8433

Vacuum Fluorescent Display Counter Scale

Service Manual

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(2/97).01

METTLER TOLEDO

Publication Problem Report

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Publication Name: _____

Publication Part Number: _____ **Publication Date:** _____

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.**		

Your Name: _____ **Location:** _____

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INTRODUCTION

Information regarding METTLER TOLEDO Technical Training may be obtained by writing, calling, or faxing to:

Mettler-Toledo. Inc.
1150 Dearborn Drive
Worthington, Ohio 43085-6712
ph: (614) 438-4400
fax: (614) 438-4444

IMPORTANT!

The Mettler Toledo® model 8433 meets the requirements of the National Institute of Standards and Technology, Handbook 44.

Local weights and measures authorities may have regulations regarding the use of weighing devices in commercial applications. In all cases, Weights and Measures require that a scale be approved and sealed prior to commercial use. Contact your local Weights and Measures authorities prior to use.

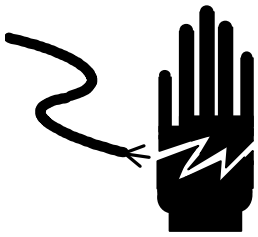
WARNING!

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, i.e., in accordance with the instructions manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference to radio communications in which case, the user at his own expense, will be required to take whatever measures may be required to correct the interference.

METTLER TOLEDO HAS A POLICY OF CONTINUOUS IMPROVEMENT OF PRODUCT AND RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

PRECAUTIONS

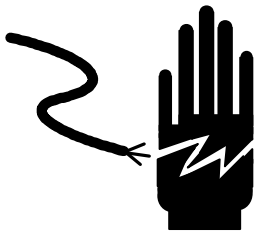
READ this manual BEFORE operating or servicing this equipment.



WARNING

ONLY PERMIT 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 HARM.

FOLLOW these instructions carefully.

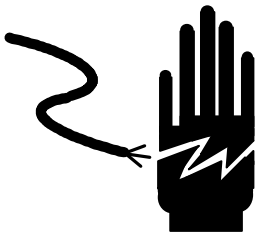


WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY.

DO NOT REMOVE THE GROUND PRONG.

SAVE this manual for future reference.



WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE REMOVING THE FUSE OR SERVICING.

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

CAUTION

BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT OR BODILY HARM.

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

CALL METTLER TOLEDO for parts, information, and service.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CONTENTS

1 Introduction

Thank you for purchasing the 8433 retail counter scale from Mettler Toledo. The 8433 was designed for ease-of-use, reliability, and is your best choice for price computing and weighing applications.

8433 Overview

The Mettler Toledo model 8433 is a stand alone retail counter scale designed to meet the needs of a worldwide market.

Ease-of-use

Display

The 8433 provides two displays for both the operator and the customer. The three data presentation areas show weight, unit price, and total price. The alpha-numeric prompting display provides clear messages and responses, permitting error free interaction with the scale.

Keyboard

8433's dome-type sealed keyboard provides an audible tone to verify key contact closure. 8433's inherent simplicity makes it easy to perform the operations of the scale regardless of your familiarity or experience.

Reliability

The 8433 was developed, produced, and tested in a Mettler Toledo facility that has been audited and registered according to international ISO 9001 quality standards.

Standard Features

The 8433 comes in two models. The vacuum fluorescent display model (8433 VFD) and the liquid crystal display model (8433 LCD). 8433 LCD can be used as a portable scale when powered by the D-Cell battery.

- 30 lb/15 kg and 40 lb/20 kg capacities (all capacities are not available in all markets.)
- 340 mm X 260 mm stainless steel platter.
- Vacuum Fluorescent Display, 12 mm high 7-segment. weight (5 digits), unit price (6 digits), total price (6 digits).

- 20-position membrane keyboard using a tactile and tone feedback upon key closure.
- External 12 Vdc wall mount transformer
- Non-volatile memory for setup and calibration
- Visible level bubble
- Selectable audible feedback on key actuation

Optional Feature

- Fish/Produce Pan

Specifications

Physical Dimensions

The 8433 enclosure (all capacities) measures 345 mm (13.6 inches) by 345 mm (13.6 inches) by 110 mm (4.3 inches).

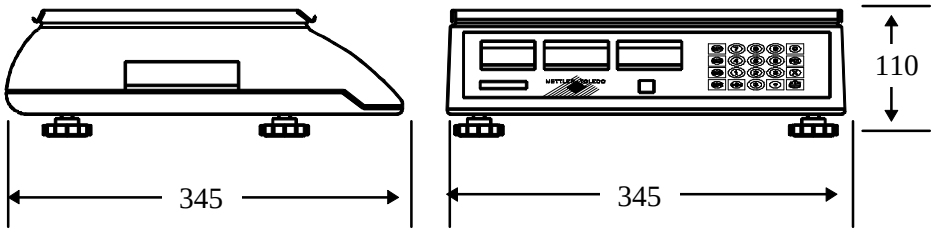


Figure 1-a

The platter measures 340 mm (13.4 inches) wide by 260 mm (10.2 inches) deep.

The approximate shipping weight is 6.5 kg (14.3 lb) based on actual scale weight of 4.0 kg (8.8 lb).

The shipping carton dimensions are 415 mm (16.3 inches) by 415 mm (16.3 inches) by 208 mm (8.2 inches).

Power Requirements

An external 12 VDC, 600 mA (11 to 17 VDC, 300 mA) power supply provides power to the 8433 scale.

Temperature and Humidity

The 8433 operates over a temperature range from +5ºC to +40ºC (+41ºF to +114ºF) at 10 to 95% humidity, non-condensing.

Storage temperature range is from -20ºC to +70ºC at 10 to 95% humidity, non-condensing.

Standards Compliance

UL Listing

The 8433 is designed to meet UL specification E87297 (12 VDC 600 mA) for transformer.

Weights and Measures Approval (U.S.)

The 8433 meets or exceeds NIST Handbook 44 performance for a Class III 3000 increment scale.

The 8433 meets or exceeds Canadian (CSA) performance for a 3000 increment scale.

Conducted and Radiated Emissions (RFI)

Conducted

Frequency	Max on AC Line
0.45 - 1.6 MHz	1000 uV
1.6 - 30 MHz	3000 uV

Radiated

Frequency	Distance	Max Field Strength
30 - 88 MHz	30 m	30 uV/m
88 - 216 MHz	30 m	50 uV/m
216 - 1000 MHz	30 m	70 uV/m

Radio Frequency Interference Susceptibility

Immunity to Radiated Electromagnetic Fields (EN 45501 Section B.3.4)
The weight indication of a 10e test load does not vary by more than +1.0e when subjected to an electromagnetic field of 26 MHz to 1000 MHz, 3 V/m and 80% AM, 1 KHz sine wave.

AC Power Line Voltage Variation

Line Voltage Variations (EN 45501 Section 3.9.3)
The 8433 scale complies with the metrological requirements if the power supply varies from 187 V to 242 V (220 V wall transformer), 194 V to 253 V (230 V wall transformer) and 100 V to 132 V (120 V wall transformer) and in frequency from 49 Hz to 61 Hz.

Ordering Information

Please refer to the following Factory Number Reference chart when ordering scale. A detailed description of each designation is given to help you determine accurately the specifications for the desired model.

8433 SCALE CONFIGURATION ex: 8433-1002-002 (Not all options are available in all markets)					
XXXX	**X**	**X**	**X**	**X**	**XXX**
Scale	**Capacity**	**Battery**	**Tower/Battery**	**Platter**	**Finish Kit**
8433 Scale	2 = 30kg Load Cell (15 kg/30 lb or 20 kg/40 lb Capacities)	0 = VFD 1 = LCD	0 = VFD W/O Tower or LCD W/ D-Cell Battery 1 = LCD W/ Ni-Cad Battery	2 = Platter W/ Lip	000 = USA 009 = Latin American Countries Requiring 220/50 Australian Plug Adapter. 022 = Latin American Countries Requiring 230/50 European Plug Adapter. 023 = China 063 = Latin American Countries Requiring 220/50 or 220/60 US Plug Adapter. 088 = Latin American Countries Requiring 110 or 120 US Plug Adapter. 089 = Canada

2

Installation

This chapter gives detailed instructions and important information you will need to install the 8433 successfully. Please read this chapter thoroughly before you begin installation.

Environment

Before you install your 8433 scale, identify the best location for the equipment. The proper environment enhances the operation and longevity of the scale. Keep in mind the following sources of scale error:

- **Vibration:** Vibration diminishes the scale's ability to measure accurately. Electrical machinery such as conveyors and drill presses can cause inaccurate and non-repeatable readings. The scale may also read inaccurately if it is not leveled properly.
- **Air Currents:** Moving air can cause the scale to read inaccurately and have the same affect as vibration.
- **Cold Circuit:** Scale at temperatures lower than room temperature can read inaccurately as the scale measures the changes in resistance of strain gauges when weight is applied to the scale. To ensure accurate readings, let the scale warm-up approximately 15 minutes before using it.
- **Electrical Influences:** Fluctuations in the electrical power supply can affect accuracy. The scale should be set apart from equipment that generates static electricity. "Clean" power should be used at all times to avoid damage.
- **Friction:** A scale cannot measure accurately if an object touches against the platter.
- **Moisture/Humidity:** Condensed moisture and humidity can corrode electrical circuitry. Please refer to the Temperature and Humidity specifications listed in Chapter 1 of this manual.

Unpacking and Inspection

Please inspect the package as it is delivered by the carrier. If the shipping container is damaged, check for internal damage and file a freight claim with the carrier if necessary. If the container is undamaged, open the box, remove the scale and place it on a solid, flat surface.

Please keep the packing material and shipping insert in case you need to return the scale to Mettler Toledo. The 8433 is a precision instrument and may be permanently damaged if not shipped in factory approved packaging.

Package contents for 8433 units include:

- 8433 Scale
- User's Guide
- Power Supply (Included with most units)
- Packing Material

Installation

Your 8433 counter scale is assembled at the factory according to your ordering specifications. If you need to install components other than those installed at the factory, please refer to Chapter 5 Service and Maintenance.

- Locate a suitable environment for the 8433. Refer to Chapter 1 for Temperature and Humidity specifications.
- Open the unit box and pull the scale out of the box, remove the packing material from each side of the scale.
- Set the unit on a sturdy, level surface. Level the scale by turning the adjustable feet on the bottom of the unit. The bubble indicator is centered in the circle when the 8433 is level. The feet must be adjusted so the scale does not rock.
- Unpack the power supply and plug it into the back of the scale. Plug the line cord into a **properly grounded** AC power outlet. You can press the "power switch" to power the scale down until you are ready to use or test it.

Power Up Sequence

The power switch is a momentary contact type switch. Press the power switch forward to turn on the 8433 and then the switch will return to “off” position automatically when you release.

The 8433 goes through a series of self tests when it is turned on. The scale performs a diagnostic test on its ROM and RAM, then proceeds to normal operating mode. The power-up sequence is as follows:

- All segments of the display characters are lighted. This verifies operation of all segments.
- The scale displays the software revision and part number.
- The scale then captures zero and is ready for normal operation.

Sealing the Enclosure - Weights and Measures Applications

After setup is complete, most legal-for-trade applications require sealing the enclosure so settings cannot be changed. The sealing sequence is as follows:

- Install special through-hole sealing screw.
- Tighten these two screws and run a wire seal through the holes in the heads of the screws.
- Apply the seal.

3

Programming and Calibration

This chapter discusses basic features of program blocks and the specific parameters and how to configure each program block. There are two ways (Service Mode & Master Mode) to access the program blocks and calibration.

- **Service Mode:** Depress the CLEAR key when you turn the scale on, the weight display will show “GRP 1”, the unit price and total price displays are blanked. In Service Mode, some softswitches are programmable. Appendix 2 list programmable softswitches in service mode.
- **Master Mode:** To access the Master Mode, the setup switch S1 on the main logic PCB must be shorted. When S1 is to be shorted, the weight display will show “GRP 1”, the unit price and total price displays are blanked. In this mode, all softswitches and calibration are programmable. Appendix 1 lists softswitch default values in master mode.

Keystroke Functions for Programming and Calibration

After accessing setup mode, the user can advance through the major setup blocks by pressing FINISH, BACKUP, TOGGLE and ACCEPT keys.

- FINISH key: to be used to end scale configuration and proceed to the SAVE prompt. This is CLEAR key for all countries.
- BACKUP key: to be used to step back through soft switches or groups. This is PREPACK/FIX key for all countries.
- TOGGLE key: to be used to step through the groups. Once a group is accepted, this key is used to toggle settings on and off or step through the setting options. This is the PLU key for all countries except China. It is the TARE key for China.
- ACCEPT key: to be used to accept a group. Once a group is accepted, this key is used to advance one softswitch at a time. This is ENTER key for all countries.

Keyboard and Display Program Block

Group 1 Keyboard and Display

Step 1: Country Select

Configures the operation of the scale for the selected country. Some functions are disabled while others are enabled depending on the restrictions for the selected country.

PRC	China
E PORT	General Export
USA	United States
LATIN	Latin America
CANADA	Canada

Step 2: Initialize to Defaults

YES Scale will initialize scale softswitch parameters to the defaults.

NO Scale will not initialize scale softswitch parameters.

Step 3: Beeper

ON Scale will “beep” when a key pressed.

OFF No sound is made when a key pressed.

Step 4: Leading Zero Suppression

ON Suppresses the leading zero’s down to but not including the first zero left of the decimal point.

OFF Display all the appropriate zeros left of weight and price decimal point.

Step 5: Decimal Point Position Select for Price Displays

Enter the number of the digits (0, 1, 2, 3) to be displayed to the right of the decimal point for the unit price and total price displays.

Step 6: Enable Zero Cursor

ON Enables zero cursor.

OFF Disables zero cursor.

Step 7: Gross or Net Zero Cursor

ON Zero cursor will be illuminated when the gross or net weight is in the center of zero.

OFF Zero cursor will be illuminated when the gross weight is in the center of zero.

Step 8: Auto-clear of Tare and Unit Price

ON Enables automatic clearing when weight is removed from platter.

OFF Disables automatic clearing when the weight is removed from platter.

Step 9: Display uuuuu's When Weight is Under Zero

ON Display will show uuuuu's when weight is under zero.

OFF Display will show negative weight when under zero.

Step 10: Expanded Weight Display

ON Minor weight increments (0.1d) are displayed.

OFF Weight is displayed in normal display increments.

Group 2 Tare Program Block

Step 1: Tare Enable

ON Enables tare function.

OFF Disables tare function.

Step 2: Chain Tare Enable

ON Enables chain (multiple) tares.

OFF Only one tare per transaction is allowed.

Step 3: Keyboard Tare Enable

ON Tare can be entered via scale numeric keyboard.

OFF The steady weight on the platter becomes the tare weight when the tare key is pressed.

Step 4: Keyboard Tare Clear

ON Tare can be cleared with TARE key when the platter is empty.

OFF Tare can not be cleared via the keyboard.

Step 5: Prepack/Fix Mode Tare Clear

ON Tare can be cleared with TARE key in Prepack/Fix mode only.

OFF Tare can be cleared with TARE key as described in step 3.

Group 3 Price Program Block

Step 1: 1/4 lb Pricing Enable

ON Enables pricing by 1/4 lb (avoir).

OFF Disables pricing by 1/4 lb (avoir).

This softswitch is only available for U.S.

Step 2: 1/2 lb or 100g Pricing Enable

ON Enables pricing by 1/2 lb or 100g.

OFF Disables pricing by 1/2 lb or 100g.

This softswitch is only available for U.S. or Canada.

Step 3: Unit Price Factor Multiplication

ON Pricing 1/2 key will alter the displayed unit price by a factor of 2 or 4.

OFF Pricing will be 1/2 or 1/4 internally, the entered unit price will not be altered.

This softswitch is only available for U.S.

Step 4: Prepack/Fix Mode Enable

ON Enables Prepack/Fix mode.

OFF Disables Prepack/Fix mode.

Step 5: Total Price Round (To Nearest 0 or 5)

ON The total price will round up or down to 0 or 5.

OFF Total price Least Significant Digit will not be rounded.

Step 6: By-Count/X Mode Enable

ON By-count pricing is enabled.

OFF By-count pricing is disabled.

This softswitch is not available for China.

Step 7: lb/FOR or kg/FOR Mode Enable

ON Enables lb/FOR or kg/FOR mode.

OFF Disables lb/FOR or kg/FOR mode.

This softswitch is only available for U.S. or Canada.

Step 8: Accumulate/+ Enable

ON Enables Accumulator.

OFF Disables Accumulator.

Step 9: PLU Enable

ON Enables the storage of unit price and tare (if step 10 is enabled) by PLU or 4 preset keys (M1 - M4).

OFF Disables this feature.

Step 10: PLU Tare Enable

ON Enables storage of tare with the unit price.

OFF Disables this feature.

Step 11: Change Function Enable

ON Enable change function.

OFF Disable change function.

This softswitch is only available for General Export and Latin America.

Step 12: Subtraction/- Enable

ON Enable subtraction function.

OFF Disable subtraction function.

This softswitch is only available for General Export and Latin America.

Group 4 Weights and Measures Program Block

Step 1: Digital Filter Selection

0 Light digital filtering.

1 Medium digital filtering.

2 Heavy digital filtering.

Step 2: kg Weighing Enable

kg Display the weight units as kg.

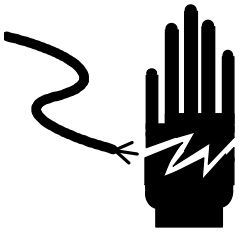
lb Display the weight units as lb.

Step 3: Perform Scale Calibration

YES Proceed with the following calibration steps in the weight units selected.

NO Advance to step **SAVE**.

CAL



WARNING

ONLY PERMIT 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 HARM.

Shown on the weight display to indicate that scale is in calibration mode.

Step 1: Scale Capacity

3.000, 6.000, 15.000, and 20.000 if weight is kg.

6.000, 15.000, 30.00, and 40.00 if weight is lb.

Select appropriate capacity and then press the ENTER key.

Step 2: - - - - - - Clear the Platter and Initiate a Zero Reading

X Empty the platter and then press ENTER key, the scale will count down from 5 to 0 while the zero reading is being taken.

If motion is detected, the count resets to 5

Note: Test weights of 50% of scale capacity minimum, 2/3 of scale capacity recommended.

Step 3: + + + + + Add the Test Weight to the Platter

Add appropriate amount of test weights on the platter, then press ENTER key.

Step 4: Enter Test Weight Value and Initiate a Span Reading

XX Enter the two-digit test weight value then press ENTER key.

X Scale counts down from 5 to 0 while the span reading is being taken.

If motion is detected, the count resets to 5.

SAVE
End of Scale Configuration

Press the **ACCEPT** key to allow saving of the modified softswitches. The unit price and total price displays will then show alternating **"S1 OFF"** message. Disconnecting the setup and calibration switch **"S1"** causes the scale to save the softswitch settings and also initiate a power-up sequence.

Press the **TOGGLE** key to switch to the **ABORT** mode. The weight display shows the **"ABORT"** message. Press the **ACCEPT** key to abort saving of softswitches. The scale then initiates a power-up sequence. If the **BACKUP** key is pressed instead of the **ACCEPT** key while the **"ABORT"** message is displayed, the **"SAVE"** message is displayed on the weight display and the softswitches can be saved as described above.

4

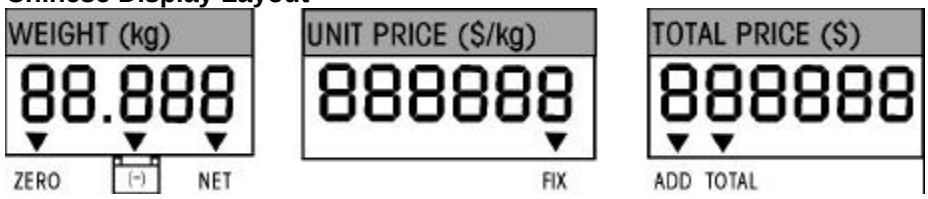
Operating Instructions

This chapter provides information that an operator will need to become familiar with the scale and to perform its functions.

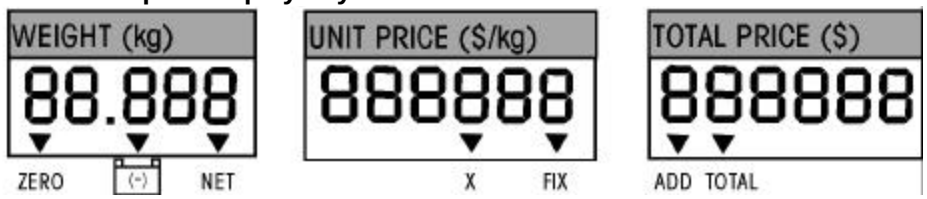
8433 Display Area

The 8433 has three displays where scale weight and unit price and total price are presented. These are pictured below:

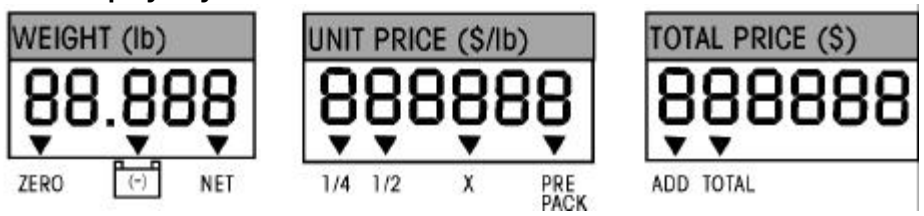
Chinese Display Layout



General Export Display Layout

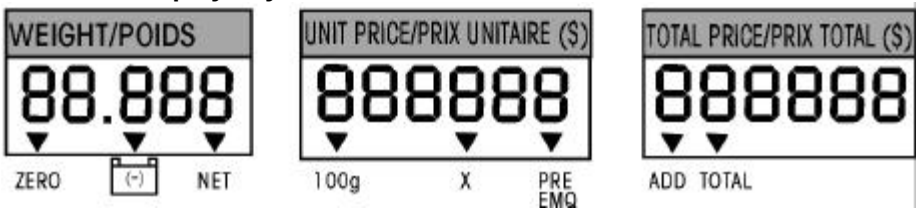


USA Display Layout



Latin American Display Layout

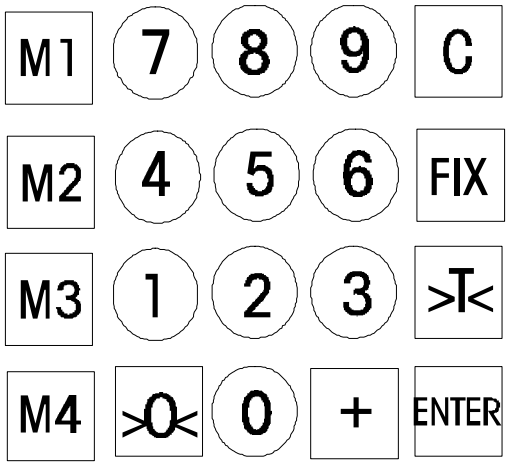
Canadian Display Layout



8433 Keypad

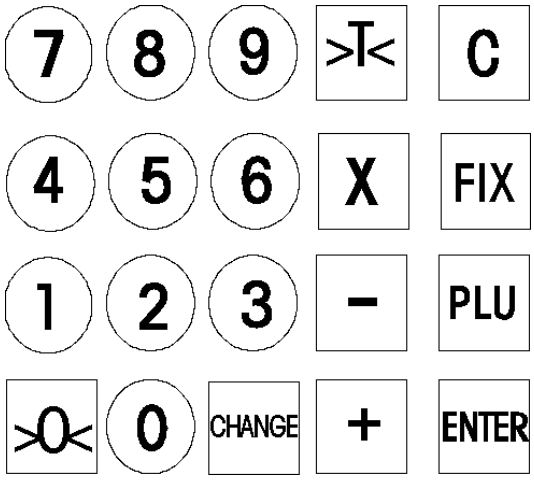
Each 8433 scale is equipped with a 4 x 5 keypad as seen below:

Chinese Keypad Layout



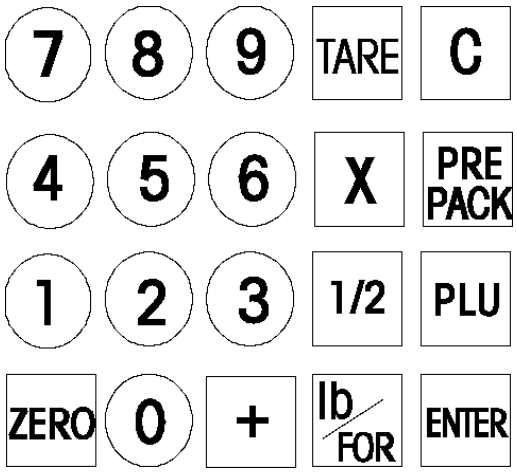
KEY	KEY FUNCTION
0 thru 9	Used for numeric data entry.
[C] Clear Key	Clears entered digits from display.
FIX Key	Toggles Fix mode on/off. Fix provides retention of unit price and tare for consecutive transactions. (default to disable automatic clearing).
>T< Tare Key	Used to enter or override a programmed tare.
>0< Zero Key	If drifting should occur, the zero key will return the scale to a gross zero condition.
[+] Accumulator Key	Used to accumulate the current transaction.
M1 - M4 Key	Preset memory keys. Used to recall four PLU's in memory.
Backlit Key	Toggles backlit on/off.

General Export Keypad Layout



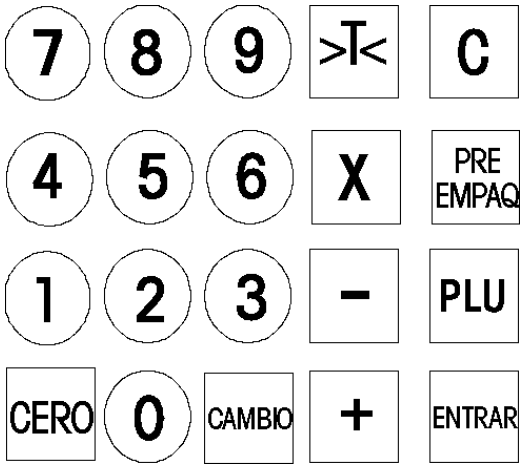
KEY	KEY FUNCTION
0 thru 9	Used for numeric data entry.
[C] Clear Key	Clears entered digits from display.
FIX Key	Toggles Fix mode on/off. Provides retention of unit price and tare for consecutive transactions. (default to enable automatic clearing).
>T< Tare Key	Used to enter or override a programmed tare.
>0< Zero Key	If drifting should occur, the zero key will return the scale to a gross zero condition.
PLU Key	Used to enter or recall a PLU.
[X] By-Count Key	Used to activate the by count mode.
[+] Accumulator Key	Used to accumulate the current transaction.
[-] Subtraction Key	Used to cancel the last transaction.
Change Key	Used to compute change.
Enter Key	Used as a Return key to enter data.

USA Keypad Layout



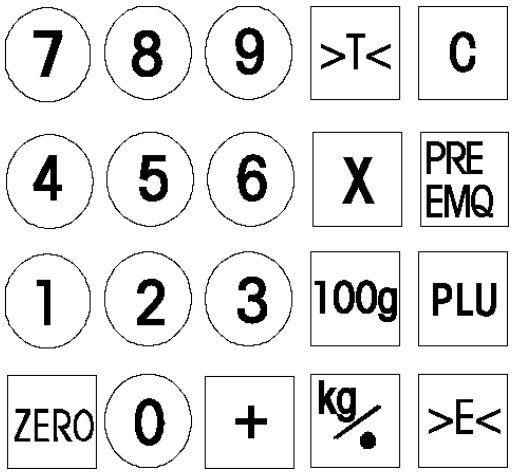
KEY	KEY FUNCTION
0 thru 9	Used for numeric data entry.
[C] Clear Key	Clears entered digits from display.
Pre-Pack Key	Toggles Prepack mode on/off. Provides retention of unit price and tare for consecutive transactions. (default to enable automatic clearing).
Tare Key	Used to enter or override a programmed tare.
lb/FOR Key	When the lb/FOR softswitch is enabled, this key is used to enter a lb/FOR price.
Zero Key	If drifting should occur, the zero key will return the scale to a gross zero condition.
PLU Key	Used to enter or recall a PLU.
1/2 Fractional Price Key	Used to turn on fractional pricing mode. Press once for 1/2 lb pricing. Press twice for 1/4 lb pricing. Press again to return to price per lb mode.
[+] Accumulator Key	Used to accumulate the current transaction.
[X] By-Count Key	Used to activate the by-count mode.
Enter Key	Used as a Return key to enter data.

Latin American Keypad Layout



KEY	KEY FUNCTION
0 thru 9	Used for numeric data entry.
[C] Clear Key	Clears entered digits from display.
Pre-Empaq Key	Toggles Pre-Empaq mode on/off. Provides retention of unit price and tare for consecutive transactions. (default to enable automatic clearing).
>T< Tare Key	Used to enter or override a programmed tare.
Cero Key	If drifting should occur, the zero key will return the scale to a gross zero condition.
PLU Key	Used to enter or recall a PLU.
[X] By-Count Key	Used to activate the by-count mode.
[+] Accumulator Key	Used to accumulate the current transaction.
[-] Subtraction Key	Used to cancel the last transaction.
Cambio Key	Used to compute change.
Entrar Key	Used as a Return key to enter data.

Canadian Keypad Layout



KEY	KEY FUNCTION
0 thru 9	Used for numeric data entry.
[C] Clear Key	Clears entered digits from display.
Pre-Emq Key	Toggles Pre-Emq mode on/off. Provides retention of unit price and tare for consecutive transactions. (default to enable automatic clearing).
>T< Tare Key	Used to enter or override a programmed tare.
kg/ù Key	When the kg/ù softswitch is enabled, this key is used to enter a kg/ù price.
Zero Key	If drifting should occur, the zero key will return the scale to a gross zero condition.
PLU Key	Used to enter or recall a PLU.
100g Key	Used to change unit price to price per 100g.
[+] Accumulator Key	Used to accumulate the current transaction.
[X] By-Count Key	Used to activate the by-count mode.
>E< Key	Used as a Return key to enter data.

Operator Functions

Operator functions are those procedures that can be done by any knowledgeable person with access to the scale. This section discusses the normal operating mode and the following operator functions:

- **Zero** the scale
- Perform **TARE** operations
- Perform the **PLU** operations
- Use the **ACCUMULATOR** key operation
- Use the **By-count** key operation
- Use the **lb/FOR** key operation
- Use the **kg/ù** key operation
- Use the **1/2** key operation
- Use the **100g** key operation
- Use the **SUBTRACTION** key operation
- Use the **CHANGE** key operation

Zero the Scale

The zeroing function works only when a “no motion” condition exits. There are three ways to set the zero:

- Calibrate Zero
- Power-up Zero
- Pushbutton Zero

Calibrate Zero: The calibration process will establish a zero for scale. For more information about the calibration sequence, see the calibration block section.

Power-up Zero: The scale can be programmed to automatically capture a zero when it is powered up. The power-up zero capture range is ±20% of scale capacity.

Pushbutton Zero: The ZERO key enables a user to re-zero the scale over a range of ±2% of scale capacity. To use this function, the scale must be in the gross weighing mode and in a no motion condition.

Tare Operations

The scale supports two tare operations:

- Pushbutton Tare
- Keyboard Tare

Pushbutton Tare: By pressing **TARE** key, the tare weight (the weight currently on the scale) is stored. The tare weight is subtracted from the gross weight to obtain the net weight and **NET** cursor will turn on. When the tare weight is removed, the net weight is displayed as a negative quantity.

Keyboard Tare: When the gross weight is equal to zero, a known tare weight can be entered and followed by **TARE** key. The least significant digit must agree with the weight increment.

PLU Operations

The **PLU** and three preset keys (**M1 to M4**) are used to recall or store the unit price and tare.

The **M1** to **M4** keys are available for China only, the PLU key will be available for all other countries. The detailed operation is as follows.

The Operation of Preset Keys M1 to M4

To store a unit price and tare

Step 1: Perform a tare operation (pushbutton tare or keyboard tare).

Step 2: Enter a unit price.

Step 3: Press the preset key (**M1** to **M4**) until the scale beeps twice, the current unit price and tare will be stored.

To recall a unit price and tare

Step 1: Press the preset key and the stored unit price and tare will be recalled.

The Operation of the PLU Key

To store a PLU (unit price and tare)

Step 1: Perform a tare operation (pushbutton tare or keyboard tare).

Step 2: Enter a unit price.

Step 3: Press the **PLU** key until the scale beeps twice, then enter the number of 1 to 15, the scale beeps twice again and causes the current unit price and tare to be stored.

To recall a PLU (unit price and tare)

Press the **PLU** key and enter the 2 digit number (1 to 15); the selected unit price and tare will be recalled from the PLU memory.

Accumulation Operations

Step 1: Perform a transaction.

Place the article to be weighed on the platter.

Enter a unit price via the numeric keys. The display will show weight, unit price and total price.

Step 2: Press the **Accumulate/+** key. The total price will be added to the accumulated total.

The **ADD** and **TOTAL** cursors will illuminate at this time; the weight display will show the prompt message "**TOTAL**", the unit price will show the accumulated transaction number and the total price will show the accumulated total price.

Step 3: Repeat steps 1 and 2 until all desired transactions are accumulated.

Step 4: If you want to clear the accumulator, press the **CLEAR** key when the accumulated number and total price is to be displayed.

Step 5: Beginning a new transaction by entering a new unit price causes the display of the accumulated total to be discontinued.

By-Count Operations

Step 1: Enter the 2 digit deal quantity (1 to 99).

Step 2: Press the **By-Count/X** key

Step 3: Enter "deal price".

Step 4: Press the **ENTER** key. The scale is now ready for the by-count operation. The **By-Count/X** cursor will be lit.

Step 5: Enter the quantity to be sold. The scale will display the total price. (The total price is always rounded up; i.e. with a deal of 3 items for $1.00, 1 item will cost $0.34)

Step 6: The **CLEAR** key will release the scale from by-count mode if the scale is at the total price stage.

The By-Count operation can be turned off via a softswitch.

lb/FOR Operations

Step 1: Enter a two digit weight quantity in lb units (no fractional part).

Step 2: Press the **lb/FOR** key. The unit price display shows "XX-0.00".

Step 3: Enter a unit price (3 digits maximum). The unit price display shows "XX-X.XX". The total price is calculated by dividing the entered price by the entered two digit weight and multiplying by the current weight.

This function is only available for United States.

Kg/• Operations

Step 1: Enter a two digit weight quantity in kg units (no fractional part).

Step 2: Press the **kg/•** key. The unit price display shows "XX-0.00".

Step 3: Enter a unit price (3 digits maximum). The unit price display shows "XX-X.XX". The total price is calculated by dividing the entered price by the entered two digit weight and multiplying by the current weight.

This function is only available for Canada.

Fractional Pricing Operations

Step 1: Place the article to be weighed on the platter.

Step 2: Enter a unit price via the numeric keys. The display will show weight, unit price, and total price.

Step 3: Press the **1/2** key, the **1/2** cursor will be lit and pricing is by 1/2 lb; press the **1/2** key twice, the **1/4** cursor will be lit and pricing is by 1/4 lb; press the **1/2** key again to return to price per lb mode.

This function is only available for United States.

100g Pricing Operations

Step 1: Place the article to be weighed on the platter.

Step 2: Enter a unit price via the numeric keys. The display will show weight, unit price and total price.

Step 3: Press the **100g** key, the 100g cursor will be lit and pricing by is 100g.

This function is only available for Canada.

Subtraction Operations

Whenever you press the **SUBTRACT/-** key, the total price of the last accumulated item will be subtracted from the accumulator.

This function is only available for General Export and Latin America. This function can be disabled via a softswitch.

Change Operations

When the accumulated total or the non-zero total price is displayed, and the customer pays with a bill larger than the total sale.

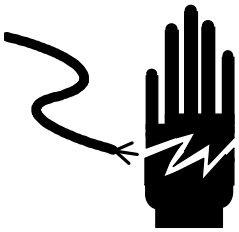
Step 1: Press the **CHANGE** key. The weight display will show the prompt message "**PAY**", the unit price will show zero, the total price display will show the money to be payed.

Step 2: Enter the amount of the payment followed by **ENTER** key. The weight display will show the prompt message "**Chg**", the total price display will show the amount of change owed to customer and unit price display will be blanked.

Step 3: Press the **CLEAR** key, and the scale returns to normal weighing mode and the accumulated total will be cleared.

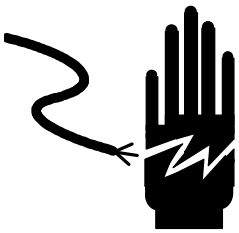
5

Service and Maintenance



WARNING

ONLY PERMIT 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 HARM.



WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE SERVICING OR CLEANING.

This chapter provides information on servicing and maintaining the 8433 scale including:

- Cleaning and regular maintenance
- Troubleshooting

Tools and Supplies

You should keep the following items on hand for service and maintenance of the 8433 scale. Some common hand tools may also be required.

- Volt-Ohm meter
- Soft, lint-free cleaning cloth
- Anti-static bags for PCBs
- Anti-static wrist strap and mat
- Phillips head screw driver

Cleaning and Regular Maintenance

You may wipe the display area and weighing platter with a clean, soft cloth that has been dampened with a mild glass cleaner. Do not use any types of industrial solvents. These may damage the display and platter finish.

Regular maintenance inspections by a qualified service technician are also recommended.

You can use the Maintenance Log found in **Appendix 3** to keep track of maintenance performed on the 8433.

Troubleshooting

Error Codes and Action

The following table lists 8433's error messages, descriptions, and corrective actions.

Diagnostic Tests

Error Message	Description	Action
E11	CPU data memory error.	Power down, then up. If error still occurs, replace Main PCB.
E16	CPU code memory error.	Power down, then up. If error still occurs, replace Main PCB.
E18	EEPROM memory error.	Re-calibrate the scale. Replace Main PCB.
E31	By-Count operation error.	Enter up to 2 digits of item quantity.
E33	The accumulator overflow.	The accumulated total price is more than 999999 or the accumulated items exceed 99.
E34	PLU operation error.	15 PLU's maximum.
NO PLU	PLU data not found.	Store PLU data before using.

You can perform several tests to help identify and isolate potential problems with the 8433 scale.

AC Power Test: Using the Volt-Ohm meter, check the AC input power. Input power must be within -15% to +10% of the nominal AC line voltage.

Voltage Test: The instructions below describe testing voltages to the Power Supply Adapter, Main PCB, Operator Display PCB.

1. Unplug the scale from the external power source. Verify the DC output voltage of adapter. The nominal DC voltage must be within 10.7 to 18.3 Vdc.
2. The verifying voltage of Main PCB are as follows:
   - The load cell excitation voltage: 5 Vdc (Connector J5 Pin 1 & Pin 4)
   - +5 Vdc for the microprocessor: 5 Vdc (Connector J2 Pin 2 & Pin 7)
   - The VFD filament voltage: 10 Vdc (Connector J2 Pin 4 & Pin 7)
   - The VFD anode and grid voltage: 50 Vdc (Connector J2 Pin 6 & Pin 7)

3. The verifying voltage of Operator Display are as follows:
   - +5 Vdc for the microprocessor: 5 Vdc (Connector J1 Pin 2 & Pin 7)
   - The VFD filament voltage: 10 Vdc (Connector J1 Pin 4 & Pin 7)
   - The VFD anode and grid voltage: 50 Vdc (Connector J1 Pin 6 & Pin 7)

Special Test

The 8433 can be put into a pass through mode for scale test. In this mode, the information is passed to and from the scale through the serial port. To enter this mode, press the setup switch to turn on while the scale is powered up. The weight display will show “PASTH” while in this mode. To exit this mode, press the setup switch off and on again, then power off the scale and power the scale on again. The weight display will show “NRL” to indicate that it is in normal mode. When the setup switch is pressed to off, the scale proceeds through its normal power-up sequence.

Adjustments

Torque Requirement

The torque required is 75 lb/inch.

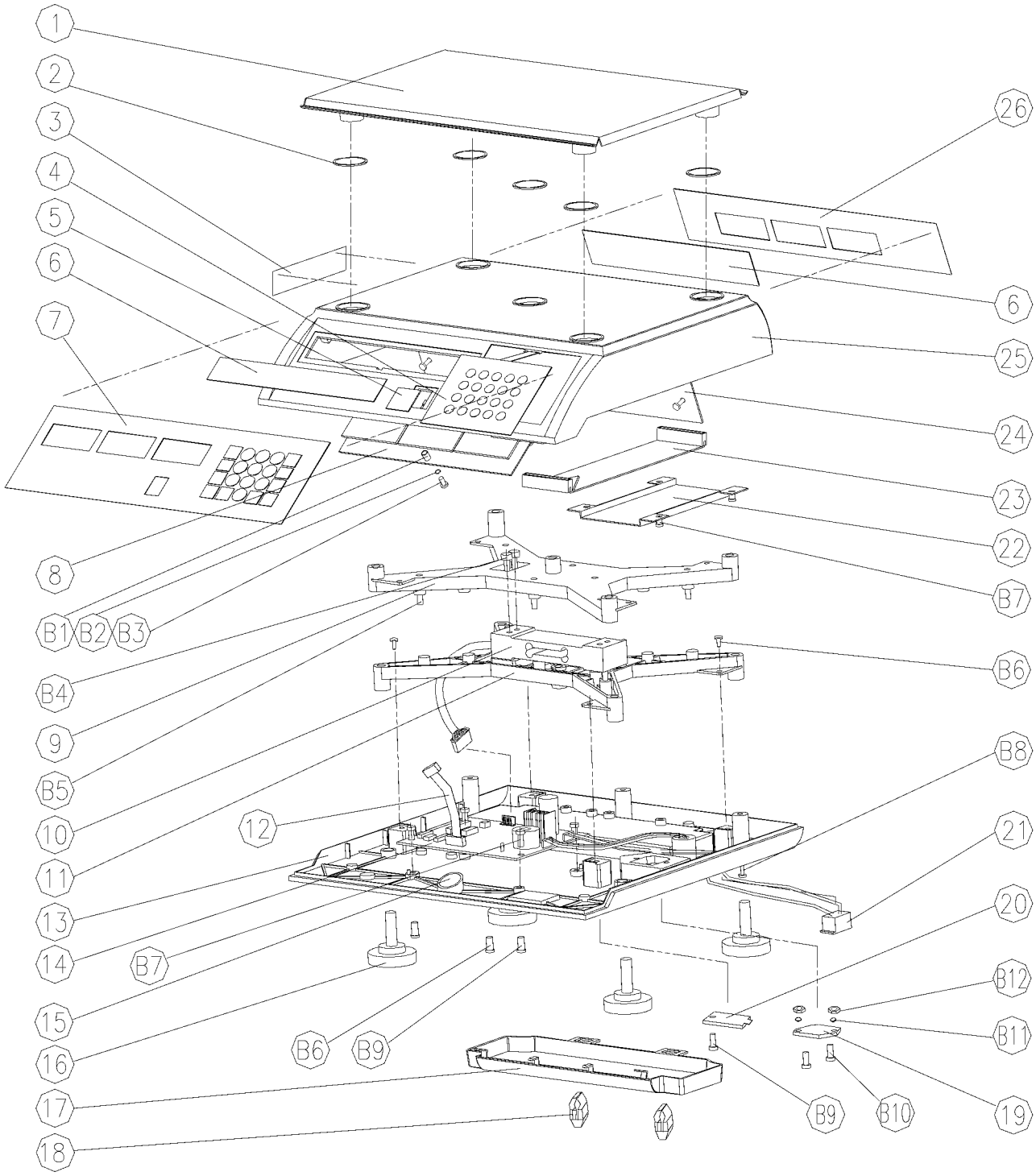
Overload Stops

For a 15 kg or 30 lb unit, at four corners of the spider, the overload stop gap is 2.80mm. For the two overload stops at the center of the spider, the gap is 0.60mm.

6

Parts and Accessories

Please refer to the following diagram and chart when ordering parts for the 8433 service counter scale.



PARTS LIST - 8433 VFD SERVICE COUNTER SCALE			
Symbol	**Part Number**	**Description**	**Qty**
1	1184810TC	PLATTER ASSEMBLY, LIP	1
2	1178970TC	RING, COCKROACH RESISTANCE	5
3	1202910TC	DATA PLATE	1
4	1152200TC	KEYBOARD MEMBRANE, 4 X 5	1
5	1152190TC	LENS, LEVEL DISPLAY CLEAR	1
6	1158990TC	LENS, DISPLAY GREEN	2
7	1158970TC 1152560TC 1182560TC 1182580TC 1190400TC	OVERLAY, OPERATOR, CHINA OVERLAY, OPERATOR, GENERAL EXPORT OVERLAY, OPERATOR, US OVERLAY, OPERATOR, LATIN AMERICA OVERLAY, OPERATOR, CANADA	1
8	B1152470TC 1156720TC	PCB ASSEMBLY, OPERATOR DISPLAY BEARING ASSEMBLY, 30kg LC	1
9	1152330TC	TOP SPIDER, 8433	1
10	1085350TC	LOAD CELL, ANALOG, 30kg CAPACITY	1
11	1152340TC	LOWER SPIDER, 8433	1
12	1152760TC	HARNESS, OPERATOR DISPLAY	1
13	B1152000TC	BASE COVER, PLASTIC, 8433	1
14	1202570TC	PCB ASSEMBLY, MAIN BOARD	1
15	1023260TC	BUBBLE, LEVEL	1
16	1152010TC	FOOT, M8X35	4
17	1132480TC	COVER, BATTERY	1
18	1132440TC	FASTENER, 1/4 TURN	2
19	1182510TC	PLATE, POWER OUTLETS	1
20	1214680TC	PLATE, CALIBRATION HOLE	1
21	1152400TC	HARNESS, POWER SUPPLY	1
22	B1182200TC	PLATE, DISPLAY HARNESS	1
23	1152370TC	DISPLAY HARNESS	1
24	1152520TC	PCB ASSEMBLY, CUSTOMER DISPLAY	1
25	B1151990TC	TOP COVER, 8433	1
26	1158980TC 1152570TC 1182570TC 1182590TC 1190410TC	OVERLAY, CUSTOMER DISPLAY, CHINA, 8433 VFD OVERLAY, CUSTOMER DISPLAY, GENERAL EXPORT OVERLAY, CUSTOMER DISPLAY, US OVERLAY, CUSTOMER DISPLAY, LATIN AMERICA OVERLAY, CUSTOMER DISPLAY, CANADA	1

PARTS LIST - 8433 VFD SERVICE COUNTER SCALE			
Symbol	**Part Number**	**Description**	**Qty**
B1	1151980TC	STANDOFF, PLASTIC	5
B2	1026440TC	WASHER, PLAIN, (4)	5
B3	1158420TC	SCREW, ST3.5X19-C-H, SELF TAPPING	5
B4	1025030TC	SCREW, M6X20, SOC CAP HD	4
B5	1132560TC	SETSCREW, M6X20, FLAT PT. (OVERLOAD STOP)	6
B6	1151950TC	SCREW, M4X8, PAN HEAD	6
B7	1151940TC	SCREW, M4X6, PAN HEAD	8
B8	1151960TC	SCREW, ST4.2X16-C-H, SELF TAPPING	3
B9	1185490TC	SCREW, SEALING	2
B10	1184290TC	SCREW, M3X12, COUNTERSUNK HEAD	2
B11	1026430TC	WASHER, PLAIN, (3)	2
B12	1026190TC	NUT, M3, HEXAGON	2
	1156720TC	BEARING SUB-ASSEMBLY, CONSISTING OF: 1152330TC, TOP SPIDER 1085350TC, LOAD CELL, ANALOG, 30 KG CAPACITY 1152340TC, LOWER SPIDER 1025030TC, SCREW, M6X20, SOC CAP HD 1132560TC, SETSCREW, M6X20, FLAT PT. (OVERLOAD STOP) THE OVERLOAD STOP GAP AND LOAD CELL SHIFT HAVE BEEN ADJUSTED AT FACTORY.	

Appendix 1

Softswitch Default Values

The softswitch defult values are as follows:

	Softswitch	CHINA	E PORT	USA	LATIN	CANADA
Group 1	Step 1	PRC	E PORT	USA	LATIN	CANADA
	Step 2	NO	NO	NO	NO	NO
	Step 3	ON	ON	ON	ON	ON
	Step 4	ON	ON	ON	ON	ON
	Step 5	2	2	2	2	2
	Step 6	ON	ON	ON	ON	ON
	Step 7	OFF	OFF	OFF	OFF	OFF
	Step 8	OFF	ON	ON	ON	ON
	Step 9	OFF	OFF	OFF	OFF	OFF
	Step 10	OFF	OFF	OFF	OFF	OFF
Group 2	Step 1	ON	ON	ON	ON	ON
	Step 2	ON	ON	OFF	ON	OFF
	Step 3	OFF	ON	ON	ON	ON
	Step 4	ON	ON	ON	ON	ON
	Step 5	OFF	OFF	OFF	OFF	OFF
Group 3	Step 1	N/A	N/A	ON	N/A	N/A
	Step 2	N/A	N/A	ON	N/A	ON
	Step 3	N/A	N/A	OFF	N/A	N/A
	Step 4	OFF	ON	ON	ON	ON
	Step 5	OFF	OFF	OFF	OFF	OFF
	Step 6	N/A	ON	ON	ON	ON
	Step 7	N/A	N/A	ON	N/A	ON
	Step 8	ON	ON	ON	ON	ON
	Step 9	ON	ON	ON	ON	ON
	Step 10	OFF	ON	ON	ON	ON
	Step 11	N/A	ON	N/A	ON	N/A
	Step 12	N/A	ON	N/A	ON	N/A
Group 4	Step 1	1	1	1	1	1
	Step 2	N/A	kg	lb	kg	kg
	Step 3	NO	NO	NO	NO	NO

Appendix 2

Programmable Softswitches in Service Mode

Softswitch	Description
Group 1, Step 3	Beeper
Group 1, Step 8	Auto-clear of tare and unit price
Group 1, Step 9	Display uuuuu's when weight is under zero
Group 1, Step 10	Expanded weight display
Group 2, Step 1	Tare enable
Group 2, Step 2	Chain tare enable
Group 2, Step 3	Keyboard tare enable
Group 2, Step 4	Keyboard tare clear
Group 2, Step 5	Prepack/Fix mode tare clear
Group 3, Step 4	Prepack/Fix mode enable
Group 3, Step 6	By-count/X mode
Group 3, Step 7	lb/FOR or kg/ù enable
Group 3, Step 8	Accumulate/+ enable
Group 3, Step 9	PLU enable
Group 3, Step 10	PLU tare enable
Group 3, Step 11	Change enable
Group 3, Step 12	Subtract/- enable
Group 4, Step 1	Digital filtering selection

Appendix 3

Maintenance Log

Maintenance Description	Performed By	Date

Mettler-Toledo, Inc.
Scales & Systems
350 West Wilson Bridge Road
Worthington, Ohio 43085-2273

P/N: 15061900A

(2/97).00

15061900A