

## SAC SERIES

### TRIPLE-INTERVAL HIGH PRECISION COUNTING SCALE

#### OPERATION MANUAL

PLEASE READ THIS MANUAL VERY CAREFULLY BEFORE ATTEMPT  
TO OPERATE THE SCALE

December 2001

*Specifications subject to change without prior notice*

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## 1. INSTALLATION

### CAUTION:

- a. This is a precision measuring device, handle with extreme care.
- b. Allow 2 minutes for warm up before operating.

1.1 **CHECK** and make sure that the following accessories are included:

- a. This operation manual
- b. Scale x 1
- c. Platter x 1
- d. Power adaptor x 1

Contact your dealer if any items are missing.

1.2 **INSERT** the platter onto the scale carefully. No excessive force is required.

### 1.3 POWER THE SCALE ON

- a. Before plugging the power adaptor into an electricity outlet, check and make sure that the input voltage of power adaptor matches with the output voltage of the outlet. If not, do not plug in and contact your dealer immediately.
- b. Before first time use, plug the main adaptor into the power outlet and charge the scale for at least 8 hours.

1.4 **RETAIN** the packing materials for future transportation purposes.

### CAUTION:

In some countries, this unit is required by law to be sealed (or stamped) and bearing a serial number. Do not break or remove the seal (or stamp) or serial affixed to this scale. Such actions may offend the law and void the warranty. Contact your dealer for more information or after sales service.

For most accurate result, do not use this scale when environment conditions fall beyond those listed in **SPECIFICATIONS**.

Do not attempt to open this unit or any trouble shootings except those listed in **TROUBLESHOOTING**.

## 2. SPECIFICATIONS

### 2.1 GENERAL SPECIFICATIONS

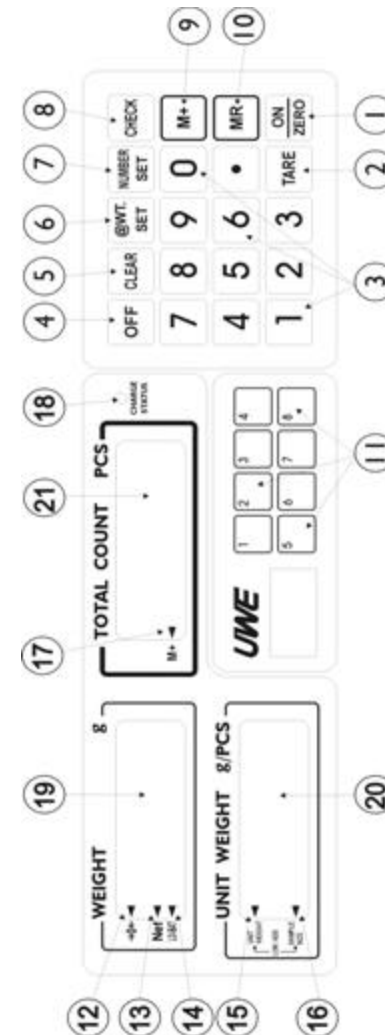
Model No.	Max <sub>1</sub> /e <sub>1</sub>	Max <sub>2</sub> /e <sub>2</sub>	Max <sub>3</sub> /e <sub>3</sub>
SAC-7.5C	1500g/0.1g	3000g/0.2g	7500g/0.5g
SAC-15C	3000g/0.2g	7500g/0.5g	15000g/1g
SAC-30C	7500g/0.5g	15000g/1g	30000g/2g
SAC-60C	15000g/1g	30000g/2g	60000g/5g
Platter Size	230 x 345mm All Stainless Steel		
Power Source	Built-in Rechargeable or Power Adaptor		
Operation Environment	0°~40°C(32°~104°F), Non-condensed R.H.=85%		

Specifications subject to change without notice

### 2.2 MINIMUM PIECES, WEIGHT APPLIED & SAMPLE SIZE WEIGHT SPECIFICATIONS

Model No.	Recommended Minimum		
	Piece Weight	Weight Applied	Sample Size Weight
SAC-7.5C	0.05g	2g	2g
SAC-15C	0.1g	4g	4g
SAC-30C	0.25g	10g	10g
SAC-60C	0.5g	20g	20g

## 3. KEYBOARDS & PANEL LAYOUT AND DESCRIPTION



## KEYS DESCRIPTION

### 1. ON/ZERO KEY

Press this key to turn scale on or set weight to zero.  
Refer to **SPECIFICATIONS** for maximum zero range.

### 2. TARE KEY

Press this key to tare off the weight of a container.  
Refer to **SPECIFICATIONS** for maximum tare range.

### 3. NUMERIC AND DECIMAL KEYS

Press these keys to attain the desired numeric value.

### 4. OFF KEY

Press this key to turn scale off.

### 5. CLEAR KEY

Press this key to clear the numeric figure entered

### 6. UNIT PIECE WEIGHT SET KEY

Press this key to enter a unit piece weight.

### 7. NUMBER SET KEY

Press this key to enter the number of pieces on platter.

### 8. CHECK KEY

Press this key to set upper weight and quantity check limit.

### 9. M+ KEY

Press this key to add current total count to memory.  
Note: When the **WEIGHT PANEL** shows a negative value, the total count will still give a positive count value. The quantity is still added to memory when M+ key is pressed.

### 10. MR KEY

Press this key to recall accumulated results.

### 11. PLU KEYS

Press this key to set/recall a unit piece weight to/from a PLU.

## INDICATORS DESCRIPTION

### 12. ZERO INDICATOR

When a zero weight is detected, an arrow will appear and point at this indicator.

### 13. NET WEIGHT INDICATOR

When the tare function is in operation, an arrow will appear and point at this indicator. The weight being displayed on the **WEIGHT PANEL** is a net weight.

### 14. LO-BAT INDICATOR

This indicator turns on when the battery inside scale is low. *Recharge the scale immediately. Failure to do so may cause unrecoverable damage to the battery.*

#### 15. LOW UNIT WEIGHT INDICATOR

An arrow will appear and point at this indicator when the unit piece weight applied/detected is less than the recommended minimum piece weight as listed on 2.2.

#### 16. LOW SAMPLE SIZE INDICATOR

An arrow will appear and point at this indicator when the sample size applied/detected is less than the recommended minimum sample size as listed on 2.2.

#### 17. M+ INDICATOR

This indicator will appear when memory contains of transaction data.

#### 18. CHARGING INDICATOR

This indicator shows battery recharge status.

Red color: Battery is being charged

Green color: Recharge completed

### PANELS DESCRIPTION

#### 19. WEIGHT PANEL

The current weight detected is shown here.

#### 20. UNIT WEIGHT PANEL

The current unit piece weight entered is shown here.

#### 21. TOTAL COUNT PANEL

Total count of the current transactions is shown here.

## 4. SCALE SETUP

### 4.1 PLACE THE SCALE

Place this unit on a hard and strong surface, where is free from RF interference, vibration, fire, airflow, direct sunlight and excessive moisture.

For most accurate weighing result, always place this unit on a level surface. If necessary, adjust the adjustable feet underneath the scale to obtain a level condition.

### 4.2 TURN SCALE ON AND OFF

Press **ON/ZERO** to turn scale on or press **OFF** to turn scale off.

### 4.3 BACKLIGHT SETTINGS

#### 4.3.1 Turn backlight on: - Power Saving Mode

- a. Turn scale on
- b. Press and hold 1
- c. Backlight is turned on

**NOTE:** Under this Power Saving Mode, backlight will automatically turn off after weight displayed is unchanged for about 20 seconds or when a zero weight remains unchanged for about 10 seconds.

Backlight will be turned on again by pressing any key or when a new weight is detected.

#### 4.3.2 Turn backlight on: - Without Power Saving Mode

- a. Turn scale on
- b. Press and hold **2**
- c. Backlight is turned on

**NOTE:** Backlight under this mode will remain lit on until manually turned off.

#### 4.3.3 Turn backlight off

Press and hold **0** until backlight is turned off

### 4.4. INTERNAL FUNCTIONS SETTINGS

4 internal functions<sup>1</sup> are available. They are:

- F1** Check offset value
- F2** Check display segments
- F3** Check span value
- F4** Set auto power off

#### 4.4.1 How to Enter the Functions Required

- a. Turn scale on by pressing **ON/ZERO**, then press and hold **NUMBER SET** before scale completes counting down
- b. The **WEIGHT PANEL** shows **F1**
- c. Press **NUMBER SET** until the desired function number appears
- d. Press **@WT/SET** to enter selection
- e. Press **M+** to save and quit to normal operation status

#### 4.4.2 Check Display Segments (F2)

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<sup>1</sup> F1 and F4 are for qualified service personnel only. May be disable as requested by metrological legislation of certain countries.

- a. Refer to the **4.4.1** on how to enter **F2**
- b. Press **@WT/SET**
- c. All display segments will be lighted up
- d. Check digits and arrow indications of all 3 panels to verify any defects or errors
- e. Press **CLEAR** to quit

#### 4.4.3 Set Auto Power Off Status (F4)

This unit is equipped with **AUTO POWER OFF** function. Default setting = auto off after 4 minutes unused. Follow the below steps to disable/employ the **AUTO POWER OFF** function.

- a. Refer to the **4.4.1** on how to enter **F4**
- b. Press **@WT/SET** to shift between **0\_OFF** and **4\_OFF**  
\*To disable the **AUTO POWER OFF** function select "**0-OFF**"  
\*To employ the **AUTO POWER OFF** function select "**4-OFF**"
- c. Press **@NUMBER SET** to confirm and return to other function selection manual, or
- d. Press **M+** to save and quit

## 5. INSTRUCTIONS FOR USE

*Before using, allow 2 minutes for warm up.*

### 5.1 ZERO THE WEIGHT DISPLAYED WHEN UNLOADED

If **ZERO INDICATOR** does not appear when the unit is not loaded, press **ON/ZERO** to set weight displayed to zero. Refer to **SPECIFICATIONS** for maximum zero range.

### 5.2 TARE FUNCTION

#### 5.2.1 Actual Tare Method

- a. Place a container onto the platter
- b. Press **TARE** to tare off the weight of this container
- c. After **TARE** is pressed, zero weight will be displayed and the **NET WEIGHT INDICATOR** appears.

#### 5.2.2 Pre Tare Method

- a. Enter the pre-tare weight value through numeric keys
- b. Press **TARE**
- c. After **TARE** is pressed, a minus pre-tare weight will be displayed and the **NET WEIGHT INDICATOR** appears

#### 5.2.3 Clear Weight of a Container from Memory

- a. Remove all loads from platter
- b. Press **TARE**
- c. **NET WEIGHT INDICATOR** disappears and weight value resides in memory is now erased

### 5.3 PLACE A LOAD

Always place a load onto the platter gently. Shock/excessive force may cause irrecoverable damage to the weight sensor inside. It is a good practice to remove all loads from platter immediately after weighed. This would prolong the lifetime of the weight sensor.

### 5.4 WEIGHING APPLICATIONS

Before weighing, make sure that the **ZERO INDICATOR** is on. Should a container is used, refer **5.2** for how to tare off the weight of the container.

Place an object on platter and the weight of it is displayed on **WEIGHT PANEL**.

For best weighing result, refer to **SPECIFICATIONS** for recommended minimum weight to be applied.

### 5.5 UNIT PIECE WEIGHT<sup>2</sup>: - THE FOUNDATION OF COUNTING

Unit piece weight can be entered or obtained by either of the following methods:

- a. By **Direct entry method** when the unit piece weight is known, or

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<sup>2</sup> For best counting result, refer to **2.2 MINIMUM PIECES, WEIGHT APPLIED & SAMPLE SIZE WEIGHT SPECIFICATIONS** for recommended minimum piece weight and sample size.

- b. By **Sampling method** when the unit piece weight is not known

#### 5.5.a Procedures of Direct Entry Method<sup>3</sup>

- a. Refer to 5.1 and 5.2 for zero and tare
- b. Enter the unit piece weight and confirm by pressing **@WT/SET**. The unit piece weight is now displayed on the **UNIT WEIGHT PANEL**

**NOTE:** Under this method, the **AUTO PIECE WEIGHT ENHANCEMENT FUNCTION** will be disabled for same subsequent counting.

#### 5.5.b Procedures of Sampling Method

- a. Refer to 5.1 and 5.2 for zero and tare
- b. Place a sample with known quantity on platter
- c. Enter the quantity of the sample through the numeric keypad and confirm by pressing **NUMBER SET**
- d. The scale will automatically determine the unit piece weight. The unit piece weight will then be displayed on the **UNIT WEIGHT PANEL**
- e. Sampling process is now completed

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<sup>3</sup> When the individual unit piece weight is not standardized, it is strongly recommended that unit piece weight should be obtained through Sample method as described in 5.5.b.

## 5.6 AUTO PIECE WEIGHT ENHANCEMENT FUNCTION

In order to obtain the best counting result and to avoid and minimize sampling error, this scale is equipped with **AUTO UNIT PIECE WEIGHT ENHANCEMENT FUNCTION**.

This function will automatically be employed when the unit piece weight is obtained through the sampling method as described in 5.5.b.

### 5.6.1 How AUTO UNIT PIECE WEIGHT ENHANCEMENT FUNCTION Works

After a unit piece weight is obtained by methods as described in 5.5.b, then place more loads onto the platter. The new quantity will be shown on the **TOTAL COUNT PANEL**.

The **AUTO UNIT PIECE WEIGHT ENHANCEMENT FUNCTION** will update the unit piece weight if both requirements of below are met:

- a. The quantity added to platter is more than 4 pieces, and
- b. The quantity added to platter is less than 100% of previous maximum counts previously attained from the same transaction.

If the above requirements are met, a new unit piece weight will be displayed on the **UNIT WEIGHT PANEL** and confirmed by an audio "beep".



AUTO UNIT PIECE WEIGHT ENHANCEMENT FUNCTION will be terminated when a zero weight is detected during the transaction process.

## 5.7. WARNING INDICATORS

### 5.7.1 LOW UNIT WEIGHT INDICATOR

This indicator appears when the unit piece weight is less than the recommended minimum piece weight as listed on 2.2.

This means that the unit piece weight is too light to generate accurate counting results. Use another counting scale with a lower  $e_1$  value as listed on 2.1

### GENERAL SPECIFICATIONS.

Should a counting scale with better resolution is not available. Counting operations may proceed but greater tolerance on counting results has to be allowed.

### 5.7.2 LOW SAMPLE SIZE INDICATOR

This indicator appears when the sample weight applied is less than the recommended minimum sample size weight as listed on 2.2.

This means that the sample size is not sufficient to generate accurate counting results. Increase the number of the sample size until this indicator turns off.

Should increasing the sample size is not possible. Counting operations may proceed but greater tolerance on counting results has to be allowed.

## 5.8 COUNTING APPLICATION

- a. Refer to 5.1 and 5.2 for zero and tare
- b. Obtain unit piece weight through either methods as listed on 5.5
- c. Step by step add more load onto the platter (or remove part of the load from the platter)
- d. The latest weight, unit piece weight and total quantity would be displayed on the corresponding panel

## 5.9 MEMORY FUNCTIONS

### 5.9.1 Accumulated Counting Transaction

- a. Obtain a transaction result through 5.8
- b. Press **M+** to save weight and total count to memory
- c. Scale displays "**tot.01**" on the **UNIT WEIGHT PANEL**, **01** denotes as the first memory entered. The weight and total count of current transaction are saved to memory
- d. The **M+ INDICATOR** appears to indicate that memory is now containing data
- e. Repeat above steps for subsequent counting transactions

**NOTE 1 :** If no unit piece weight is applied, only weight data will be saved to memory.

#### **5.9.2 Adding Quantity to Memory Manually**

Follow the below procedures to add quantity to memory

- a. Remove all loads from platter
- b. Make sure that the **ZERO INDICATOR** appear and the **NET INDICATOR** disappears
- c. Enter the desired quantity to be added to memory through numeric keys
- d. Press **M+**
- e. Quantity is now added to memory

#### **5.9.3 Recall Accumulated Data from Memory**

- a. Press **MR**
- b. Scale displays "**tOt.#**" on the **WEIGHT PANEL**. # Denotes the total number of entries saved to memory. Then, the total accumulated weight and total count are displayed on the **WEIGHT** and **TOTAL COUNT PANEL** respectively
- c. The scale will return to normal operation 2 seconds after the accumulated data is displayed

**NOTE:** Data stored will be erased when the scale is turned off.

#### **5.9.4 To Clear Accumulated Data from Memory**

- a. Press **MR**
- b. Total accumulated data will be displayed on 3 display panels
- c. Press **CLEAR**
- d. All data is cleared now
- e. The scale will return to normal operation

### **5.10 CHECK FUNCTIONS**

This unit is equipped with check functions. When quantity or weight reaches or exceeds the preset value, a continuous audio beep and flashing display will be activated.

#### **5.10.1 Set Quantity Check Limit**

- a. Press **CHECK**
- b. Scale displays **CH. \_\_\_** on **UNIT WEIGHT PANEL**
- c. Enter preset quantity value through numeric keys
- d. Value entered is shown on the **UNIT WEIGHT PANEL**
- e. Press **NUMBER SET** to confirm
- f. Scales displays **CH.\_PSC** on the **UNIT WEIGHT PANEL** while the value entered on the **TOTAL COUNT PANEL**
- g. Scale return to normal operation within 2 seconds

#### **5.10.2 Set Weight Check Limit**

- a. Press **CHECK**
- b. Scale displays **CH. \_\_\_** on **UNIT WEIGHT PANEL**

- c. Enter preset weight value through numeric keys
- d. Value entered is shown on the **UNIT WEIGHT PANEL**
- e. Press **@WT/SET** to confirm
- f. Scales displays **CH.\_Wt** on the **UNIT WEIGHT PANEL** while the value entered on the **WEIGHT PANEL**
- g. Scale return to normal operation within 2 seconds

#### 5.10.3 Clear Quantity Check Limit

- a. Press **CHECK**
- b. Press **0**
- c. Press **NUMBER SET**
- d. Wait until the scale return to normal operation
- e. The upper weight limit is now erased from memory

#### 5.10.4 Clear Weight Check Limit

- a. Press **CHECK**
- b. Press **0**
- c. Press **@WT/SET**
- d. Wait until the scale return to normal operation
- e. The upper count limit is now erased from memory

### 5.11 UNIT PIECE WEIGHT MEMORY (PLU)

#### 5.11.1 Saving a Unit Piece Weight to PLU

This scale is equipped with 8 unit piece weight PLU memories. Save a unit piece weight to PLU by either one of the following methods:

- a. By **Direct entry method**, or
- b. By **Current unit piece weight method**

#### 5.11.a Direct Entry Method

- a. Key in the unit piece weight through keypad. Make sure the unit piece weight does not exceed 6 figures disregard the decimal place
- b. Press and hold the preferred PLU location for about 2 seconds until **Pr.\_SET** appears
- c. Data is now stored

#### 5.11.b Current Unit Piece Weight Method

- a. Obtain a unit piece weight through procedures listed on **5.5.b**
- b. Press and hold the preferred PLU location for about 2 seconds until **Pr.\_SET** appears
- c. Data is now stored

**NOTE:** Data stored in PLU will not be erased when scale is powered off.

#### 5.11.2 Recall Unit Piece Weight from Memory

To recall unit piece weight stored in memory, simply press the corresponding PLU.

After the PLU is pressed, the unit piece weight will be displayed on the **UNIT WEIGHT PANEL**.

### 5.11.3 Clear Unit Piece Weight PLU

- a. Press 0
- b. Press and hold the preferred PLU location to clear
- c. Wait until the scale displays **PRE.\_SET** on **UNIT WEIGHT PANEL**
- d. Release PLU
- e. Memory is cleared and scale returns to normal operation

## 5.12 COMPUTER DATA RS232C OUTPUT (OPTIONAL)

### 5.12.1 Connect the Scale with a Computer

Follow the below steps to connect the scale with a computer.

- a. Turn scale off
- b. Turn computer off
- c. Connect the RS232C output of scale to computer with an appropriate data cable
- d. Turn scale on
- e. Turn computer on
- f. Load and run the BASICA program file (For DOS platform)

### 5.12.2 Default Output Settings

- BAUD RATE = 9600
- DATA BITS = 8
- PARITY = NONE
- STOP BITS = 1

### 5.12.3 When Using DOS System

- a. Create BASICA computer program file as below to enable the computer to receive data sent by scale.

```
10 OPEN "COM*:9600, N,8,1,CS,DS,CD" AS#1
   *: Input 1 if the input port of computer is
   COM 1, or input 2 for COM 2 ...etc.
20 LINE INPUT #1, A$
30 PRINT A$
40 GOTO 20
50 END
```

- b. Save the above program file.

## 5.13 PRINTER OUTPUT (OPTION)

By pressing the **M+** and by erasing the accumulated data (by pressing **MR** followed by **CLEAR**), the follow data will be transmitted to printer.

S/N	WT	@WT	PSC	(NOTE 1)
01.	78	1.0000	78	
02.	580	2.0000	290	(NOTE 2)
03.	+++		100	(NOTE 3)
<hr/>				
03/	658		468	(NOTE 4)

### NOTE 1:

S/N = Serial Number, WT = Weight, @WT = Unit Piece Weight,

PSC = Total quantity. An underlined heading will be transmitted if **M+** is pressed for the first time.

**NOTE 2 :**

By pressing **M+** again, the data of 2<sup>nd</sup> transaction is transmitted.

**NOTE 3 :**

**+++** means the count number is added to memory by manual entry.

**NOTE 4 :**

When the total accumulated transaction is erased (by pressing **MR** followed by **CLEAR**), the total number of transaction, total accumulated weight and count number are transmitted.

A consecutivedot linesent beforetheaccumulatedresult denotes the total accumulated value.

### 5.14 RECHARGE THE SCALE

When the **LO-BAT INDICATOR** appears, recharge the scale immediately. Fail to do so will damage the rechargeable battery inside. Recharging is possible during operation. The charge status is indicated by the **In-Charge INDICATOR** as below:

RED: Battery is charging.

GREEN: Battery charge completed.

## 6. TROUBLESHOOTING

### SyndromeScale cannot be turned on

**Check:** Is the scale charged?

**Action:** Recharge the scale for at least 8 hours before use for the first time or plug in the power adaptor before power on the scale.

**Check** Is the power adaptor plug in properly into both the electricity outlet and the DC inlet of scale?

**Action:** Secure both ends of the power adaptor and try again.

### Syndrome Scale turned off automatically

**Check** Is the **AUTO POWER OFF** function enabled?

**Action** Refer to 4.4.3 to disable the **AUTO POWER OFF** function.

**Check** Is the **LO-BAT INDICATOR** on?

**Action** Apply the power adaptor.

### Syndrome Rated capacity cannot be reached

**Check** Is the **TARE INDICATOR** on?

**Action:** Turn the scale off. Remove all loads from platter and turn on again.

**Check** Is there anything obstructing the platter?

**Action** Remove all obstacles.

**Syndrome** When turning on scale, all display PANEL blank out but only the ZERO and TARE INDICATOR appear

**Check** Is any load applied to platter when turning scale on?

**Action:** Turn scale off. Remove all loads from platter and turn scale on again.

**Check** Is the platter inserted properly?

**Action:** Turn scale off. Insert platter properly and turn scale on again.

**Syndrome** WEIGHT and TOTAL COUNT PANEL blank out during operation

**Check** Does the load applied to platter exceed the rated capacity of scale?

**Action** Remove all loads from platter and try to put less loads.

**Syndrome** Weighing result is not accurate

**Check** Is the scale placed in a level condition?

**Action** Adjust the adjustable feet to a level condition.

**Check** Is the scale affected by airflow, vibration or RFI?

**Action:** Place the scale away from all interferences.

**Check** Is the scale calibrated correctly?

**Action** Contact your dealer.

## 7. ERROR CODES AND DESCRIPTIONS

**Err\_1:** Accumulation error.

M+ cannot be activated when weight applied is zero or while the same transaction has already been accumulated.

**Err\_2:** EEPROM parameter error.

Contact dealer for service.

**Err\_3:** Offset value too low.

Contact dealer for service.

**Err\_4:** Offset value too high.

Removed all loads from platter and restart again. Should same error code appear again, contact dealer for service.

**Err\_5:** The calibrated weight applied is out of range.

Contact dealer for service.

## 8. DAILY CARE AND MAINTENANCE

- a. Precision measuring device, handle with extreme care.
- b. Clean the scale with a soft and damp cloth. If necessary, apply a mild detergent.
- c. Do not use any harsh, abrasive material, acetone, volatile solvent, thinner or alcohol for cleaning.
- d. Verify the accuracy of scale periodically.

**NOTE:** In some countries, calibration is restricted to be done by an authorized/qualified agent only. Contact your dealer for more information.

- e. It is a good practice to apply the dust cover when operating the scale.
- f. The scale must be placed horizontally during transportation or long time storage.
- g. Remove platter from scale before transportation or long time storage.
- h. Store scale in a dry and clean place.