press the **SAMPLE** key to acknowledge the placement of the sample pieces.

The SC counting scale will now display the count of the sample quantity indicating the number of pieces on the platter.

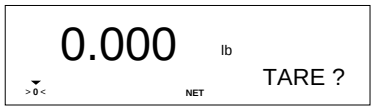


Additional pieces added will be shown on the display. The count sequence is complete.

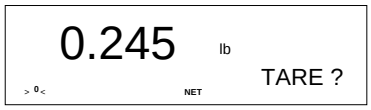
Fixed Sample Quantity

For applications in which you do not want the operator to be able to change the sample size, you can use the **fixed sample mode**. In this mode, no other sample quantity may be used other than the default sample size. You can view the sample size but cannot change the value. Fixed sample is useful if all of the items you are counting have approximately the same APW and can be counted accurately using the same sample quantity. The fixed sample feature may be used in dependent or independent mode and when using the count-in or count-out sample methods. Fixed sample must be enabled in Master Mode.

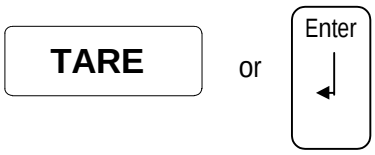
Example - Dependent Mode Using Fixed Sample



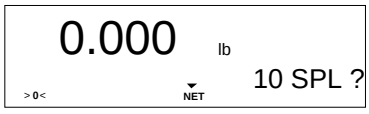
The SC counting scale will prompt for a tare weight to be added.



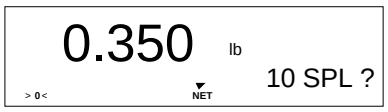
Place the empty container that will hold the pieces to be counted on the platter. If a tare container will not be used, proceed to the next step.



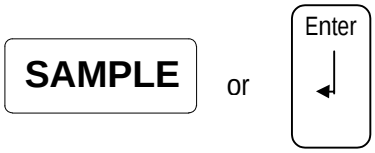
Press the **TARE** key to confirm entry of the tare value.



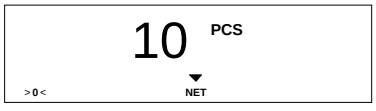
The scale will now prompt for a pre-selected sample quantity of pieces to be added to the scale.



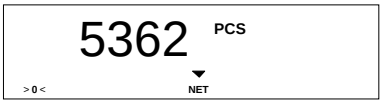
Place the correct quantity of sample pieces (10) on the scale .



Press the **SAMPLE** key to acknowledge the placement of sample pieces.



The SC counting scale now displays the count of the sample quantity.



Additional pieces placed on the platter will be shown on the display. The count sequence is complete.

5 Special Operations and Functions

The SC counting scale has several operations and functions that can be used to expand the scale's capabilities. They can be selected in the Master Mode or may be disabled. Some features are not enabled in the default settings and can only be modified in the Master Mode of programming. Accessing Master Mode is discussed in the SC Technical Manual. To modify the setup, please contact your local METTLER TOLEDO representative for assistance or to obtain a service manual.

Time and Date Entry

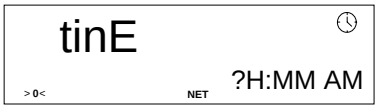
The SC counting scale has time and date capability that can be transmitted to a printer or other serial device connected to its serial port. If the AC power is disconnected, the SC counting scale will prompt the operator to reenter the time and date. If the scale is turned off with the **ON/OFF** key or the sleep mode is accessed with battery power, the scale will retain the time and date values. Only disconnecting power will cause the loss of these values.

The time and date fields are originally disabled (default off). To use them, they must be enabled in the Master Mode. After the time and/or date fields are enabled, the SC counting scale will prompt the operator to enter the correct values during the power-up sequence. If only time is enabled, the operator will only be prompted to enter the time. If only the date is enabled, the operator will only be prompted to enter the date. If both fields are enabled, both must be entered.

To edit the time or date fields, AC power must be removed then reapplied. Pressing the **ON/OFF** key will not require reentering the time and date values.

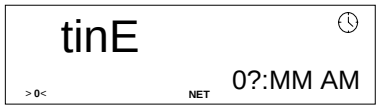
During power-up, the following prompts will be shown. In the examples below 02:35 PM is entered as the time and June 15, 1998 as the date.

Example - Entering the Time (02:35 PM)



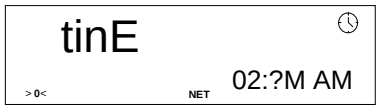
If enabled, the SC counting scale will prompt for time to be entered during the power up sequence. The format will be either 12 hour (as shown here) or 24 hour. The question mark indicates the active digit to be entered.

Begin entering the hour “02” by pressing the **0** key.



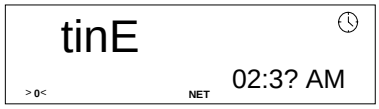
The number “0” is displayed and the question mark moves to the next position to be entered.

Continue entering the hour by pressing the **2** key.



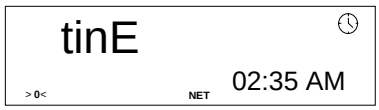
The number “2” is displayed and the question mark moves to the minute position, to be entered next.

Begin entering the first digit of the minute by pressing **3**.



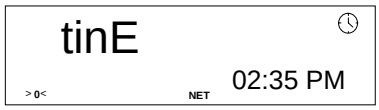
The number “3” is displayed and the question mark moves to the next position to be entered.

Finish entering the minute by pressing **5**.



The number “5” is displayed and the active entry field moves to the “AM” position.

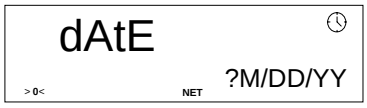
Press the **TARE** key to change the “AM” display to indicate “PM”. If “AM” would be correct, skip this step.



The complete and correct time should now be shown on the display. If the time is not correct, press the **CLEAR** key to move the data entry position back to the left again.

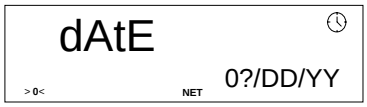
The **ENTER** key terminates the time entry and allows the SC counting scale to continue to the next step in the power up sequence.

Example - Entering the Date (June 15, 1998 - 06/15/98)



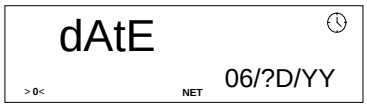
If enabled, the SC counting scale will prompt for the date entry during the power-up sequence. The format will be either Month/Day/Year (as shown here) or Day/Month/Year as selected in the Master Mode. The question mark indicates the active digit to be entered.

Begin entering the month of June (entered numerically as 06) by pressing the **0** key.



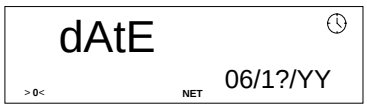
The number "0" is displayed and the question mark moves to the next position to be entered.

Complete the entry of the month of June by pressing the **6** key.



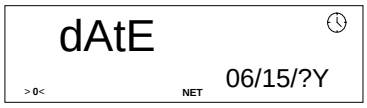
The number "6" is displayed and the question mark moves to the first digit of the day position, to be entered next.

Begin entering the first digit of the day by pressing **1**.



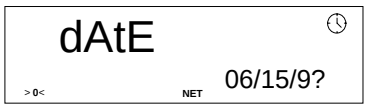
The number "1" is displayed and the question mark moves to the next position to be entered.

Finish entering the day by pressing the number **5**.



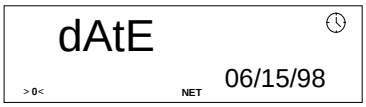
The number "5" is displayed and the active entry field moves to the first position for the year.

Begin entering the first digit of the year by pressing **9**.



The number "9" is displayed and the question mark moves to the next position to be entered.

Finish entering the year by pressing the number **8**.



The number “8” is displayed and the complete and date should now be shown on the display. If the date is not correct, press the **CLEAR** key to move the data entry position back to the left again.

The **ENTER** key terminates the date entry and allows the SC counting scale to continue to the next step in the power up sequence.

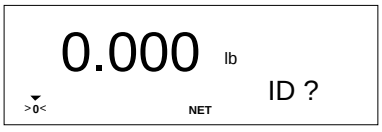
The Identification Field

The SC counting scale allows you to enter up to eight characters in an identification field. Alpha-numeric data may be entered into the ID field. The ID can then be added to the serial output to a printer or other device for documentation purposes. This field may also be used for an alpha-numeric part number, an operator’s name, or for other code. Only one eight-character field of ID is available. The identification field is originally disabled (default).To use the ID feature, you must access the Master Mode and enable the ID program step.

When using the SC counting scale in the dependent mode, the right side of the display will prompt for entry of the ID before entering a tare or sample. If the scale is used in the independent mode, the ID may be entered at any time by selecting the characters then pressing the **ID** key.

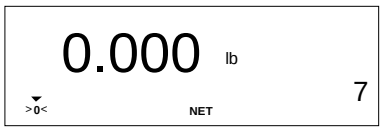
For full alpha-numeric capability, use the **ACCUM+** and **ACCUM-** keys in conjunction with the numeric keys. To enter alpha information, press the numeric key which has the letter you wish to use. Then press the **ACCUM+** or **ACCUM-** key to toggle through the other choices for the key. Each alpha character shown on the key is accessible using this method. An example of entering an ID of “7FV” in the dependent mode follows.

Example - Entering an ID in the Dependent Mode



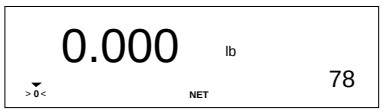
SC counting scale showing gross zero weight and prompting for the ID before a transaction begins. Locate the key with the first ID character to be entered.

Press the number **7** key since it is the first character of the ID to be entered.



The display indicates [7] on the right side of the display. The first character has now been entered. Now locate the key that has the next character to enter, the letter “F”.

The number **8** key has the letter “F” on it so press the **8** key.

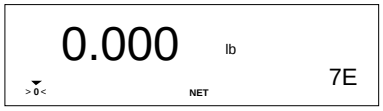


The display now shows [7 8]. We want to toggle the number “8” to get the letter “F” so press the **ACCUM+** key.

The **ACCUM+** key is used to select which of the characters on the **8** key is displayed. The SC counting scale now changes the “8” to a “D”.

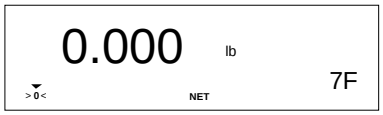
With [7D] displayed, press **ACCUM+** again to access the next letter on the **8** key.

The **ACCUM+** key toggles through all characters available on the **8** key.



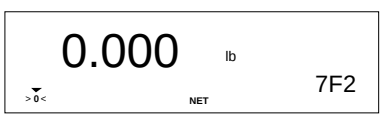
The “D” is now changed to an “E”. Remember that the next letter in the selection will be the letter “F” which is the next choice.

Press the **ACCUM+** key again to access the next letter.



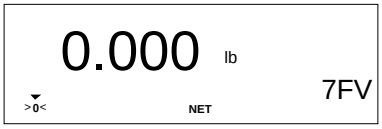
The SC counting scale now changes the “E” to an “F”. Now we have the first two characters of the ID. Locate the key which has the next character in the ID field, the letter “V”.

The number **2** key has the letter “V” on it so press the **2** key.

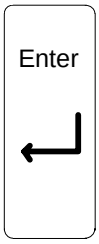


The display now shows [7 F 2]. We want to toggle the number “2” to get the letter “V” so press the **ACCUM+** key.

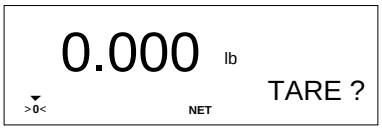
The **ACCUM+** key is used to select which of the characters on the **2** key is displayed. The SC counting scale now changes the “2” to a “V”.



The display now shows [7 F V]. The ID field is now ready to be entered into memory.



The ID entry can be terminated with either the **ID** key (to indicate the data just entered was an ID) or with the **ENTER** key (since the SC counting scale is in the dependent mode and has already prompted for the ID field to be entered - it knows the data just entered should be used as the ID).



After entering the ID data, the SC counting scale moves to the next step, prompting for tare. Refer to the example in Chapter 3 for tare and sample entry.

The **ACCUM-** key can also be used to toggle the selections in reverse order. Either key will scroll through all possible choices. Note that there are special characters on the keys in addition to just numbers and letters. These symbols may also be entered into the ID field.

Scale Selection in a Two-Scale System

The SC counting scale supports use of a second scale as a remote sampling or gross counting scale. Details on connecting the remote base are described in the SC Counting Scale Technical Manual and in Chapter 7 of this manual, **Connecting a Second Remote Scale Base**.

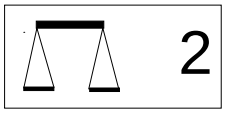
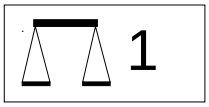
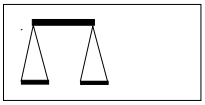
Once a remote scale is connected and calibrated, it may be selected for use by the SC counting scale. There are four possible combinations for sample and gross scale assignment in a two-scale system. The assignments identify which scale will be used for sampling pieces and which will be used for weighing the gross amount of parts. The remote scale can be a lower or higher capacity scale than the SC counting scale. Before beginning a count sequence, you must decide which scale will be used for sampling and which for counting the gross amount of parts.

A typical sequence for two-scale counting is to tare the empty container weight from the gross scale. Then the SC counting scale switches to the sample scale so sampling can be done. When sampling is complete, the gross scale is accessed again to count the bulk parts. Even when using a two-scale counting configuration, either scale may be used as

both gross and sample. This allows counting lighter parts on the smaller scale only and heavier parts using the larger scale only.

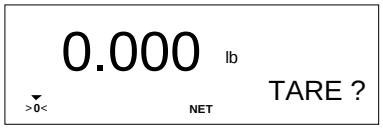
When power is applied to the SC counting scale in a two-scale configuration, it will always default to the local SC scale for both the sample and gross scale. If a different combination is desired, the **SCALE SELECT** key is used to choose the correct selection.

The different two scale counting selections are illustrated in the following table with the SC counting scale display symbol identifying each combination. The symbol will be shown directly above the right display.

SAMPLE SCALE	GROSS SCALE	DISPLAY SYMBOL
SC	SC	No Symbol Shown
SC	Remote Base	
Remote Base	Local (SC)	
Remote Base	Remote Base	

In the following example, we use an SC05 (10 lb / 5kg) scale with a 250 pound (100 kg) remote base for weighing the bulk container. We select the second combination from the table above, which allows us to sample on the SC05 then count the bulk quantity of parts on the remote scale. The dependent mode is used in this example.

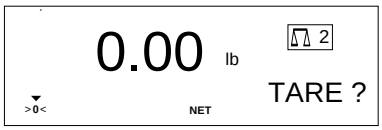
Example - Two Scale Counting in the Dependent Mode



Scale Select

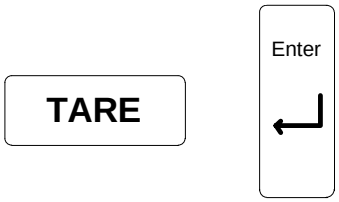
The SC scale displays gross zero weight and prompts for the tare before a transaction begins. Note there is no scale symbol shown. This means the SC counting scale is both sample and gross. We want to choose the remote scale as the gross scale and keep the SC counting scale as the sample scale.

Press the **SCALE SELECT** key to toggle to the next choice for the sample and gross scale combination.

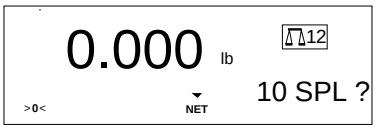


The scale selection symbol now indicates that sampling will be done on the SC counting scale and the gross weighing will be done on the remote scale. This is the desired combination so the **SCALE SELECT** key does not need to be pressed again. If another combination was desired, the **SCALE SELECT** key would be pressed until the correct configuration is shown.

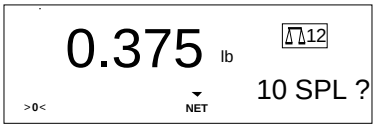
An empty tare container is placed on the remote scale since it is the gross scale.



Press the **TARE** key to enter the tare value. The **ENTER** key may also be used since the SC counting scale knows that the value to be entered is the tare.

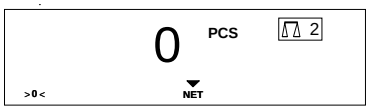


The SC counting scale proceeds to the sampling mode looking for weight to be applied to the sample (local) scale. Note the number “1” flashing on the scale selection icon indicating the active scale.

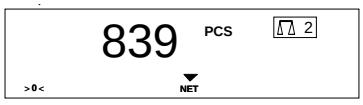


Place the required sample pieces onto the SC counting scale platter.

After the sample pieces have been placed, press the **SAMPLE** key. The **ENTER** key may also be used.



The SC counting scale will switch to the gross scale to continue the counting process and indicate the count of zero pieces.



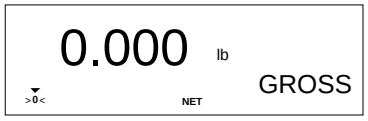
As additional pieces are added to the remote (gross) scale, the piece count will be displayed. The count sequence is complete.

Hand Entering Tare

If the actual weight of the tare container is known, it may be hand entered on the SC counting scale keyboard without placing the empty container on the scale. In the normal sequence, instead of placing the container on the scale, enter the tare value numerically then press **ENTER**.

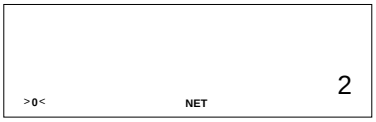
The following example shows the manual entry of a numeric tare value using the keyboard in single scale independent mode of operation. It could also be done in dependent mode and in two-scale configurations.

Example - Manual Tare Entry in the Independent Mode



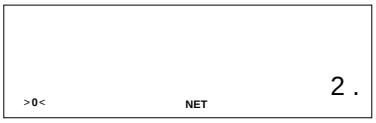
The SC counting scale indicates that it is in the gross weight mode ready to begin. We will use a predetermined tare value of 2.8 pounds. The 2.8 lb container does not need to be on the scale.

Press the **2** key to begin the entry.



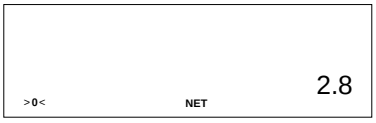
The lower right display will show the tare digits as they are entered.

Press the **.** (decimal point) key.



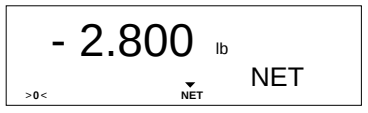
The display now shows the entry of both the 2 and the decimal point.

Press the **8** key as the final numeric value to be entered.



Now the display shows the complete tare value to be entered.

Press the **TARE** key to enter the tare value. The **ENTER** key cannot be used in the independent mode as it had been in the dependent mode.



The SC counting scale will now indicate the negative tare weight in the net mode and is ready for the next step.

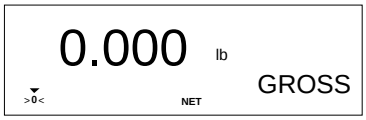
Note: If the tare container was not on the scale while the tare value was entered, DO NOT place it on the scale until AFTER a sample has been taken.

Numeric Entry of Variable Sample Quantity

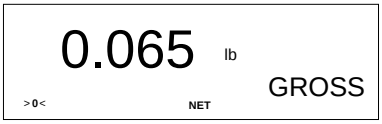
The entry of a variable sample quantity was discussed earlier in this manual using the **SAMPLE** key to toggle through a list of selections. The numeric keys of the SC counting scale permit entry of a custom value directly without searching through a list. Using this method, you can place a handful of parts on the scale and enter an irregular number instead of picking exactly 10 or 20 pieces for sampling. This may be a faster sampling method, depending upon the counting operator's preference.

Sample values above 100 are generally not used since there is an increased chance for a sampling error when hand-counting a large quantity.(See the section on Average Piece Weight Enhancement on page 5-26.) The following example illustrates how to enter a sample quantity of 23 using the numeric keys on the keyboard. The independent mode is used but the dependent mode also supports manually entered quantities.

Example - Numeric Sample Entry in the Independent Mode

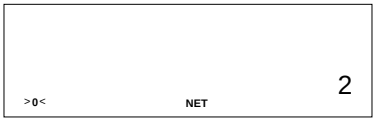


The SC counting scale indicates that it is in the gross weight mode ready to begin. A tare may be entered but this example does not use a tare container so the tare steps will be skipped.



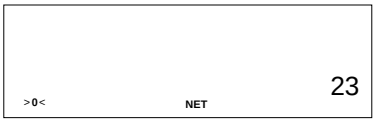
Add the 23 sample pieces to the scale. As the pieces are added, the scale tracks the weight on the left display.

Press the **2** key to begin the variable sample quantity entry.



The lower right display will show the sample digits as they are entered.

Press the **3** key as the second digit of sample entry.



The display now shows the entry of both the 2 and the 3.

Press the **SAMPLE** key to enter the sample value. The **ENTER** key cannot be used in the independent mode as it had been in the dependent mode.

The SC counting scale will now indicate the correct piece count on the scale platter. Additional pieces added will be shown on the display.

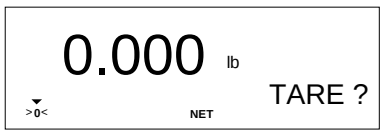
Entering an Average Piece Weight (APW)

The counting examples so far have used parts sampling to determine an accurate average piece weight. This procedure is useful when counting extremely small parts or when parts have a predetermined, accurate APW. There are two ways the average piece weight value can be expressed. It can be shown as the actual weight of one piece. For example, 0.025 lb/piece is the same as 40 pieces/lb. The second way is not used extensively, but the SC counting scale can be programmed in the Master Mode to utilize this APW representation which is actually the inverse of the true APW.

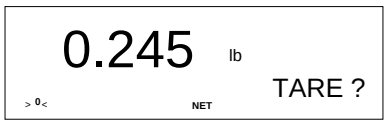
Average piece weights up to scale capacity may be entered. When manually entering an APW value, make sure you are using the correct weighing units. For example, do not enter the APW in pounds when the SC counting scale is being used in the kilogram mode. The weight units must agree or an error will occur.

The following example demonstrates how to enter a decimal APW value of 0.025 pounds. The dependent or independent mode may be used. The dependent mode is used in this example. Note that when the display is prompting for sample, an APW may be entered instead.

Example - APW Entry in the Dependent Mode



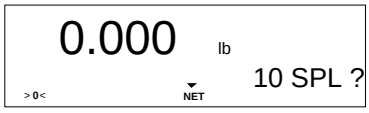
The SC counting scale begins with a tare weight prompt.



Place an empty container on the platter. If a tare container will not be used, proceed to the next step.

Press the **TARE** key to acknowledge entry of the tare value.

TARE

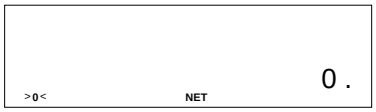


The SC scale will now prompt for a pre-selected sample quantity of pieces to be added to the scale. Instead of placing sample pieces on the scale, begin to enter in the APW using the numeric keys of the SC counting scale.

Press the **0** key to begin the APW entry.

The lower right display will show the digits as they are entered.

Press the **.** (decimal point) key.



The lower right display will show the characters as they are entered.

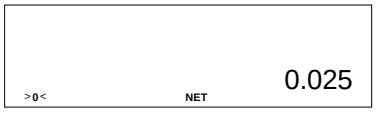
Press the **0** key again.

The lower right display will show the digits as they are entered.

Press the **2** key to continue the 0.025 entry.

The lower right display will show the digits as they are entered.

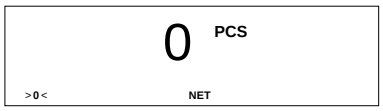
Finally, press the **5** key to complete entry of the APW.



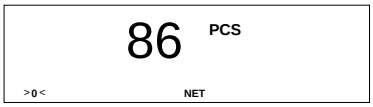
The lower right display now shows all digits as they were entered.

APW

Press the **APW** key to acknowledge the entry.



As soon as the APW is entered, the SC counting scale enters the count mode.



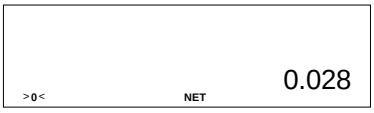
Additional pieces placed on the platter will be shown on the display. The count sequence is complete.

Editing Data with the CLEAR Key

The SC counting scale provides a method to correct a data entry error during entry of an ID, tare value, sample quantity or APW. You must correct the mistake before the entry is terminated with either the **ENTER** key or the specific function key. Once the entry has been terminated, it cannot be corrected. The **CLEAR** key must be pressed to exit the sequence and begin again.

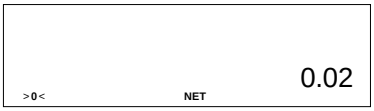
In the previous example, an APW value of 0.025 pounds was entered. If an "8" key was pressed instead of a "5", the following example shows how to erase the "8" and replace it with the correct value of “5”.

Example - Correcting an APW Entry Error



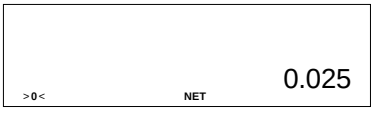
The lower right display now shows all digits of the APW entered except the last character is an “8” and it should have been a “5”.

Press the **CLEAR** key to edit the “8” that was entered by mistake.



The edit process removes the last character entered from the display. It eliminates the character that was entered by mistake.

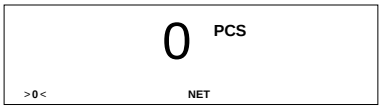
With the mistake erased, press the correct character **5**.



The display shows the complete correct value to be entered as the APW.

APW

Press the **APW** key to acknowledge the entry.



As soon as the APW is entered, the SC counting scale enters the count mode.

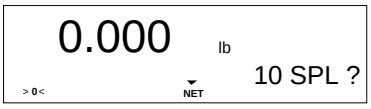
Percent Accuracy Display

The SC scale can be programmed in Master Mode to display the percent of accuracy during a sample sequence. When **percent accuracy display** is enabled, the percent accuracy value is shown on the lower right display .This value indicates the relative accuracy of the APW calculation resulting from the sample size used. In theory, the more sample weight used, the more accurately the scale can determine the APW since the ratio of error that the scale can introduce into the same calculation is reduced. This calculation does not take into account any variance in the individual piece weight of the item being counted. It simply indicates the potential error that could be added to the piece count related to the scale's counting process.

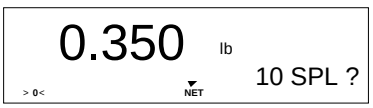
If automatic or manual APW enhancement is enabled in Master Mode, the percent accuracy will be updated every time a new sample enhancement is initiated. The percent accuracy will be calculated to a maximum value of 99.99%.

The following sequence is possible by enabling the percent accuracy and APW enhancement calculation in the Master Mode. The Master Mode programming is discussed in the SC Technical Manual (B14751500A).

Example - Percent Accuracy Display



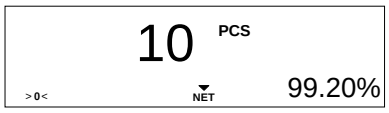
This example shows the SC counting scale in the dependent mode prompting for the addition of 10 sample pieces.



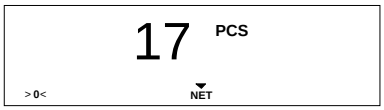
Place the correct number of sample pieces (10) on the scale.

SAMPLE

Press the **SAMPLE** key to acknowledge the placement of sample pieces.



The piece count will be shown and the percent accuracy calculation will be shown on the right display.



As additional pieces are added, they will be shown on the display.

If automatic APW enhancement is enabled, adding these additional pieces will automatically update with the 'ENHANCED' display. If manual APW enhancement is enabled, the **SAMPLE** key must be pressed.

Then the new percent accuracy display will be shown.

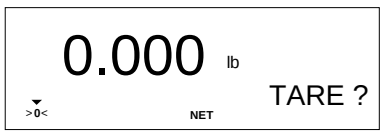
Automatic Clear Tare and/or APW Feature

Some SC scale data fields can be programmed to automatically clear after a transaction is complete. **Tare and APW are common fields chosen for automatic clearing.** When the same piece is counted repeatedly but packed in different size boxes, time can be saved by automatically clearing the tare value after each count and retaining the APW. If the same box was used to package many different parts, you may want to retain the tare value but clear the APW each time.

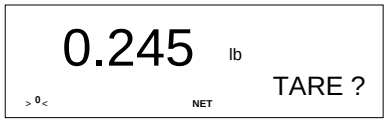
For **auto clear tare** and **auto clear APW** to function, the weight on the scale must exceed three increments above net zero and the count mode must have been accessed. When the weight on the scale settles to no motion within these parameters then returns to within three divisions of gross zero, tare will automatically clear. Both features may be combined so that tare and APW are cleared after each transaction.

These sequences are possible by enabling the auto clear features in the Master Mode. Master Mode programming is discussed in the SC Technical Manual.

Example - Auto Clear Tare in the Dependent Mode

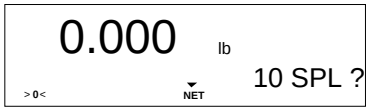


The SC counting scale begins by prompting for a tare weight to be added.

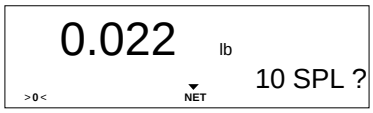


Place an empty container on the platter.

Press the **TARE** key to enter the tare value.

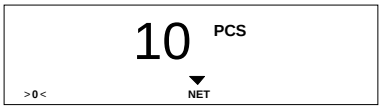


The SC counting scale now prompts for the addition of a pre-selected sample quantity of pieces to be added.

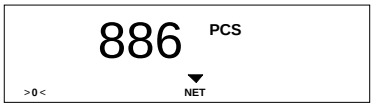


Place the sample pieces on the sample scale.

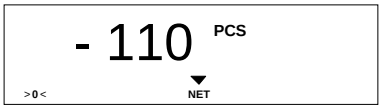
Press the **SAMPLE** key.



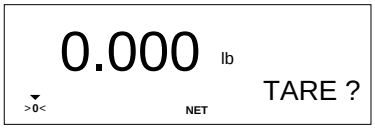
The SC counting scale indicates the piece count.



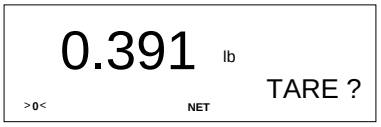
As additional pieces are added, the new count is shown in the count display. When the transaction is complete, remove all the weight from the scale platter.



The SC counting scale indicates a negative piece count equal to the tare value for a brief moment.

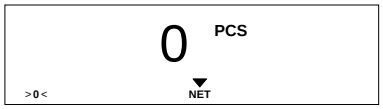


Then the tare is automatically cleared and the display prompts for a new tare to be taken. The APW is retained for the next transaction.

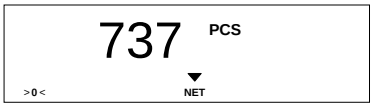


Place the next empty tare container on the scale.

Press the **TARE** key to enter the tare weight of the new container.

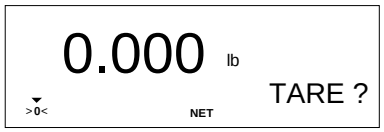


The scale enters the count mode immediately since the APW was retained from the previous transaction.

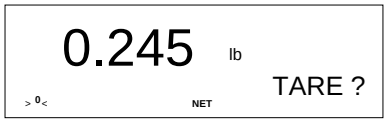


As additional parts are added, the count will be shown.

Example - Auto Clear APW in the Dependent Mode

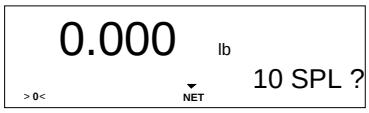


The SC counting scale begins with a tare weight prompt.

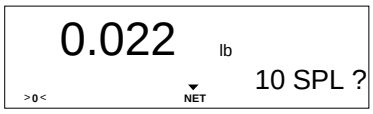


Place the empty container that will be used to hold the pieces to be counted on the platter.

Press the **TARE** key to acknowledge entry of the tare value.

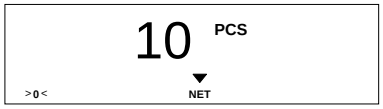


The SC counting scale will now prompt for a pre-selected sample quantity of pieces to be added.

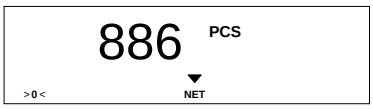


Add the sample pieces to the sample scale.

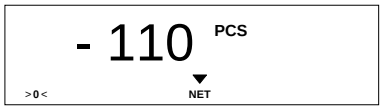
Press the **SAMPLE** key.



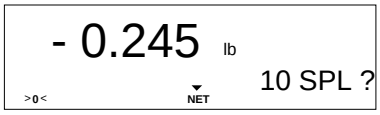
The SC counting scale indicates the piece count.



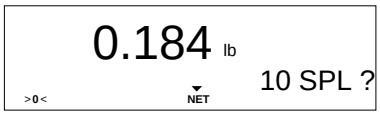
As additional pieces are added, the new count is shown in the count display. When the transaction is complete, remove all the weight from the scale platter.



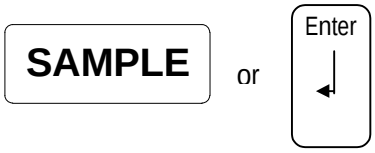
The SC counting scale indicates a negative piece count equal to the tare value for a brief moment.



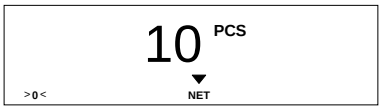
Then the APW is automatically cleared and the display prompts for a new sample to be taken. The tare is retained for the next transaction.



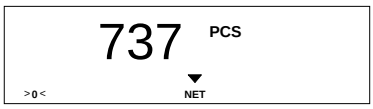
Place an empty container AND the correct sample number of new pieces on the scale platter.



Press the **SAMPLE** key to enter the sample quantity of the new part.



The scale is in the count mode ready for additional pieces to be placed on the scale.



When the parts are added, the count will be shown.

Average Piece Weight Enhancement

APW Enhancement improves the accuracy of an APW. APW enhancement is based on the fact that an inaccurate APW, while not able to accurately count large numbers of parts, will reliably count a small number. This allows a determination of APW based on a larger weight. Given enough enhancements, the APW becomes very accurate.

In Master Mode, the SC counting scale can be programmed to permit the operator to continuously update the average piece weight based on larger and larger samples. A minimum sample weight is required before initially calculating an APW. As additional pieces are placed on the scale, a new APW can be calculated based on the new total sample weight and count.

APW enhancement is useful when the initial computed value of APW does not have the accuracy needed to count large numbers of small pieces. To compensate, the APW can be enhanced constantly up to 4% of the scale capacity. To ensure a minimum APW initial accuracy, a sample weight of at least two display increments must be used. There is a selection in Master Mode which increases the minimum sample to 0.02%, 0.05% or 0.1% of capacity.

When using APW enhancement, you must not add more pieces to the scale than have already been counted. If this maximum is exceeded, a warning of [- Too Many] will be displayed for approximately two seconds then will automatically clear. The operator can remove parts until [Enhanced] is displayed.

Note: If a manageable sample size of an item does not reach the minimum sample weight of 2 display increments, the APW for this item should be accurately determined on a smaller, more sensitive scale and then entered using the keyboard of the SC or via the serial port using a remote terminal.

If the operator ignores the [- Too Many] error display and adds more pieces (or removes more in count-out sample mode), or prints, no further APW enhancement will be done for the current transaction. If the proper procedure is followed, the scale will continue to enhance the APW until 4% of the scale capacity is reached. Once the counting weight reaches 4%, APW enhancement is discontinued.

There are two modes selectable in the Master Mode for APW enhancement: manual and automatic. If manual APW enhancement mode is selected, the SAMPLE key must be pressed to initiate an enhancement cycle. If the automatic APW enhancement mode is selected, each time the scale sees a motion/no-motion sequence, an APW enhancement is initiated.

No operator input is required in automatic mode. The enhancement is automatically done each sample sequence up to 4% of capacity or until the [- Too Many] display is ignored by the operator. This can slow down the sampling process if enhancement is not needed for all the parts being counted. The manual enhancement mode allows the operator to choose when an APW should be enhanced. If none is required for a particular part, the operator does not press **SAMPLE**. If the next part requires enhancement, the operator simply presses **SAMPLE** after adding additional pieces.

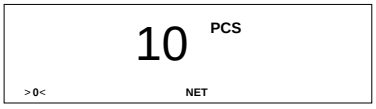
Remember that enhancement occurs with the following conditions satisfied:

a) A minimum sample weight of two display increments (or other value selected as minimum sample in the Master Mode) has been used initially.

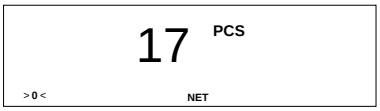
b) Pieces must be added. The weight must have increased (or decreased in the count-out sample mode) at least one display increment since last APW calculation.

c) The pieces added (or removed) must not exceed the amount on the scale when the last enhancement was initiated. A display of [-Too Many] results when this amount is exceeded. A display of [- Too Many] results when this amount is exceeded.

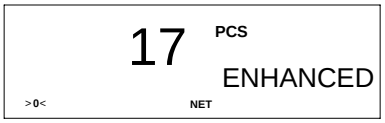
Example - Automatic APW Enhancement Procedure



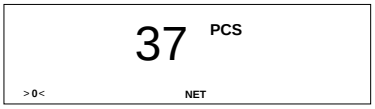
This example shows the SC counting scale in the piece count mode immediately after sampling 10 pieces



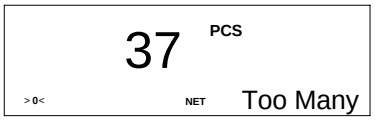
Add 7 additional pieces to the platter.



After the SC counting scale settles to no motion, an APW enhancement will occur and a new APW will be calculated.

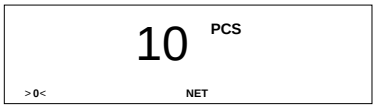


Add 20 more pieces to the platter. The piece count will be shown.



Since you cannot add more pieces for enhancement than have already been counted (17), the SC counting scale will indicate an error. Either remove pieces (to continue enhancement) or continue to add pieces and APW enhancement will be discontinued.

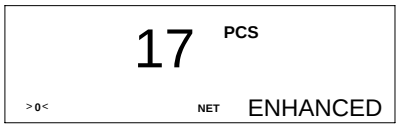
Example - Manual APW Enhancement



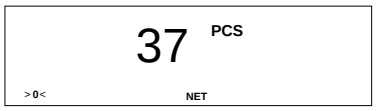
This example shows the SC counting scale in the piece count mode immediately after sampling 10 pieces

Add 7 additional pieces to the platter.

After the SC counting scale settles to no motion, press the **SAMPLE** key.

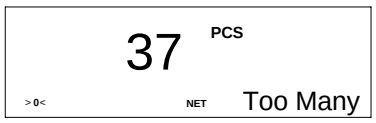


An APW enhancement will occur and a new APW will be calculated. This procedure can be repeated up to 4% of the scale capacity.



Add 20 more pieces to the platter. The new piece count will be shown.

After the SC counting scale settles to no motion, press the **SAMPLE** key.



Since you cannot add more pieces for enhancement than have already been counted, the SC counting scale will indicate an error. Remove pieces (to continue enhancement) or add pieces and APW enhancement will be discontinued.

Accumulation

Accumulation is used for tracking the totals of several weighing or counting sequences. The SC counting scale offers accumulators for gross weight, net weight, and piece count. You may use one, any combination of the three, or all of them. Accumulation is accomplished by pressing the **ACCUM+** or **ACCUM-** key when the SC counting scale is in the count or weight mode. If you are not in the count mode, a piece count cannot be accumulated but gross and net weight can be. Each accumulator can store values up to seven digits in length, allowing you to accumulate up to 9,999,999 pieces.

The **ACCUM+** key is used to add values to the totals. The **ACCUM-** key is used to subtract values from the accumulators. The following values are stored when accumulating:

Gross - current gross weight on the scale is either added (**ACCUM+**) or subtracted (**ACCUM-**).

Net - the absolute value of the net weight is added or subtracted.

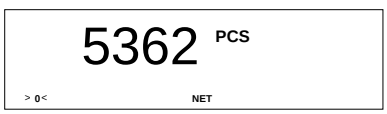
Pieces - the absolute value of the piece count is added or subtracted.

For protection against duplicate accumulation, the weight on the scale must return to within +/- 3 increments of gross or net zero to be able to accumulate again. If the weight does not return to within this “window” and a second accumulation is attempted, the SC counting scale will replace the previous accumulation with the current values. The display will show [Replaced] in this situation.

You cannot accumulate when the weight on the scale is within the reset “window" which is within +/- 3 increments of gross or net zero. If an accumulation is attempted, a display of [No Add] or [No Sub] will be shown. This display will also be shown in other circumstances where accumulation is not possible.

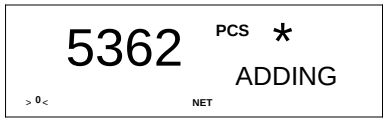
Accumulators may be recalled for viewing or may be added to the data output to a printer or other serial device for documentation purposes. They can be cleared automatically or manually.

Example - Accumulation Procedure

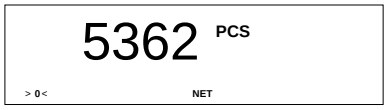


This shows the SC counting scale in the piece count mode when the transaction is complete and the operator is ready to accumulate.

Press the **ACCUM+** key and the SC counting scale will add the selected fields to its accumulators.



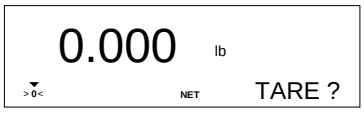
After the **ACCUM +** key is pressed, the display will show [Adding] on the right side of the display. The * symbol above the [Adding] display will also illuminate to indicate an accumulation is taking place.



When accumulation is complete, the display will return to showing only the piece count again.

The **ACCUM-** key could have been used in this example to subtract these values instead. The accumulator values can be recalled to the display using the **RECALL** key. Multiple depressions of the **ACCUM+** key will recall the totals for net weight, gross weight and count.

Example - Viewing the Totals

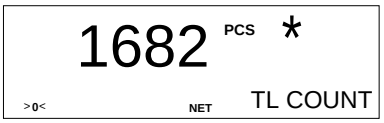


The SC counting scale can recall the accumulated totals for viewing from almost any display mode. The home position is shown here.

Press the **RECALL** key to begin the accumulator viewing process.

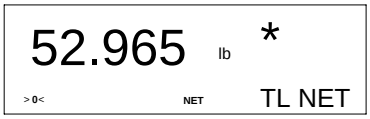
The first recall field (percent accuracy) will be recalled on the display for viewing.

Press the **ACCUM+** key to directly access the accumulator values.



The total piece count accumulator will be shown first.

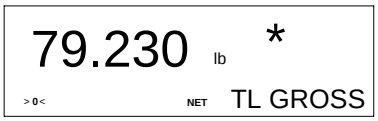
Press the **ACCUM+** key to directly access the next accumulator value.



The total net weight accumulator will be shown.

Accum +

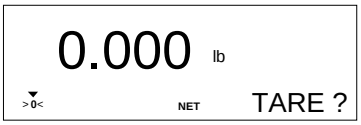
Pressing the **ACCUM+** key again will display the final accumulator value - total gross weight.



You can continue to scroll through the accumulators by pressing the **ACCUM+** key as many times as needed.

Clear C

After all desired accumulators have been viewed, pressing the **CLEAR** key will exit the recall sequence. The **CLEAR** key can be pressed at any time during recall to return to the normal display mode.



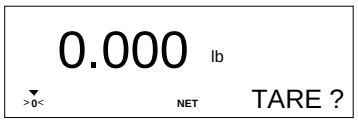
After exiting the recall sequence, the SC counting scale will return to its previous display condition as shown.

Clearing the Totals

The **accumulator totals may be cleared** from the SC counting scale keyboard. During the recall sequence, when the desired accumulator is displayed, press the **ZERO** key twice to clear the totals value.

During Master Mode programming, automatic clearing of the totals can be enabled. All three accumulators will be cleared when the **CLEAR** key is pressed at the end of a count cycle. The display will show [CLR ACCM] during the clearing process. This would typically be used when accumulating one part for several transactions, then wanting to print the total values and clear out the tare and APW, and begin counting a different part. The automatic clearing eliminates the operator steps of clearing each total individually. The totals will also be cleared if the scale goes into the sleep mode when auto clear is enabled.

Example - Manually Clearing Totals



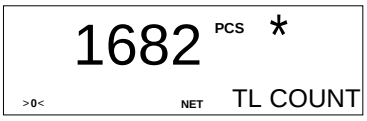
The SC counting scale can recall the accumulated totals for viewing from almost any display mode. The home display position is shown here.

Recall i

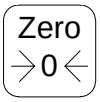
Press the **RECALL** key to begin the accumulator viewing process.

The first recall field (percent accuracy) will be recalled on the display for viewing.

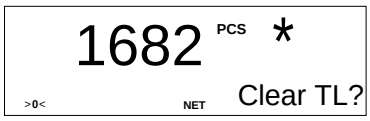
Press the **ACCUM+** key to directly access the accumulator values.



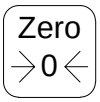
The total piece count accumulator will be shown first.



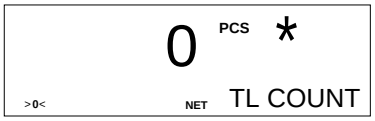
Press **ZERO** to clear the piece count accumulator value. If you do not want to clear the piece count accumulator, press **ACCUM+** to skip to the net weight accumulator.



The SC counting scale will ask you to verify that you wish to clear the accumulator by asking [Clear TL?].



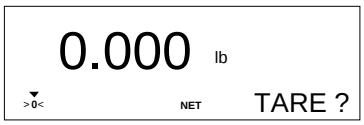
Press the **ZERO** key again to confirm and the accumulator value will be reset to zero. If you do not wish to clear the total, press **CLEAR** to exit the recall sequence.



The piece count accumulator will reset to zero as shown.

Pressing the **ACCUM+** key again will take you to the next accumulator which you may either clear or skip.

After all desired accumulators have been viewed and/or cleared, pressing the **CLEAR** key will exit the recall sequence.



After exiting the recall sequence, the scale will return to its previous display condition as shown.

Printing the Results

The SC counting scale includes a standard serial I/O port that may be used to transmit data to a printer. This provides the ability to print labels, tickets or record individual transactions on a strip printer. All parameters for serial communication are programmed in the Master Mode as described in the SC Technical Manual. Contact your local METTLER TOLEDO representative for assistance or to obtain a manual.

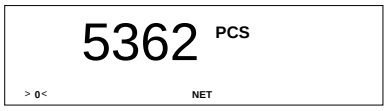
To send information to the printer, when the sequence is complete, press **PRINT**. If the weight on the scale is more than 20 increments above gross zero and there is no motion on the scale, a data output will occur.

If there is motion, the SC counting scale will wait until motion ceases then transmit the data. If the weight on the scale is less than 20 increments above gross zero, an error of [No Print] is displayed for approximately 2 seconds. More weight must be added to complete a print cycle.

The SC counting scale can perform an autoprint without operator control. In count mode when the weight settles to a no-motion condition greater than 3 increments, the scale will automatically transmit data. After transmission, the weight must return to within +/- 3 increments of gross or net zero before another auto print cycle is possible. If autoprint is enabled, the **PRINT** key on the SC scale keypad is still operational.

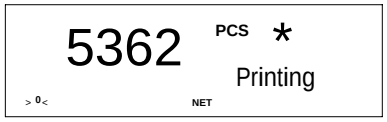
To print several times without returning the scale to zero between prints, use the repeat print feature in the Master Mode. The default setting for this step is enabled so you can print multiple times. If only one print is permitted per transaction, repeat print must be disabled. This provides tighter control for documentation purposes.

Example - Printing



This example shows the SC counting scale in the piece count mode when the transaction is complete and the operator is ready to print.

Press the **PRINT** key and the scale will transmit data from the serial port to a printer or other device.

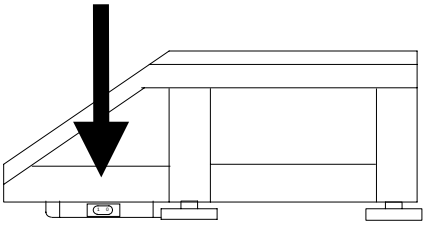


While the data is being transmitted, the right display will show [Printing].

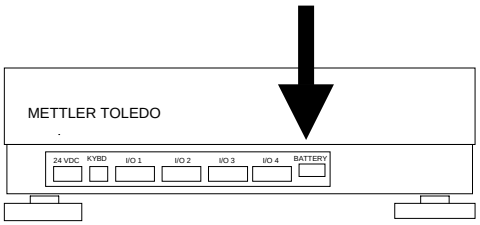
When printing is complete, the display will return to showing only the piece count again.

Battery Operation

An optional internal NiCad battery pack allows the SC counting scale to operate in areas where it would be difficult to attach AC power such as when used with a portable cart. When this option is installed, you do not need to plug the scale into AC power. To operate from battery power, you must have the battery switch on the scale turned “on” (1=on; 0=off). Refer to the following figures for the location of the switch.

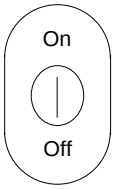


Battery Switch SC05 and SC15



Battery Switch SC30 and SC60

If the scale is not plugged into an AC power source and the battery switch is “on," the battery operates the scale. All SC counting scale standard features may still be used. A single scale SC counting scale will operate continuously for approximately 6.5 hours from a fully charged battery. If a DigiTOL remote base is attached, the operating time is reduced to approximately 4 hours. With a single cell analog remote base, battery life is limited to about 5 hours. With an analog floor scale, it will last approximately 3 hours.

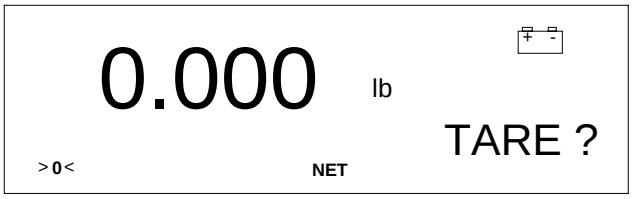


Front Panel ON/OFF Key

To conserve battery power, a sleep mode is available (set in Master Mode) which allows the scale to “sleep” during periods of inactivity. Extended operation time will depend on how often the scale accesses the sleep mode. In normal use, up to 30% additional operating time may be obtained. The sleep mode can also be accessed directly by pressing the front panel keypad **ON/OFF** key.

When the battery can no longer operate the scale, a warning symbol will flash on the display for approximately 2 minutes before the SC counting scale turns off. The display will show [PowEr Failure]. Turn the battery switch “off,” and plug the scale into an AC outlet to recharge.

If the battery is low when the scale is turned on, the display will show [SLEEP], and the SC counting scale will not operate. The battery symbol will be blinking. To operate the scale, connect it to an AC power source and wait until the battery symbol shuts off (approximately 2 minutes). Then press the **ON/OFF** key to turn the scale on.



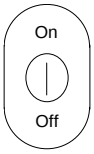
Flashing Low Battery Symbol

NOTE: Do not use the standard size 250mA wall power supply (P/N 14083200A, 14806900A or 14912100A) to recharge the battery. You must use the larger 1.0 Amp power supply (P/N 14605500A or A14664800A). Failure to do so could result in permanent damage to either the power supply or the scale. Use only the 1.0 Amp power supply to recharge the battery.

To recharge the battery, attach the larger power supply (14605500A or A146648-0047) to the rear of the scale and an AC power source. The average recharge time for a fully discharged battery is approximately14 hours. It is recommended that a battery-equipped SC counting scale be plugged into an AC power source to recharge the battery whenever possible to ensure maximum operating time when battery power is used. The internal charger will not overcharge the battery.

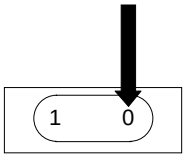
If using a spare battery, you must replace the discharged internal battery with a fully charged battery. Remove the battery cover plate from the bottom of the SC counting scale, unplug the discharged battery, and plug in the fully charged one. Reinstall the cover plate. The SC counting scale is ready to use. The discharged battery can be recharged using the external battery charger.

Battery Replacement Procedure

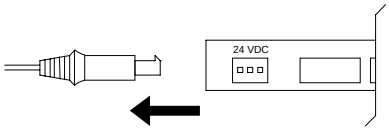


- Press the **ON/OFF** key on the front panel to put the SC counting scale into the sleep mode.

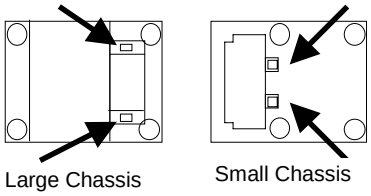
- The SC counting scale should now show [SLEEP] on the display.



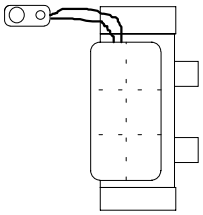
Turn the battery switch to the “off” position. The switch for the small SC counting scale is under the scale on the right side and the larger SC counting scale is on the rear panel.



- Disconnect the AC power plug from the rear of the SC counting scale.



- Place the SC counting scale onto its side and remove the battery cover by turning the two plastic retainers 90°.

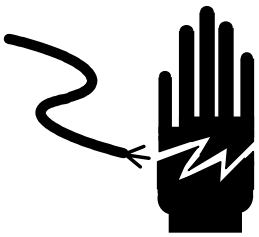


- Carefully remove the battery pack from the scale and unplug the batteries from the main harness.

- Connect the new battery pack and repeat the steps above in reverse order.

6 Additional Information

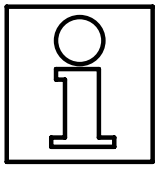
Caring for Your Scale



WARNING!

DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, OR CLEANING. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

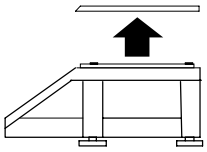
The SC counting scale requires minimal maintenance. It is recommended that you clean it regularly to preserve its value and enhance its dependability.



- Wipe the exterior surfaces of the scale with a damp cloth and a mild commercial household cleaner.

- POTENTIAL SHOCK HAZARD!
- Do not spray the cleaner directly onto the scale. Apply the cleaner to the cleaning cloth then wipe the scale.
- Never clean the scale under running water.

- Always remove corrosive materials immediately.
- Never use acids, bases or similar types of solvents for cleaning.



- Lift the platter of the SC counting scale and remove any dirt or other objects which may have collected between the cover and platter. Do not attempt any cleaning below the covers - damage to the scale may result.

Display Messages and Error Messages

When operating the SC counting scale, you may see errors or messages displayed due to an incorrect key sequence, not meeting certain requirements for a feature, or a failure of the scale. The following chart lists some of these displays and action items that may eliminate the error or explain the message. If an error persists, please contact your local representative for further assistance.

DISPLAY MESSAGE	DESCRIPTION	ACTION
Adding	Indicates that the **ACCUM+** key was pressed and the current scale values are being accumulated.	No action required.
Replaced	Indicates that the **ACCUM+** key was replaced and the current scale values are replacing the previously stored values in the accumulators.	No action required. If a second accumulation was desired, make sure the scale returns to zero between accumulations.
Subtract	Indicates that the **ACCUM-** key was pressed and the current scale values are being subtracted from the accumulator.	No action required.
Too Many	Too many pieces were added to the platter during an APW enhancement process.	Remove some pieces from the scale platter until the error does not reoccur. After an enhancement occurs, more pieces may be added.
• - - - - - • OutOfRng	Scale turned on with weight on the scale exceeding the programmed power up zero capture range.	Remove extra weight on the scale. A larger power up zero capture range may be required in Master Mode. Shipping screw may be in SC05.
• - - - - - • OutOfRng	Scale turned on with weight on the scale below the programmed power up zero capture range.	Add weight to the scale. Platter may be off. A larger power up zero capture range may be required in Master Mode.
• - - - - - • Over Cap	Weight on the scale has exceeded the calibrated capacity.	Remove weight from the platter until the error disappears and weight is shown.
• - - - - - • UnderCap	Weight on the scale is below zero more than 5 increments.	Press **ZERO** key. If zero cannot be captured, service may be required.

DISPLAY MESSAGE	DESCRIPTION	ACTION
- - - - - - -	Tare interlock is enabled and there is motion on the scale.	The message automatically clears when weight on the scale becomes stable. Disable tare interlock in Master Mode to show weight values during motion.
CLEAr APW>Cap	APW greater than the calibrated capacity of the SC counting scale entered.	Press **CLEAR** or **ESCAPE**.
CLEAr Illegal	A sequence of operation is taken out of order.	Press **CLEAR**, then reenter the operation in the correct sequence.
CLEAr Too High	The count data to be displayed is greater than 9,999,999 pieces.	Remove some pieces, press **CLEAR** key.
Error BadEntry	Data type is not correct or invalid data was entered. Possibly an incorrect key sequence.	Enter an integer for the sample size (no decimal) or enter a number for the weight (no alpha). Follow the correct key sequence.
Error FullAccm	The accumulator is full.	Clear accumulators by recalling the accumulator to be cleared using the **RECALL** key. When the desired accumulator is displayed, press **ZERO** key twice.
Error InRecall	The function being attempted, cannot be completed while the SC counting scale is in the recall mode.	Error will automatically clear in 2 seconds. Press **CLEAR** to exit Information mode, then retry the function.
Error Max Entry	Data exceeds the maximum allowable fields (8 characters).	Press **CLEAR** or **ESCAPE** and reenter the data.
Error No Add	Addition (ACCUM+) attempted without meeting the accumulation requirements or ACCUM+ pressed out of sequence.	Make sure weight is more than 3 increments from gross and net zero before accumulating
Error No Chain	Multiple tares attempted while chain tare disabled.	Enable chain tare in Master Mode or clear out of a count transaction and begin new transaction from beginning.
Error No Kybd	A pushbutton or keyboard tare has failed because it is disabled in Master Mode.	Enable both pushbutton and keyboard tare in Master Mode and retry the sequence.
Error No Print	A print sequence attempted with gross weight below 20 increments or repeat print is disabled.	Add additional weight then retry the print or enable repeat print in the Master Mode.
Error NoRemote	The remote second scale not configured or installed properly.	Enable the second scale in Service Mode and verify second scale installation.

DISPLAY MESSAGE	DESCRIPTION	ACTION
Error No Sub	A subtraction (ACCUM-) was attempted without meeting the accumulation requirements or ACCUM- pressed out of sequence.	This is not a user function. Please call Mettler Toledo for assistance.
Error NoSwitch	Switching units while alternate weight unit disabled in Master Mode.	Do not switch units or enable an alternate weight unit in Master Mode.
Error No Tare	Occurs if tare is disabled and a pushbutton tare is attempted.	Do not attempt a tare or enable the tare feature in Master Mode.
Error No Var	A variable sample entry was attempted while only fixed sample size is enabled in Master Mode.	Use only the selected fixed sample quantity or enable the variable sample selection in Master Mode.
Error Spl Low	The total weight of the sample is not 2 display increments or has not met the minimum sample % selected in the Master Mode.	Error will automatically clear after 2 seconds. Add additional sample pieces and resample.
Error Tr>Limit	A tare value greater than scale capacity has been entered.	Retry the tare entry using a correct tare value.
PouuEr Failure	Indicates a low battery condition exists. Further use of the scale is not permitted.	Battery must be recharged. Turn battery switch off. Plug scale into AC outlet. Display will show [SLEEP] and battery symbol will blink a few minutes. After the symbol stops blinking, press On/Off key to turn scale on.
SLEEP	Shows that the scale is "off" and is "sleeping". This extends battery life. At powerup, this may indicate a low battery condition.	To turn the scale on, press the On/Off front panel key. The SC counting scale should complete a powerup cycle. If a low battery condition exists, turn the battery switch off and plug the scale into an AC power source. After a few minutes, press the On/Off key to turn the scale on.
SLEEP Waking	Indicates the scale is powering up from the sleep mode after the On/Off key was pressed.	Display will automatically clear after approximately 5 seconds.

Specifications

Weighing Capacity	Configuration
10 lb (5 kg)	Combined keyboard/display and weighing platform assembly
37.5 lb (15 kg)	Combined keyboard/display, and weighing platform assembly
60 lb (30 kg)	Separate keyboard/display with a 3-foot coiled cable that extends to12 feet and connects it to the platform
120 lb (60 kg)	Separate keyboard/display with a 3-foot coiled cable that extends to12 feet and connects it to the platform

Product Weights

Model	Net Weight	Shipping Weight
SC05, SC15	11.1 lb / 5 kg	17 lb / 8 kg
SC30, SC60	24 lb / 11 kg	30 lb /14 kg

Dimensions

SC05 and SC15 scales: 12.2" (310mm) wide by 14.8" (375mm) deep by 5.3" (135mm) high.

Platter size: 12" (305mm) wide by 8.5" (215mm) deep.

SC30 and SC60 scales: 13.8" (350mm) wide by 11.8" (300mm) deep by 5.3" (135mm) high.

Platter size: 13.8" (350mm) wide by 11.8" (300mm) deep.

Temperature

Operating temperature range: 50°F to 104°F (10° C to 40° C).
Storage temperature range: -4°F to 158°F (-20° C to 70°C).

SC Scale Capacities

The following are the standard builds for the SC scale. Other builds are possible by recalibrating in the Service Model. The recalibration process is described in the SC Technical Manual (B14751500A).

Model	Pounds Mode	Kilogram Mode	Display Divisions
SC05	10 x 0.001 lb	5 x 0.0005 kg	10,000
SC15	37.5 x 0.005 lb	15 x 0.002 kg	7,500
SC30	60 x 0.01 lb	30 x 0.005 kg	6,000
SC60	120 x 0.02 lb	60 x 0.01 kg	6,000

Standard Features

All SC scales have the following features:

- Compact and rugged, industrial construction.
- Convenient keypad and large, easy to read display. (See Chapter 3 for illustration.)
- Eight character alpha-numeric display for operator prompting. (See Chapter 3 for illustration.)
- Stainless steel platter to ensure long life.
- Bi-directional RS-232 serial port.
- Expandability through use of optional battery.
- UltraRes® load cell with 1 part in 1 million counting resolution.
- Ability to switch between weighing units (lb/kg, lb/g, kg/g)
- Beeper to indicate key activation or error condition.
- Accumulators for gross and net weights and count.
- Various counting modes to adapt to your counting sequences.
- Optional remote second scale connection for flexibility.

Optional Equipment

The following optional equipment may be factory-installed or ordered as a separate kit for installation at a later time. Detailed instructions are included with each kit for installation by qualified personnel. Please contact your local METTLER TOLEDO representative.

NiCad Battery Option (0919-0045 and 0919-0049)

Two battery options - one for the smaller and one for the larger SC counting scale, allow the SC counting scale to operate when not connected to an AC power outlet. Both use a "pack" of NiCad batteries, which allows multiple recharging, and are attached to the bottom of the scale. The battery pack provides 7.2 volts of power to operate the SC counting scale (without a remote second scale) up to 6.5 hours without recharging. To recharge the pack, plug the SC counting scale into an AC power source for approximately 14 hours. The sleep mode can be enabled to conserve battery life. A battery low symbol illuminates on the display when approximately 2 minutes of battery operation remain.

Extra NiCad Battery (0919-0046)

This kit consists of the NiCad battery only. It can be installed to operate the SC counting scale while the original battery is being recharged externally.

Heavy Duty 1.0 Amp Power Supply (0919-0047)

The power supply is required when any electrical option is used with the SC counting scale. It supplies additional power to operate a remote scale

or to recharge a battery via the scale. This power supply is designed for 120/240 VAC with U.S. line cord.

External Battery Charger (0919-0051)

This 120VAC charging device recharges a NiCad battery pack external to the scale while a fresh battery pack is installed for longer operating time.

Heavy Duty 1.0 Amp Power Supply (0919-0052)

This power supply is required when any electrical option is used with the SC scale. It supplies additional power to operate a remote scale or to recharge a battery via the scale. This power supply is designed for 120/240VAC input with U.K. line.

Heavy Duty 1.0 Amp Power Supply (0919-0053)

This power supply is required when any electrical option is used with the SC scale. It supplies additional power to operate a remote scale or to recharge a battery via the scale. This power supply is designed for 120/240VAC input with European line cord.

Heavy Duty 1.0 Amp Power Supply (0919-0054)

This power supply is required when any electrical option is used with the SC scale. It supplies additional power to operate a remote scale or to recharge a battery via the scale. This power supply is designed for 120/240VAC input with Australian line cord.

Analog Remote 2nd Scale (0901-0385)

The analog remote 2nd scale allows you to attach a remote analog scale base. A larger scale for counting large containers of parts or a lower capacity remote scale for sampling very small parts may be used.

DigiTOL Remote 2nd Scale (0901-0386)

The DigiTOL remote 2nd scale allows you to attach a remote DigiTOL scale base. A larger scale for counting large containers of parts may be used.

Keyboard/Display Stand (0992-0001)

This metal stand supports the keyboard/display of the SC30 or SC60 to make it easier to view and use in certain situations. It may be used alone or with the attachment bracket (0992-0002).

Stand Attachment Bracket (0992-0002)

The bracket attaches the keyboard/display stand (described above but not included) to the base of the SC30 and SC60 scale to make each an integral system that can be easily moved.

Sealing Kit (0992-0003)

The sealing kit contains all required hardware to prevent unauthorized access to the scale weighing parameters. This is only required when "sealing" the SC counting scale for approved applications. Hardware for both large and small models is included.

Software Upgrade Kit (0992-0004).

This kit contains new firmware for the SC to upgrade an older unit to the latest functionality. THIS KIT REQUIRES INSTALLATION BY A TRAINED SERVICE TECHNICIAN.

RS-232 Interface Cable (0900-0255)

This 20-foot (6 m) long cable provides bi-directional RS-232 interface between the SC counting scale and a serial device such as a printer that utilizes a 25 pin female serial connector.

RS-232 Interface Cable (0900-0278)

This 15-foot (5 m) long cable provides bi-directional RS-232 interface between the SC counting scale and a serial device such as a computer that utilizes a 9 pin male serial connector.

RS-232 Interface Cable (0900-0279)

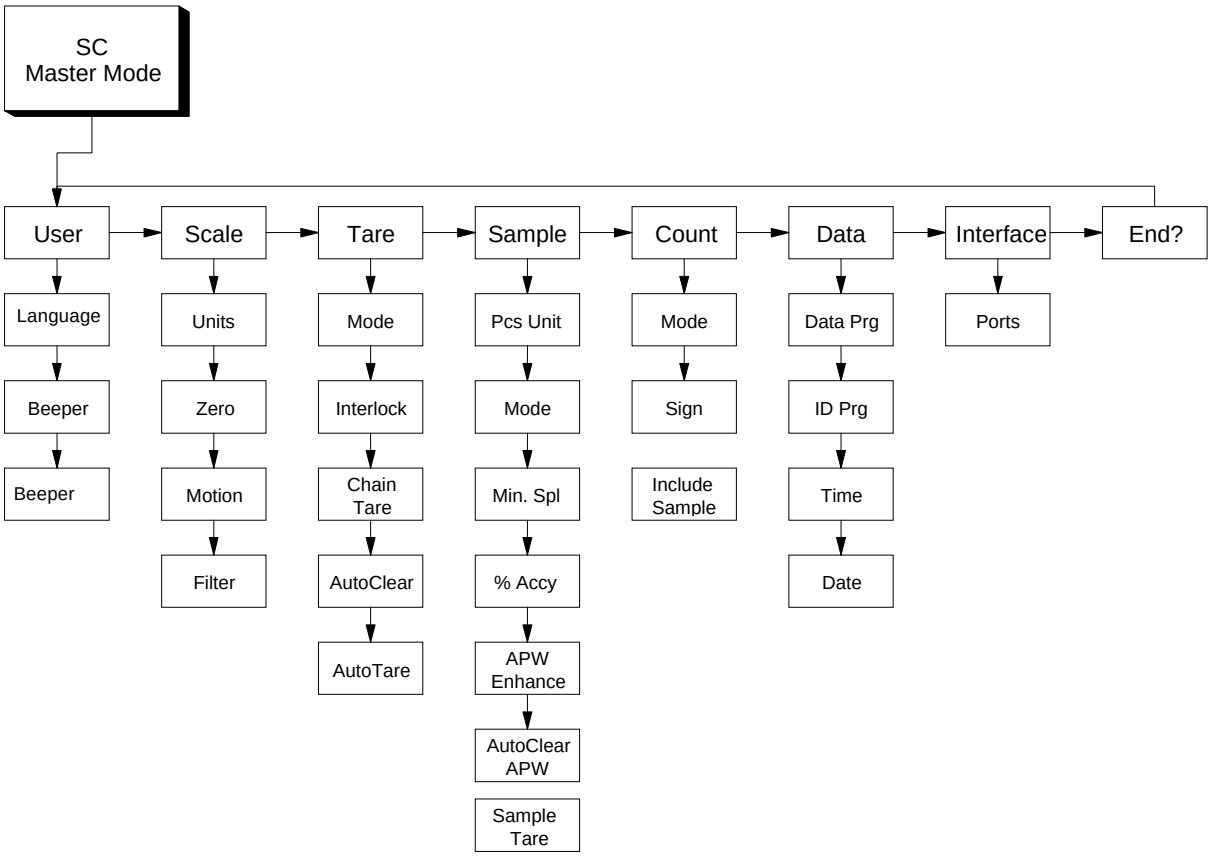
This 15-foot (5 m) long cable provides bi-directional RS-232 interface between the SC counting scale and a serial device such as a computer that utilizes a 25 pin male serial connector.

Roller Ball Top Platter (0906-0161)

This platter contains 14 roller balls and is designed to allow the operator to easily move containers onto the base of the SC30 or SC60 scales.

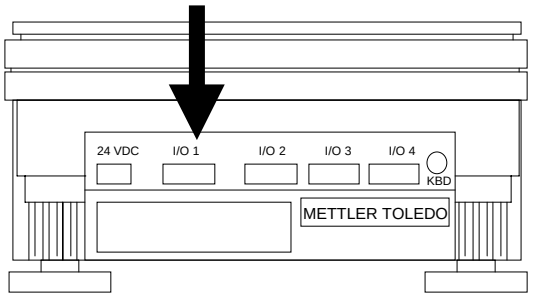
Master Mode

The following is an overview of the parameters that may be selected during the programming of the SC counting scale in the Master Mode. Information on accessing the Master Mode is found in the SC Counting Scale Technical Manual. If you wish to modify any of the programming selections in the Master Mode, please contact your local Mettler Toledo representative for assistance or to obtain a service manual.

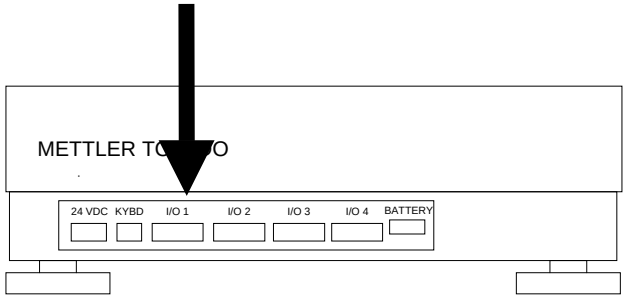


Connecting a Printer

Every SC scale contains an installed RS-232 serial port. The connection to the serial port is via a female 9 pin connector on the back panel of the scale. It is labeled I/O 1.



SC05, SC15



SC30, SC60

Mettler Toledo provides several cables to connect various devices to the serial port of the SC counting scale. (See the beginning of this chapter, **Optional Equipment***).*

The pin designations for I/O 1 on the rear panel of the SC counting scale are configured as follows:

Note: Do not use pin locations other than 2,3 or 5. Other pins are used for testing at the factory and may cause damage if mis-connected.

Pin Number	Signal	Definition
2	RxD	Receive RS-232 data
3	TxD	Transmit RS-232 data
5	Signal Ground	Ground Connection

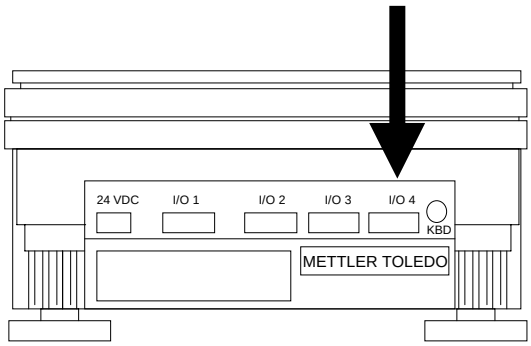
For more information about serial connections, contact your local Mettler Toledo representative for assistance or to obtain a service manual.

Connecting a Remote Second Scale Base

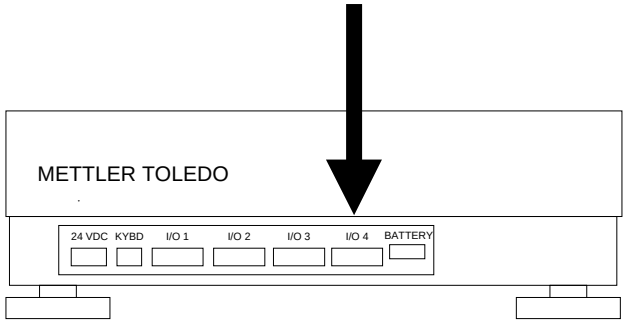
The SC counting scale can support one remote scale base in addition to the built-in scale. It can be ordered with the second-scale option already installed, or the option may be ordered and installed after initial installation of the SC counting scale. There are two scale options, one for analog scale bases and one for DigiTOL scale bases. These options ARE NOT INTERCHANGEABLE. Only an analog scale base can be connected to an remote analog scale option. A DigiTOL option can only have a DigiTOL base connected.

Analog Remote Scale

The analog remote scale option provides power to operate from one to four load cells (350 ohms) in a remote base. This allows use of either a floor scale or a bench scale for full flexibility. The connection to the SC scale is made via a 9 pin female connector on the back panel. The port will be labeled I/O 4. Refer to the following drawings for port location.



SC05, SC15



SC30, SC60

The pin designation for the I/O 4 analog scale port is:

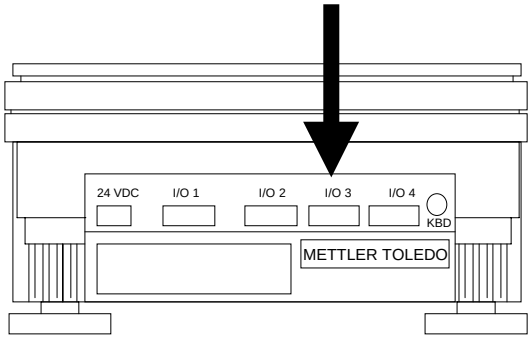
Pin Number	Signal	Definition
1	+ Exc	Positive Excitation
2	+ Sense	Positive Sense
4	- Sense	Negative Sense
5	- Exc	Negative Excitation
6	Key	Plastic Key
7	+ Signal	Positive L/C Signal
8	- Signal	Negative L/C Signal

Shield of cable should be tied to chassis of the SC counting scale via metal shell of the I/O 4 connector.

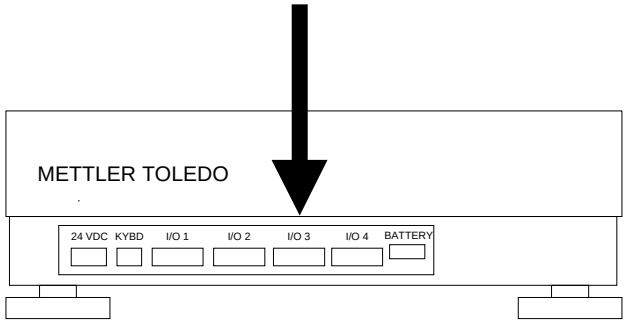
DigiTOL® Remote Scale

The DigiTOL remote scale option provides power to operate a DigiTOL remote base. This allows use of either an UltraRes or standard bench scale for full flexibility. The connection to the SC scale is made via a 9 pin female connector on the back panel. The port will be labeled I/O 3.

Refer to the following drawings for port location.



SC05, SC15



SC30, SC60

The pin designation for the I/O 3 DigiTOL scale port is:

Pin Number	Color Code	Signal	Definition
1	Red	RxD - A	Receive RS-422 Data - A
3	--	Key	Plastic Key
4	N/C	RxD - B	Receive RS-422 Data - B
5	Green	+ 20 VDC	Power Supply
6	Yellow	TxD - B	Transmit RS-422 Data - B
7	Blue	Gnd	Power Ground
8	Black	TxD - A	Transmit RS-422 Data - A

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Publication Part Number: A15031300A Publication Date: 5/98

PROBLEM(S) TYPE:	DESCRIBE PROBLEM(S):	*INTERNAL USE ONLY*
☐ Technical Accuracy	☐ Text ☐ Illustration	
☐ Completeness What information is missing?	☐ Procedure/step ☐ Illustration ☐ Definition ☐ Example ☐ Guideline ☐ Feature ☐ Explanation ☐ Other (please explain below)	☐ *Info. in manual* ☐ *Info. not in manual*
☐ Clarity What is not clear?		
☐ Sequence What is not in the right order?		
☐ Other Comments Use another sheet for additional comments.		

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Please note the name, address, phone number and fax number of the local METTLER TOLEDO representative below for future reference.

Representative's Name: _____

Local Address: _____

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